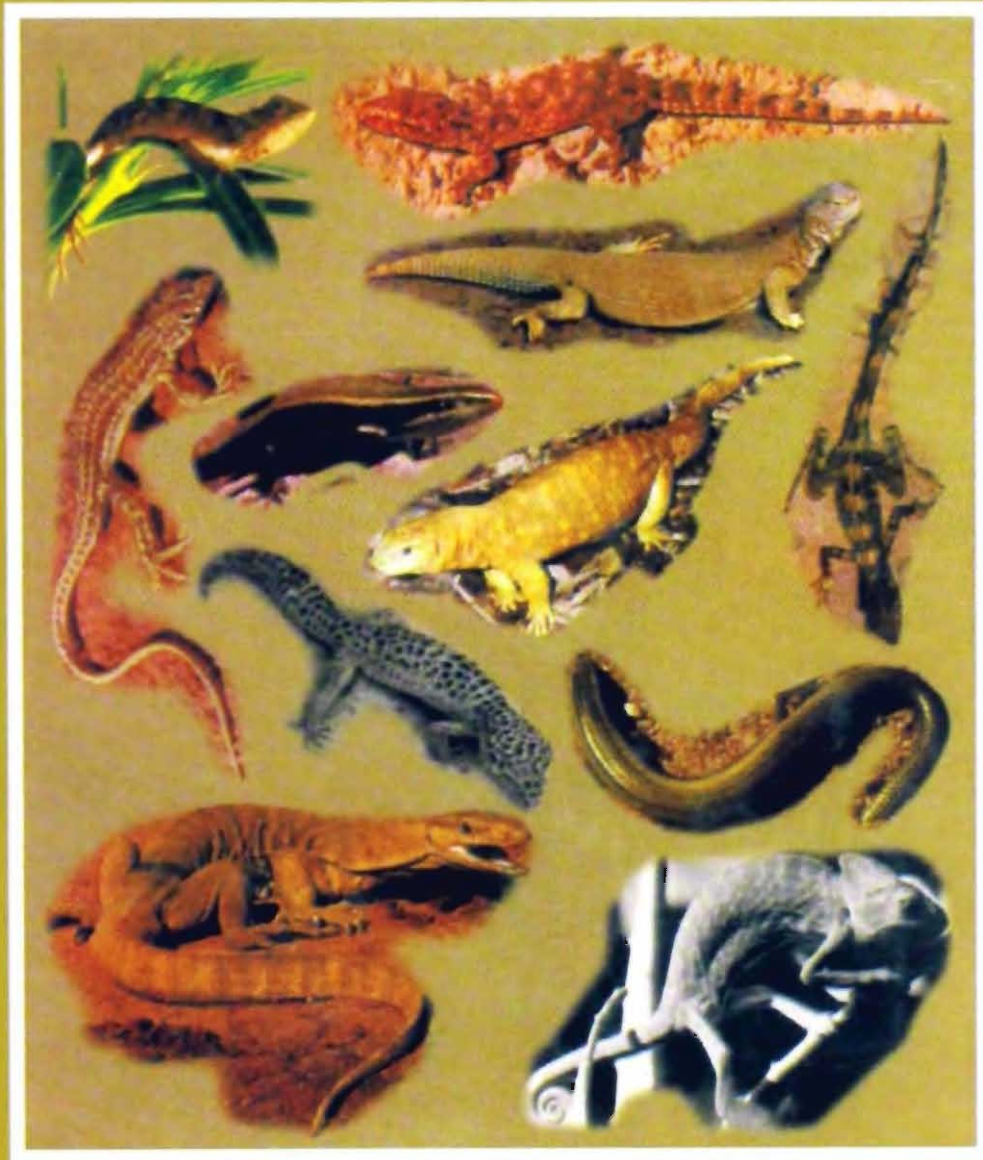


Fauna of India



REPTILIA

Sauria

Volume : II

R. C. SHARMA



The present fauna of India, volume on lizards, which is second in the series of 3 volumes on Reptilia by him (earlier one being on Testudines and Crocodylians), comprises the comprehensive and profusely illustrate taxonomic account with additional knowledge of natural history and other biological data so far available on all the known species inhabiting the Republic of India, Bhutan, Bangladesh, Burma, Srilanka and Pakistan. The phylogeny, exact distribution in present times, habits and habitats, biology, ecology, conservation, breeding, skeletal morphology, denitition and current status of all the species has been discussed. Nine families represented by 66 genera and 280 species and subspecies have been dealt with in this faunal work.

The third volume on Snakes has also been completed and is under publication.

**THE FAUNA OF INDIA
AND
THE ADJACENT COUNTRIES**

REPTILIA

Volume II
(SAURIA)

R. C. SHARMA

Desert Regional Station, Zoological Survey of India, Jodhpur

Edited by the Director, Zoological Survey of India, Kolkata



सत्यमेव जयते

**Zoological Survey of India
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FOREWORD

Fauna of India : Reptilia Volume I –Testudines and Crocodilians by Dr. R. C. Sharma was published in 1998 and reprinted in 2002. The present volume by the same author is the second in the series of three volumes and deals with lizards. Like earlier volume, the present one is also an updated version of the fauna of British India volume on Reptilia and Amphibia by Malcolm Smith (1935) and includes 27 more species described since then.

This present volume deals with the taxonomic description of 280 species and subspecies of lizards distributed in 66 genera and nine families. Besides taxonomic account, emphasis has also been laid on zoogeography, phylogeny, skeletal morphology, biology and ecology of each species alongwith their current status.

Lizard, like other reptiles, have fascinated mankind since time immemorial and there has always been an eagerness to know more about them. This Fauna of India volume is certainly a serious effort in this direction where attempts have been made to provide as much information as available till date. This will also provide basic information needed for the conservation and management of endangered species.

The third volume in the series on snakes will also be brought out shortly.

June, 2002
Kolkata

J.R.B. Alfred
Director
Zoological Survey of India

PREFACE

Since the publication of Malcolm Smith's "The Fauna of British India Reptilia and Amphibia", in 3 volumes (1931-1943), the taxonomic research and related knowledge in the subject has increased considerably. This warrants me to rewrite the complete fauna of the Indian Region. I propose to complete the work in three volumes. The present book is the second in the series of three volumes which deals with the detailed general introduction on suborder Sauria of class reptilia, covering briefly all the possible details and descriptions of the characters and the systematic accounts of 66 genera and 280 species and subspecies. This faunal work apart from providing an up-to-date and complete taxonomic account of all the species and subspecies known from the Indian Region, which for the present volume includes, India, Pakistan, Nepal, Bhutan, Bangladesh, Burma and Sri Lanka, sufficient information on biology, ecology, distribution, zoogeography, habits and habitats, status, conservation etc. of numerous species has also been given in this book. The work is well illustrated with the line drawings of important structures. Distributional maps of all the species and subspecies have been given. I hope this book will serve a useful purpose.

R. C. SHARMA

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Last but not the least I am highly obliged to the late Professor M. L. Roonwal, former Director, Zoological Survey of India, for giving valuable suggestions in connection with this work. I am also indebted to Dr. Ishwar Prakash, Professor of Eminence, Central Arid Zone Research Institute, Jodhpur, for useful suggestions from time to time.

ABBREVIATIONS

AFBOC	Articular facet for basioccipital
AFEXO.	Articular facet for exoccipital
AFO.	Articular facet for quadrate
AN.	Anal shield or angular bone of mandible
API.	Acetabular part of ilium
APIS.	Acetablular part of ischium
APP.	Acetablular part of pubis
ARI. -	Articular facet of ilium
AROP.	Articular process for odontoid process
ART. or ar.	Articular bone of mandible
AT. -	Atlas vertebra
AX.	Axillary shiled of plastron or axis vertebra
BF. -	Basipital fossa
BOC. or bo.	Basioccipital
BSPH. or B.P. or bp.-	Basisphenoid
BRAR.	Branchial cornua of Hyoid
Brit. Mus.	British Museum of Natural History
CA. or ca.	Columella auris; Canine teeth
CART.	Cartilage between quadrate and paraoccipital process
CB.	Chevron bone
CBOC. -	Part of Occipital Condyl formed by basioccipital
CC.	Concavity
CD. -	Coracoid
CDF.	Coracoid foramen
CEXO.	Part of occipital condyl formed by exoccipital
CFI.	Condyl for fibula
CJ.	Cartilaginous joint
CL.	Claw or claws or Clavicle bone
CO. or CR. or Cor.	Coronoid bone of mandible
CP.	Clawed distal phalanges or Corpus hyodium of Hyoid

CO. -	Cranio-quadrate passage
CR ₁ . -	First cervical rib
CR ₂ . -	Second cervical rib
CT. -	Centrale
CTI. -	Condyl for tibia
D. or d. -	Dentary
DC ₁ . -	First distal carpal
DC ₅ . -	Fifth distal carpal
DR. -	Deltoid ridge
DT. -	Distal tarsal
EAP. -	Extra acetabular portion of ilium
ECD. -	Epicoracoid
ECTPT. -	Ectopterygoid
EPB. -	Epipubis
EPS. -	Episternum
EPT. -	Epipterygoid
ESTS. -	Extra stapes
EXO. or EO. -	Exoccipital
EXOPR. -	Paroccipital process
F. or FR. or f. -	Frontal
FE. -	Femur bone
FI.	Fibula
FIB. -	Fibulare
FM. -	Foramen magnum
FMCK. -	Fossa meekelii
FME. -	External mandibular fossa
FOR. -	Foramen rotundas
FOV. -	Part of foramen ovalis
FPT.	Post temporal fossa
FV. -	Foramen
HP.	Hypocentrum
HU. -	Humerus bone

HY. -	Hyoid cornua of Hyoid
IF. -	Inframarginals
IG. -	Intergular shield
IM. -	Intermedium
IP. -	Interparietal
IPT. -	Interpterygoid space
ITF. -	Infratemporal fossa
ITR. -	Internal trochanter
J. -	Jugal
LAC. -	Lachrymal
LG. -	Ligament
Loc. -	Locality
MX. or m. -	Maxillary or maxilla or maxillae
MA. -	Marginal shields of carapace
MC. -	Metacarpal
MCK. -	Meekel's cartilage
N.	Nasal bone
NC. -	Neural canal
NCA.	Nasal capsule
NS. -	Neural spine
OC. -	Occipital condyl
OF. -	Obturator foramen
OP. -	Odontoid process
OPR. -	Olecranon process
opo. -	Opisthotic
ORSPH. -	Orbitosphenoid
P. or p. -	Parietal
PAF. -	Palatine foramen
PL. or PAL. -	Palatine
PAP. -	Preacetabular process of ilium
PBSPH. -	Pterygoid process of basisphenoid
PEC. AR. -	Pectoral arch

PEG.	Process entoglossus of Hyoid
PF.	Prefrontal bone or parietal foramen
PFR. -	Prefrontal bone
PLF.	Palatal fossa
PLPT. -	Pterygoidal bulla
PMX. or pm. -	Premaxillary or Premaxille
POF.	Postfrontal
POR.	Postorbital
PPO.	Paroccipital process
PPT. -	Palatine process of pterygoid
PRF. -	Prefrontal
PRO. or pro. -	Prootic bone
PSARTP. -	Postarticular process
PSPM. -	Parasphenoid
PT. or pt.	Pterygoid bone
PTF.	Posttemporal fossa
ptf. -	Postorbital
PVO. -	Prevomer
PZS.	Prezygapophysis
PZT.	Postzygapophysis
QD. or q. -	Quadrate bone
QPT.	Quadrate process of pterygoid
qj. -	Quadrato - jugal
R.	Radius bone
RD.	Radiale bone
ROE.	Recessus oticus externus
S.	Sternum
SAN. or s. ang.	Supra-angular
So. or Soc. or so.	Supraoccipital
SP.	Scapula
SPL.	Splenia
SQ or sq. -	Squamosal

SS.	Suprascapula
ST. -	Supratemporal
STF.	Supratemporal fossa
STP.	Supratemporal process of parietal
STS.	Stapes bone
T.	Teeth
TI. -	Tibia bone
TP. -	Transverse process
TYP. -	Tympanic process
U. -	Ulna bone
UC.	Ulnar Condyl
UN.	Ulnare
Vo. or v. -	Vomer
VP.	Ventral process
VR.	Vertebral rib

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INTRODUCTION

After the publication of Fauna of Smith (1935) on lizards, 27 more new species have been described, types were studied in more details and compared with the recently collected material, many topotypes were added, status of various species was checked and reestablished and the knowledge regarding the distribution of most of the species increased considerably. Intensive studies on the lizards have been taken up recently, the results published through various publications in India and abroad are scattered. The present fauna volume on lizards comprises the comprehensive, profusely illustrated taxonomic account with additional knowledge of natural history and other biological data so far available on all the known species inhabiting the Republic of India, Bangladesh, Bhutan, Burma, Sri Lanka and Pakistan. The phylogeny, exact distribution in present times, habits, habitats, biology, ecology, conservation, breeding, skeletal morphology, dentition and current status of all the species has been discussed. The recent changes occurred in the nomenclature of various taxonomic categories are as follows :

Family GEKKONIDAE

1. Genus *Alsophylax* has been discarded and its 12 species have been shifted to the genus *Bunopus*.
2. Genus *Gymnodactylus* has been discarded and its all the 30 species have been included in the genus *Cyrtodactylus*. All these species constitute most diverse assemblages of Gekkonids and further studies on the available material has revealed the existence of more species and sub-species as new to the science. The 62 species of various genera like *Agamura*, *Cnemaspis*, *Pristurus*, *Hemidactylus*, *Calodactylodes*, *Ptyodactylus*, *Phyllodactylus*, *Dravidogecko*, *Gehyra*, *Hemiphyllodactylus*, *Gekko*, *Lepidodactylus*, *Ptychozoon*, *Lophopholis*, *Phelsuma* and *Teratolepis*.
3. Genus *Platyurus* has been discarded and its species have been shifted to the genus *Cosymbotus*. The status of the species of *Cosymbotus* is reestablished, after a detailed study of the Assam and Nepal material. The species have been redescribed with proper illustrations.
4. A new genus *Tropicolotes* has been discovered recently and the detailed study of this material has been included in this work.

Family EUBLEPHARIDAE

This family of Boulenger (1883) has been reestablished as an independent family and as such genus *Eublephavis* has been redescribed with proper illustrations and useful data.

Family AGAMIDAE

Most of the genera like *Draco*, *Sitana*, *Otocryptis*, *Ptyctolaemus*, *Cophotis*, *Ceratophora*, *Lyriocephalus*, *Oriocalotes*, *Japalura*, *Goniocephalus*, *Mictopholis*, *Salea*, *Calotes*, *Psammophilus*, *Agama*, *Phrynocephalus*, *Leiolepis* and *Uromastix* are redescribed in accordance with the recent discoveries on more available material during the last 58 years (1935-1993). There was an urgent need to reestablish the exact taxonomic status of numerous species of family Agamidae.

Family CHAMAELEONIDAE

The exact taxonomic status of the Indian material is not certain. The complete material from the range of genus *Chamaeleo* (from Indian to the African region) has been examined and the concerned species has been redescribed with a comparative taxonomic account.

Family SCINCIDAE

1. On account of the recent advances and large accumulation of the material, radical changes have to be incorporated in the descriptions of numerous species of genera like *Mabuya*, *Dasia*, *Ablepharus*, *Riopa*, *Tropidophorus*, *Ristella*, *Eumeces*, *Scincus*, *Ophiomorus*, *Chalcides*, *Barkudia*, *Sepsophis*, *Chalcidoseps* and *Nessia*.
2. All the species of *Lygosoma* have been shifted under the genus *Sphenomorphus*, have been redescribed.
3. All the species of genus *Leiolopisma* have been placed under the genus *Scincella*. The changes in the taxonomic descriptions have been incorporated.

Family DIBAMIDAE

Detailed comparative study of the material so far collected has been done and status of the species *Dibamus novaeguineae* from Nicobar Islands has been ascertained.

Family LACERTIDAE

A considerable confusion existed in the taxonomy even at the generic level. Extensive studies on the material of *Takydromus* and *Eremias* has been done. The present taxonomic status of the species of *Eremias* was uncertain and confusing and further studies were necessary in justifying the separation of these species from the species of genera *Mesalina* and *Scapteira*.

Family ANGUIDAE

Further detailed studies were required on the material of *Ophisaurus apodus* and the species has been described again with more details of taxonomic comparison and illustrations.

Family VARANIDAE

Redescriptions of all the species of monitor lizards was needed with improved illustrations and taxonomic and other details.

Besides the enormous identified reptile material, the numerous types available in Zoological Survey of India, Calcutta were examined in all the possible details. At many occasions the material (including the types) was borrowed from other institutions for study and comparison. Numerous faunistic surveys were conducted by the Zoological Survey of India in different parts of India during the last 60 years after the publication of Smith's fauna of reptiles. These extensive surveys further initiated the detailed studies on the species of the area covered in this work. Type localities were studied once again, topotypes of various species were collected and related ecological and biological observations were recorded on the various less known species viz., *Cnemaspis sisparensis* Beddome, *Calotes nemoricola* Jerdon, *Dasia subcaerulea* (Boulenger), *Chalcides pentadactylus* (Beddome), *Cyrtodactylus fasciolatus* (Blyth), *Cyrtodactylus khasiensis* (Jerdon), *Cyrtodactylus gubernatoris* (Annandale), *Cyrtodactylus jeyporensis* Beddome, *Dravidogecko anamallensis* (Gunther), *Draco norvilli* Alcock, *Mictopholis austeniana* (Annandale), *Japalura andersoniana* Annandale, *Tropidophorus assamensis* Annandale, *Barkudia insularis* Annandale, *Sepsophis punctatus* (Beddome) and *Takydromus haughtonianus* Jerdon.

PHYLOGENY AND ZOOGEOGRAPHY

Ancestry of modern lizards can be traced back up to the middle of Jurassic period of mesozoic Era in the diapsid reptile-stock, living on Earth about 155 million years back, who were ancestors of the modern snakes also. The Squamatan reptile fossils are not known before the jurassic period and the lizard remains are not common until the late cretaceous period (110 to 115 million years ago). Triassic Eosuchians are seems to be the real ancestors of modern lizards, snakes and Rhynchocephalians. In every anatomical feature, the ancestral lizards were quite similar to the diapsid Sphenodon and the derivation of both (by reduction of the lower arch) from the Triassic diapsid Eosuchians comes quite true.

Eosuchia is the order of fossil reptiles of sub-class Lepidosauria and includes fossil reptiles inhabiting this Earth between Upper Triassic to Upper Permian periods (160 to 190 million years back). Almost all the Eosuchians perished by the beginning of the cretaceous period or early Mesozoic Era (roughly 100 million years back) and it was the chance for lizards and snakes, when these creatures flourished vigorously. Availability of the floral fossil records of water loving family Depterocarpaceae also helps in tracing the phylogery of the modern lizards in India. The presence of this floral family signify that the climate of Peninsular India during Miopliocene was tropical with heavy rainfall. This

indicates the abundance and availability of the variety of arthropod and other invertebrate food for those ancestral lizards. During the upper-cretaceous. India experienced plenty of volcanic activity, which considerably altered its topographical features and brought drastic changes in the general lithography of the terrain, numerous lizard species perished with the uplifting of the continental areas, as there was a considerable restriction of low level plains, suitable for the formation of swamps and lagoons. This abrupt change in general topography effected the climate and the elevation of mountain chains contributed immensely to change the ocean currents, wind pattern and rainfall. All these abrupt changes aided in the reduction of natural habitats of most of the lizard species inhabiting various bioms of those days. Such changes in rainfall, humidity, temperature and other climatic factors caused the dispersal of lizards in altogether different and changed habitats. The divergence from a original habitat introduced altogether new adaptations in different groups and as such new species were formed. Gradually the changed habits enforced variations in structural patterns and characters and ultimately the lizards were broadly differentiated into arboreal, scansorial (climbing), saltatorial (fossorial or burrowing), cursorial (running), terrestrial (ground dwelling, cave dwelling, rock dwelling) and volant (flying, gliding) forms. Climatic and physical changes in Indian sub-continent took place towards the end of cretaceous and made the vast areas quite unsuitable for the survival of many species of lizards. The formation of physical barriers such as mountain ranges, arid deserts, large stretches of water and dense forests caused the strict localization of numerous species which is continuing till the present times. After passing through the numerous fluctuating conditions of temperature, rainfall, wind velocity, humidity, salinity, alkalinity and cooling process of the crust, the existing species of lizards are well adjusted in the different ecological niches. While these lithographic changes of Earth were going on, dominant ancestral stock of Permian and Mesozoic reptiles had undergone enormous changes in shape, size, structure and adapted themselves to survive in much diversified ecological circumstances. The second exchange of the Palaearctic, Indian, Indo-chinese and Indo-malayan faunal elements of reptiles took place on the maximum scale during this period only. The most effected creatures were the lizards and the snakes. The ancestors of lizards are either archaic remnants of the dominant reptiles of the Mesozoic or they are the result of a new branching which originated after the extinction of the Mesozoic stock. It has already been stated while discussing the phylogeny that modern lizards have originated in the Triassic and most of the ancestral eosuchian reptiles did not undergo typical adaptive radiations until Tertiary period. Lizards could become independent and well adjusted not before cretaceous. The beginning of the discontinuous and relict distribution in India in case of lizards is not an independent happening. The discontinuity is in most cases secondary and comparatively is of a recent origin from a former continuous distribution. This indicates with acceptable proofs that the present continents had suitable land bridges or connections for the dispersal of various abundant species. Such species,

during the course of evolution living in isolation for a long time have undergone some changes but still exhibit marked similarities in morphology, structure and behaviour. Further evidence of single landmass or pangaea is displayed by the carboniferous rocks of India, South Africa and South America which provide proofs of contemporary glaciation over them. All these areas were definitely close together near the south pole in Carboniferous period. The landmass split in Triassic and further subdivided in the Jurassic and the drift continued during the Cretaceous and later periods. The flow of the glacier prevailed almost throughout the Carboniferous period towards Northwestern, Northern and North-eastern regions from a central ice-covered region where Orissa, Bihar, Madhya Pradesh and West Punjab are situated now a days. The various species of lizards and other animals survived in certain warmer pockets of southern portion of Western Ghats of Indian and Sri Lanka. The following is the brief synthetic discussion and merits of the saurian fauna of Indian subregion at a zoogeographical point of view. By taking the numerous factors in to consideration, it is necessary to reassess the origin and dispersal of the various species of lizards presently inhabiting India, tropical south Africa, Madagascar, Western Asia, North-east India, Malaysia, Java, Sumatra, Borneo and Australia. The Indian peninsula was never under water even since the Cambrian period but the major portion of N. India including the region of Himalayas was under the sea. India had land connections with Madagascar and South Africa in Mesozoic and early Cenozoic periods. Recently Roonwal and Chhotani (1960) have brought important zoogeographical findings to the light of science in the field of termites (Insecta : Isoptera) and further prove the land connections of India with other areas of the world in upper carboniferous period. Some theories can be very well fit in the case of lizards also. Hora (1949) has established the continuity of Vidhya-Satpura hills with Assam Himalayas in the Northeast and the Western-Ghats in the west. It has been proved that a land connection existed between Assam-Burma-Malaysia-Sumatra-Java and Borneo. The recent oceanographic survey of the floor of the Bay of Bengal has proved that submerged area near Sumatra, Java and Borneo was once above the water. This submerged coastal area "Sunda-shelf" is absolutely flat and the deposits on its surface are not of the oceanographic nature but agree with those which are generally brought and deposited by the rivers. "Sunda-shelf" before its submergence served as a bridge between Sumatra, Java, Borneo, many small islands (which are now submerged) and Malaysia. The sea-level increased abruptly after the Carboniferous ice age and sea water engulfed the various lower coastal areas. The submergence was maximum near the Malayan Archipelago during the postpleistocene period. Enormous volcanic activity took place during Eocene period in India and resultant lava covered almost whole of Peninsular India and as such has given rise to the formation of infra and inter-trappean beds. This great lithographic change helped in the formation of Deccan trap and had a prominent effect on the topography and climate of the region. At that time the flow of all the rivers of peninsula was towards the

north-west instead of west to east as we find now a days and the rivers like Narbada and Tapti were not at all in existence. Wadia (1926) has explained the pattern of drainage of the rivers on this area in the following way.

"One supposition regards this fact as an indication that the present paninsula is the remaining half of a landmass, which had the Ghats very near its centre as its primeval water-shed. This water-shed has persisted, while a vast extension of the country west of it has been submerged under-neath the Arabian sea, Another view, equally probable, is suggested by the exceptional behaviour of the Narbada and the Tapti. These rivers discharged their drainage to the west, while all the chief rivers of the country, from Cape Comorin through the Western Ghats and the Aravallis to the Siwalik hills near Hardwar (a long water shed of 1,700 miles) all run to the east. This exceptional circumstances is explained by the supposition that the Narbada and Tapti do not flow in Valleys of their own eroding, but have usurped for their channels two faultplanes, or cracks, running parallel with the Vindhya. These faults are said to have originated with the bending or sagging, of the northern part of the peninsula at the times of the upheaval of the Himalayas as described before. As an accompaniment of the same disturbance, the peninsular block, south of the cracks tilted slightly eastwards, causing the eastern drainage of the area"

Hora (1938) disregards the first hypothesis of Wadia (1926), stated above on the basis of the estuarine nature of the fauna and flora of the inter-trappean beds in the central provinces and the probable direction of flow of the post-trappean rivers but he believed in the 'tilt' theory of India. It has been established by various workers (Fox 1923, Heron 1938, Sewell 1937 and Verdenburg 1906) that a constant geological phenomenon has caused the steep and straight elevation along the western coast and a simultaneous depression along the east coast of peninsular India. The present shape of the western Ghats is since the Pleistocene period. Such major changes in the physiography of peninsular India were mainly experienced by the northern portion of the Western Ghats and most of southern portion either subjected to changes of lesser degree or remained unaffected. Possibly the whole of Indian peninsula had the reaction of the great earth movements like the uplift of Himalayas, the general crust movements of the Pleistocene and movements due to the scarp-faulting along the western coast. The Himalayan uplift might have caused the cracks in the northern part of the peninsula which ultimately might have created the valleys for Narbada and Tapti rivers and possibly also helped in tilting of the Indian Peninsula from east to west.

The past physiographic conditions of peninsular India already discussed above render an opportunity to realize that possibly this area itself in particular and India as a whole in general was the original home of the common ancestral stock of reptiles, including the lizards, much prior to the changes which took place in the northern western Ghats. This ancestral fauna of reptiles ultimately migrated to the adjoining areas in different and

suitable intervals and subsequently by the lapse of time suffered from various changes on account of isolation in different ecological conditions. Ultimately many species or genera either remained unaltered or segregated into various allied species, subspecies and colour forms depending on their resistance or susceptibility in relation to the changed environment. The Indian reptiles especially the peninsular represent the oldest element of fauna and most probably dispersed from here to Madagascar and South Africa in Mesozoic and early Cenozoic times, since the peninsula had land connections with above areas in those days. Most of the species possibly flourished in western Ghats and then the intertransmission took place between this region and other parts like Tropical south Africa, Madagascar, Western Asia, Assam, Burma, Malayan peninsula, Java, Sumatra and Borneo. This admixture of the reptile fauna continued so long as the land connections (as already mentioned) prevailed between these land masses. Possibly the intermigration of this fauna took place on account of basic natural needs like food, breeding and climatic instability in one or another region mentioned above. The over-crowding of the fauna might be also one of the reasons of the dispersal. The major portion of the western Ghats, like these days were covered with dense tropical forests and was much humid when the reptilian faunal dispersal took place.

Pliocene Siwalik deposits of Himalayan foot hills approve that the recent saurian fauna of Tropical South Africa and Western Asia has a close similarity with it and might have descended from the same ancient stock which inhabited the Peninsular India once upon a time. The occurrence of the Siwalik fauna of Himalayas in the mountains of Southern India and in Burma and even further south up to Sri Lanka gives a suitable support to this idea. Further it has been observed that no records indicating the presence of unaltered or allied Siwalik species in the intervening areas of peninsula. Such a type of migration of temperate Himalayan reptiles to the hilly areas of southern India and Ceylon and the presence of Burmese and Malayan reptiles in the present reptile fauna of peninsular India provides an explanation for the origin of ancestral reptiles from the western portion of the Indian peninsula. Many Zoogeographers give the reasons of this faunal anomaly as a result of Glacial Epoch. In this connection Prasad (1942) states "At the present day the comparatively narrow plain of the Brahmaputra in Assam is far more extensively covered with forests than the much Gangetic plain, and if, as is possible, the same differences existed at the close of the Glacial Epoch, it is easy to understand why the Trans-Gangetic fauna of Burma and South-east had greater chances of occupying the vacant region of the Himalayas than the Cis-Gangetic fauna which had been driven much further south by the cold"

Probably the original home of the lizards now inhabiting South Africa, Madagascar and Western Asia was the tropical India and the ancestral groups migrated there in Mesozoic and in the beginning of Cenozoic times, when Indian peninsula had a land

connection with these parts. The present condition shows that the lizard fauna of peninsular India, on one side is well represented in Assam, Burma and Malayan peninsula while on the other it is absolutely absent from the northern India. It seems that in the beginning the main concentration of the lizards in India was at lower portion of Western Ghats and from there the migration took place to Assam hills through Satpura - Vindhya ranges. Many migrated species which could remain unaltered in both the regions till present times, reached up to Java, Sumatra and Borneo are as follows: *Cnemaspis kandiana*, *Hemidactylus frenatus*, *Hemidactylus bowringi*, *Platyurus platyurus*, *Gehyra mutilata*, *Hemiphyllodactylus typus*, *Lepidodactylus lugubris*, *Mabuya macularia* and *Riopa lineata*.

This migration of the lizard species took place much earlier to the following geological changes : 1. The submergence of Assam, Burma and parts of the Malayan region. 2. The changes which took place in the northern western Ghats. 3. The changes which took place in the topography of the area between Satpura—Vindhya and Assam hills "Garo-Rajmahal Gap"

On account of this migration of the lizard species from peninsular India to other connected parts many ancestral groups of genera had to segregate gradually into the allied species. This was possibly due to the parallel evolution on account of the changed environmental conditions. The effect can be easily noticed in the following species, now inhabiting the peninsular India and the Malayan region; *Draco dussumieri* and *Draco norvilli*; *Draco subcaerulea* and *Draco olivacea*; *Cophotis ceylanica* and *Cophotis sumatrana*; *Lygosoma dussumieri* and *Lygosoma maculatum*; and *Riopa alpopunctata* and *Riopa bowringi*; *Dasia olivacea* and *Dasia subcaerulea*.

The change in any of the above species has not gone beyond a species step, which indicates that the isolation in case of these allied species must not be older than a million years. In case of lizards the isolation of two allied faunas possibly took place in Pleistocene times. The reptile faunal dispersal from a common ancestral stock from peninsular India to Africa, Western Asia and S.E. Asia, and the parallel evolution of the separated groups is further established when the characters of these various allied species now inhabiting, are compared. If we minutely go into the details of certain species of genus like *Draco* then we come to the conclusion that at one time they inhabited the complete India but due to the sudden change in the climate, died out or had to migrate to the adjoining areas for survival and changed themselves to adapt to the different environmental conditions. This is interesting to mention and prove the above statements that *Riopa quincens* from W. Africa is very closely allied to *Riopa bowringi* from Indo-Chinese sub region, *Riopa alpopunctata* from India is absolutely unseparable from *Riopa herberti* from Thailand. In certain Gekkonids the parallel evolution extended up to the generic level.

Present distributional pattern of reptiles in India and their relations with adjoining Zoogeographical Regions :

1. **Lizard species of Palaearctic origin with some admixture of Ethiopian elements :** The following species have their main origin from the Mediterranean, Irano-Turanian, Saharo-Sindian and Palaeotropic subregions.

Family Gekkonidae : *Stenodactylus orientalis*, Family Agamidae : *Phrynocephalus theobaldi*, *Phrynocephalus reticulatus*, *Phrynocephalus euptilopus*, *Phrynocephalus laungwalansis*, Family Scincidae : *Ophiomorus tridactylus*, *Chalcides pentadactylus*, *Ablepharis grayanus*, Family Lacertidae : *Ermias guttulata watsonana*.

2. **Lizard species exclusively endemic to the Indian subregion :** The following species are mainly from the climatically diversified geographical zones of Indian subregion namely the desert area of Rajasthan and North-Western India; Kashmir and the Western Himalayas; The plains of Ganga and Yamuna; Central India; The Indian peninsula; Western Ghats; Eastern Ghats; The Chota Nagpur area and the North-east India including Eastern Himalayas. Family Gekkonidae : *Cyrtodactylus nebulosus*, *Cyrtodactylus collegalensis*, *Cyrtodactylus dekkansis*, *Cyrtodactylus albofasciatus*, *Cyrtodactylus jeyporensis*, *Cnemaspis indica*, *Cnemaspis sisparensis*, *Cnemaspis wynadensis*, *Cnemaspis ornata*, *Cnemaspis beddomii*, *Cnemaspis mysoriensis*, *Cnemaspis gracilis*, *Cnemaspis littoralis*, *Cnemaspis jerdoni*, *Cnemaspis goaensis*, *Calodactylodes aureus*, *Dravidogecko anamallensis*, *Hemidactylus subtriedrus*, *Hemidactylus prashadi*, *Hemidactylus gracilis*, *Hemidactylus reticulatus*, *Hemidactylus frenatus*, *Hemidactylus giganteus*, *Hemidactylus bowringi*, *Hemidactylus garnoti*, *Hemidactylus karenorum*, *Hemidactylus porbandarensis*, *Hemidactylus albofasciatus*, *Hemiphyllodactylus typus aurantiacus*, *Lophopholis scabriceps*, Family Eublepharidae : *Eublepharis hardwickii*, Family Agamidae : *Draco dussumieri*, *Sitana ponticeriana*, *Otocryptis beddomii*, *Japalura tricarinata*, *Japalura planidorsata*, *Japalura andersoniana*, *Japalura variegata*, *Salea horsfieldi*, *Salea anamallayana*, *Calotes cristatellus*, *Calotes jubatus*, *Calotes maria*, *Calotes jerdoni*, *Calotes emma*, *Calotes mystaceus*, *Calotes nemoricola*, *Calotes grandisquamis*, *Calotes calotes*, *Calotes andamanensis*, *Calotes rouxi*, *Calotes elliotti*, *Calotes danieli*, *Calotes bhutanensis*, *Psammophilus dorsalis*, *Psammophilus blanfordianus*. Family Chamaeleonidae : *Chameleo zeylanicus*. Family Scincidae : *Mabuya bibroni*, *Mabuya innotata*, *Mabuya allapallensis*, *Mabuya nagarjuni*, *Mabuya carinata*, *Mabuya multifasciata multifasciata*, *Mabuya tytleri*, *Mabuya andamanensis*, *Mabuya rugifera*, *Mabuya beddomii*, *Mabuya quadricarinata*, *Mabuya trivittata*, *Dasia subcaerulea*, *Sphenomorphus dussumieri*, *Scincella travancoricum*, *Scincella beddomii*, *Scincella laterimaculatum*, *Scincella bilineatum*, *Scincella macrotympanum*, *Riopa albopunctata*, *Riopa punctata*, *Riopa guentheri*, *Riopa lineata*, *Riopa vosmaeri*, *Riopa ashwamedhi*, *Riopa goaensis*, *Riopa pruthi*, *Ristella rurki*, *Ristella travancorica*, *Ristella guentheri*, *Ristella beddomii*, *Barkudia insularis*, *Sepsophis punctatus*. Family Lacertidae : *Cabrita leschenaulti*, *Cabrita jerdoni*, and *Ophisops beddomei*. Family Varanidae : *Varanus flavescens*, *Varanus salvator*.

3. **Lizard species of Palaearctic origin, intruded in the Indian subregion :** Family Gekkonidae : *Teratolepis fasciata*, Family Eublepharidae : *Eublepharis macularius*. Family

Scincidae : *Eumeces taeniolatus*. Family Lacertidae : *Acanthodactylus cantoris cantoris* and *Ophisops jerdoni*.

4. **Lizard species which are common to the Oriental and Palaearctic Regions** : Family Gekkonidae : *Cyrtodactylus scaber*, *Cyrtodactylus kachhensis*, *Cyrtodactylus fasciolatus*, *Cyrtodactylus stoliczkai*, *Cyrtodactylus lawderanus*, *Cyrtodactylus malcolmsmithi*, *Cyrtodactylus madarensis*, *Hemidactylus maculatus*, *Hemidactylus triedrus*, *Hemidactylus brooki*, *Hemidactylus leschenaulti*, *Hemidactylus flaviviridis*, *Teratolepis fasciata*. Family Eublepharidae : *Eublepharis macularius*, Family Agamidae : *Japalura major*, *Japalura kumaonensis*, *Calotes versicolor*, *Agama himalayana*, *Agama tuberculata*, *Agama agorensis*, *Agama agilis* and *Uromastix hardwicki*. Family Scincidae : *Mabuya dissimilis*, *Mabuya macularia*, *Scincella himalayanum*, *Scincella ladacense*, *Scincella sikkimense* and *Eumeces poonaensis*. Family Lacertidae : *Acanthodactylus cantoris cantoris*, *Ophisops jerdoni* and *Ophisops microlepis*. Family Varanidae : *Varanus griseus* and *Varanus bengalensis*.

5. **Lizard species of oriental origin (Indo-Chinese and Indian subregions), intruded in to Palaearctic region** : Family Agamidae : *Calotes versicolor*, *Japalura major*, *Japalura kumaonensis* Family Scincidae : *Scincella himalayanum*, *Scincella ladacense* and *Riopa punctata*.

6. **Lizard species exclusively endemic to the Indo-Chinese and Malayan subregions** : Family Gekkonidae : *Cyrtodactylus rubidus*, *Gekko smithi*, *Ptychozoon kuhli*, *Phelsuma andamanense*. Family Agamidae : *Ptyctolaemus gularis*, *Mictopholis austeniana* and *Oriocalotes paulus*. Family Scincidae : *Dasia olivacea*, *Dasia nicobarensis*, *Sphenomorphus indicum*, *Sphenomorphus courcyanum* and *Tropidophorus assamensis*. Family Dibamidae : *Dibamus novae-guineae*. Family Lacertidae : *Takydromus sexlineatus* , *Takydromus sexlineatus khasiensis*, *Takydromus haughtonianus*. Family Anguillidae : *Ophisaurus gracilis*.

7. **Lizard species common to Indian, Indo-Chinese and Malayan subregion** : Family Gekkonidae : *Cyrtodactylus khasiensis*, *Cyrtodactylus gubernatoris*, *Cnemaspis kandiana*, *Hemidactylus frenatus*, *Hemidactylus bowringi*, *Hemidactylus garnoti*, *Hemidactylus karenorum*, *Cosymbotus platyurus*, *Gehyra mutilata* and *Gekko gecko*. Family Agamidae : *Draco maculatus* and *Draco norvilli*. Family Scincidae : *Sphenomorphus maculatum* and *Riopa bowringi*.

Lizards are the ectothermic or poikilothermic (cold blooded) lung breathing tetrapod amniotes form the suborder Sauria or order Squamata of class Reptilia. Lizards are generally oviparous and lay eggs which are hatched by external heat. Eggs are flexible or hardshelled and ovoid in shape. After copulation the development of the embryo and fertilization takes place inside the body of the female much before the formation of albumen and the shell contents in the oviduct (Fig. 1). In many species of lizards development takes place inside the body of the female and the young are produced alive and this condition is called as Ovo-Vivipary and Vivipary. Many species show parental care where eggs are attended by the female.

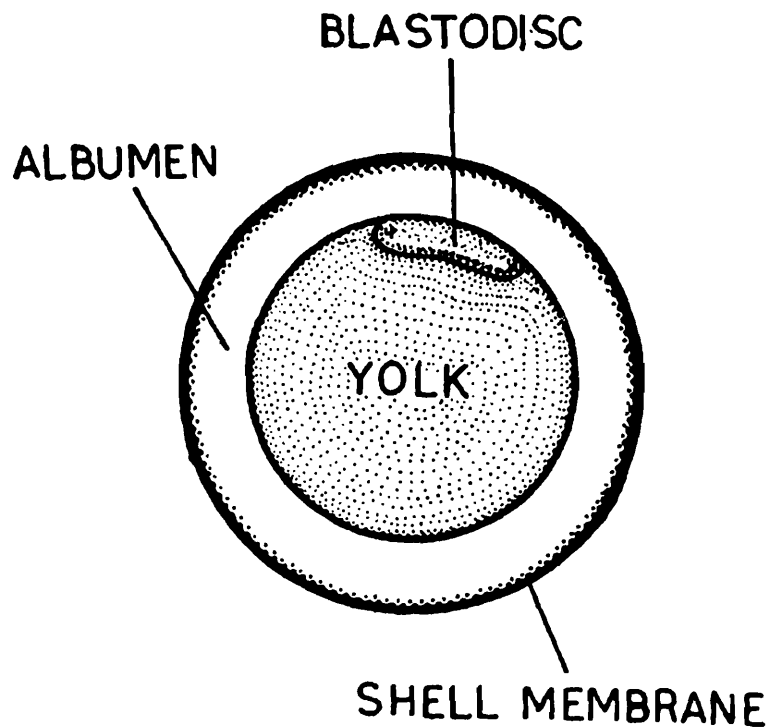


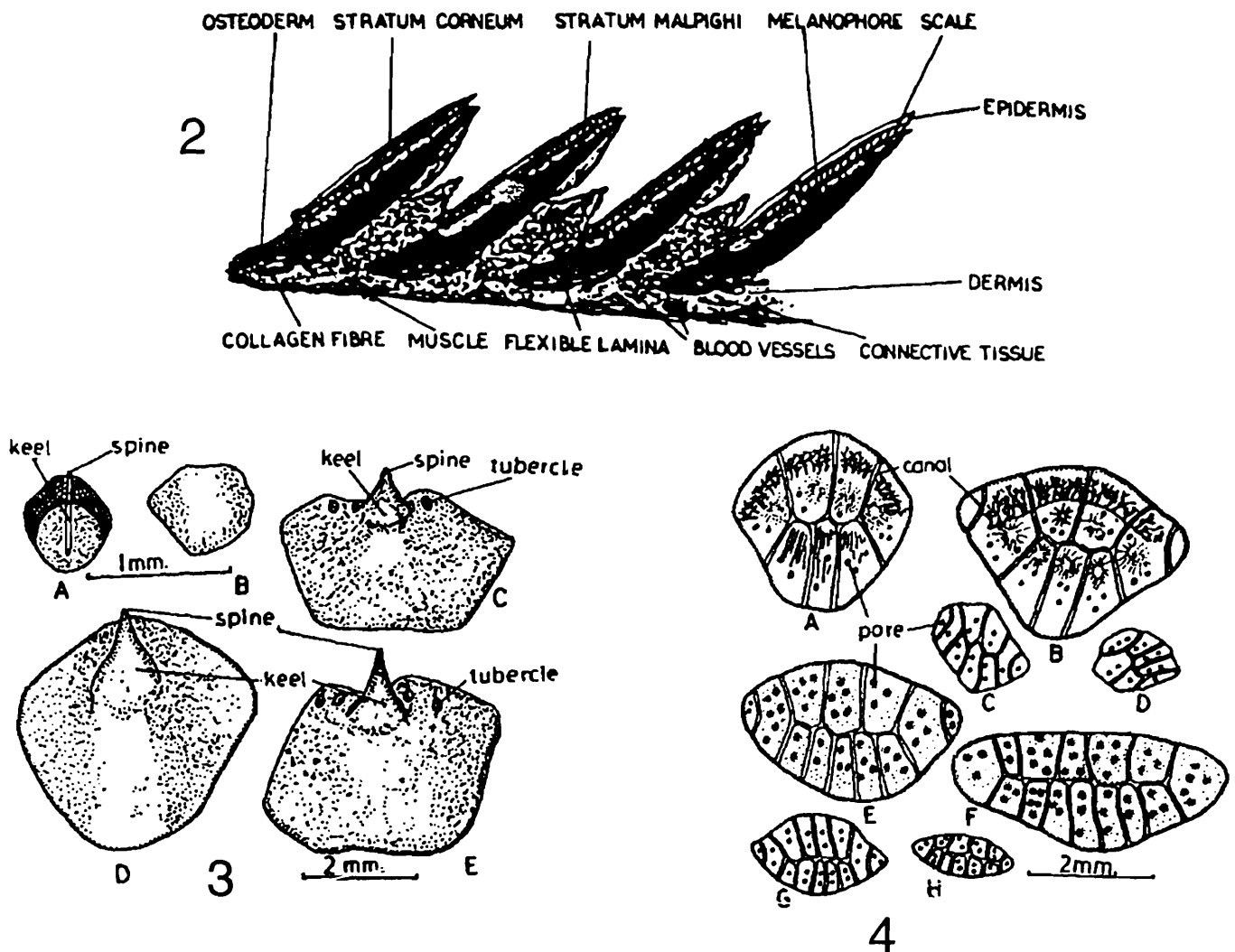
Fig-1. Egg : Snakes, Lizards and Sphenodon

Sexual dimorphism is prominent in many species sex can not be judged without the examination of gonads. Males are more prominently coloured than females and have enlarged postanal scales, enlarged gular folds, broader heads, larger bodies and prominent femoral pores. Copulatory organs are paired and can be retracted into postcloacal sheaths; cloacal opening is transverse, coprodaeum is made up of many chambers and is completely covered with urodaeum and the opening of the coprodaeum into urodaeum is effected by a powerful sphincter muscle. The outermost cloacal chamber protodaeum is a shallow structure with a transverse external opening and it is meant for the extrusion of the copulatory organs. Urodaeum receives the openings of urinary tube, oviduct (in female) and vasa deferentia (in male). Hemipenis consists of two tubular structures made up of erectile tissue and these copulatory organs can be everted like the finger of a glove at the time of mating. Femoral and preanal pores (pits) are found in six families of Indian lizards namely Gekkonidae, Eublepharidae, Agamidae, Lacertidae, Dibamidae and Varanidae but these are absent in the families Chamaeleonidae, Scincidae and Anguidae; these are not found in all the genera of the families mentioned above; restricted in males only in families Gekkonidae and Eublepharidae and are found in both the sexes in the family Lacertidae. These pores are the tubular invaginations of the epithelium and are arranged in a single row along the under surface of the thigh. The exact function of these pores is not fully known as yet, possibly these help the males in keeping a firm hold on the ground while in combat or on female in copulation. Lizards exhibit remarkably vivid colourations and mimicry patterns. Young ones are more brilliantly coloured than the

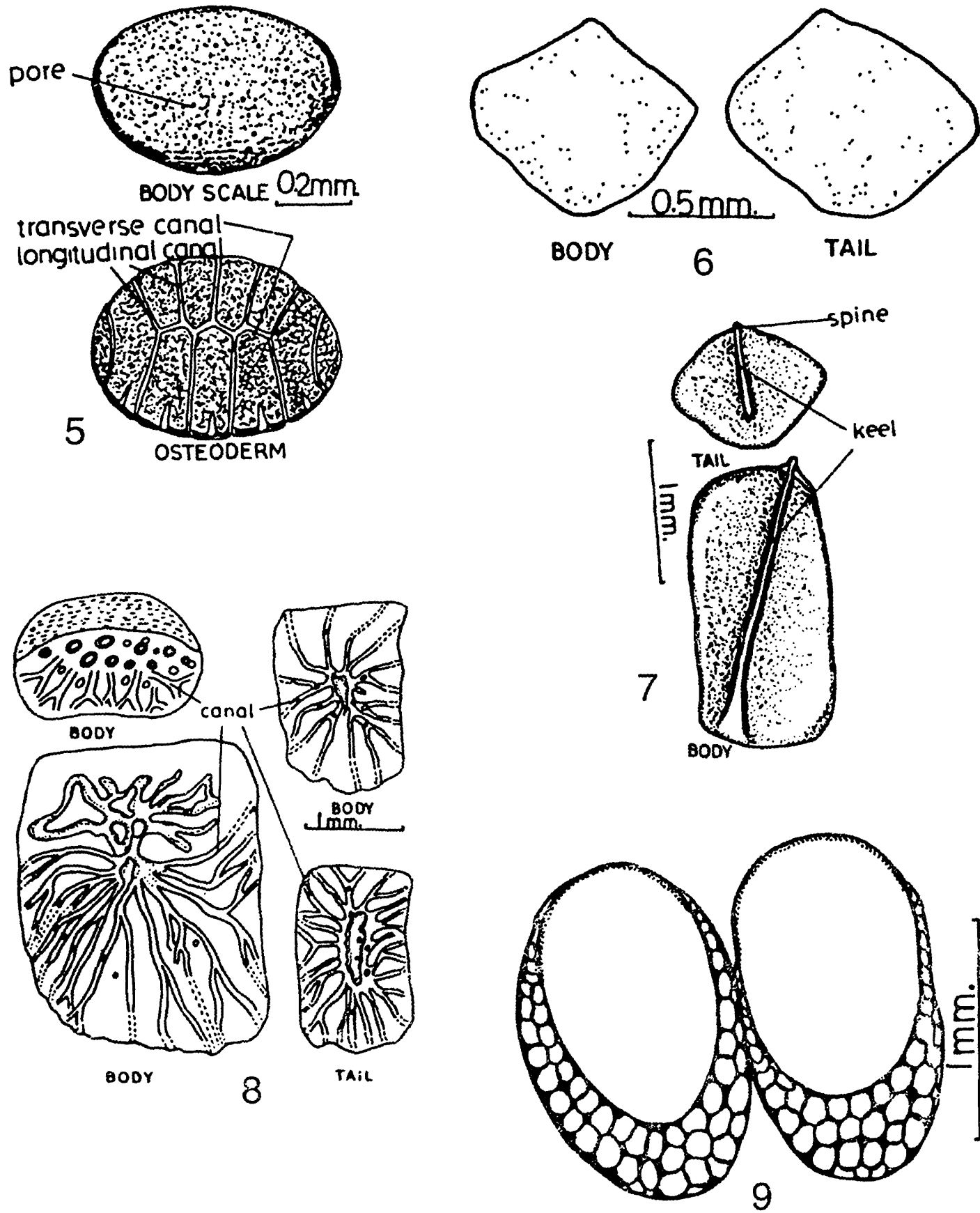
adults. Some species show significant difference of colouration in the two sexes; males are generally more charming and vividly coloured in comparison to the females. Brilliant colouration is assumed during the breeding season.

Skin
(Figs. 2-9)

The body of a lizard is covered with a horny epidermal sheath or scales, which periodically shed either in flakes or in a single piece like the snakes. Scales exhibit a marked degree of variations in arrangement, position and structure depending on the species. These are modified into tubercles, keels, spines, pitted scutes, smooth shields, granules and numerous other structures. In many species the scales form an intimate attachment with the osteoderms. In some species the scales are provided with a fine system of transverse and longitudinal channels, thus dividing the complete scale surface into numerous smaller components. Microscopic structure of scales provide an important tool for their taxonomy.



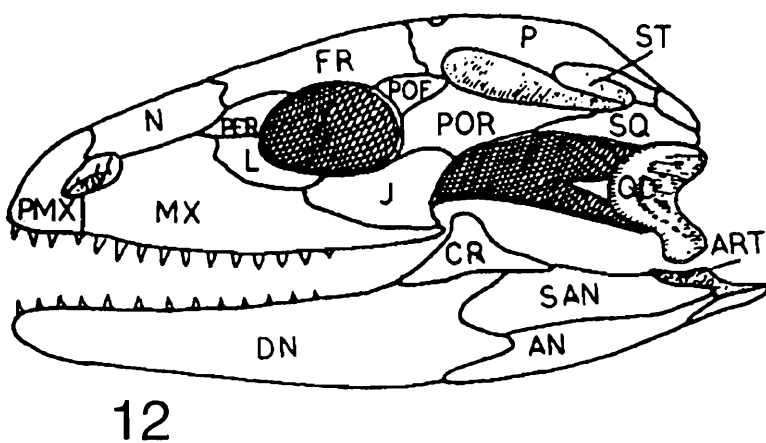
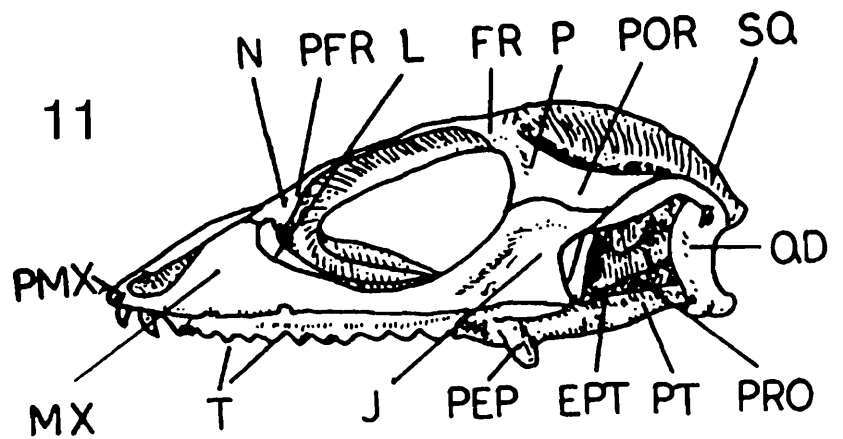
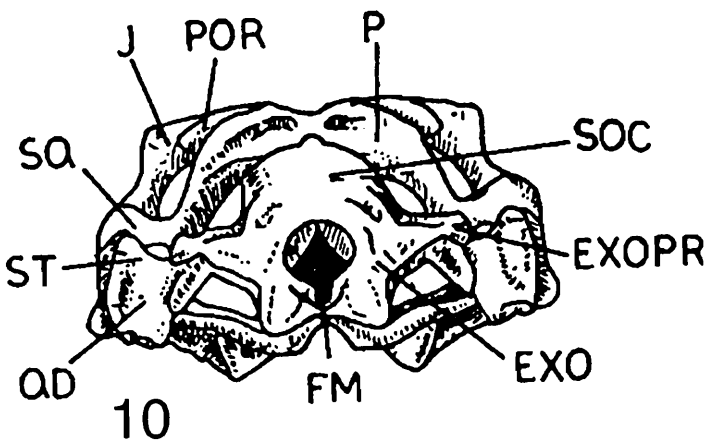
Figs 2-4 : 2. Lizard skin; 3. Scales in lizards : Agamidae; 4. Scales in lizards : Scincidae



Figs. 5-9 : 5. Scales in lizards : Scincidae; 6. Scales in lizards : Chamaeleonidae; 7. Scales in lizards : Lacertidae; 8. Scales in lizards : Anguillidae; 9. Scales in lizards : Varanidae

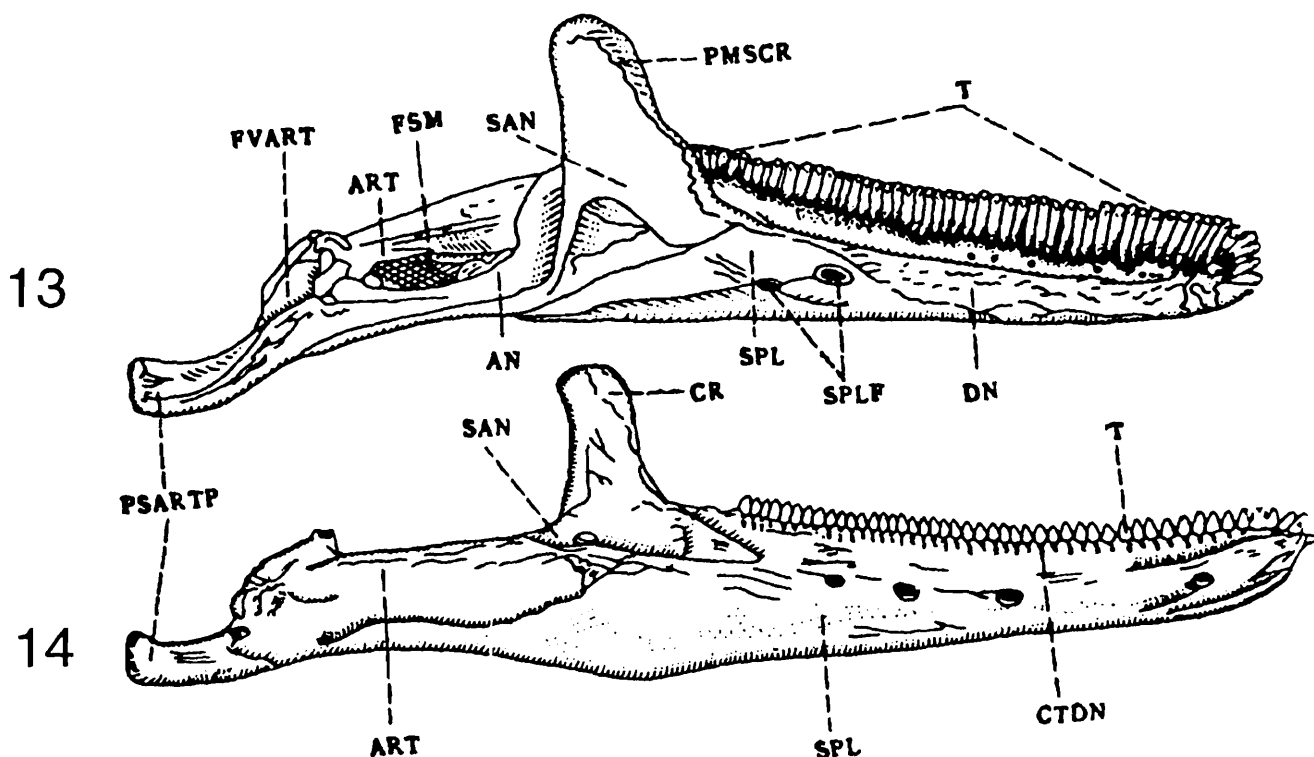
Skull
(Figs. 10-15)

Skull is complicated, typically diapsid with two temporal arches. Atlas vertebra articulates with the skull through a single tripartite occipital condyl (Fig. 10). The bones of anterior skull region have some flexible movements. Supraoccipital and parietal form a loose attachment, thus providing a flexible and lever like mechanism to the bones of fronto-parietal portion over the occipitosphenoidal region of the skull (Figs. 11 & 12). The head is kept high of the ground and rotates freely. The orbit become bigger in land forms.



Figs. 10-12 : 10. *Japalura variegata* Gray : Skull : (Occipital region); 11. *Japalura variegata* Gray : Skull : Lateral view; 12. Side view of the skull of a lizard

The lower jaw or mandible (Fig. 13 & 14) forms a complex of many small bones. Each ramus is generally an elongated and slightly curved structure formed basically by the combination of seven bony elements viz., prearticular, angular, articular, surangular, opercular or spleniod, coronoid and dentary. The intermandibular articulation is firm and generally by a symphysis. The articular bone of the mandible articulates with the quadrate bone of the cranium. In lizards the articulation of mandibles with skull and the intermandibular articulation bears considerable taxonomic significance. The comparison of these structures between the living and fossil forms can serve as one of the important tools in tracing the exact ancestry of the modern lizards.



Figs. 13&14 : *Eublepharis macularius* : Mandibles

Auditory complex

This is composed of tympanum, prootic and opisthotic, forming an auditory capsule in lizards. The columella auris is a rod-like structure and is composed of two parts, a slender rod-like stapes and a cartilaginous tubercle, the extrastapes. The flac and disk-like proximal invagination of stapes remains in close contact with the membranous lid of fenestra ovalis. The distal end of stapes extends up to the capitulla of quadrate. The extrastapes is an important replacing bone of the auditory capsule, attached on each side with stapes and on the other with tympanic membrane. In Saurians an external ear-drum is visible. In certain burrowing lizards, the ear-drum (tympanum) is concealed. The sense of hearing is feeble in lizards.

Hyoid apparatus

(Fig. 15)

It consists of all the three visceral cornua (arches) well developed, emerging on each side from corpus hyoideum, which represents the main body of the hyoid apparatus, is cartilaginous medially and bony on the margins. The anterior portion of corpus hyoideum becomes narrow and gradually extends anteriorly into a slender tapering medial process, known as process lingulis or process entoglossus. The anterior most cornua or the hyoid cornua, which emerges on either side of corpus hyoideum is formed by the union of two parts. The proximal part of the hyoid cornua is a short bony element having a cartilaginous connection with the long slender distal portion. The first branchial cornua is also composed of two parts, a much elongated proximal bony ceratobranchial and a minute distal cartilaginous epibranchial. From the posterior aspect of corpus hyoideum on either side emerges two parallel long whip-like bony extensions representing the second branchial cornua of the hyoid apparatus.

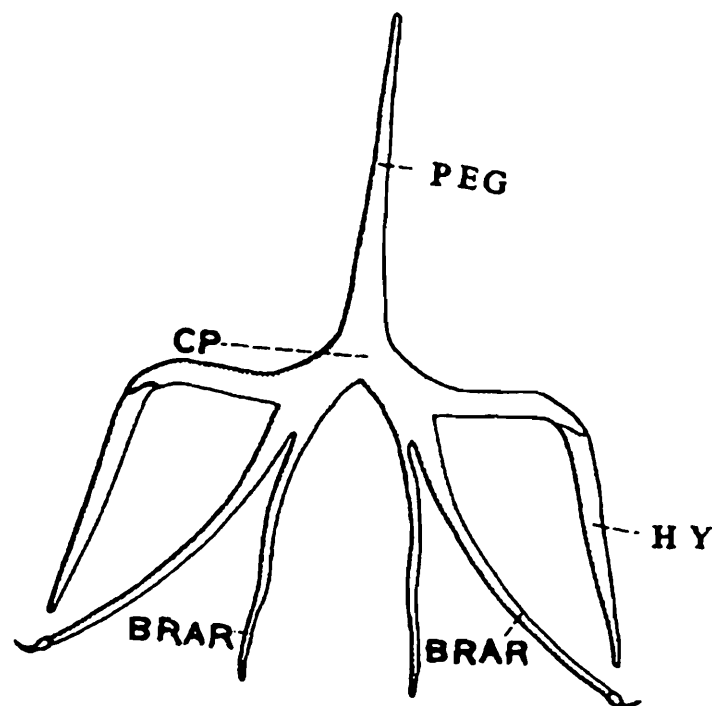


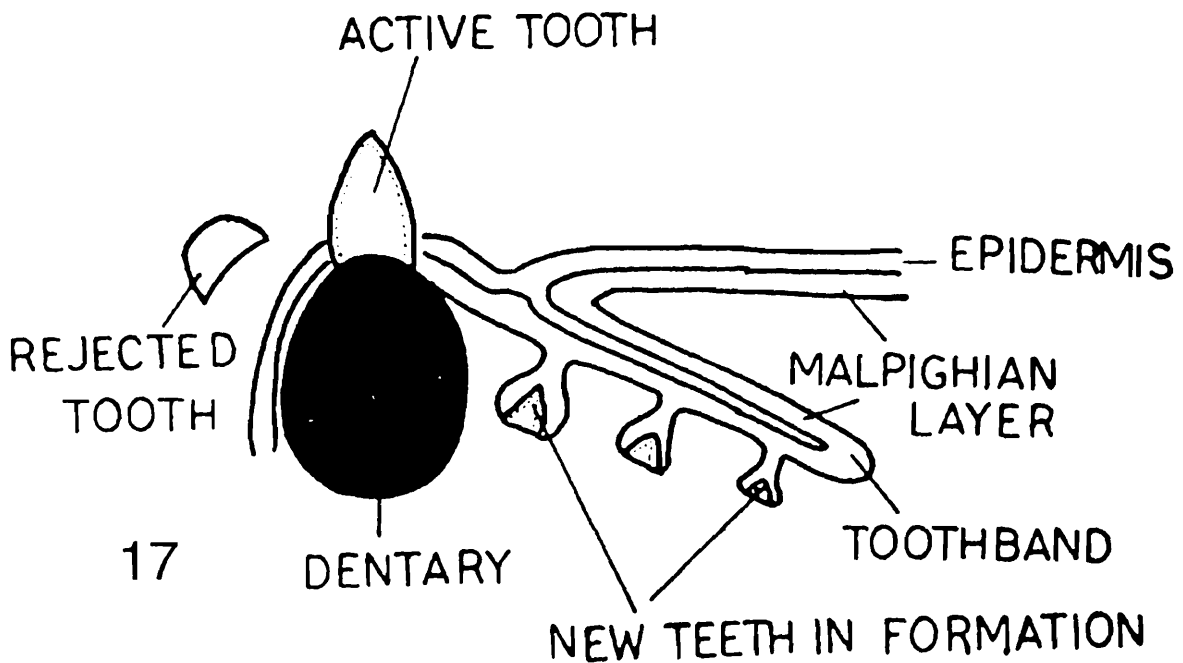
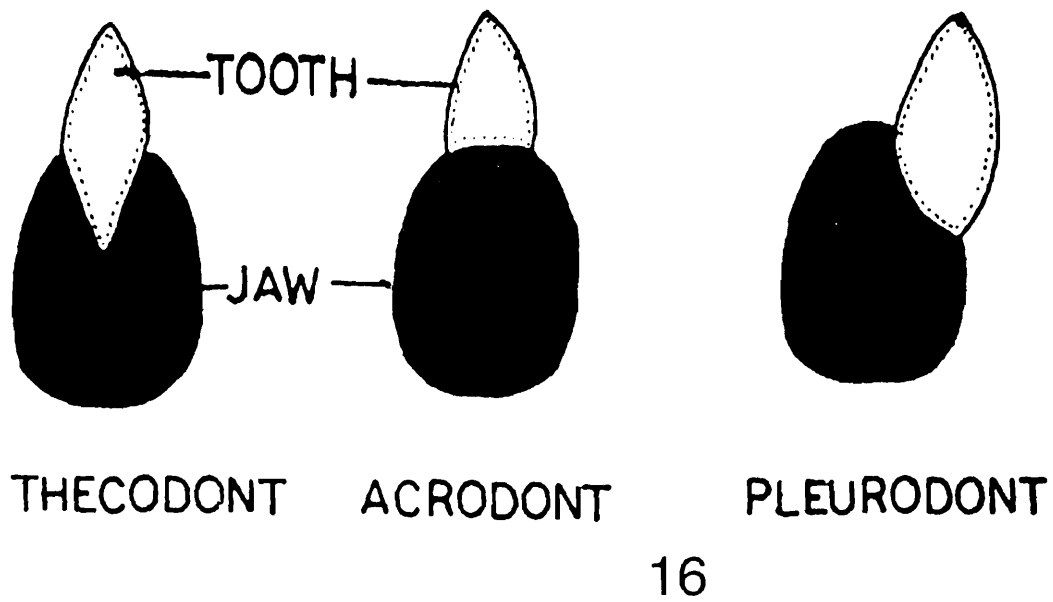
Fig. 15 : *Eublepharis macularius* : Hyoid arch

Tongue

Tongue is an olfactory organ and is extremely variable in shape, size and structure in different families of lizards. This may be short or long, forked, thickened, club-shaped, extensible and retractile. In lizards tongue cannot be withdrawn into a sheath.

Teeth
(Figs. 16 & 17)

The form of the teeth vary according to the food habits. Generally two types of teeth are found in Indian species; acrodont, which are fixed to the parapet of the jaws and pleurodont, which are fixed to the inner aspects of the jaws. Many species show a clear division of teeth into incisors, canines and molars.



Figs. 16-17 : 16. Reptilian teeth; 17. Reptile tooth succession

Egg-tooth

The embryos of the oviparous lizards possess a sharp calcarious "egg-tooth" at the extreme tip of the snout, which they use to break the egg-shell for coming out of it. The egg-tooth is shed shortly after birth. In Geckoes the egg-tooth is double but in other lizards it is single.

Vertebral column

(Fig. 18)

Vertebral column exhibits plenty of variations and is generally made up of procoelous and opisthocoelous (Eublepharids) vertebrate which are differentiated as cervical, thoracolumber, sacral and caudal vertebrae. The maximum number of vertebrate available in modern lizards is 60. Generally 7 cervical vertebrate are present, the first 3 viz., the atlas, the axis and the third one are devoid of ribs; the remaining 4 possess free ribs. The atlas is devoid of neural spine and transverse process, its dorsal surface bears a flat neural arch formed by the union of the lateral neurapophysis. The axis vertebra is devoid of

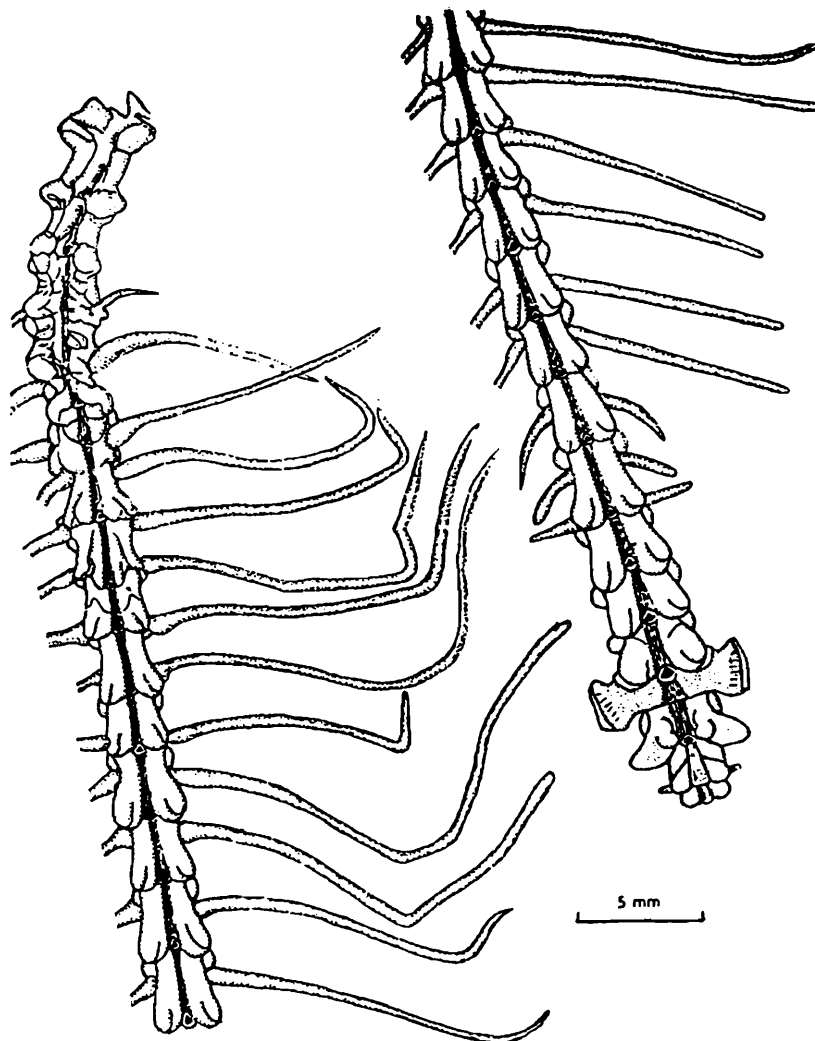


Fig. 18. *Eublepharis macularius* : Vertebral column

transverse process and bears a pointed, posteriorly directed, laminar neural crest on the dorsal aspect. The thoracic vertebrae are generally 18 in number, and possess well developed pre- and post zygapophysis, neural spines, and cup-shaped sockets at the base of antero-lateral aspect of the cranium for providing movable articulation to ribs. Generally there is a single lumbar with a strong antero-dorsally pointed pre-zygapophysis and a well developed transverse process lying between the thoracic and the sacral vertebrae. Lumbar is devoid of ribs. Two sacral vertebrae are generally available which bear well developed and expanded lateral transverse process. In Sacrals the neural spines are less prominent, generally the haemal arches are missing; pre and post zygapophysis are well developed and the transverse process of anterior sacral is stronger than that of the posterior one in most of the modern lizards. The caudal vertebrae are generally 29 in number, which are differentiated into three types, thus (i) The Intermediate postsacrals with a well developed transverse process, neural spine and without haemal arches. (ii) The remaining anterior caudal vertebrae with transverse process, neural spines and haemal arches. The haemal arches or chevron bones are the ventral extensions which emerge from the centrum (intercentrum) and form a demarcation between the caudal muscles. (iii) The elongated tubular posterior tail vertebrae without transverse process and neural spines but with well developed pre and post zygapophysis. In many species tail vertebrae are broken by muscular shrinking or by abrupt stress on tail and these lizards are having the power of caudal autonomy and regeneration.

Ribs (Fig. 19)

These are generally well developed and in 22 pairs in all the lizards.

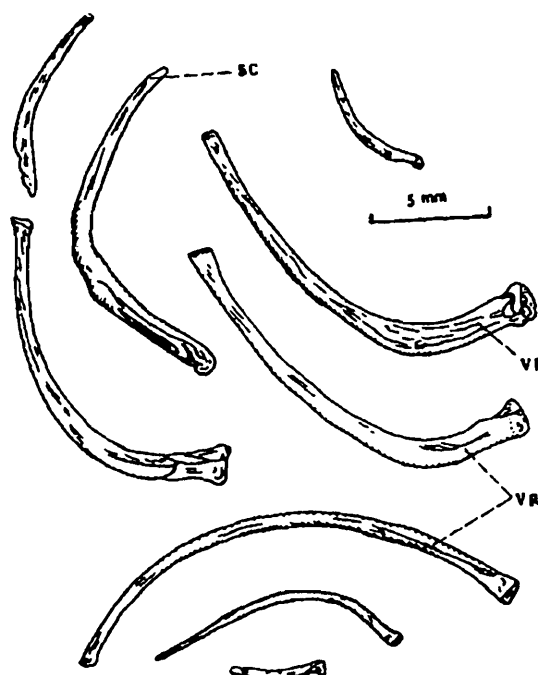


Fig. 19. *Eublepharis macularius* : Ribs

Sternum (Fig. 20)

Sternum is present in all the lizards and bears 5 pairs of ribs and a pair of fontanelles. Xiphisternum is present in all the lizards.

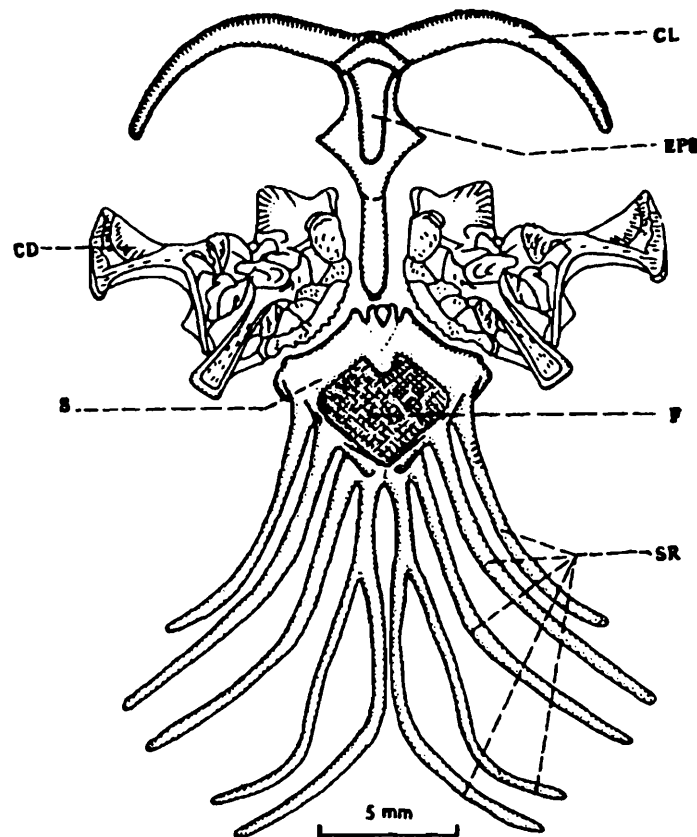


Fig. 20 : *Eublepharis macularius* : Pectoral arch

Pectoral girdle (Fig. 21)

In most of the lizards the pectoral girdle is partly cartilaginous and partly bony paired structure, articulating with fore limbs at glenoid fossa, and sternum. It is composed of six bones viz., the scapula, suprascapula, coracoid, epicoracoid, clavicle and interclavicle. The suprascapula and epicoracoid are cartilaginous structures while the other four are bony. The clavicles are curved bones on the ventral side, articulating with the interclavicle, epicoracoid and scapula. The interclavicle is a T-shaped median ventral bone lying beneath the sternum. The Suprascapula is a thin cartilaginous bone attached to the dorso-lateral edge of scapula, which forms a dorso-lateral bony extension of pectoral girdle, and forms a sutural articulation with coronoid. The coronoid is a large flat slightly convex structure

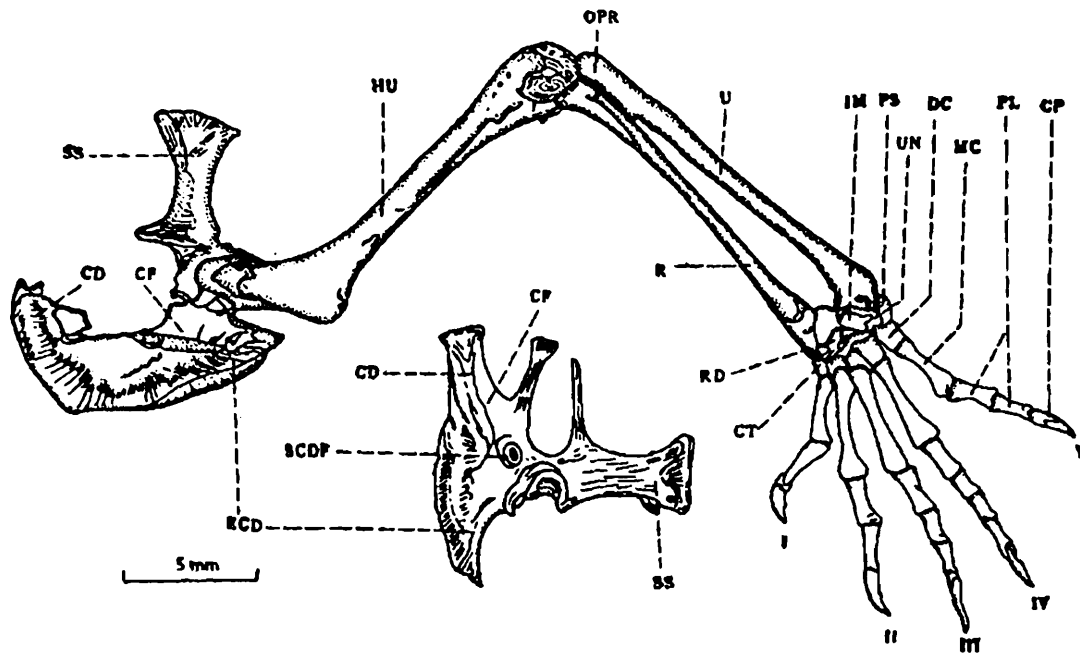


Fig. 21 : *Eublepharis macularius* : Fore-limbs and Pectoral girdle

bearing the glenoid fossa. Forelimbs (Fig. 21) : Forelimbs consists of humerus, ulna, radius, carpals, metacarpals and phalanges. The bicipital fossa of deltoid ridge of humerus possesses many foramina. The metacarpals are five in number, the phalangeal formula 2, 3, 4, 5, 3 and the corpus is formed by 9 elements in Saurians.

Pelvic girdle

(Fig. 22)

It is composed of two triradiate elements to form a bilaterally symmetrical composite structure. Each triradiate half consists of three bones viz., pubis, ischium, and ilium. The pubis, ischium and ilium of each innominate fuse with one another on the lateral aspect and the sutures between them are not distinct. *Hindlimbs* : (Fig. 22) Each limb consists of femur, tibia, fibula, tarsus and pes. The tarsus is made up of 6 parts and metatarsals are 5 in number, the third and fourth are of equal size; the phalangeal formula is 2, 3, 4, 5, 4. The limbs are much reduced or even absent in many lizards. Most of the lizards are generally with well developed limbs and girdles. Some species have lost their limbs and acquired long bodies, but in such cases also vestiges of pectoral and pelvic girdles are always available. Limbs are pentadactyle in most of the species, but the reduction or loss of digits and in some cases even of limbs occurs in certain species of Scincidae and Anguillidae. Most of the species of family Gekkonidae have developed highly specialized structures "digital pads" under their digits which increase their efficiency in climbing the walls, rocks and this change in the structure of digital lamellae is mainly correlated with arboreal and subarboreal habits. In a number of skinks also this change in lamellar

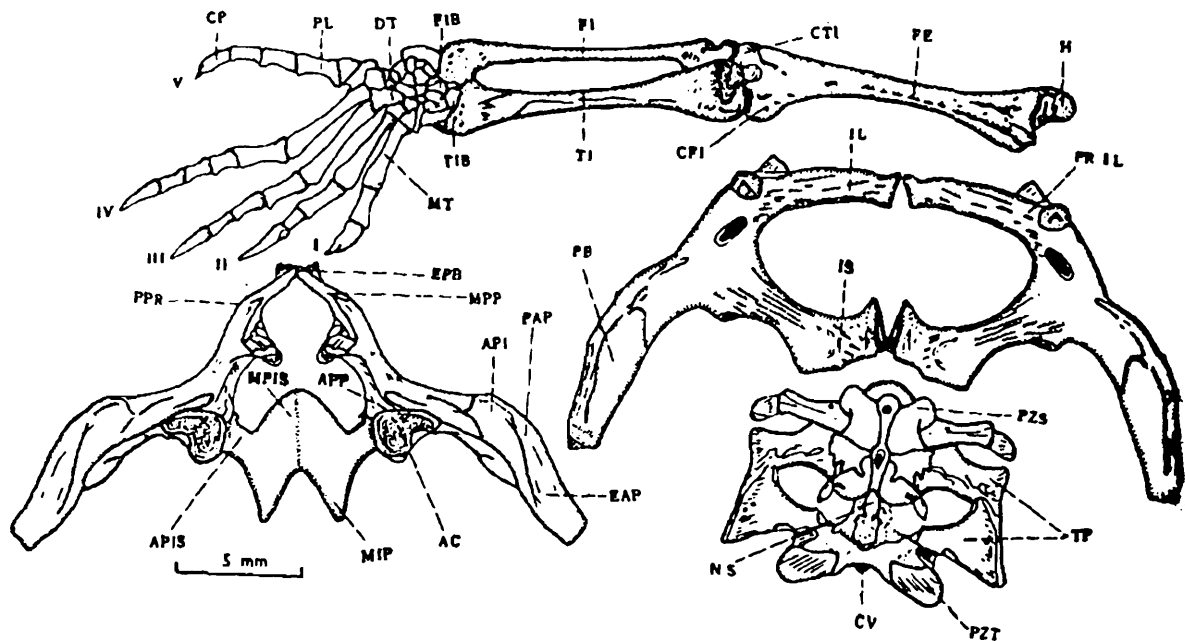


Fig. 22 : *Eublepharis macularius* : Hind-limbs and Pelvic girdle

structures has been observed, where the broadening of the plates of basal phalanges of digits have taken place. Many desert dwelling species have developed lateral digital fringes (denticulations). Shapes and size of the limbs and girdles are generally conditioned by the locomotary habits of lizards; they become short and feeble in most of the burrowing species and short, but powerful in scansorial forms. Locomotion takes place by leg movements in the species with short or median bodies but it is effected by lateral flexion of body in limbless lizards which have a snake-like body.

Blood & Vascular system

(Fig. 23)

The red blood corpuscles (Erythrocytes) are nucleated, biconvex and oval. The heart is three chambered, two auricles and a ventricle. Both the right and left aortic arches are complete and functional. The heart is always enclosed in a pericardium.

Respiration : Lizards are with two lungs and respiration is effected by the thoracic movements of the ribs. In limbless lizards the lungs are asymmetrical, the right one being much larger than the left.

Eye : Eyes are well developed in terrestrial species; degenerated in burrowing forms; devoid of nictitating membrane; pupils are movable, round or vertical, eyelids are well developed or fuse to form a transparent spectacle over the eye; in most of the terrestrial species vision is well developed.

Nervous system : The cerebrum is moderately developed in lizards and never covers the mid-brain, Optic lobes are two in number and are situated on the antero-dorsal aspect

of the moderately developed cerebellum. Olfactory bulbs are club-shaped and are connected with the cerebral hemispheres through the olfactory tracts. Infundibulum and pituitary are moderately developed.

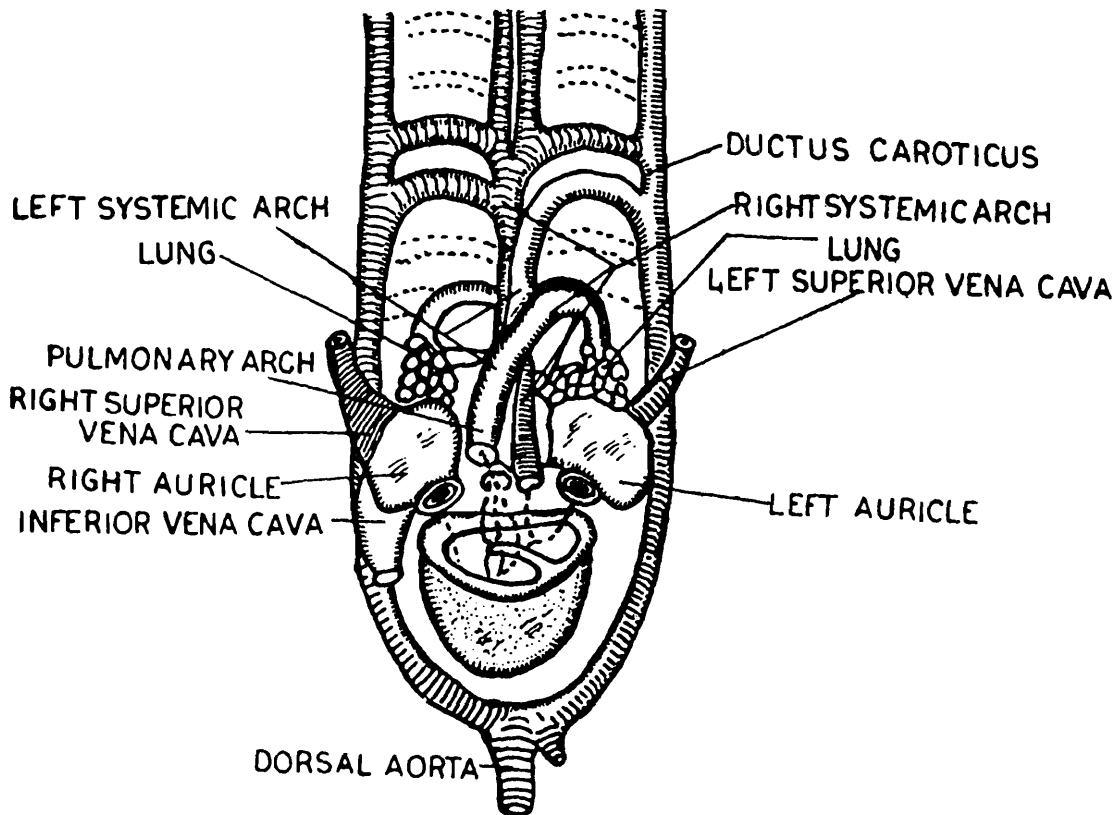


Fig. 23 : Heart and aortic arches of a lizard

Size of the tail varies from species to species, depending on the habitat and mode of life, in some cases it is absolutely short while in others it is abnormally long and males are with a broaden tail base than females.

Most of the lizards capture their food by undertaking the fast movements of the body and through vigorous chase of the prey. This phenomenon effects the skeletal and musculature systems and tends to form the bones more ossified and in the formation of stronger musculature.

Nine families represented by 66 genera and 280 species and subspecies have been dealt with in this faunal work.

SYSTEMATIC ACCOUNT

Order SQUAMATA

The order Squamata comprises three Suborders namely Sauria (Lizards), Serpentes (Snakes) and Amphisbaenia (Limbless worm like reptiles). The present work covers lizards and snakes only.

Sub order SAURIA Macartney 1803

1. Sub order SAURIA :

1803. Macartney, Ross Transl, Cuvier's Lect. Comp. Anat ii, tab. iii.

1864. Gunther, *Rept. Brit. Ind.* p. 56

1935. Smith, *Fauna Brit. Ind.* p. 20

2. Suborder LACERTAE :

1788. Batsch, *Anbit, Kennt. Thier, Min.* i. pp. 437, 454.

1830. Wagler, *Nat. Syst. Amphib*, p. 141.

1935. Smith, *Fauna Brit. Ind.* p. 20

3. Suborder LACERTILIA :

1841. (1842) Owen, *Rep. Brit. Ass. Adv. Sci.* p. 144.

1885. Boulenger, *Cat. Liz. Brit. Mus.* i, p. 1

1890. Boulenger, *Fauna Brit. Ind.* p. 52

1935. Smith, *Fauna Brit. Ind.* p. 20.

Key to the families of suborder SAURIA

Body dorsoventrally flat, covered with granule like imbricate scales, no symmetrical shields on the top of head. The digits are with adhesive pads. Eyes are devoid of movable lids, eyeball is covered with a transparent membrane. Teeth are pleurodont (emerging from the side of jaws). Tongue is fleshy, short, broad, protrusible, nicked anteriorly and is covered with villose papillae. Skull is devoid of temporal and postorbital arcades, parietals are paired and without parietal foramen. Vertebrae are amphicoelous. GEKKONIDAE

Body stout, covered with small, irregular, juxtaposed scales intermixed with larger tubercles, top of head with irregular polygonal scales. The digits are clawed non-dilated, devoid of adhesive pads, with transverse lamellae beneath. Eyes are with well developed movable lids, eye-ball is devoid of fixed membranous covering, Teeth are pleurodont, Tongue is fleshy, moderately elongate, broad, protrusible and covered with villose papillae. Skull is devoid of temporal and postorbital arcades, parietals are united into a single shield. Vertebrae is opisthocoelous. EUBLEPHARIDAE

Body dorsoventrally or laterally compressed, covered with imbricate scales, no symmetrical shields on the top of head. Eyes are with movable lids. Teeth are acrodont (situated on the summit of the jaws), Pleurodont (emerging from the side of jaws) and are differentiated into 'incisor', canine and molars. Tongue is broad and short, smooth or covered with villose papillae, not protrusible, skull is having temporal and postorbital arcades. AGAMIDAE

Body laterally compressed, covered with flat, rounded granular scales or tubercles. Eyes are large and move independently, the upper and lower eyelids are joined forming a complete ring around the eye with a small aperture at the centre. The feet have the digits permanently opposed in groups of two or three and are modified to form clasping organs. Teeth are acrodont, small and triangular. Tongue is clubshaped, sticky at the tip and rapidly extensible up to a distance of 15 cm, for catching the insects. Skull is having temporal and postorbital arcades. The ear is devoid of tympanum. CHAMAELEONIDAE

Body is circular in cross section, covered with cycloid, overlapping scales, osteoderms are present under the scales of head and body, head with symmetrical shields above. The legs are short, in many species the legs are not present at all. Teeth are pleurodont. Tongue is short, feebly nicked anteriorly, covered with scale-like papillae. Only temporal arcade is present. SCINCIDAE

Body is worm-like, covered with uniform, cycloid, imbricate scales. Eyes and ears are concealed under the skin. Fore-limbs absent, hind-limbs vestigial. Tongue is short, broad with curved papillae. Only temporal arcade is present. DIBAMIDAE

Body dorsoventrally flat, covered with scales, scales on the head with osteoderms which generally fuse with the top of the skull, no osteodermal plates on the body. Legs are well developed. Teeth are pleurodont. Tongue is long and forked anteriorly, covered with scale-like papilla. Skull is having both the Temporal and post - orbital arcades. LACERTIDAE

Body elongated, covered with overlapping scales supported by osteoderms, head with symmetrical shields above. Limbs are either lost or reduced. Teeth are pleurodont. Tongue has a thin extensible anterior portion which can be retracted in to a thick posterior part. Temporal and postorbital arcades are present, the temporal fossa is covered by the post - frontal and by osteoderms. ANGUIDAE

Body stout, dorsoventrally compressed, covered with small scales, generally without osteoderms. The head is typically long, tail is very long and laterally compressed. Teeth are large, pointed, pleurodont. Tongue is very long, snake-like, forked, smooth and retractile. The temporal arcade is present but the postorbital arcade is incomplete. VARANIDAE

Family 1. GEKKONIDAE Smith 1935

1817. *Ascalabotes* Cuvier, *Regne Anim.* ii, p. 44.
 1820. *Ascalabotae* Merrem, *Tent. Syst. Amphib*, p. 39.
 1825. *Geckotidae* Gray, *Ann. Phil* (2) x, p. 198.
 1830. *PlatyGLOSSAE* Wagler, *Syst. Amphib*, p. 141.

1884. Uroplatidae Boulenger, *Ann. Mag. Nat. Hist* (5) xiv, p. 119.
 1885. Geckonidae Boulenger, *Cat. Liz., Brit. Mus.* i. p. 3.
 1923. Gekkota Camp, *Bull Amer. Mus. Nat. Hist.* xviii, p. 304.
 1926. Ascalabotoidea Fitzinger, *Neue Class Rept.*, p. 13.
 1933. Geckonidae, Smith, *Rec. Ind. Mus.* xxxv. p. 9.
 1935. Gekkonidae, Smith, *Fauna Brit. Ind.* p. 21.
 1966. Gekkonidae, Minton, *Bull. Amer. Mys. Nat. Hist.* 134, p. 72.

Family Gekkonidae is very ancient and comprises the group of highly specialised lizards exhibiting remarkable adaptive radiations, evolutionary history, distribution pattern, varied habitat selection, flexibility for change and a tendency to evolve into new and more advance forms. These lizards are widely distributed in all the warmer parts of the world. Many of them have adjusted even in the most diverse ecological circumstances and exhibit arboreal, scansorial, saltatorial (fossorial), cursorial (running) and volant (gliding) adaptations very strongly. These are secretive nocturnal or diurnal, mainly insectivorous creatures. Many species have adapted to live in buildings in the close association of man. They show strong homing behaviour and maintain a territorial integrity against other intruding lizards. The family is very primitive but its exact phylogeny has not fully been established as yet. It seems to have been evolved from an ancestral Gekkota stock of Jurassic period. Many workers regard *Ardeosaurus* of that period as one of the ancestors of modern Gekkonidae. The main characters of this family are : The body is dorsoventrally flat; skin is soft and covered with granule like imbricate scales; no symmetrical shields on the top of head; scales of the lower parts of body and limbs are rounded, hexagonal and imbricate; osteoderms may be present or absent on dorsal aspect, if present these are irregularly distributed; a distinct lateral fold or dermal fringe may be present or absent, the scales at the mid junction of the fold are slightly enlarged. The limbs are well developed and pentadactyle, digits are with adhesive pads. Pectoral girdle (Fig. 21) generally consists of dilated and thinned clavicles which may or may not be perforated at their sternal end, inter clavicle is large and cruciform. Ribs are monocondylar, three or four articulate with the sternum. Eyes are well developed, devoid of movable lids which are represented by an immovable rim of tissue, eyeball is movable and is covered with a transparent membrane, pupil is vertical or round and forms a denticulated slit, which effects the opening of the eye; eyes are provided with a lachrymal apparatus. Teeth are small, numerous, closely set, with cylindrical shafts, obtusely pointed and emerge from the side of jaws (Pleurodont). Tongue is fleshy short, broad, protrusible, nicked anteriorly and is covered with villose papillae. Skull (Fig 12) exhibits the thinning of bones; devoid of temporal and postorbital arcades; jugal is vestigial; only one premaxillary; two distinct nasals; pterygoids are two but do not touch each other, devoid of teeth; parietals are paired and without a parietal foramen; epipterygoid is not present; mandible is composed

of five bones only. The cavity of the middle ear is large, columella auris is bony and in contact with the tympanum by an extracolumellar cartilage, tympanum is generally exposed. Vertebrae are amphicoelous and notochordal. Tail represents marked variations in different species, generally cylindrical and tapers to a point, some times prehensile, more or less fragile but easily reproduced, in certain cases like *Agamura* fragility is less or not and no records are available indicating its regeneration if broken by injury. Femoral and preanal pores may or may not be present in males, females generally have pitted preanal and femoral scales. Paired postanal bones and sacks (Fig 24) are present on each

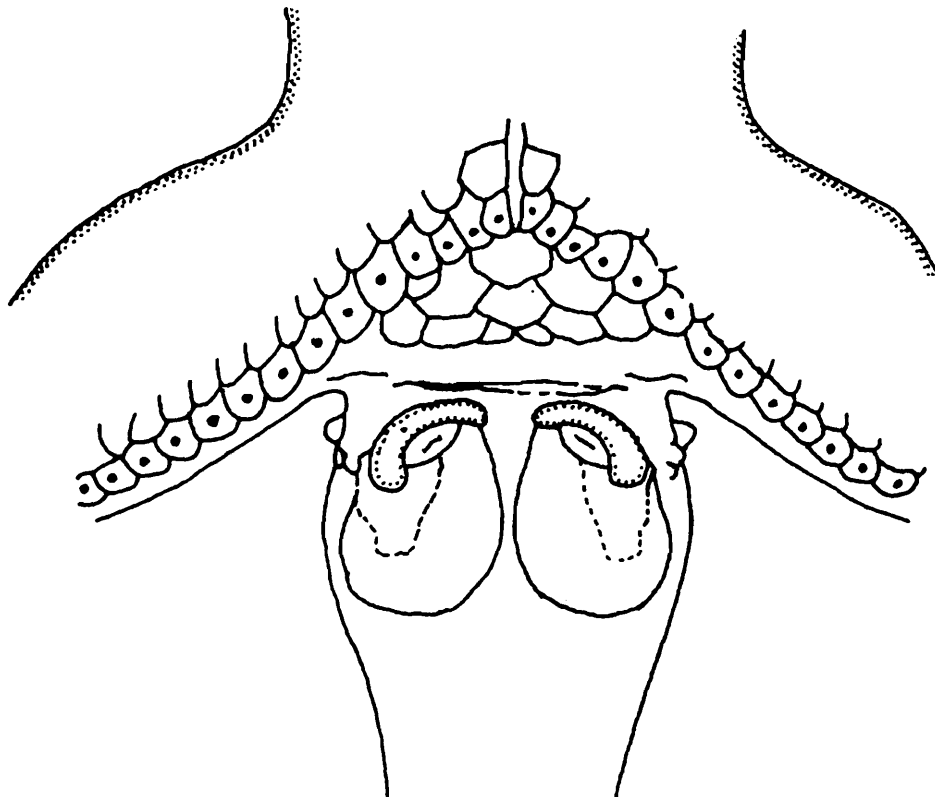


Fig. 24 : *Cyrtodactylus pulchellus* : Postanal bones and sacks

side of the base of tail, just behind the vent. Postanal sacs are present in both the sexes but the postanal bone is available in males only, in certain species both these structures are absent. The postanal bone is a short and curved structure lying just underneath the skin, it can be seen by inserting the point of needle into the opening of the sac and lifting the bone upwards, in this way sex of the lizard can be determined easily without dissection. Numerous variations are exhibited in shape and size of the opening of the postanal sac, which lies within the curve of the postanal bone. The exact function of these structures is not known. Endolymphatic glands are present on either side of the neck immediately behind the ear in most of the Geckoes. The function of these glands is not fully known, but these are supposed to be of some use to the auditory apparatus or in supplying

calcium to the oviducal eggs at the time of pregnancy. These glands produce a whitish fluid which solidifies in to a chalk-like substance on exposure to air. Most of the Geckoes are oviparous and generally lay two spherical or slightly oval eggs in a clutch. Newly laid eggs are with a membranous, sticky shell which ultimately become hard on exposure to the air. Geckoes are capable of producing voice, which can be differentiated as chirruping, clucking and loud cry like sound, which can be audible up to the long distances. Most of the Geckoes cast their skin at certain intervals. Certain species are capable of changing their colour from light to dark and vice versa.

Key to the genera of family GEKKONIDAE

1. Digits feebly dilated.

A. Digits straight and having a lateral fringe of pointed scales.

1. No transverse plates beneath, only small granular scales are present, dorsum with uniform, imbricate scales. TERATOSCINCUS
2. With transverse plates beneath, dorsal small scales intermixed with large rounded tubercles. STENODACTYLUS
3. Digits are devoid of lateral fringe of pointed scales; with transverse plates below; dorsal scales small, intermixed with much larger rounded tubercles.
..... BUNOPUS

B. Digits angularly bent.

1. Pupil vertical.

- i. Tail not slender but fragile CYRTODACTYLUS
- ii. Tail extremely slender suddenly reduces at the base, not fragile.
..... AGAMURA

2. Pupil round.

- i. Tail round, without a crest CNEMASPIS
- ii. Tail flattened dorsoventrally, without a crest TROPIOCOLOTES
- iii. Tail compressed and crested PRISTURUS

II. Digits strongly dilated.

A. Dorsal scales granular or tubercular; skin is not expanded along the side of the body; pupil vertical.

1. Digits dilated at the apex only.

- i. Each digit with two pairs of plate-like expansions except the innermost digit (which has only one). CALODACTYLODES
- ii. Each digit with a single expansion, with fine lamellae beneath.
..... PTYODACTYLUS

- iii. Each digit with a single expansion, which is smooth beneath (without lamellae)
 PHYLLODACTYLUS
2. Digits dilated at the base.
- (a) Terminal phalanges of outer four digits free, rising angularly from the expanded portion.
- i. Inner digit well developed with free, clawed, terminal phalange; subdigital lamellae not divided. DRAVIDOGECKO
- ii. Inner digit well developed, with free, clawed terminal phalange; subdigital lamellae divided. HEMIDACTYLUS
- iii. Inner digit well developed, without free terminal phalange. GEHYRA
- iv. Inner digit vestigial without free terminal phalange.
 HEMIPHYLLODACTYLUS
- (b) Terminal phalanges of outer four digits united with the expanded portion; inner digit clawless.
- i. Subdigital lamellae undivided GEKKO
- ii. Subdigital lamellae divided LEPIDODACTYLUS
- B. Dorsal scales granular or tubercular, skin is expanded along the side of the body; pupil vertical.
1. All the digits clawed, lamellae under the digits divided. COSYMBOTUS
2. Inner digit clawless; lamellae under the digits not divided. PTYCHOZOOM
- C. Dorsal scales granular or tubercular, digits clawless; pupil round. PHELSUMA
- D. Dorsal scales overlapping, digits clawed, pupil vertical.
1. Top of head with large polygonal scales, lamellae under the digits are divided.
 TERATOLEPIS
2. Top of head with small granular scales, lamellae under the digits are divided.
 LOPHOPHOLIS

Genus I. *Teratoscincus* Strauch 1863

1869. *Teratoscincus* Strauch, *Bull Acad. Sc. St. Petersburg*, vi : p. 480.
1885. *Teratoscincus* Boulenger, *Cat. Liz. Brit. Mus. i* : p. 12.
1901. *Teratoscincus*, Gadow, *Amphib & Rept.* : p. 507.
1905. *Teratoscincus*, Bedriaga, *Ann. Mus. Zool. St. Petersburg*, x : p. 159.
1935. *Teratoscincus*, Smith, *Fauna Brit. Ind.* : p. 30.
1966. *Teratoscincus*, Minton, *Bull. Amer. Mus. Nat. Hist.*, 134 : p. 75.

Genus comprises moderate to large delicate skinned lizards with straight, non-dilated, clawed digits. Each digit is with a fringe of long, pointed scales on lateral aspects of toes and with minute granule like scales below. Body covered with uniform, cycloid imbricate scales. Dorsal aspect of the tail is with a series of transverse nail shaped plates. Pupil is vertical. Males are devoid of femoral and preanal pores. Originally six species were recognised by Bidriage (1905); later the number was reduced to four, out of them two cover the scope of this work. Genus is confined to Iran and Transcaspia to Pakistan (Baluchistan).

Key to the species

Dorsal scales strongly imbricate, extend up to occiput (hinder part of head); scales round the middle of body 28-34.....*Teratoscincus scincus*
 Dorsal scales feebly imbricate, rarely extend beyond the shoulders; scales round the middle of body are 100 or more.....*Teratoscincus microlepis*

I. *Teratoscincus scincus* (Schlegel, 1858)

(Fig. 5, Map 1)

1858. *Stenodactylus scincus* Schlegel, *handl. Dierk. ii*, p. 16-17 (type loc. iii River, Turkistan).

1885. *Teratoscincus scincus*, Boulenger, *Cat. Liz. Brit. Mus. i*, p. 12 : pl. 2, fig. 3.

1935. *Teratoscincus scincus*, Smith, *Fauna Brit. Ind.* : p. 30.

1966. *Teratoscincus scincus*, Minton, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 75.

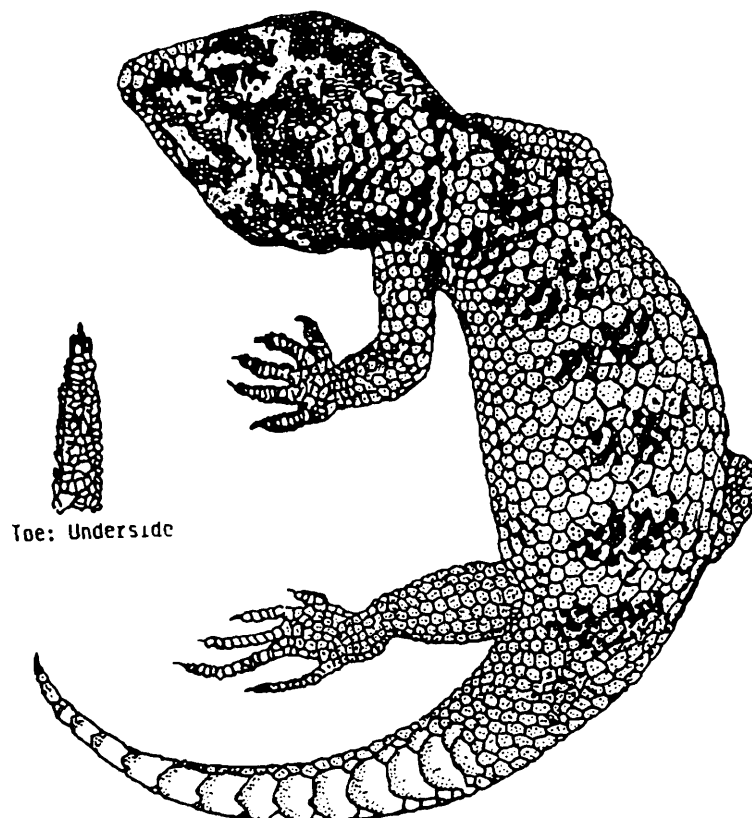


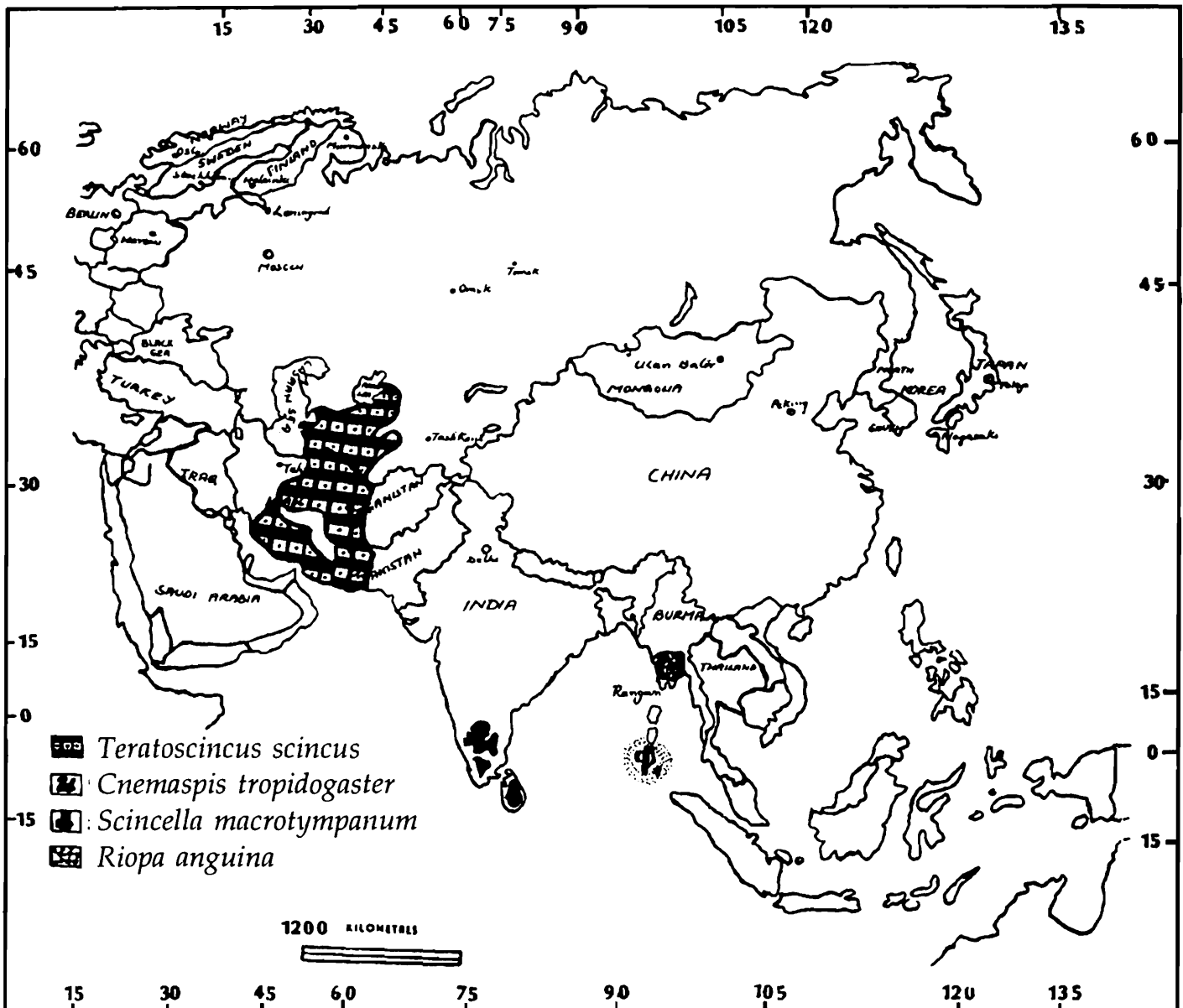
Fig. 25 : *Teratoscincus scincus* : Dorsal view and Toe : Underside

This is a moderate to large, nocturnal, burrowing, aggressive, slow moving lizard inhabits mainly the sandy areas in throughout its range. Dorsum is sandy with light yellow, orange, brown or reddish mottlings throughout; four dark brown stripes with a reddish tinge are usually available on the back of all the examples but not extending on the tail; upper aspect of the tail is without a definite pattern which is somewhat brownish; lower parts whitish with a pink tinge; head is brownish with prominent darker markings; lips are with vertical spots. Juveniles are deep yellow with an orange tinge, body with 4-5 transverse bands above; tail is also with 4-5 bands above. The head is large, high and temporal portions bulged in adult individuals; snout obtuse and bluntly pointed; head covered above with small juxtaposed granular scales; eyes are large, with a well developed upper lid; ear opening is like an oblique large slit; upper labials 9-12, lower labials 9-13; nostril is situated between the rostral, an internasal and two or three large postmental scales; rostral quadrangular, with a median dorsal cleft; mental subquadrangular, larger than the adjoining labials; no postmentals; in many individuals an enlarged scale is present between the mental and first infra labial. Body is robust; somewhat depressed; covered all over with large, uniform, cycloid, imbricate scales; scales on back extend anteriorly up to the occiput; from 28-35 scales round the middle of the body. Tail scales are similar to as found on the body except that a series of 13-16 large, thin transverse plates are present on the dorsal aspect. Limbs are quite strong and long; digits are straight, fringed with sharp scales and terminate in sharp claws; covered all over with the similar type of scales as found on the body except on the inner aspect of the upper arm and posterior part of thigh, which have small granule like scales. Standard length 91-113 mm; tail length 50-85 mm.

Distribution : This species occurs in Iran, from the eastern shores of Caspian Sea to Tazikistan and southwardly up to the north western Baluchistan in Pakistan. (Map 1)

Habits and habitat : These curious, generally slow moving nocturnal geckos prefer to inhabit either the burrows made by themselves in soft sand in arid areas or in the crevices of rocks in the hilly areas available in deserts (records of their presence are available up to the elevation of 3000 feet). These lizards are most pugnacious and bite savagely. If cornered, they exhibit fast movements and show most aggressive tendency by pouncing on the intruder by making a slow but distinct hissing sound. They make 25-40 cm deep burrows and remain inside for the whole day and come out for feeding immediately after the sunset. The feeding continues for the whole night and the lizards can be seen walking slowly on four limbs while keeping their body elevated above the ground in search of food, which includes orthopterans (crickets, grass hoppers and their larvae) and small lizards. Not much is known about the breeding habits except that the eggs are laid from late April to June, which are spherical (15 mm in diameter). The incubation is reported to be of 77 days. The skin of these lizards is most delicate and comes off in large patches on rough handling.

Status : The species is available in abundance.



Map 1 : Distribution of *Teratoscincus scincus*, *Cnemaspis tropidogaster*, *Scincella macrotympanum* and *Riopa anguina*.

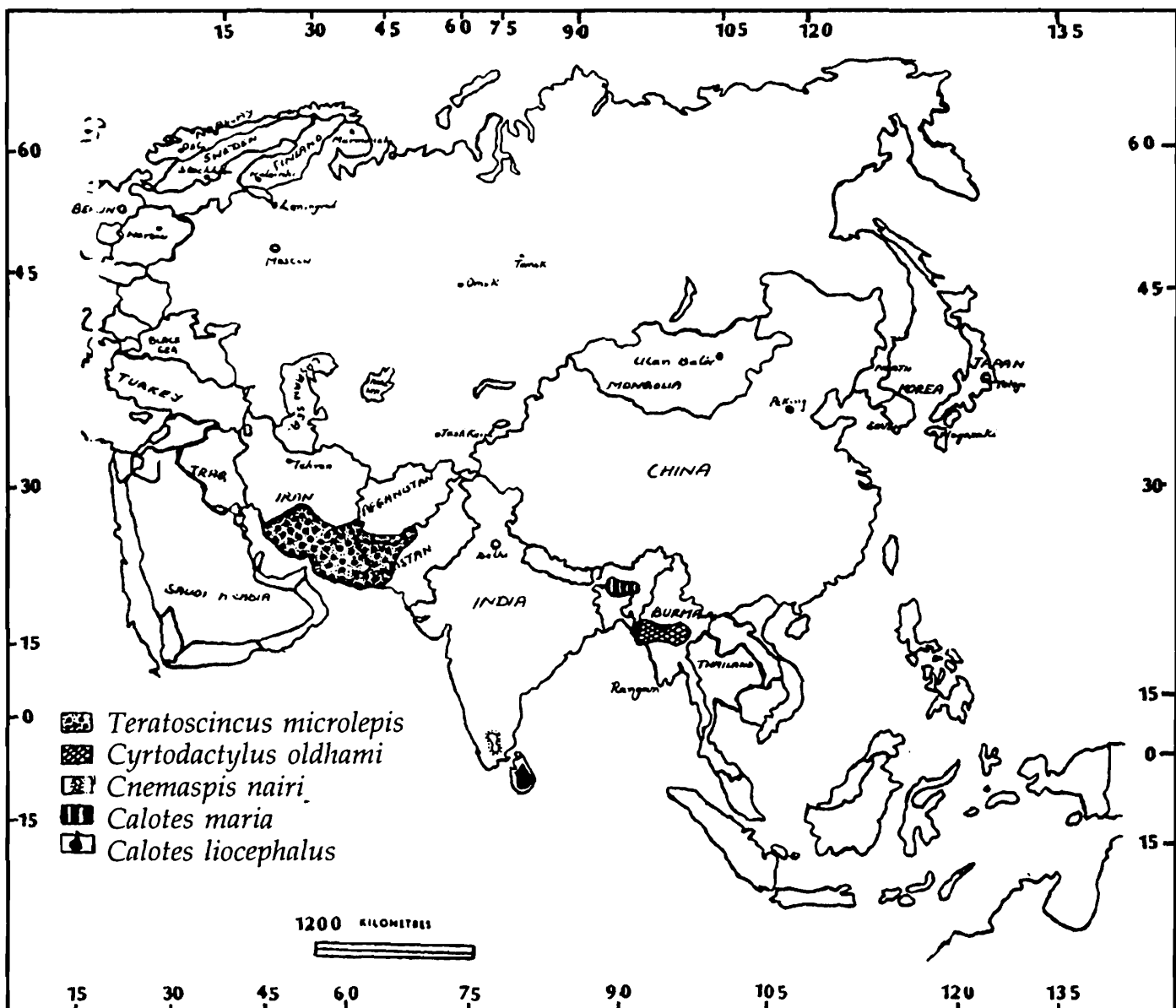
2. *Teratoscincus microlepis* Nikolski 1899 (Map 2)

1899. *Teratoscincus microlepis* Nikolski, *Ann. Mus. Zool. St. Petersburg*, iv : pp. 145 & 376 (type 10c. Duz-Abad, east of Kerman, Iran).

1935. *Teratoscincus microlepis*, Smith, *Fauna Brit. India.* : p. 32.

This is a small, nocturnal, burrowing, mild tempered, most docile, slow moving gecko, inhabits the sandy areas along with the larger species *Teratoscincus scincus*. Dorsum is sandy, yellow or light brown; in juveniles and semiadult individuals, the back is with six dark brown. V-shaped transverse bands. This dorsal colour pattern becomes less prominent or disappears with the advancement of age; head is with a U-shaped mark on dorsal

aspect; tail is with 5-6 dark transverse bars. The head is moderately large, high, temporal portions are less bulged in adult individuals; snout obtuse and bluntly pointed; head covered above with small, juxtaposed granular scales which are largest on the snout; eyes are large, with a prominent upper lid; ear opening comparatively quite large; upper labials 10-16, lower labials 9-13; nostril is situated between the rostral, an internasal and two or three large postmental scales; rostral quadrangular, with a median cleft above; mental sub-quadrangular, much larger than the adjoining labials; no postmentals; no enlarged scale between the mental and first infralabial. Body not so robust; somewhat depressed; covered all over with small uniform, juxtaposed, cycloid, imbricate scales which merge gradually, at the level of the shoulders in to the fine granule like scales of the neck and head; about 100 scales round the middle of the body. Tail scales (on sides



Map 2 : Distribution of *Teratoscincus microlepis*, *Cyrtodactylus oldhami*, *Cnemaspis nairi*, *Calotes maria* and *Calotes liocephalus*.

and ventral aspect) are like those present on the body but comparatively larger; dorsal aspect of the tail (except at the base) is with a series of 10 enlarged transverse plates. Limbs moderately long and strong, covered with imbricate scales; scales on the inner portion of upper arms and posterior part of the thigh are small and granule like. Standard length 67-73 mm; tail length 40-42 mm.

Distribution : Eastern Iran (Dusht-i-Lut near Kerman), Pakistan (Baluchistan, at the vicinity of Nushki and Kharan) and on the Afghan-Baluchistan border. (Map 2)

Habits and habitat : Other habits and habitat are quite similar to *T. scincus* except that it is a most docile and smaller species, skin is comparatively harder and main food comprises certain beetles and their grubs. Nothing is known about the breeding habits.

Status : Species is less plentiful but not endangered or vulnerable.

Genus 2. *Stenodactylus* Fitzinger 1826

1826. *Stenodactylus* Fitzinger, *New class. Rept* : pp. 13, 14.

1831. *Tolarenta* Gray, *Zool. musc.*, p. 58.

1885. *Stenodactylus*, Boulenger, *Cat. Liz. Brit. Mus. i* : p. 16.

1935. *Stenodactylus*, Smith, *Fauna Brit. Ind.* : p. 33

1966. *Stenodactylus*, Minton, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 74.

Genus comprises small desert geckos with non-dilated, clawed digits; digits are not angularly bent at any of joints but are straight; each digit with a lateral fringe or denticulation of pointed scales, and with transverse lamellae beneath. Dorsal scales juxtaposed or subimbricate, uniform or intermixed with larger rounded tubercles. Pupil vertical. Males with or without preanal pores. Seven species are available from North Africa to the Indian Desert, out of these three cover the scope of this work.

Key to the species

Snout is about as long as the distance between the eye and the ear-opening; the hind limb reaches to the axilla; ventral scales keeled; males with 1-4 preanal pores. back with dark cross-bars *Stenodactylus orientalis*

Snout is slightly longer than the distance between the eye and the ear-opening; the hind limb reaches to the axilla; ventral scales keeled; males with 8 or 9 preanal pores; females with 8 or 9 enlarged pitted scales; back with longitudinal stripes
..... *Stenodactylus maynardi*

Snout is distinctly greater than the distance between the eye and the ear-opening; the hind limb reaches to beyond the axilla; ventral scales smooth; males are not known; females with 4 enlarged preanal plates; back with dark cross bars
..... *Stenodactylus lumsdeni*

3. *Stenodactylus orientalis* Blanford 1876

(Fig-26, Map-3)

1876. *Stenodactylus orientalis* Blanford, *J. Asiat. Soc. Beng.* xiv : p. 21. pl. 1, fig. 2 (type loc. Rohri and Shikarpur District, Upper Sind, Pakistan)
1884. *Stenodactylus dunstervillei* Murray, *Zool. Sind* : p. 363 and erratum (type loc. Hala, Sind, Pakistan)
1885. *Stenodactylus orientalis*, Boulenger, *Cat. Liz. Brit. Mus.* i : p. 16, pl. 3, fig. 1.
1935. *Stenodactylus orientalis*, Smith, *Fauna Brit. Ind.*, p. 33.
1966. *Stenodactylus orientalis*, Minton, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 74.

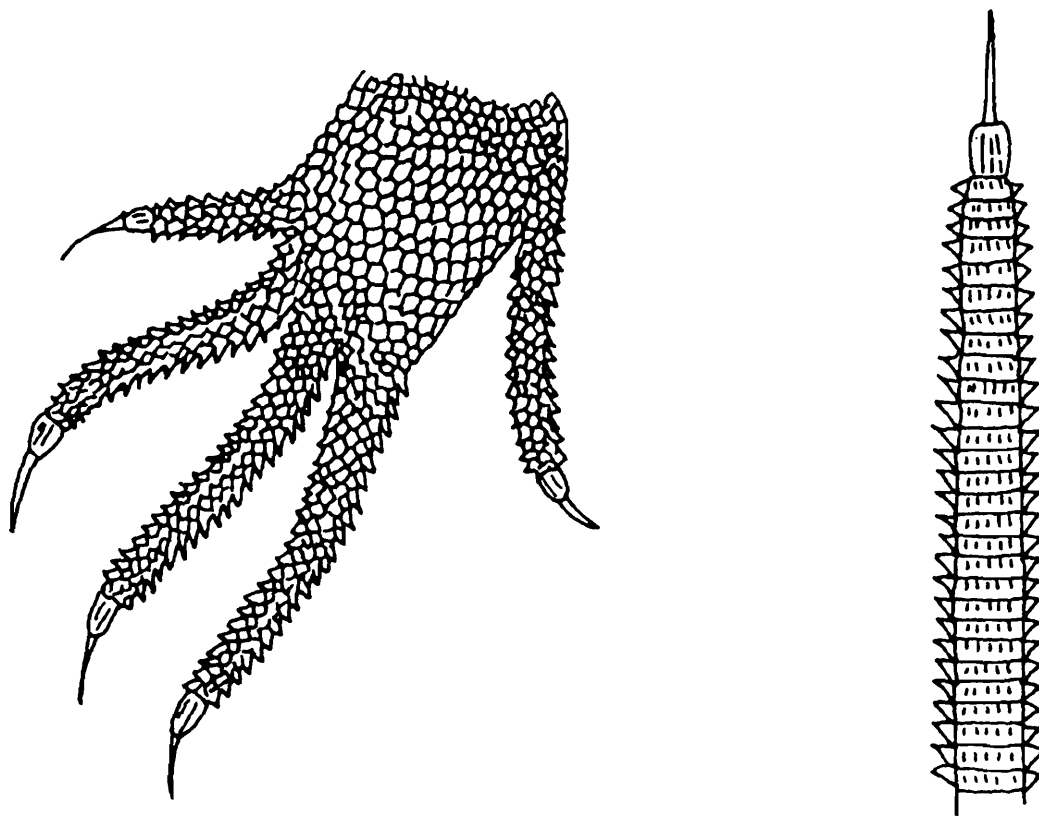


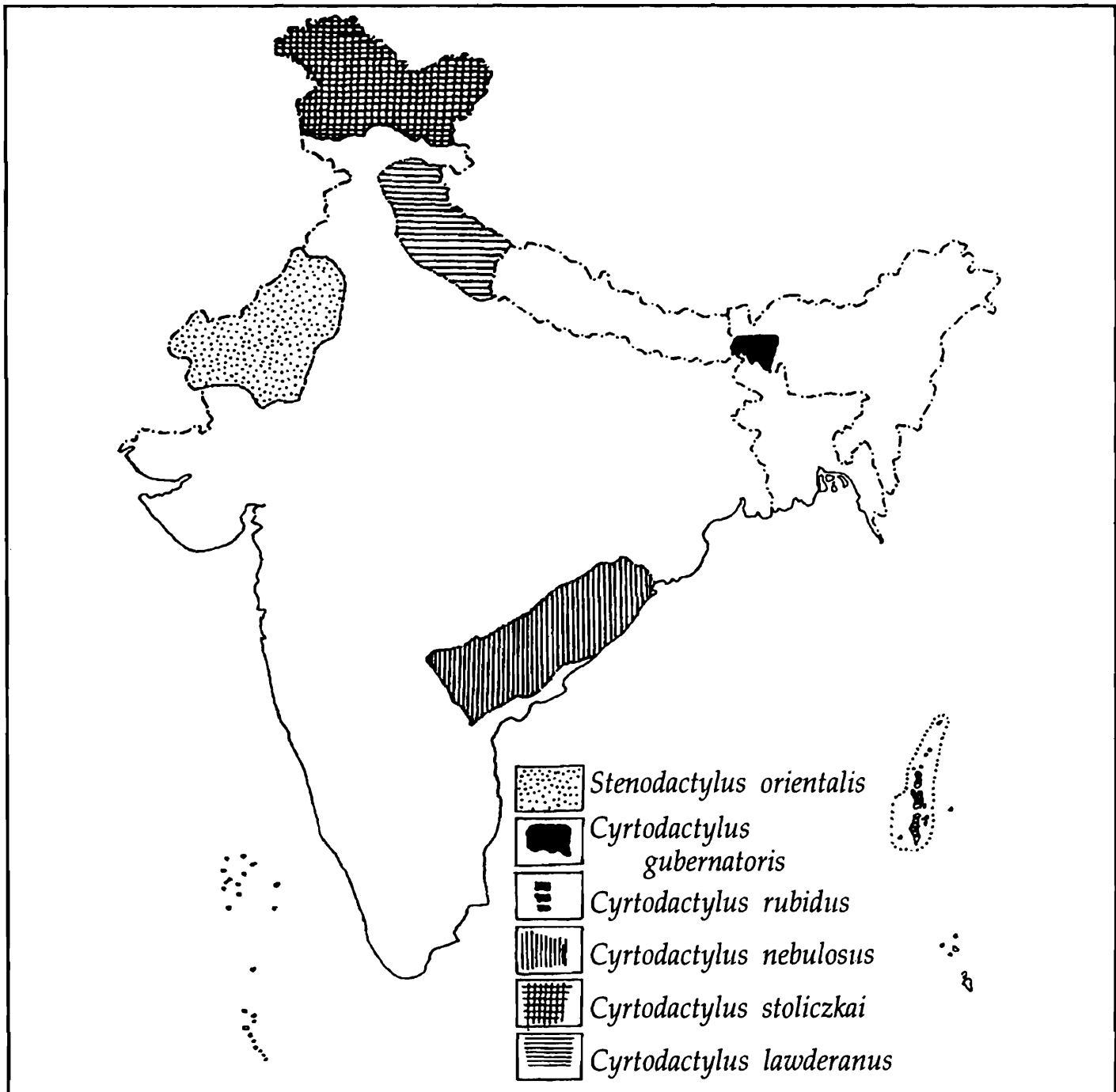
Fig. 26 : *Stenodactylus orientalis* : Upper surface of foot and lower surface of toe.

This is a small, nocturnal, burrowing, desert gecko which inhabits sandy areas of North-western India (mainly Rajasthan). Dorsum is sandy gray, with 3-5 faint transverse bands; a dark streak emerges from the eye, runs along the flanks and reaches up to the base of tail; enlarged tubercles on the back more darker than body colouration; tail yellowish with numerous prominent dark rings; belly is absolutely white.

The head is moderately long, slightly flat, covered above with small, regular, flat and slightly keeled granules. Upper labials 10-13; lower labials 9-13; nostril between the rostral, first labial and three nasals; rostral quadrangular with a median dorsal cleft; mental two times larger than the adjoining labials; no postmentals. Body is depressed, dorsal scales are comprising a mixture of smaller or larger rounded granules; with feebly keeled scales

and tubercles; belly with small, rounded keeled scales; limbs above with subimbricate keeled scales; all digits with fringe of small pointed scales and prominent denticulations, the transverse lamellae below the digits are with keels; hind-limb reaches to axilla; caudal scales annulated and are arranged in rings. Males are with one to four femoral pores. Standard length 40-55 mm.; tail length 35-50 mm.

Distribution : India : In India this Gecko has been recorded from Jodhpur, Jaisalmer and Barmer districts of Rajasthan. Elsewhere: Pakistan: Sind, Thar desert (along the coast to about the mouth of the Hingol River and inland to the base of the Kirthar Range) (map 3).



Map 3 : Distribution of *Stenodactylus orientalis*, *Cyrtodactylus gubernatoris*, *Cyrtodactylus rubidus*, *Cyrtodactylus nebulosus*, *Cyrtodactylus stoliczkai* and *Cyrtodactylus lawderanus*.

Habits and habitat : These lizards are abundant in many localities like Agolai, Balotra and Osian in Rajasthan where they were observed running on sand dunes, immediately after sun set in search of food which comprises mainly of longhorned grasshoppers, beetles and their larvae, lepidopterous larvae, jassids, asilids and ticks, termites and small ants. They are active throughout the night while running rapidly on fine loose sand with the help of their fringed toes. This species is swift and skillful burrower and can go quite deep into the sand, sometimes up to one foot or more. Gravid females were observed from March to May. These geckos are most docile and generally do not bite but on rough handling twitch the tip of their tails and emit a feeble snarling voice.

Status : The species is available in abundance in sand dune localities of Rajasthan.

4. *Stenodactylus lumsdeni* Boulenger 1887

(Map-5)

1887. *Stenodactylus lumsdenii* Boulenger, *Cal. Liz. Brit. Mus. iii* : p. 479. (type loc. Nushki and Helmand, Baluchistan, Pakistan).

1935. *Stenodactylus lumsdeni*, Smith, *Fauna Brit. Ind.* : p. 34.

1966. *Stenodactylus lumsdeni*, Minton. *Bull Amer. Mus. Nat. Hist.* 134 : p. 74

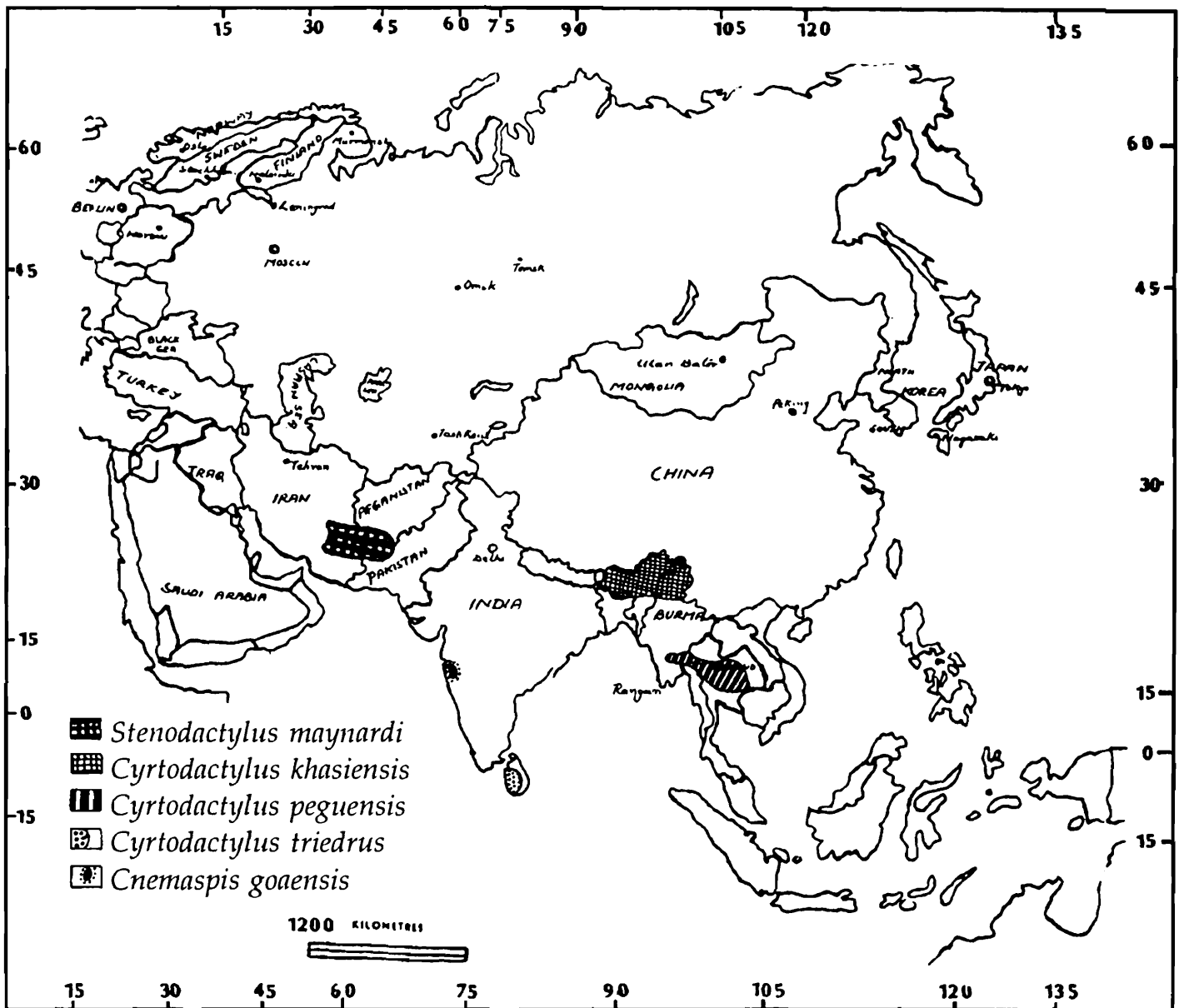
This very small gecko is known only by a single female specimen, obtained from the North Baluchistan, in the sandy desert between Nushki and Helmand. Dorsum is sandy grey; dorsum is with seven prominent cross-bars.

The head is quite long (snout is comparatively longer), flat, covered above with numerous small, regular, flat tubercles intermixed with more irregular scales on the top of head. Upper labials 10-12, lower labials 9-12; nostril between the rostral, first labial and three nasals; rostral quadrangular, with a median dorsal cleft; mental almost two times longer than the adjoining labials; no postmentals. Body is depressed; dorsum with a mixture of smaller and larger granular scales; belly with comparatively larger smooth shields. Limbs are comparatively longer; the hind limb reaches to beyond the axilla; with subimbricate keeled scales above; all digits with fringe of small pointed scales and more prominent denticulations. Four preanal shields are enlarged. Possibly males are with 4 preanal pores as evidenced by the presence of four preanal shields in female. Standard length 33 mm.; tail length 40 mm.

Distribution : Pakistan (North Baluchistan, between Nushki and Helmand) (Map5).

Habits and habitat : The lizard was obtained from the sandy desert. Nothing is known about its other habits.

Status : Rare, secretive



Map 4 : Distribution of *Stenodactylus maynardi*, *Cyrtodactylus khasiensis*, *Cyrtodactylus peguensis*, *Cyrtodactylus triedrus* and *Cnemaspis goaensis*.

5. *Stenodactylus maynardi* Smith 1933

(Map-4)

1896. *Stenodactylus orientalis* Alcock & Finn., *J. Asiat. Soc, Beng.* 65 : p. 554.

1933. *Stenodactylus maynardi* Smith, *Rec. Ind. Mus.* 35 : p. 18.

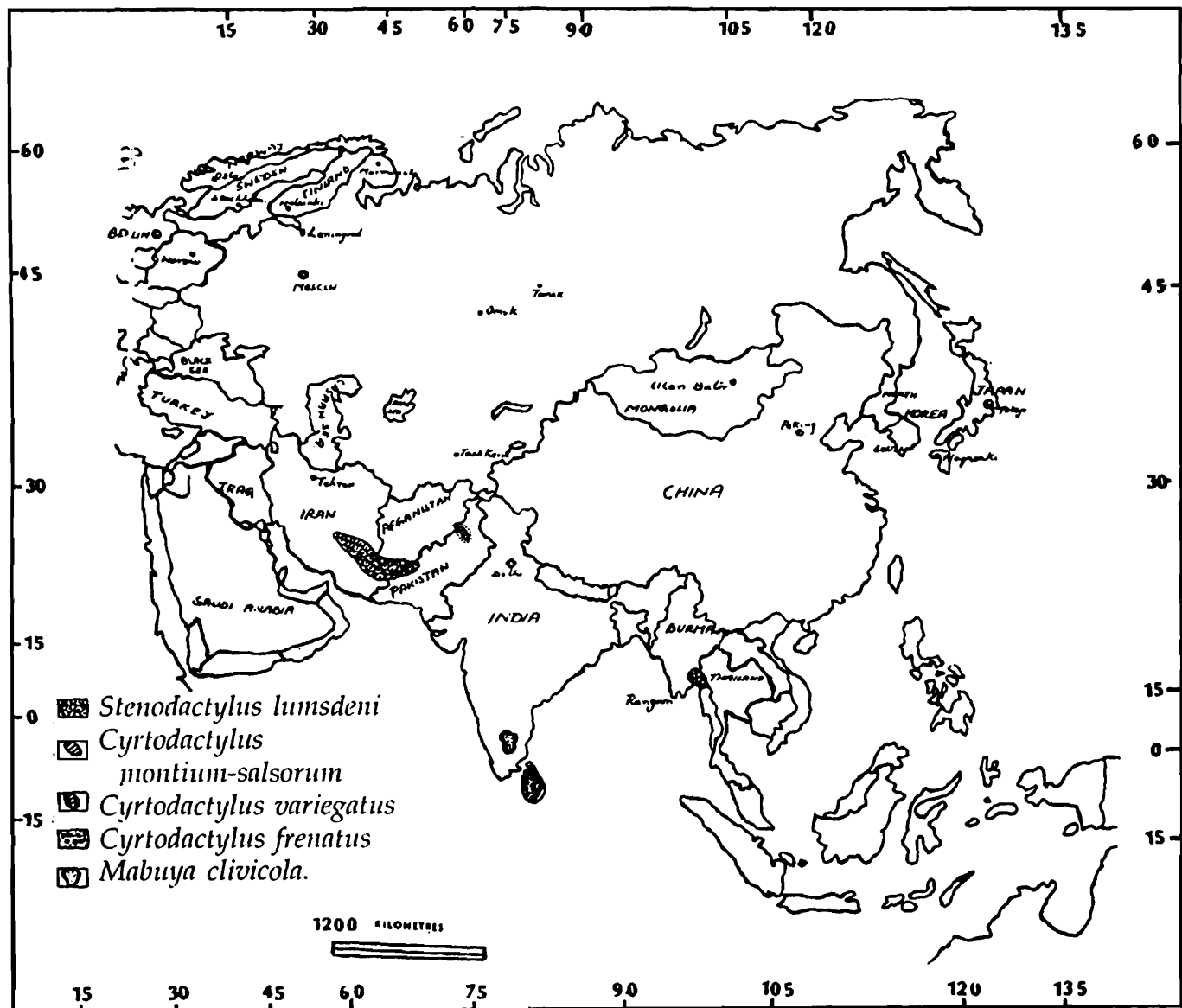
1935. *Stenodactylus maynardi* Smith, *Fauna Brit. Ind.* : p. 35.

1966. *Stenodactylus maynardi*, Minton, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 75.

This is a small gecko, almost of the same size and disposition of *Stenodactylus orientalis*. Dorsum is yellowish-brown, pale grayish or sandy grey; with two vertebral dark brown stripes (sometimes broken up in to a longitudinal series of spots, extending up to the half of tail and two longitudinal lateral stripes of the same colour; distal part of tail, belly and underside of limbs are white with a pinkish tinge.

The head is small, flat, covered above with small granular scales, which are largest on the snout. Upper labials 12-15; lower labials 11-13; nostril is between the rostral, first labial, and three or four small shields; rostral quadrangular, with a less prominent median cleft on dorsal aspect; mental is quite large, almost two times larger than the adjacent labials, its curved posterior aspect project distinctly beyond these labials; no postmentals. Body is depressed, dorsal scales are comprising a mixture of smaller granules and numerous larger keeled tubercles; belly with small, rounded keeled scales; limbs above with subimbricate keeled scales; all digits with fringe of large pointed scales and denticulations; the transverse lamellae of the toes with many keels; hind-limb reaches to the axilla; tail is long, slender and with rows of small keeled scales. Males are with 8 or 9 preanal pores arranged in a transverse row; females with 8 or 9 enlarged pitted shields. Standard length 40-50 mm.; tail length 70-76 mm.

Distribution : Pakistan (north western Baluchistan), Afthanistan and Iran (Map-4).



Map 5 : Distribution of *Stenodactylus lumsdeni*, *Cyrtodactylus montium-salsorum*, *Cyrtodactylus variegatus*, *Cyrtodactylus frenatus* and *Mabuya clivicola*.

Habits and habitat : Prefers to live in large open sand-dune areas; burrows in loose sand; a female collected in May contained two large eggs.

Status : Rare, secretive.

Genus 3. *Bunopus* Blanford 1874

1843. *Alsophylax* Fitzinger, *Syst. Rept.* : pp. 18-19 (type *pipiens*)
 1874. *Bunopus* Blanford, *Ann. Mag. Nat. Hist.* (4) *xiii* : p. 454. (type *tuberculatus*).
 1885. *Alsophylax*, Boulenger, *Cat. Liz. Brit. Mus.* *i* : p. 19.
 1935. *Alsophylax*, Smith, *Fauna Brit. Ind.*, p. 36.
 1963. *Bunopus*, Liviton & Anderson, *Proc. Calif. Acad. Sci.*, ser. 4, vol. 31 (12) : pp. 335-336., figs.
 1966. *Bunopus*, Minton, *Bull. Amer. Mus. Nat. Hist.* **134** : p. 74

Genus *Bunopus* is closely allied to the genus *Alsophylax* and was established by Blanford in 1874. Subsequently it was merged in to *Alsophylax* by Boulenger in 1885 which contained about 12 species. Further studies of Liviton & Anderson 1963, revealed that the 8 species of *Alsophylax* differ from others in many primary characters and as such they were separated and placed under the reinstated genus *Bunopus*. *Bunopus* differs from *Alsophylax* in having enlarged tubercles intermixed with small, juxtaposed granular scales. In all the species of *Alsophylax* dorsal scales are small, granular and homogenous. Other generic characters of this small terrestrial gecko are : Digits are straight, clawed and devoid of lateral fringe or denticulation of pointed scales; each digit with transverse lamellae beneath. Pupil vertical. Males are with preanal pores. The genus is distributed from North Africa to Pakistan (Sind). Only single species is included in the present work.

6. *Bunopus tuberculatus* Blanford 1874

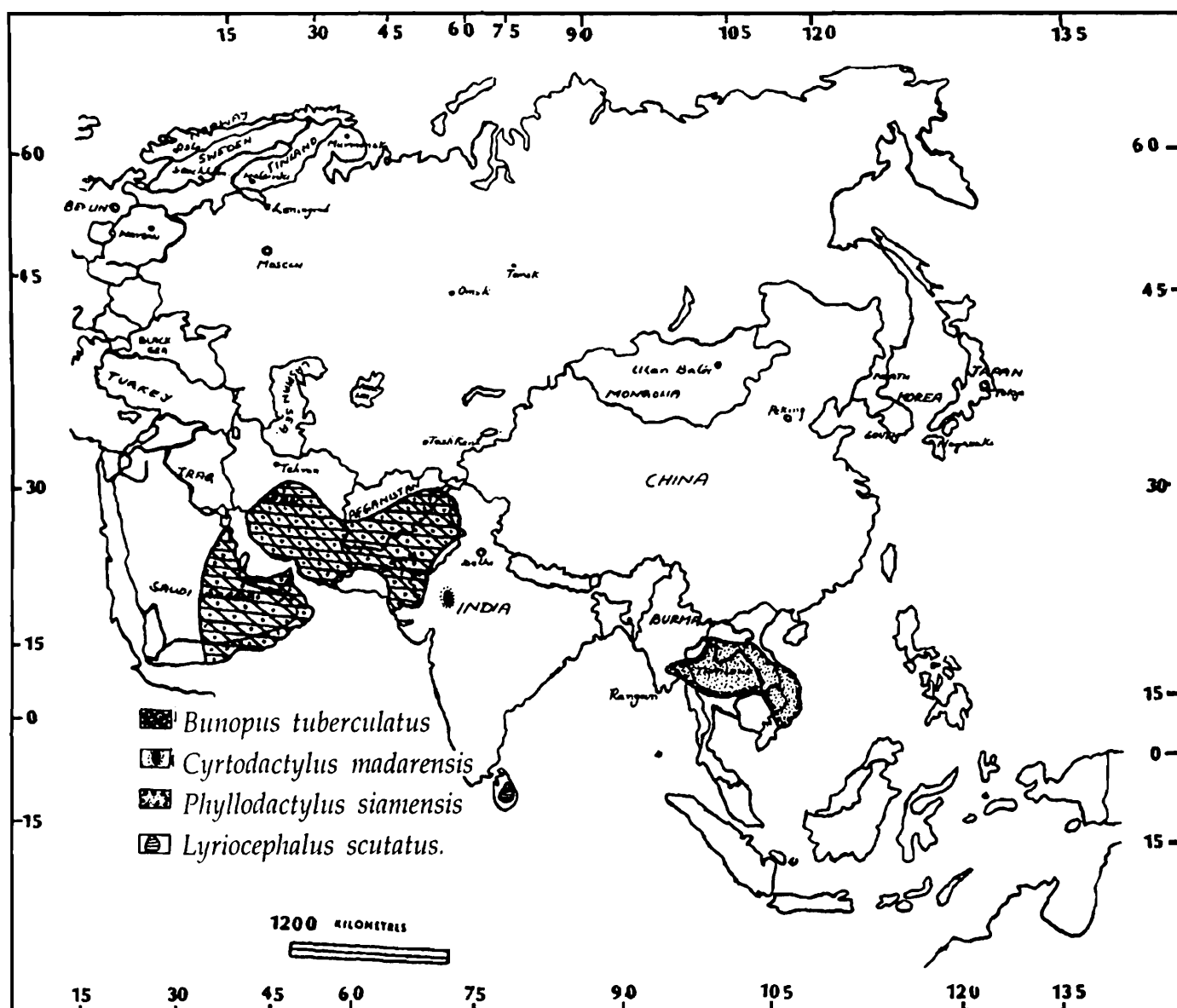
(Map-6)

1874. *Bunopus tuberculatus* Blanford, *Ann. Mag. Nat. Hist.* (4) *xiii* : p. 454 (type loc. Bahu, Kalat, Mand, and Bampur, Baluchistan, Pakistan).
 1935. *Alsophylax tuberculatus*, Smith, *Fauna Brit. India.* : p. 36.
 1963. *Bunopus tuberculatus*, Liviton & Anderson, *Proc. Calif. Acad. Sci.*, ser. 4, Vol. 31 (12) : pp. 335-336, figs.
 1966. *Bunopus tuberculatus*, Minton, *Bull. Amer. Mus. Nat. Hist.* **134** : p. 74.

This is a moderately large, terrestrial, rock dwelling, nocturnal Gecko inhabits hills at an altitude between 3000-6500 feet. Dorsum is pale gray or dull brown, with faint dark gray cross-bars or spots, dorsal tubercles are black and give a definite spotted colour pattern on the back, a curved spot on the nape is distinct, tail with numerous light and dark bars, lower parts white.

The head is moderately large, depressed, covered above with small rounded scales intermixed with large-keeled ones; snout bluntly pointed and as long as or a little longer

than the distance between the eye and the ear-opening; a series of small scales above the eye; the eye is large and the diameter of which is almost double that of ear opening which is a small oval slit; Upper labials 9-13; lower labials 8-13; nostril is between the rostral, the first labial and three small scales; rostral is quadrangular, with a median dorsal cleft; mental broader than long, about two times larger than the adjoining labials; no postmentals. Body moderately stout, dorsoventrally flat; dorsal body scales are small, flat granules, intermixed with numerous much larger flattened tubercles arranged in 10-14 irregular longitudinal rows; ventral scales are small rounded, smooth and imbricate; upper side of limbs are with larger and smaller keeled imbricate scales; toes moderately long; straight and unfringed; the transverse lamellae under the digits are with minute tubercles; the hind-limb reaches to the axilla or not so far; tail cylindrical, filiform, tapering to a pointed



Map 6 : Distribution of *Bunopus tuberculatus*, *Cyrtodactylus madarensis*, *Phyllodactylus siamensis*, and *Lyriocephalus scutatus*.

tip, covered above with minute flat granular scales and regular series of much larger keeled tubercles, ventral aspect of tail with subquadrangular flat, feebly keeled plates. Males with a transverse series of 5-9 preanal pores. Standard length, males 38-46 mm., females, 44-52 mm., tail length 46-50 mm.

Distribution : Eastern Arabia to Pakistan (Sind, Baluchistan) through Iran and eastern Afghanistan. The species is common in northern and western Baluchistan but less common in other parts of its range (Map-6).

Habits and habitat : This insectivorous, nocturnal, terrestrial species prefers to live in sandy fields, scrubby hilly areas and under the stones and boulders. Breeding season extends May onwards and one or two large, spherical eggs are laid in the third week of May or early June. Gravid females are reported from March to May.

Status : The species is available in abundance in Pakistan and not endangered in any part of its range.

Genus 4. *Cyrtodactylus* Gray 1827

1825. *Gymnodactylus*, Spix, *Spec. nov. Lacert. Bras*, p 17 : pl. 17. fig. 1 (type *geckoides*)
 1826. *Phyllurus* Fitzinger, *Neue class Rept.* : pp. 13 & 47 (type *marmoratus*)
 1827. *Goniodactylus* Kuhl, *Neue class, Rept.* : p. 290 (type *marmoratus*).
 1827. *Cyrtodactylus* Gray, *Phil. Mag. (2) ii* : p. 55 (type *pulchellus*).
 1843. *Dasyderma* Fitzinger, *Syst. Rept.* : p. 30 (type *geckoides*).
 1843. *Anomalurus* Fitzinger, *Syst. Rept.* : pp. 18 & 90 (type *miliusii*).
 1843. *Cyrtopodion* Fitzinger, *Syst. Rept.* : pp. 18 & 93 (type *Stenodactylus scaber Ruppell*).
 1845. *Cubina* Gray, *Cat. Liz. Brit. Mus.* : p. 175 (type *fasciatus*).
 1860. *Puellula* Blyth, *J. Asiat. Soc. Beng.* 29 : p. 109 (type *rubida*).
 1867. *Geckoella* Gray, *Proc. zool. Soc.* : p. 98 (type *punctata*).
 1883. *Quendenfeldtia* Boettger, *Abh. Senck. Ges.* 13 : p. 125 (type *trachyblepharus*).
 1885. *Gymnodactylus* Spix, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 22.
 1890. *Gymnodactylus* Spix, Boulenger, *Fauna Brit. Ind.* : p. 59.
 1913. *Gymnodactylus* Spix, Annandale, *Rec. Ind. Mus.* 9 : p. 309.
 1926. *Gymnodactylus* Spix, Hora, *Rec. Ind. Mus.* 28 p. 187.
 1935. *Gymnodactylus* Spix, Smith, *Fauna Brit. Ind.* : p. 37.
 1954. *Cyrtodactylus* Gray, Underwood. *Proc. zool. Soc.* 124 (3) : pp. 469-492.
 1966. *Cyrtodactylus* Gray, Minton, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 77.

Small to moderately large and quite large geckonid species which were formerly placed in the genus *Gymnodactylus* were shifted to this large genus by Underwood (1954). The common generic characters shared by these lizards (unless stated otherwise) are as follows :

Head and body depressed; rostral broad, with a median cleft above; nostril between the rostral, first labial, an internasal and several small scales. Head covered above with

small granular scales; largest scales on the snout; scales on the posterior aspect of head intermixed with larger rounded tubercles. Mental large subtriangular; two or three pairs of postmentals are present, the first pair is largest and both the shields are in contact with one another behind the mental. Digits are not dilated, clawed and cylindrical; two or three distal phalanges are slightly compressed laterally and form a strong dorsoventral curve (bend) between last and next to last phalanx; two enlarged scales separate the digits of the claw, the lower scale is strongly notched and lines below the claw; the underside of the digits is with a row of distinct transverse plates; dorsal scales of the body mixed with enlarged tubercles, may or may not be arranged in longitudinal rows. Tail not tapering abruptly behind the vent. Pupil verticle. Males are with or without preanal or femoral pores. This large genus is distributed from the shores of Mediterranean to Australia through complete south Asia and the islands of the southwest Pacific. The present work includes the description of 25 species.

Key to the species of genus Cyrtodactylus.

1. Enlarged dorsal tubercles on back in a straight series.
 - (a) Male with a continuous series of preanal and femoral pores.
 - i. Enlarged dorsal tubercles separated from one another by small scales; 28-36 scales across the middle of belly *C. fedtschenkoi*
 - ii. Enlarged dorsal tubercles in contact with one another; 18-20 scales across the middle of belly *C. montium-salsorum*
 - (b) Male with 4-7 preanal pores.
 1. Enlarged dorsal tubercles separated from one another, by small scales.
 - i. Generally 30 scales across the middle of belly *C. kachhensis*
 - ii. About 40 scales across the middle of belly *C. watsoni*
 2. Enlarged dorsal tubercles almost in contact with one another; 20 scales across the middle of belly *C. scaber*
- II. Enlarged dorsal tubercles if present, not in straight series.
 - A. Enlarged dorsal tubercles always present; tail longer than the head and body, not swollen; a lateral fold may or may not be present; males are with pores.
 - (a) A series of transversely enlarged plates below the tail are present.
 - i. Dorsum with 4 dark cross bars; 35 scales across the middle of belly *C. fene*
 - ii. Dorsum with 6-7 dark, broad, sinous cross bars; 28-34 scales across the middle of belly; male with preanal and femoral pores *C. fasciolatus*
 - iii. Dorsum with 7-8 irregular cross bars; 38-40 scales across the middle of belly; male with preanal pores only *C. chitralensis*

- iv. Dorsum with 6-7 dark narrow cross bars, sometimes broken into transverse markings, these cross bars thinner than adjoining interspaces; 24-30 scales across the middle of belly; male with 4 preanal pores *C. consobrinoides*
- v. Dorsum with irregular dark spots; 22 scales across the middle of belly; male with preanal and femoral pores *C. variegatus*
- vi. Dorsum with dark w-shaped markings; 35 scales across the middle of belly; male with an angular series of 4-6 preanal pores *C. frenatus*
- vii. Dorsum with white spots; 34-38 scales across the middle of belly; male generally with 4 preanal pores (in some individuals these pores are not present) *C. oldhami*
- viii. Dorsum with dark paired spots (some cases these spots are confluent); 34-38 scales across the middle of belly; male with an angular series of 7-8 preanal pores *C. peguensis*
- (b) Transversely enlarged plates below the tail are not present.
 - i. Dorsum with dark regular markings; 34-40 scales across the middle of belly; male with an angular series of 8-14 preanal pores *C. khasiensis*
 - ii. Dorsum with dark markings; 33 scales across the middle of belly; male with preanal and femoral pores *C. gubernatoris*
 - iii. Dorsum with dark markings or irregular transverse bars; 34-40 scales across the middle of belly; male with a longitudinal pubic groove containing 6 preanal pores *C. rubidus*
- B. Enlarged dorsal tubercles may be present or absent; tail shorter than the head and body, swollen, transversely enlarged sub-caudal plates are not present; lateral fold absent or feebly developed; males are devoid of preanal or femoral pores.
 - (a) Dorsal scales smaller than the ventrals.
 - i. Dorsum with white spots (rarely absent; enlarged dorsal tubercles present; male with 3-4 preanal pores. *C. triedrus*
 - ii. Dorsum with dark, paired, sinous spots; enlarged dorsal tubercles present; males are devoid of preanal or femoral pores *C. nebulosus*
 - iii. Dorsum with dark, paired, rounded spots or cross bands; enlarged dorsal tubercles absent or few in number; males are devoid of preanal or femoral pores *C. collegalensis*
 - iv. Dorsum is grey with darker wavy cross-bars; enlarged dorsal tubercles present; lateral fold indistinct or absent; males are devoid of preanal or femoral pores *C. stoliczkai*

- v. Dorsum is grey, with darker variegations; enlarged dorsal tubercles intermixed with unequal scales; lateral fold indistinct or absent; male with preanal pores *C. lawderanus*
- (b) Dorsal scales larger than ventrals; lateral fold is missing; males without preanal or femoral pores.
 - i. Dorsum is reddish-brown, with white transverse bands *C. dekkanensis*
 - ii. Dorsum is brown, with deep-yellow cross bars *C. albofasciatus*
 - iii. Dorsum is with brown spots *C. jeyporensis*
- C. Enlarged dorsal tubercles present; tail shorter than the head and body, not swollen, cylindrical, segmented, tapering to a point, transversely enlarged sub-caudal plates are present; lateral fold is feebly developed but distinct; males with a continuous series of 23-36 preano-femoral pores *C. madarensis*

7. *Cyrtodactylus fedtschenkoi* (Strauch 1887)

1887. *Gymnodactylus fedtschenkoi* Strauch, *Mem. Acad. St. Petersb.* 35 : p. 46 (type of loc. Samarkand, Turkistan).
1935. *Gymnodactylus fedtschenkoi* Strauch, Smith, *Fauna Brit. Ind.* : p. 41.
1966. *Cyrtodactylus fedtschenkoi* (Strauch), Minton, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 78.

This is a small rock gecko with a light brownish dorsal colouration; with faint darker cross bands all over, more prominent on anterior portion of tail; belly whitish. The head is moderately large; covered above with slightly smaller, irregular rounded, scales, which are intermixed in snout region with larger rounded, scales. Upper labials 10-13 and lower labials 9-12; postmentals are two and are quite large. Body is depressed, flattened dorsoventrally; lateral fold is indistinct. Dorsum with 10-12 regular longitudinal series of large subtriangular tubercles, these rows of tubercles are separated from one to three small granular scales; belly is with rounded subimbricate scales, 28-36 across the middle of the body. Dorsal aspect of the limbs is provided with keeled imbricate scales. The hind-limb reaches slightly beyond the axilla; toes are elongated, subdigital lamellae well developed, those on the basal phalanges are almost as broad as the digit. Tail longer than the head and body, slightly depressed; dorsal aspect with small scales and rows of large, spine like, scales, which are smaller than the ventral scales. Males are devoid of femoral or preanal pores; no enlarged femoral scales are present. Standard length 42-50 mm.; tail length 65 mm.

Distribution : India : Rajasthan (Burr, Sendra, Madar in Ajmer Division) (Map-8).

Elsewhere : Transcaspia to southern Kazakhstan; Baluchistan in Pakistan.

Habits and habitat : It is a rock dwelling, nocturnal species whose food mainly comprises Grasshoppers, Gryllids, Coleopterans, Branconids (Hymenoptera), other soft bodied insects and seeds and fibres of some wild plants.

Status : Rare

8. *Cyrtodactylus montiumsalsorum* (Annandale 1913)

(Map-5)

1913. *Gymnodactylus montium-salsorum* Annandale, *Rec. Ind. Mus.* 9 : p. 313, pl. 17, fig. 1. (type 10c. Salt Range, Punjab).
1935. *Gymnodactylus montium-salsorum* Annandale, Smith, *Fauna Brit. Ind.* : p. 42.
1966. *Cyrtodactylus montiumsalsorum* (Annandale), Minton, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 78.

This small rock gecko is generally brownish with a greenish tinge, dorsum with grey blotches all over and variegated with white colour which is confined to the number of tubercles. The head is moderately large covered above with irregular rounded scales, intermixed posteriorly with larger rounded tubercles. The eyes are prominent. Snout almost equal to the distance between the eye and the ear-opening. Diameter of ear-opening is almost half that of eye. Upper labials 12-13 and lower labials 11-12. Body is moderately depressed, lateral fold is indistinct and with smaller scales; dorsum with much larger subtriangular tubercles which are almost in contact with one another; belly is with 18-20 rows of rounded imbricate scales across the middle of the body. Dorsal aspect of the limbs with keeled, imbricate scales. Subdigital lamellae well developed, those on the basal phalanges nearly as broad as the digit; toes elongate; the hind-limb reaches slightly beyond the axilla. Tail feebly depressed, covered above with small scales and rows of large, spinose, trihedral tubercles; underside of the tail is with a median row of enlarged plate like scales. Males are with a continuous series of preanal and femoral pores. Standard length 47 mm., tail length 60 mm.

Distribution : Pakistan (Recorded only from the Salt Range in northwestern Punjab) (Map-5).

Habits and habitat : It is a rock dwelling insectivorous species. Not much is known about its other habits.

Status : Very rare.

9. *Cyrtodactylus scaber* (Heyden, 1827)

(Map-9)

1874. *Gymnodactylus brevipes* Blanford, *Ann. Mag. Nat. Hist.*, 4, Vol. 13 : p. 453.
1827. *Stenodactylus scaber* Heyden, in Ruppell, *Atlas N. Afr., Rept.* : p. 15, pl. 4, fig. 2 (type loc. Arabia).
1935. *Gymnodactylus scaber* (Heyden), Smith, *Fauna Brit. Ind.* : p. 42.
1966. *Cyrtodactylus scaber* (Heyden), Minton, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 77.

This is a small, nocturnal, blunt-snouted drab lizard inhabits in arid habitat of Rajasthan. Dorsum is sandy light gray with numerous brown spots all over, in most of the individuals a curved spot on the nape is present; tail is banded with dark brown; belly is white. The

head is moderately large and depressed, covered above with small granular scales intermixed with large keeled tubercles. Its eyes are large with an vertically elliptical pupil; ear opening is like a vertical slit and smaller than pupil. Upper labials 12-13 and lower labials, 10-12; postmentals 2 or 3. Body is depressed, flattened dorso-ventrally with a feeble lateral fold; dorsal scales are composed of 10-12 rows of regularly arranged series of large subtrihedral tubercles and one or two rows of small granular scales separating them; median dorsal and lateral scales are of equal size and shape; belly is with about 20-23 rows of large rounded imbricate scales across the mid-body. Limbs above with keeled imbricate scales, digits long, slender, toes elongate, subdigital lamellae well developed, more than half the breadth of the digit; the hind-limb reaches to beyond the axilla. Scales near lateral fold small, juxtaposed. Tail is slightly depressed, above with small 2 or 3 rows of small scales, separating the rows of enlarged, strongly keeled, generally mucronate, spinose, trithedral tubercles; a regular series of enlarged median scales on underside of tail. Males are with 4-7 preanal pores in a transverse series. Standard length 50 mm.; tail 67 mm.

Distribution : India: Western Rajasthan, Elsewhere : The range of the species extends from Egypt to Western Rajasthan (Map-9).

Habits and habitat : The main habitat of this species is desert but according to Minton (1966) also prefers to live in dry grassland, on rocky hill sides. In Rajasthan the collections were made almost under similar conditions, but in many areas in Jodhpur it is quite acclimatized to living in inhabited houses where it may be found in company of *Gryllus* spp. hiding under stones/bricks. In the same house, other lizards such as *Hemidactylus brooki* and *Hemidactylus flaviviridis* may also be present. The food of this species comprises gryllids, Scarabaeid beetles, flies, ants and scorpions. On rough handling these Geckos make a faint squawking noise and sometimes make an attempt to bite.

Status : The species is available in abundance.

10. *Cyrtodactylus kachhensis* (Stoliczka 1872)

(Fig. 27, Map 9)

1872. *Gymnodactylus kachhensis* Stoliczka, *P. Asiat. Soc. Beng.* : p. 79 (type loc. Kutch).

1884. *Gymnodactylus petrensis* Murray, *Zool. Sind.* : p. 362 (type loc. Sind)

1935. *Gymnodactylus kachhensis kachhensis*; Smith, *Fauna Brit. Ind.*, : p. 43.

1966. *Cyrtodactylus kachhensis* (Stoliczka), Minton, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 78.

This small nocturnal rock lizard has got a marked resemblance with *C. scaber* and is a good climber. Dorsum is light brown or gray; dark black spots on the back are most irregularly arranged; belly is whitish. The head is moderately large and depressed, covered above with minute granular scales intermixed with large keeled tubercles. The eyes are

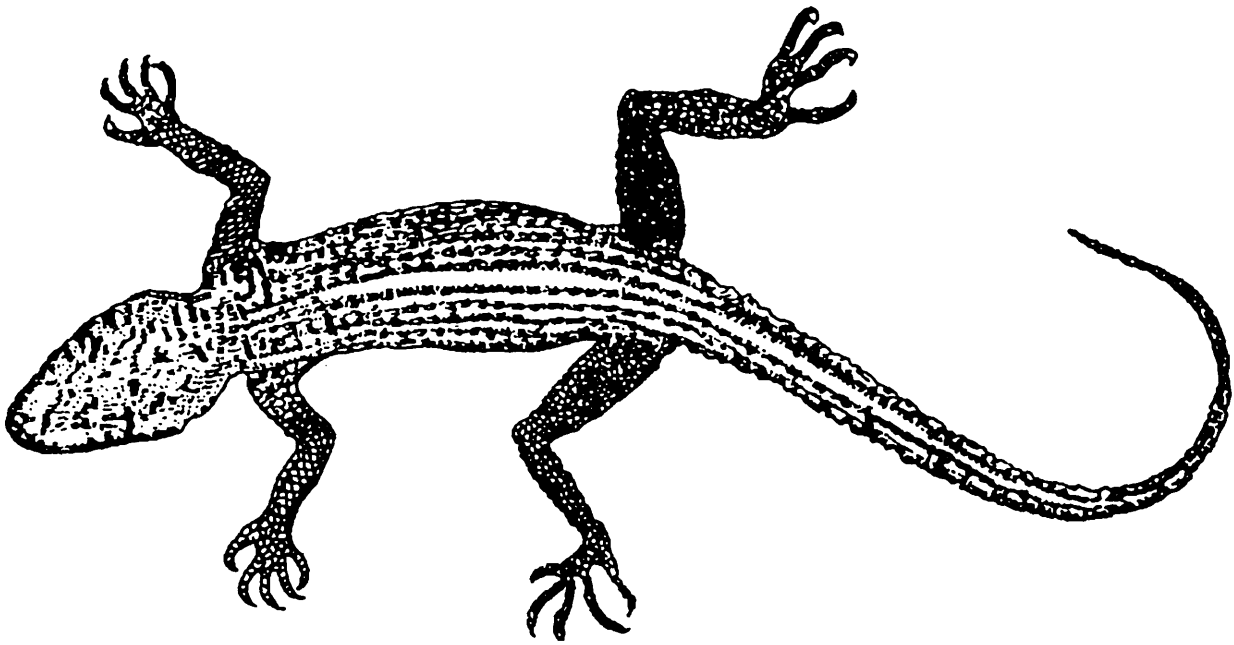


Fig. 27 : *Cyrtodactylus kachihensis* : Dorsal view.

large, pupil vertically elliptical; ear opening is smaller than pupil and just like an vertical slit. Upper labials 8-12 and lower labials 7-10; postmentals 2 or 3. Body is depressed, flattened dorsoventrally, with a distinct lateral fold; dorsal scales are composed of 10-13 rows of regularly arranged series of smaller subtrihedral tubercles and one to five rows of small granular scales separating them; median dorsal scales are smaller than lateral scales; belly is with 24-39 rows of large rounded imbricate scales across the mid-body. Limbs above with keeled imbricate scales, digits long, slender, toes elongate, subdigital lamellae well developed, more than half the breadth of the digit; hind limb reaches beyond the axilla. Scales near lateral fold small juxtaposed. Tail is slightly depressed, above with small 2 or 3 rows of small scales, separating the rows of enlarged trithedral tubercles; underside of tail is with a irregularly arranged median row of small scales. Males with 4 to 7 preanal pores arranged in a transverse series. Standard length 34-43 mm.; tail 40 mm.

Distribution : India : Cutch

Elsewhere : Pakistan : Sind

Habits and habitat : These small lizards prefer to live in the crevices of rocks in foot hills, understones, dead leaves and wooden logs, roofs of abandoned houses. They very rarely enter inhabited houses. During summer season these lizards emerge from their rocky abodes about sunset and remain active for most of the night while devouring insects. Breeding season ranges from March to July; generally 2 oval, fragile shelled eggs are laid in soil, decaying vegetable matter or under stones. Each egg measures 9.5×7 mm. and incubation period ranges between 39-45 days.

Status : These lizards are in abundance throughout their range.

11. *Cyrtodactylus watsoni* (Murray 1892)
(Map-7)

1892. *Gymnodactylus watsoni* Murray, *Zool, Beluch, & S. Afghan* : p. 68 (type loc. Quetta)
 1923. *Gymnodactylus ingoldbyi* Proctor, *J. Bombay Nat. Hist. Soc.* 29 : p. 121, text. fig. (type loc. Ladha, North West Frontier Provinces of Pakistan).
 1935. *Gymnodactylus kachhensis watsoni* : Smith, *Fauna Brit. Ind.* : p. 44.
 1966. *Cyrtodactylus watsoni* (Murray), Minton, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 79.

This small nocturnal gecko is quite similar to *C. kachhensis* in scalation and colour pattern but differs from it in having 33-47 scale rows across the middle of the belly; small scales on dorsum are intermixed with larger keeled scales (while in *C. kachhensis* the enlarged trihedral tubercles are separated by small granular scales): in males more preanal pores are present; a series of enlarged scales are present at the underside of tail; usually a dark collar is present across the nape. Size is comparatively larger. Standard length 41-54 mm., tail length 40-53 mm.

Distribution : Pakistan (North West Frontier Province, Las Bela to Quetta in Baluchistan, Surat and the northern Punjab) (Map-7).

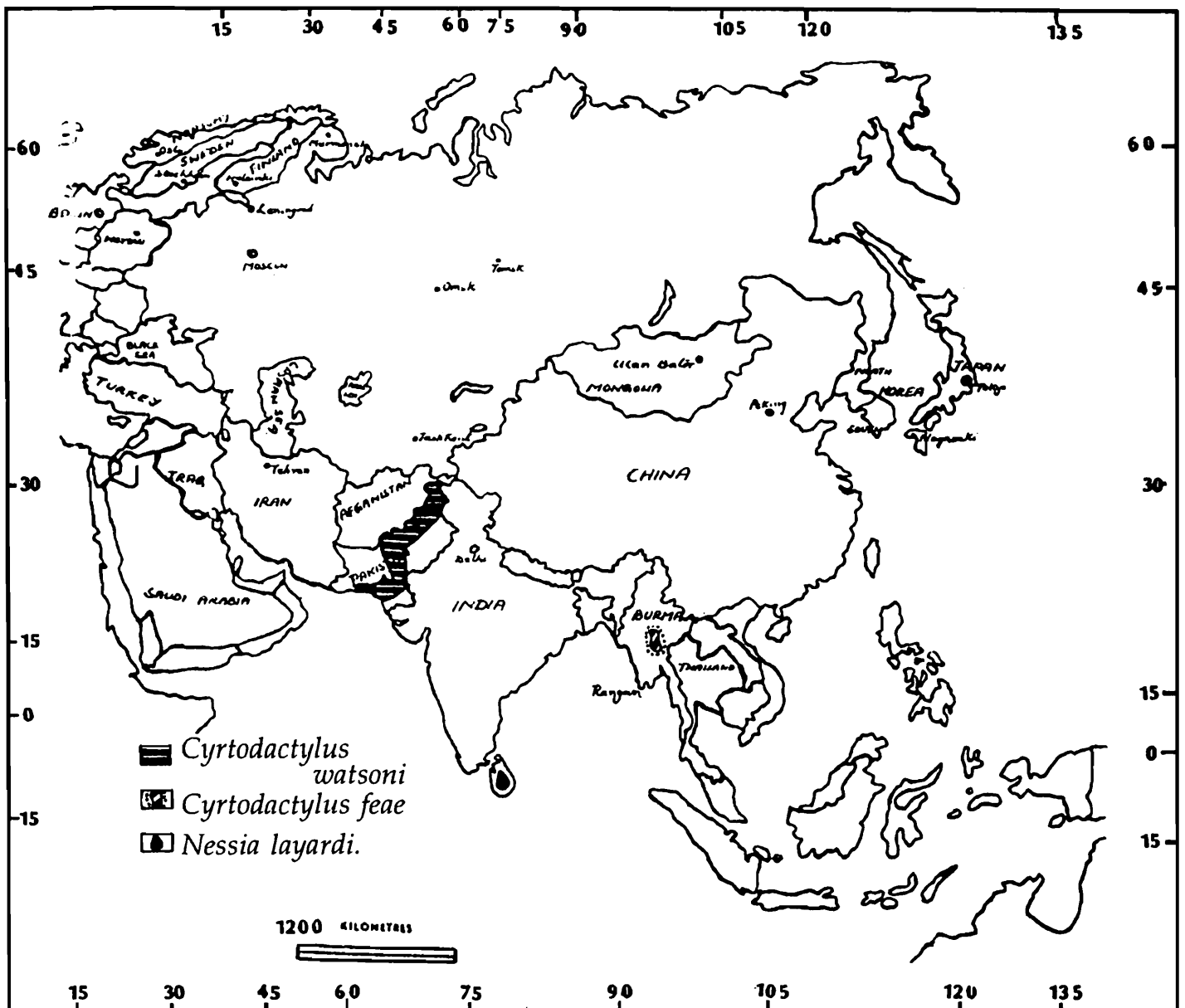
Habits and habitat : This generally nocturnal, insectivorous gecko inhabits rocky areas at elevations from 500-2000 metres. The species has been observed to be living in houses, hiding behind boxes, furniture and other house-hold material.

Status : Common.

12. *Cyrtodactylus feae* (Boulenger 1893)

1893. *Gymnodactylus feae* Boulenger, *Ann. Mus. Civ. Genova* (2) xiii, p. 313, pl. vii, fig. 1 (type loc. Karenni Hills, Burma).
 1935. *Gymnodactylus feae*, Smith, *Fauna Brit. Ind.* : p. 45.

This small gecko is greyish in dorsal colouration, with four yellowish cross-bars upon the back; a cross-bar is present across the nape, which extends along the margins of head and reaches up to the eyes; top of the head with large brown spots edged with white; tail is with alternate light and dark bands; belly and other lower parts are dark brown. The head is moderately large. The eyes are prominent. Snout longer than the distance between the eye and the ear-opening. Diameter of the ear-opening is less than half that of the eye. Upper labials 11-12 and lower labials 9-10. Body covered above with minute granular scales, intermixed with larger, rounded, subtrihedral tubercles, a lateral fold with distinctly enlarged scales; belly with rounded imbricate scales, 35 scales between the lateral folds. Dorsal aspect of the limbs with small granular scales, intermixed with larger, rounded, subtrihedral tubercles. Subdigital lamellae well developed, almost as broad as the digit; the hind-limb reaches to the axilla. Tail covered above with small flat scales and rows of



Map 7 : Distribution of *Cyrtodactylus watsoni*, *Cyrtodactylus feae* and *Nessia layardi*.

enlarged tubercles; underside of the tail is with a median row of enlarged plate like scales. Males are with a continuous series of enlarged preanal and femoral scales, some of which are pitted but not perforated. Standard length 45 mm., tail length 50 mm.

Distribution : Burma (Karenni Hills) (Map-7).

Habits and habitat : It is a rock dwelling, insectivorous species. Nothing is known about its other habits.

Status : Very rare.

13. *Cyrtodactylus fasciolatus* (Blyth 1860)

1860 *Naultinus fasciolatus* Blyth, *J. Asiat. Soc. Beng.* 29 : p. 114 (type loc. Subathu, Simla dist.).

1876. *Gymnodactylus fasciolatus*, Theobald, *Cat. Rept. Brit. Ind.* : p. 92

1885. *Gymnodactylus fasciolatus*, Boulenger, *Cat. Liz. Brit. Mus.* : p. 44.
 1890. *Gymnodactylus fasciolatus*, Boulenger, *Fauna Brit. Ind.* : p. 71.
 1913. *Gymnodactylus fasciolatus*, Annandale, *Rec. Ind. Mus.* 9 : p. 325. pl, xvi, fig. 3.
 1935. *Gymnodactylus fasciolatus*, Smith, *Fauna Brit. Ind.* : p. 45.

This large nocturnal rock lizard is greyish above with 6-7 dark brown cross-bars on the dorsum, which assume W-shaped dark marking on their hinder margin; a dark curved streak starts from the nape and reaches up to the eyes; dorsal surface of head spotted with brown; tail is with dark brown and light cross bars arranged alternately; belly is whitish. The head is moderately large and slightly depressed; its occipit is with small granular scales mixed with larger tubercles. The eyes are prominent. Upper labials 10-13 and lower labials 9-10. Body is depressed, flattened dorsoventrally, with a distinct lateral fold; dorsal scales on body and limbs are like small granules intermixed with much larger subtriangular tubercles; the scales of the lateral folds are slightly enlarged; belly is with 28-34 rows of large rounded imbricate scales across the middle of the body. Subdigital lamellae is well developed, nearly as broad as the digit; the hind-limb hardly reaches to the axilla. Tail above with, small flat, scales and at its base there is a series of enlarged flat tubercles; underside of tail is with a series of transversely enlarged median plates. Females are with 15-16 enlarged preano-femoral plates on each side out of which few are pitted. Males have not been collected so far. Standard length 82 mm.; tail length 110 mm.

Distribution : India : Western Himalayas (Simla, Almora and Kumaon) (Map-9).

Habits and habitat : This lizard has been observed in rocks up to 600 metres near Kumaon. Its food comprises a variety of insects.

Status : Rare

14. *Cyrtodactylus chitralensis* (Smith 1935)

1935. *Gymnodactylus chitralensis* Smith, *Fauna Brit. Ind.* : p. 46. (type loc. Karakal, in Bumhoet Valley, Chitral).

This small gecko is greyish in dorsal colouration and with 7-9 irregular dark cross-bars which are as broad as their interspaces. These cross-bars are more darker on the posterior dorsum. The first cross-bar starts from the occiput and reaches up to eyes through the sides of head. Tail is dark grey with numerous darker bands. Venter is greyish-white. The head is moderately large and is covered above with flat granular scales and larger polyhedral scutes on the snout. The eyes are prominent. Snout longer than the distance between the eye and the ear-opening. Diameter of ear-opening is almost half that of eye. Upper labials 11-12 and lower labials 9-10, rostral broader than high; nostril between the rostral, first labial and several small scales; mental large, subtriangular, twice as long as the adjoining labials; two prominent pairs of postmentals, the inner pair is larger than the outer and both the postmentals of this pair are in contact with one another behind the



Fig. 28 : *Cyrtodactylus chitralensis* (Smith) : Dorsal Pattern.

mental; behind the postmentals the size of the scales reduces gradually and ultimately merge with the flat scales of the regular region. Body is moderately depressed; dorsum is with small granular scales intermixed with much larger, rounded, keeled tubercles; these larger scales are arranged in 12 fairly regular rows across the middle of back; belly is with a distinct lateral fold and is covered with rounded imbricate scales, 38-40 scales across the middle of the belly between the lateral folds. Dorsal aspect of the limbs with keeled. imbricate scales. Subdigital lamellae well developed, as broad as the digit, toes moderately elongate; the hind-limb reaches to the axilla. Tail feebly depressed, oval in section, covered above with small, pointed, imbricate scales and regular series of large keeled tubercles in 6 rows; ventral aspect of tail is with a median series of transversely enlarged plates, which except at the base, are almost as broad as the tail. Males are with 4 preanal pores. Enlarged femoral scales are not available. Standard length 52 mm.; tail length 75 mm.

Distribution : Pakistan (Karakal, Bumhoet Valley, Chitral district) (Map-8)

Habits and habitat : It is a rock dwelling, insectivorous species. Nothing is known about its other habits.

Status : Not known, Rare.

15. *Cyrtodactylus consobrinoides* (Annandale 1905)

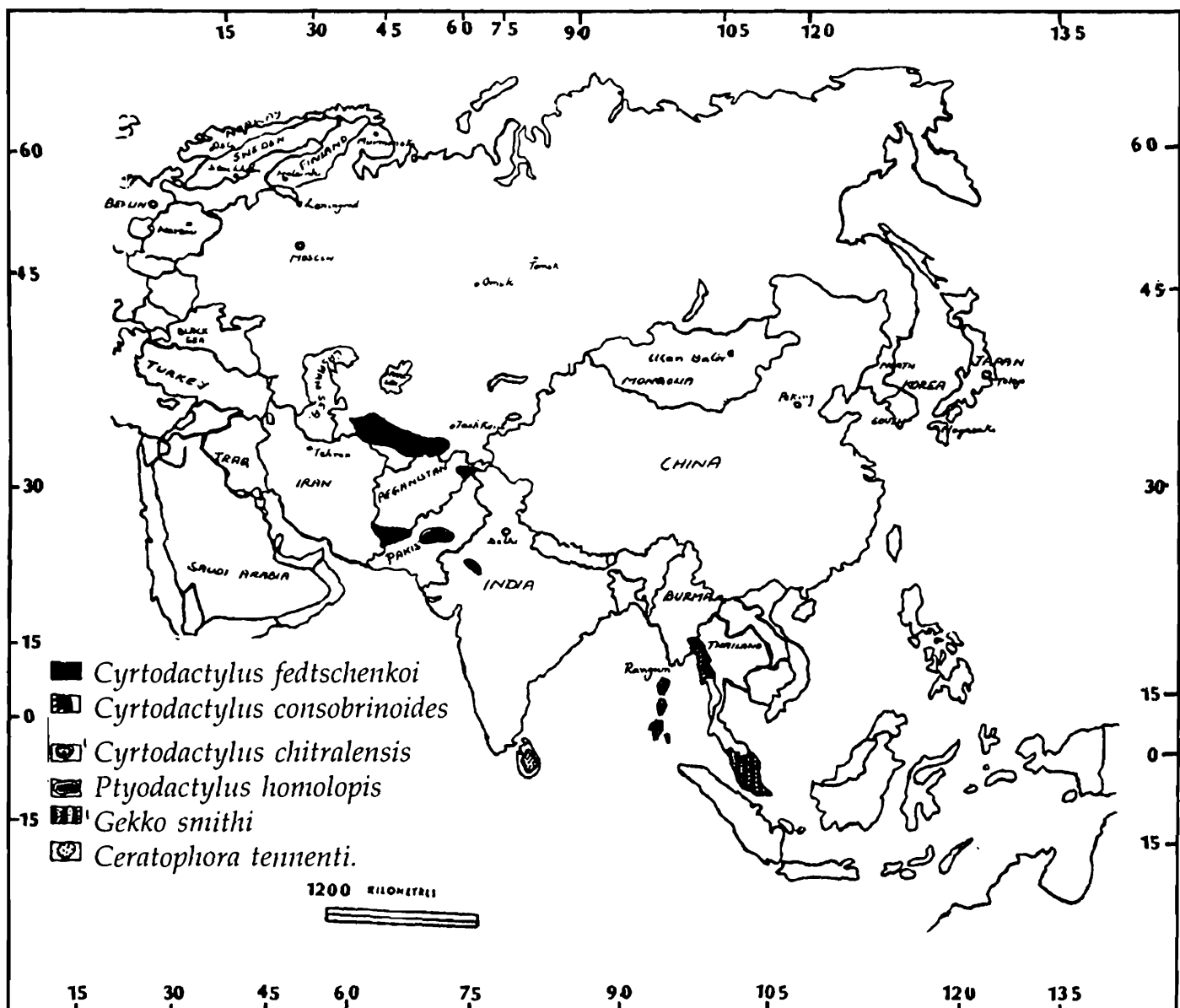
1888. *Gymnodactylus pulchellus*, Boulenger, *Ann. Mus. Civ. Genova*, 25 : p. 475.

1905. *Gymnodactylus consobrinoides* Annandale, *J. Asiat. Soc. Beng.* : p. 82.

1913. *Gymnodactylus consobrinoides* Annandale, *Rec. Ind. Mus.* 9 : p. 324, pl. 16, fig. 1 (type loc. Tavoy dist., Tenasserim).

1935. *Gymnodactylus consobrinoides* Annandale, Smith, *Fauna Brit. Ind.* : p. 47.

This little gecko is light brown and with 6 or 7 narrow dark brown, white edged cross-bars or transverse markings on the dorsum. The cross-bars are narrower than their interspaces; a dark curved mark across the nape reaching up to the eyes; top of the head with brown spots; dorsal aspect of the tail is with alternate light and dark bars; ventrum



Map 8 : Distribution of *Cyrtodactylus fedtschenkoi*, *Cyrtodactylus consobrinoides*, *Cyrtodactylus chitralensis*, *Ptyodactylus homologis*, *Gekko smithi* and *Ceratophora tennentii*.

is light brown. The head is moderately large, covered above with irregular rounded scales. The eyes are prominent. Snout is almost equal to the distance between the eye and the ear-opening. Diameter of the ear-opening is less than half that of the eye. Upper labials 10-11 and lower labials 9-10. Body is moderately depressed, lateral fold is feeble but distinct and with smaller scales; dorsum is with small granular scales, intermixed with larger, rounded, keeled tubercles; belly with 24-40 smaller rounded, imbricate scales across the middle of the body. Dorsal aspect of the limbs with small granular scales, intermixed with larger, rounded, keeled tubercles. Subdigital lamellae well developed, almost as broad as the digit; toes moderately elongate; the hind-limb almost reaches up to axilla. Tail feebly depressed, covered above with small flat scales and rows of enlarged tubercles; underside of tail is with a series of enlarged plate like scales. Males are with 4 preanal pores in an angular series and a continuous series of enlarged femoral scales. Standard length 48 mm.; tail length 62 mm.

Distribution : Burma (Tavoy dist., Tenasserim, Pla-pu west of Mt. Muleyit, and Moulmein)

Habits and habitat : Rock dwelling, insectivorous. Nothing is known about its other habits.

Status : Rare.

16. *Cyrtodactylus variegatus* (Blyth 1859)

1859. *Naultinus variegatus* Blyth, *J. Asiat. Soc. Beng.*, 28 : p. 279. (type loc. mountains of the interior from Moulmein).
1871. *Gymnodactylus variegatus*, Anderson, *Proc. Zool. Soc. London* : p. 161.
1885. *Gymnodactylus variegatus*, Boulenger, *Cat. Liz. Brit. Mus.* : p. 43.
1890. *Gymnodactylus variegatus*, Boulenger, *Fauna Brit. Ind.* : p. 70.
1913. *Gymnodactylus variegatus*, Annandale, *Rec. Ind. Mus.* 9 : p. 326, pl. 16, fig. 2.
1935. *Gymnodactylus variegatus*, Smith, *Fauna Brit. Ind.* : p. 48.

This moderately large gecko according to Blyth is "Grey above, beautifully spotted and marbled with black, set off with subdued white. On the back the markings appear as irregular bands, paler internally, and blackish on their zigzag borders. Head spotted above; a broad dark streak bordered with whitish behind each eye and continued irregularly round the occiput; lower parts whitish, freckled on the tail with black, the terminal third being almost wholly blackish; above, the tail is irregularly banded" The head is moderately large, covered above with irregular rounded scales. The eyes are prominent. Snout is equal to the distance between the eye and the ear-opening. Diameter of the ear-opening is less than half that of the eye. Upper labials 10-11 and lower labials 10. Body is moderately depressed, lateral fold is distinct and with enlarged scales; dorsum is with small granular scales; intermixed with much larger subtriangular tubercles; belly is

with 22 imbricate leaf-like scales, between the lateral folds. Dorsal aspect of limbs with small granular scales, intermixed with much larger subtriangular tubercles. Subdigital lamellae well developed, almost as broad as the digit; toes moderately elongate; the hind-limb reaches to the axilla. Tail feebly depressed, covered above with small flat scales and whorls of enlarged tubercles; ventral aspect of tail is with a median series of enlarged plates. Males are with a continuous series of 32 preanal and femoral pores. Standard length 71 mm.; tail length 95 mm.

Distribution : Burma (Moulmein, Dawna Hills, Amherst district, between Thingannyinaung and Sukli) (Map-5).

Habits and habitat : Mountain dwelling insectivorous species.

Status : Very rare.

17. *Cyrtodactylus frenatus* (Gunther 1864)

1864. *Gymnodactylus frenatus* Gunther, *Rept. Brit. Ind.* p. 113 : pl. 12, fig. 1 (type loc. Ceylon)

1885. *Gymnodactylus frenatus*, Boulenger, *Cat. Liz. Brit. Mus. i* : p. 42.

1890. *Gymnodactylus frenatus*, Boulenger, *Fauna Brit. Ind.* : p. 68.

1928. *Gymnodactylus frenatus*, Henry, *J. Sci. B.* **14** : p. 339.

1932. *Gymnodactylus frenatus*, Deraniyagala, *J. Sci.* **16** : p. 295, pl. 61.

1935. *Gymnodactylus frenatus*, Smith, *Fauna Brit. Ind.* : p. 49.

This large gecko is olive-brown or yellowish-brown above, with 4 or 5 large W-shaped dorsal marks in the young, which become indistinct in the adult. A dark band from each eye meeting a W-shaped mark upon the nape, and continued along the neck to the first mark upon the shoulders; head speckled with dark brown; tail with alternate light and dark bands; ventrum is brown. The head is large and broad, covered above with irregular rounded scales. The eyes are prominent. Snout is longer than the distance between the eye and ear-opening. Diameter of the ear-opening is less than half that of the eye. Upper labials 10-11 and lower labials 8-10. Body is slightly depressed; a lateral fold is present, few of the scales on lateral fold are enlarged; dorsum with small granular scales intermixed with larger rounded tubercles; belly is with rounded imbricate scales, about 35 between the lateral folds. Dorsal aspect of limbs with small granular scales intermixed with larger rounded tubercles. Subdigital lamellae strongly developed, as broad as digit; toes elongate; the hind-limb reaches to the axilla. Tail covered above with small flat scales, without any distinct series of enlarged scales; underside of the tail is with transversely enlarged imbricate plates. Males are with 4 or 6 preanal pores in a wide enlarged series; a group of enlarged preanal and a series of enlarged femoral scales. Standard length 100 mm. tail length 120 mm.

Distribution : Sri Lanka (Map-5).

Habits and habitat : A tree and rock dwelling species. It lays large eggs, 15×17 mm.

Status : Rare.

18. *Cyrtodactylus oldhami* (Theobald 1876)

1876. *Gymnodactylus oldhami*, Theobald, *Cat. Rept. Brit. Ind.* : p. 81 (type loc. Not known)
 1890. *Gymnodactylus oldhami*, Boulenger, *Fauna Brit. Ind.*, : p. 67.
 1913. *Gymnodactylus oldhami*. Annandale, *Rec. Ind. Mus*, 9 : p. 320, pl. 17, fig. 2
 1916. *Gymnodactylus oldhami*, Smith, *J. Nat. Hist. Soc. Siam*, ii : p. 150.
 1935. *Gymnodactylus oldhami*, Smith, *Fauna Brit. Ind.* : p. 50.

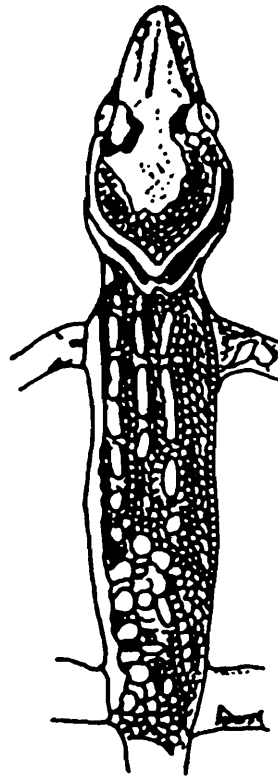


Fig. 29 : *Cyrtodactylus oldhami* (Theobald) : Dorsal Pattern.

This moderately large gecko is brownish, with whitish, elongated or rounded, dark edged spots arranged in four longitudinal lines on the back; a dark curved band across the nape extending to the eyes, edged in front and behind with white; top of head uniform brown; tail with white bars; ventrum is whitish. The head is moderately large, covered above with irregular rounded scales. The eyes are prominent. Snout equal to the distance between the eye and the ear-opening. Diameter of the ear-opening is half that of the eye. Upper labials 12-13 and lower labials 9-11. Body is slightly depressed; lateral fold is indistinct, in certain specimens it is missing; dorsum with small granular scales, intermixed with much larger subtriangular tubercles; belly is with 34-38 rounded imbricate scales across the middle of body between the lateral folds. Dorsal aspect of the limbs with small granular scales, intermixed with much larger subtriangular tubercles. Subdigital lamellae is moderately elongated; the hind-limb reaches to the axilla or not so far. Tail is slightly depressed, covered above with small flat scales and paired series of enlarged tubercles;

underside of the tail is with a median row of transversely enlarged plates, excluding the basal portion. Males are with an angular series of 1-4 preanal pores and an enlarged series of femoral scales. Standard length 65 mm., tail length 75 mm.

Distribution : Burma (Tavoy district, Tenasserim), Thailand (Patiyu district and Nakon Sritamarat Mts.) (Map-2).

Habits and habitat : Rock dwelling, insectivorous species.

Status : Rare.

19. *Cyrtodactylus peguensis* (Boulenger 1893)

1893. *Gymnodactylus peguensis* Boulenger, *Ann. Mus. Civ. Genova*, (2) *xiii* : p. 314, pl. 7, fig. 2 (type loc. Palon, Pegu).

1921. *Gymnodactylus peguensis*, Smith, *Proc. Zool. Soc.* : p. 427, text fig. 1, a.

1935. *Gymnodactylus peguensis*, Smith, *Fauna Brit. Ind.* : p. 50.

This large gecko is light brown in dorsal colouration; back is with a series of paired dark brown black-edged vertebral spots, which generally confluent transversely; flanks are with less regularly placed white-edged darker spots; a dark curved mark is present on the nape, which extends up to the eyes, sometimes this curved mark on nape is broken up into spots; top of head with brown spots; tail is with dark bands; ventrum is white. The head is large but comparatively less broad, covered above with flat granules. The eyes are prominent. Snout longer than the distance between the eye and the ear-opening. Diameter of the ear-opening is almost half that of the eye. Upper labials 10-12 and lower labials 9-10. Body is moderately depressed, lateral fold is feebly distinct, sometimes it is altogether absent; dorsum with small granular scales, intermixed with much larger conical or subtrihedral tubercles; belly is with 34-38 rounded imbricate scales across the middle of the body. Dorsal aspect of the limbs with small granular scales, intermixed with much larger subtrihedral tubercles. Subdigital lamellae moderately developed, less than half or equal to the breadth of the digit; toes elongate; the hind-limb not reaching up to the axilla. Tail covered above with small flat scales; underside of the tail is with a median series of narrow transverse plates excluding the basal portion. Males are with an angular series of 7 or 8 preanal pores and a series of slightly enlarged femoral scales. Standard length 80 mm., tail length 95 mm.

Distribution : Burma (Pegu). Thailand (Patelung) (Map-4).

Habits and habitat : A mountain dwelling insectivorous species available at low altitude.

Status : Common.

20. *Cyrtodactylus khasiensis* (Jerdon 1870)

1870. *Pentactylus khasiensis* Jerdon. *P. Asiat, Soc. Beng.* : p. 75 (type loc. Khasi Hills, Assam).

1871. *Gymnodactylus khasiensis*, Anderson, *Proc. Zool. Soc.* : p. 162.

1926. *Gymnodactylus khasiensis*, Hora, *Rec. Ind. Mus.* 28 : p. 189. pl. 7, figs. 4-6.

1935. *Gymnodactylus khasiensis*, Smith, *Fauna Brit. Ind.* : p. 52.

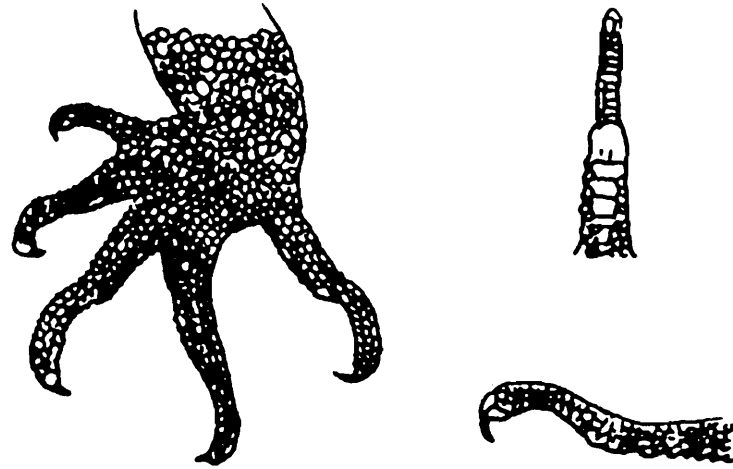


Fig. 30 : *Cyrtodactylus khasiensis* : A. Lower view of foot; B. Lower view of toe; C. Side view of toe.

This large rock gecko is greyish-brown above with almost regularly arranged dark-brown spots; a faint curved streak extends to the eyes from the nape; head is with brown spots above; tail is banded with brown; belly is white. The head is moderately large and depressed. The eyes are prominent. Upper labials 10-12 and lower labials 10-12. Body is depressed, lateral fold is distinct and with larger scales; dorsal scales on body and limbs are small and granular intermixed with much larger rounded keeled tubercles; belly is with 30-40 rows of rounded imbricate scales across the middle of the body. Subdigital lamellae well developed, nearly as broad as the digit; the hind-limb reaches to the axilla. Tail above with, small flat scales; upperside of the basal portion of tail is having enlarged tubercles; underside of tail is with a median row of enlarged scales. Males are with an angular series of 8-14 preanal pores; the species is devoid of enlarged femoral scales and femoral pores. Standard length 85 mm., tail length 100 mm.

Distribution : India : Hills of Meghalaya, Assam, Arunachal Pradesh and Darjeeling district (Map-9).

Elsewhere : Hills of Northern Burma.

Habits and habitat : It is a rock dwelling, and insectivorous species. It is quite pugnacious and makes attempt to bite even on a gentle handling and makes a snarling voice.

Status : Plentiful, most common.

21. *Cyrtodactylus gubernatoris* (Annandale 1913)

1913. *Gymnodactylus gubernatoris*, Annandale, *Rec. Ind. Mus.* 9 : p. 310, pl. 17, fig. 3 (type loc. Darjeeling dist., 1000-3000 feet).

1935. *Gymnodactylus gubernatoris*, Smith, *Fauna Brit. Ind.* : p. 54.

This is comparatively a smaller light-brown gecko with numerous darker spots on the dorsum; tail is with alternate light and darker brown bands; belly is whitish. The head is comparatively larger to the body size. The eyes are prominent. Upper labials 10-12 and the same is the number of lower labials. Body is depressed, lateral fold is distinct and with enlarged scales; dorsal scales on body and limbs are minute, granular and are intermixed with larger rounded keeled tubercles; belly is with 33 rows of rounded imbricate scales across the middle of the body. Subdigital lamellae is well developed, nearly as broad as the digit; the hind-limb does not reach to the axilla. Tail above with, small flat granules; upper side of the basal portion of tail is having few enlarged tubercles; under side of tail is with a median series of slightly enlarged scales. Males are with an angular series of 7 preanal pores; 6 femoral pores are also present on either side; preanal and femoral pores are separated by small scales. Standard length 53 mm.; tail length 65 mm.

Distribution : India : Darjeeling district of West Bengal (Map-3).

Habits and habitat : It is a mountain dwelling insectivorous species found up to 350 metres in Eastern Himalayas.

Status : Very rare.

22. *Cyrtodactylus rubidus* (Blyth 1860)

1860. *Puellula rubida* Blyth, *J. Asiat. Soc. Beng.* 29 : p. 109 (type loc. Andaman Is.)

1870. *Cyrtodactylus rubidus*, Stoliczka, *J. Asiat. Soc. Beng.* 39 : p. 165.

1890. *Gymnodactylus rubidus*, Boulenger, *Fauna Brit. Ind.* : p. 69.

1935. *Gymnodactylus rubidus*, Smith, *Fauna Brit. Ind.*, : p. 54.

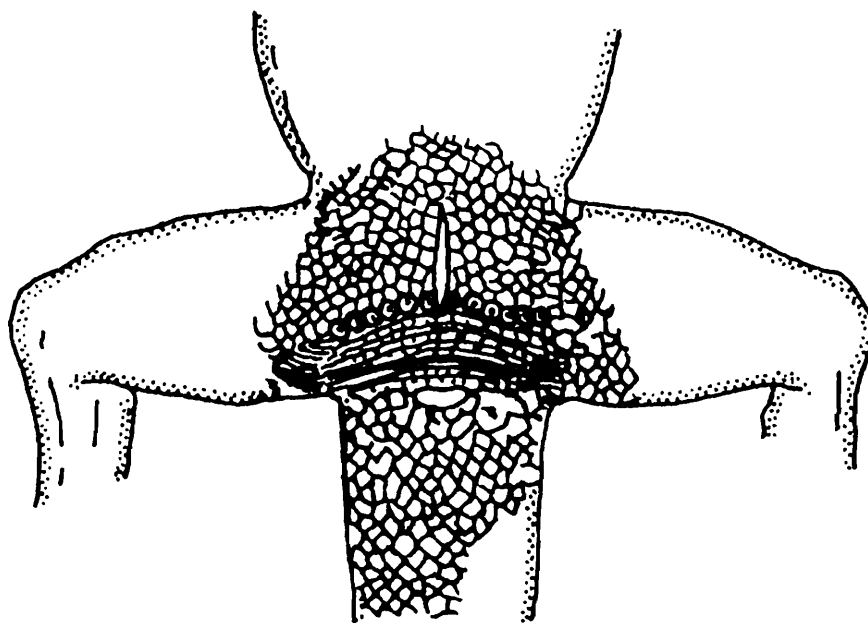


Fig. 31 : *Cyrtodactylus rubidus* : Preanal groove.

This is moderately large. greyish gecko has a reddish tinge. The head is moderately large and depressed. The eyes are large. Upper labials 10-12 and same is the number for the lower ones. Body is depressed, lateral fold is distinct and with prominent scales; dorsal scales on body and limbs are small and granular intermixed with much larger rounded keeled tubercles; belly is with 30-40 rows of imbricate scales across the middle of the body. Subdigital lamellae well developed, almost as broad as the digit; the hind limb reaches to the axilla. Tail above with, small flat scales; upper side of the basal part of tail is having enlarged tubercles; under side of tail is with a median row of enlarged scales. Males are having a prominent longitudinal preanal groove which contains usually 6 pores; in the females the preanal groove is less distinct. Standard length 75 mm; tail length 90 mm.

Distribution : India : Andaman & Great Nicobar Islands (Map-3).

Habits and habitat : It is a arboreal and terrestrial species, available in abundance in the dense forested areas of Andaman Islands. The species is most agile and exhibits marked swiftness while capturing insect prey. Tail is held stiffly up while running.

Status : A common forest species.

23. *Cyrtodactylus triedrus* (Gunther 1864)

1864. *Gymnodactylus triedrus* Gunther, *Rept. Brit. Ind.* : p. 113 (type loc. Ceylon)
 1867. *Geckoella punctata* Gray, *Proc. Zool. Soc.* : p. 99, pl. 9 (type loc. Ceylon)
 1932. *Gymnodactylus triedrus*, Deraniyagala, *Ceylon J. Sci.* : B. 16, p. 295, pl. 61.
 1935. *Gymnodactylus triedrus*, Smith, *Fauna Brit. Ind.* : p. 58.

This moderately large gecko is having small white spots on brown dorsum. These spots are having dark brown margins; ventrum is light brown. The head is moderately large, covered above with minute scales. The eyes are prominent. Snout almost equal to the distance between the eye and the ear-opening. Diameter of the ear-opening is one-third that of the eye. Body is slightly depressed, lateral fold is not present; dorsum with small granular scales, intermixed with much larger rounded, keeled, or subtriangular tubercles; belly is with 35 rounded imbricate scales across the middle of body. Dorsal aspect of limbs with small granular scales, intermixed with much larger rounded, keeled scales. Subdigital lamellae moderately developed, about half as broad as the digit; toes short; the hind-limb not reaching up to axilla. Tail shorter than the head and body, slightly swollen at the base, tapering to a point, covered above with small, rounded, imbricate scales; underside of the tail is with much larger rounded imbricate scales. Males are with 3 or 4 preanal pores and enlarged femoral scales are not present. Standard length 62 mm.; tail length 56 mm.

Distribution : Sri Lanka (Map 4).

Habits and habitat : It is a rock dwelling, forest species and lives on insects and other small arthropods.

Status : Rare.

24. *Cyrtodactylus nebulosus* (Beddome 1870)

1870. *Gymnodactylus nebulosus*, Beddome, *Madras Month. J. Med. Sc.* ii : p. 174 (type loc. Golconda Hills near Vizagapatam)

1935. *Gymnodactylus nebulosus*, Smith, *Fauna Brit. Ind.* : p. 56.

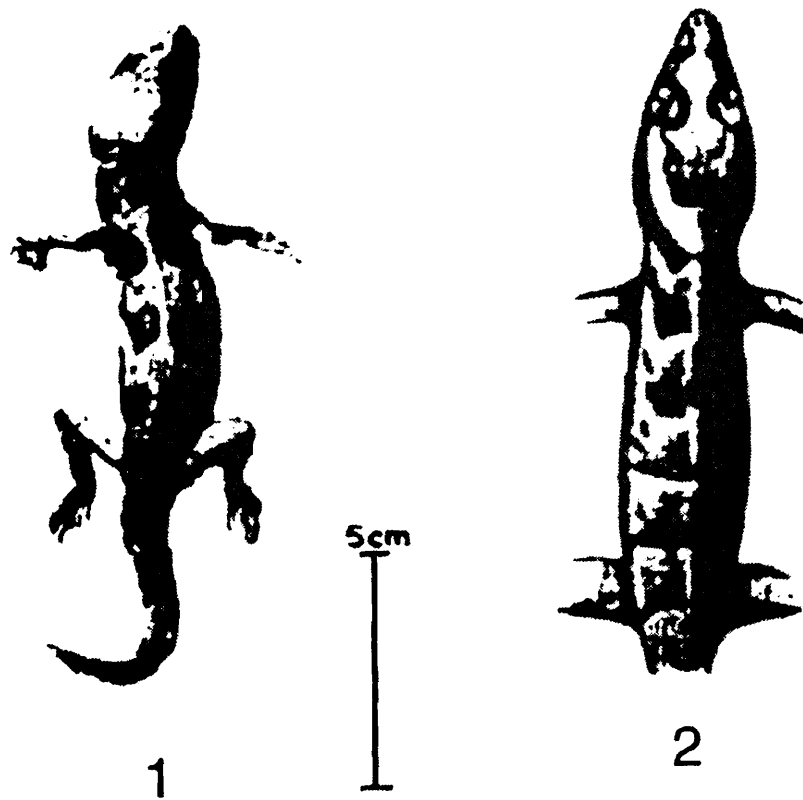


Plate 1-2 : 1. *Cyrtodactylus nebulosus* (Beddome); 2. *Cyrtodactylus nebulosus* (Beddome)

This is a small gecko with a greyish dorsal colouration, with dark brown, paired, transverse, black-edged spots throughout the body and tail; upper part of head, lips and throat spotted with brown; ventrum is brown. The eyes are large. The head is moderately large and depressed, covered above with small rounded scales. Upper labials 10-12 and same is the number for the lower labials. Body is slightly depressed; lateral fold is not present; dorsal scales on back are small, granular intermixed with numerous larger, rounded, keeled tubercles, belly is with 35-40 rounded imbricate scales across the middle of the body. Toes are considerably short; subdigital lamellae not more than half the breadth of the digit; the hind-limbs does not reach to the axilla. Tail is shorter than the head and body, swollen at the base and tapering to a point; covered above with small, rounded, imbricate scales; under side of tail is having large round, imbricate scales. Males are devoid of preanal pores, scales or enlarged scales. Standard length 43-52 mm.; tail length 32-42 mm.

Distribution : India : Andhra Pradesh : (Golconda Hills, Gorge Hills, Russelconda and Nelamba). Keral : Nilambur near Calicut. Madhya Pradesh; Kisli village in Mandla district, Mukhi. Tamilnadu : Saidapet district (Map-3).

Habits and habitat : The species is terrestrial. From Golconda Hills and Kisli these Geckos were collected under stones while from Mukhi from the dry bed of Banjar River.

Status : Rare.

25. *Cyrtodactylus collegalensis* (Beddome 1870)

1870. *Gymnodactylus collegalensis* beddome, *Madras Month. J, Med. Sci.* ii : p. 173 (type loc. Bolarangams near Yelandur, State of Mysore).
 1870. *Gymnodactylus speciosus* Beddome, *Madras Month, J. Med. Sci.* ii : p. 173. (type loc. Erode).
 1872. *Gymnodactylus frenatus* Gunther, *Ann. Mag. Nat. Hist.* (4) ix : p. 86.
 1885. *Gymnodactylus nebulosus* (in part), Boulenger, *Cat. Liz. Brit. Mus.* i : p. 34, pl. 4, fig. 1 (*collegalensis*), fig. 1a (*speciosus*).
 1932. *Gymnodactylus nebulosus*, Deraniyagala, *Ceylon J. Sci.* : B, 16, p. 293, pl. 59.
 1935. *Gymnodactylus collegalensis*, Smith, *Fauna Brit. Ind.* : p. 56.

This small gecko has got a remarkable similarity with *Cyrtodactylus nebulosus* in scalation but this species is devoid of enlarged dorsal tubercles on the back. Its colour pattern is also different and two main colour forms are recognised. In Beddome's *speciosus* form, dorsum is having four dark brown, black-margined cross bands, one across the nape reaching up to the eyes; one just behind the shoulders; one at the middle of back and a

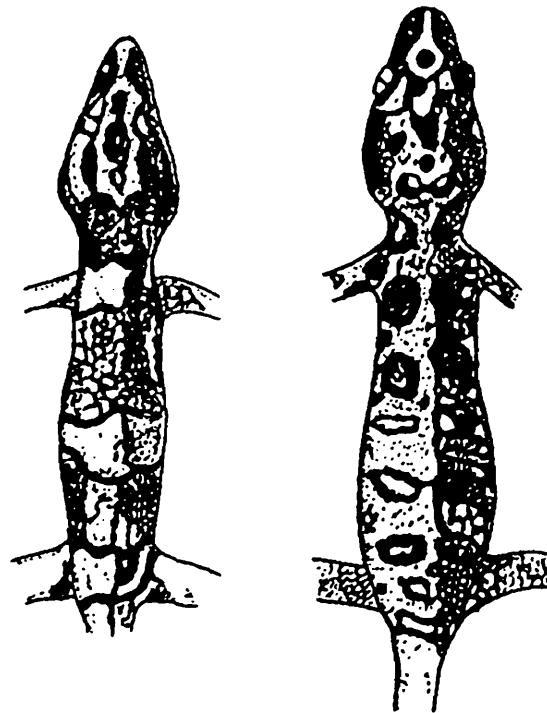
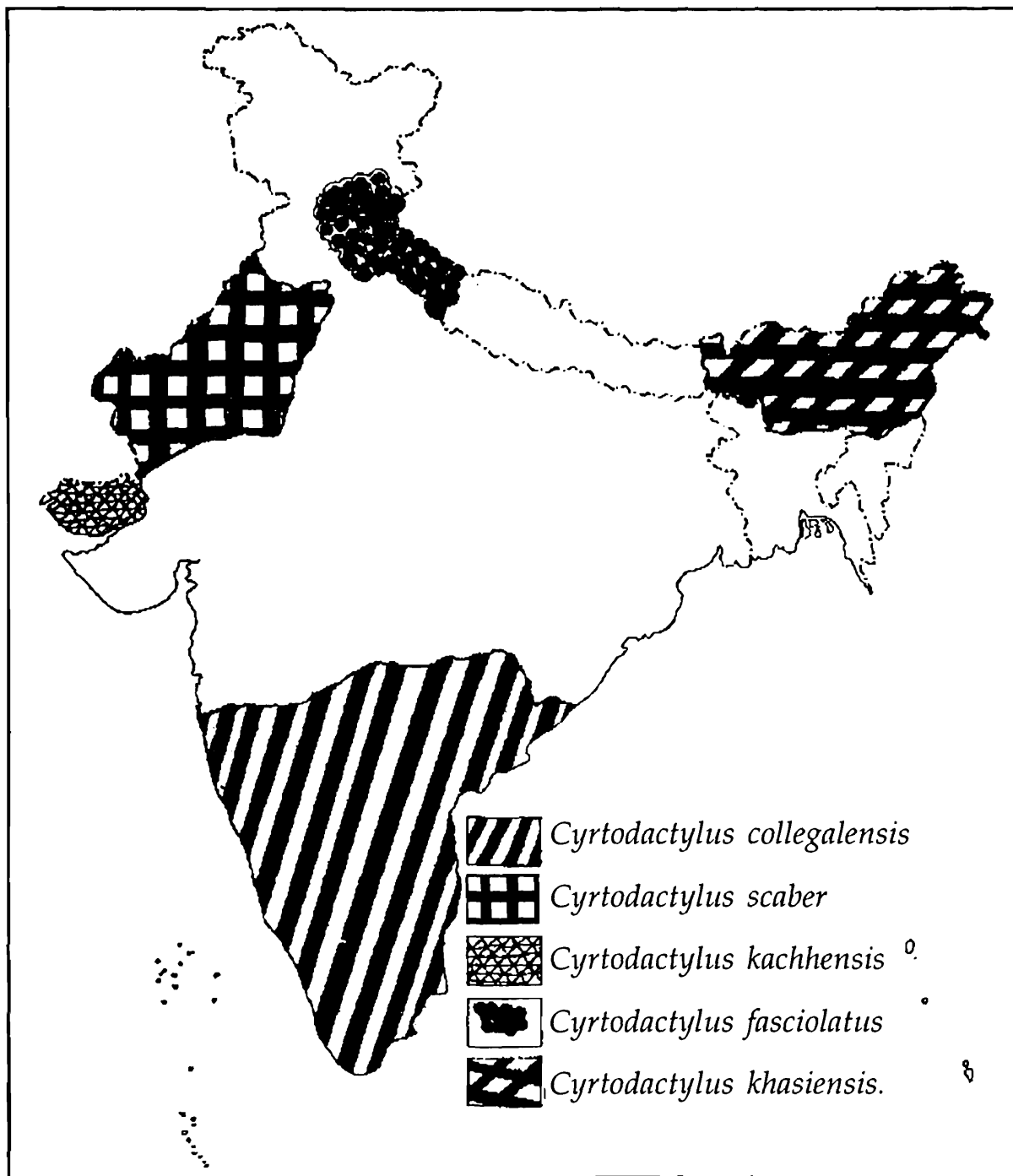


Fig. 32 : *Cyrtodactylus collegalensis* (Beddome) : Dorsal colour patterns.

fourth at the base of the tail. Dorsal part of the head, lips and throat profusely spotted with brown; belly is light brown. These bands are broader than the interspaces between them. In *collegalensis* dorsum is light brown to grey, with a series of large, rounded black-margined spots arranged in pairs. In many specimens much smaller irregularly arranged brown spots are also present on dorsal aspect of back and tail. Head is like *speciosus* colour form. Standard length 46-52 mm.; tail length 42-46 mm.

Distribution : India : Hilly districts of Southern India (Map-9).

Elsewhere : Sri Lanka.



Map 9 : Distribution of *Cyrtodactylus collegalensis*, *Cyrtodactylus scaber*, *Cyrtodactylus kachhensis*, *Cyrtodactylus fasciolatus* and *Cyrtodactylus khasiensis*.

Habits and habitat : The species is arboreal, insectivorous found under the bark of dead trees. It is available in forests at low elevations.

Status : A forest species which is becoming vulnerable on account of habitat destruction as the forests are being cut at a fast rate at low elevations.

26. *Cyrtodactylus stoliczkai* (Steindachner 1869)

1869. *Gymnodactylus stoliczkai* Steindachner, *Reise Novara, Rept.* : p. 15, pl. 2 (type loc. Karoo Valley north of Dras, Kashmir).
 1872. *Gymnodactylus yarkandensis* Anderson, *Proc. Zool. Soc.* : p. 381, fig. (type loc. Ladak).
 1922. *Gymnodactylus walli* Ingoldby, *J. Bombay Nat. Hist. Soc.* 28 : p. 1051 (type loc. Chitral)
 1935. *Gymnodactylus stoliczkai*, Smith, *Fauna Brit. Ind.* : p. 57.
 1966. *Cyrtodactylus stoliczkai*, Minton, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 79.

This is a small grey nocturnal, gecko with a series of eight dark brown white edged wavy or irregular cross-bars on the back; flanks and upper portion of head, tail and limbs are profusely speckled with black; labials are with alternate black and white bars and belly is dirty white or pale yellow. The head is moderately large, snout is somewhat depressed, covered above with small rounded tubercles. Ear opening is oval almost half the size of pupil. Eyes are large with vertically elliptical pupil. Upper labials 9-11 and lower labials 8-9; postmentals 2. Body is depressed, flattened dorsoventrally and is with a feeble, indistinct lateral fold. Body and limbs covered above with small, rounded subimbricate or juxtaposed scales intermixed with numerous larger rounded, feebly keeled tubercles; belly is with about 30-39 rows of small, rounded, subimbricate scales across the mid-body. The hind-limb reaches to the axilla; digits shorter and thicker; subdigital lamellae well developed, almost as broad as the digit. Tail shorter than head and body, depressed, swollen at the base, tapers to a point, covered with small flat scales, largest below and with a series of enlarged tubercles in rows of 3-4 on each side above, in adults the tail may be segmented. Males are devoid of preanal or femoral pores. Standard length 39-55 mm., tail length 37-50 mm.

Distribution : India : Ladakh & Kashmir.

Elsewhere : Pakistan (North West Frontier Provinces and Chitral) (Map-3).

Habits and habitat : The species is most agile, and pugnaceous, prefers to live under stones, crevices, rocks up to 300 metres. Enters the houses, hides during the day at suitable places and comes out during the night for insect food.

Status : Very common.

27. *Cyrtodactylus lawderanus* (Stoliczka 1871)

1871. *Gymnodactylus lawderanus* Stoliczka, *P. Asiat. Soc. Beng.* : p. 194.
 1913. *Alsophylax himalayensis* Annandale, *Rec. Ind. Mus.* 9 : p. 305, pl. 15 (type loc. Dharampur, Simla dist.).
 1935. *Gymnodactylus lawderanus*, Smith *Fauna Brit. Ind.* : p. 58.

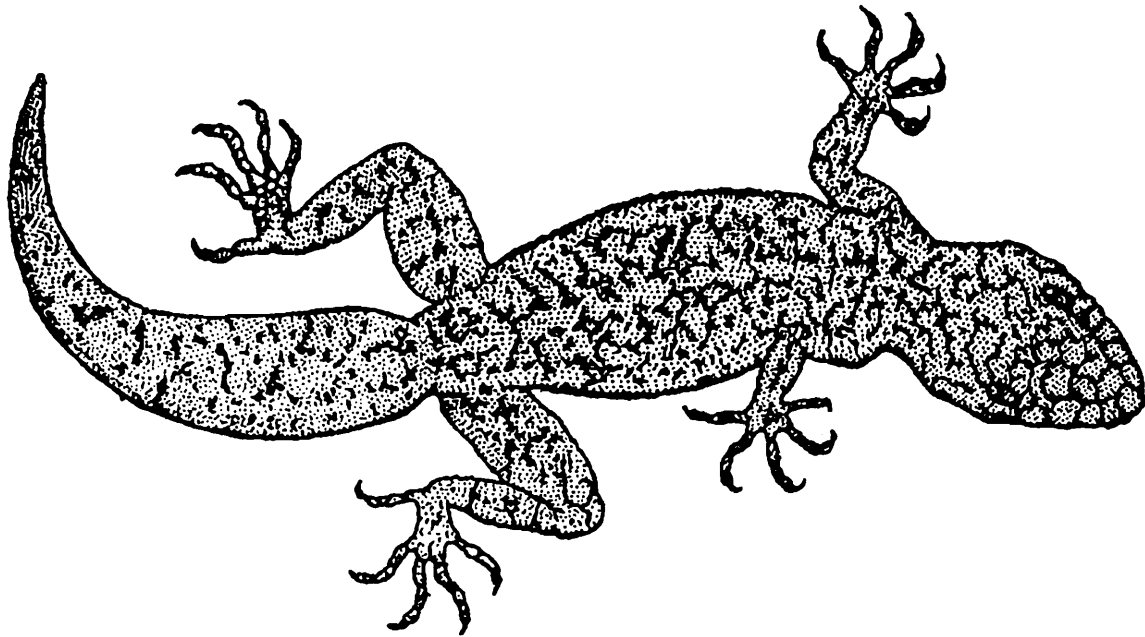


Fig. 33 : *Cyrtodactylus lawderanus* : Dorsal view.

This is a small nocturnal gecko, whose colouration is almost like that of *C. stoliczkai*, colour pattern is more broken up; cross-bands become merged and general colouration of dorsum becomes somewhat reticulated; flanks, upper portion of head, tail and limbs are lavishly speckled with fine black dots; black bars on labials are broken up into fine small spots and belly is pale yellow. The head is moderately large with rounded snout, depressed, covered above with smaller granules. Ear opening is oval, half the size of pupil. Eyes are large with vertically elliptical pupil. Upper labials 9-11 and lower labials 8-9; postmentals 2. Body is depressed, flattened dorsoventrally, lateral fold if present is most indistinct. Body and limbs covered above with small, rounded subimbricate or juxtaposed scales intermixed with few slightly larger, rounded, feebly keeled or smooth tubercles; which are not so clearly differentiated from the general smaller scales. The smaller scales on the back are most variable in size and shape; belly is with 30-36 rows of small, rounded subimbricate scales across the mid-body. The hind-limb reaches to the axilla; digits are moderately long and slender; subdigital lamellae narrower. Tail shorter than the head and body, unsegmented, more cylindrical, less broad and less swollen at base and not so tapering; upper portion is covered with small flat granules and with a series of large tubercles in 2-3 rows on each side. Males are with 4-5 preanal pores arranged in an angular series. Standard length 40-55 mm., tail length 38-50 mm.

Distribution : India : Western Himalayas (Simla district, Kulu Valley, Almora, Garhwal, Ambala)(Map-3).

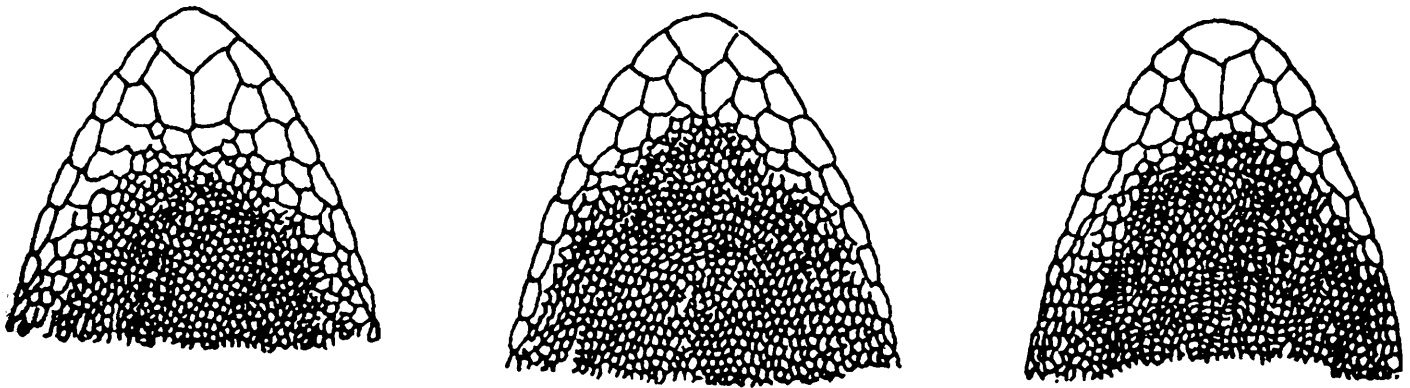
Habits and habitat : The species is not so agile, nocturnal insectivorous and rock dwelling.

Status : Very common.

28. *Cyrtodactylus dekkanensis* (Gunther 1864)

1864. *Gymnodactylus dekkanensis* Gunther, *Rept. Brit. Ind.* : p. 115, pl. 12 fig. E (type loc. Deccan, Bombay Presidency).

1935. *Gymnodactylus dekkanensis*, Smith, *Fauna Brit. Ind.* : p. 59.



34

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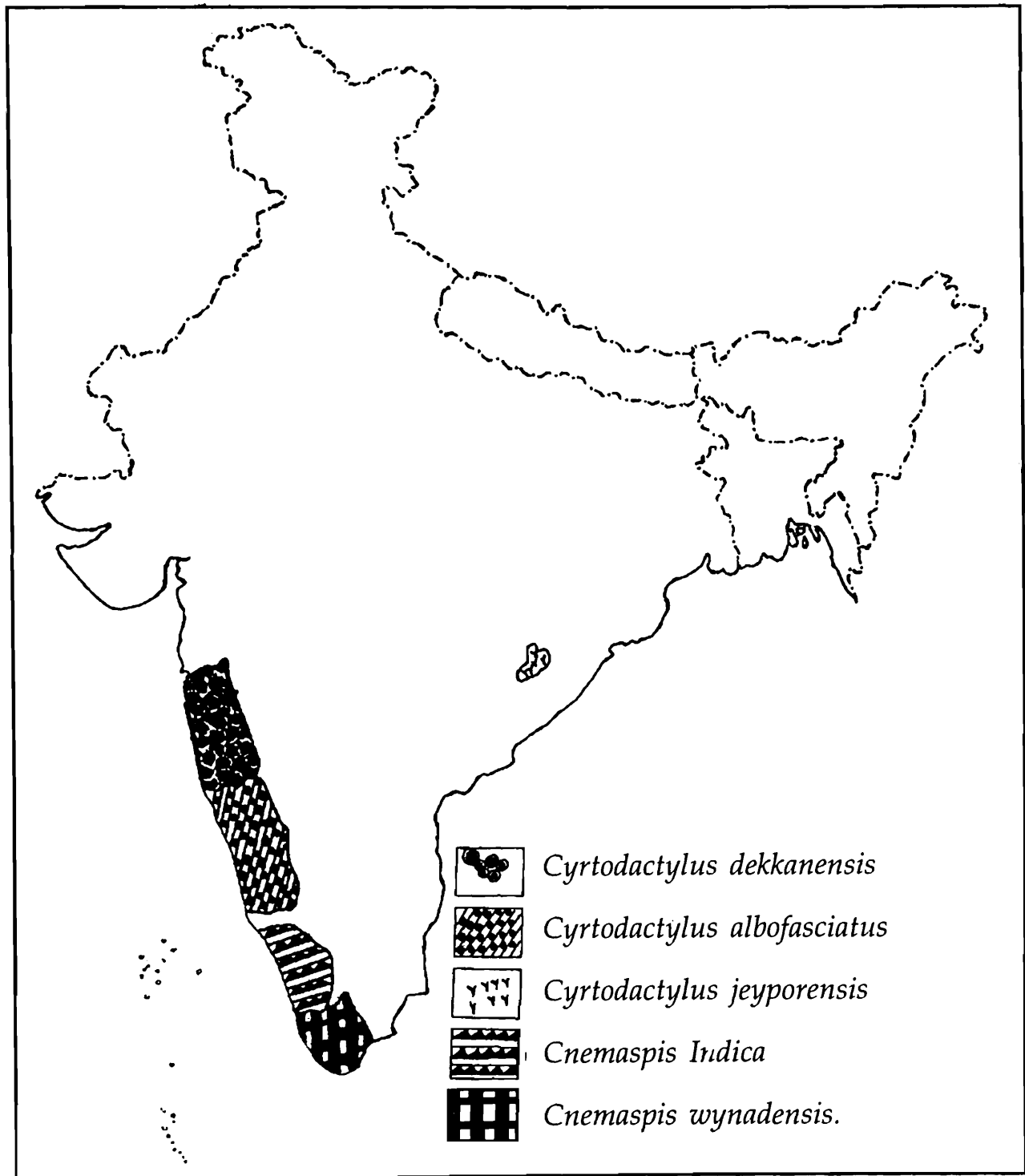


Fig. 34 : Chin shields : A. *Cyrtodactylus dekkanensis* B & C. *Cyrtodactylus albofasciatus*.

Plate 3 : *Cyrtodactylus albofasciatus* (Boulenger); *Cyrtodactylus dekkanensis* (Gunther)

This is a moderately large gecko is reddish-brown above, with narrow, white, brown-edged, transverse bars upon the back and tail; a curved black streak starts from the nape and reaches up to eyes; ventrum is white. The head is large in comparison to the body with a prominent snout, covered above with small rounded scales which are largest and conical on the nape. Upper labials 10-12 and lower labials 9-11, which are separated from the scales of gular region by a series of larger scales. Body is depressed, flattened dorsoventrally; lateral fold is not present. Dorsum with larger somewhat quadrangular,

juxtaposed scales forming regular transverse series, few much smaller scales are present at places; belly is with 30-33 rows of much smaller rounded imbricate scales across the mid-body; belly scales are much smaller than the dorsal scales. The hind-limb reaches to the axilla; subdigital lamellae small, the median series is almost equal to the adjacent tubercles. Tail feebly swollen at the base and tapers to a point, covered above with transverse series of small, squarish, juxtaposed scales and rows of enlarged tubercles;



Map 10 : Distribution of *Cyrtodactylus dekkanensis*, *Cyrtodactylus albofasciatus*, *Cyrtodactylus jeyporensis*, *Cnemaspis Indica* and *Cnemaspis wynadensis*.

ventral aspect of tail with irregular, larger scales. Males are devoid of preanal or femoral pores; preanal and series of femoral scales are enlarged. Standard length 47-85 mm.; tail length 34-80 mm.

Distribution : India : Western Ghats (Halvak, Koyana Valley; Panchgani; Matheran and Vihar Lake near Bombay) (Map 10)

Habits and habitat : Terrestrial, insectivorous and nocturnal.

Status : Rare.

29. *Cyrtodactylus albofasciatus* (Boulenger 1885)

(Figs. 34 & 35, plate 3, Map 10)

1885. *Gymnodactylus albofasciatus* Boulenger, *Cat. Liz. Brit. Mus. i* : p. 37, pl. 4, fig. 3 (type loc. S. Kanara).

1935. *Gymnodactylus albofasciatus*, Smith, *Fauna Brit. Ind.* : p. 60.

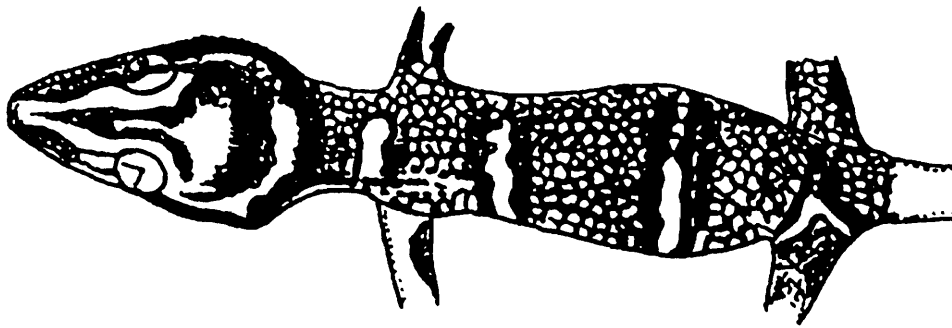


Fig. 35 : *Cyrtodactylus albofasciatus* (Boulenger) : Dorsal pattern.

This is a moderately large gecko with brilliant colouration, with alternate black and deep yellow transverse bars all over the dorsum; a curved black streak emerges from the nape and reaches up to eyes; belly is white. The head is slightly larger in comparison to the body, with a prominent acute snout; the upper head scales are small, rounded and intermixed with larger ones at the nape. Upper labials 10-12 and lower labials 9-11. Body is depressed, flattened dorsoventrally; lateral fold is not present. Dorsum with less uniform scales and is having a mixture of small irregular scales and numerous large, rounded subtriangular tubercles; belly is with 30-33 rows of feebly keeled scales across the mid-body. The hind-limb reaches to the axilla; subdigital lamellae is larger and the median series is broader than the adjacent scales. Tail slightly swollen at the base and tapers to a point, covered above with transverse series of small, squarish, juxtaposed scales and rows of enlarged tubercles; ventral aspect of tail with irregular and slightly large scales. Males are devoid of preanal or femoral pores; preanal region with a group of enlarged scales; a series of slightly enlarged femoral scales. Standard length 49-63 mm.; tail length 38-57 mm.

Distribution : India : Karnataka (Karwar, South Kanara and Castle Rock), Goa (Mollem) (Map 10).

Habits and habitat : Most secretive forest species, nocturnal, hides under stones and wooden logs during day time. Makes a croaking sound even on a gentle handling.

Status : Rare.

30. *Cyrtodactylus jeyporensis* (Beddome 1877)
(Map-10)

1877. *Gymnodactylus jeyporensis* Beddome, *Proc. Zool. Soc. London* : p. 685 (type loc. Patinghe Hill, Jeypore).

1885. *Gymnodactylus jeyporensis*, Boulenger, *Cat. Liz. Brit. Mus. i* : p. 36, pl. 4, fig. 2.

1935. *Gymnodactylus jeyporensis*, Smith, *Fauna Brit. Ind.* : p. 60.

This is a small gecko of light grey dorsal colour and with large paired reddish-brown, black-edged markings down the middle of the back; flanks and upper surface of the tail spotted with black; a curved streak on the nape; head above with brown spots; belly is white. The head is moderately large, covered above with large, rounded scales which are largest on the occiput. Upper labials 8 or 9 and lower labials 7 which are separated by the small gular scales by 2 or 3 rows of enlarged scales. Body is depressed, flattened dorsoventrally; lateral fold is not present. Dorsum with large, squarish, juxtaposed scales arranged in regular transverse series; these scales on the back are much larger than the belly scales; belly is with 27 rows of imbricate, rounded scales across the mid-body; scales on dorsal aspect of limbs are smaller than those on the back. The hind-limb reaches to the axilla; toes short, subdigital lamellae moderately developed and is about half the breadth of the digit. Tail shorter than the head and body; slightly swollen at the base, tapering to a point; upper aspect of tail is having squarish scales while the under side is provided with moderately large, rounded subimbricate scales. Males are devoid of preanal or femoral pores and enlarged scales in preanal or femoral region. Standard length, 53 mm.; tail length 40 mm.

Distribution : India : Orissa (Patangi Hill, near Jeypore) (Map 10)

Habits and habitat : It is a forest species inhabiting rocks up the altitude of 500 metres.

Status : Rare.

31. *Cyrtodactylus madarensis* (Sharma 1980)
(Map-6)

1980. *Cyrtodactylus madarensis* Sharma, *Bull. Zool. Surv. India*. 3 (1 & 2) : pp. 111-112 (type loc. Rocky area near Madar T. B. Sanatorium ca 5 km. N.W. of Ajmer, Rajasthan).

This is a small luminous gecko, brownish-black above, with narrow white transverse bars upon the back and tail which meet each other laterally, thus enclosing rectangular

black spots or bars; a curved white mark upon the nape extending up to the top of snout, below eyes; a white irregular spot about the shoulders; white oblique streaks above the eyes; white irregular spots on the head; whitish below. The head is moderately large; covered above with minute rounded scales intermixed with rounded tubercles; snout with pentagonal or hexagonal scales, intermixed with small rounded scales and are largest on the anterior most portion. Upper labials 9 and lower labials 10. Body is depressed, flattened dorsoventrally; lateral fold is feebly developed but distinct. Dorsum with small granular scales intermixed with large subtrihedral tubercles; belly is with rounded imbricate scales. 30 across the middle of body. The hind-limb extends to the axilla; toes short; subdigital lamellae well developed, as broad as the digit. Tail shorter than the head and body, cylindrical, segmented, not swollen at the base, tapering to a point, covered above with small trihedral tubercles; underside with a median series of enlarged plates. Males are with a continuous series of 23-36 preano-femoral pores. Standard length 50-mm.; tail length 36 mm.

Distribution : India : Rajasthan (Rocky area near Madar T.B. Sanitorium, Ajmer) (Map 6).

Habits and habitat : While surveying the Madar foot hills near Ajmer (Rajasthan) in August 1973 during middle of night we came across this peculiar geckonid on the uneven, barren, stony terrain with sparse xerophytic and other vegetation. The lizard was shedding bright light in darkness from its body while moving slowly towards a bush. The mode of progression of the Gecko was so slow that it was easily captured and made a feeble attempt to escape. The gecko was not crawling but slowly moving like a chamaeleon by keeping all the limbs stretched straight, thus keeping its body sufficiently raised from the ground. The white bands and spots on the dorsum of lizard were glowing constantly like a series of candles in darkness.

Status : Rare.

Genus 5. *Agamura* Blanford 1874

1874. *Agamura* Blanford, *Ann. Mag. Nat. Hist.* (4) viii : p. 455.

1876. *Agamura* Blanford, *Zool. E. Persia* : p. 355 (type *persica*).

1890. *Agamura* Blanford, Boulenger, *Fauna Brit. Ind.* : p. 71.

1935. *Agamura* Blanford, Smith, *Fauna Brit. Ind.* : p. 61.

1966. *Agamura* Blanford, Minton, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 80.

This genus comprises 3 species of mainly nocturnal lizards inhabiting the rocky areas in the deserts of Pakistan (Baluchistan) and Iran. The characters of the genus are : Limbs are very long, slender, with slender digits, clawed, cylindrical at the base, underside with a series of transverse plates, the distal phalanges are slightly compressed and make an angle with the basal portion of the digits, the claw is between the two enlarged scales; dorsum is with small granule like scales, intermixed with larger keeled tubercles. Tail is

cylindrical and tapers abruptly posterior to the vent, it reduces abruptly in size after the basal portion, not fragile and not reproduced if broken. Pupil is vertical. Males with or without preanal pores.

Key to the species of genus Agamura

Postmental shields are not present; tail blunt at the tip; males with 1-2 preanal pores (may be missing); devoid of enlarged femoral scales..... *Agamura persica*

Postmental shields are present; posterior pair is not well developed, small and both the shields of the pair are not in contact; tail blunt at the tip; males with 4 preanal pores; enlarged femoral scales are present but not in a regular series. *Agamura agamuroides*

Postmental shields are well developed; tail is pointed at the tip; males with 5-6 preanal pores; a series of 9-12 greatly enlarged femoral scales are present. *Agamura femoralis*

32. *Agamura persica* (Dumeril 1876)

(Fig-36, Map-13)

1855. *Gymnodactylus persicus* Dumeril, *Arch. Mus. Hist. Nat. Paris*, 8 : p. 481 (type loc. Persia).
 1874. *Agamura cruralis* Blanford, *Ann. Mag. Nat. Hist.* (4) xiii : p. 455 (type loc. Bahu Kalat and Askan, Baluchistan).
 1876. *Agamura persica*, Blanford, *Zool. E. Persia* : p. 358, pl. 23, fig. 4 a, b.
 1935. *Agamura persica*, Smith, *Fauna Brit, Ind.* : p. 61.
 1966. *Agamura persica*, Minton, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 80.

This moderately large gecko comparatively largest among the three species of the genus is with a dull yellowish grey dorsum on which 5 dark grey cross bars are present; 9 or 10 dark grey cross bars are available above the tail; ventrum is dirty white, belly may be with minute grey spots, dots or streaks; lateral aspects of body and head all over with

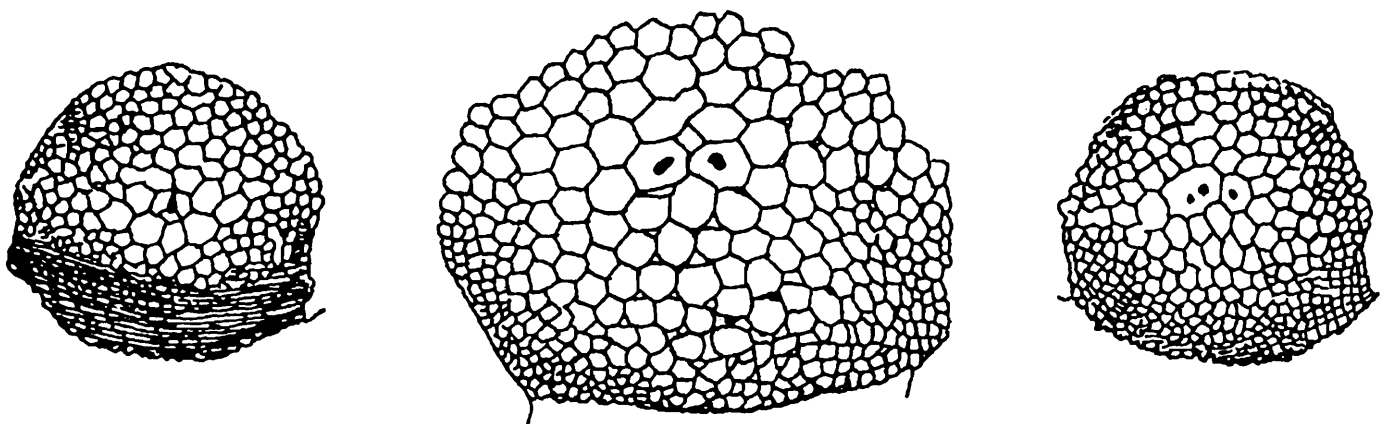


Fig. 36 : *Agamura persica* : Variations in the number of preanal pores.

grey or brown dots; dorsal aspect of limbs with dark cross-bars. In juveniles dorsal bands are somewhat blackish with darker dots. The head is large, high, distinct from neck; snout is bluntly pointed, broad, rounded, equal or slightly longer than the distance between the eye and ear-opening. Diameter of the ear-opening is about one-third that of eye; nostrils are slightly elevated and situated between the rostral, first labial and three bulged nasal shields. Eyes are large, with well-developed upper eyelids, superciliary ridge is most prominent and assumes the shape of a lid. Rostral broader than high, in many cases divided vertically. Upper labials 9-14 and lower labials 9-12, anterior lower labials longer than wide; mental shield elongated, not pointed behind, rarely longer than the adjoining labials; postmental shields are not available. The head is covered above with small rounded scales intermixed with larger tubercles in the posterior portion. Body is slightly flat dorsoventrally, with a feeble lateral fold; dorsum is with minute granular scales intermixed with numerous larger, rounded, keeled tubercles; belly is with 25 small, rounded imbricate scales at mid body. Limbs long and slender; digits long, slender, angularly bent; the hind-limb reaches up to the eye or sometimes only to the ear. Tail cylindrical, thick at the extreme base, strongly thinner and narrow immediately behind the vent, becomes much smaller and of nearly the same thickness to the end, bluntly tipped; complete tail is segmented, with 4-5 small unequal scales above in each segment in longitudinal series; underside of the tail is with a median series of large plates, two to each segment. Males are with 2 preanal pores, sometimes preanal pores are not present. Standard length 58-65 mm., tail length 65 mm.

Distribution : Iran, Pakistan (Baluchistan, South Waziristan, Cape Monze near Karachi) (Map 13).

Habits and habitat : This slow moving, insectivorous, nocturnal gecko prefers to live in rocky habitat and has been recorded in hills up to 1000 metres. Eggs are laid in June and juveniles are seen in September.

Status : Common.

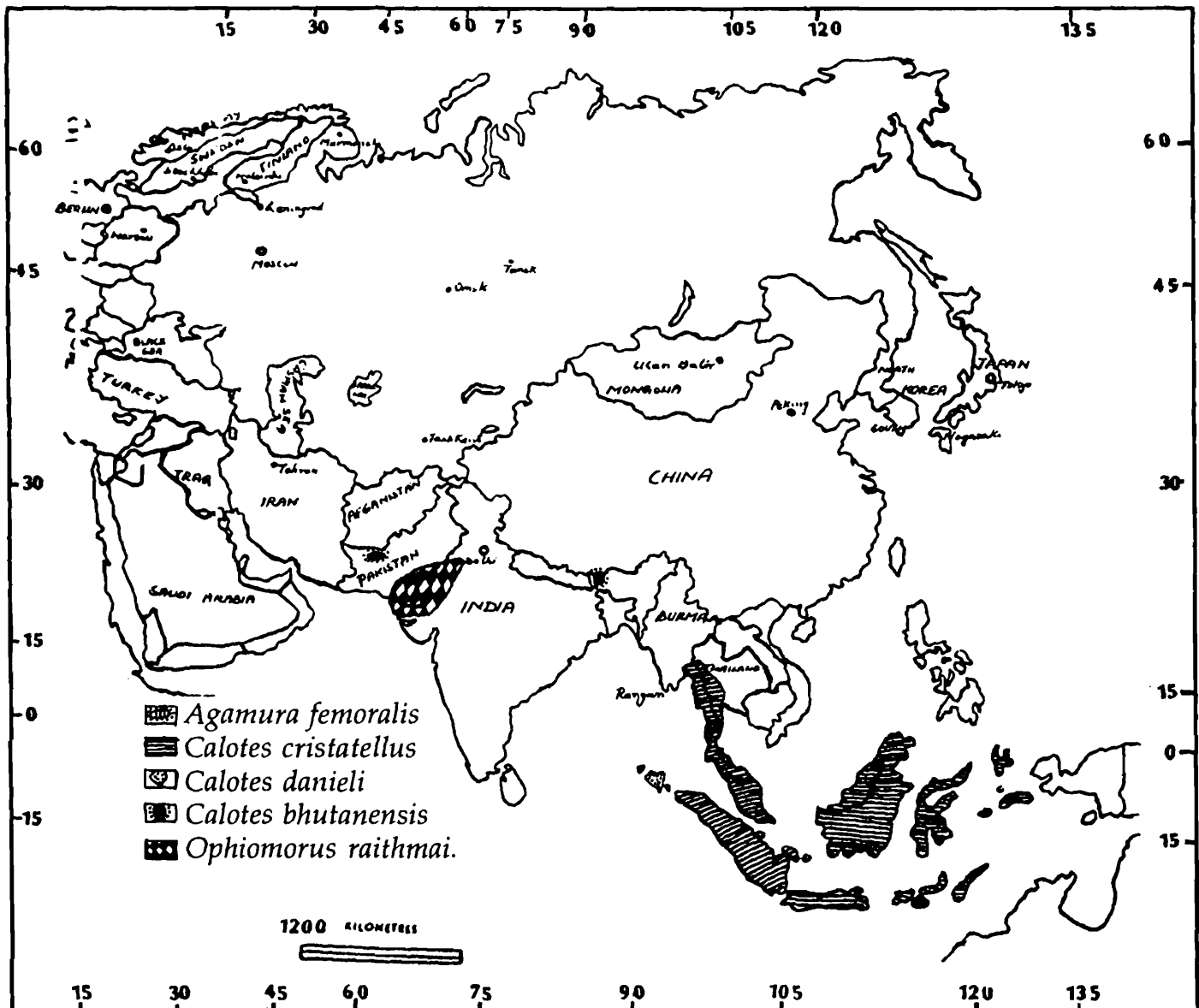
33. *Agamura agamuroides* (Nikolsky 1899) (Map-12)

1899. *Gymnodactylus agamuroides* Nikolsky, *Ann. Mus. Zool.* : p. 384 (type loc. not given).

1963. *Cyrtodactylus agamuroides*, Anderson, *Calif. Acad. Sci.* : p. 438.

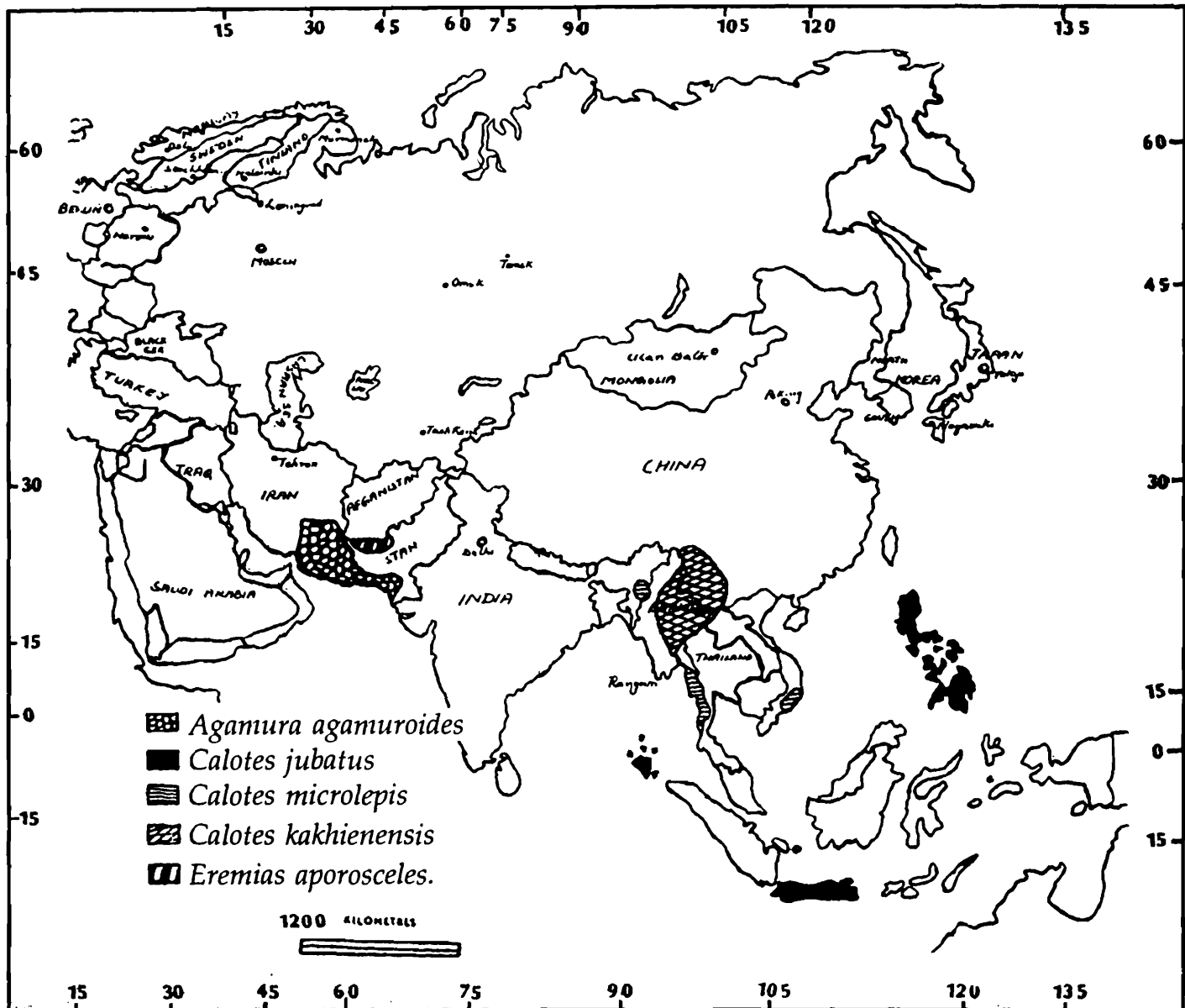
1966. *Agamura agamuroides*, Minton, *Bull. Amer. Mus. Nat. Hist.* : p. 80.

This small gecko is with a ashy grey to pale brown dorsum; tail is yellowish; five grey cross bands or transverse rows of blotches on back and eight such bands on the tail; ventrum is white. The head is large, high, distinct from neck; snout is bluntly pointed, broad rounded, equal or slightly longer than the distance between the eye and the ear-opening. Diameter of the ear-opening is about one-third that of eye; nostrils are not



Map 11 : Distribution of *Agamura femoralis*, *Calotes cristatellus*, *Calotes danieli*, *Calotes bhutanensis* and *Ophiomorus raithmai*.

situated at apex of caruncle, situated between the rostral, first labial and three nasal shields. Eyes are large with well developed upper eye-lids. Rostral broader than high. Upper labials 9-12 and lower labials 9-12; mental shield elongated, not pointed behind; postmental shields are present, anterior postmentals are in contact, posterior postmental shields are generally absent or if present are small and are not in contact with one another. The head is covered above with small, rounded scales intermixed with larger tubercles in the posterior portion. Body is slightly depressed dorsoventrally; dorsum is with minute granular scales, intermixed with numerous larger, rounded, keeled tubercles; belly is with 21-24 rows of small, rounded imbricate scales at middle of the body. Limbs long and slender; digits long, slender, angularly bent; the hind-limb reaches up to eye or little less.



Map 12 : Distribution of *Agamura agamuroides*, *Calotes jubatus*, *Calotes microlepis*, *Calotes kakhienensis* and *Eremias aporosceles*.

Tail cylindrical, thick at the base, strongly thinner and narrow immediately behind the vent, becomes much smaller and of nearly the same thickness to the end, bluntly tipped; complete tail is segmented, with 4-5 small unequal scales above in each segment in longitudinal series; underside of the tail is with a median series of large plates, two to each segment. Males are with 4 preanal pores; enlarged femoral scales are present but not in a regular series. Standard length 45 mm., tail length 48 mm.

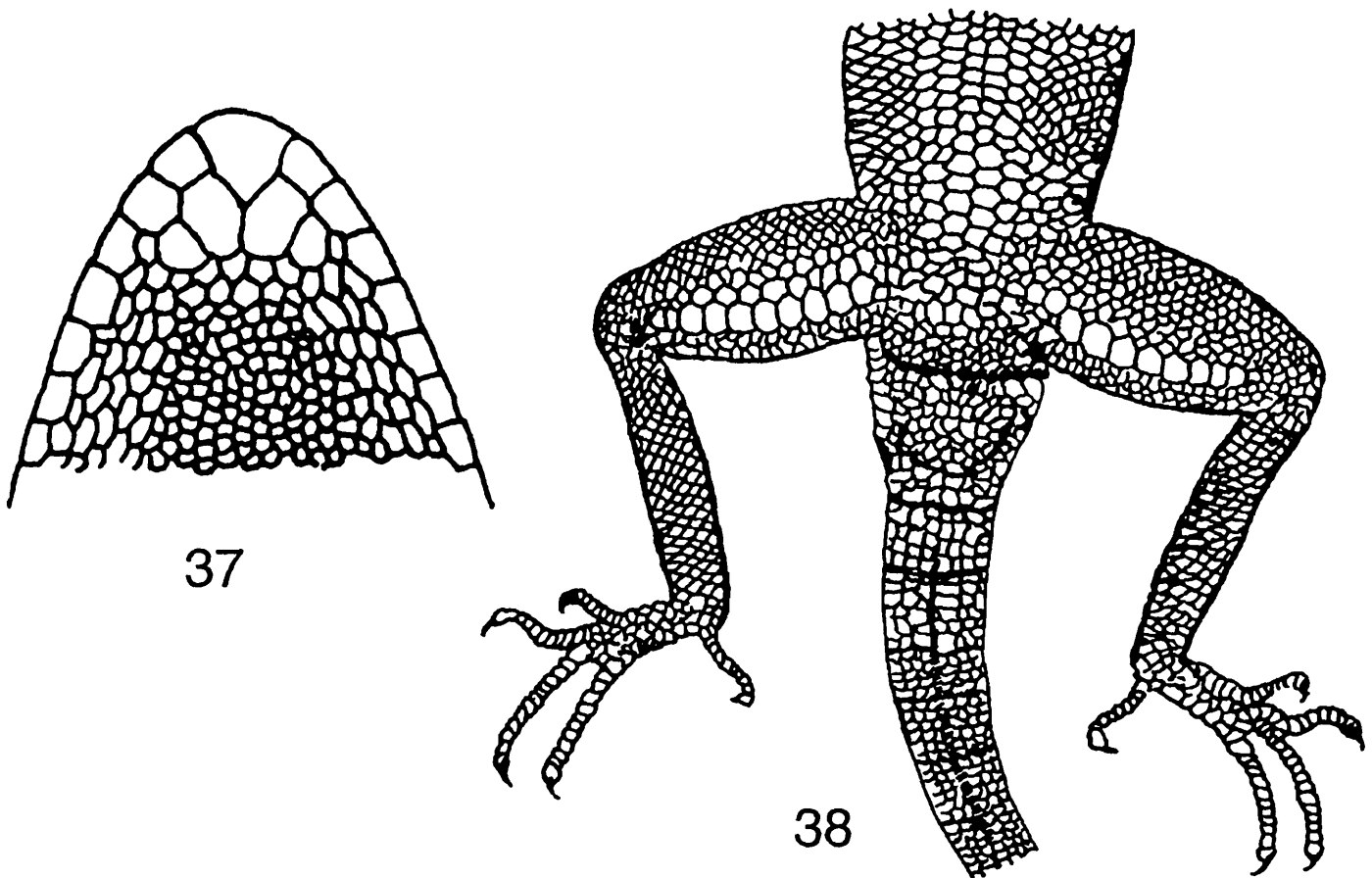
Distribution : Iran (Seistan and Kerman Provinces), Pakistan (Las Bela) (Map 12)

Habits and habitat : Rock dwelling, insectivorous nocturnal and most agile. One specimen was collected during the night from a desert canyon at about 700 feet elevation.

Status : Rare.

34. *Agamura femoralis* Smith 1933

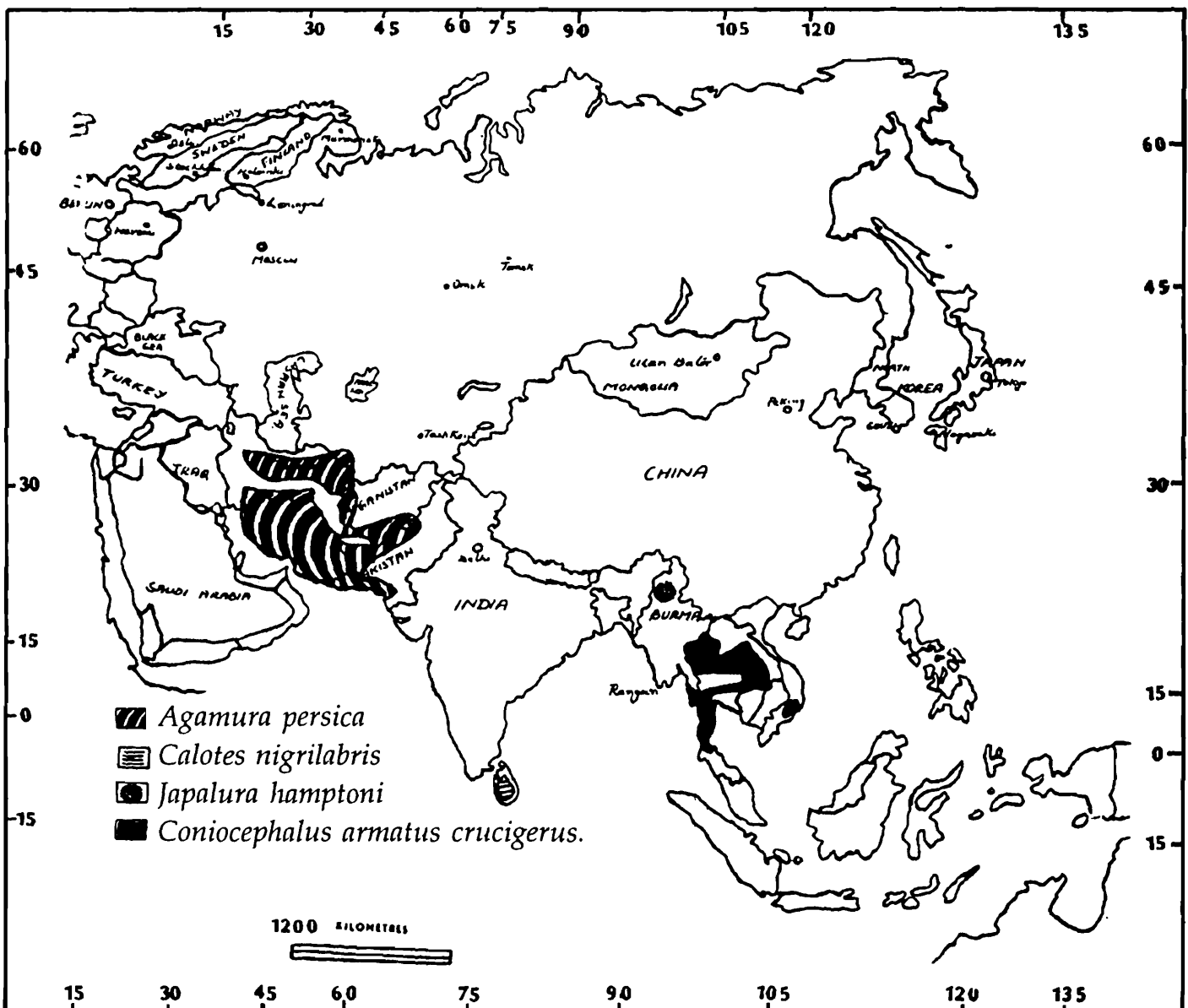
(Fig-37 & 38, Map-1)

1933. *Agamura femoralis* Smith, *Rec. Ind. Mus.*, 35 : p. 17, fig. 7 (type loc. Kharan, Baluchistan).1935. *Agamura femoralis* Smith, *Fauna Brit. Ind.* : p. 63.1966. *Agamura femoralis*, Minton, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 80.

Figs. 37-38 : 37. *Agamura femoralis* : Chin shields; 38. *Agamura femoralis* : Enlarged femoral and belly plates.

This gecko is greyish in dorsal colouration, with 5 dark cross bands on body and 8-10 on tail; general colour pattern of body parts is like *persica*. In juveniles the colour pattern is similar to *persica*, but more vivid. the head is depressed, two times longer than broad; snout pointed, longer than the distance between the eye and the ear-opening. Diameter of ear-opening is less than half that of the eye; nostrils are situated at the apex of caruncle, exist between the rostral and first upper labial or between the first labial and three swollen nasals. Eyes are moderately large, with well developed upper eyelids. Rostral pentagonal, as broad as high. Upper labials 12 and lower labials 11; mental longer than the adjoining labials, pointed behind; two pairs of postmental are present, anterior

pair is well developed and both the shields are in contact, the other pair is smaller; gular portion is with small flat granular scales. The head is covered above with small rounded scales, largest on the snout, intermixed posteriorly with larger tubercles. Body is depressed dorsoventrally; dorsum is with small irregular scales, intermixed with numerous larger, rounded, keeled tubercles; belly is with 17-21 rows of small, rounded imbricate scales at middle of the body, the size of belly scales increases posteriorly. Limbs slender, shorter than *persica*; digits moderately long, slender, angularly bent; the hind-limb reaching only up to the neck; a series of much enlarged scales along the under surface of thighs. Tail cylindrical, becomes abruptly smaller after the basal portion, tapers to a sharp point; segmented, with small scales above, 4 or 5 in longitudinal series in each segment, underside of the tail is with larger irregular scales, generally three to each segment. Males are with



Map 13 : Distribution of *Agamura persica*, *Calotes nigrilabris*, *Japalurs hamptoni* and *Coniocephalus armatus crucigerus*.

5 or 6 preanal pores in a transverse series and a series of 9-12 greatly enlarged femoral scales. Standard length 50-60 mm., tail length 55-65 mm.

Distribution : Pakistan (Kharan and Chagai districts in northwestern Baluchistan) (Map-11).

Habits and habitat : The species is terrestrial, rock dwelling, nocturnal and insectivorous. Females become gravid in June. On provocation these geckos flatten against the ground, elevate their tails and twitch them from side to side.

Status : Rare.

Genus 6. *Pristurus* Ruppell 1835

1835. *Pristurus* Ruppell, *Neue Wirbelth Abyss, Rept.* : p. 16 (type *flavipunctatus*).

1935. *Pristurus* Ruppell, *Smith Fauna Brit. Ind.* : p. 64.

This genus of diurnal Geckoes comprises eight species distributed from North-east Africa to Pakistan, one of which covers the scope of this work. The main generic characters are : Digits slender, clawed, cylindrical at the base, with transverse sub-digital plates, the distal phalanges are slightly compressed and form an angle with the basal portion of the digits, the claw lies between the two enlarged scales. Body is not depressed and dorsum is covered with similar granule-like scales. Tail compressed and keeled. Pupil is circular; eyelid is prominently distinct all round the eye. Preanal and femoral pores are not present.

35. *Pristurus rupestris* Blanford 1874

(Map-14)

1874. *Pristurus rupestris* Blanford, *Ann. Mag. Nat. Hist.* (4), xiii : p. 454 (type loc. Muscat, Arabia and is, of Kharag, Persian Gulf).

1876. *Pristurus rupestris* Blanford, *Zool. E. Persia* : p. 350, pl. 23, figs. 1, 1a

1935. *Pristurus rupestris*, *Smith, Fauna Brit, Ind.* : p. 64.

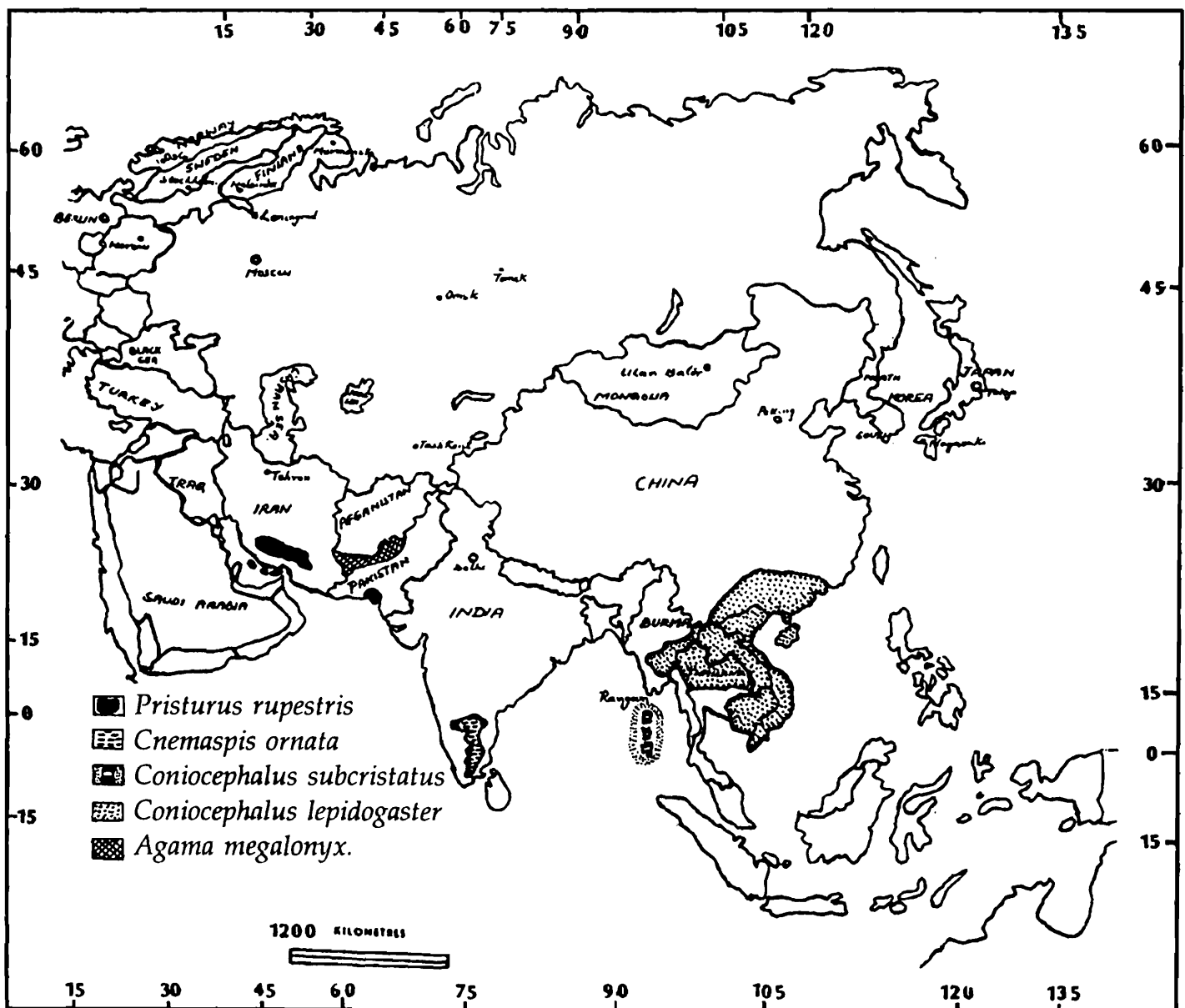
This little gecko is with a brownish dorsum which is profusely speckled with darker dots and is with a reddish vertebral stripe; lateral aspects of dorsum are with red spots arranged in a series; a dark stripe or streak passes through the eye; throat is with minute brown dots all over; ventrum is whitish. The head is much elevated; snout subacuminate, longer than the distance between the eye and the ear-opening, about two times longer than the eye, covered with large polygonal scales; ear-opening one-third the diameter of the eye; rostral much broader than high; nostril is between the rostral and two or three nasal shields; upper labials 6-8 and lower labials 5-6, the first 3 lower labials are much larger than the others; mental very large, broader than the rostral, not pointed behind; postmental shields are not available. The dorsal aspects of head, dorsum and limbs are with small granular scales; belly is with smooth, rounded, subimbricate scales; anterior

aspect of thigh and lower aspect of tibia covered with large imbricate scales; the hind-limb reaches to the ear or slightly less. Tail is strongly compressed in adult male, crested or denticulated in both the dorsal and ventral aspects, the dorsal crest is most prominent and do not extend posteriorly on to the back; in females the tail is less compressed and crests are not prominent. Standard length 32 mm., tail length 53 mm.

Distribution : Arabia, Iran, Islands of Persian Gulf, Pakistan (Karachi) and Socotra (Map 14).

Habits and habitat : Most active, diurnal, rock dwelling, insectivorous.

Status : Common.



Map 14 : Distribution of *Pristurus rupestris*, *Cnemaspis ornata*, *Coniocephalus subcristatus*, *Coniocephalus lepidogaster* and *Agama megalonyx*.

Genus 7. *Cnemaspis* Strauch 1887

1842. *Goniodactylus*, Gray, *Zool. Misc.* : p. 58 (type *boiei*).
 1885. *Gonatodes*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 56.
 1887. *Cnemaspis* Strauch, *Mem. Acad. St. Petersb.*, 35 : p. 41 (type *boulengeri*).
 1921. *Paradonatodes* Noble, *Amer. Mus. Nov.* 4 : p. 14 (type *Gonatodes dickersoni*).
 1935. *Cnemaspis*, Smith, *Fauna Brit. Ind.* : p. 65.

In this genus about 23 species are known from Africa, India, Vietnam and the East Indian Archipelago, fourteen of which are included in the present work. Thirteen species are from the hilly regions of Southern India and Sri Lanka and one from Goa. Out of the remaining nine species, two are from Vietnam and seven from the other parts of the range as stated above. The main characters are : Digits slender, clawed, generally not dilated, the two distal phalanges are compressed forming an angle with the basal part of the digits, subdigital lamellae are present. Body is depressed, with granular scales or tubercles on the dorsum. Tail cylindrical. Pupil round; eyelids are distinct and all round the eye. Males are with or without preanal or femoral pores.

Key to the species of genus Cnemaspis

1. Sides are devoid of spinose tubercles.
 - (a) Males are only with femoral pores, no preanal pores.
 1. Back scales are small, granular, keeled and uniform throughout; 4 or 5 femoral pores on each side *C. indica*
 2. Back scales are small, conical, intermixed with large rounded tubercles; 7-8 preanal pores, no femoral pores *C. nairi*
 3. Back scales are large, rounded, like strong keeled tubercles, not uniform but mixed with minute scales; 4-6 femoral pores on each side *C. wynadensis*
 4. Back scales are large, rounded, like the strong spines, not uniform but mixed with minute granular scales; 7 or 8 femoral pores on each side ... *C. sisparensis*
 - (b) Males are only with preanal pores, no femoral pores.
 1. Back scales represent a mixture of small granules and large spinose tubercles; ventral scales are smooth; 6-9 preanal pores are present *C. ornata*
 2. Back scales represent a mixture of small granular scales and slightly larger keeled scales; ventral scales are keeled; 6-9 preanal pores are present
 *C. mysoriensis*
- II. Sides are provided with small spinose projecting tubercles.
 - (a) Digits moderately dilated at the base.
 1. Ventral neck scales keeled; 2-4 preanal pores; 3-6 femoral pores on each side
 *C. kandiana*

2. Ventral neck scales feebly keeled; 2 or 3 preanal pores; 2-4 femoral pores on each side *C. goaensis*
3. Ventral scales keeled; 1-3 preanal pores; 2-5 femoral pores on each side
..... *C. tropidogaster*
4. Ventral neck scales smooth; 2-4 preanal pores; 3-6 femoral pores on each side
..... *C. gracilis*
5. Ventral neck scales smooth; 5-15 femoral pores on each side *C. jerdoni*
6. Ventral neck scales smooth, preanal and femoral pores not present *C. boiei*
- (b) Digits strongly dilated at the base; 14-18 femoral pores on each side
..... *C. littoralis*

36. *Cnemaspis indica* (Gray 1846)

(Map-10)

1846. *Goniodactylus indicus* Gray, *Ann. Mag. Nat. Hist.* 18 : p. 429; (type loc. Madras Presidency)

1864. *Gymnodactylus indicus*, Gunther *Rept. Brit. Ind.* p. 115.

1885. *Gonatodes indicus*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 64, pl. 6, fig. 1.

1935. *Cnemaspis indica*, Smith, *Fauna Brit. Ind.* : p. 68.

This is a small olive-brown lizard with dark spotted dorsum and slight brown vertebral marking. Ventrums is dirty white; throat is dark brown. In many examples the back and flanks are adorned with rows of light-orange spots. Head is covered above with small granules which become slightly larger on the snout, which is somewhat obtuse. Upper labials 7-8, lower labials 5-6; mental is subtriangular border than the rostral, truncated posteriorly; 2 or 3 pairs of postmentals are present, the first one is separated by a small median scale. Dorsum is having similar type of minute, keeled scales; scales on the ventrum are comparatively larger than the dorsal scales, these are smooth and imbricate. The hind-limb reaches hardly to the axilla, digits elongated, the lamellae below the basal part are well developed. Tail longer than the head and body, cylindrical, with a dorsal aspect having small uniform keeled scales or may be having regular series of large tubercles; underside with much larger, smooth, subimbricate scales, the scales of the median series are larger than the other ventral tail scales. Males are with 4 or 5 femoral pores on each side. Standard length 38 mm.; tail length 40 mm.

Distribution : India : Mercara, Nilgiri Hills, and Malabar coast of Kerala (Map 10).

Habits and habitat : Generally nocturnal, insectivorous and sluggish. Hides during the day under stones, leaves, wooden logs and such other material and comes out at dusk in search of insect food.

Status : Vulnerable on account of large scale habitat destruction.

37. *Cnemaspis wynadensis* (Beddome 1870)
(Map-10)

1870. *Gymnodactylus wynadensis*, Beddome, *Madras Month. J. Med. Sci.* 1 : p. 32 (type loc. Wynaad).
1875. *Goniodactylus wynadensis*, Gunther, *Proc. Zool. Soc.* : p. 226.
1885. *Gonatodes wynadensis*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 65, pl. 6, figs. 2, 2a.
1935. *Cnemaspis wynadensis*, Smith, *Fauna Brit. Ind.* : p. 69.

This is a small brown gecko with an obtusely pointed snout. Its dorsum is sculptured with light or darker brown shades and back is generally having light-brown vertebral stripe, which is more clear and prominent in the young hatchlings, as the age increases the dorsal stripe becomes less distinct and vanishes in the old individuals; the ventrum is light brown; throat dark brown, densely spotted with white; tail is variegated with brownish lighter and darker markings. Head is covered above with small, granular, keeled scales, largest upon the snout. Upper labials 6-8, lower labials 6-8; mental is subtriangular, broader than the rostral; postmentals are small, the first pair separated from one another by one or two small scales. Dorsum is with large, round, sharp pointed, keeled tubercles, sometimes mixed with smaller scales; scales on the ventrum are smooth, generally larger or at least equal to the longest dorsal scales. The hind-limb hardly reaches to the axilla, digits elongate, clawed, the lamellae below the basal part is generally broken up, only two or three larger plates at the articulations remain entire. Tail larger than the head and body, cylindrical, constricted at its base, its upper aspect covered with small keeled scales, ventral aspect is covered with comparatively larger smooth scales, scales on the median series are largest. Males are with 4-6 femoral pores on each side. Standard length 33-40 mm.; tail length 35-44 mm.

Distribution : India : Western Ghats (Wynaad and adjoining southern hill ranges; Parambikulam, Kavalai, Cochin and Trichur) (Map 10).

Habits and habitat : This is a rain forest species inhabiting moist stony areas with full of leaves and other forest litres. Found hiding understones during the day and crawls in the open searching for insects after dusk. This is perfectly a nocturnal species.

Status : Vulnerable on account of large scale habitat destruction for urbanisation.

38. *Cnemaspis sisparensis* (Theobald 1876)
(Fig-39, Map-15)

1870. *Gymnodactylus maculatus* Beddome, *Madras Month. J. Med. Sci.* 2 : p. 173 (type loc. Sholakal, at the foot of Sispara Ghat, Nilgiri Hills).
1876. *Gymnodactylus sisparensis*, Theobald, *Cat. Rept. Brit. Ind.* : p. 86.
1885. *Gonatodes sisparensis*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 66.
1915. *Gonatodes bireticulatus* Annandale, *Rec. Ind. Mus.* 11 : p. 344, text figs. (type loc. Kavalai, 1300-3000 feet, Cochin State).
1935. *Cnemaspis sisparensis*, Smith, *Fauna Brit. Ind.* : p. 69.

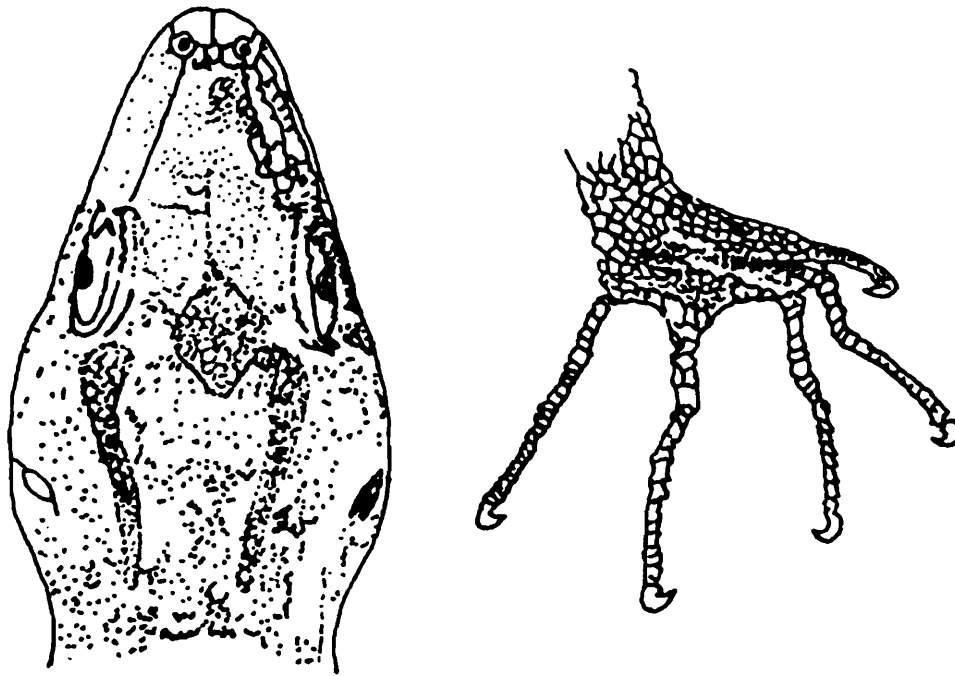


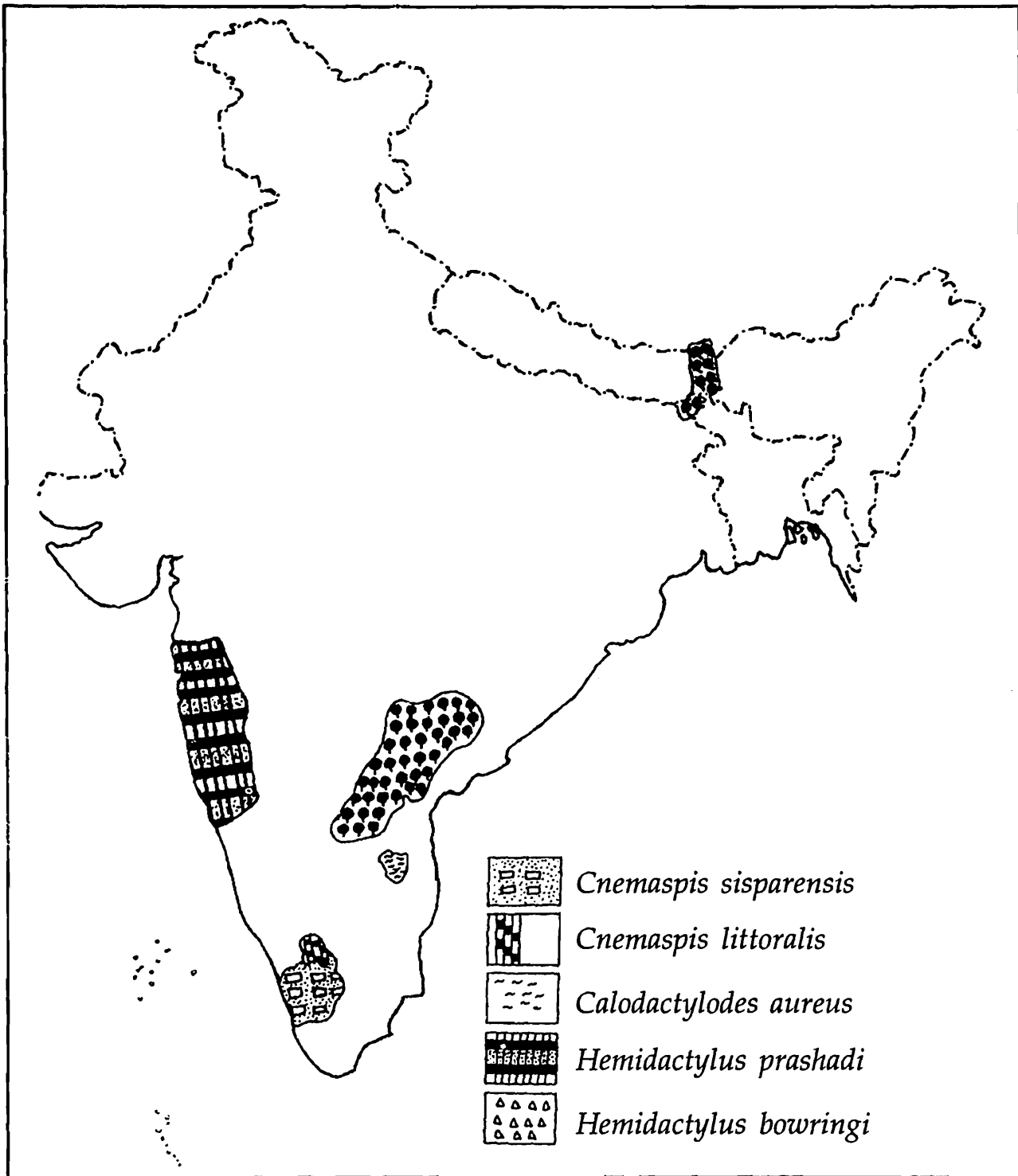
Fig. 39 : *Cnemaspis sisparensis* : Head and lower side of foot.

This is a large gecko with a general brown background of profusely spotted with white, presenting a grizzled appearance; back with three longitudinal rows of dark-brown oblong spots, which are continuous up to the whole length of the dorsum; a dark streak with white margins passes through the eye; throat is brown and profusely spotted with white; dorsal aspect of tail is having alternate bars of light-brown or dark-brown colour. Head is covered above with minute, granule like keeled scales which are largest on the snout. Upper labials are 6-8 and as many as lower labials; mental is subtriangular, broader than the rostral; postmentals are small, the first pair separated from one another by one or two small scales. Dorsum is with much larger, rounded, sharp pointed, keeled tubercles, mixed with smaller scales; ventral scales are smooth, generally larger or at least equal to the largest dorsal scales. The hind-limb hardly reaches to the axilla, digits are quite elongated and clawed, the lamellae below the basal part is generally broken up, only two or three larger plates at the articulations remain entire. Tail is cylindrical, slightly constructed at the base; upper side of tail is covered with small keeled scales, lower side is with comparatively larger smooth scales; scales of the median series are largest. Males are with 7-8 femoral pores on each side. Standard length 62 mm., tail length 50 mm.

Distribution : India : Western Ghats (Sispara Ghat, Nilgiri Hills; Kavalai near Cochin) Map 15).

Habits and habitat : A nocturnal, insectivorous forest species.

Status : Rare.



Map 15 : Distribution of *Cnemaspis sisparensis*, *Cnemaspis littoralis*, *Calodactylodes aureus*, *Hemidactylus prashadi* and *Hemidactylus bowringi*.

39. *Cnemaspis ornata* (Beddome 1870)
(Map-14)

1870. *Gymnodactylus ornatus* Beddome, *Madras Month. J. Med. Sci.* 1 : p. 32 (type loc. Tinnevely).
 1885. *Gonatodes ornatus*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 66., pl. 7, fig. 3.
 1935. *Cnemaspis ornata*, Smith, *Fauna Brit. Ind.* : p. 70.

This is a small brown, black and white spotted gecko, with slight brown black edged transverse streak on the shoulders. Its belly is brownish and is having dark-brown or black line along the whole length of mandibles. Head is moderately large, covered above with minute, conical granules which are largest on the snout, which is obtuse. Upper labials 6-8, lower labials are also of the same number; mental large, with truncated posterior margin, subtriangular and slightly broader than the rostral; postmentals are represented by two or three pairs, the first one is separated by a single median scale. Dorsum is with small, conical scales, intermixed with much larger, strongly keeled, spine-like tubercles which are arranged in 16 almost longitudinal rows; scales are smooth, rounded, smaller than the largest ventral dorsal scales. The hind-limb reaches to the shoulder, digits are elongated and clawed; lamellae under the basal phalanges are generally small, only one plate is large. Tail is cylindrical, longer than head and body, upper side with small, subimbricate scales mixed with large pointed tubercles arranged in series; underside of tail with moderately large smooth scales, no distinction exists between the scales of median series and other ventral scales of the tail. Male with 6-9 preanal pores forming an obtuse angle. Standard length, 52 mm., tail length 65 mm.

Distribution : India : Western Ghats and other hill regions of Peninsular India (Annamalai, Tinnevely, Malabar coast). (Map 14).

Habits and habitat : It is a rock dwelling mountain species found up to 500 metres in dry forested area.

Status : Rare.

40. *Cnemaspis beddomei* (Theobald 1876)
(Map 16)

1870. *Gymnodactylus marmoratus*, Beddome, *Madras month. J. Med. Sci.* 1 : p. 31 (type loc. Travancore).

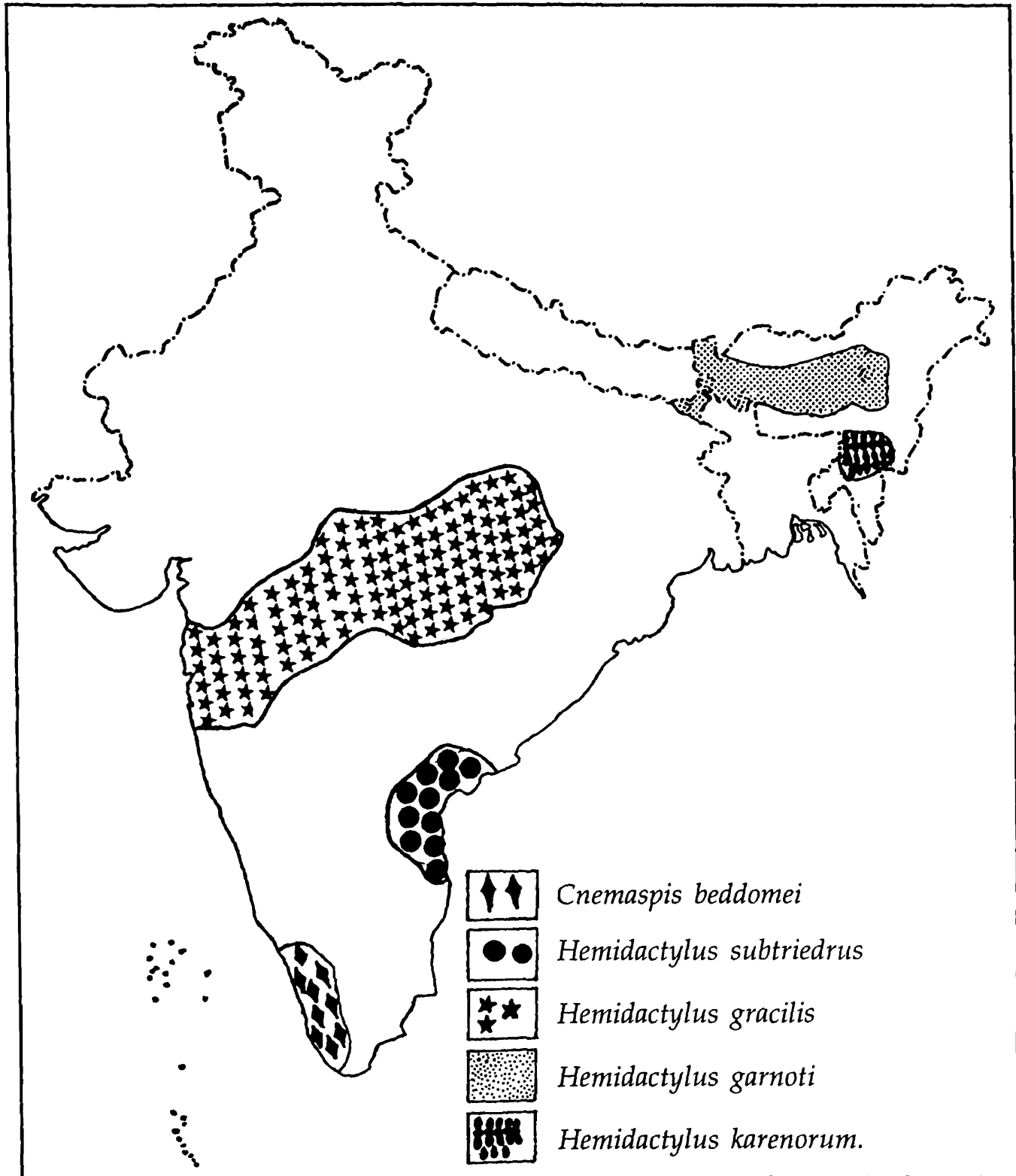
1876. *Gymnodactylus beddomei* Theobald, *Cat. Liz. Brit. Ind.* p. 88.

1885. *Gonatodes marmoratus*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 67, pl. 6, fig. 4.

1935. *Cnemaspis beddomei*, Smith, *Fauna Brit. Ind.* : p. 71.

This is a small brown species, with dark-brown spots all over the dorsum; lower lip, throat and tail spotted with light or dark brown colour; ventrum is light brown. Head is small in comparison to the body, covered above with minute, conical granules which are largest on the snout, which is obtusely pointed. Upper labials 6-8 and as many lower labials; mental large, truncated posteriorly, subtriangular, slightly broader than the rostral, postmentals are small and represented by a single pair, separated by a single median scale. Dorsum is with small conical scales, intermixed with smaller, feebly keeled tubercles which are not arranged in regular series and can be hardly differentiated from the general smaller scales of the back; ventral scales are keeled, rounded, smaller than the largest dorsal scales. The hind-limb reaches to the neck, digits are elongated and clawed; lamellae

under the basal phalanges are generally small, broken up and only one plate is large under the articulation. Tail is cylindrical, almost equal or slightly longer than head and body, thicker at the base; upper side with small, subimbricate scales mixed with less conspicuous enlarged tubercles which are not arranged in series; under side of the tail



Map 16 : Distribution of *Cnemaspis beddomei*, *Hemidactylus subtriedrus*, *Hemidactylus gracilis*, *Hemidactylus garnoti* and *Hemidactylus karenorum*.

with moderately large smooth scales, showing no difference from the scales of the median series of tail. Male with 6-9 preanal pores forming an obtuse angle. Standard length, 49 mm.; tail length, 52 mm.

Distribution : India : Western Ghats and other hill regions of Peninsular India (Tinnevely, Malabar Hills, Wynaad Hills) (Map 16)

Habits and habitat : This is a high mountain dwelling species and was collected under stones up to 800 metres altitude.

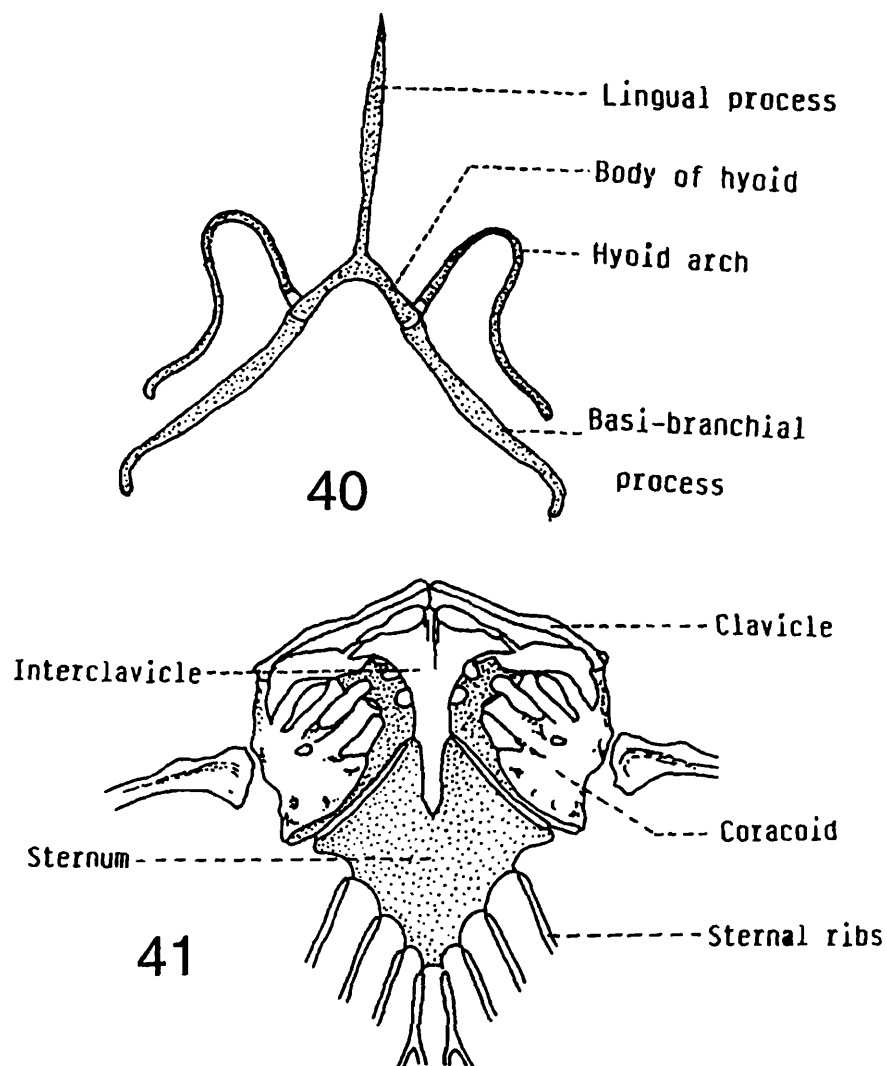
Status : Rare.

41. *Cnemaspis mysoriensis* (Jerdon 1853)
(Figs. 40 & 41, Map 18)

1853. *Gymnodactylus mysoriensis* Jerdon, *J. Asiat. Soc. Beng.* 22 : p. 469 (type loc. Bangalore; type lost).

1885. *Gonatodes mysoriensis*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 68.

1935. *Cnemaspis mysoriensis*, Smith, *Fauna Brit. Ind.* : p. 72.



Figs. 40-41 : 40. *Cnemaspis mysoriensis* : Hyoid; 41. *Cnemaspis mysoriensis* : Sternal apparatus

This is the smallest species of the genus *Cnemaspis* in India. Dorsal colouration is brownish, with a light-brown vertebral stripe and regularly arranged dark-brown spots on the complete back; throat is bright yellow profusely spotted with brown; upper side of the digits with distinct dark-brown bars; belly is light brown. Head is covered above with small, granular, keeled scales which are largest on the snout which is obtusely pointed. Upper labials 6-7 and as many lower labials; mental large, subtriangular, truncated posteriorly and is broader than the rostral; postmentals are in two or three pairs, the first one is separated from one another by a median scale. Dorsum is with small, granular, keeled scales intermixed with a few larger ones, the scales on the flanks are generally conical in shape; ventral scales subimbricate, smooth, larger than the largest dorsal scales. The hind-limbs reach to the axilla only, digits elongate, clawed, with well developed plates beneath the basal phalanges. Tail much longer than the head and body, cylindrical, upper aspect having small keeled scales, mixed with clusters of large pointed tubercles; lower aspect with larger, flat, imbricate scales with the largest scales in the median series. Male with 2-3 preanal, and on each side, 3-4 femoral pores. Standard length 23-26 mm.; tail length 34-38 mm.

Distribution : India : Karnataka (Bangalore), Kerala (Malabar Hills), Tamil Nadu (Anaimalai Hills) (Map 18).

Habits and habitat : This is a mountain dwelling species recorded up to 350 metres under stones.

Status : Vulnerable on account of large scale habitat destruction for urbanisation.

42. *Cnemaspis kandiana* (Kelaari 1852)
(Figs.-42 & 43, Map-19)

1852. *Gymnodactylus kandianus* Kelaart, *Prod. Fauna Zeyl.* : p. 186 (type loc. hills round Kandy, Ceylon).
1873. *Gymnodactylus wicksii* Stoliczka, *J. Asiat. Soc. Beng.* 42 (2) : p. 165 (type loc. Preparis Is., Andaman Is.).
1876. *Gymnodactylus humei* Theobald, *Cat. Rept. Brit. Ind.* : p. 89 (type loc. Kandy, Ceylon; type lost)
1885. *Gonatodes kandianus*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 68.
1904. *Gonatodes andersoni* Annandale, *J. Asiat. Soc. Beng.* 73 (2) : p. 21.
1905. *Gonatodes andersoni* Annandale, *J. & P. Asiat. Soc. Beng.* 1 : p. 83. pl. 2, fig. 3 (type loc. Narcondam, Andaman Is.
1915. *Gymnodactylus kandianus*, De Rooji, *Rept. Indo-Austral. Archipelago* 1 : p. 23, figs.
1926. *Gymnodactylus kandianus*, Hora, *Rec. Ind. Mus.* 28 : p. 192, fig.
1932. *Gymnodactylus kandianus*, Deraniyagala, *Ceylon J. Sci., B*, 16 : p. 296. fig.
1935. *Cnemaspis kaudiana*, Smith, *Fauna Brit. Ind.* : p. 73.

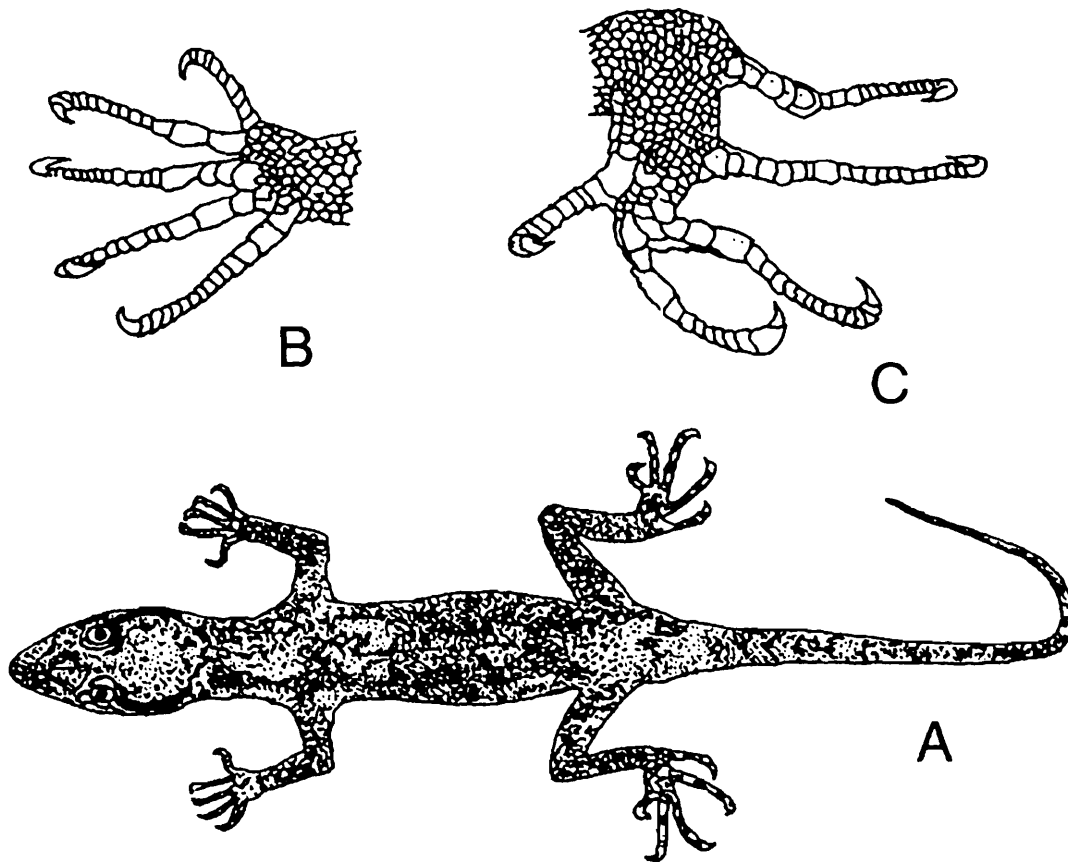


Fig. 42. *Cnemaspis kandiana* : A. Entire dorsal view. B. Lower surface of hand.
C. Lower surface of foot.

This is a small brown gecko with transversely arranged variegations and a faint vertebral stripe or spots; throat dark-brown; ventrum light-brown; tubercles on the flanks are white. Head is covered above with minute keeled scales which are largest on the snout. Upper labials 6-9 and lower labials 6-8; mental is large, subtriangular, truncated posteriorly, broader than the rostral; postmentals are small, in 2 to 3 pairs, the first pair separated from one another by a single median scale, just behind the mental. Dorsum is with small granular, slightly keeled scales, intermixed with larger rounded tubercles; flanks with small, widely separated, spine-like tubercles; ventral scales subimbricate, those under the neck are large and keeled, those on belly are generally smooth, rarely keeled. The hind-limb reaches to the axilla or slightly beyond, digits elongated and clawed, subdigital lamellae large, the plates beneath the basal phalanges are 3-5 in number, usually large. Tail slightly longer than the head and body, cylindrical, covered dorsally with small keeled scales and clusters of large tubercles, below with large, imbricate, feebly keeled scales, the median series of which may be bigger than others. Male with 2-4 preanal and on each side, 3-5 femoral pores. Standard length 36-40 mm.; tail length 40-44 mm.

Distribution : India : Andaman Islands : Karnataka (Jog, Kanara, Bangalore, Kammangudi) Kerala (Tenmalai, Trichur); Maharashtra (Mahabaleshwar), Tamil Nau (Marikuppam).

Elsewhere : Sri Lanka & Sumatra (Map 19).

Habits and habitat : This is mainly a forest species but enters in the houses also.

Status : Species is quite common throughout its range.

43. *Cnemaspis tropidogaster* (Boulenger 1885)
(Map 1)

1885. *Gonatodes kandianus tropidogaster* Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 69 (type loc. Ceylon and South Western India).
1932. *Gonatodes kandianus tropidogaster*, Deraniyagala, *Ceylon J. Sci.*, B. 16 : p. 298.
1935. *Cnemaspis kandiana*, Smith, *Fauna Brit. India.* : 73.
1984. *Cnemaspis tropidogaster*; Inger, Marx & Koshy, *Herpetologica*, 46(2) : p. 152.

The dorsal colour of this small gecko is brown with lighter and darker variegations in transverse rows, a light vertebral band is present in few individuals, sometimes this band is broken into small spots; spinose tubercles on the flanks are white; ventrum is light brown; throat is slightly darker. The head is small and covered above with small, granular, keeled scales which are largest on the snout; snout is obtusely pointed, longer than the distance between the eye and the ear-opening. Upper labials 7-8 and lower labials 7-8; mental large, broader than the rostral, subtriangular, truncate posteriorly; postmentals small, the first pair separated from one another behind the mental by a median scale. Ventral scales imbricate; scales below the neck are keeled; scales on the belly are strongly keeled. Digits moderately elongated, large plates are not available under the first toe, plates beneath the fourth toe are 4-6; the hind-limb reaches to the axilla or slightly beyond. Tail cylindrical, covered above with small keeled scales and larger tubercles arranged in groups, ventral aspect of tail is with large, imbricate, feebly keeled scales, the median row comprising the larger scales. Males are with 2-5 femoral pores and 1-4 preanal pores on each side. Standard length 26-35 mm., tail length 30-39 mm.

Distribution : Sri Lanka, India (South western India, Tinnevelly, Ponmudi etc.) Map 1.

Habits and habitat : The species inhabits the forests, Insectivorous.

Status : Common.

44. *Cnemaspis gracilis* (Beddome 1870)
(Fig. 43, Map 20)

1870. *Gymnodactylus gracilis* Beddome, *Madras Month. J. Med. Sci.* 1 : p. 32 (type loc. Palghat Hills, Madras Presidency)
1885. *Gonatodes gracillis*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 70, pl. 6, fig. 5
1932. *Gonatodes kandianus* var. *gracilis*, Deraniyagala, *Ceylon J. Sci.*, B. 16, p. 297.
1935. *Cnemaspis gracilis*, Smith, *Fauna Brit. Ind.* : p. 74.

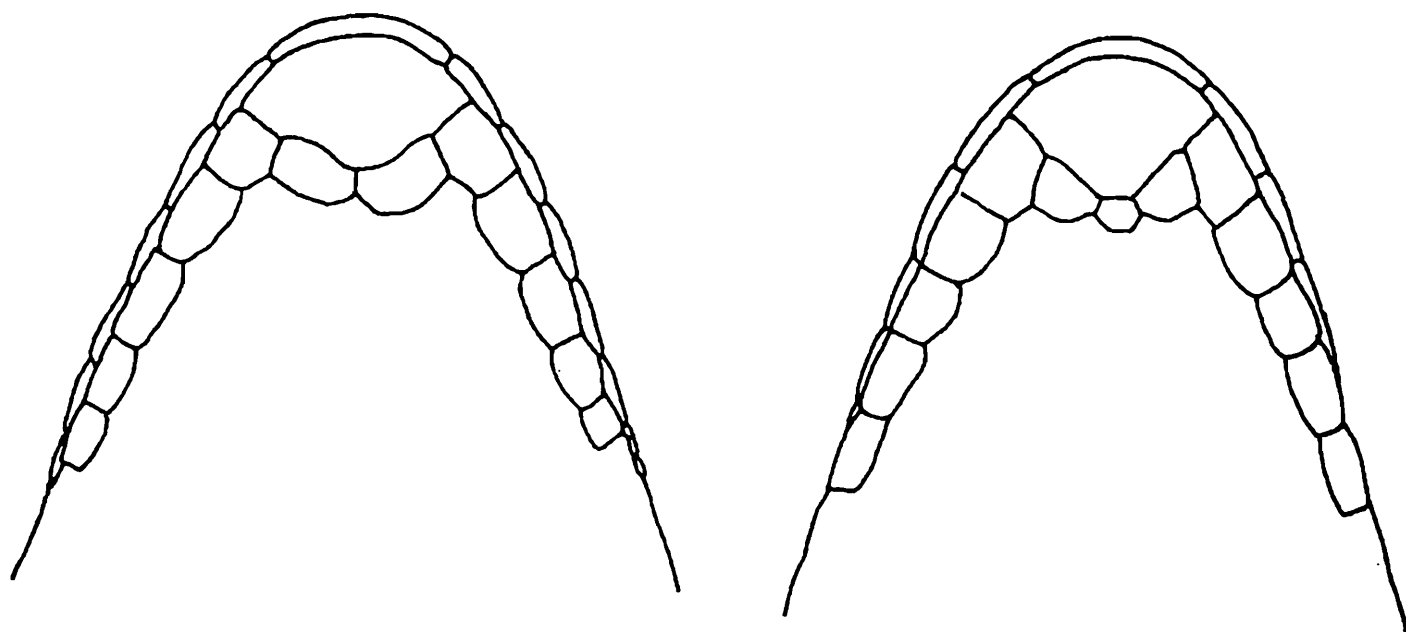


Fig. 43 : Chin shields : A. *Cnemaspis gracilis* B. *Cnemaspis kandiana*

This small gecko is light brown above with numerous light-brown to dark-brown spots; a series of deep black vertebral spots just commencing from the nape and are continue up to the base of tail; tail is banded with dark and light brown above; ventrum is brownish. Head is covered above with minute keeled scales which are largest on the snout. Upper labials 7-8 as many lower labials; mental is large, becomes like a spine posteriorly, subtriangular, broader than the rostral; post-mentals are small, in 2 or 3 pairs, the first pair is generally in contact with one another just behind the mental shield. Dorsum is with small granular, slightly keeled scales, intermixed with larger rounded tubercles, on flanks the tubercles are comparatively smaller, lesser in number and widely separated from one another; ventral scales (including the gular scales) are larger, flat, smooth and are absolutely devoid of keels. The hind-limb reaches to the axilla or slightly beyond, digits moderately elongated, clawed, subdigital lamellae much smaller, the plates beneath the basal phalanges are 3 or more in number, usually much smaller. Tail slightly longer than the head and body, cylindrical, covered above with minute smooth or slightly keeled scales and clusters of tubercles, under side of the tail is with moderately large, subimbricate, smooth or feebly keeled scales, the median row may or may not be bigger than the other scales. Male with 2-4 femoral pores. Standard length 36-40 mm.; tail length 39-40 mm.

Distribution : India : Tamil Nadu (Mettupalayam and near Bhawani River in Ootacamund districts; Nilgiri foot hills; Sivagiri Hills; Kuttur; Yelagiri Hills; Shevaroy Hills). The species is available in India as far north as 12°.

Elsewhere : Sri Lanka. (Map 20)

Habits and habitat : This is an arboreal, insectivorous, nocturnal species inhabiting the dense forests, throughout its range, in South-western India.

Status : Rare, undeterminate.

45. *Cnemaspis jerdoni* (Theobald 1868)
(Map 21)

1868. *Gymnodactylus jerdoni* Theobald, *Cat. Rept. Asiat. Soc. Mus.* : p. 31 (type loc. not known).

1877. *Gymnodactylus scalpensis* Ferguson, *Rept. Fauna Ceylon*, : p. 13 (type loc. Ceylon, type lost).

1885. *Gonatodes jerdoni*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 71.

1935. *Cnemaspis jerdoni*, Smith, *Fauna Brit. Ind.* : p. 74.

This small gecko is dark-brown above with more darker spots throughout the back, in many examples these dorsal spots are clouded and broken; the spines on the sides are white; black spots on the nape may or may not be present; belly is dirty white. Head is covered above with minute granules which are largest on the snout which is obtusely pointed. Upper labials 8-10 and lower labials 7-8; mental shield is much larger, subtriangular, truncated posteriorly and broader than the rostral; postmentals are small, in 2 or 3 pairs, the first pair may be in contact or be separated by a single median scale, just behind the mental shield. Dorsum is with small uniform scales which on the flanks are intermixed with few spinose tubercles; ventrum is with much larger subimbricate, smooth scales. The hind-limb generally reaches beyond the axilla, digits moderately elongated, clawed; subdigital lamellae moderately large, the shields beneath the basal phalanges are large and 3-5 in number. Tail slightly longer than the head and body, cylindrical, covered above with small subimbricate scales and regular series of larger pointed tubercles; underside of the tail is with much larger, smooth subimbricate scales, the scales of the median series are much larger than other scales. Male with 5-15 femoral pores on each side. Standard length 40 mm.; tail length 44 mm.

Distribution : India : Nilgiri Hills; Palni Hills; Anaimalai Hills; Sivagiri Hills and Lamparis Peak (Map 21).

Habits and habitat : The species is a forested rock dwelling species recorded up to 500 metres. It is a nocturnal and insectivorous species.

Status : Rare, undeterminate.

46. *Cnemaspis boiei* (Gray 1842)

1842. *Goniodactylus boiei* Gray, *Zool. Misc.* : p. 58 (type loc. India).

1885. *Gonatodes boiei*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 72.

1935. *Cnemaspis boiei*, Smith, *Fauna Brit. Ind.* : p. 75.

This species is quite similar to *Cnemaspis jerdoni* in scalation, colouration and other characters but differs from *jerdoni* and other species of the genus in having a single pair of postmentals, which are smaller and always in contact with one another. Tail is devoid of regular series of enlarged tubercles. Males are without preanal and femoral pores. Standard length 34 mm., tail length 45 mm.

Distribution : India (South western India) Exact origin is not known.

Habits and habitat : Nothing is known.

Status : Very rare, known only by two males and one female.

47. *Cnemaspis littoralis* (Jerdon 1853)

(Map 15)

1853. *Gymnodactylus littoralis* Jerdon, *J. Asiat. Soc. Beng.* 22 : p. 469 (type loc. sea coast of Malabar, type lost).
1871. *Gymnodactylus planipes* Beddome, *Madras Month. J. Med. Sci.* 4 : p. 403 (type loc. near Nellakota, below the Nilgiris on the western side).
1885. *Gonatodes littoralis*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 71, pl. 6.
1935. *Cnemaspis littoralis*, Smith, *Fauna Brit. Ind.* : p. 76.

This small, slender gecko is brownish above; its vertebral region, nape, head and lips are spotted with dark-brown; belly is dirty white. Head is covered above with small granular scales which are largest on the snout which is obtusely pointed. Upper labials 8-10 and lower labials 7-8; mental shield is large, subtriangular, truncated posteriorly and slightly broader than the rostral; postmentals are small, in 2 or 3 pairs, the first pair may be in contact or be separated by a single median scale, just behind the mental shield. Dorsum is with small, uniform, granular scales which on the flanks are intermixed with few small somewhat conical tubercles; ventrum is with slightly larger subimbricate smooth scales. The hind-limb is not reaching beyond the axilla; digits moderately elongated, clawed, subdigital lamellae on the basal phalanges are very large, somewhat subquadrangular, 3-5 in number, the distal shield is the largest and projecting (the somewhat flat distal phalanges originate from the middle aspect of it). Tail is longer than the head and body, cylindrical, covered above with minute scales, generally uniform but sometimes mixed with larger tubercles, arranged in regular series, below with a median series of transverse plates. Male with 14-18 femoral pores on each side. Standard length 30 mm.; tail length 35 mm.

Distribution : India : Nilambur, Nellakota in Nilgiri Hills. Malabar coast. Elsewhere : None so far (Map 15).

Habits and habitat : This species is insectivorous, arboreal and diurnal inhabiting dense forested rocky areas.

Status : Rare, undeterminate.

48. *Cnemaspis nairi* Inger, Marx & Koshy, 1983

(Map 2)

1984. *Cnemaspis nairi* Inger, Marx & Koshy, *Herpetologica*, 40 (2) : p. 149.

The dorsal colour of this newly described gecko is olive gray with pairs of paravertebral black spots, each pair is followed by a white vertebral spot; enlarged scales on the flanks are whitish; temporal region and side of neck with narrow light lines; iris reddish-brown; limbs with narrow light rings; tail ringed with black and olive yellow. Ventrums are greyish-brown; underside of head darker in males than in females; throat of males with a wide, dark, transverse band divided by a narrow, light transverse ring. The head is small and covered above with small, granular, conical scales, intermixed with larger conical or rounded tubercles in about 12 irregular rows; snout is obtusely pointed, longer than the distance between the eye and the ear-opening. Upper labials 6-8 and lower labials 7-9; mental large, broader than the rostral, subtriangular, with pointed or truncate posterior border; two pairs of enlarged postmentals, shields of the first pair separated by a large median scale; no spine-like tubercles on the flanks; ventral scales smooth, rounded, as large as the largest dorsals. Digits elongated; scales below basal phalanges are small except for one large plate under the articulation with the distal phalanges, or with one or two somewhat enlarged scales proximal to the large scales or under the fourth toe; Large plates are not available under the first toe, Tail cylindrical, slightly constricted at base; covered above with small, flat scales and series of larger, weakly keeled scales, ventral aspect of tail with larger, flattened smooth scales, mid-ventral row larger than adjacent scales. Males are with 7-8 preanal pores forming an angle; femoral pores are not present. Standard length 31-44 mm., tail length 38-48 mm.

Distribution : India (Ponmudi, Trivandrum district, Kerala) (Map 2).

Habits and habitat : A forest species, insectivorous.

Status : Rare.

49. *Cnemaspis goaensis* Sharma 1976

(Map-4)

1976. *Cnemaspis goaensis* Sharma, *Rec. zool. Surv. India*, 71 : p. 152.

In this small gecko dorsum is brown, with W-shaped dark-brown marks on the back (2 on neck, 6 on the space between the forelimbs and hindlimbs); tail with light and dark, narrow annuli above; head, limbs and flanks variegated with lighter and darker markings. Ventral side of head and throat densely spotted with black colour; digits with conspicuous dark bars; few dark lines emerging from eyes and extending on the cheeks, whitish below, speckled with black. Snout obtuse, much longer than the distance between the eye and the ear-openings; seven upper and six or seven lower labials; mental shield is large,

broader than the rostral, subtriangular, truncate posteriorly; three pairs of postmentals, the first pair is separated from one another by a median scale. Head covered above with small, granular keeled scales intermixed with a few larger rounded tubercles, flanks with much separated spine shaped tubercles. Ventral scales imbricate, smooth, few on sides, under the neck are feebly keeled, those on belly smooth. The hind-limb reaches to the axilla, digits elongate, the plates beneath the basal phalanges well developed, 2-5 in number. Tail longer than the head and body, cylindrical, covered above with small keeled scales and a series of six large pointed white tubercles; below with large, imbricate, feebly keeled scales, the median series of scales being bigger than others. Males with 2 or 3 preanal and on each side, 2 to 4 femoral pores.

Distribution : India : Goa Canacona (Map 4)

Elsewhere : None so far.

Habits and habitat : Nocturnal, insectivorous collected under the stones.

Status : Rare, undeterminate.

Genus 8. *Calodactylodes* Strand 1926 (1928)

1870. *Calodactylus* Beddome, *Madras Month. J. Med. Sci.* 1 : p. 30 (type *aureus*).

1926 (1928). *Calodactylodes* Strand, *Arch. Nat. Berlin*, xcii : p. 54.

1935. *Calodactylodes*, Smith, *Fauna Brit. Ind.* 1 : p. 77.

This monotypic genus is with digits slender at the base, subdigital scales are squarish, with two large trapezoidal expansions, one at the base, the other at the free end of the terminal phalanx, the underside of each expansion is covered by two large plates separated by a longitudinal groove; all the digits are with claws which retractile between the distal plates; inner digit is with a distal expansion only. Body is covered dorsally with minute granule like scales, intermixed with larger tubercles, belly scales squarish, juxtaposed. Pupil is vertical, Males are devoid of preanal and femoral pores.

50. *Calodactylodes aureus* (Beddome 1870)

(Fig. 44, Map 15)

1870. *Calodactylus aureus* Beddome, *Madras Month. J. Med. Sci.* 1 : p. 31, pl. 2 (type loc. Tiruppatus Hills, Eastern Ghats).

1926(1928). *Calodactylodes aureus* Strand, *Arch. Nat. Berlin*, xcii, A.S. : p. 54.

1935. *Calodactylodes aureus*, Smith, *Fauna Brit. Ind.* 1, p. 78.

This is a moderately large monotypic gecko with a golden coloured dorsum and whitish belly. The whole body is profusely speckled with brown. Head is large with a broad rounded snout with a distinct somewhat rounded canthal ridge; ear-opening is an oblique slit; eye is large, with a vertical pupil, head is covered above with small granular scales, which are largest on the snout in the portion of canthal ridges. Upper labials 12-13 and as many lower labials; mental is a small shield, generally smaller than the adjacent

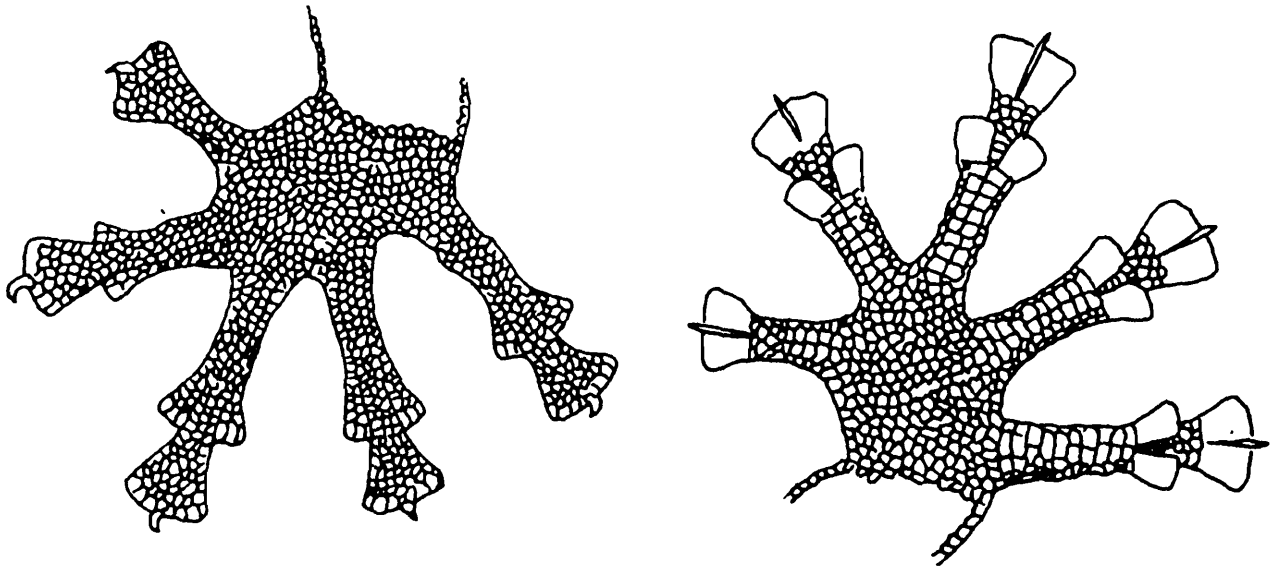


Fig. 44 : *Calodactylodes aureus* : Upper and lower surface of foot.

labials; postmental shields are not present; rostral is two times broader than high; a pair of internasals is available. Dorsum is with small, granular scales intermixed with numerous larger rounded tubercles; ventrum is with large, flat, smooth, squarish, juxtaposed scales; the anterior gular region is with small polygonal scales. The hind-limb reaches up to axilla; digits are slender at the base, with squarish scales beneath, with two large trapezoidal expansions, one at the base, the other at the free extremity of the terminal phalanx, the lower surface of each expansion covered by two large plates separated by longitudinal groove; all the digits are clawed, the claw is retractile between the distal plates; inner digit is with a distal expansion only. Tail is much longer than the head and body, depressed, oval in section, tapering to a point, segmented, covered above with small squarish scales, below with large, squarish, juxtaposed scales. Males are devoid of preanal and femoral pores. Standard length 85 mm.; tail length 100 mm.

Distribution : India : Andhra Pradesh : Tirupati Hills of Eastern Ghats (Map 15).

Habits and habitat : These geckonids prefer to live in dark shady revines or crevices in rocks.

Status : Undeterminate.

Genus 9. *Ptyodactylus* Gray 1825

1825. *Ptyodactylus* Gray, *Ann. Phil.* (2)x : p. 198 (type *lobatus*)

1935. *Ptyodactylus*, Smith, *Fauna Brit. Ind.* 1 : p. 79.

1966. *Ptyodactylus*, Minton, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 88.

This genus comprises two species distributed from North Africa to Sind, Pakistan through South west Asia. The species *Ptyodactylus homolepis*, dealt with here is from Sind.

The other species *Ptyodactylus hasselquisti-lobatus*, inhabits the arid areas of Arabia, Iran and North Africa. The genus is characterised in having digits slender at the base, with series of transverse plate like lamellae beneath; the extremity of each digit is with a large fan-shaped expansion, the lower surface of which is covered with two diverging series of lamellae; all the digits clawed, the claw retractile through a notch at the distal end of the expansion. Complete dorsum is covered with small scales, uniform or mixed with larger tubercles; ventrum is with subimbricate scales. Pupil is vertical. Preanal and femoral pores are not available.

51. *Ptyodactylus homolepis* Blanford 1876
(Map 8)

1876. *Ptyodactylus homolepis* Blanford, *J. Asiat. Soc. Beng.* 45 : p. 19, pl. 2 (type loc. Shikarpur, Sind).

1935. *Ptyodactylus homolepis*, Smith, *Fauna Brit. Ind.* 1 : p. 79.

1966. *Ptyodactylus homolepis*, Minton, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 86.

This large gecko is with a pale-brown dorsum, on which broad transverse, wavy bands of lighter and darker shades are present; ventrum is whitish. The head is large, quite distinct from the neck, covered above with small granular scales which are largest on the snout. Snout broad and rounded, longer than the distance between the eye and the ear-opening. Ear-opening is an oblique slit, the length of which is more than half that of eye; an indistinct canthal ridge is present. Upper labials 13-15 and lower labials 13-15; mental small, about as large as the adjoining scales; postmental shields are present and form a distinct row; rostral broader than high, not touching the nostril, which is encircled by three bulged scales. Dorsum is with small, uniform granular scales; ventrum is with large, flat, rounded, subimbricate scales. Limbs slender; the width of the digital expansion is equal to the diameter of the eye. Tail is slightly depressed, oval in section, tapering to a fine point; covered above with small uniform scales; underside of the tail is with larger scales. Standard length 90-110 mm.; tail length 85 mm.

Distribution : Pakistan (Kirthar range in western Sind) (Map 8).

Habits and habitat : Rock dwelling, insectivorous.

Status : Rare.

Genus 10. *Phyllodactylus* Gray 1828

1828. *Phyllodactylus* Gray, *Spicil. Zool.* : p. 3 (type *pulcher*)

1843. *Euleptes* Fitzinger, *Syst. Rept.*, : pp. 18 & 95. (type *Phyllodactylus europaeus* Gena).

1843. *Discodactylus* Fitzinger, *Syst. Rept.* : 18 & 95 (type *Phyllodactylus tuberculatus* Wiegmann).

1879. *Paraedura* Gunther, *Ann. Mag. Nat. Hist.* (5) iii : p. 218 (type *sancti-johannis*).

1935. *Phyllodactylus*, Smith, *Fauna Brit. Ind.* 1 : p. 80.

This is a large genus comprising more than 45 species distributed in Tropical America, Australia, Africa, islands of Mediterranean Sea and Asia. Only three species are from Asia, one inhabiting Indo-china and two are available in Iran. The genus is characterised in having, basal parts of the digits slender, all the digits are clawed, free, with transverse plates or tubercles beneath, the extreme end of the digits dilated and are with two subtriangular plates separated from one another by a longitudinal groove in to which the claw is retractile. Dorsum covered above with small scales, uniform or mixed with larger tubercles. Pupil vertical. Males are with or without the preanal and femoral pores.

52. *Phyllodactylus siamensis* Boulenger 1899

(Map 6)

1898. *Phyllodactylus siamensis* Boulenger, *Proc. Zool. Soc.*, p. 918, pl. 55, figs. 1, la (type loc. Dong Paya Fai Mts. E. Thailand).
1904. *Phyllodactylus paviei* Mocquerd., *Miss. Pavie Indo-china*, : p. 486. pl. 23, fig. 3 (type loc. Vatana, Thailand).
1905. *Phyllodactylus burmanicus* Annandale, *Ann. Mag. Nat. Hist.* (7) 15 : p. 28 (type loc. Tavoy).
1935. *Phyllodactylus siamensis*, Smith, *Fauna Brit. Ind.* 1 : p. 81.

This small gecko is greyish or brownish dorsally, with or without irregular blackish spots which may have whitish centres; ventrum is whitish. The head is covered above with small scales, largest on the snout, generally intermixed on the occiput with rounded keeled tubercles. Snout rounded, as long as or longer than the distance between the eye and the ear-opening, the length of which is not more than half the diameter of the eye. Upper labials 7-8 and lower labials 6-7; mentals subtriangular, about as broad as the rostral; a pair of large postmentals followed by one or two smaller pairs; rostral twice as broad as high, touching the nostril. Dorsum with small scales and much larger keeled or subtrihedral tubercles, forming 10-12 regular longitudinal rows; ventral scales large, smooth, imbricate, from 20-25 across the middle of the body. Digits long, with transverse lamellae below; the hind-limb reaches to the axilla or slightly less. Tail cylindrical, covered above with irregular imbricate scales, most of which are keeled, underside of the tail are with smooth scales, the median series of which are transversely enlarged. Males are with 6 or 7 preanal pores in wide angled series. Standard length 50 mm., tail length 58 mm.

Distribution : Burma (Tavoy, Tenasserim), Thailand, South Vietnam (Map 6).

Habits and habitat : Terrestrial, insectivorous, nocturnal.

Status : Common in Thailand, rare in Burma.

Genus 11. *Tropicolotes* Peters

1966. *Tropicolotes* Peters, Minton, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 81.

This genus is having four species distributed in the desert areas from North Africa to Sind, Pakistan. These geckos are with uniform strongly imbricate to juxtaposed scales, not

intermixed with enlarged tubercles, no lateral fold, toes weakly angulate between last and next to last phalanx; ear-opening is smaller than eye; males are devoid of femoral pores. Only two species cover the scope of this work.

Key to the species of genus Tropicolotes

1. Postmentals present, in two pairs; enlarged internasal and postrostral scales are present; 12-16 lamellae beneath the fourth toe; male without enlarged preanal scales
..... *Tropicolotes helena*
2. Postmentals are absent or a single small pair may be present; internasal and postrostral scales are not present; 17-18 lamellae beneath the fourth toe; male with a pair of enlarged preanal scales, having pits *Tropicolotes depressus*

53. *Tropicolotes helena* (Nikolsky 1907)

(Fig. 45, Map 68)

1907. *Microgecko helena* Nikolsky, *Ann. Mus. Zool. Acad. Imp. Sci. St. Petersburg*, 10, p. 265 (type loc. Arabistan, Persia = Khuzistan, Iran).

1956. *Tropicolotes helena*, Mertens, *Jahresh. Ver. Vaterl. Naturk Wurttemberg*, 111 : p. 92.

1966. *Tropicolotes helena*, Minton, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 81.

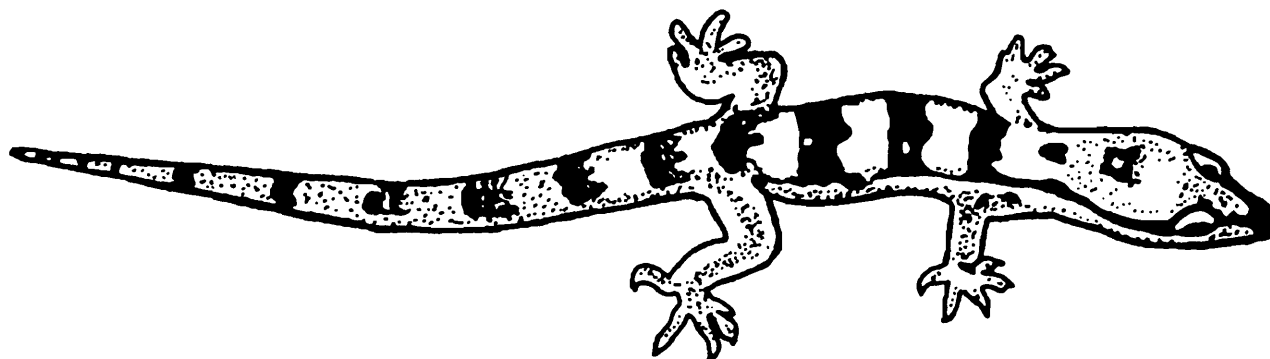


Fig. 45 : *Tropicolotus helena* (Nikolsky) : Dorsal view.

This little dorsoventrally flat gecko is with a pale straw to chrome yellow or amber dorsum and is with five transverse dark bands on body and six to eight on the tail, anterior end of each band is irregular and lighter in colour, thus assuming a general ground colour in adults; posterior end of each band is straight and dark, in some individuals bordered by a white line; interspaces between the bands on tail are narrow; a dark line radiate from snout passes through the eyes and dorsal aspect of forelimbs and ultimately merge with first two or three cross-bands; dorsal aspect of limbs is greyish; ventrum is white with a pinkish tinge. The head is flat, quite distinct from neck and covered above with small, subequal subimbricate or juxtaposed scales, snout bluntly pointed; eyes are moderately large; ear-opening is small and oval. Upper labials 7-9 (generally 8) and

6-8 lower labials (generally 7); postmentals are well developed, anterior postmentals are large and in contact, posterior postmentals are small and do not touch with each other; two large scales are present immediately behind the rostral and in between the nostrils; body scales are small, subequal, subimbricate or juxtaposed; limbs and digits are short but well developed, 12-16 smooth lamellae under the fourth toe. Tail is flat dorsoventrally, with small, subequal, subimbricate or juxtaposed scales above; males are devoid of preanal and femoral pores. Standard length 25-35 mm., tail length 30-40 mm.

Distribution : Iran (South-western Iran), Pakistan (Las Bela, Sind; Mirjawa, north-western Baluchistan) (Map 68).

Habits and habitat : These small lizards are mainly nocturnal, inhabit *Euphobia caducifolia* shrubs, rocky crevices situated in flat and hilly terrain up to 700 feet elevation. These lizards are most agile during the nights of September to October. The main food comprises a variety of arthropods like muggots, young spiders and termites. A single egg (8×5.5 mm.) is laid, incubation period is 5-8 weeks. The breeding season extends from late January to early September, plenty of hatchlings about 15 mm. in body length are seen in February, July, and September (Minton 1966).

Status : Common.

54. *Tropicolotes depressus* Minton & Anderson 1965

(Map 68)

1965. *Tropicolotes depressus* Minton and Anderson, *Herpetologica*, 21 : p. 59 (type loc. Kach, Quetta Division, Pakistan).

1966. *Tropicolotes depressus* Minton and Anderson, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 82.

It is a little, much dorsoventrally flat gecko, dorsum is saffron yellow; three to five dark bands on body and six on tail and all of these are sharply prominent but without light edges, narrower than interspaces between them; a dark band is present across the neck; a dark stripe emerges from snout and emerges in the nuchal band after passing through the eyes and upper side of neck; occiput is with a dark bar; ventrum is white with a pinkish tinge. The scalation and other characters are like *T. helena* but differs from it in following characters; Postmentals are generally absent or a single small pair is available in which both the shields do not touch with each other; enlarged internasal and postrostral scales are not present; fourth toe is with 17-18 lamellae beneath; males are with a pair of enlarged preanal scales bearing pits; tail shorter than body. Standard length 27-29 mm., tail length 24-26 mm.

Distribution : Pakistan (Kach, Quetta Division, Baluchistan) (Map 68.)

Habits and habitat : Rock dwelling (take shelter in rock crevices) available at 6000-6500 feet in hilly areas with sparse vegetation, nocturnal, insectivorous. Nothing is known about other habits.

Status : Rare, undeterminate.

Genus 12. *Dravidogecko* Smith 1933

1890. *Hoplodactylus* Boulenger, *Fauna Brit. Ind.* : p. 100.

1933. *Dravidogecko* Smith, *Rec. Ind. Mus.* 35 : p. 14 (type *anamallensis*)

1935. *Dravidogecko* Smith, *Fauna Brit. Ind.* 2 : p. 82.

This monotypic genus from South India is with clawed, moderately dilated free digits with undivided transverse lamellae beneath. The terminal phalanges are free, slender, compressed rising angularly from the dilated portion. Dorsum is with small, granular scales. Pupil vertical. Males with preanal and femoral pores.

55. *Dravidogecko anamallensis* (Gunther 1875)
(Fig-46, Map-22)

1875. *Gecko anamallensis* Gunther, *Proc. Zool. Soc.* p. 226 (type loc. Anamalai Hills, S. India)

1885. *Hoplodactylus anamallensis*, *Cat. Liz. Brit. Mus.* 1 : p. 175, pl. 14, fig. 2

1933. *Dravidogecko anamallensis*, Smith, *Rec. Ind. Mus.* 35 : p. 14.

1935. *Dravidogecko anamallensis*, Smith, *Fauna Brit. Ind.* 2 : p. 82.

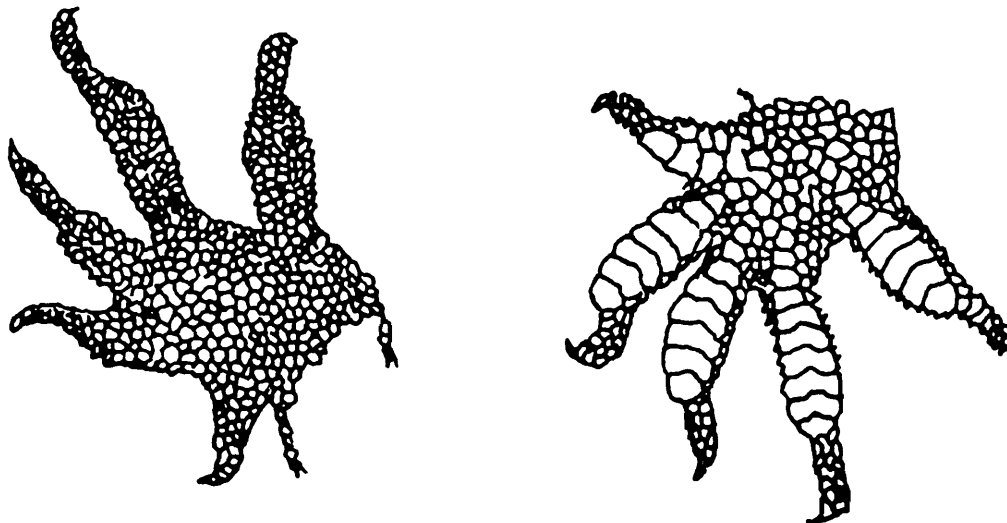


Fig. 46 : *Dravidogecko anamallensis* : Upper and lower surface of foot.

This is a small monotypic gecko with a brown dorsum with dark-brown spots or dots on the back, limbs and tail; belly is pale brown. Head is small, somewhat depressed, with an obtusely pointed snout; ear-opening is very small; eye is moderately large, with an vertical pupil; head is covered above with minute granular scales which are largest upon the snout. Upper labials 8-10 and lower labials 7-8; mental shield is subtriangular, as broad as the rostral and is slightly larger than the adjoining labials; two or three pairs of postmental shields are present, these are somewhat elongated; rostral shield is much broader than high; nostril is situated between the rostral, first labial, and three small nasal

scales. Dorsum is with small, granular, uniformly arranged scales; ventrum is with larger imbricate smooth scales. The hind-limb is short and reaches almost half-way between the axilla and the middle of the body; digits are free, moderately dilated, with undivided transverse lamellae beneath; terminal phalanges free, slender, compressed, rising angularly from the dilated portion; all the digits are clawed; toes are moderately long, slightly webbed at the base; 6-8 lamellae under the fourth toe. Tail slightly longer than the head and body, cylindrical, swollen at the base in the fully grown up adult, its upper surface covered with minute scales, its underside with much larger scales with a median row of transversely enlarged plates. Male is with a continuous series of 40-44 preano-femoral pores. Standard length 45 mm.; tail length 50 mm.

Distribution : India : Anamalai, Palni and Tinnevely Hills of South-western India (Map 22).

Habits and habitat : Rock dwelling, insectivorous, nocturnal.

Status : Rare, undeterminate.

Genus 13. *Hemidactylus* Oken 1817

1817. *Hemidactylus* Oken, Isis, p. 1183 (based on Cuvier's *Hemidactyle*, *Regne Anim.* 2 : p. 47 (type *Gecko tuberculatus* Daudin = *mabouia*)
1842. *Boltalia* Gray, *Zool. Misc.* : p. 58 (type *sublaevis*)
1843. *Hoplopodion* Fitzinger, *Syst. Rept.* : pp. 19 & 103. (type *H. coctaei*)
1843. *Microdactylus* Fitzinger, *Syst. Rept.* : pp. 19 & 104. (type *H. peruvianus*)
1843. *Onychopus* Fitzinger, *Syst. Rept.* : pp. 19 & 104 (type *H. garnoti*)
1843. *Tachybates* Fitzinger, *Syst. Rept.* : pp. 19 & 105 (type *H. mabouia*).
1843. *Pnoepus* Fitzinger, *Syst. Rept.* : pp. 19 & 106 (type *H. javanicus*)
1845. *Velernesia* Gray, *Cat. Liz. Brit. Mus.* : p. 156 (type *richardsonii*)
1845. *Doryura* Gray, *Cat. liz. Brit. Mus.* : p. 156 (type *bowringii*)
1845. *Leiurus* Gray, *Cat. Liz. Brit. Mus.* : p. 157 (type *ornatus*)
1845. *Nubilia* Gray, *Cat. Liz. Brit. Mus.* : p. 273 (type *argentii*).

Key to the species of genus Hemidactylus

1. Back with larger number of strongly keeled tubercles, arranged in longitudinal series; free distal phalanx of inner digit is half as long as the dilated portion.
 - (a) Lamellae under the digits are in a transverse series, 11-13 lamellae under the fourth toe; males with 19-25 femoral pores on each side.....*H. maculatus*
 - (b) Lamellae under the digits are in oblique series, 7-16 under the fourth toe.
 1. Males with preanal pores only.
 - i. 8-11 lamellae under the fourth toe *H. turcicus*
 - ii. 12-14 lamellae under the fourth toe *H. persicus*

2. Males with preano-femoral pores

- i. Back with very large tubercle like scales; digits free, 7-10 lamellae under the fourth toe; back with a pattern of strongly defined large dark-brown saddles; males with 6-14 preano-femoral pores *H. triedrus*
- ii. Back with large tubercles; digits free; 12 lamellae under the fourth toe; dorsum light brown with regularly arranged dark brown cross-bands with white margins. *H. subtriedrus*
- iii. Back with large tubercles; digits free; 8-10 lamellae under the fourth toe; dorsum is with small dark spots or blotches; males with 7-16 preano-femoral pores. *H. brooki*
- iv. Back with moderately large tubercles; digits webbed at the base; with 10 oblique lamellae under the fourth toe; dorsum brownish-grey with faint narrow white-cross-bars; males with 17-20 preano-femoral pores.
..... *H. prashadi*

(c) Lamellae under the digits are in a semi transverse series; 8-10 under the fourth toe; males with preanal pores only; free distal phalanx of inner digit not even half as long as the dilated portion.

1. Back with granular scales mixed with larger oval tubercles; digits free; 8-9 lamellae under the fourth toe; dorsum is with quadrangular spots; males with 6 preanal pores *H. gracilis*
2. Back with small irregular scales mixed with larger round or oval strongly keeled tubercles; digits free; 9-10 lamellae under the fourth toe; dorsum is with dark-brown irregular spots; males with 6 preanal pores
..... *H. porbanderensis*
3. Back with granular scales mixed with scattered erect conical tubercles; digits free; 8-10 lamellae under the fourth toe; dorsum is with dark reticulations; males with 6-12 preanal pores. *H. reticulatus*
4. Back with small, keeled, granular scales mixed with numerous erect conical tubercles; digits free; 9 lamellae under the fourth toe; dorsum with narrow, wavy, whitish transverse bands; males with 7-10 preanal pores. *H. albofasciatus*

II. Back with a smaller number of rounded, smooth or feebly keeled, irregularly arranged tubercles (missing in *H. garnoti*)

(a) Tail without lateral denticulations.

1. Inner toe less than half of length of second toe; in males a continuous of 23-33 preano-femoral pores. *H. frenatus*
2. Inner toe more than half of length of second toe; males with 10-20 femoral

- pores on each side; 9-12 lamellae under the fourth toe; Tail with enlarged tubercles above, swollen at the base. *H. leschenaulti*
3. Inner toe more than half of length of second toe; males with 5-7 femoral pores on each side; 11-15 lamellae under the fourth toe; tail with enlarged tubercles above, swollen at the base. *H. flaviviridis*
4. Inner toe more than half of length of second toe; males with 18-22 femoral pores on each side; 13-15 lamellae under the fourth toe; Tail is devoid of enlarged tubercles but with uniform small scales above, swollen at the base. *H. giganteus*
5. Inner toe more than half of length of second toe; males with 12-15 femoral pores on each side, separated by 2-4 scales mesially; 9-11 lamellae under the fourth toe; tail with uniform small scales above, *not swollen* at the base but *slightly depressed* *H. bowringii*
- (b) Tail with sharp lateral denticulations, strongly depressed.
1. Back with uniform small granular scales; outer pair of postmentals generally not in contact with the lower labials; 11-13 lamellae under the fourth toe. *H. garnoti*
2. Back with small granular scales intermixed with large rounded tubercles; outer pair of postmentals in contact with the lower labials; 10-13 lamellae under the fourth toe; males with 18-20 femoral pores on each side. *H. karenorum*

56. *Hemidactylus maculatus* Dum. & Bibr. 1836

(Plate 4, Map 33)

1836. *Hemidactylus maculatus* Dum. & Bibr. *Erp. Gen.* 3 : p. 358 (type loc. Bombay)

1864. *Hemidactylus sykesii* Gunther, *Rept. Brit. Ind.* : p. 108. pl. 12, fig. c (type loc. Deccan)

1935. *Hemidactylus maculatus* Dum. & Bibr., Smith, *Fauna Brit. Ind.* 2 : p. 85.



Plate 4 : *Hemidactylus maculatus* (Dum. & Bibr.)

This giant gecko in which dorsum is brown with dark-brown spots, undulating transverse bars and streaks; belly is dirty-white. Young individuals are more brilliantly coloured and spotted with dark brown. Head is large and prominent, with a bulging on the tip of snout; eye is moderately large with an vertical pupil; ear opening is small; head is covered with small granular scales intermixed with larger conical tubercles, snout is having somewhat convex scales. Upper labials 10-12 and lower labials 9-10; mental shield subtriangular, broader than the rostral and slightly longer than the adjoining labials; postmental shields are well developed, in two pairs, the inner pair is elongate and quite larger than the outer pair, rostral is quadrangular, broader than high; nostril is situated between the rostral, first labial, and several small scales; a pair of internasal scales is always present. Dorsum is with small juxtaposed scales and large trihedral tubercles, arranged in 18-20 regular longitudinal rows; ventrum with smooth, rounded, imbricate scales; the scales on the gular region are small and granular. The hind-limb just reach to the axilla; digits free, moderately dilated; the transverse lamellae under toes are completely straight and smooth, 9-10 under the first toe and 10-13 under the fourth toe. Tail is longer than the head and body, slightly depressed, oval in section, verticillate; its upper aspect is covered with small, irregular, pointed, keeled scales, and a series of 6-8 large trihedral tubercles; under surface of tail is with a median transverse series of much enlarged plates. Male with 19-25 femoral pores on each side. Standard length 83-122 mm.; tail length 90-130 mm.

Distribution : India : Gujarat : Surat, Dangs. Kerala : Malabar coast, Maharashtra : Bhaji caves, Karla, Khandalaghat, Khopoli in Poona district; Panchgani in Satara district. Tamil Nadu : Tinnevely Hills, Ramnad district and Salem (Map 23).

Habits and habitat : Inhabits the crevices, caves and other such structures in the rocks. This is a carnivorous species consuming a wide range of arthropods, small lizards including the juveniles of its own and other species of geckos; worm snakes and earthworms. The species is most pugnacious and bites savagely on rough handling. Breeding takes place between March to July, 2 round (19×16 mm.) eggs are laid in each clutch.

Status : Common.

57. *Hemidactylus turcicus turcicus* (1758)

(Map 24)

1758. *Lacerta turcica* Linnaeus, *Syst. Nat.* ed. 10 : p. 202.

1884. *Hemidactylus kurachiensis* Murray, *Zool. Sind* : p. 361, pl. 9, fig. 2 (type loc. Sind.)

1885. *Hemidactylus turcicus*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 126.

1935. *Hemidactylus turcicus*, Smith, *Fauna Brit. Ind.* 2 : p. 86.

This moderately large gecko is light brownish or greyish dorsally, with dark spots arranged in a transverse series in few individuals; usually there remains a dark streak on

the lateral aspects of head; ventrum dirty white. The head is moderately large and is covered above with minute granular scales intermixed with larger tubercles. Snout obtusely pointed, about as long as the distance between the eye and the ear-opening, covered with rounded, convex scales, largest over the canthal region. The diameter of the oval, oblique ear-opening is almost half that of eye. Upper labials 7-10 and lower labials 6-9; mental triangular, as broad as the rostral, longer than the adjoining labials; postmentals are present, in two well developed pairs, the inner pair is elongate and larger than the outer; gular scales are small and granular; rostral is slightly less broader than high; nostril is between the rostral, first labial and two or three small scales; dorsum is with small granular scales intermixed with larger, rounded keeled or subtrihedral tubercles arranged in 14-16 almost regular longitudinal rows. Ventrums are with smooth, rounded, imbricate scales. Digits free, moderately dilated; subdigital lamellae oblique and curved, 5-8 lamellae under the first and 8-11 under the fourth; the hind-limb not reaching up to the axilla. Tail subcylindrical in section, covered above with small irregular, more or less pointed scales and a series of 6 or 8 large pointed tubercles; underside of the tail is with imbricate scales and a median series of transverse enlarged plates. Males are with 2-10 preanal pores.

Distribution : The original home was the Mediterranean coasts and islands. Now the species is available in South-western Asia, Pakistan (Karachi and its surroundings, Sehwan and Ghorabari), North Africa, West Indies, Mexico (eastern part), Southern United States. The species has reached and established nicely in new areas, through cargo ships (Map 24).

Habits and habitat : Nocturnal, insectivorous, terrestrial, house dwelling gecko which breeds throughout the year.

Status : Very common.

58. *Hemidactylus persicus* Anderson 1872 (Map 25)

1872. *Hemidactylus persicus* Anderson, *Proc. Zool. Soc.* : p. 378, fig. 2 (type loc. Shiraz)

1895. *Hemidactylus bornmuelleri* Werner, *Verh. Zool. bot. Ges. Wien.* : 45, p. 14, pl. 3 (type loc. Bagdad).

The species is with a dark brown yellow-tinged dorsum, with black dots or lines on back; cross-bands on tail; a dark stripe up to the tip of snout which radiates through the eyes. The species is most closely allied to *H. turcicus* but differs in having the following characters. Labials in larger number, upper labials 10-12 and lower labials 8-10; lamellae under the first toe 8-10; lamellae under the fourth toe 12-14; preanal pores 9-13. Size is larger than *turcicus*, standard length 66 mm., tail length 82 mm.

Distribution : Arabia, Iran, Pakistan (Sind, Waziristan, Bolan pass at 3400 feet, Wad in Kalal District) (Map 25).

Habits and habitat : Prefers rocky desert cliffs, trees, old buildings, nocturnal, insectivorous, breeding season is from June to mid-September; eggs are laid under stones and the bark and roots of euphorbia shrubs.

Status : Common throughout the range.

59. *Hemidactylus triedrus* (Daudin 1802)
(Map-16)

1802. *Gecko triedrus* Daudin, *Hist. Nat. Rept.* 4 : p. 155 (type loc. Not known).

1832. *Hemidactylus triedrus*, Lesson, *Belang. Voy. Ind. Or.* : p. 311. pl. 5, fig. 1.

1935. *Hemidactylus triedrus*, Smith, *Fauna Brit. Ind.* 2 : p. 88.

This large colourful gecko is somewhat yellowish with a brownish, pinkish or greenish tinge on dorsum, with numerous scattered white tubercles all over; back with four large rich-brown or olive-green white edged saddle shaped cross-bars or bands between the head and hind-limbs; supra-ocular region is greenish; head with one or two yellow stripes behind the eye and a yellow streak across the nape; ventral surface is light pink in the young which in the adult becomes white or yellow with a reddish tinge. In the very old individuals the dorsal markings become faint with the advancement of age and general dorsal colour becomes light pinkish-brown, with yellow cross-bars edged with dark-brown or rows of white tubercles encircled by brown; on tail alternate dark-brown and white bands or bars persist throughout the life. Head is large and prominent with a bulging on the tip of snout, swelling is most prominent in the canthal region, eye is moderately large with an vertical pupil; ear opening is small, somewhat oval; head is covered with minute granular scales intermixed with larger, keeled tubercles; snout is covered with convex, keeled scales which are largest on the canthal region. Upper labials 8-10 and lower labials are 7-8; mental shield is large, subtriangular, about two times longer than the adjoining labials; postmentals are well developed, in two pairs, the inner pair is much larger and elongated than the outer; rostral is not much broader than high; nostril is situated between the rostral and several small scales, usually separated from the first labial; two or three inter nasals are generally present. Dorsum is with small, irregular scales and very large trihedral tubercles arranged in 16-18 regular longitudinal rows; ventrum is with large, smooth, rounded, subimbricate scales, gular region is with small granular scales. The hind-limb reaches almost to the axilla; digits free, moderately dilated, with slightly oblique lamellae; 6-7 lamellae under the first toe and 7-8 lamellae under the fourth toe, the base of the digit is covered with small scales. Tail is longer than the head and body, slightly depressed, oval in section, covered above with small, irregular, pointed scales and series of 4 or 6 large, keeled, pointed tubercles; under side of the tail is with imbricate scales and a median series of transversely enlarged plates. Male with preanofemoral pores 6-14 on each side, briefly interrupted mesially, generally with a single scale only. Standard length 65-80 mm.; tail length 63-90 mm.

Distribution : India : Andhra Pradesh : Adori in Kurnool district, Vijaypuri North in Nalgonda district, Kerala; Azambola, Trivandrum district, Quilon, Madhya Pradesh; Indore. Maharashtra : Poona district, Satara district. Karnataka; Bangalore district, Mysore district, Tamil Nadu. Ramnad district, Sivagiri Hills, Nilgiri Hills, Madurai district, Rajasthan : Ajmer, Jodhpur.

Elsewhere : Sri Lanka, West Pakistan. (Map 26)

Habits and habitat : This nocturnal, insectivorous, docile gecko prefers to live in semi arid rocky as well as flat sandy but moderately moist areas with plenty of scrubby vegetation. The most suitable abodes are rodent and lizard burrows, crevices in trees, rocks, dams, walls of the inner as well as outer walls of abandoned old buildings and termite mounds. At dusk it emerges from hideouts and roams in search of food which comprises mainly the insects like beetles, moths, bugs, spiders and plenty of termites, crickets and grasshoppers. When provoked it exhibits a defensive attitude by rising high on the legs, lashing the tail, and by making a spitting sound. In Pakistan this gecko was found to be living in the association of *Eublepharis macularius*. Minton (1966) states that *Eublepharis* feeds upon its young ones. The species has been recorded up to 400 metres altitude. The breeding season is from May to July. The gravid females are seen during middle of May to the end of June.

Status : Common.

60. *Hemidactylus subtriedrus* Jerdon 1853

1853. *Hemidactylus subtriedrus* Jerdon, *J. Asiat. Soc. Beng.* 22, p. 467 (type loc. Nellore district)

1935. *Hemidactylus subtriedrus*, Smith, *Fauna Brit. Ind.* 2 : p. 89.

The Madras blotched gecko is light brown with dark-brown saddle shaped bands on the dorsum. The bands are bordered with white and are four in number between the head and the hind-limbs. The pholidosis and other characters are same as available in *Hemidactylus triedrus* except that it differs in having 10-12 upper and 10 lower labials; 8 lamellae under the first toe and 12 under the fourth.

Distribution : India : Tamil Nadu: Nellore and Ellore districts.

Habits and habitat : This is a rock dwelling, nocturnal insectivorous species.

Status : Rare, undeterminate.

61. *Hemidactylus brooki* Gray 1845

(Map 27)

1845. *Hemidactylus brooki* Gray, *Cat. Liz. Brit. Mus.* p. 153 (type loc. Borneo)

1858. *Hemidactylus cyanodactylus* Girard, *U.S. Explor. Exp., Herpet.*, : p. 254, pl. 35, figs. 17-24 (type loc. Cape Verde Is.).

1864. *Gecko typleri* Tytler, *J. Asiat, Soc. Beng.* 33 : p. 547 (type loc. Moulmein).

1870. *Hemidactylus affinis* Steindachner, *Sitz. Akad. Wiss. Wien.* 62 (1) : p. 328 (type loc. Senegambia).

1873. *Hemidactylus guineensis* Bocage, *J. Sci. Lisbon*, 4 : p. 209.

1884. *Hemidactylus gleadowi* Murray, *Zool. Sind* : p. 360, pl. 9, fig. 3 (type loc. Sind).

1884. *Hemidactylus kushmorensis* Murray, *Ann. Mag. Nat. Hist.* (5) 14 : p. 109 (type loc. Bhaner, Upper Sind).
1887. *Hemidactylus murrayi* Gleadow, *J. Bombay Nat. Hist. Soc.* 2 : p. 49 (type loc. Pimpry and Garvi near Surat).
1895. *Hemidactylus lenkatei* Lidth de Jeude, *Notes Leyden Mus.* 16 : p. 121 (type loc. Rotti E. Ind. Archipel.).
1905. *Hemidactylus subtriedroides* Annandale, *Ann. Mag. Nat. Hist.* (7) 15 : p. 29.
1935. *Hemidactylus brooki*, Smith, *Fauna Brit. Ind.* 2 : p. 89.

This moderately large gecko is with a light brown and dark-brown spotted dorsum; dirty white belly and with a dark streak along the side of head. Head is large, ovate, and prominent, eye is moderately large with an vertical pupil; ear opening is oval; head is covered with small granular and larger scales; snout is covered with small, convex scales. Upper labials 8-12 and lower labials are 7-9; mental shield is moderately large, subtriangular, almost two times longer than the adjacent labials; postmentals are generally represented by two pairs, the inner one is elongate and larger than the outer, in many individuals, a third pair is also available (in most of the specimens from Goa); rostral shield is quadrangular, not much broader than high; nostril is situated between the rostral, first labial and two or three small scales. Dorsum is with small granular scales mixed with conical, keeled tubercles, which are arranged in 16-20 longitudinal rows; scales on the ventrum are smooth, rounded and imbricate. The hind-limb is not reaching to the axilla, digits are free, moderately dilated, with 5-6 oblique lamellae under the first and 6-10 under the fourth toes. Tail is much longer than the head and body, very much depressed, verticillate, swollen at the base; its dorsal aspect is covered with small scales and with a series of 6-8 long, pointed, strongly keeled tubercles; under side of the tail is with imbricate scales and with a median series of transversely enlarged plates. Male with 6-16 preano-femoral pores on each side, generally interrupted mesially. Standard length 14-60 mm.; tail length 17-75 mm.

Distribution : India : Widely distributed in whole of India.

Elsewhere : Widely distributed in Sri Lanka, Borneo, Pakistan, Burma, South China, West Indies, Tropical Asia and Northern half of Africa (Map 27).

Habits and habitat : This commonest house gecko prefers to live under the stones, beneath the dry bark of the wooden logs, rocky areas in dense forests away from human dwellings. In many areas its favourite situation is in the buildings. In Rajasthan this gecko leads a harmonious existence with *Cyrtodactylus scaber* and *Hemidactylus flaviviridis*. The food mainly comprises grasshoppers and their nymphs; beetles and their grubs (family Scarabaeidae); dipterous insects; cockroaches; termites; spiders and their nymphs; earwigs; arthropod eggs; moths, butterflies and their caterpillars; ants (*Camponotus compressus*); Hymenopterous insects; scutigeraans; solifugids; bugs and their nymphs; Isopods; Gastropoda (*zotecus* sp.) and seeds of wild plants. Breeding season extends through complete summer to October; two spherical eggs are laid in a single clutch; incubation period is of about 39 days.

Status : Very common.

62. *Hemidactylus depressus* Gray 1842
(Map 25)

1842. *Hemidactylus depressus* Gray, *Zool. Misc.* : p. 58 (type loc. not known).
1845. *Nubilia argentii* Gray, *Cat. Liz. Brit. Mus.* : p. 273 (type loc. Singapore).
1852. *Hemidactylus piersii* Kelaart, *Prod. Faun. Zeyl.* : p. 159 (type loc. Kandy, Sri Lanka).
1935. *Hemidactylus depressus*, Smith, *Fauna Brit. Ind.* 2 : p. 91.

This large gecko is with a light brown dorsum, with four or five dark, transverse, angular or branched markings upon the back; two dark and white stripes on the lateral aspects of head, white one is upper, top of head may be with the dark spots; tail is cross bared with dark colour; ventrum is greyish-white. The juveniles are with broad, dark transverse bars, which sometimes enclose pale spots. In old individuals these markings fade out and become indistinct. The head is moderately large and covered above with small granular scales which are largest on the snout. On the occiput the small granular scales are mixed with rounded tubercles. Snout obtusely pointed, slightly longer than the distance between the eye and the ear-opening. Diameter of the oval ear-opening is almost half that of the eye. Upper labials are 10-12 and lower labials 8-10; mental large, subtriangular as broad as the rostral, longer than the adjoining labials; two well developed pairs of postmentals are present, the inner pair is slightly longer and larger than the outer; gular region is with small granular scales; breadth and height is almost equal; nostril is between the rostral and several small scales, generally not in contact with the first labial; two or three internasals are available; dorsum is with small granular scales and 16-18 almost regular longitudinal rows of subtriangular tubercles; the distance between two tubercles in longitudinal series is greater than the length of the tubercle; a distinct lateral fold is present; belly is with smooth, rounded, imbricate scales in 36-40 rows across the middle of the body. Digits perfectly webbed at the base, moderately dilated; subdigital lamellae are oblique, 6-8 under the first toe, 10-11 under the fourth toe; the hind-limb generally reaches to the axilla. Tail is depressed, verticillate, flat beneath, with angular or serrated lateral aspect, covered above with small, pointed scales and series of 6 or 8 large, pointed tubercles; underside of the tail is with pointed, strongly imbricate scales and a median series of transversely enlarged plates, the breadth of which is about one-third that of the tail. Males are with 16-19 femoral pores on each side. Standard length 80 mm., tail length 90 mm.

Distribution : Sri Lanka (Map 25).

Habits and habitat : House and tree dwelling, insectivorous, nocturnal.

Status : Common.

63. *Hemidactylus prashadi* Smith 1935

(Plate 5, Map 15)

1935. *Hemidactylus prashadi* Smith, *Fauna Brit. Ind.* 2 : p. 92.Plate 5 : *Hemidactylus prashadi* Smith

This large, gecko is greyish-brown with faint narrow white bands on the complete dorsum including the tail. Its ventral aspect is light grey. Young individuals are more prominently coloured and are having narrow, whitish cross-bars or spots with darker margins, these 7 or 8 spots are continuous from Occiput to the complete length of back. Head is large, slightly flat, moderately large, eyes are moderately large, with an vertical pupil; ear-opening is circular; head is covered above with small granular scales which are largest and convex on the occiput where they are intermixed with larger and rounded tubercles. Upper labials 11-12 and lower labials 9-11; mental shield is large, subtriangular, twice the size of adjoining labials in length; postmentals are always in two pairs, the inner pair of postmentals is larger than the outer pair and is in contact with one another behind the mental; rostral shield is broader than high and is having a prominent median cleft; nostril is situated between the rostral, first labial and several small scales. Dorsum is with small, granular scales intermixed with quite larger, subtrihedral tubercles, which are arranged in regular longitudinal rows; ventrum is with rounded subimbricate scales, gular region is with small granular scales; in this gecko there is a distinct lateral fold; 35-40 scales are present across the mid-body between the lateral folds. The hind-limb is hardly reaching to the axilla; digits are moderately dilated, distinctly webbed at the base; 8 oblique lamellae are present under the first toe and 10 under the fourth toe. Tail much longer than the head any body, slightly swollen at the base, rounded in section, quite depressed, verticillate with a faint angular lateral edge; the upper surface of the tail is provided with small scales and a row of four large, keeled tubercles, the underside with

a series of transversely enlarged plates, which cover the whole width of the tail surface. Male with 17-20 preano-femoral pores, separated mesially by three scales. Standard length 51-95 mm.; tail length 71-123 mm.

Distribution : India : Goa, Karwar, Jog (Map 15).

Habits and habitat : The specimens from Goa were collected from old deserted buildings. At Nayada village (Near Molem, Goa) it was observed that the crevices in the walls used as abodes by these lizards were also shared by the wolf snakes, *Lycodon aulicus* and pitvipers, *Trimeresurus granineus*. This is an insectivorous, nocturnal species. These geckos are most docile and gentle in disposition.

Status : Rare.

64. *Hemidactylus gracilis* Blanford 1870 (Map 16)

1870. *Hemidactylus gracilis* Blanford, *J. Asiat. Soc. Beng.* 39 : p. 362, pl. 26, figs. 4-6 (type loc. S.E. Berar, Raipur, Madhya Pradesh)

1912. *Hemidactylus platyceps* Annandale, *Rec. Ind. Mus.* 8 : p. 56 (type loc. Bilimora, Maharashtra).

1935. *Hemidactylus gracilis*, Smith, *Fauna Brit. Ind.* 2 : p. 94.

This small, slender gecko is of greyish dorsum with dark-brown squarish spots arranged in two longitudinal rows on either side of a thin dark vertebral line; another more prominent line along the side of the head and body; ventrum is white, generally with dark-brown longitudinal lines. Head is narrow and quite long; ear-opening is small, subcircular; head is covered above with small, juxtaposed scales, those on the snout are largest and strongly keeled. Upper labials 9-10 and lower labials are generally 7 or 8; mental shield is large, triangular; twice as long as the adjoining labials; postmentals are large and in two pairs, the inner pair is almost equal to the outer pair, rostral shield is broader than high; nostril is situated between the rostral and many small scales. Dorsum is with small scales and 10-12 longitudinal rows of oval, strongly keeled tubercles; ventrum is with large, flat, rounded imbricate scales, which are comparatively smaller on the gular region. The hind-limb does not reach to the axilla; digits are free, moderately dilated, 5 lamellae under the first toe, 8-9 lamellae under the fourth toe, only the anterior lamellae are divided, free distal phalange of innermost digit very short. Tail is longer than the head and body, the median series of scales are enlarged to form transverse plates on the lower side. Male with an angular series of six preanal pores. Standard length 22-37 mm.; tail length 26-43 mm.

Distribution : India : Andhra Pradesh: Nagarjunakonda Hill, Nalgonda district. Maharashtra : Mahavali, Poona district, Wai and Alandi in Satara district; Chanda, Berar, Bilimora, Madhya Pradesh; Raipur (Map 16).

Habits and habitat : Insectivorous and nocturnal.

Status : Common.

65. *Hemidactylus reticulatus* Beddome 1870
(Fig-27, Map-28)

1870. *Hemidactylus reticulatus* Beddome, *Madras Month. J. Med. Sci.* 1 : p. 33 (type loc. Kollegal, Karnataka).

1935. *Hemidactylus reticulatus*, Smith, *Fauna Brit. Ind.* 2 : p. 94.

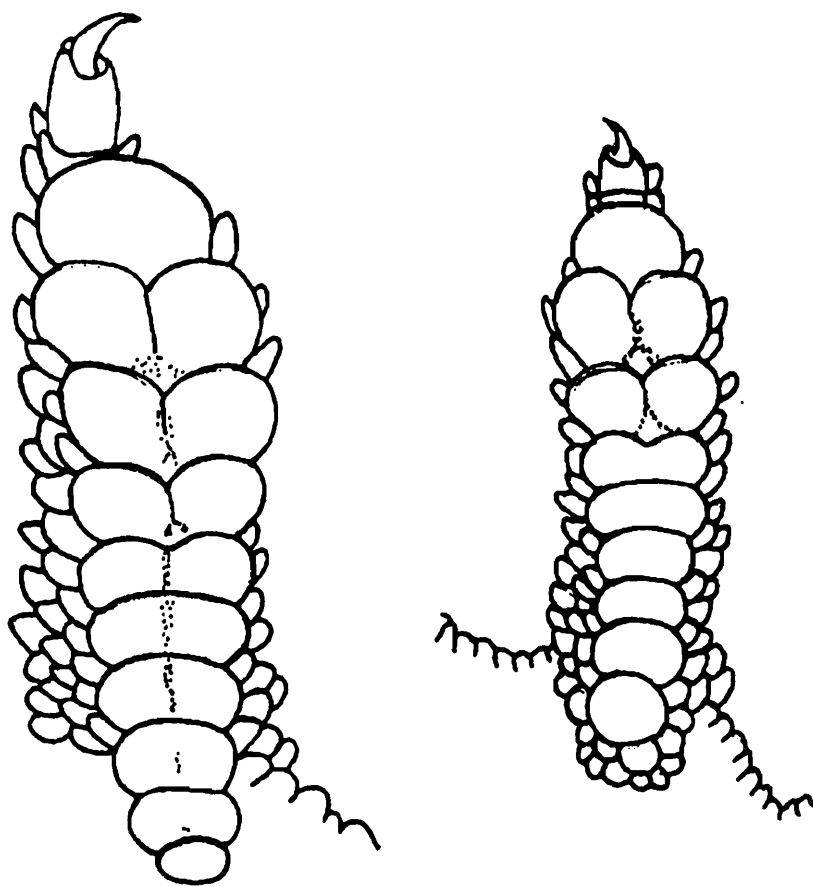


Fig. 47 : Lower surface of fourth toe : A. *Hemidactylus reticulatus*; B. *Hemidactylus albofasciatus*

This small brown gecko is having a network of brownish-blue lines on its dorsum; many of the dorsal tubercles are white; throat is having the brown markings; ventrum is whitish. Head is small and bulged, snout is rounded; ear-opening small, subcircular; head is covered above with small granular scales which are largest and more strongly keeled on the snout. Upper labials 9-10 and lower labials are 7-8; mental shield is moderately large, subtriangular, two times longer than the adjoining labials; 2 or 3 well developed pairs of postmental shields, the inner pair is most prominent and largest; rostral shield is squarish, not much broader than high; nostril is situated between first labial and several

small scales. Dorsum is with small, keeled scales which are intermixed with larger, sharply pointed keeled tubercles; ventrum is with smooth, rounded imbricate scales. The hind-limb just reach to the axilla; digits short, free, moderately dilated; free distal phalange of innermost digit quite short; 4-6 lamellae under the first and 8-10 lamellae under the fourth toe. Tail is slightly longer than the head and body, round in transverse section, verticillate, covered above with small, pointed scales and series of 6-8 long, pointed tubercles; the underside of tail is with similar, pointed, imbricate scales. Male with an angular series of 6-12 preanal pores. Standard length 21-60 mm.; tail length 30-65 mm.

Distribution : India : Andhra Pradesh : Tummalabaibu, Palkonda Hills in Anaparthi district; Eddenmotu and Fringimotu Hills and Macherla town in Guntur district; Nandikonda, Deverkonda, Vijaypuri, Madhvram, Suryaraopet, Nidigul and Yelleshwaram in Nalgonda district. Kerala : Cochin. Karnataka : Chikmanglur, Bababudin Hills. Tamil Nadu : Madura, Gudikal Hills, Yemmiganur and Shevaroy Hills (Map 28).

Habits and habitat : All the geckos from Andhra Pradesh were collected from rocky areas either under stones or from crevices in rocks. The species is insectivorous and nocturnal.

Status : Common.

66. *Hemidactylus frenatus* Schlegel 1836 (Map 29)

1836. *Hemidactylus frenatus* Schlegel, *Erp. Gen.* 3 : p. 366 (type loc. Java)
 1854. *Hemidactylus punctatus* Jerdon, *J. Asiat. Soc. Beng.* 22 : p. 467 (type loc. Tellicherry, Malabar, Kerala).
 1860. *Hemidactylus inornatus* Hallowell, *Proc. Acad. Philad.* : p. 492 (type loc. Riu Kiu Is.)
 1860. *Hemidactylus pumilus* Hallowell, *Proc. Acad. Philad.* : p. 502 (type loc. Hongkong)
 1864. *Gecko chaus* Tytler, *J. Asiat. Soc. Beng.* 33 (2) : p. 547 (type loc. Moulmein and Rangoon).
 1864. *Gecko caracal* Tytler, *J. Asiat. Soc. Beng.* 33(2) : p. 547 (type loc. Rangoon).
 1868. *Hemidactylus longiceps* Cope, *Proc. Acad. Philad.* : p. 320 (type loc. Manila).
 1874-75. *Hemidactylus vittatus* Gunther, *Zool. Ferbus & Terror*, : p. 17, pl. 15, fig. 5 (type loc. Borneo and Port Essington).
 1935. *Hemidactylus frenatus*, Smith, *Fauna Brit. Ind.* 2 : p. 95.

This smaller gecko is pinkish-brown or tobacco-brown, pale grey or absolutely brown above; many examples have faint brown longitudinal stripes on the dorsum; a dark streak generally emerge from near the eyes and extend up to groin; tail is reddish; belly is whitish or light yellow. Head is quite large; ear-opening subcircular; head is covered above with small granular scales which become larger on the snout. Upper labials 10-12 and lower labials 8-10; mental shield is large, subtriangular; two pairs of postmental shields, both are almost equal, in some examples a small third pair of postmentals is also

available; rostral shield is broader than high; nostril is situated between rostral, first labial and three or four small scales. Dorsum is with small granular scales, usually intermixed with scattered, rounded, slightly keeled tubercles; ventrum is with smooth, rounded, imbricate scales, those on the gular region are quite small and granular. The hind-limb not reaching to the axilla; digits free, moderately dilated, first one is the smallest; oblique lamellae under the first toe 4-5 and 9-10 under the fourth toe. Tail is slightly longer than head and body, feebly depressed, oval in section, verticillate, covered above with small scales and series of six enlarged, pointed tubercles; under side of the tail with a median series of transversely enlarged scales. Male with a continuous series of 26-36 preanofemoral pores. Standard length 40-60 mm.; tail length 39-65 mm.

Distribution : India : Peninsular India, West Bengal, Andaman and Nicobar Islands. Elsewhere : A tropicopolitan species. Bangladesh; complete Indo-chinese and Indo-Malayan sub-regions; Island of Indian Ocean; Tropical Australian region; East Africa; St. Helena (Map 29.)

Habits and habitat : The species is insectivorous, nocturnal, prefers to live in the crevices of tree trunks, deserted houses; gardens and all sort of habitats. Breeding season extends from March to December. Its calls are loud and repeated for 3 to 4 times with a slight gap.

Status : Abundant, throughout its range.

67. *Hemidactylus leschenaulti* Dum. & Bibr. 1836

(Map 30)

1836. *Hemidactylus leschenaulti* Dum. & Bibr., *Erp. Gen.* 3 : p. 364 (type loc. Sri Lanka)
 1845. *Hemidactylus bellii* Gray, *Cat. Liz. Brit. Mus.* : p. 155 (Type loc. Not Known).
 1852. *Hemidactylus coctaei*, Kelaart, *Prod. Faun. Zeyl.* : p. 160.
 1856. *Hemidactylus pustulosus* Lichtenstein, *Nomencl. Rept. Mus. Berol.* : p. 5 (type loc. Sri Lanka)
 1868. *Hemidactylus kelaarti* Theobald, *Cat. Rept. Asiat. Soc. Mus.* : p. 29 (type loc. Sri Lanka)
 1870. *Hemidactylus marmoratus*, Blanford, *J. Asiat. Soc. Bengal* 39 (2) : p. 363, pl. 16, figs. 1-3, (type loc. near Nellore, Tamilnadu).
 1935. *Hemidactylus leschenaulti*, Smith, *Fauna Brit. Ind.* 2 : p. 97.

This large ashy grey gecko is with undulating cross-bars or rhomboidal spots on the back; a black stripe emerges from behind the eye and extends up to flanks; belly is whitish. Head is large with a broad snout; ear opening is subcircular; head is covered with small granular scales which become quite large near the snout. Upper labials 10-12 and lower labials 8-10; mental shield is quite large, subtriangular; two pairs of postmentals, inner pair is larger than the outer pair; rostral shield is broader than high; nostril is situated between rostral, first labial and two or three small scales. Dorsum is with small granular scales intermixed with few larger, rounded, feebly keeled tubercles; ventrum is with smooth, rounded, subimbricate scales, those on the gular region are quite small and

flat. The hind-limb hardly reaches to the axilla; digits are free, moderately dilated, with slightly oblique lamellae; 6-7 lamellae under the first and 9-11 under the fourth toe. Tail is almost equal to the head and body, strongly depressed, swollen at the base in the mature individuals, flat beneath, verticillate, covered above with small scales and series of 6 enlarged pointed tubercles; below with imbricate scales and a median series of transversely enlarged plates. Male with 10-17 femoral pores on each side. Standard length 32-33 mm.; tail length 31-83 mm.

Distribution : India : Peninsular India; Rajasthan, West Bengal, Elsewhere : Sri Lanka, Pakistan (Map 30).

Habits and habitat : The species is arboreal, sylvetic most favourable abodes are the large trees of banyan, tamarind, mango etc. During the day these lizards hide under the bark and in crevices of these trees. These lizards are insectivorous. Gravid females are available in March to May.

Status : Abundant.

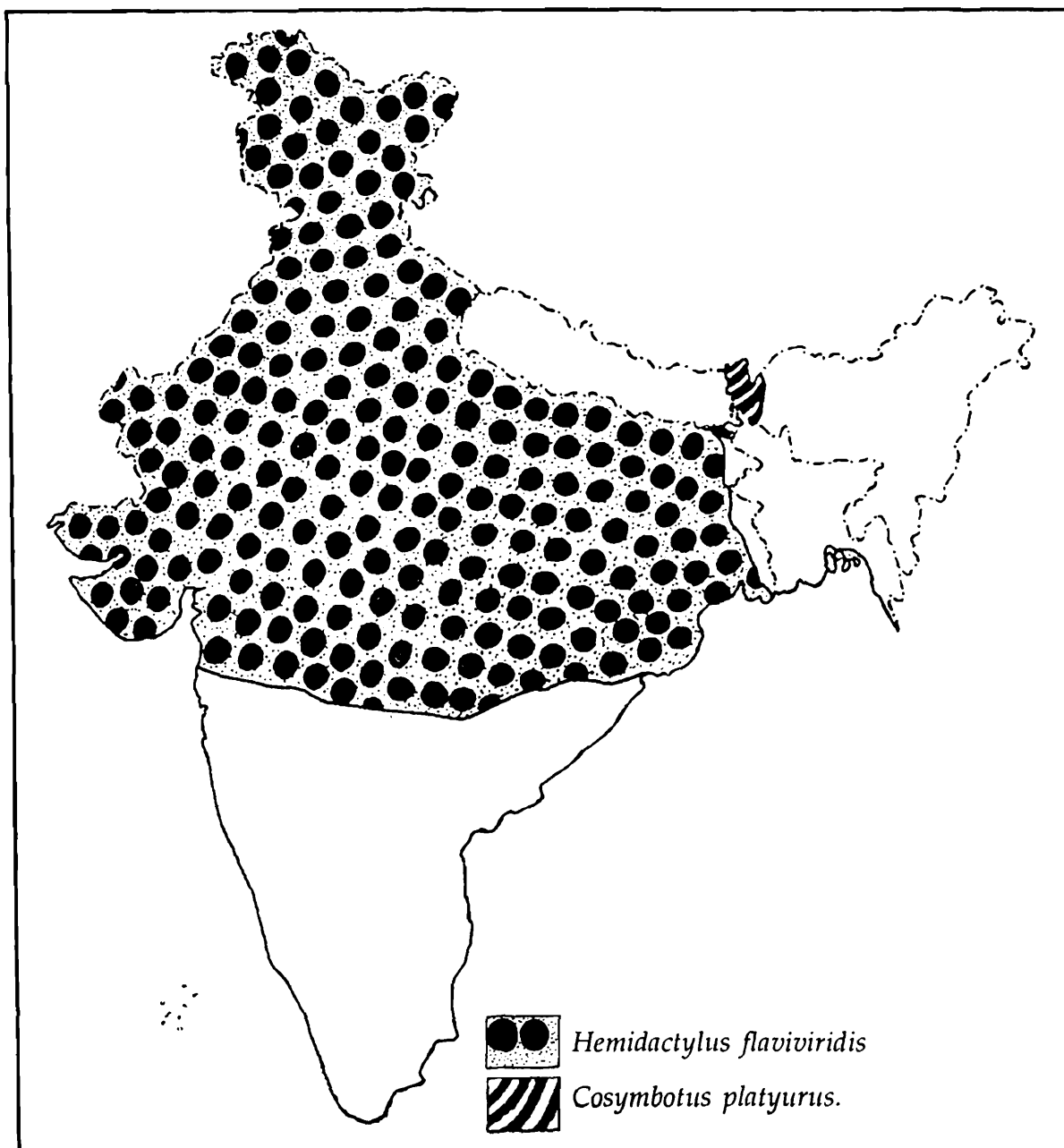
68. *Hemidactylus flaviviridis* Ruppell 1835

(Map-17)

1835. *Hemidactylus flaviviridis* Ruppell, *Neue Wirb. Faun. Abyss* : p. 18, pl. 6, fig. 2 (type loc. Massana Is. Eritrea).
 1836. *Hemidactylus coctaei* Dum. & Bibr. *Erp. Gen.* 3 : p. 365 (type loc. Bengal and Bombay)
 1842. *Boltalia sublaevis* Gray, *Zool. Misc.* : p. 58 (type loc. India).
 1871. *Hemidactylus bengaliensis* Anderson, *J. Asiat. Soc. Bengal*, (2) 40 : p. 14 (type loc. Bengal).
 1935. *Hemidactylus flaviviridis*, Smith, *Fauna Brit. Ind.* 2 : p. 98.

This large and robust gecko is with a pale-grey or greenish-grey, brown or olive dorsum; back is with wavy, dark cross bands which are clearly visible during the day; belly is yellowish. Head is large with a broad snout; ear-opening is subcircular; head is covered with minute granules, which become more prominent and large on the snout. Upper labials 12-15 and lower labials 10-12; mental shield is large, subtriangular; two pairs of postmentals, inner one is larger than the outer pair; rostral is broader than high; nostril is situated between rostral, first labial and two or three small scales. Dorsum is with small granular scales, intermixed with very few larger, rounded, feebly keeled tubercles; ventrum is with smooth, rounded, imbricate scales, those on the gular region are quite small and flat. The hind-limb just reaches to the axilla; digits are free, moderately dilated, with oblique lamellae beneath; 7-10 lamellae under the first toe and 11-14 under the fourth. Tail is almost equal to the head and body, strongly depressed and swollen at the base in the adults, flat beneath, verticillate, upper surface covered with small scales and series of 6 enlarged tubercles; underside of the tail is with imbricate scales with a median series of transversely enlarged plates. Male with 5-7 femoral pores on each side. Standard length 42-90 mm.; tail length 38-90 mm.

Distribution : India : Whole of India, but widely distributed in North India above 20°N. Elsewhere : Arabia, Pakistan, Iran and shores of the Red Sea (Map 17).



Map 17 : Distribution of *Hemidactylus flaviviridis* and *Cosymbotus platyurus*.

Habits and habitat : Inhabits the buildings, most agile, pugnacious, a marked climber, generally nocturnal but can be seen during day time also; its voice is like a chirp of a small bird which is audible from even a long distance. Breeding season starts in March and commences up to August. Two white spherical eggs are laid (diameter 8-9 mm.), incubation period ranges from 53-57 days. These geckos are strongly insectivorous and diet comprises a variety of insects and other arthropods. The main food items revealed by the study of gut contents are Orthopterans (grass hoppers, mole crickets, gryllids);

moths, butterflies, caterpillars; beetles of the families Scarabaeidae and Elateridae; flies; bugs; ants; spiders; centipedes. These geckos maintain a territorial integrity and show an acute homing behaviour.

Status : Most common.

69. *Hemidactylus giganteus* Stoliczka 1871
(Plate 6, Map 39)

1871. *Hemidactylus giganteus* Stoliczka, *P. Asiat. Soc. Beng.* : p. 193.

1871. *Hemidactylus giganteus* Stoliczka, *J. Asiat. Soc. Beng.* 41(2) : p. 99, pl. 2., fig. 2 (type loc. near Bhadrachalam, Godavary Valley).

1935. *Hemidactylus giganteus*, Smith, *Fauna Brit. Ind.* 2 : p. 99.

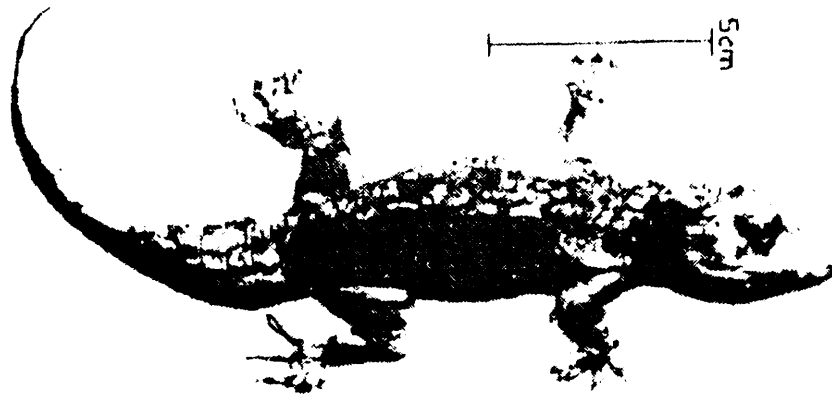


Plate 6 : *Hemidactylus giganteus* Stoliczka

This giant gecko is with a greyish dorsum; back with W-shaped undulating cross-bars; belly is whitish. Head is big, with an obtusely pointed snout, ear opening small, subcircular; head is covered above with small granular scales, snout with considerably larger ones. Upper labials 12-15 and lower labials 10-12; mental shield is large, subtriangular; two pairs of postmentals are present, inner pair is much larger than the outer; rostral shield is broader than high; nostril is situated between the rostral and many small scales, generally separated from the first labial. Dorsum is with quite regularly arranged, uniform small granular scales which are absolutely devoid of the enlarged tubercles; ventrum is with smooth, rounded, imbricate scales, which become quite small, flat and granular in the gular region. The hind-limb may or may not reach axilla; transverse lamellae beneath; 10-11 lamellae beneath the first toe, and 13-15 under the fourth toe. Tail is slightly longer than the head and body, strongly depressed, swollen at the base in grown up individuals, flat beneath, verticillate, covered above with uniform small scales, below with imbricate scales and a median series of transversely enlarged plates. Male with 18-22 femoral pores, separated by small median gap. Standard length 110-115 mm.; tail length 90-120 mm.

Distribution : India : Andhra Pradesh : Nellore district, Palkonda Hills; Guntur district, Siddelder Hill, Kerala. Malabar coast. Maharashtra : Thana district, Karjat, Tamilnadu : Madras (Map 39).

Habits and habitat : All the examples from Andhra Pradesh were collected from trees in hilly areas. The species is strongly arboreal and insectivorous.

Status : Rare.

70. *Hemidactylus bowringi* (Gray 1845)

1845. *Doryura bowringii* Gray, *Cat. Liz. Brit. Mus.* : p. 156 (type loc. Hongkong)

1853. *Leiurus berdmorei* Blyth, *J. Asiat. Soc. Beng.* 22(2) : p. 646 (type loc. Mergui).

1935. *Hemidactylus bowringi*, Smith, *Fauna Brit. Ind.* 2 : p. 99.

This small gecko is with light-brown dorsum; darker spots intermixed with whiter spots on the back are generally arranged in four longitudinal stripes on the back; a dark stripe is always present on lateral aspect of the head; the complete dorsal aspect of tail spotted with dark-brown spots; belly is whitish. Head is quite large in comparison to the body, with an obtusely pointed snout; ear opening is small, subcircular; head is covered above with small granular scales, which are largest on the snout. Upper labials 9-11 and lower labials 7-9; mental shield is quite large, subtriangular; postmentals are in two pairs, the inner one is quite larger and prominent than the outer pair; rostral shield is broader than high; nostril is situated between the rostral, first labial and several small scales. Dorsum is with small granular scales which are completely devoid of larger tubercles; ventrum is with smooth rounded, subimbricate scales, ventral scales become quite small and granular in the gular region. The hind-limb reaches almost to the axilla, but not completely; digits are free, moderately dilated, with oblique lamellae under the toes; 5-6 oblique lamellae beneath the first toe, while these are from 9-11 under the fourth toe. Tail slightly depressed, sub-oval in transverse section, may or may not be slightly segmented, the upper aspect of the tail is covered with minute but uniform scales; the under side of tail with a median series of transversely enlarged plates. Male with 12-15 femoral pores on each side, with a small median gap. Standard length 50 mm.; tail length 55 mm.

Distribution : India : Godavari valley, Andhra Pradesh; North Bengal and Sikkim. Elsewhere : Burma (Myithyina district, Thayetmyo, Minhla, Pegu); Yunnanfu; Hong-kong; S. China (Map 15).

Habits and habitat : Insectivorous, nocturnal.

Status : Undeterminate.

71. *Hemidactylus garnoti* Dum. & Bibr. 1836
(Map 16)

1836. *Hemidactylus garnoti* Dum. & Bibr., *Erp. Gen.* **3** : p. 368 (type loc. Tahiti)
 1857. *Doryura vulpecula* Girard, *Proc. Acad. Philad.* : p. 197 (type loc. Sandwich Is.)
 1859. *Hemidactylus ludekingii* Bleeker, *Nat. Tijds, Ned. Ind.* **16** : p. 27 (type loc. Agam, Sumatra).
 1868. *Doryura gaudama* Theobald, *J. Linn. Soc., Zool.* **10** : p. 30 (type loc. toungoo, Sittaung Valley, Pegu).
 1868. *Hemidactylus mortoni* Theobald, *J. Linn. Soc.* **10** : p. 32 (type loc. Teikgyi, Rangoon).
 1871. *Hemidactylus (Doryura) mandellianus* Stoliczka, *P. Asiat. Soc. Beng.* p. 193.
 1872. *Hemidactylus (Doryura) mandellianus* Stoliczka, *J. Asiat. Soc. Beng.* **41(2)** : p. 101, pl. 3, figs. 1-2 (type loc. Pankabaree and Tista Valley, Sikkim)
 1885. *Hemidactylus blanfordi* Boulenger, *Cat. Liz. Brit. Mus.* **1** : p. 141 (type loc. Darjeeling).
 1935. *Hemidactylus garnoti*, Smith, *Fauna Brit. Ind.* **2** : p. 100.

This moderately large gecko is with a brown dorsal colour; profusely dotted with dark-brown colour on the back which is generally mixed with the white spots; a dark stripe is always present on the lateral aspect of the head; belly is white. Head is comparatively larger, with an obtusely pointed snout; ear-opening is small and subcircular; head is covered above with minute granular scales, which are larger and most prominent on the snout. Upper labials are 11-13 and lower labials are 9-12, mental shield is large, subtriangular; almost two times larger than the adjoining scales; postmentals are in two pairs, the inner pair is larger than the outer pair, which is separated by the lower labials by few small granular scales; rostral shield is not broader than high; but is just like a squair; nostril is situated between the rostral, first labial and several small scales. Dorsum is with small, granular scales; on the lateral aspect larger rounded tubercles are present and form a longitudinal series along the whole length; ventrum is with smooth, rounded, subimbricate scales; in gular region the ventrals become like small flat granules. The hind-limb reaches to the axilla; digits are free, moderately dilated or with a slight web, the lamellae under the toes are oblique, 5-6 under the first toe, 11-13 under the fourth one; in most of the individuals there is a characteristic fold of skin along the hinder border of the thigh. Tail not much longer than the head and body, strongly depressed, with a sharp denticulate lateral edge, slightly segmented dorsally, covered above with small but uniform scales; flat beneath, with larger subimbricate scales and a median series of transversely enlarged plates. So far males have not come across, but many females also with 15-20 rows of pitted femoral scales on each side. Standard length 65 mm.; tail length 70 mm.

Distribution : India : Sikkim, North Bengal (Darjeeling), Lower Assam, Elsewhere : East Indies; Burma; Tongkin; Hainan; North Thailand (Map 16).

Habits and habitat : Nocturnal, insectivorous.

Status : Undeterminate.

72. *Hemidactylus karenorum* (Theobald 1868).
(Map-16)

1868. *Doryura karenorum* Theobald, *J. Linn. Soc., Zool.* 10 : p. 30 (type loc. Karenchoung, near Toungoo, Burma).
1935. *Hemidactylus karenorum*, Smith, *Fauna Brit. Ind.* 2 : p. 102.

This moderately large gecko is with a greyish-brown dorsal colour, with clear dark-brown longitudinal markings or spots on the back; belly is white. The pholidosis agrees with *Hemidactylus garnoti*, to which it is very closely allied. It differs with *Hemidactylus garnoti* in having 10-12 upper labials and 8-10 lower labials; both the pairs of postmentals are equal in size and are in contact with the infralabials; dorsum with numerous, rounded conical tubercles intermixed with the much smaller granular scales. Male with 18-20 femoral pores on each side, interrupted mesially. Standard length 57 mm; tail length 70 mm.

Distribution : India : Assam (Cachar district). Elsewhere : Burma (Pegu and Toungoo districts) (Map 16).

Habits and habitat : Nocturnal, insectivorous.

Status : Undeterminate.

73. *Hemidactylus albofasciatus* Grandison & Soman 1963
(Fig. 47)

1963. *Hemidactylus albofasciatus* Grandison & Soman, *J. Bombay nat. Hist. Soc.* 60(2) : p. 322, (type loc. Dorle village, Rajapur Taluka, Ratnagiri District, Maharashtra).

This very small gecko is with a dark-brown dorsal colour, back and tail has got dark-brown cross bands and light streaks, a clearly visible white band from nostril to above the ear; ten narrow, wavy, white bands run transversely from behind the eyes to the hind limbs; tail is also cross-banded in the same fashion; belly is cream with fine brown speckling; a longitudinal midventral dark line is available on the tail. Head is moderately small, snout obtusely pointed, distance from tip of snout to anterior margin of eye is slightly greater than distance from posterior border of eye to anterior border of ear; diameter of ear 1/8 of diameter of eye; head is covered above with small granular scales, snout with considerably larger ones. Upper labials 8, lower labials 7; mental shield is large, triangular, its length equal to the width of the first lower labial; postmentals are in a single pair (rarely two or three pairs), not forming a suture; rostral shield is broader than high; nostril is situated between the rostral, first labial and three scales; one internasal is present. Dorsum is with small, keeled granular scales, intermixed with larger trihedral tubercles; ventrum is with smooth, rounded imbricate scales. The hind-limb reaches to the axilla; digits are free with slight dilation; lamellae under the first toe are 5 and under the fourth

toe are 9. Tail cylindrical, tapering to a point, with a median furrow; scales on the tail larger than dorsals of body, faintly keeled, imbricate, arranged in whorls; a denticulation on each side formed from two to three longitudinal series of enlarged, keeled, pointed, flat scales; sub caudals subequal. Male with 7-10 preanal pores arranged almost in a straight series, uninterrupted mesially. Standard length 29.6 mm.; tail length 26.5 mm.

Distribution : India : Maharashtra. Dorli, Dabhil and Garkhadi villages, Rajapur Taluka, Ratnagiri district.

Habits and habitat : These nocturnal geckos are the inhabitants of rocky areas with scrub and semi-evergreen forests. Many clutches of two eggs are laid to be found in January; the eggs measured 7.5×6.6 mm to 9.0×7.0 mm.

74. *Hemidactylus porbandarensis* Sharma 1981

(Fig. 48)

1981. *Hemidactylus porbandarensis* Sharma, *Bull. Zool. Surv. India* 1-2, 4(1) : p. 1 (type loc. Port area, Porbandar, Junagarh District, Gujarat).

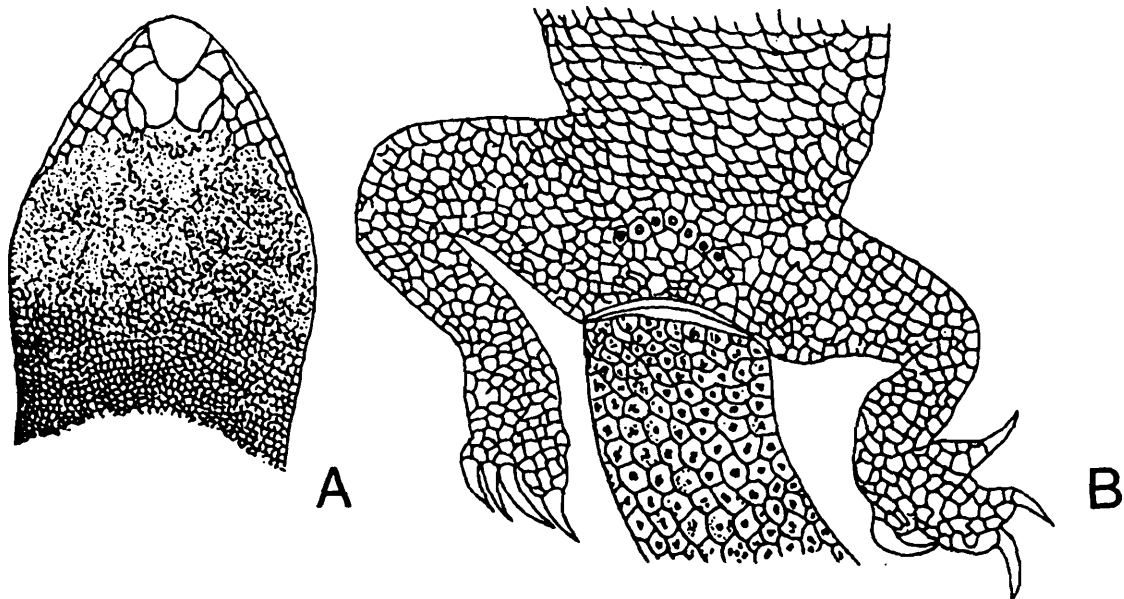


Fig. 48 : A. Inguinal region of *Hemidactylus porbandarensis* showing preanal pores.

B. Ventral view of head of *Hemidactylus porbandarensis* showing postmental shields.

This small gecko is with a light-grey dorsal back ground; back with dark-brown irregularly arranged spots, which are continuous on the dorsal aspect of tail and limbs; maximum concentration of these spots is on the neck; a dark streak along each side of head passing through the eyes; belly is yellowish-white. Head and body slender, slightly depressed; head narrow (17 mm. long and 9 mm. wide), twice as long as broad, snout obtusely pointed, longer than the distance between the eye and the ear-opening, which is small, sub-circular, with a diameter 1/3 that of eye; upper labials 9-11; lower labials

7-8; mental shield is large, triangular, twice as long as the adjacent labials; two pairs of postmentals, the inner one is at least two times larger than the outer, gular region is with small, flat, rounded scales; rostral broader than high; nostril is situated between the rostral and seven small scales; top of head covered with small juxtaposed scales, intermixed with large rounded flat ones; dorsum is with small irregular scales and with 16-17 longitudinal series of more or less round or oval strongly keeled tubercles; belly with large flat, round imbricate scales. The hind-limb hardly reaching to the axilla; digits are free, dilated; lamellae under first toe 5-6, lamellae under fourth toe 9-10. Tail moderately depressed, verticillate, oval in section, its upper side is covered with round smooth or feebly keeled scales and a series of 6 strongly keeled pointed tubercles; below with imbricate, smooth scales with a median series of transversely enlarged plates. Males with an angular series of 6 preanal pores. Standard length 31-45 mm; tail length 30 mm. (broken).

Distribution : India : Port area, Porbandar, Junagarh district, Gujarat.

Habits and habitat : These insectivorous, nocturnal, geckos were found to be inhabiting the marshy coastal areas with dense xerophytic vegetation. The most of the lizards were hiding under the huge boulders.

Status : Undeterminate.

Genus 14. *Cosymbotus* Fitzinger 1843

1836. *Platyurus* Oken, *Allgem. Naturgesch* 4 : p. 641 (type *Hemidactylus marginatus*).
 1843. *Cosymbotus* Fitzinger, *Syst. Rept.* : pp. 19 & 104 (type *Hemidactylus platyurus*)
 1864. *Nycteridium* Gunther, *Rept. Brit. Ind.* : p. 111 (type *schneideri*).
 1896. *Mimetozone* Boulenger, *Proc. Zool. Soc.* : p. 767 (type *floweri*).
 1890. *Hemidactylus*, Boulenger, *Fauna Brit. Ind.* : p. 82.
 1935. *Platyurus*, Smith, *Fauna Brit. Ind.* 2 : p. 102.

This genus which is distributed from North India to South-east Asia (Malasia) through Sri Lanka, Indo-China, Indonesia, Hong Kong, Taiwan and East Indian Archipelago comprises two species. One covers the scope of this work. The geckos with strongly dilated webbed digits and divided lamellae below; terminal phalanges long, slender, clawed, free, rising angularly from within the expanded part; dorsum with small, granular, uniform or intermixed with larger tubercles; a dermal fringe on both lateral aspects of body from axilla to the groin. Pupil is vertical. Males with femoral and preanal pores.

75. *Cosymbotus platyurus* (Schneider 1792) (Map-17)

1792. *Stellio platyurus* Schneider, *Amphib. Physiol.* 2 : p. 30 (type loc. Not given)
 1802. *Lacerta schneideriana* Shaw, *Gen. Zool.* 3 : p. 278.

1829. *Gecko marginatus* Cuvier, *Regne Anim.* 2 : p. 54 (type loc. Bengal).
 1864. *Nycteridium schneideri* Gunther, *Rept. Brit. Ind.* : p. 111.
 1871. *Nycteridium platyurus*, Stoliczka, *P. Asiat. Soc. Bengal.* : p. 194.
 1885. *Hemidactylus platyurus*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 143.
 1907. *Hemidactylus nepalensis* Annandale, *Rec. Ind. Mus.* 1 : p. 151, pl. 6 (type loc. Kathmandu, Nepal).
 1922. *Cosymbotus platyurus*, Taylor, *Liz. Philipp.* Is. p. 59.
 1935. *Platyurus platyurus*, Smith, *Fauna Brit. Ind.* 2 : p. 102.

This moderately large common garden gecko is greyish-brown in dorsal colouration; back and tail are spotted profusely with dark-brown; belly is yellowish or dirty-white; in many individuals tail is deep red in life. Head is moderately large, with an obtusely pointed snout; ear-opening is small subcircular; head is covered above with small granular scales, which are largest on the snout. Upper labials 9-11 and lower labials are 8-9; mental shield is large, as broad as the rostral, twice as long as the adjoining labials; postmental shields are in two pairs, the inner one is larger; rostral shield is broader than high; nostril is situated between the rostral, first labial and two or three small scales; a pair of internasal scales is present, both the internasals are separated by a small scale. Dorsum is with regular, small, granular scales, which are completely devoid of larger tubercles, ventrum is with large, smooth, rounded, imbricate scales; a prominent dermal fringe along the side of the body from the axilla to groin, covered above with small granular scales as available on the dorsum. The hind-limb hardly reaches to the axilla; posteriorly the hind-limb is having a cutaneous expansion; one fourth to one-third part of the digits is webbed; lamella under the toes are in pairs, 5-8 under the fourth toe. Tail slightly longer than the head and body, very strongly depressed, with broad, sharply denticulated lateral margin, covered above with small scales, below with larger ones and a series of transversely enlarged plates. Male with a continuous series of 13-20 preanal and femoral pores on each side, meeting at an angle in the middle. Standard length 60 mm.; tail length 65 mm.

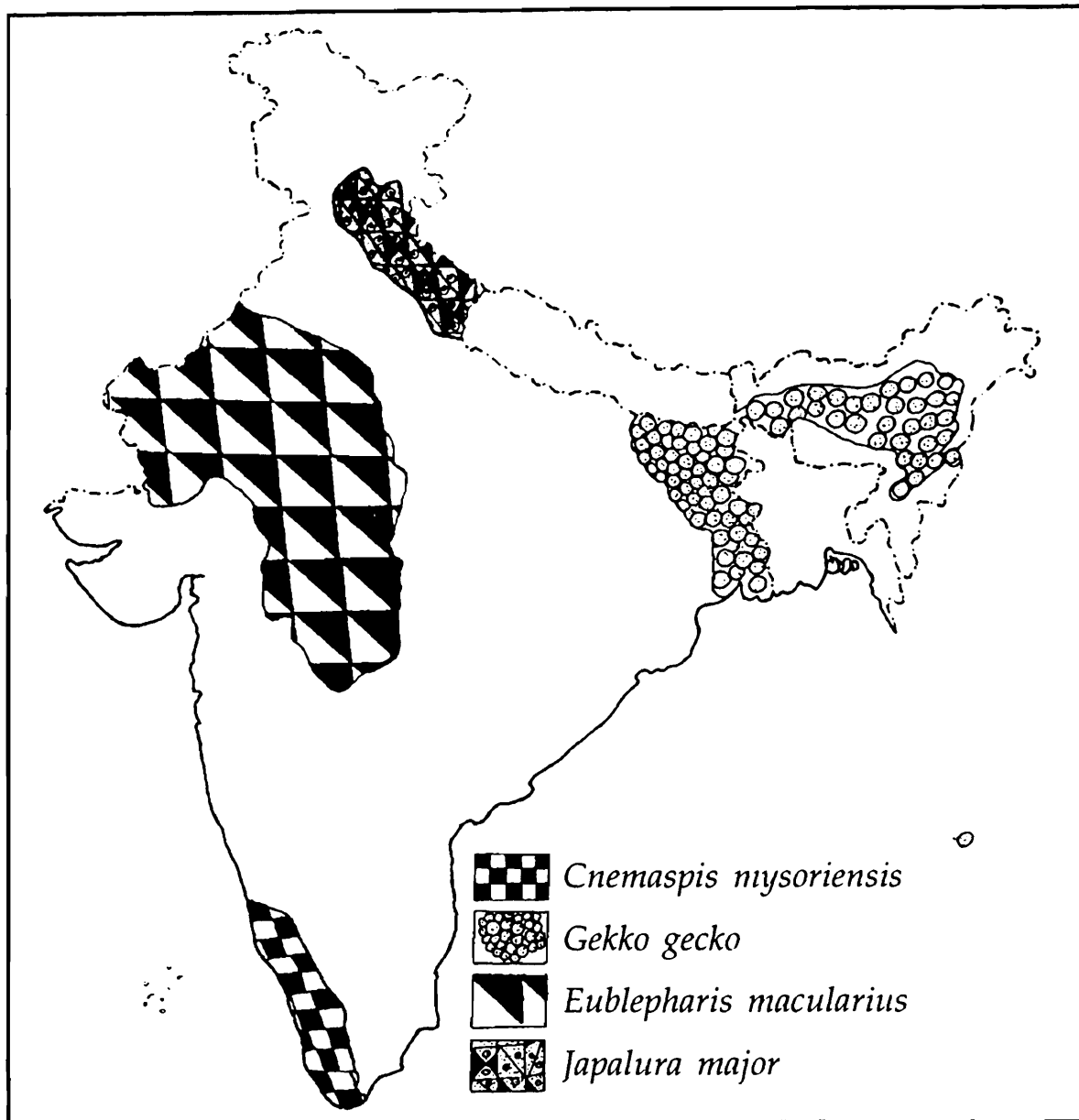
Distribution : India : Sikkim, Darjeeling district. Elsewhere : East-Indian Archipelago; Hong Kong, Taiwan, Sri Lanka, North & South Vietnam (Map 17).

Habits and habitat : Insectivorous. Prefers to live in gardens and houses.

Status : Undeterminate.

Genus 15. *Gehyra* Gray 1834

1834. *Gehyra* Gray, *Proc. Zool. Soc.* : p. 100 (type *pacifica*=*Gecko oceanicus* Lesson, 1830).
 1835. *Peropus* Wiegmann, *Nova Acta Acad. Leop.-Carol* 17 : p. 238 (type *mutilatus*).
 1843. *Perodactylus* Fitzinger, *Syst. Rept.* : pp. 19, 103 (type *Hemidactylus oualensis*).
 1843. *Dactyloperus* Fitzinger, *Syst. Rept.* : pp. 19, 103 (type *Hemidactylus veriegatus*).
 1845. *Peripia* Gray, *Cat. Liz. Brit. Mus.* : p. 158 (*peronii*).



Map 18 : Distribution of *Cnemaspis mysoriensis*, *Gekko gecko*, *Eublepharis macularius* and *Japalura major*

1883. *Chalinocnemis* Duges, *la natureza* 6 : p. 312.

1883. *Spasmocnemis* Duges, *La Natureza*, 6 : p. 312.

1935. *Gehyra*, Smith, *Fauna Brit. Ind.* 2 : p. 104.

This genus is widely distributed. About 14 species are known from Mascarene Islands; Seychelles; the Oriental and Tropical Australia; Polynesia and Mexico. The main characters of the genus are : The digits are free, strongly dilated, may be webbed at the base, with generally undivided lamellae on the underside or lamellae may be divided at the middle portion of the digit. The terminal phalanges of outer four toes quite long, slender, clawed, free, rising angularly from within the expanded part; inner digit well developed, without free distal phalanx, the claw is minute and generally hidden. Dorsum is with small, granular scales. Pupil vertical. Males are with femoral and preanal pores.

76. *Gehyra mutilata* (Weighmann 1835)

(Fig. 49, Map 31)

1835. *Hemidactylus (Peropus) mutilatus* Wiegmann, *Nova Acta Acad. Leop.-Carol*, 17 : p. 238 (type loc. Manila).
1836. *Hemidactylus peronii* Dum. & Bibr., *Erp. Gen.* 3 : p. 352, pl. 30, fig. 1 (type loc. Mauritius)
1857. *Dactyloperus insulensis* Girard, *Prof. Philad. Acad.* : p. 197, and extra, p. 5 (type loc. Sandwich Islands).
1858. *Hemidactylus platurus* Bleeker, *Nat. Tijdschr. Ned. ind.* 16 : p. 30 (type loc. Java)
1864. *Gecko pardus* Tytler, *J. Asiat. Soc. Beng.* 33 : p. 547 (type loc. Moulmein)
1864. *Gecko harrieti* Tytler, *J. Asiat. Soc. Beng.* 33 : p. 547 (type loc. Andamans).
1868. *Peropus packardi* Cope, *Proc. Philad. Acad.* : p. 319 (type loc. Penang).
1883. *Hemidactylus navarri* Duges, *La Natureza* 6 : p. 309, pl. 7, (type loc. Mexico)
1885. *Gehyra mutilata*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 148.
1913. *Gehyra beebei* Annandale, *Rec. Ind. Mus.* 9 : p. 306 (type loc. Sarawak, Borneo)
1935. *Gehyra mutilata*, Smith, *Fauna Brit. Ind.* 2 : p. 105.

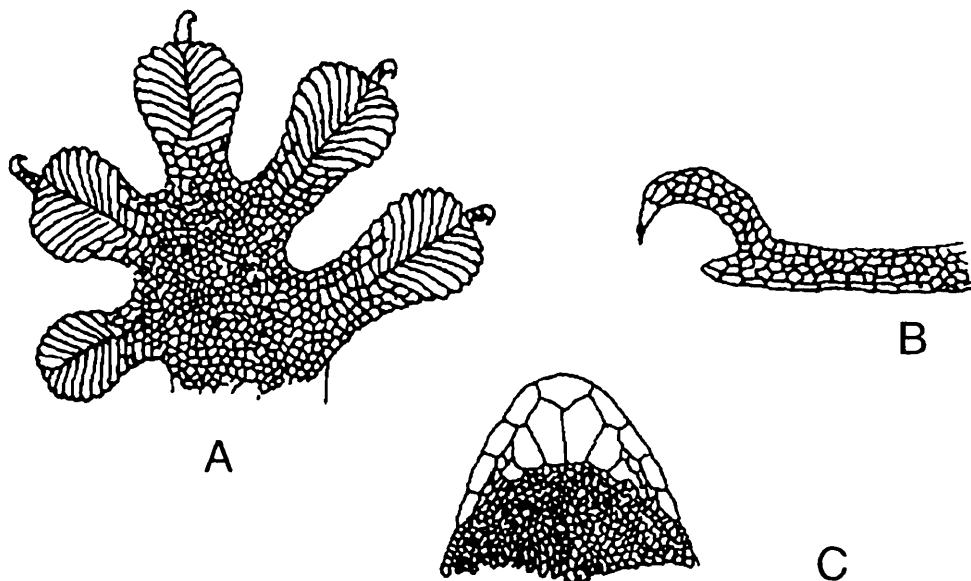
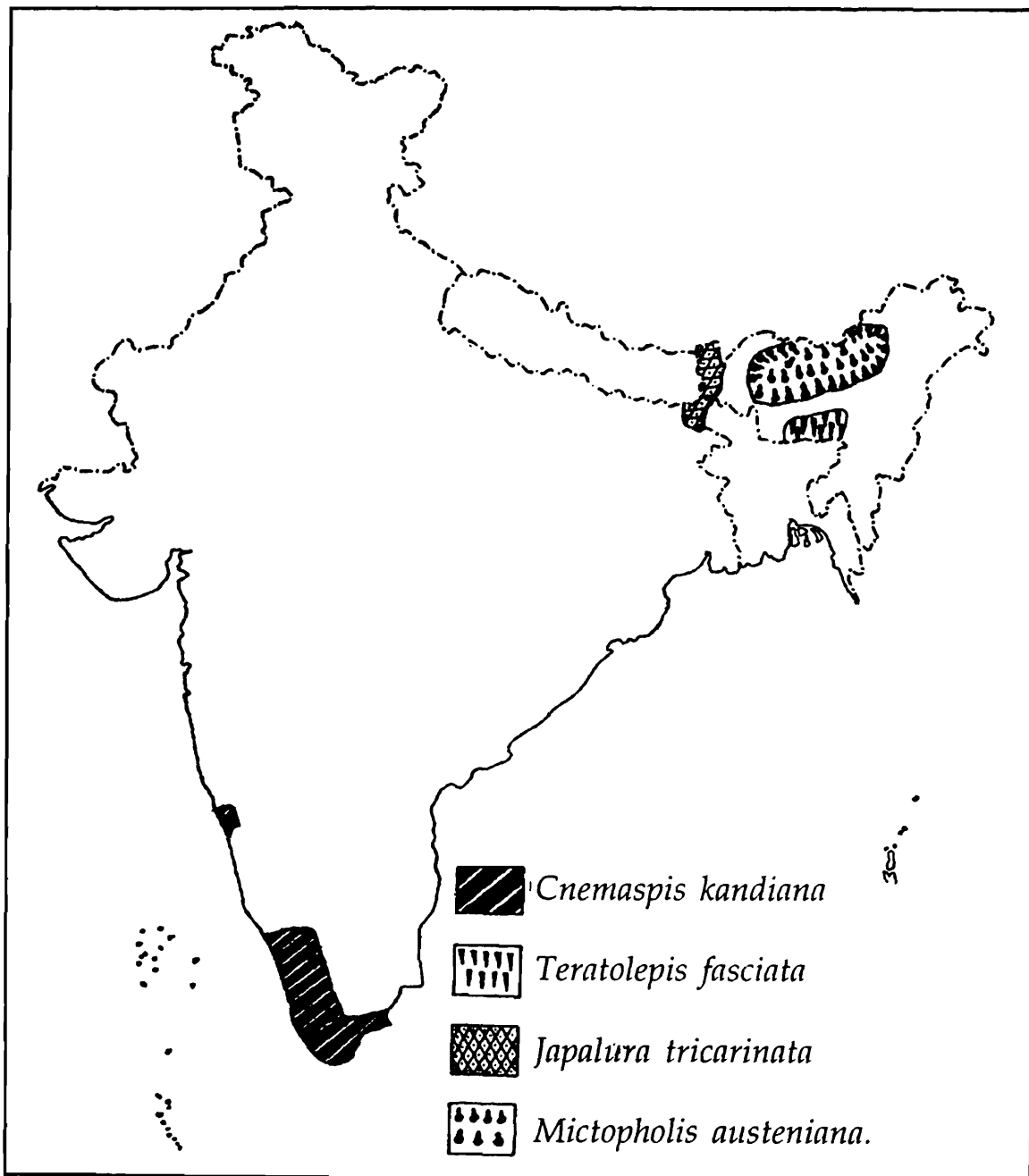


Fig. 49 : *Gehyra mutilata* : A. Lower surface foot. B. Side view of toe, C. Chin shields.

A moderately large gecko with a buff or pinkish-brown colour; this colour may be uniform or many individuals may be spotted with dark-brown colour; most of geckos have got light coffee like spots with dark-brown rings; a dark stripe behind the eye is present in most of individuals; belly is dirty-white. Head is moderately large, with an obtusely pointed snout; ear-opening is small, oval, oblique; head is covered above with small granular scales which are slightly larger on the snout. Upper labials 9-10 and lower labials are 8-9; mental shield is subtriangular, almost as broad as the rostral and is longer than the adjoining labials; postmentals are in two pairs, both the pairs are well developed

and elongated, the inner part is longer than the outer; rostral broader than high; nostril is situated between the rostral, first labial and two or three small scales; a pair of internasals is generally present. Dorsum is with regular, small granular scales which are absolutely devoid of larger tubercles; ventrum is with much larger, rounded, imbricate scales; a feeble cutaneous fold is available along the flanks. The hind-limb is very short, not reaching beyond middle of the belly, a cutaneous fold along the posterior margin; digits webbed at the base; lamellae under the toes in pairs and are strongly oblique, 7-9 lamellae under the fourth toe. Tail is equal to the head and body; strongly depressed, abruptly swollen at the base, with sharp, denticulated lateral edge, covered above with very small scales,



Map 19 : Distribution of *Cnemaspis kandiana*, *Teratolepis fasciata*, *Japalura tricarinata* and *Mictopholis austeniana*.

below with much larger flat ones, the median series of which are strongly enlarged transversely. Male with a continuous series of 25-41 preanal and femoral pores meeting at an angle in the mid-line. Standard length 60 mm.; tail length 60 mm.

Distribution : India : Andamans; islands of Indian Ocean; Cochin. Elsewhere; East Indian Archipelago and Oceania; Southern Burma; Thailand; South Vietnam, Sri Lanka; Hainan (Map 31).

Habits and habitat : Insectivorous, nocturnal, has the power of changing colour from light to dark.

Status : Undeterminate.

Genus 16. *Hemiphyllodactylus* Bleeker 1860

1860. *Hemiphyllodactylus* Bleeker, *Nat. Tijdschr. Ned.-Ind.* 20 : p. 327 (type *typus*)

1872. *Spathodactylus* Gunther, *Proc. Zool. Soc.* : p. 594 (type *mutilatus*)

1885. *Spathoscalabotes* Boulenger, *Cat. liz. Brit. Mus* 1 : p. 156.

1890. *Lepidodactylus*, Boulenger, *Fauna Brit. Ind.* : p. 97.

1912. *Gehyra*, Boulenger, *Fauna Malay Pen.* : p. 46.

1924. *Cainodactylus* Barbour, *Occ. Pap. Boston Soc. Nat. Hist.* 5 : p. 133 (type *Gehyra yunnanensis*).

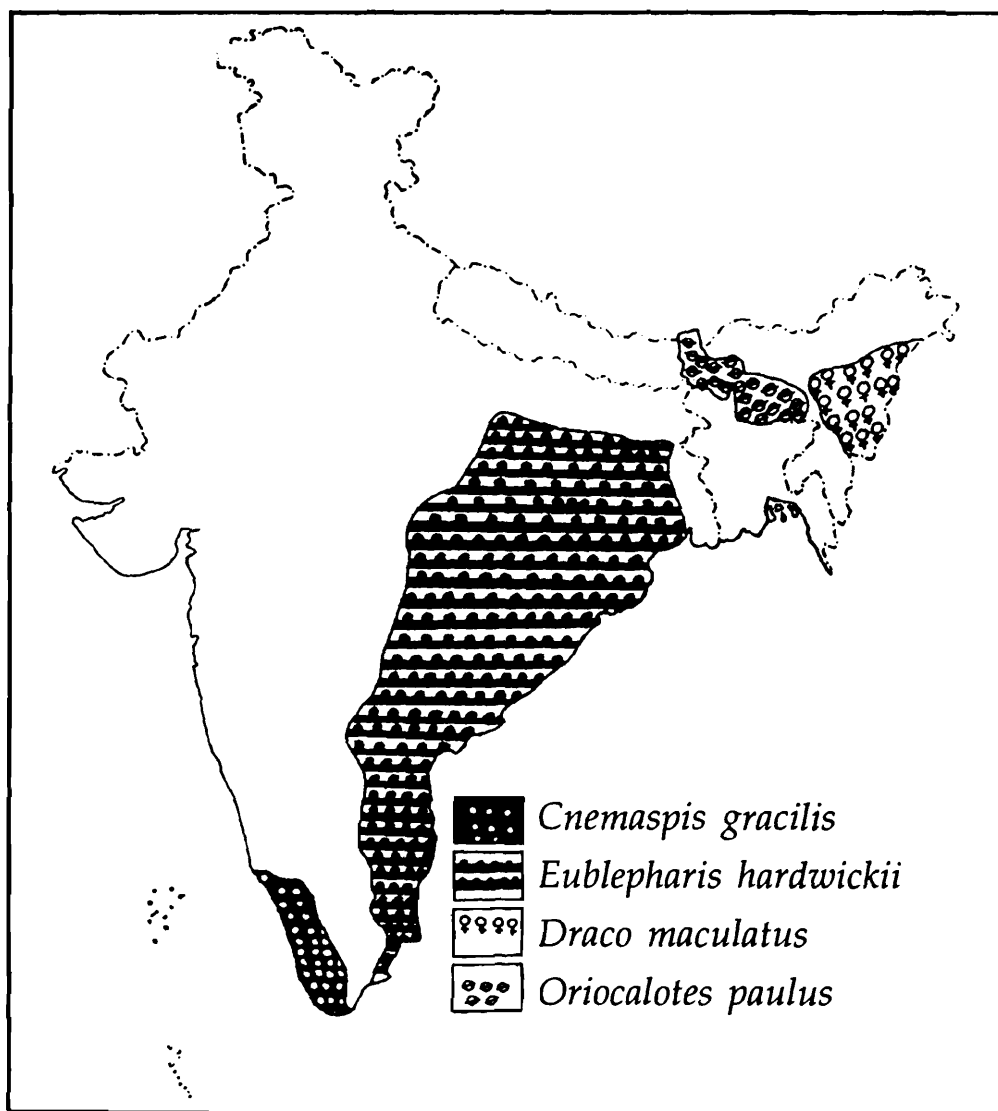
This small genus comprises 3 species distributed in Sri Lanka, India, South-east Asia, Thailand, Laos, the East Indian Archipelago, Burma, Yunnan, Hawaii Islands and Indonesia. Two species have been included in the present work. The main characters of the genus are : The digits are free, subcylindrical at the base, the last but one joint becomes strongly expanded and is with lamellae on the underside, which are divided at the median part; outer four digits are with short terminal phalanges, compressed, clawed, free and rise at an angle from within the expansion; inner digit is rudimentary, without free distal phalanx and rarely with a minute claw. Dorsum is with small granular scales. Pupil is vertical. Males are with femoral and preanal pores.

Key to the species and subspecies of genus Hemiphyllodactylus

1. Postmental shields are not distinct, hind-limb never reaches to more than half distance between the axilla and groin; males are with femoral and preanal pores; having following two subspecies.
 - i. 4-6 lamellae under the fourth toe..... *Hemiphyllodactylus typus typus*
 - ii. 2-3 lamellae under the fourth toe..... *Hemiphyllodactylus typus aurantiacus*
2. Postmental shields are quite distinct; hind-limb mostly reaches to more than half distance between the axilla and groin; males are devoid of femoral pores, only preanal pores are present *Hemiphyllodactylus yunnanensis*

77. *Hemiphyllodactylus typus typus* Blecker 1860
(Map-24)

1860. *Hemiphyllodactylus typus* Blecker, *Nat. Tijdschr. Ned.-Ind.* 20 : p. 327 (type loc. Gunong, Paring, Java).
1869. *Platydictylus crepuscularis* Bavay, *Mem. Soc. Linn. Normandie*, 15 : p. 8. (type loc. New Caledonia).
1872. *Spathodactylus mutilatus* Gunther *Proc. Zool. Soc.* : p. 594, fig. (type loc. Agam Sumatra)
1885. *Lepidodactylus ceylonensis* Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 164, pl. 13, fig. 3).
1899. *Hemiphyllodactylus leucostictus* Stejneger, *Proc. U.S. Nat. Mus.* 21 : p. 800, text fig. (type loc. Kauai, Hawaii Islands)
1918. *Hemiphyllodactylus insularis* Taylor, *Philipp. J. Sci.* 13 D : p. 237, text fig. and pl. 1, figs. 6, 7 (type loc. Mindoro)
1931. *Hemiphyllodactylus margarethae* Brongersma, *Mem. Mus. R. Hist. Nat. Belge*, 5 (2) : p. 11 (type loc. Forte de Kock, Sumatra).
1935. *Hemiphyllodactylus typus typus* Smith, *Fauna Brit. Ind.* 2 : p. 107.



Map 20 : Distribution of *Cnemaspis gracilis*, *Eublepharis hardwickii*, *Draco maculatus* and *Oriocalotes paulus*.

This subspecies is quite similar to the allied subspecies *H. typus aurantiacus* in colouration, size, general characters and scalation but differs from it in the following characters : Head moderate and depressed; fourth toe is having more oblique lamellae below, 4-6; number of preanal pores is more, 10-12; number of femoral pores is more, 8-10. In certain cases the pores remain almost in a continuous series and preanal pores are separated from the femoral pores by a single scale only on each side (*H. insularis*. Taylor, 1918). The examination of material of this subspecies from different localities of its wide range exhibited slight variation in colour and in morphological characters like the number of labials, size of the postmental shields, size of digital expansions and in the number and situation of femoral and preanal pores. Standard length 60 mm.; tail length 60 mm.

Distribution : Sri Lanka, Burma (Pegu, Tavoy hills between Burma and Thailand), Thailand (Klong Menao), Singapur, the east Indian Archipelago, Sumatra, Java, Mindoro and Hawaii Islands (Map 24).

Habits and habitat : Terrestrial (sea level to the hills slopes), insectivorous, nocturnal, Nothing is known about breeding habits.

Status : Common.

78. *Hemiphyllodactylus typus aurantiacus* Beddome 1870

(Fig. 50, Map 32)

1870. *Hemiphyllodactylus aurantiacus* Beddome, *Madras Month. J. Med. Sci*, 1 : p. 33 (type loc. Shevaroy Hills, South India).
 1885. *Lepidodactylus aurantiacus*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 164, pl. 13, fig. 4.
 1935. *Hemiphyllodactylus typus aurantiacus*, Smith, *Fauna Brit. Ind.* 2 : p. 108.

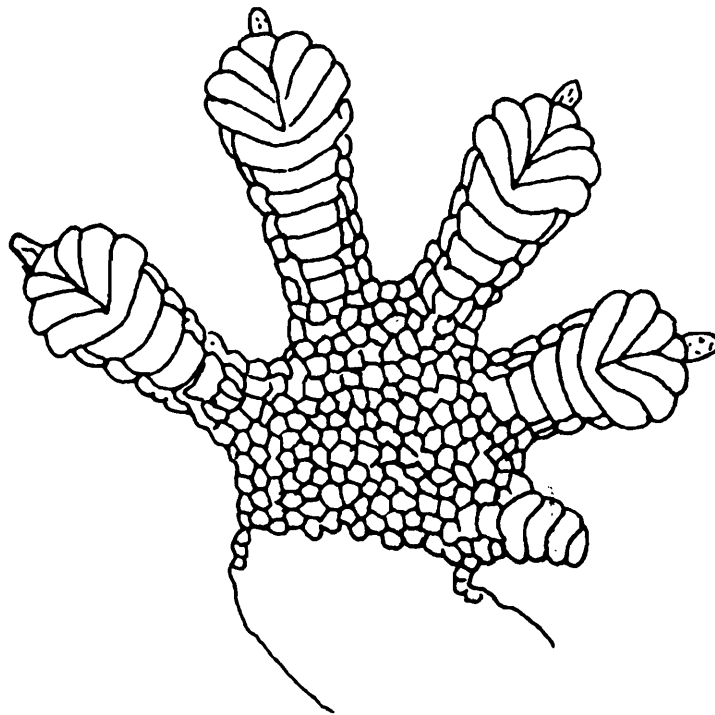


Fig 50 : *Hemiphyllodactylus typus aurantiacus* : Under surface of foot.

This small ground gecko is brownish and spotted with dark-brown on the back; a dark-brown stripe from the side of head to the shoulder is always persist; a dorso-lateral series of small reddish spots emerging from eye and reaching up to the tail; tail is banded with light-brown and dark-brown; base of the tail is with a whitish black-edged spot; belly is whitish profusely spotted with dark-brown. Head is small and moderately depressed; snout is obtusely pointed; ear-opening is small, subcircular; head covered above with small granular scales which are largest upon the snout. Upper labials 10-12 and lower labials are also of the same number; mental shield is narrow, subtriangular, narrower than the rostral, as large as the adjacent labials; no postmentals, few polygonal scales are present in the place of postmentals which merge gradually into the small granular scales of the gular region; rostral broader than high; nostril is situated between the rostral, first labial, and two or three small scales. Dorsum is with regular small granular scales; ventrum is with smooth, rounded imbricate scales, almost equal in size to the dorsal scales. Limbs are short, the hind-limb reaching up to the middle of body; digits free, sub-cylindrical at the base, the penultimate joint bearing a strong expansion bearing the lamellae underneath; lamellae are divided in two parts by a median fissure; terminal phalanges of outer four digits short, compressed, clawed, free, rising angularly from within the expansion; inner digit vestigial without free distal phalynx, with a minute claw; 2 or 3 strongly oblique lamellae under the fourth toe. Tail shorter than the head and body, slightly depressed, oval in section; upper surface of tail covered with small, rounded scales; scales on the lower surface of tail are slightly larger than the scales of upper surface. Male with 7-9 preanal pores and 5-7 femoral pores. Standard length 36 mm; tail length 34 mm.

Distribution : India : Nilgiri, Shevaroy and Anaimalai Hills (Map 32).

Habits and habitat : Insectivorous, nocturnal rock dwelling species generally hiding under loose stones during the day.

Status : Undeterminate, rare.

79. *Hemiphyllodactylus yunnanensis* Boulenger 1903 (Map 24)

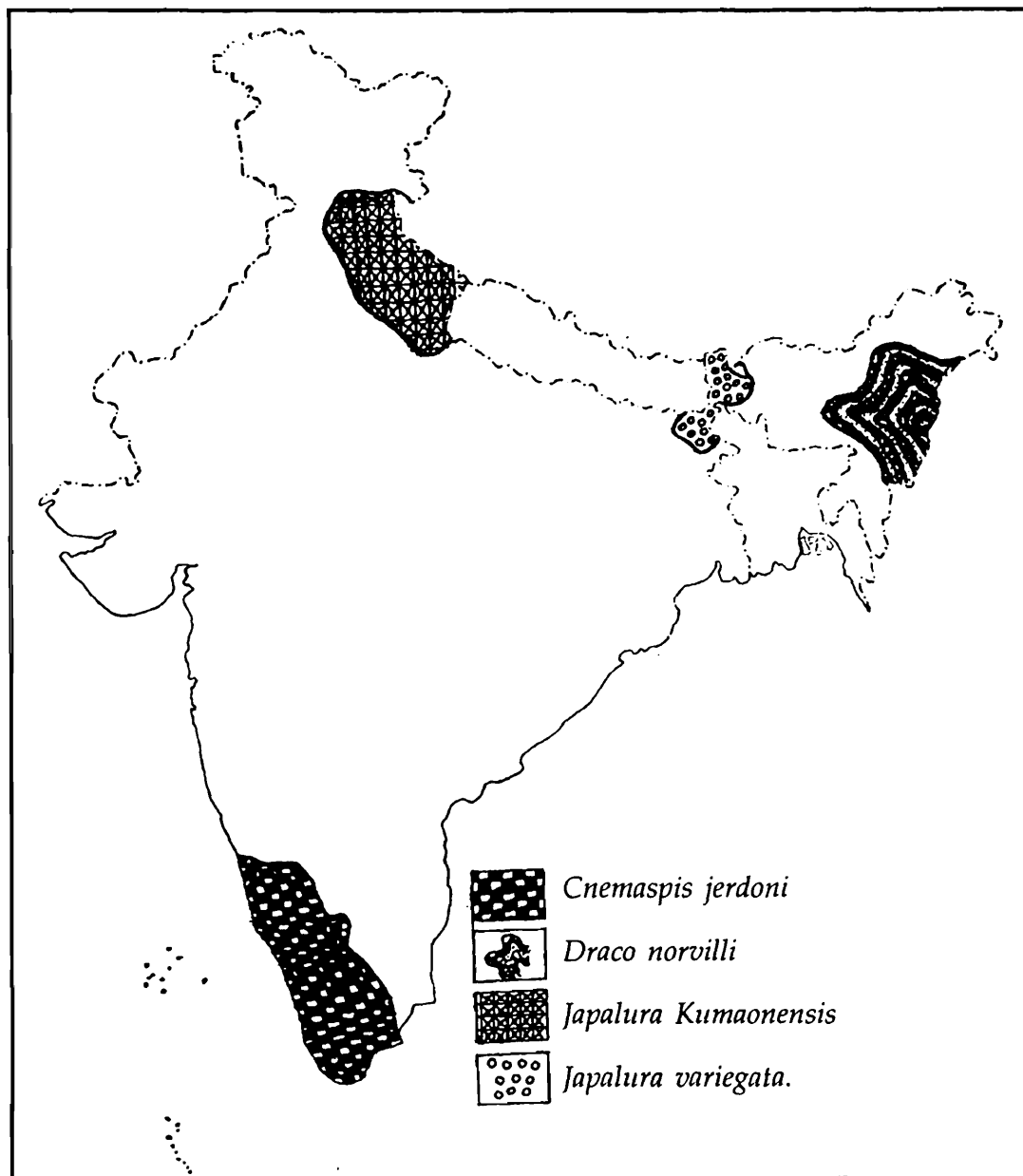
1903. *Gehyra yunnanensis* Boulenger, *Ann. Mag. Nat. Hist.* (7) 12 : p. 429; (type loc. Yunnan-fu)

1924. *Cainodactylus yunnanensis*, Barbour, *Occ. Pap. Boston Soc. Nat. Hist.* 5 : p. 134, fig. (foot).

1935. *Hemiphyllodactylus yunnanensis*, Smith, *Fauna Brit. Ind.* 2 : p. 109.

This little gecko is with a brown dorsum, with darker markings transversely arranged and generally edged with lighter on the back side; tail with dark light-edged cross-bars or chevron-shaped marks; ventrum is light brown; with dark brown dots. The head is moderately large, covered above with small granular scales which are largest on the snout. Snout obtusely pointed, as long as or longer than the distance between the eye and

the ear-opening. The ear-opening is small, subcircular, its diameter is about one-fourth that of the eye. Upper labials 10-12 and lower labials 9-11; mental as broad as the rostral and as long as the adjoining labials; one or two pairs of postmentals are present, the inner pair is larger than the outer pair and generally somewhat elongated. Rostral broader than high; nostril is between the rostral, first labial and two or three small scales; dorsum is with uniform, small, granular scales; belly with smooth, rounded, imbricate scales which are much larger than the dorsal scales. Digits are free or webbed at the base; 4-5 strongly oblique lamellae under the fourth toe; the hind-limb reaches to beyond half way between the axilla and groin. Tail is somewhat depressed, oval in section, covered above with small subimbricate scales, under side of the tail is with comparatively larger scales. Males are with 12-22 preanal pores, almost in an angular series. Standard length 41 mm.; tail length 37 mm.



Map 21 : Distribution of *Cnemaspis jerdoni*, *Draco norvilli*, *Japalura Kumaonensis* and *Japalura variegata*.

Distribution : Yunnan (Yunnan-fu, Tong-chuan-fu); Laos (Phong Sali, Northern Laos), Burma (Lashio, northern Burma) (Map 24).

Habits and habitat : Terrestrial, insectivorous, nocturnal. Oviducal eggs measure 7×5 mm. in size. Nothing is known about other habits.

Status : Common.

Genus 17. *Gekko* Laurenti 1768

1768. *Gekko* Laurenti, *Syn. Rept.* : p. 43 (type *verticillatus*)
 1820. *Platydactylus* Goldfuss, *Handb. Zool.* 2 : p. 157 (type *guttatus*)
 1833. *Lamatodactylus* Van der Hoeven, *Handb. Dierk.* 2 : p. 342 (type *vittatus*)
 1843. *Scelotretus* Fitzinger, *Syn. Rept.* : pp. 99, 101 (type *Platydactylus vittatus*)
 1035. *Gekko*, Smith, *Fauna Brit. Ind.* 2 : p. 109.

This genus is represented by 11 species, ranging in India, Indo-china, Southern China, Japan, East Indies and tropical Australian region. In these geckoes digits are free or a portion is webbed, moderately dilated, subdigital lamellae entire; terminal phalanges of four outer digits are slender, somewhat compressed, clawed, attached to the dilated part; inner digit is well developed but clawless. Dorsum is with small, uniform or intermixed with larger tubercles. Pupil vertical. Preanal and femoral pores are present in males.

Key to the species of genus Gekko

1. Scales between the dorsal tubercles are 3-5; each annulus of the tail is with 5 or 6 scales *Gekko gekko*
2. Scales between the dorsal tubercles 5-8; each annuals of the tail is with 10 or 11 scales. *Gekko sniithi*

80. *Gekko gekko* (Linnaeus 1758)

(Map 18)

1758. *Lacerta gekko* Linnaeus, *Syst. Nat.* ed. 10 : p. 205 ("habitat India").
 1768. *Gekko verticillatus* Laurenti, *Syn. Rept.* : p. 44 (based on Seba's Illus. 1, pl. 108. figs. 2, 6 type loc. (India).
 1768. *Gekko teres* Laurenti, *Syn. Rept.* : p. 44 (based on Seba's Illus, 1, pl. 108, figs. 1, 3)
 1802. *Gekko guttatus* Daudin, *Hist. Nat. Rept.* 4 : p. 122, pl. 49 (type loc. Not known)
 1820. *Gekko verus* Merrem, *Tent. Syst. Amphib.* : p. 42 (type loc. Archipelago Indico).
 1820. *Gekko annulatus* Kuhl, *Beitr. Zool. Vergl. Anat.* p. 132.
 1831. *Gekko reevesii* Gray, in *Griff. Anim. King* 9 : *Syn.* p. 48, (type loc. China).
 1858. *Gekko indicus* Girard, *U.S. Explor. Exped., Herp.* : p. 290, Col. pl. 16, figs. 9-16 (type loc. island in Balabao Str. China Sea).
 1935. *Gekko gekko*, Smith, *Fauna Brit. Ind.* 2 : p. 111.

This one of the largest gecko is grey, greyish-blue, violet-grey on the dorsal aspect; lavishly spotted all over with brick-red and whitish-grey; on the back the whitish spots are arranged in 7 or 8 narrow transverse bands; tail with alternate bands of broad olive or dark-blue and narrow white or pale grey; belly is white with numerous small pink spots. Head is large, and somewhat bulged, snout obtusely pointed; head covered above with small polygonal shields, scales of the snout and occiput are equal. Upper labials 12-14, the first supra labial is touching the nostril; lower labials are 10-12; mental shield is narrower than the rostral, not larger than the adjoining labials; postmentals are in 4-5 small pairs; rostral broader than high, not in contact with the nostril; 2-3 large internasals are present. Dorsum is with juxtaposed flat scales, intermixed with larger almost conical tubercles arranged in 12 longitudinal series; 2 longitudinal rows are separated by 2-5 small scales; ventrum is with large, rounded imbricate scales. The hind-limb is not reaching to the axilla; digits are generally with a rudiment of the web; 20-23 lamellae are under the fourth toe. Tail either smaller or equal to the head and body, slightly depressed, oval in section, annulate; upper surface of the tail with subquadrangular smooth scales and regular rows of large conical scales, 5-6 small scales in longitudinal series in each annulus; the under surface of tail is with large, flat, smooth scales, the median row comprises the larger scales. Male with 10-24 preanal pores arranged in a wide-angled series. Standard length 170 mm.; tail length 170 mm.

Distribution : India : Assam, Bengal, Bihar, Andamans. Elsewhere : The complete Indo-chinese subregion (Map 18).

Habits and habitat : These geckos are nocturnal, mainly insectivorous, most pugnacious, bold and house dwelling. These lizards are having an acute sense of homing behaviour and maintain the territorial integrity at any cost. In their best they do not allow any encroachment. The main food comprises insects but they devour anything which these lizards can overpower easily. The other items of their food are other lizards, mice, small birds and snakes. The jaws of this gecko are extremely powerful.

Status : In abundance throughout its range.

81. *Gekko smithi* Gray 1842 (Map 8)

1842. *Gekko smithii* Gray *Zool. Misc.* : p. 57 (type loc. Prince of Wales Island (Penang))
 1847. *Platydactylus stentor* Cantor, *Cat. Rept. Malay Pen.* : p. 18 (type loc. Penang)
 1861. *Platydactylus albomaculatus* Giebel, *Zeitschr. Ges. Naturw.*, 17 : p. 59 (type loc. Banka Island)
 1864. *Gekko stentor*, Gunther, *Rept. Brit.* : p. 102, pl. 11, fig. A.
 1865. *Gekko verreauxi* tytler, *J. Asiatic Soc. Beng.* 33 : p. 546 (type loc. Andaman is.).
 1867. *Gekko albofasciatus* Gunther, *Ann. Mag. Nat. Hist* (3) 20 : p. 50 (type loc. Not known, probably Malaya Archipelago).
 1935. *Gekko smithi*, Smith, *Fauna Brit. Ind.* 2 : p. 113.

This is also a very large gecko with elongated body and resembles with *Gekko gecko* in size and pholidosis. Its dorsum is brownish-grey with irregular dark-brown spots (mainly on the back portion of head); the juveniles are usually spotted with white, in many cases these spots are arranged in transverse series, on nape these spots make two V-shaped markings; belly is white with plenty of grey dots all over; tail is having alternate bars of dark-brown and whitish colour. Head is very large, broader somewhat bulged, snout obtusely pointed, head covered above with small polygonal shields, scales on the occiput smaller than those present on the snout and are intermixed with larger conical tubercles; Upper labials, 12-14, the first one touching the nostril; infralabials are 10-12; mental shield is narrower than the rostral, almost equal to the adjoining labials; postmentals are in 4-5 small pairs; rostral broader than high, not in contact with the nostril; 2-3 large internasals are always present. Dorsum is with smaller, juxtaposed flat scales, intermixed with slightly larger, almost conical tubercles arranged in 12 longitudinal series, the two rows of these tubercles are separated by 5-8 small scales; ventrum is with large, rounded imbricate scales, scales on the gular region are much smaller. The hind-limb is not reaching to the axilla; digits are generally with a rudiment of the web; 20-23 lamellae are under the fourth toe. Tail is generally smaller than the head and body, much depressed, more ovate in transverse section, the scales on the upper part of tail are smaller and with 10 or 11 scales in each annulus and form a longitudinal series; on the under side of tail, the scales of transverse series are much larger generally form two regular series on account of a furrow or depression between them. Male with 10-16 preanal pores. Standard length 155 mm.; tail length 150 mm.

Distribution : India : Andamans (Map 8).

Elsewhere : Malaysia up to Patani in the north.

Habits and habitat : This gecko is completely arboreal and lives upon large trees in dense forests of Andaman Islands. Its cry is a loud "tuk, tuk, tuk", repeated five to six times. Food, feeding and other habits are like that of *G. gecko*.

Status : Abundant.

Genus 18. *Lepidodactylus* Fitzinger 1843

1843. *Lepidodactylus* Fitzinger, *Syst. Rept.* : pp. 19, 98 (type *Platydactylus lugubris*).

1845. *Amydosaurus* Gray, *Cat. Liz. Brit. Mus.* : p. 162 (type *Platydactylus lugubris*).

1935. *Lepidodactylus lugubris*, Smith, *Fauna Brit. Ind.* 2 : p. 115.

The genus is distributed in the islands of S.W. Pacific Ocean, East Indies, Sri Lanka, East Indian Archipelago, Malaysia, Burma and Andaman and Nicobar islands. Main characters are : The digits are free or partly webbed, strongly dilated; subdigital lamellae arranged in a transverse or oblique series, divided by a median furrow, in some cases

only anterior lamellae are divided; terminal phalanges of four outer digits are slender, compressed, clawed and united with the dilated part; inner digit is well developed but without a claw. Dorsum is with small granular scales. Pupil is vertical. Preanal and femoral pores are present in males.

82. *Lepidodactylus lugubris* Dum, & Bibr. 1836
(Map 65)

1836. *Platydactylus lugubris* Dum. & Bibr., *Erp. Gen.* 3 : p. 304 (type loc. Tahiti)
1857. *Peropus neglectus* Girard, *Proc. Philad. Acad.* : p. 197 (type loc. Not Known)
1859. *Hemidactylus meijeri* Blecker, *Naturk. Tijds. Ned.-Ind.* 16 : (8) p. 47 (type loc. Bintang, Rhio Archipelago).
1864. *Peripia cantoris* Gunther, *Rept. Brit. Ind.* : p. 110, fig. (type loc. Penang)
1867. *Gecko maestus* Peters, *Monatsb. Acad. Berlin*, p. 13 (type loc. Pelew Island)
1869. *Gymnodactylus candeloti* Bavay, *Mem. Soc. Linn. Normandie*, 15 : p. 13 (type loc. N. Caledonia)
1874. *Peripia mysorensis* Meyer, *Monatsb. Acad. Berlin*, : p. 129 (type loc. Mysore, Schouten Is.).
1885. *Lepidodactylus lugubris*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 165.
1915. *Lepidodactylus aurolineatus* Taylor, *Philippine J. Sci., D*, 10 : p. 97 (type loc. Agusan Prov., Mindanao).
1918. *Lepidodactylus divergens* Taylor, *Philippine J. Sc., D*, 13 : p. 242, pl. 1, figs. 1-3 (type loc. Little Govenen Island; Sulu Archipelago)
1935. *Lepidodactylus lugubris*, Smith, *Fauna Brit. Ind.* 2 : p. 115.

This little dull grey lizard with a pinkish tinge on dorsum is generally with a vertebral series of small, paired, blackish spots, sometimes forming wavy markings; a dark line emerges from the tip of snout and reaches up to the ear, while passing through the eye. Juveniles are generally with one or more dark lateral stripes; ventrum is whitish, in certain individual complete lower surface is with brown dots. The head is moderately large is covered above with small, granular scales which are largest on the snout. Snout is obtusely pointed, longer than the distance between the eye and ear-opening. Ear-opening is small, subcircular and its diameter is about one-quarter that of the eye. Upper labials 11-13 and lower labials 9-12; mental is smaller than the adjoining labials; postmental scales are present forming the regular rows; gular scales are small and granular. Rostral is much broader than high; nostril is between the rostral, first labial and two or three small scales. Dorsum is with equal sized small granular scales; belly is with flat, rounded imbricate scales. The digits are webbed at the base, with 12-14 lamellae under the fourth toe, the anterior lamellae are strongly oblique; the hind-limb reaching to about two-thirds of the distance between the axilla and groin. Tail is slightly swollen at the base, with sharp, more or less denticulated lateral aspect; covered above with small subimbricate

scales, underside with large imbricate scales. Regenerated tail is subcylindrical or very strongly depressed. Males are with a continuous series of 25-30 preanal and femoral pores, which form a slight angle in the middle. Standard length 42 mm.; tail length 40 mm.

Distribution : Islands of South-west Pacific ocean, East Indian Archipelago, Malaysia, Burma, India (Andaman and Nicobar Islands) and Sri Lanka (Map 65).

Habits and habitat : Terrestrial, insectivorous, nocturnal.

Status : Most common in the islands of S.W. Pacific ocean; rare in East Indian Archipelago, Sri Lanka and Malaysia and extremely rare in Burma, the Andaman and Nicobar Islands.

Genus 19. *Ptychozoon* Kuhl 1822

1822. *Ptychozoon* Kuhl, *Isis*, 1 : p. 475 (nom. nud.)

1826. *Ptychozoon*, Fitzinger, *Neue Class. Rept.* : p. 13 (type *homalocephalum*)

1827. *Pteropleura* Gray, *Phil. Mag.* (n.s.) 2 : p. 56 (type *horsfieldii*).

1935. *Ptychozoon*, Smith *Fauna Brit. Ind.* 2 : p. 117.

This genus comprises four species and its range of distribution includes Southern portion of South Vietnam, Malaysia, India (Nicobar Is.), Philippine Is. and Riu Kiu Archipelago. In these geckoes the digits are webbed, strongly dilated, underside is with undivided transverse lamellae, terminal phalanges of four outer digits are slender, clawed and attached to the expanded part; inner digit is clawed and without a free terminal phalange. Dorsum is with small scales, intermixed with enlarged tubercles, a dermal expansion is present on the lateral aspect of body and tail. Pupil vertical. Preanal and femoral pores are available in males. Two species namely *Ptychozoon kuhli* and *Ptychozoon lionotum* come within the scope of this faunal work.

Key to the species of genus Ptychozoon

1. Lobes of the tail wider, set at right angles to the central axis; dorsum is with tubercles; 20-25 preanal pores are present in males *Ptychozoon kuhli*
2. Lobes of the tail narrower, directed backwards, dorsum is without tubercles. 16-25 preanal pores are present in males *Ptychozoon lionotum*

83. *Ptychozoon kuhli* Stejneger 1902

(Fig. 51, Map 33)

1798. *Lacerta homalocephala* Creveldt, *Mag. Ges. Naturf. f. Berlin*, 3 : p. 267, pl. 8

1847. *Ptychozoon homalocephalum*, Cantor, *J. Asiat. Soc. Beng.* 16 : p. 626 (in part)

1902. *Ptychozoon kuhli* Stejneger, *Proc. Biol. Soc. Washington*, 15 : p. 37.

1935. *Ptychozoon kuhli*, Smith, *Fauna Brit. Ind.* 2 : p. 117.

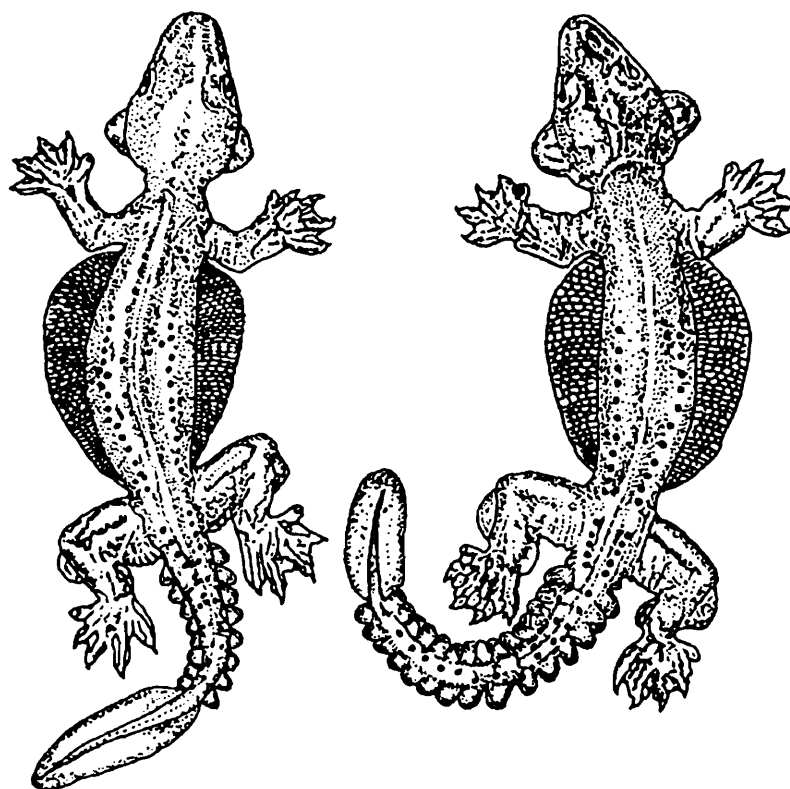


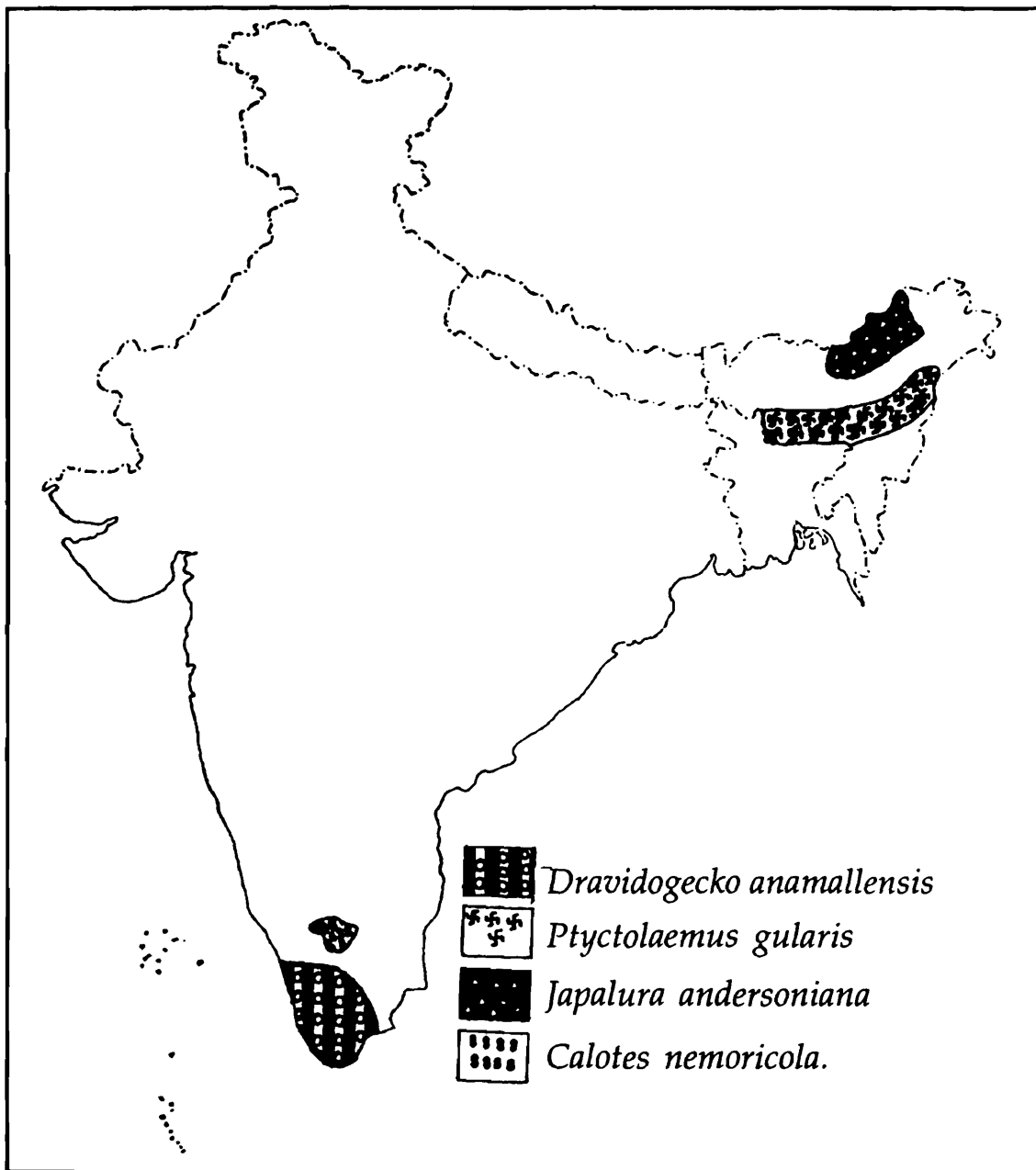
Fig. 51 : *Ptychozoon kuhli* : Tail variation.

The parachute gecko is able to glide from one tree to another by means of its skin membrane along each side of the body. These lizards are greyish or brownish above with dark-brown somewhat W-shaped, wavy bands on the complete dorsum, including the tail; belly is yellowish or brownish; flaps are purple with light bluish ting and dots. Head is large, with obtusely pointed snout much depressed; pupil vertical; ear-opening small, subcircular, the diameter of which is more than half that of eye; head is covered with minute granular scales, those on occiput in many examples intermixed with large round tubercles, snout is with irregular, polygonal, small scales. Upper labials 11-15 and lower labials 10-12; mental shield is moderately large, subtriangular, slightly narrower than the rostral, shorter than the adjacent labials; postmentals are represented by three or four irregular scales on either side, the inner pair is quite elongate; rostral broader than high; nostril is situated between the rostral, first labial and two or three nasals; a pair of internasals is always present. Dorsum is with small, polygonal somewhat juxtaposed scales, intermixed with much larger subconical tubercles, arranged in longitudinal rows; ventrum is with smooth, rounded, imbricate scales. The hind-limb hardly reaches to the axilla; digits are completely webbed, strongly dilated, with undivided, strongly curved, transverse lamellae beneath the dilated portions. Lateral portion of the head, body and limbs are with a very well developed cutaneous, membranous expansions, the expansion on the body is covered above with large, squarish, subimbricate scales arranged like the bricks of a wall; few scales on the head flap are much larger, more larger or at least equal

to the ventral scales. Tail is almost equal to the head and body, strongly depressed, with scalloped lateral membrane, terminating in to broad club-shaped flap; tail is absolutely annulated, its upper portion is having small irregular scales and regular series of conical tubercles; the under side of the tail is with large, flat, squarish scales. Male with a continuous series of 20-25 preanal pores. Standard length 95 mm.; tail length 95 mm.

Distribution : India : Nicobar Islands. Elsewhere : Malaysia; Indonesia (Java, Sumatra and Borneo) (Map 33).

Habits and habitat : Strongly arboreal, insectivorous and breeding commences from late September to December. Eggs are generally laid in the first week of November and hatch



Map 22 : Distribution of *Dravidogecko anamallensis*, *Ptyctolaemus gularis*, *Japalura andersoniana* and *Calotes nemoricola*.

out in the first week of January. Generally two spherical, eggs are laid at a suitable place in the bark of trees. The gecko is capable of gliding considerable distances, sometimes up to 30 metres, depending the distance between the two trees in dense forests. All the flaps of the body serve as parachutes in the process of gliding and their fleshy membrane helps the animal in holding the body and tail rigidly straight.

Status : Rare, Undeterminate.

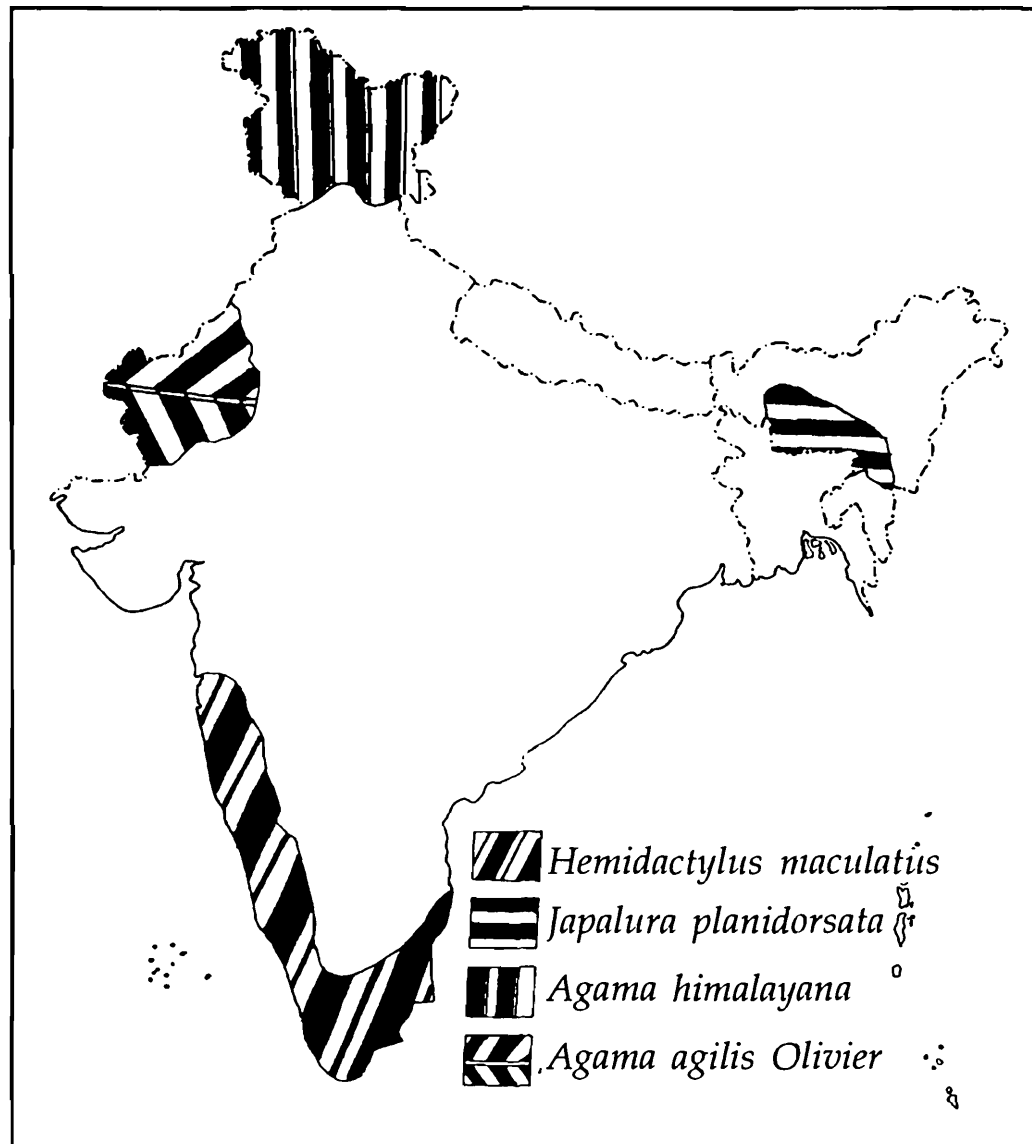
84. *Ptychozoon lionotum* Annandale 1905

(Map 33)

1847. *Ptychozoon homalocephalum* Cantor, *J. Asiat. Soc. Beng.* 16 : p. 626 (in part)

1905. *Ptychozoon homalocephalum* var. *lionotum* Annandale, *Ann. Mag. Nat. Hist.* (7) 15, p. 30 (type loc. Pegu, Burma)

1935. *Ptychozoon lionotum* Smith, *Fauna Brit. Ind.* 2 : p. 118.



Map 23 : Distribution of *Hemidactylus maculatus*, *Japalura planidorsata*, *Agama himalayana* and *Agama agilis* Olivier.

In habitus and scalation etc. this species is very similar to *Ptychozoon kuhli* but differs in having the tail lobes much narrower and directed backwards, in lacking dorsal tubercles and males with 16 to 25 preanal pores. The size is almost same as in *kuhli*.

Distribution : Burma (Pegu), Thailand (Chantabun and Sriracha in the South-east. The Dong Paya Fai Mountains, the Me Wang and Chiengrai districts in the north) (Map-33).

Habits and Habitat : Strongly arboreal, insectivorous. Other habits are not known.

Status : Rare.

Genus 20. *Phelsuma* Gray 1825

1825. *Phelsuma* Gray, *Ann. Phil.* 26 : p 199 (type *cepedianus*).

1830. *Anoplopus* Wagler, *Nat. Syst. Amphib.*, : p. 142 (type *cepedianus*).

1935. *Phelsuma*, Smith, *Fauna Brit. Ind.* 2 : p. 120.

About 15 species of this genus are known from Madagascar; the Comoro; Seychelles and Mascarene Is. and the Andaman Is. in India. Only one species *Phelsuma andamanense* covers the scope of this work. Main generic characters are: The digits are not webbed, strongly dilated, underside with undivided transverse lamellae; devoid of terminal phalanges, clawless or with a vestigial claw; inner digit is rudimentary. Dorsum is with small, granular and uniform scales. Eyes are with well developed lids all round and with a round pupil. Femoral and preanal pores are present in males.

85. *Phelsuma andamanense* Blyth 1860 (Figs. 52-55)

1860. *Phelsuma andamanense* Blyth, *J. Asiat. Soc. Beng.* 29 : p. 108 (type loc. Andaman Is.)

1904. *Gecko chameleon* Tytler, *J. Asiat. Soc. Beng.* 33 : p. 548.

1935. *Phelsuma andamanense*, Smith, *Fauna Brit. Ind.* 2 : p. 121.

This moderately large red tongued gecko is with a beautiful emerald green dorsum, profusely spotted with orange or red, on the back, such spots are not continuous on the tail; red stripes are present on the lateral aspects of head and neck region; tail is blue or green; belly is bright yellow. The head is small with a pointed snout; pupil circular; ear-opening is subcircular; snout covered above with small polygonal scales; upper labials 8-10; lower labials 6-8; mental subtriangular, as large as the adjoining labials; postmentals small and irregular; rostral two times broader than high; nostril is lateral, situated between the rostral, first labial and several small scales. Dorsum with small, uniform and granular scales; ventrum is with large, smooth, round, imbricate scales; digits free, not webbed, strongly dilated, with undivided transverse lamellae beneath, without terminal phalanges, inner digit rudimentary; the fourth toe is much longer than the others with 16 lamellae beneath the dilation. Tail longer than the head and body, depressed, oval in transverse

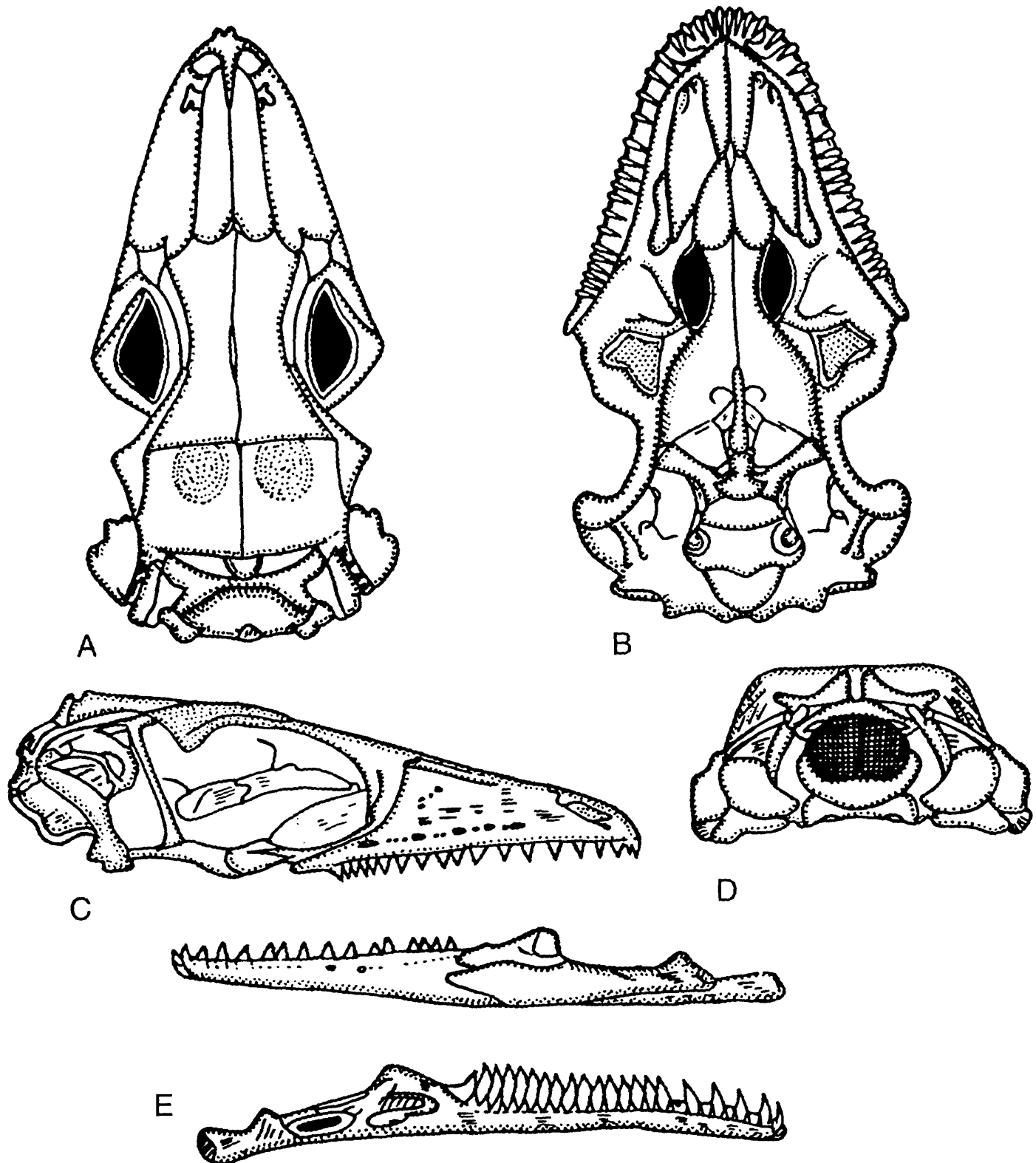
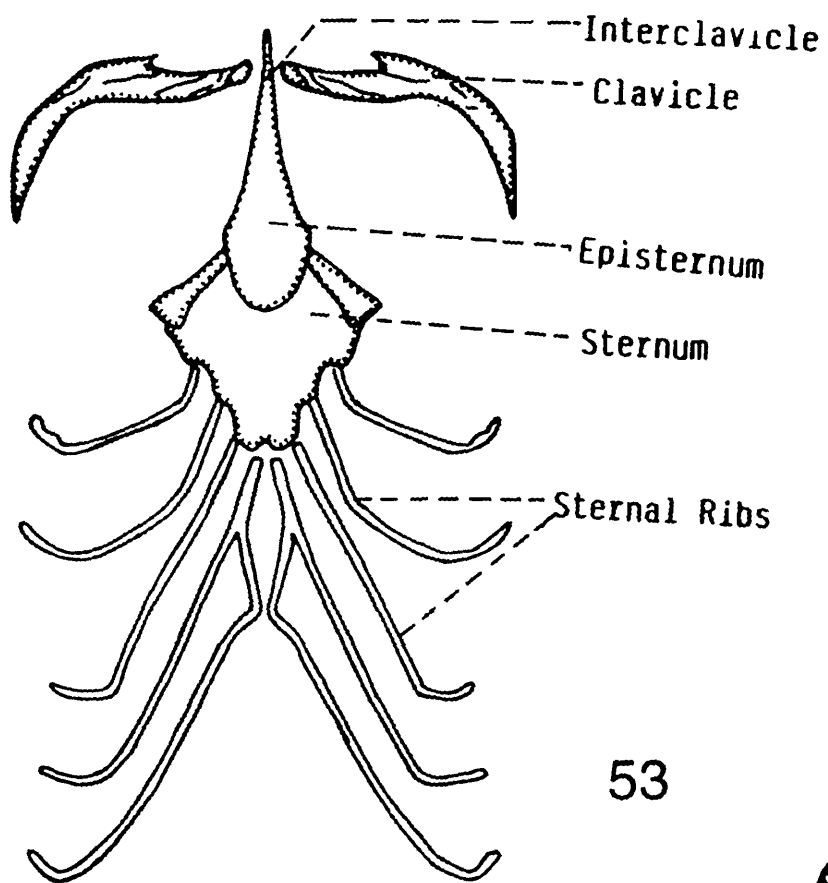
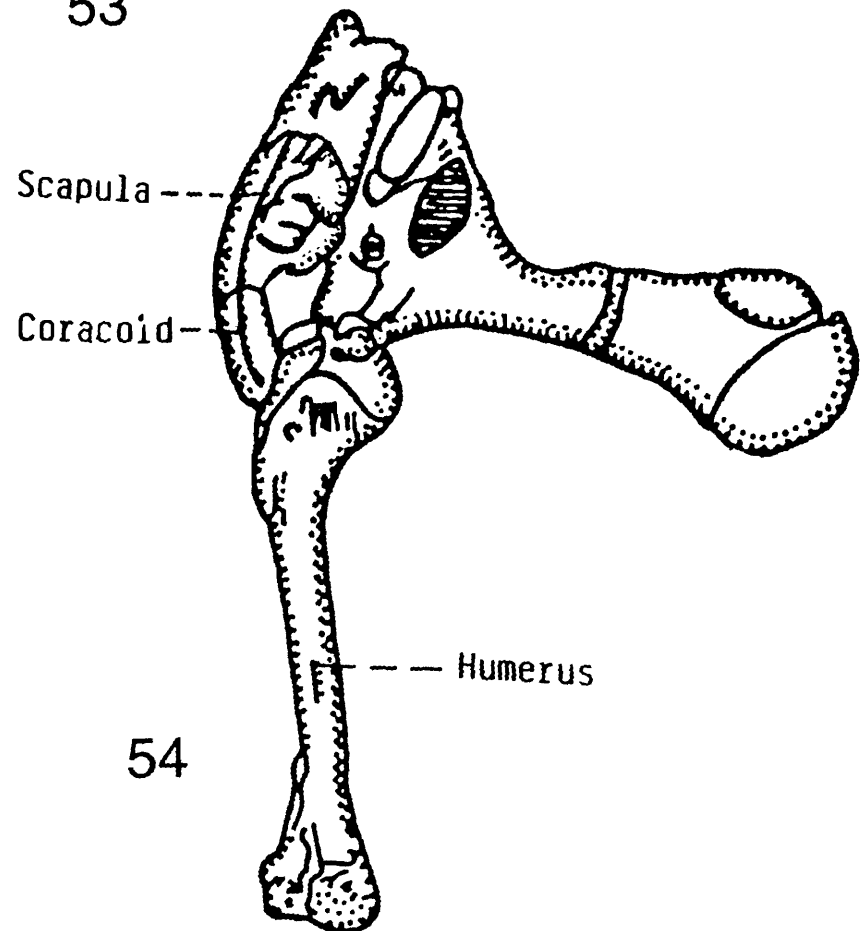


Fig. 52 : *Phelsuma andamanense* : A Skull : Dorsal view. B. Skull : Ventral view. C. Skull: Lateral view. D. Skull : Occipital region. E. Mandible.



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Figs. 53-54 : 53. *Phelsuma andamanense* : Pectoral arch.; 54. *Phelsuma andamanense* : Pectoral girdle and humerus.

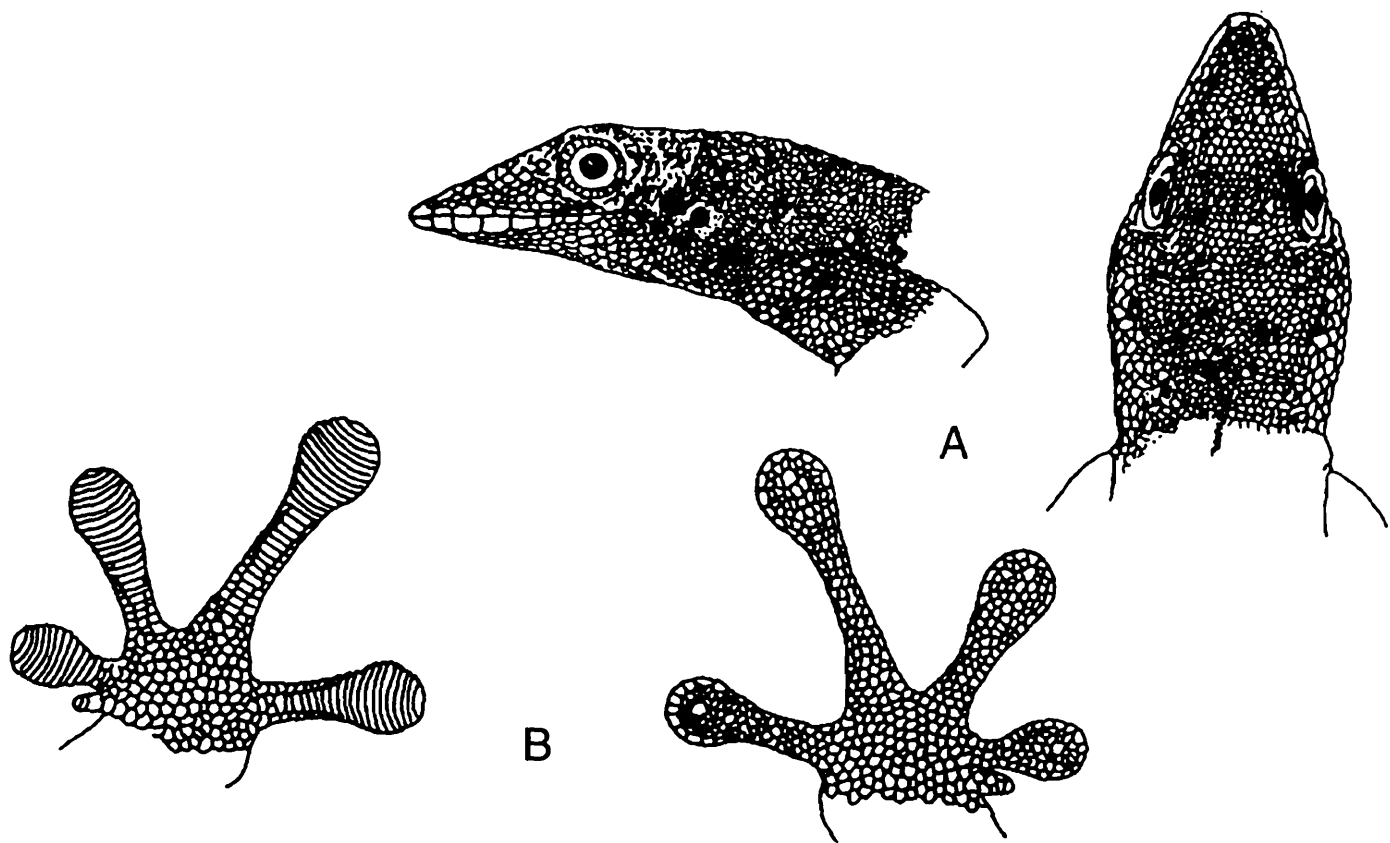


Fig. 55 : *Phelsuma andamanense* : A. Upper and side view of head; B. Lower and upper surface of foot.

section, thicker at the base, tapering to a point, feebly segmented, covered above with uniform scales, below with large scales and a median series of transversely enlarged plates. Male with 15 pores on each side. Standard length 63 mm.; tail length 73 mm.

Distribution : India : Andaman Islands.

Habits and habitat : It is strongly arboreal and diurnal. Also enters the house, can be seen on the walls along with other geckos. Its most favourite abode is the flowers and bunches of banana. The species is mainly insectivorous but has got a great liking for nectar of banana flowers.

Status : Undeterminate, common in many localities.

Genus 21. *Teratolepis* Gunther 1869

1869. *Teratolepis* Gunther, *Proc. Zool. Soc.* : p. 504 (type *fasciata*)

1890. *Teratolepis*, Boulenger, *Fauna Brit. Ind.* : p. 96.

1935. *Teratolepis*, Smith, *Fauna Brit. Ind.* 2 : p. 122.

This Indian genus is monotypic and is with free, moderately dilated digits with transverse lamellae beneath; the anterior subdigital lamellae are notched at the middle; terminal phalanges are slender, clawed, free, rising angularly from within the expanded part; dorsum is with large, pointed, imbricate scales which are distinctly larger than the ventral scales; tail covered with large imbricate plates. Pupil is vertical.

86. *Teratolepis fasciata* (Blyth 1853)

(Fig 56)

1853. *Homonota fasciata* Blyth, *J. Asiat. Soc. Beng.* 22 : p. 468 (type loc. Not known).
 1869. *Teratolepis fasciata*, Gunther, *Proc. Zool. Soc.* : p. 505.
 1876. *Teratolepis fasciata*, Theobald, *Cat. Rept. Brit. Ind.* : p. 95.
 1885. *Teratolepis fasciata*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 145.
 1890. *Teratolepis fasciata*, Boulenger, *Fauna Brit. Ind.* : p. 96.
 1935. *Teratolepis fasciata*, Smith, *Fauna Brit. Ind.* 2 : p. 123.

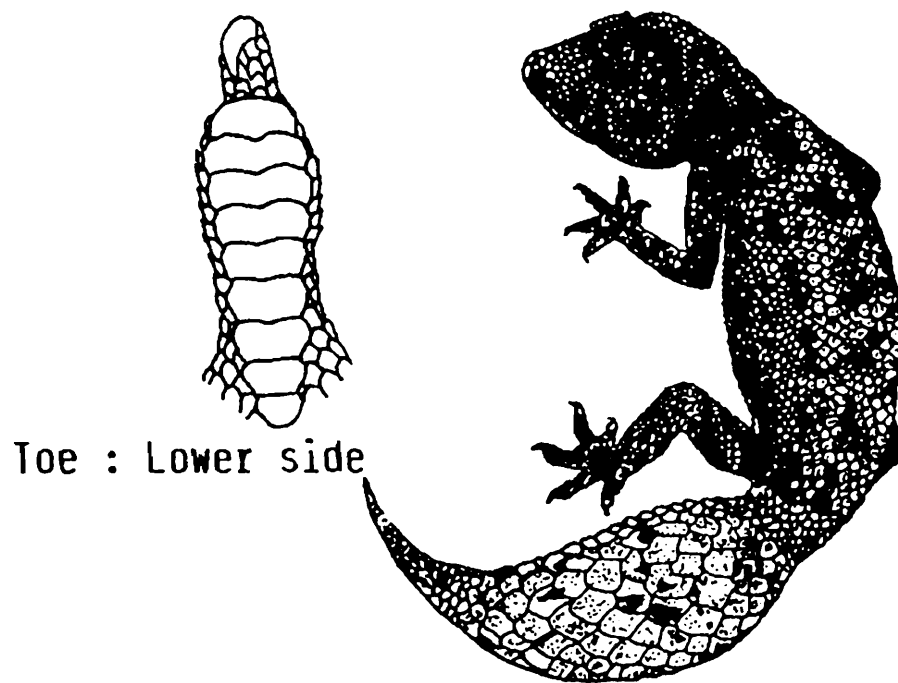
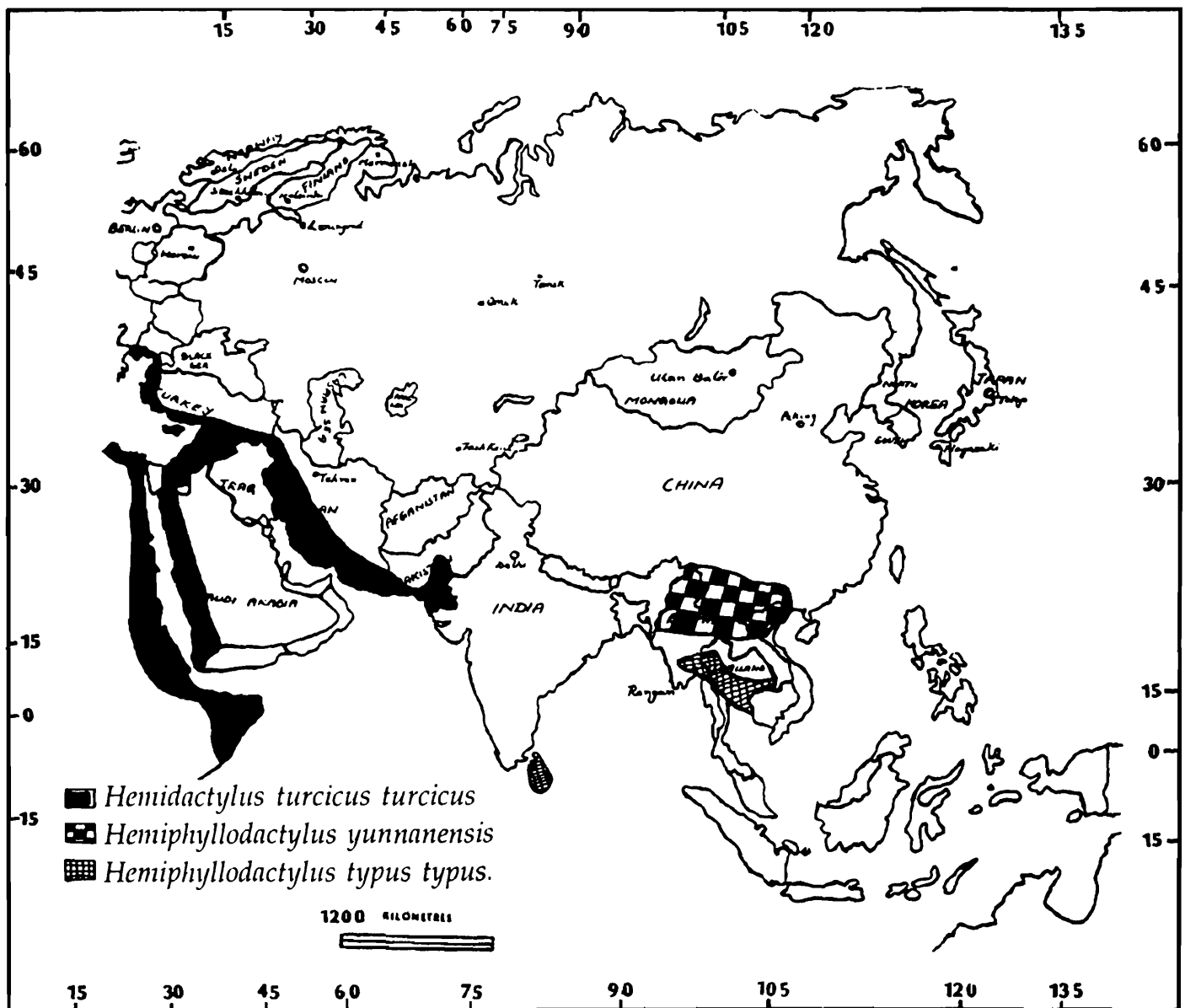


Fig. 56 : *Teratolepis fasciata* : Dorsal view. Toe : Lower side.

This small swollen tailed gecko is greyish-brown above with five longitudinal dark-brown dorsal stripes; six rows of white spots on the back which are continuous on the tail in the shape of white cross bars on its general brown back ground; belly is whitish with numerous brown dots. Head is large in comparison to the body, snout obtusely pointed, pupil vertical, ear opening small, head covered above with large, flat, polygonal scales. Upper labials 8-10; lower labials 7-8; mental large, two times longer than the adjoining labials and triangular in shape; postmentals are in three pairs; inner one is longest; rostral shield is broader than high; nostril is situated between the rostral first labial and two or three small shields. Dorsum including the neck portion is covered with large, imbricate, strongly keeled or feebly keeled or not keeled or smooth, pointed scales which are two times larger than the ventral scales; ventral scales are smaller, imbricate and quite smooth. Limbs are moderately strong, upper surface covered with strongly imbricate scales; digits are free, moderately dilated, elongated, with transverse lamellae beneath, the anterior

ones mesially notched; terminal phalanges slender, clawed, free, rising angularly from within the expansion; lamellae under the first toe 7, under the fourth toe 8-9. Tail is much shorter than the head and body, depressed, oval in transverse section, constricted at the base, than suddenly swollen, tapering to a fine point; the upper side of tail is having large, imbricate, leaf-like scales, few of them are extremely large. Male with 6-8 preanal pores. Standard length 42-56 mm.; tail length 27-40 mm.

Distribution : India : Peninsular India (Jalna, Hyderabad, Tamil Nadu) Meghalaya (Shillong). Elsewhere : Pakistan (Tatta and Hyderabad districts, Sind). The species exhibits most interesting discontinuous distribution with point of range and climate.



Map 24 : Distribution of *Hemidactylus turcicus turcicus*, *Hemiphyllodactylus yunnanensis* and *Hemiphyllodactylus typus typus*.

Habits and habitat : Terrestrial, nocturnal and sluggish. The food comprises, mainly the insects like cockroaches, crickets, flies and termites. Mating takes place in February and first clutch of two eggs are laid in March. Incubation period is about 46 days. The eggs measure 9×9.8 mm., the hatchlings are generally 33-35 mm. in the total length.

Status : Underterminate, Most rare.

Genus 22. *Lophopholis* Smith & Deraniyagala 1934

1906. *Teratolepis* Annandale, *Mem. Asiat. Soc. Beng.* 1 : p. 187.

1934. *Lophopholis* Smith & Deraniyagala, *Ceylon J. Sc.*, B, 18 : p. 235 (type *Teratolepis scabriceps* Annandale).

1935. *Lophopholis*, Smith, *Fauna Brit. Ind.* 2 : p. 124.

This monotypic genus is distributed in South India and Sri Lanka, and main generic characters are : The digits are free, moderately dilated, subdigital lamellae form a double series; terminal phalanges are long, slender, clawed, free and rise angularly from within the expanded part. Dorsum is with imbricate scales which are not much larger than the ventral scales; tail scales are similar to the body scales. Pupil is vertical. Preanal pores are present in males.

87. *Lophopholis scabriceps* Annandale 1906

(Fig-57, Map-31)

1906. *Teratolepis scabriceps* Annandale, *Mem. Asiat. Soc. Beng.* 1 : p. 187, pl. 9, fig. 1, a-c (type loc. Ramnad, Madura district)

1906. *Lophopholis scabriceps*, Smith & Deraniyagala, *Mem. Asiat. Soc. Beng.* 1 : p. 235, text-figs.

1935. *Lophopholis scabriceps*, Smith, *Fauna Brit. Ind.* 2 : p. 124.

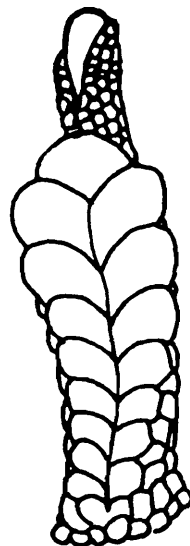


Fig. 57 : *Lophopholis scabriceps* : Lower surface of toe.

This small scaled gecko is greyish-brown above, with dark brown markings, those on the dorsum arranged as transverse bars; belly is dirty-white. Head is moderately large, snout obtusely pointed, pupil vertical, ear-opening is sub-circular; head covered above with small granular scales, which are largest and keeled on the snout. Upper labials 7-8, lower labials 6-7; mental shield is large, broader than the rostral, triangular, twice as long as the adjacent labials; postmentals are in two pairs, the inner one is largest and in contact with one another behind the mental; rostral broader than high; nostril is situated between the rostral, first labial and several small scales; internasals are two or three. Dorsum is with uniform, imbricate, slightly elongated, striated and feebly keeled scales, dorsals are slightly larger than the belly scales; ventral scales are smaller and smooth, gular scales are minute and granular. Limbs short, hind-limb hardly reaches to the mid-way between axilla and groin; digits short, free, moderately dilated, with a double series of lamellae beneath; terminal phalanges long, slender, clawed, free, rising angularly from within the expansion; 5-7 pairs of lamellae beneath the fourth toe. Tail slightly longer than the head and body, round in transverse section, tapering to a point; upper aspect of the tail is with regular imbricate scales, the ventral scales are slightly larger than the dorsals. Males with 6 preanal pores, separated by a large median scale. Standard length 45 mm.; tail length 50 mm.

Distribution : India : Madras, Ramnad, Elsewhere : Sri Lanka (Mariccukatti) (Map 31).

Habits and habitat : Insectivorous and nocturnal.

Status : Rare, Undeterminate.

Family 2. EUBLEPHARIDAE Boulenger 1883

1883. Eublepharidae Boulenger, *Ann. Mag. Nat. Hist.* (5) xii : p. 308.

1901. Eublepharinae Gadow, *Amphibia & Rept.*, : p. 512.

1935. Eublepharidae, Smith, *Rec. Ind. Mus.* xxv : p. 16.

1935. Gekkonidae, Smith, *Fauna Brit. Ind.* : p. 21.

Eublepharids are the most primitive, terrestrial, ground dwelling lizards which are the direct descendants of a most primitive Gekkota stock of Mesozoic period (Upper Jurassic-Lower cretaceous). It appears that the same ancient group of reptiles was ancestral to the existing families Eublepharidae and Gekkonidae which have evolved simultaneously in their preferred environments. From the very beginning family Eublepharidae adapted to lead a terrestrial, ground dwelling life thus retaining the most primitive characters like ophisthocoelous vertebrae, well developed and movable eyelids, a single parietal bone in skull (Fig 58p) and padless digits. All these characters are most stable and have got an evolutionary significance. Smith (1935) by disregarding these important characters, merged

family Eublepharidae in the family Gekkonidae. He has quoted the example of American *Sphaerodactylus* (with procoelous vertebrae) and Malayan *Aelurosscalabotes* (with movable eyelids), in the support of his claim. In another Indo-chinese Gecko *Phyllodactylus siamensis*, the presence of a single parietal shield in the skull could not be proved as mentioned by Noble (1921). His statement regarding the presence of paired parietals in two species of Eublepharids is doubtful and is a subject of controversy. All the examples belonging to three species of Eublepharids namely *Eublepharis hardwickii*, *Eublepharis macularius* and *Eublepharis lichtenfelderi* were found to be having a single parietal bone in their skull. If the comparative set of characters like skull bones, claws and digits, femoral and preanal pores, scalation of body, habits and habitats and distribution pattern etc. are taken into consideration, it will be noticed that all the above mentioned species are on the different evolutionary lines and should not be mixed together in order to avoid confusion about their true status. On the contrary in family Gekkonidae the vertebrae are amphicoelous, eyelids are not available and represented by a fully or partially developed rim of tissue around the eye, presence of two parietal bones in the skull, digits are dilated and generally with the adhesive pads.

As such it warrents the reestablishment of the original, independent status of the family Eublepharidae (Boulenger 1883). Most probably both the families Eublepharidae and Gekkonidae undergone a parallel evolution and originated from a common ancestor like *Ardeosaurus* from the Jurassic. The main characters of the family Eublepharidae are : Body stout, covered with small, irregular, juxtaposed scales intermixed with larger tubercles, top of the head covered with irregular polygonal scales. The digits are clawed, non-dilated, devoid of adhesive pads, with transverse lamellae beneath. Eyes are with well developed movable lids, eye-ball is devoid of fixed membranous covering. Teeth are pleurodont. Tongue is fleshy, moderately elongate, broad, protrusible and covered with villose papillae. Skull is devoid of temporal and postorbital arcades, parietals are united in to a single shield. Vertebrae are ophisthocoelous.

Genus 23. *Eublepharis* Gray 1827

1827. *Eublepharis* Gray, *Phil. Mag.* (2) 2 : p. 56 (type *hardwickii*)

1908. *Goniurosaurus* Barbour, *Bull. Mus. Comp. Zool. Harvard*, 51 : p. 316 (type *hainanensis*).

This genus includes four species, two are included in the present work. The main generic characters are : The digits are short, cylindrical, clawed (claws are partly hidden between two lateral scales and an upper scale), subdigital lamellae are in transverse rows. Both the eyelids are well developed and movable. Dorsum is with small juxtaposed scales and larger tubercles. Pupil is vertical. Only preanal pores are present in males. Tail is shorter than the head and body and in adult individuals much swollen at the base.

Key to the species of genus *Eublepharis*

1. Preanal pores are 13-18; enlarged dorsal tubercles are larger than their interspaces *Eublepharis hardwickii*
2. Preanal pores are 9-14; enlarged dorsal tubercles are equal to or smaller than their interspaces..... *Eublepharis macularius*

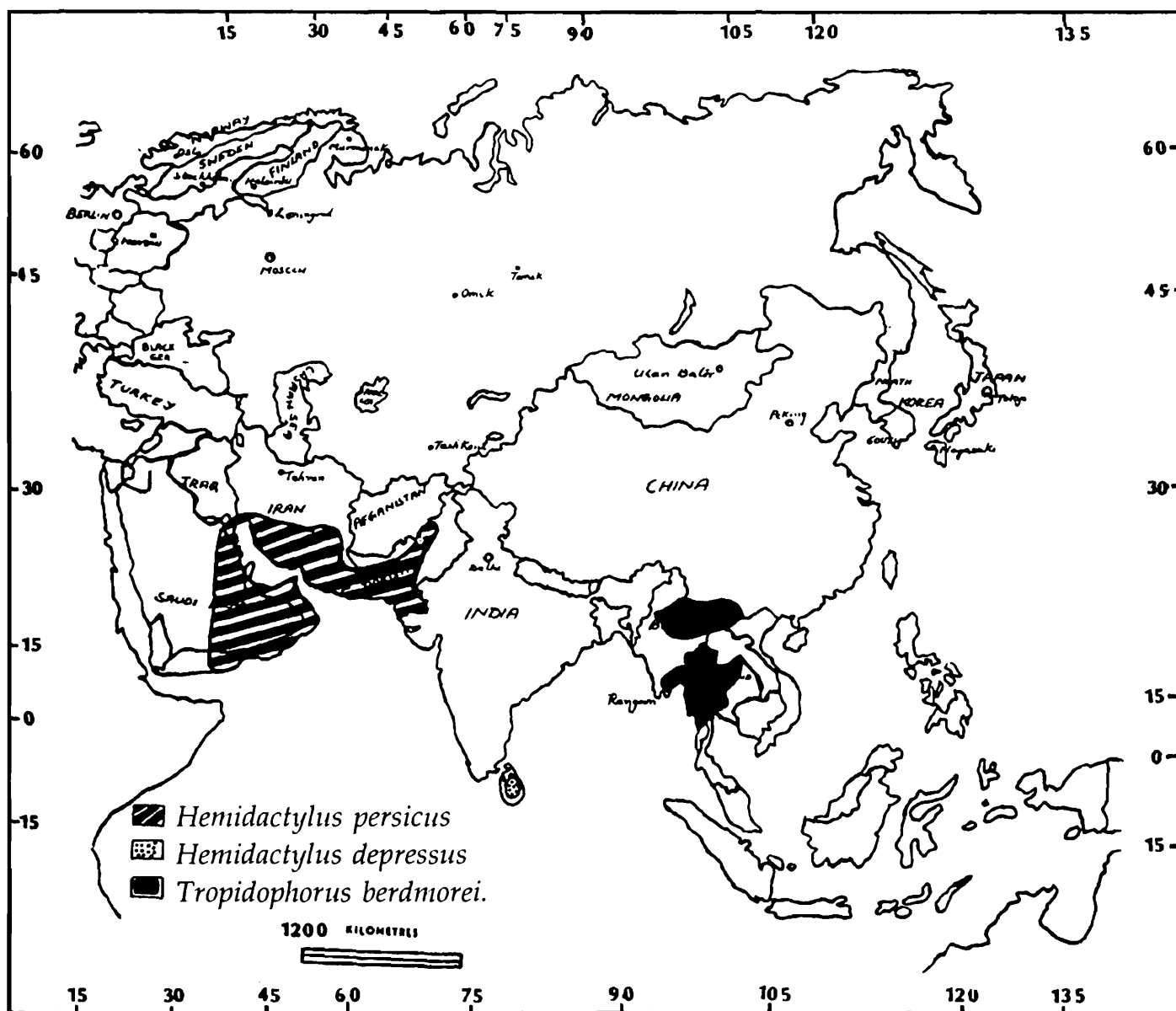
88. *Eublepharis hardwickii* Gray 1827

(Map 20)

1827. *Eublepharis hardwickii* Gray, *Phil Mag.* (2) 2 : p. 56 (type loc. Chittagong, Penang).

1847. *Gymnodactylus lunatus* Blyth, in Cantor, *Cat. Malay. Rept.* : p. 27 (type loc. Chaibassa).

1935. *Eublepharis hardwickii*, Smith, *Fauna Brit. Ind.* 2 : p. 126.



Map 25 : Distribution of *Hemidactylus persicus*, *Hemidactylus depressus* and *Tropidophorus berdmorei*.

The common fat-tailed gecko is reddish-brown or deep tobacco brown above, with broad cream coloured transverse spots. There is a U-shaped mark across the nape which extends to the tip of the snout through the upper labials; the second much broader than the first is across the mid-body; tail is also having four or five such bands; belly is whitish. Head is large, high and bulged absolutely distinct from the neck, snout obtusely pointed. Eyes are large, with well developed movable eyelids and with a vertical pupil, ear-opening is subcircular; head is covered above with irregular polygonal scales. Upper labials are 9-10; and same is the number of lower labials; mental scale is large, pentagonal, twice as broad as the adjoining supralabials; postmentals are in single pair and in contact with one another; postmentals are followed by smaller irregular scales behind; rostral broader than high. Dorsum is with small, irregular, juxtaposed scales intermixed with larger rounded or oval subconical or keeled tubercles; ventrum is with round imbricate scales. Limbs are quite short, digits are short, cylindrical, with transverse lamellae beneath, clawed, the claw partly concealed between two lateral scales and an upper scale. Tail shorter than the head and body, cylindrical, much swollen at the base, tapering to a point, segmented, its upper portion is covered with flat irregular scales and rows of larger tubercles, the underside with subquadrangular scales. Male with an angular series of 13-18 preanal pores. Standard length 110 mm.; tail length 85 mm.

Distribution : India : Bihar, Orissa, Bengal, Tamil Nadu, Madhya Pradesh, and Uttar Pradesh (Map 20).

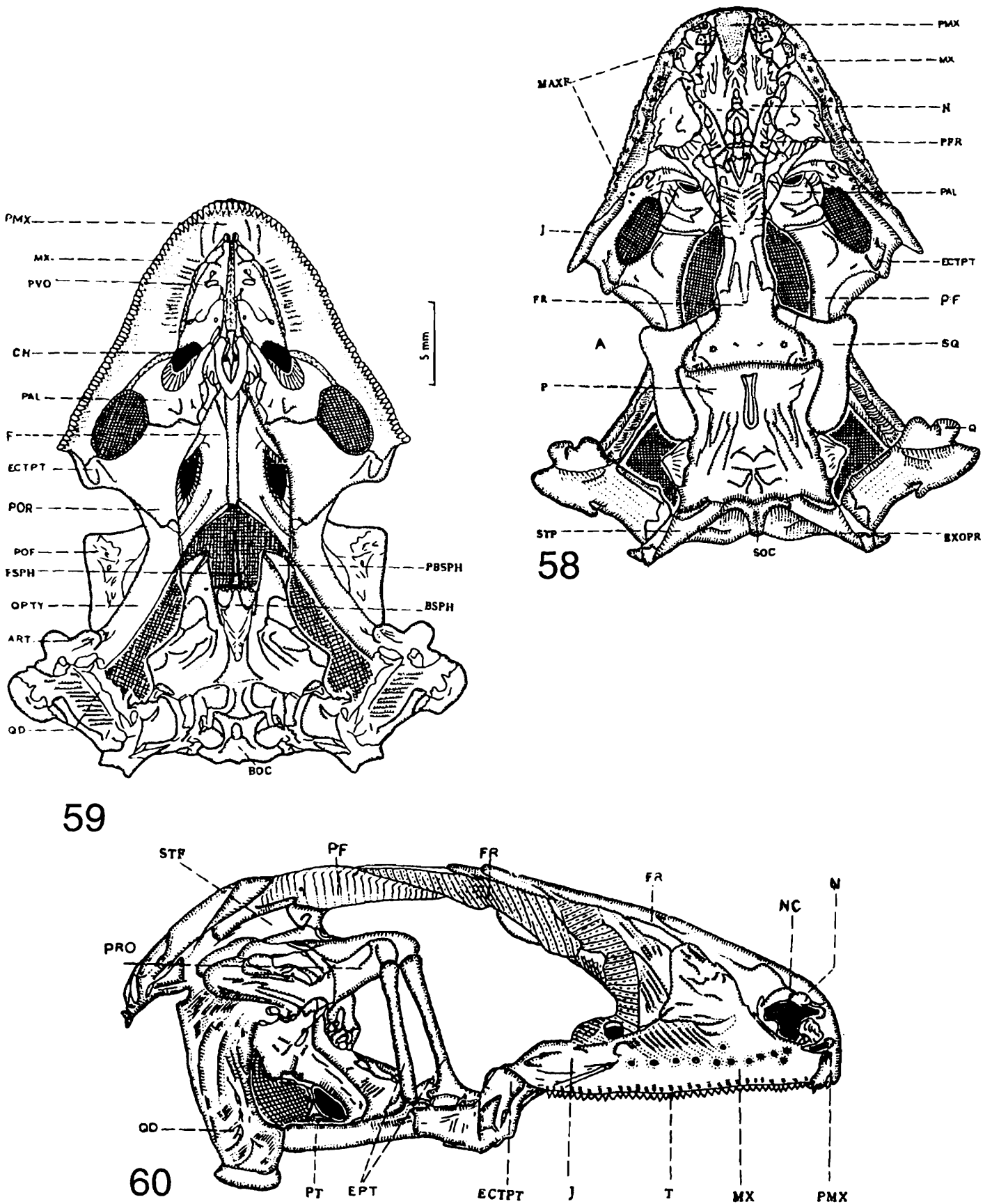
Habits and habitat : Insectivorous, nocturnal and terrestrial.

Status : Rare.

89. *Eublepharis macularius* Blyth 1854
(Figs. 13-15, 18-22 & 58-62, Map 18)

1854. *Cyrtodactylus macularius* Blyth, *J. Asiat. Soc. Beng.* 23 : pp. 737, 738 (type loc. Salt Range, Punjab).
 1864. *Eublepharis fasciolatus* Gunther, *Ann. Mag. Nat. Hist.* (3) 14 : p. 429 (type loc. Hyderabad Sind)
 1871. *Eublepharis macularius*, Anderson, *Proc. Zool. Soc.* : p. 163.
 1884. *Eublepharis hardwickii*, Murray, *Zool. Sind* : p. 366.
 1935. *Eublepharis macularius*, Smith, *Fauna Brit. Ind.* 2 : p. 127.

The juveniles of this gecko are dark-brown to black above, with two or three wide yellow bands across the trunk; a milky band from nape extends to the ear through lips; tail is with 4-6 transverse white bands. Adults are spotted with yellow, bluish grey, straw yellow, violaceous-grey, dorsum is with blue-black spots. This is a stout species with a robust built and a markedly swollen tail. Pholidostic characters are like that of *E. hardwickii* except the following differences :- Enlarged dorsal tubercles are smaller; Male with 9-14 preanal pores. Standard length 120 mm.; tail length 90 mm.



Figs. 58-60 : 58. *Eublepharis macularius* Blyth : Dorsal view of skull; 59. *Eublepharis macularius* : Skull in ventral view; 60. *Eublepharis macularius* : Blyth : Lateral view of skull.

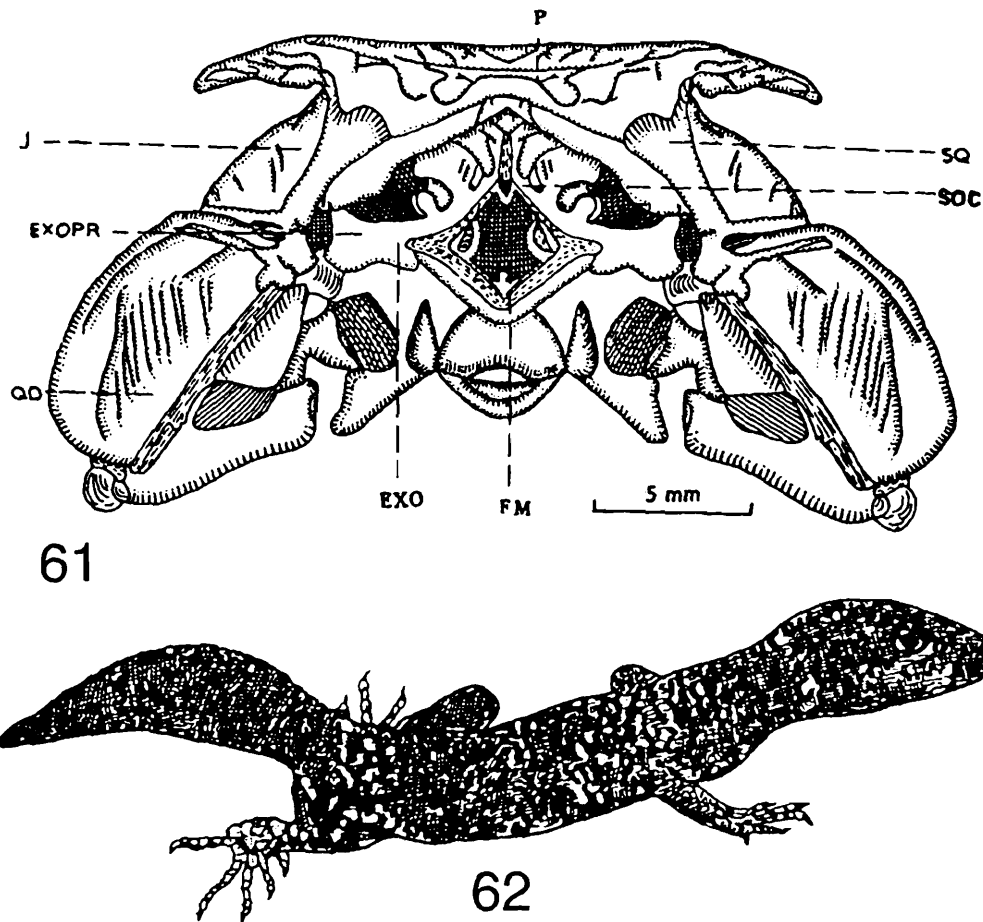


Fig. 61-62 : 61. *Eublepharis macularius* : Skull (Occipital region); 62. *Eublepharis macularius* : Dorsal view

Distribution : India : Punjab, Rajasthan, Maharashtra, Elsewhere : Pakistan, Transcaspia, Iraq (Map 18).

Habits and habitat : A nocturnal species inhabiting rocky desert area, generally avoids the sand dune country. The main food comprises a variety of insects, other arthropods like grasshoppers, crickets, beetles, dragonflies, antlions and scorpions. Smaller geckos especially the juveniles of *Hemidactylus triedrus* are also devoured readily. The species is said to be quite indifferent to the sting of scorpions. The breeding season is between March to August, 2 to 3 oval eggs are laid, measuring 13-16 mm in width and 31-35 mm. in length. The gecko is most pugnacious and readily bite even on gentle handling. On provocation they rise high on their legs, with the back laterally bowed or arched; the tail is raised and slowly waved about. They make a sound like the spitting of a kitten.

Status : Undeterminate.

Family 3. AGAMIDAE Gray 1827

1825. *Stellionidae* Gray, *Ann. Phil.* (2) 10 : p. 196.

1827. *Agamidae* Gray, *Phil. Mag.* (2) 2 : p. 57

1868. *Uromasticidae* Theobald, *J. Linn. Soc., Zool.* 10 : p. 34.

1890. *Agamidae*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 250.

1935. *Agamidae*, Smith, *Fauna Brit. Ind.* 2 : p. 130.

This large family inhabits the warmer parts of the old world and Australia, but is not present in New Zealand and Medagaskar. A majority of its members live in Asia and are most numerous, both in genera and species in the oriental region. The family includes 34 genera and about 300 species all over the world and exhibit great ecological and structural diversities. All agamids are with well-developed limbs and long tail. Teeth are differentiated in to incisors, canines and molars. The anterior teeth typically pleurodont (born on the side of the jaws), while the posterior ones are acrodont (born on the summit of the mandibles. The tongue is broad and is a short fleshy structure and is not protrusible. The skull is much ossified and is with both the temporal and post orbital arcades; devoid of post frontal bone but having a single premaxillary, a pair of nasals, single frontal and a single parietal. The eyes are generally well developed, with complete eyelids and a round pupil. The skin is without osteoderms and large symmetrical shields are not available on the head and belly. Agamids are generally insectivorous, some are insectivorous as well as herbivorous and some are absolutely herbivorous.

Key to the genera of family AGAMIDAE

1. Femoral pores are not present

A wing-like expansion is present on the much extended ribs..... *Draco*

Wing-like expansion is not present, ribs are not extended.

A. Body not depressed.

a. Only four toes are present *Sitana*

b. Toes are five in number.

1. Tympanum is not present

i. Fifth toe is short, almost as long as first *Otocryptis*

ii. Throat is with three parallel longitudinal folds forming a U-shaped mark
..... *Ptyctolaemus*

iii. Dorsum is with very large, unequal, irregularly arranged scales; a dorsal
crest is present; tail is prehensile *Cophotis*

iv. Dorsum is with unequal scales; dorsal crest is not present; a rostral
appendage is present (at least in males)..... *Ceratophora*

v. Dorsum is with small unequal scales, intermixed with larger ones; a bony
supraorbital arch is present; in adults there is a globular protuberance on
the nose. *Lyriocephalus*

2. Tympanum is present, exposed or covered with skin.
 - i. Tympanum is partially naked; dorsal scales unequal, regularly arranged; dorsal crest is not prominent (feeble); no gular sac; no transverse gular fold; a postorbital spine is present; tail rounded, not swollen at the base; no preanal or femoral pores *Oriocalotes*
 - ii. Tympanum concealed, partially naked; dorsal scales unequal, heterogeneous; dorsal crest is represented by few denticulations or may be absent; gular sac small or absent; an oblique gular fold is present; no postorbital spine; no preanal or femoral pores *Japalura*
3. Tympanum is present; always exposed.
 - iii. Tympanum exposed; dorsal scales unequal, heterogeneous; a dorsal crest is present; gular sac is usually present; a strong gular fold is present; a post-orbital spine is present except in *subcristatus*: tail compressed, underside scales are longer than broad; no preanal and femoral pores. ...
..... *Goniocephalus*
 - iv. Tympanum exposed; dorsal scales very unequal; irregular; ventral scales unequal; a nuchal and a dorsal crest is present; a strong fold in front of the shoulder is present; a gular sac is present; no preanal or femoral pores are available. *Mictopholis*
 - v. Tympanum exposed, dorsal scales are large, unequal, not heterogeneous, strongly imbricate; a dorsal crest is present; tail in males is strongly compressed and crested above..... *Salea*
 - vi. Tympanum exposed; dorsal scales are equal in size, regularly arranged; dorsal crest is present; tail of male is rounded and swollen at the base ..
..... *Calotes*
- B. Body is depressed.
 1. Tympanum exposed; males are devoid of callose preanal scales; throat is with a transverse fold; no gular sac; body with uniform keeled scales, regularly arranged; no dorsal crest *Psammophilus*
 2. Tympanum exposed; males are with callose preanal scales; a transverse gular fold is present; dorsal crest is not present..... *Agama*
 3. Tympanum is missing; no dorsal crest; no gular sac; a transverse gular fold is present; dorsal scales uniform or intermixed with larger ones; no preanal or femoral pores *Phrynocephalus*
- ii. Femoral pores are present.
 1. Body depressed, dorsal crest is not present; dorsum is with minute granular scales; gular pouch is not present; tail long, rounded, slightly depressed,

covered above with small equal scales; 13-20 femoral pores on each side.

..... *Leiolepis*

2. Body depressed, dorsal crest is not present; dorsal scales small, uniform, smooth, with or without scattered large scales on the back; ventral scales subquadrangular, smooth; gular scale rounded, much smaller than the ventrals; tail with whorls of large spinose scales; 12-18 femoral pores on each side *Uromastix*

Genus 24. *Draco* Linnaeus 1758

1758. *Draco* Linnaeus, *Syst. Nat.* : p. 199 (type *volans*)
 1815. *Draconus* Rafinesque, *Analyse Nat.* : p. 77.
 1834. *Dracunculus* Wiegman, *Harp. Mex.* : p. 14 (type *lineatus*)
 1843. *Rhacodracon* Fitzinger, *Syst. Rept.* : p. 50 (type *fimbriatus*).
 1843. *Pterosaurus* Fitzinger, *Syst. Rept.* : p. 51 (type *dussumieri*).
 1843. *Pterosaurus* Fitzinger, *Syst. Rept.* : p. 51 (type *haematopogon*).
 1843. *Dracontoidis* Fitzinger, *Syst. Rept.* : p. 51 (type *lineatus*).
 1845. *Dracocella* Gray, *Cat. Liz. Brit. Mus.* : p. 234 (type *dussumieri*).
 1935. *Draco*, Smith, *Fauna Brit. Ind.* 2 : p. 135.

This genus comprises about 40 species, except one *Draco dussumieri* available in Goa and other parts of South India, all the other species are from Indo-chinese Region, the East Indian Archipelago and the Philippine Islands. The main generic characters are : A large wing-like membrane which is supported by the last 5-7 much extended ribs is present on the lateral aspects of body. A gular appendage and a lateral flap or wattle on either side of the throat. Tympanum is distinct or covered with scales. Tail is quite long. Femoral and preanal pores are not present.

Key to the species of genus *Draco*

- I. Nostril is lateral, directed outward; tympanum scaly; patagium spotted.....
 *Draco maculatus*
- II. Nostril is dorsal, directed straight upwards
- A. Length of the snout is almost equal to the diameter of the orbit; dorso-lateral aspect is with a series of widely separated, enlarged, trihedral scales.
- (a) Tympanum is not scaly
- i. Patagium with four or five black transverse bands, inside of which is with red reticulations *Draco taeniopterus*
- ii. Patagium is variegated with brown spots, generally with fine, white, longitudinal lines; inside is with red reticulations. *Draco blanfordi*

(b) Tympanum is scaly; patagium is with three red or black and red, transverse bands; inside of the wing-membrane is with red reticulations

.....*Draco norvilli*

B. Length of the snout is shorter than the diameter of the orbit; dorsolateral aspect is with a series of small tubercles composed of small scales ..*Draco dussumieri*

90. *Draco maculatus* (Gray 1845)

(Figs. 63 & 64, Map 34)

1845. *Dracunculus maculatus* Gray, *Cat. Liz. Brit. Mus.* : p. 262 (type loc. Penang).

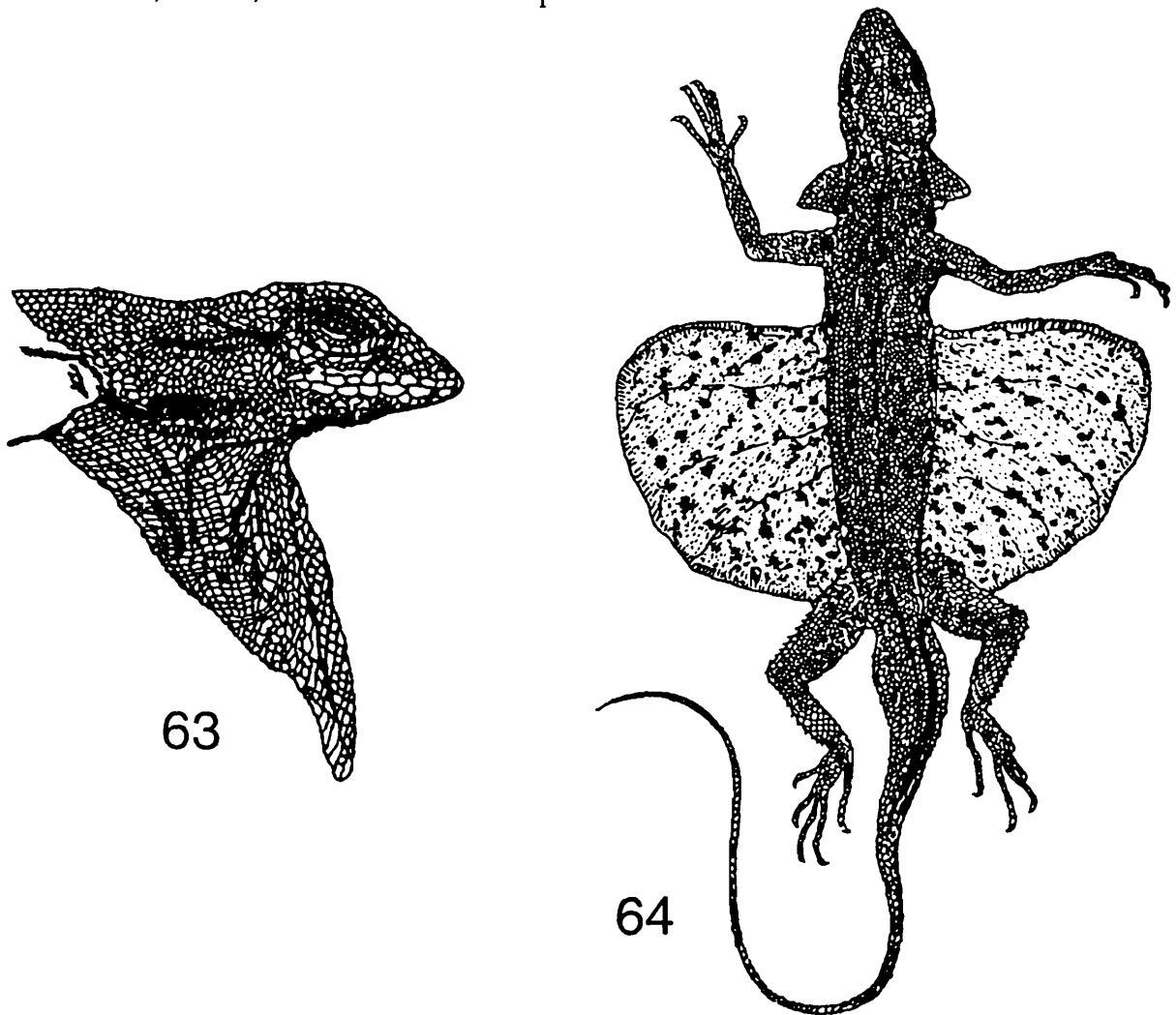
1864. *Draco maculatus* Gunther, *Rept. Brit. Ind.* : p. 125, pl. 13.

1893. *Draco haasei* Boettger, *Zool. Anz. Leipzig.* : p. 429 (type loc. Chantabun, Thailand).

1899. *Draco whiteheadi* Boulenger, *Proc. Zool. Soc.* : p. 956, pl. 66 (type loc. Five-finger Mountain, Hainan).

1915. *Draco maculatus haasei*, Smith & Kloss, *J. Nat. Hist. Soc. Siam*, 1 : p. 239.

1935. *Draco maculatus*, Smith, *Fauna Brit. Ind.* 2 : p. 138.



Figs. 63-64 : 63, *Draco maculatus* : Head of adult male; 64. *Draco maculatus* : Dorsal view.

This flying lizard is greyish to bronze above; black spots are present on the nape and inter orbital region; wing membrane is adorned above beautifully with orange, reddish-brown or greenish intermixed with variable black spots, which are arranged in longitudinal lines; belly is yellowish, with irregular black spots all over; inside gular pouch light yellow or brown, with a blue spot at the base and sometimes at the tip. head is moderately large; dorsal head scales unequal, strongly keeled, compressed, erect over the canthal region and anterior portion of the orbit. Upper labials 7-11; nostril lateral, directed outwards; tympanum concealed with small scales; patagial ribs are 5 in number; gular appendage of male much longer than the head, covered with scales which are equal to the ventral scales in size, gular appendage of female is small, not even half the length of head. Dorsum is with unequal, smooth to feebly keeled scales; the largest dorsal scale of body is either as large as or larger than the largest ventral scale of the body; ventral scales of body are strongly keeled; lateral aspects of back are bearing a series of widely separated, enlarged, strongly keeled scales. The fore-limb reaches to the snout and the hind-limb to the axilla. Males are having a feeble nuchal fold but are devoid of a caudal crest. Standard length 82 mm; tail length 125 mm.

Distribution : India : Naga Hills, Arunachal Pradesh. Elsewhere : Complete Indo-chinese Peninsula to Hainan and the Man-son Mountains, Tonkin, Nahon Sritamaret Mountains in Thailand (Map 34).

Habits and habitat : This species inhabits the Naga foot-hills and collected not beyond the altitude of 1500 metres. They are absolutely arboreal and their food comprises insects and their grubs. The species exhibits courtship, pairing and males will have to choose a mate after a tough fight. Two to five eggs are laid at a time and are buried in ground.

Status : Undeterminate.

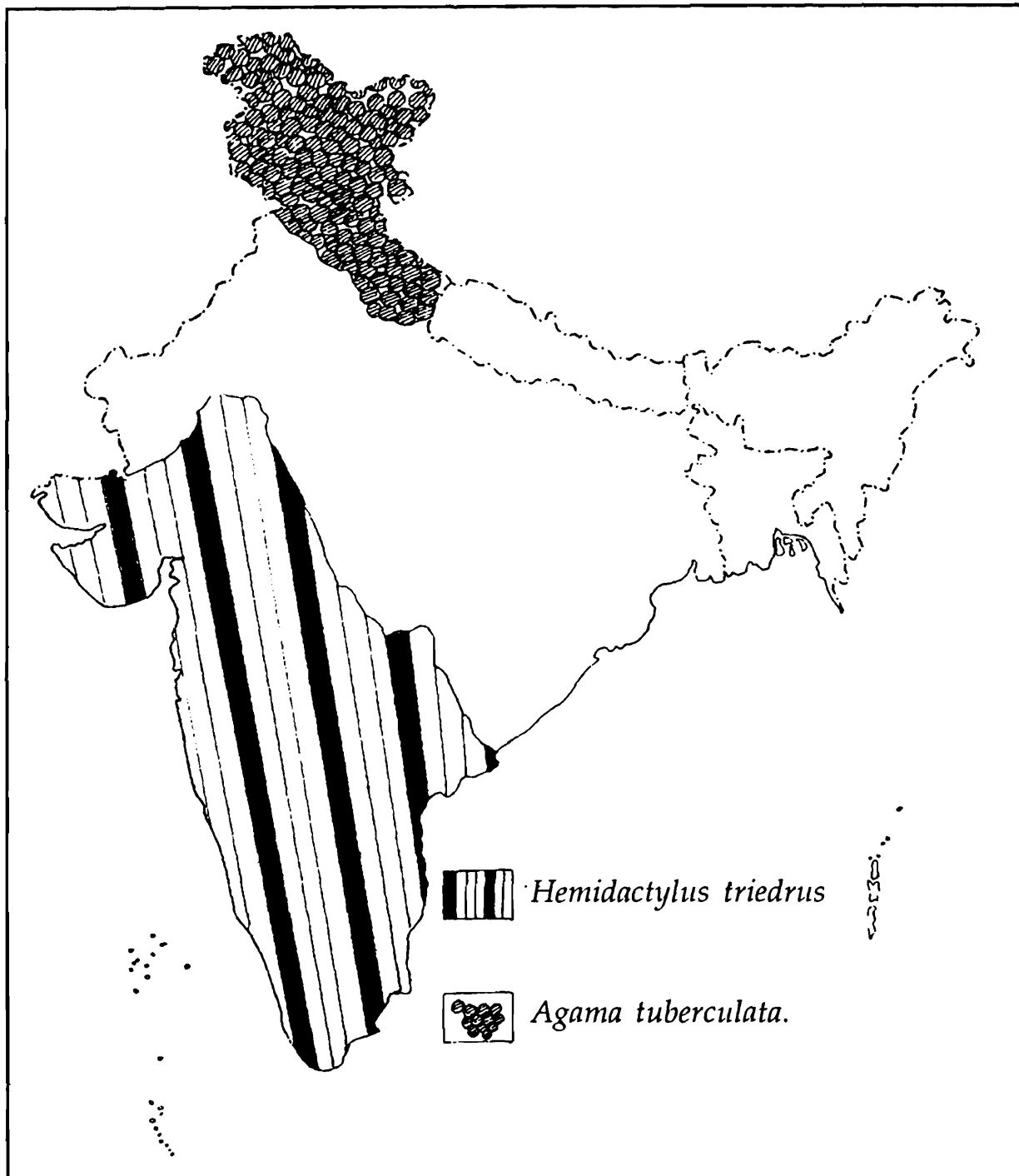
91. *Draco taeniopterus* Gunther 1861

(Map 35)

1861. *Draco taeniopterus* Gunther, *Proc. Zool. Soc.* p. 187 (type loc. Chantabun, Thailand).

1935. *Draco taeniopterus*, Smith, *Fauna Brit. Ind.* 2, p. 140.

The dorsum is of glossy, greyish-bronze in colouration; patagium above with four or five curved transverse black bands, which bifurcate while touching the body; ventrum is unstained and spotless. Throat is light greenish, inner aspect is deep red or with red reticulations; posterior margin of complete wing-membrane is with a broad maroon band. The head is moderately large, covered above with keeled, unequal scales, a distinct inverted Y-shaped series of enlarged scales on the anterior dorsal aspect of head; a prominent tubercle at the posterior end of the orbit; upper labials 7-9; nostril directed vertically upwards; tympanum is devoid of scales; patagial ribs 5 in number; snout as long as the diameter of the orbit; gular appendage of male is longer than the head, translucent, the



Map 26 : Distribution of *Hemidactylus triedrus* and *Agama tuberculata*.

tip rounded, covered with large scales which are larger than the ventral scales; appendage in female is smaller and is almost less than half the length of the head. Dorsum is with subequal smooth or feebly keeled scales, almost as large as the ventral scales, which are strongly keeled; lateral aspects of the back are with a series of widely separated, enlarged, strongly keeled scales. Mature males are usually with a feeble nuchal fold; the caudal crest is missing. The fore-limb reaches to beyond the snout and the hind-limb reaches to the axilla or slightly beyond. Standard length 75-100 mm., tail length 150-180 mm.

Distribution : Burma (Tenasserim; Mergui Archipelago); Thailand (as far north as lat. 18°, east to South-Vietnam frontier). Isthmus of Kra (Map 35).

Habits and habitat : Arboreal, insectivorous. Nothing is known about other habits.

Status : Common.

92. *Draco blanfordi* Boulenger 1885

(Fig. 65, Map 36)

1878. *Draco major* Blanford, *J. Asiat. Soc. Beng.* 47 : p. 125 (type loc. forest E. of Tavoy)

1885. *Draco blanfordi* Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 267, pl. 20 (head)

1935. *Draco blanfordi*, Smith, *Fauna Brit. Ind.* 2 : p. 141.

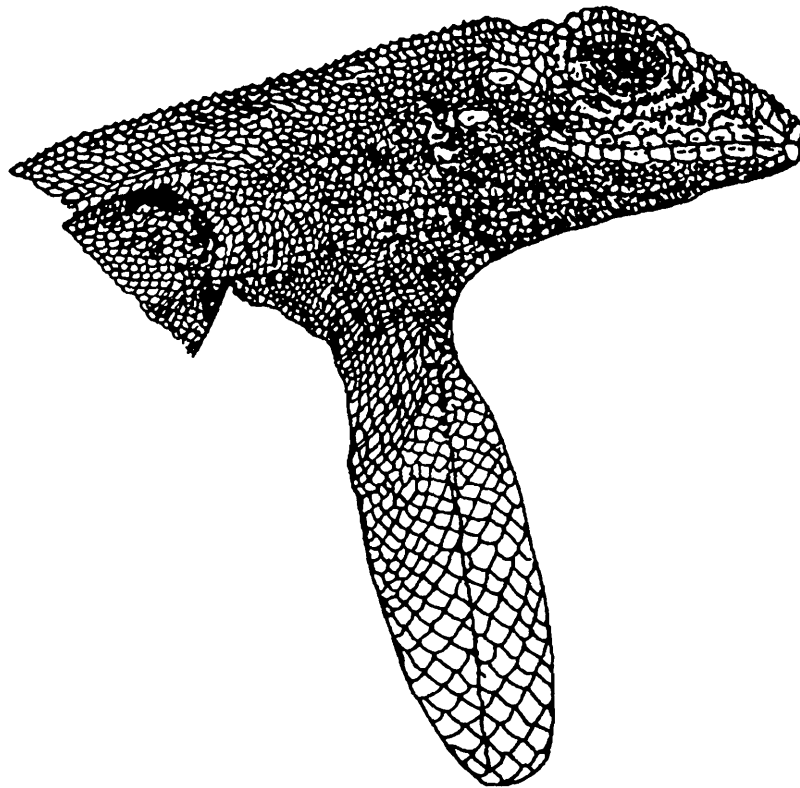
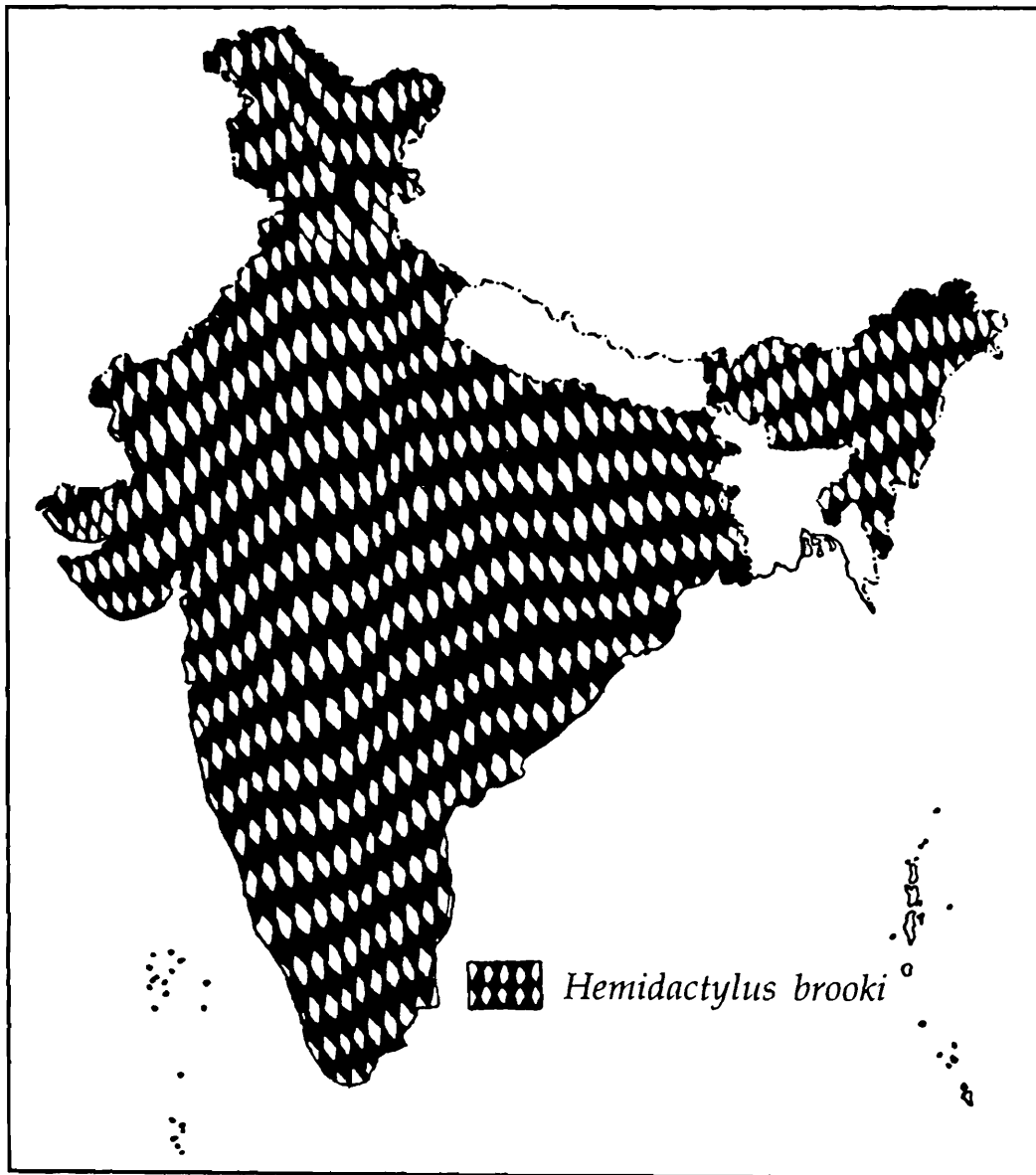


Fig. 65 : *Draco blanfordi* : Head of adult male.

The colouration of this Indo-chinese flying dragon is greyish above; with small black spots, generally in pairs on dorsum. Upper aspect of patagium is spotted with deep brown or olive colour, in certain individuals indistinct dark transverse bars are available upon the patagia; generally with fine white lines arranged longitudinally; posterior portion of wing-membrane is dark brown; lower aspect is uniformly white, grey or lemon yellow. Throat is bluish or complete black; inside is wattled with scarlet colour. The head is moderately large, covered with strongly keeled, unequal shields; a distinct inverted Y-shaped series of enlarged scales on the anterior dorsal aspect of head; a compressed tubercle is present at the posterior portion of the orbit; upper labials 9-10; nostrils directed

straight or almost straight upwards; tympanum is devoid of scales; patagial ribs 5 in number; snout as long as or slightly larger than, the diameter of the orbit; gular appendage of male is much longer than the head, translucent, the tip rounded, covered with very large scales, much larger than the ventral scales; appendage in female is less than half the length of head. Dorsum is with subequal, smooth or feebly keeled scales; ventral scales are large, strongly keeled; lateral aspects of the back are with a series of widely separated, enlarged, strongly keeled scales. Mature males are with a feeble nuchal fold and a low but distinct caudal crest. The fore-limb reaches to beyond the snout and the hind-limb reaches to the axilla or slightly less. Standard length 130 mm., tail length 240 mm. Males are much larger than females.

Distribution : Burma (Southern part, Tenasserim upto Dauna Hills in north Malaysia, Thailand (western part, Chieng Rai district) (Map 36).



Map 27 : Distribution of *Hemidactylus brooki*.

Habits and habitat : Arboreal, insectivorous.

Status : Rare, throughout the range.

93. *Draco norvilli* Alcock 1895.

1895. *Draco norvilli* Alcock, *J. Asiat. Soc. Beng.* 64 : pt. 2, p. 14, col. pl. 3. (type loc. Dum Dooma, N.E. Assam).

1935. *Draco norvilli*, Smith, *Fauna Brit. Ind.* 2 : p. 142.

Assam flying lizard is greyish to bronzy above with a light grey transverse bar across the middle of back. Petagium of male with three scarlet red transverse bands above; in the female the first band and inner parts of the second and third bands are dark-brown; belly immaculate, thorax mottled with grey; gular appendage pale lemon in life; inside of wattles red. Head is moderately large; dorsal head scales unequal, strongly keeled; upper labials 9-10; nostrils directed vertically upwards; tympanum covered above with small scales; patagial ribs are 5 in number; gular appendage of male is slightly longer than head, covered with large scales; gular appendage of female is small, not even half the length of head. Dorsum is with unequal, smooth to feebly keeled scales; the largest dorsal scale of body is equal to the largest ventral scale of the body; ventral scales of body are strongly keeled; lateral aspects of back are having a series of widely separated, enlarged, subtriangular scales. The fore limbs are longer and can be stretched much beyond the tip of the snout; the hind-limb reaches to the axilla. Males are with a feeble nuchal fold but are devoid of a caudal crest, Standard length 108 mm.; tail length 190 mm.

Distribution : India : Arunachal Pradesh, Nagaland, Assam (Golpara).

Habits and habitat : Arboreal, insectivorous.

Status : Rare, Undeterminate.

94. *Draco dussumieri* Dum. & Bibr. 1837

(Plate 7, Map 37)

1837. *Draco dussumieri* Dum. & Bibr., *Erp. Gen.* 4 : p. 456. (type loc. Malabar).

1935. *Draco dussumieri*, Smith, *Fauna Brit. Ind.* 2 : p. 143.

The colouration of South-Indian flying dragon is greyish-brown, Ashy-brown, brownish-black and similar darker markings; back sometimes profusely provided with darker circular spots; wing membranes purplish-black above with round oval or rhomboidal light black orange margined spots; ventrum is greyish with a series of large black-margined spots; throat is light blue with numerous black spots; the examples from Goa are dark grey with bluish tinge above and series of longitudinally arranged oval or rhomboidal dark spots with orange margins on the back. The upper surface of the wing membrane black, with subcircular, oval or irregular deep orange spots; upper surface of tail having alternate

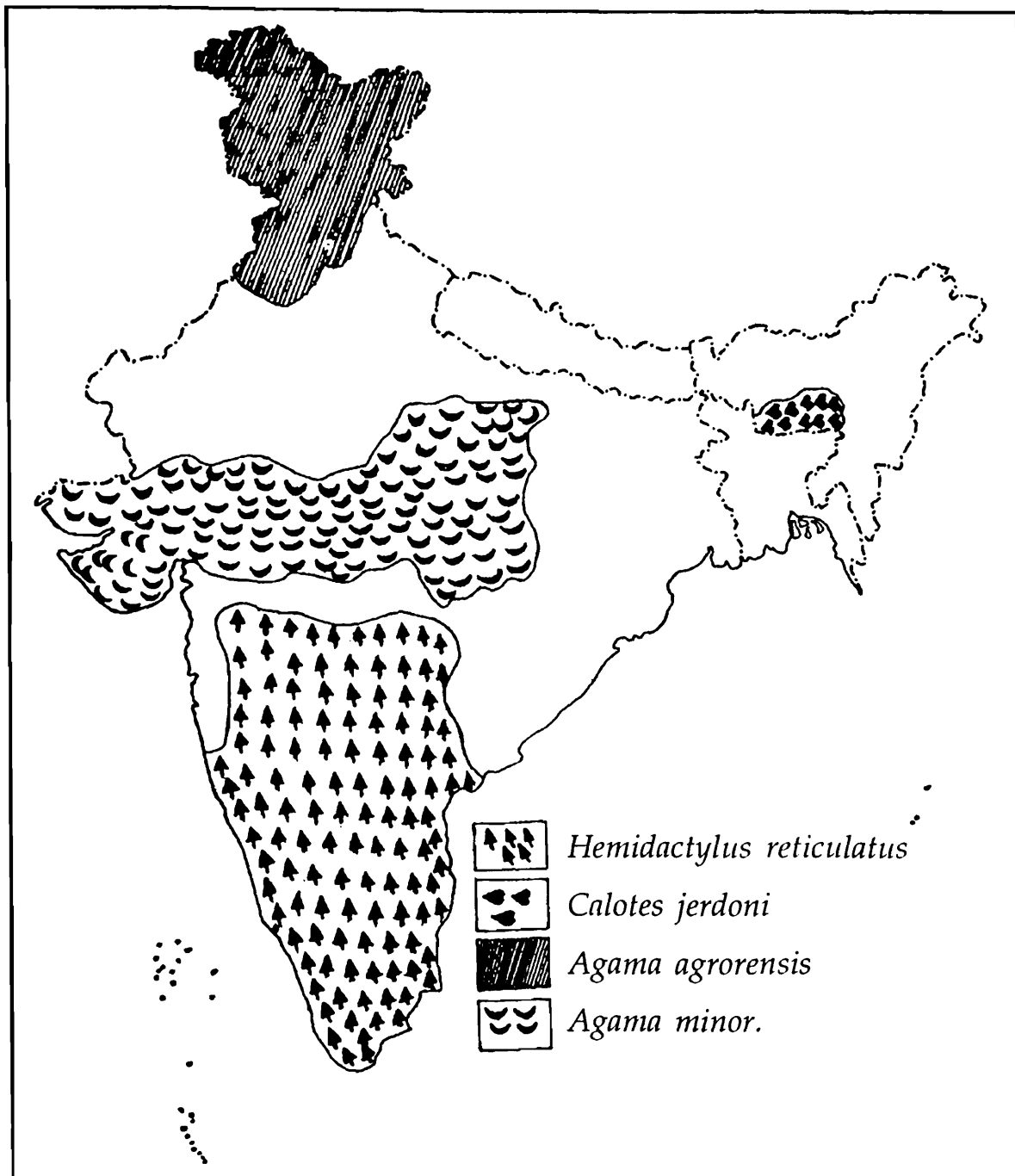


Plate 7 : *Draco dussumieri* Dum. & Bibr.

bands of light grey and black. Upper surface of head and limbs with black spots. Dirty grey below, with a series of black margined spots (confined only to the outer half of the ventral surface). Throat bluish with black spots. Gular appendage yellow with an orange tinge. Head is moderately large; dorsal head scales unequal, strongly keeled, compressed and erect upon the canthus rostrals and much of the anterior part of the orbit; the presence of a conical scale at the posterior part of the orbit is a characteristic feature; upper labials 10-12; nostrils directed vertically upwards, tympanum is naked; patagial ribs are 6 in number; gular appendage of male is larger, than the head and its tip is obtusely pointed, covered with scales which are almost equal to the ventral scales; gular appendage of female is small and it is even less than half the length of the head. Dorsum is with unequal, smooth to feebly keeled scales; the largest dorsal scale of body is equal to the largest ventral scale of the body; ventral scales of body are strongly keeled; lateral aspects of back are having a series of tubercles each composed of several small scales. The fore-limbs are longer and can be stretched slightly beyond the snout; the hind-limb reaches to the axilla. Males are with a feeble nuchal fold and a distinct, low caudal crest. Standard length 95 mm.; tail length 135 mm.

Distribution : India : Peninsular India (Malabar coast, Karwar, Goa, Mercara, Trivandrum) (Map 37).

Habits and habitat : Generally found in coconut, betel, teak, arecnut and other such plantations in ever green forests up to an altitude of 1500 metres. This is absolutely arboreal, gliding, insectivorous and most agile species. It glides from tall trees to the



Map 28 : Distribution of *Hemidactylus reticulatus*, *Calotes jerdoni*, *Agama agrorensis* and *Agama minor*.

lower elevations and assumes a vertical position just before landing on a tree trunk. While gliding, at a time the lizard was seen covering maximum up to 50 metres. The breeding season extends from February to May. The pre-mating combats between the males are most frequent; all the period the fight continues the female remains as a most passive keen observer. The dominant males strictly maintain courting territory from which the defeated males are chased out. After the combat for mating finishes the dominant male bowed its head for several times towards the waiting female, stretches its fore-legs and folds the throat appendage and shakes it vigorously. Female moves slowly towards the

male and mating starts and the process continues at least for 8 minutes. This is repeated for several times. After pairing the male and female live together for the complete season. In Goa the gravid females were found even in October. Three to five, white, somewhat oval eggs are laid which are buried by the female in the soil. The incubation period is about 50 days. The hatchlings at the time of emergence measure from 75-85 mm. In total length, at this stage these lizards are most agile and mainly feed on red ants and other small insects.

Genus 25. *Sitana* Cuvier 1829

1829. *Sitana* Cuvier, *Regne Anim.* 2nd ed. 2 : p. 43. (type *ponticeriana*).

1830. *Semiophorus* Wagler, *Syst. Amphib* : p. 152 (type *ponticeriana*)

1935. *Sitana*, Smith, *Fauna Brit. Ind.* 2 : p. 144.

This monotypic genus is from India and Sri Lanka. The body is compressed, dorsum is with regularly arranged keeled scales, which are smallest on the lateral aspects of the body; dorsal crest is not present; limbs long, with five fingers and four toes. Males are with a large folding gular appendage which extends backwards on to the belly, tympanum is clearly visible, not covered with scales. Femoral and preanal pores are not present.

95. *Sitana ponticeriana* Cuvier 1844

(Fig. 66, Map 38)

1844. *Sitana ponticeriana* Cuvier, *Regne Anim.* 2nd ex. 2 : p. 43 (type loc. Pondicherry)

1864. *Sitana minor* Gunther, *Rept. Brit. Ind.* : p. 135, pl. 14, fig. A (type loc. Madras district).

1870. *Sitana deccanensis* Jerdon, *P. Asiat. Soc. Beng.* : p. 76 (type loc. Deccan).

1935. *Sitana ponticeriana*, Smith, *Fauna Brit. Ind.* 2 : p. 144.

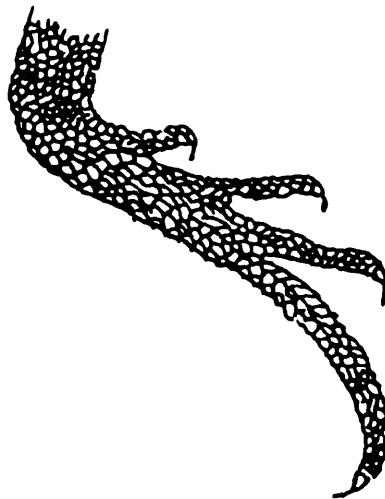
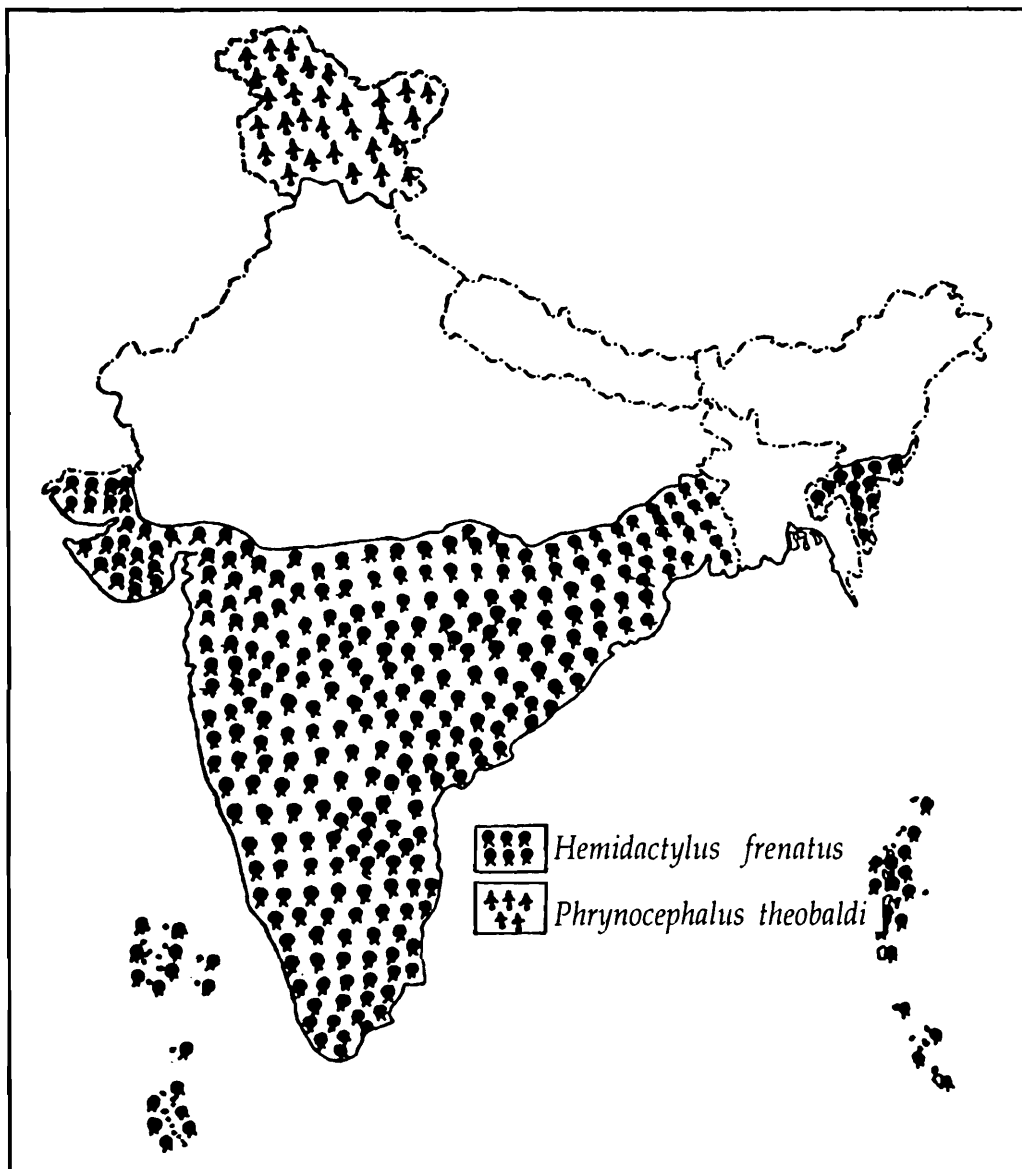


Fig. 66 : Foot of *Sitana ponticeriana*.

This is a small agamid lizard, brown above, with a series of dark-brown, black-margined, rhomboidal, vertebral spots on the back; the throat fan in male is brilliantly coloured in red, blue and black; belly is whitish. Body is compressed, dorsal crest not present. Head scales unequal, strongly keeled; dorsal scales large, strongly keeled; lateral scales small, uniform, upper ones pointing upwards and backwards; limbs long, with uniform, strongly keeled scales, only four toes are present, fourth toe longest, fifth toe is absent. Tail is extremely longer than the head and body, it is round in transverse section, covered above with almost equal keeled scales. Males are with a low nuchal crest and a very large folding gular appendage, which extends backwards to about the middle of the belly and is covered with very large scales. Females are devoid of such appendages. Standard length 40-80 mm.; tail length 60-170 mm.

Distribution : India : Whole of India (not recorded east of Ganges in eastern India).
Elsewhere : Sri Lanka (Map 38).



Map 29 : Distribution of *Hemidactylus frenatus* and *Phrynocephalus theobaldi*.

Habits and habitat : Inhabits moderately moist scrub, sandy, rocky areas with plenty of bushes and other such vegetation, and is not available in deserts and rain forests. It is strictly terrestrial, diurnal and insectivorous. It can run with a considerable speed, generally using bipedalism when chased. The food mainly comprises grasshoppers and their nymphs, white ants, beetles, bugs, spiders, small red ants, arthropod eggs, dipterous maggots, the fibres of wild plants. The presence of lizard skin and scales in the gut of various examples from Gujarat indicate that probably *Sitana ponticeriana* feeds on the lizards of its own or other kinds. In Junagarh a few examples were found inside a large termite mound at the depth of one metre. Breeding season is from April-October. During the breeding season these lizards (especially the males) assume beautiful and brilliant colouration. The fan on the throat of male becomes most shining with bluish-red colour. Eggs are laid from July to October. Female digs a hole up to a depth of 6 cm. with the help of her fore-limbs. About 11-14 eggs (10×6 mm.) are laid in a single clutch and kept in the hole and soil is replaced.

Status : Very common.

Genus 26. *Otocryptis* Wagler 1830

1830. *Otocryptis* Wagler, *Syst. Amphib.* (Type *wiegmanni*).

1831. *Otocryptis*, Wiegmann, *Syst. Amphib.* (type *bivittata*).

This genus from South India and Sri Lanka comprises two species. The main generic characters are : The body is compressed; dorsum is with unequal, keeled scales, dorsal crest is not present; limbs long and slender; fifth toe is very short, almost equal to the first toe. Males are with a distinct but low nuchal crest. A large folding gular appendage may or may not be present, if present extends backwards on to the belly. Tympanum is not visible, covered with scales. Femoral and preanal pores are not present.

Key to the species of genus Otocryptis

1. Gular appendage is present in males; a pit is not present in front of the shoulders
..... *Otocryptis wiegmanni*
2. Gular appendage is not present in males; a pit is present in front of the shoulders
..... *Otocryptis beddonii*

96. *Otocryptis wiegmanni* Wagler 1830

(Map 35)

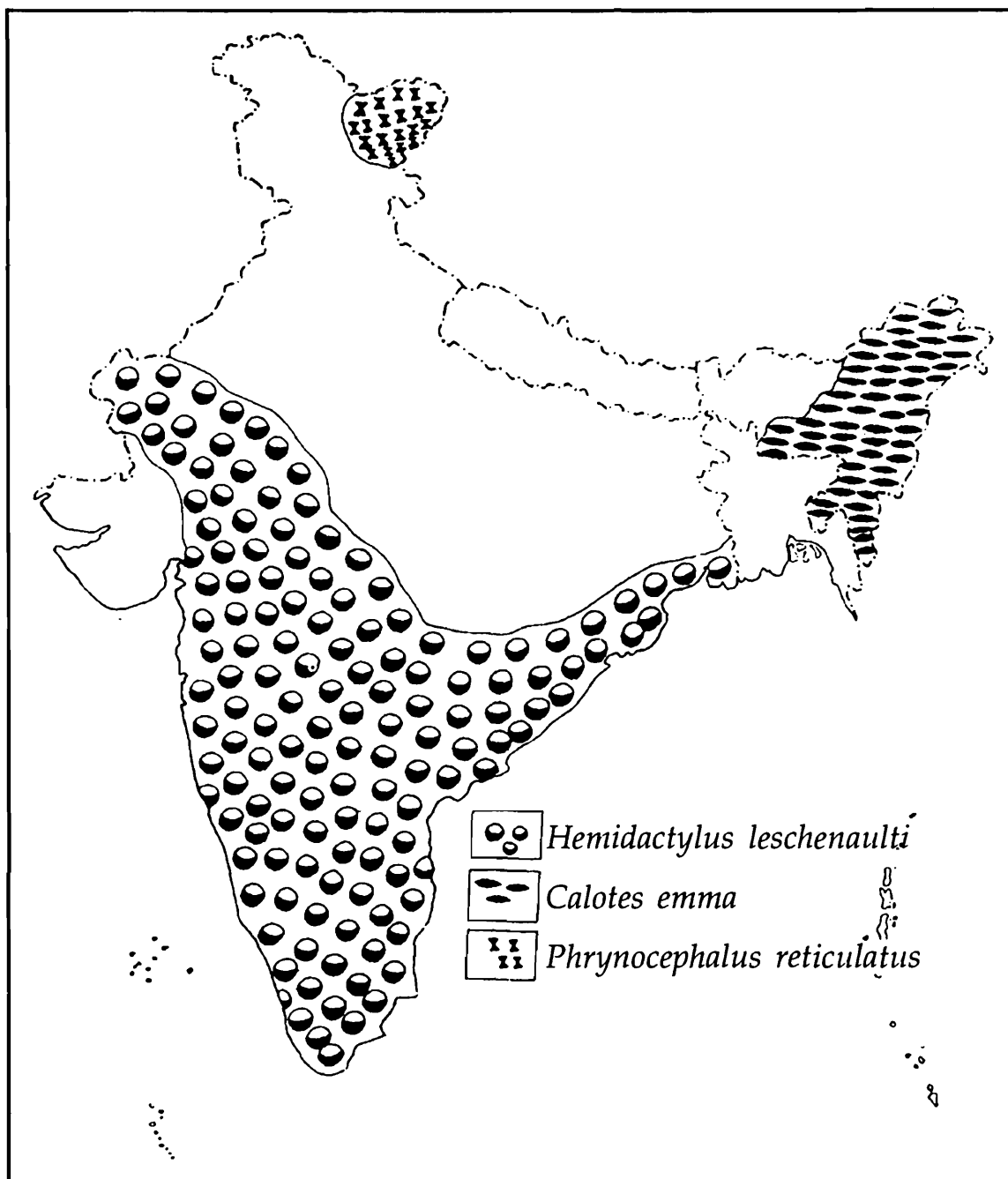
1830. *Otocryptis wiegmanni* Wagler, *Syst. Amphib.* : p. 150 (type loc. America)

1831. *Otocryptis bivittata* Wiegmann, *Syst. Amphib.* : p. 291 (type loc. Not known)

1935. *Otocryptis wiegmanni*, Smith, *Fauna Brit. Ind.* 2 : p. 146.

This is a large agamid with a compressed body. Dorsal colour is somewhat brownish with dark-brown spots; dark-brown cross-bars are present between the eyes and on the

back; males are generally having two light stripes on dorsolateral portion; belly is light-brown; in females the throat is deep-blue. The head is with unequal, strongly keeled scales; the scales above the eye are large and arranged in longitudinal series, the inner row extends forward and form an inverted Y-shaped figure on the snout; interorbital distance is having 4-5 scales; Supralabials 9-11 and same is the number for the infralabials. Dorsal scales are keeled, intermixed with larger scales, the upper and anterior pointing backwards and upwards; the lower and posterior scales are directed backwards and downwards; ventral scales are largest and strongly keeled. Limbs much longer and slender, with very large, strongly keeled scales; fourth toe is longer than the third; the hind-limb



Map 30 : Distribution of *Hemidactylus leschenaulti*, *Calotes emma* and *Phrynocephalus reticulatus*.

reaches slightly more than the tip of snout. Tail much longer than the head and the body, round in transverse section, slender, covered with subequal scales. Males are with a low nuchal fold and with very large gular appendage, which extend backwards, almost to the middle of the belly. Gular appendage is covered with very large scales. Females are devoid of gular appendage. Standard length 70 mm., tail length 180 mm.

Distribution : Sri Lanka (Peradeniya) (Map 35).

Habits and habitat : Terrestrial (inhabits the shady areas of forests near the streams, prefers low lands as well as hill slopes); most agile, exhibits bi-pedalism while running fast. There is no fixed breeding season, lays 3-4 eggs in a single clutch. The species is insectivorous and nocturnal.

Status : Common.

97. *Otocryptis beddomii* Boulenger 1885.

(Fig. 67, Map 39)

1885. *Otocryptis beddomii* Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 272, pl. 23, fig. 1 (type loc. Sivagiri Ghat, South India).

1935. *Otocryptis beddomii*, Smith, *Fauna Brit. Ind.* 2 : p. 147.

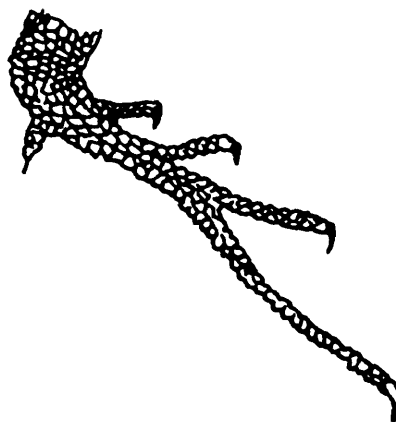


Fig. 67 : *Otocryptis beddomii* : Foot.

This is a moderately large agamid with a compressed body. Dorsal colour is light-brown; vertebral is paler in comparison to the flanks, with a series of brown spots; a dark-brown cross-bar is present on the forehead; belly is light-brown; limbs are with dark bars above. The head is with unequal strongly keeled scales on the dorsal aspect; interorbital distance is having 2-3 scales; Supralabials 9-11 and same is the number for the infralabials; dorsal scales keeled, some of them are much larger and point backwards and upwards; scales on the lower region of flanks point backwards and downwards; ventral scales are large about as large as the enlarged dorsal scales and strongly keeled. Limbs long, slender with large, almost equal, keeled scales above. The hind-limb reaches beyond the snout;

Tail longer than the head and body, round in transverse section, covered above with sub-equal, keeled scales. A small conspicuous pit is present in front of the shoulder; gular sac is represented by a feeble longitudinal fold in male; the species is devoid of a gular appendage. Standard length 45 mm.; tail length 80 mm.

Distribution : India : Sivagiri Ghat, Cardamom Hills, in South India (Map 39).

Habits and habitat : Inhabit grassy areas on a hilly forested area (1500 metres altitude). Insectivorous and nocturnal species. One gravid female contained three oviducal eggs.

Status : Rare.

Genus 27. *Ptyctolaemus* Peters 1864

1864. *Otocryptus (Ptyctolaemus)* Peters, *Mon. Acad. Berlin*, : p. 386 (type (*gularis*)).

1830. *Ptyctolaemus*, Boulenger, *Cat. Liz. Brit. Mus.*, 1 : p. 273.

1935. *Ptyctolaemus*, Smith, *Fauna Brit. Ind.* 2 : p. 149.

This monotypic genus is available from India (Assam), is with a compressed body; dorsum is with unequal, keeled scales; a low nuchal crest is present; dorsal crest is not present. Throat is with three parallel longitudinal folds on each side of the middle, curved and form a U-shaped figure on the posterior aspect. Tympanum is covered with scales, not visible. Femoral and preanal pores are not present.

98. *Ptyctolaemus gularis* Peters 1864.

(Fig. 68, Plate 8, Map 22)

1864. *Otocryptis (Ptyctolaemus) gularis* Peters, *Mon. Akad. Berlin* : p. 386 (type loc. Calcutta)

1885. *Ptyctolaemus gularis*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 273.

1935. *Ptyctolaemus gularis*, Smith, *Fauna Brit. Ind.* 2 : p. 149.

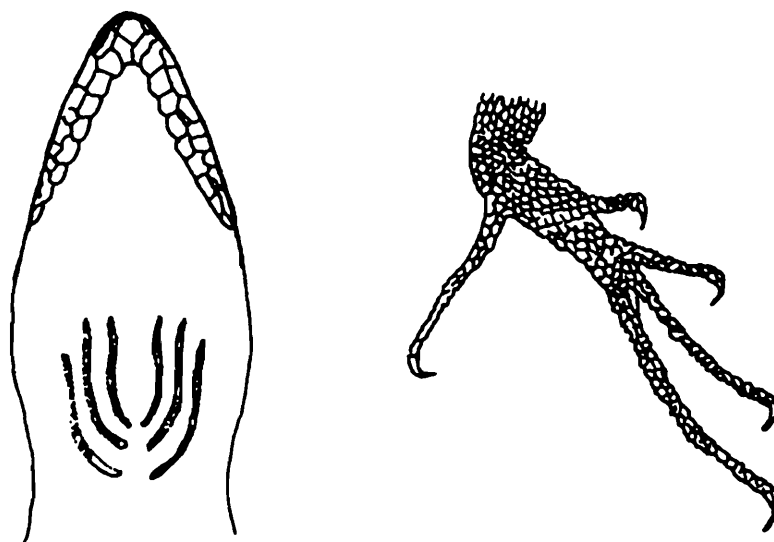


Fig. 68 : *Ptyctolaemus gularis* : Throat and foot.

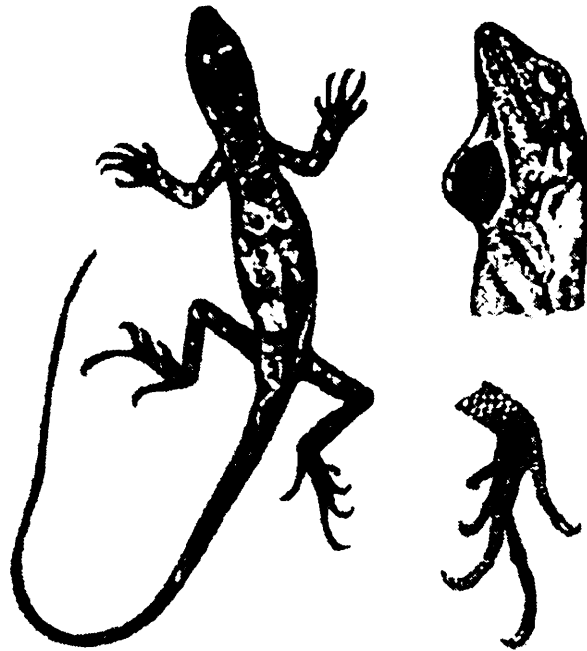


Plate 8 : *Ptyctolaemus gularis* Peters

This is a moderately large lizard, with a compressed body, with low nuchal fold and with a concealed tympanum. Throat with three parallel longitudinal folds on each side of the middle, curved and form a U-shaped mark. Dorsal colour is olive-brown, with dark-brown transverse bars and spots on head, between and below the eyes, on the angle of mouth, limbs and on the tail; throat is blue, folds on the throat are dark-blue. Head is long and narrow with an acute snout; dorsal head scales large and strongly keeled; dorsal scales of the body unequal and keeled, the upper few rows pointing backwards and upwards, the lower dorsal scale rows pointing backwards and downwards; ventral scales are equal to the largest dorsals, strongly keeled. Limbs moderately long; third and fourth fingers equal; fourth toe much longer than third, the hind-limb reaches to the ear. Tail much longer than the head and body, round in transverse section, covered above with subequal keeled scales. Male with a low nuchal fold. The gular pouch in male more prominent and better developed. Standard length 80 mm.; tail length 170 mm.

Distribution : India : Assam south of the Brahmaputra. Khasi Hills, Shillong (Map 22).

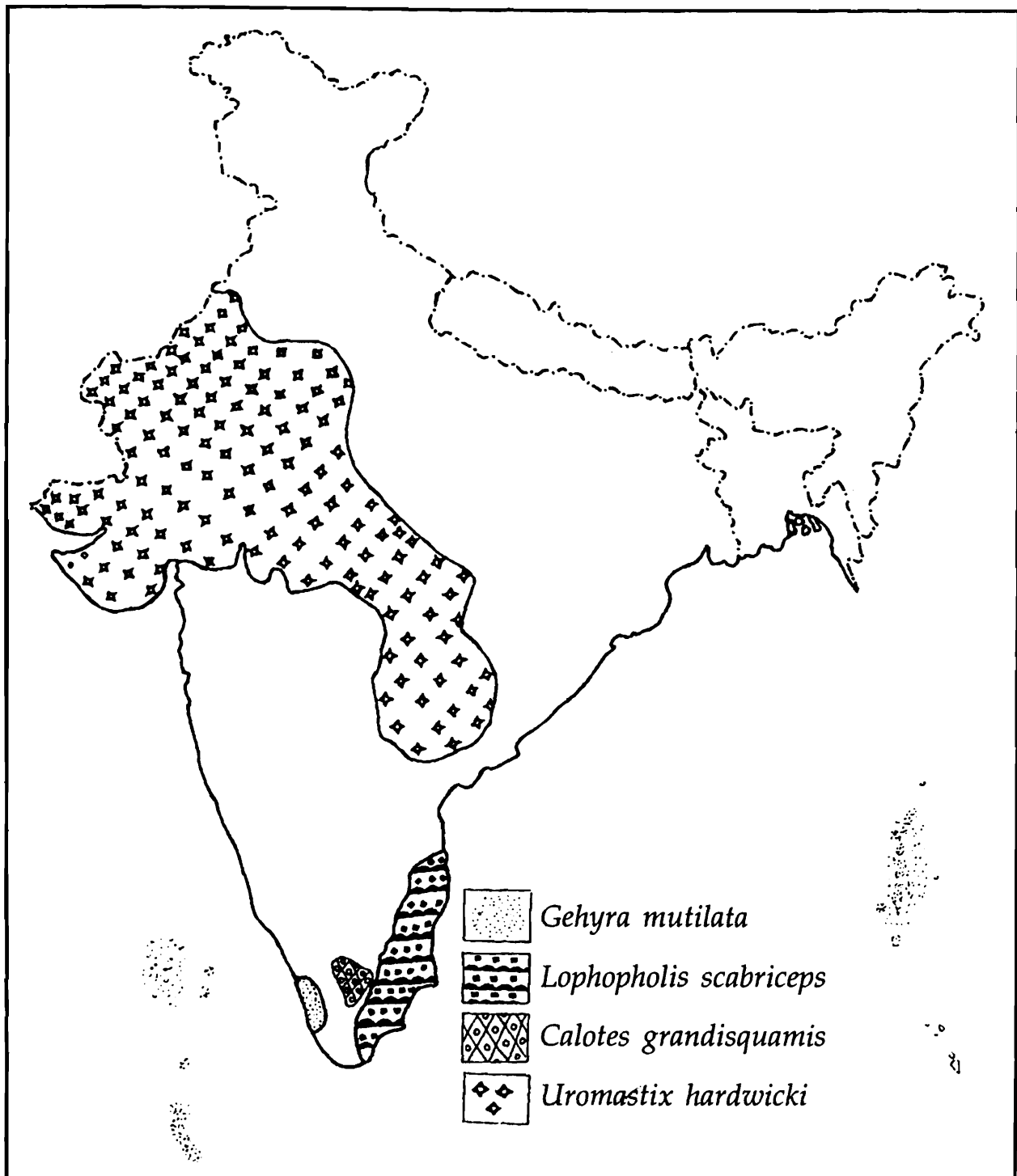
Habits and habitat : This is a rock dwelling agamid found up to an altitude of about 500 metres. Insectivorous and nocturnal.

Status : Rare.

Genus 28. *Cophotis* Peters 1861

1861. *Cophotis* Peters, *Mon. Akad. Berlin* : p. 1103. (type *ceylanica*).

1935. *Cophotis*, Smith, *Fauna Brit. Ind.* 2 : p. 150.

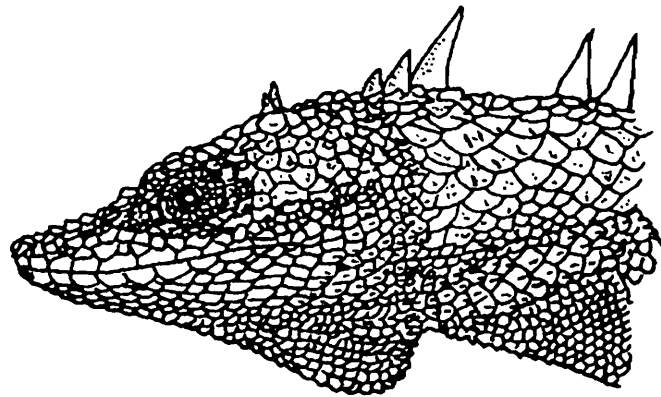


Map 31 : Distribution of *Gehyra mutilata*, *Lophopholis scabriceps*, *Calotes grandisquamis* and *Uromastix hardwicki*.

This genus comprises two species, one which is included in this work, is from Sri Lanka and other inhabiting Java and Sumatra. The main generic characters are : The body is compressed; dorsum is with very large, unequal, irregularly disposed scales; a nuchal and a dorsal crest is available; a small gular sac is present. Tail is prehensile. Tympanum is missing. Femoral and preanal pores are not present.

99. *Cophotis ceylanica* Peters 1861

(Fig. 69, Map. 36)

1861. *Cophotis ceylanica* Peters, *Mon. Akad. Berlin* : p. 1103 (type loc. Sri Lanka)1935. *Cophotis ceylanica*, Smith, *Fauna Brit. Ind.* 2 : p. 150.Fig. 69 : *Cophotis ceylanica* : Lateral view of head.

This agamid is with a general olive-green dorsal colouration, with light to dark markings on the back. In all the individuals a reddish-brown or cream-coloured stripe is always available on the upper lip; extending on to the shoulders; nape is with a light spot; one broad light stripe on the anterior portion of body and one in front of the eyes are present in most of the individuals; throat of male generally with a dark streak along each side of the lower jaw, and dark longitudinal lines in between; ventrum is whitish; tail with light and dark annulations. The head is long and narrow, almost two times longer than broad, it is covered above with large, unequal, tubercular scales; the head is characterised that the long prominence of the skull give rise to a tubercle on the tip of the snout, two tubercles in front of the eyes, four tubercles on the occiput and many others distinctly present on the sides of head. Snout is obtusely pointed, longer than the orbit. Upper labials 8-10 and lower labials are also in the same number. Dorsum is with very large, unequal, irregularly disposed, smooth or shortly keeled, strongly imbricate scales, which point backwards and downwards; ventral scales are smaller, strongly keeled and mucronate. Dorsal aspect of limbs with large keeled scales; digits are short, fourth toe is slightly longer than the third; the hind-limb hardly reaches to the axilla. Tail is short, feebly compressed, covered with keeled scales, scales below the tail are quite narrow in comparison to the upper scales. Nuchal crest of male is formed by three or four lanceolate spines, the longest of which is equal to the length of the orbit; dorsal crest is separated from the nuchal crest and is made up of 12-15 spines, separated from one another; crest in female is much lower in comparison to the males. A small gular sac is present which is larger in males than females. Standard length 60 mm., tail length 85 mm.

Distribution : Sri Lanka (Map 36).

Habits and habitat : This is slow moving, arboreal, insectivorous, viviparous lizard, which generally prefers to live about the moss-covered bases of tree-trunks in hilly forested areas. The species has been recorded up to 2500 metre altitude.

Status : Rare.

Genus 29. *Ceratophora* Gray 1834.

1834. *Ceratophora* Gray, III. *Ind. Zool.* 2 : pl. 68, fig. 2 (type *stoddartii*)

1876. *Lyriocephalus* Theobald, *Cat. Rept. Brit. Ind.* : p. 99.

1935. *Ceratophora*, Smith, *Fauna Brit. Ind.* 2 : p. 151.

This genus from the hilly areas of Sri Lanka, comprises 3 species. These agamids are with a compressed body; dorsum is with unequal scales; a low nuchal fold-like crest is present; dorsal crest is not present; devoid of gular sac; a rostral appendage is present in both the sexes, but it is larger in males; tympanum is not present; femoral and preanal pores are missing.

Key to the species of genus *Ceratophora*

I. Gular scales larger than the ventral scales.

1. Gular scales smooth or feebly keeled; lateral scales large, very unequal; rostral appendage smooth and pointed. *Ceratophora stoddarti*
2. Gular scales distinctly keeled, lateral scales large, almost equal; rostral appendage scaly and suboval *Ceratophora tennenti*

II. Gular scales smaller than the ventral scales; rostral appendage scaly and pointed.

..... *Ceratophora aspera*

100. *Ceratophora stoddarti* Gray 1834

(Fig. 70, Map 37)

1834. *Ceratophora stoddarti* Gray, III. *Ind. Zool.* 2 : pl. 68, fig. 2 (type loc. Sri Lanka)

1935. *Ceratophora stoddarti*, Smith, *Fauna Brit. Ind.* 2 : p. 152.

The colouration of this large agamid according to Smith and Deraniyagala "Olive-green above, with more or less distinct brown cross-bars on the back, sides and limbs; frequently a white mark behind the eye and other on the side of the neck. Rostral appendage white, and often the upper lip and throat also; belly usually greysish; tail with light and dark annuli. A broad vertebral band of cinnamon replaced by green; lower row of lateral scales sometimes yellow; a yellow ring at elbow and knee. A specimen from Pattipola has a light dorso-lateral line, formed by a row of enlarged scales." The head is one and half

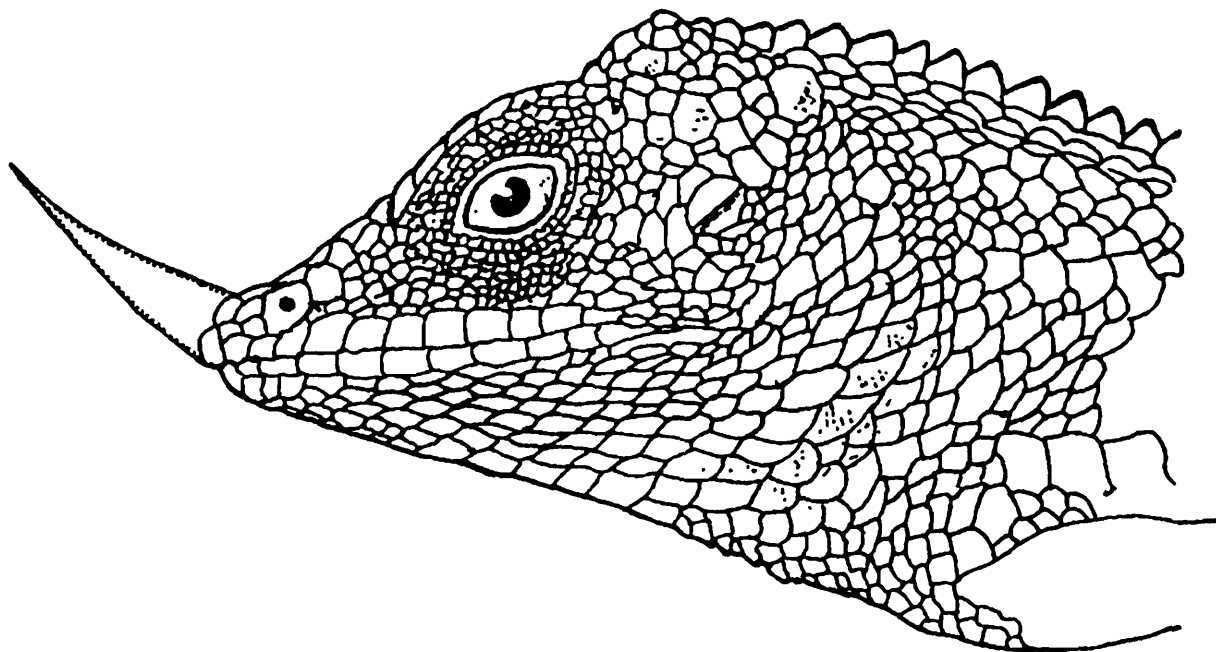


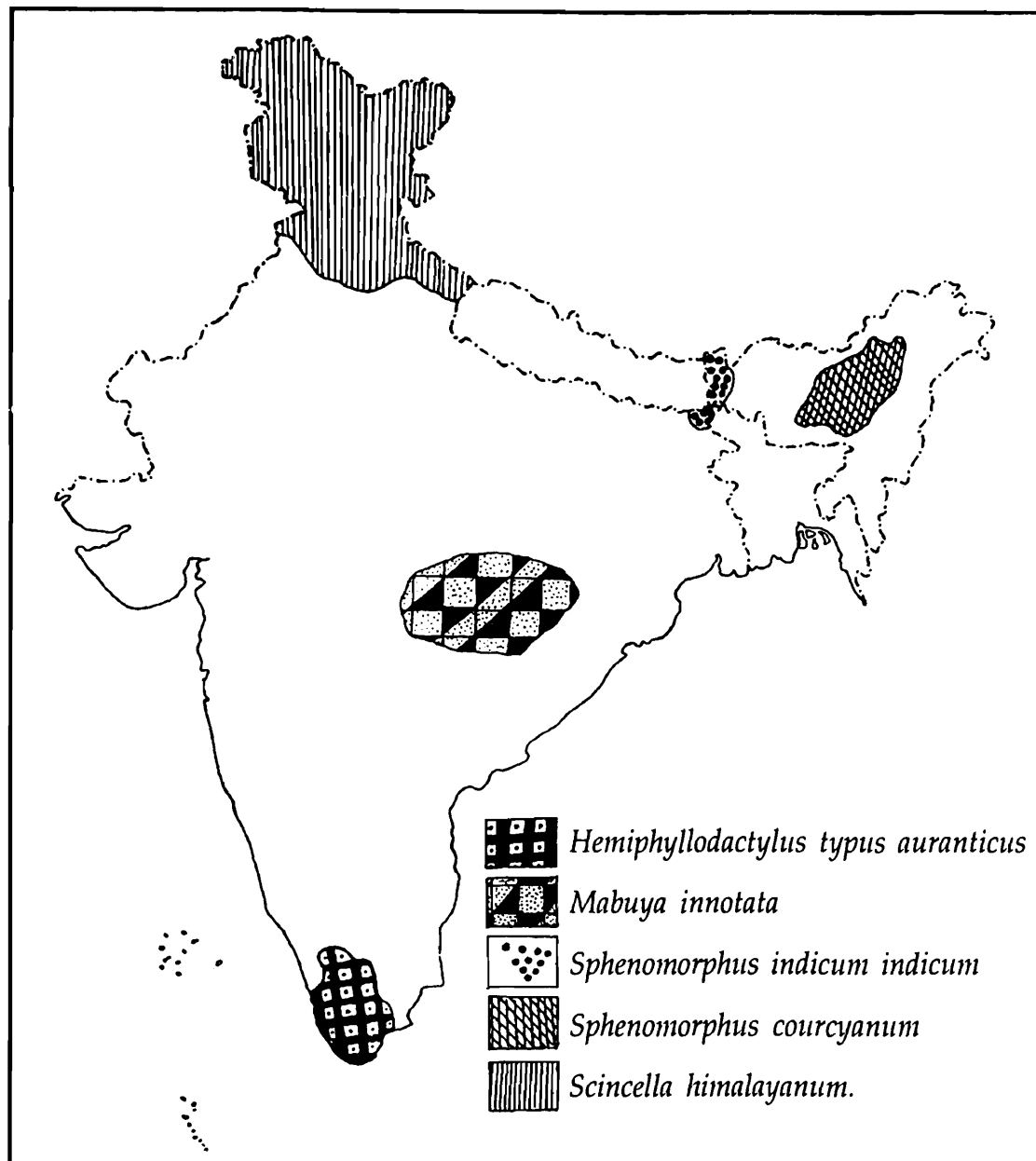
Fig. 70 : *Ceratophora stoddarti* : Lateral view of head.

to two times greater in length than width and covered above with large, irregular scales, those on supraorbital are keeled; occiput with regular tubercles; snout longer than the orbit; canthus rostralis is sharp. Upper labials 9-11 and lower labials are also in the same number. Dorsum is with most unequal, smooth or feebly keeled scales, pointing backwards and upwards; gular scales are large, subquadrangular, smooth or feebly keeled, forming regular longitudinal rows, those on the median line are smaller; ventral scales are smaller than the gular scales, smooth or feebly keeled. Limbs are moderately long; fourth toe is longer than the third; the hind-limb reaches to the eye or slightly less. Tail is feebly compressed, slender, covered with subequal keeled scales. A low nuchal fold is present, denticulations are distinctly prominent. Rostral appendage is small, flexible and pointed, about as long as the snout in males; in females the rostral appendage is generally reduced to a small tubercle or if present it is shorter than the snout in length. Standard length 85 mm., tail length 175 mm.

Distribution : Sri Lanka (Map 34).

Habits and habitat : This is a sluggish, diurnal mountain dwelling, arboreal species. The food comprises mainly the earthworms and is supplemented with soft bodied arthropods. Generally 3-4 soft-shelled eggs are laid in holes on the ground, which are dug by the lizard, immediately after the mating. The mating generally takes place on the stem of small bushes and trees.

Status : Common.



Map 32 : Distribution of *Hemiphyllodactylus typus auranticus*, *Mabuya innotata*, *Sphenomorphus indicum indicum*, *Sphenomorphus courcyanum* and *Scincella himalayanum*.

101. *Ceratophora tennenti* Gunther 1861

(Map 8)

1861. *Ceratophora tennentii* Gunther, in Tennent's *Nat. Hist. Ceylon* : p. 281, fig. (type loc. Sri Lanka)

1935. *Ceratophora tennenti*, Smith, *Fauna Brit. Ind.* 2 : p. 153.

This moderately large agamid is with a greyish dorsum with a series of dark brown spots; a dark brown mark is present on the snout; an angular bar is present across the eye; a white streak emerges from the eye and merges at the angle of the jaw; limbs and tail with dark bars. All the markings are most distinct in juveniles, in certain individuals longitudinal lines down the back are present. General scalations and characters are quite

similar to *Ceratophora stoddarti*, with which it differs in the following characters: Lateral scales are large, majority of these are of equal-sized, smooth or feebly keeled and more regularly arranged in disposition; gular scales are moderately keeled; ventral scales are strongly keeled; the hind-limb reaches certainly to the eye or beyond; rostral appendage is large, fleshy, compressed, suboval, covered with small scales; rostral appendage is well developed in both the sexes and its length is shorter than that of the snout. Standard length 70 mm., tail length 135 mm.

Distribution : Sri Lanka (Map 8).

Habits and habitat : It is sluggish, diurnal, arboreal agamid, inhabiting forested hilly areas above 1000 metres. Its food mainly comprises earthworms, insects and other soft bodied arthropods.

Status : Common.

102. *Ceratophora aspera* Gunther 1864
(Map 33)

1864. *Ceratophora aspera* Gunther, *Rept. Brit. Ind.* : p. 131, pl. 3, fig. G (Type loc. Sri Lanka)

1935. *Ceratophora aspera*, Smith, *Fauna Brit. Ind.* 2 : p. 154.

The colouration of this much smaller agamid is brownish above with lighter and darker markings or longitudinal lines; a series of dark brown spots or V-shaped markings are generally present on the dorsum of females; sacral region is with a rhomboidal spot; males are generally with a large white spot across the throat and white spots on the dorsal aspect of limbs. Deraniyagala states that the throat and upper lips are orange in life and there is a vertebral stripe or bluish-grey in females and greenish-brown in males. The head is small and covered above with irregular, strongly keeled and spine like tubercles; interorbital region is deeply concave; occiput is with distinct symmetrical tubercles and an inverted V-shaped ridge at its middle part; upper and lower labials are strongly keeled, 9-11 in number; gular scales are uniform, strongly keeled and not larger than the ventral scales; dorsal and lateral scales are moderately large, strongly keeled, intermixed with larger, very strongly keeled and spine-like scales; ventral scales are very strongly keeled, the end of the keel is spinose; scales of the limbs, digits and tail are very strongly keeled; the hind-limb generally reaching to the occiput. Nuchal crest is not present; rostral appendage in the males is cylindrical, elongate, covered with small, strongly keeled scales and terminating in a pointed spinose scale; the length of the rostral appendage is more than half of the length of head, rostral appendage in the female is much shorter, with similar scalation except the terminal scale. Standard length 37 mm., tail length 45 mm.

Distribution : Sri Lanka (Map 33)

Habits and habitat : Terrestrial mountain-forest dwelling (found among fallen leaves), sluggish, insectivorous, diurnal species. Nothing is known about other habits.

Status : Rare.

Genus 30. *Lyriocephalus* Merrem 1820

1820. *Lyriocephalus* Merrem. *Tent. Syst. Amphib* : p. 49 (type *margaritaceus*).

1935. *Lyriocephalus*, Smith, *Fauna Brit. Ind.* 2 : p. 155.

The monotypic genus from Sri Lanka bears the following characters: The body is compressed; dorsum is with small unequal scales, intermixed with much larger scales; nuchal crest is in continuation with the dorsal crest; a prominent bony supraorbital arch is present in adult individuals; the supraorbital arch is formed on account of the prolongation of the prefrontal and post frontal bones, thus forming a well developed supraorbital vacuity. Tympanum is not present; gular fold is prominent and is of V-shaped. Adults are with a globular protuberance on the nose. Femoral and preanal pores are not available.

103. *Lyriocephalus scutatus* (Linnaeus 1758)
(Figs. 71-73)

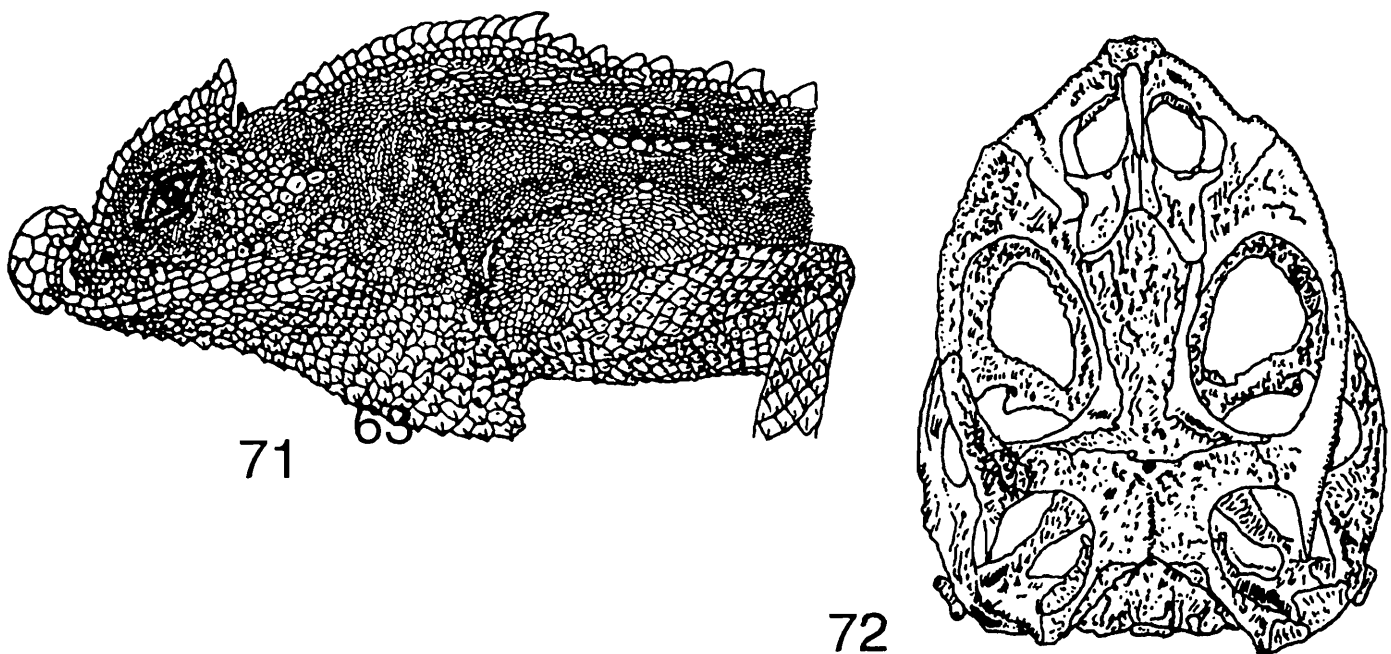
1758. *Lacerta scutata* Linnaeus, *Syst. Nat.* ed. 10 : p. 201 (based on Seba, *i*, p. 173, pl. 109, fig 3 (Type loc. Amboyna, Sri Lanka).

1768. *Iguana clamosa* Laurenti, *Syn. Rept.* : p. 49.

1820. *Lyriocephalus margaritaceus* Merrem, *Tent. Syst. Amphib.* : p. 49.

1834. *Lyriocephalus macgregorii* Gray, *Ill. Ind. Zoo.*, ii : pl. 68, fig. 1.

1935. *Lyrioccephalus scutatus*, Smith, *Fauna Brit. Ind.* 2 : p. 154



Figs. 71-72 : 71. *Lyriocephalus scutatus* : Lateral view of head of adult male; 72. *Lyriocephalus scutatus* : Dorsal view of skull.

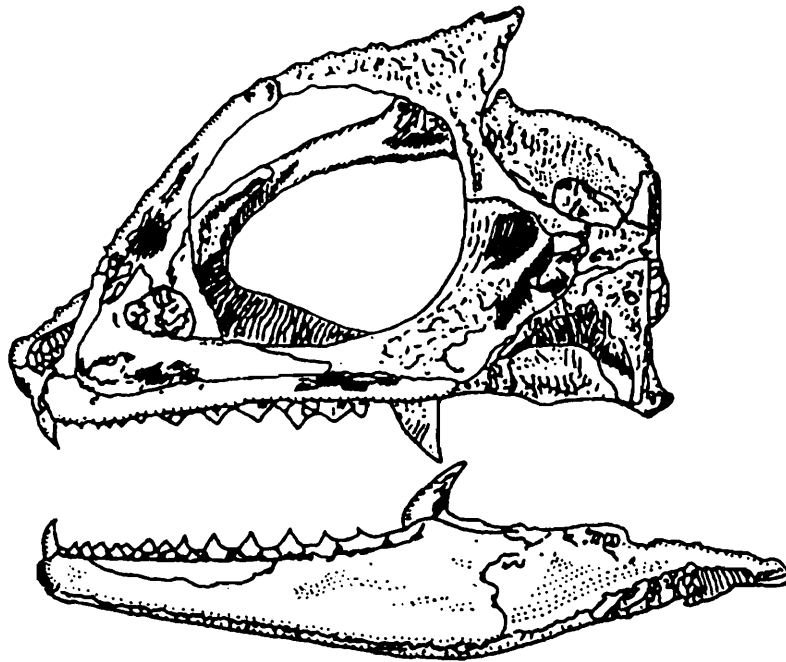


Fig. 73 : *Lyriocephalus scutatus* : Lateral view of skull.

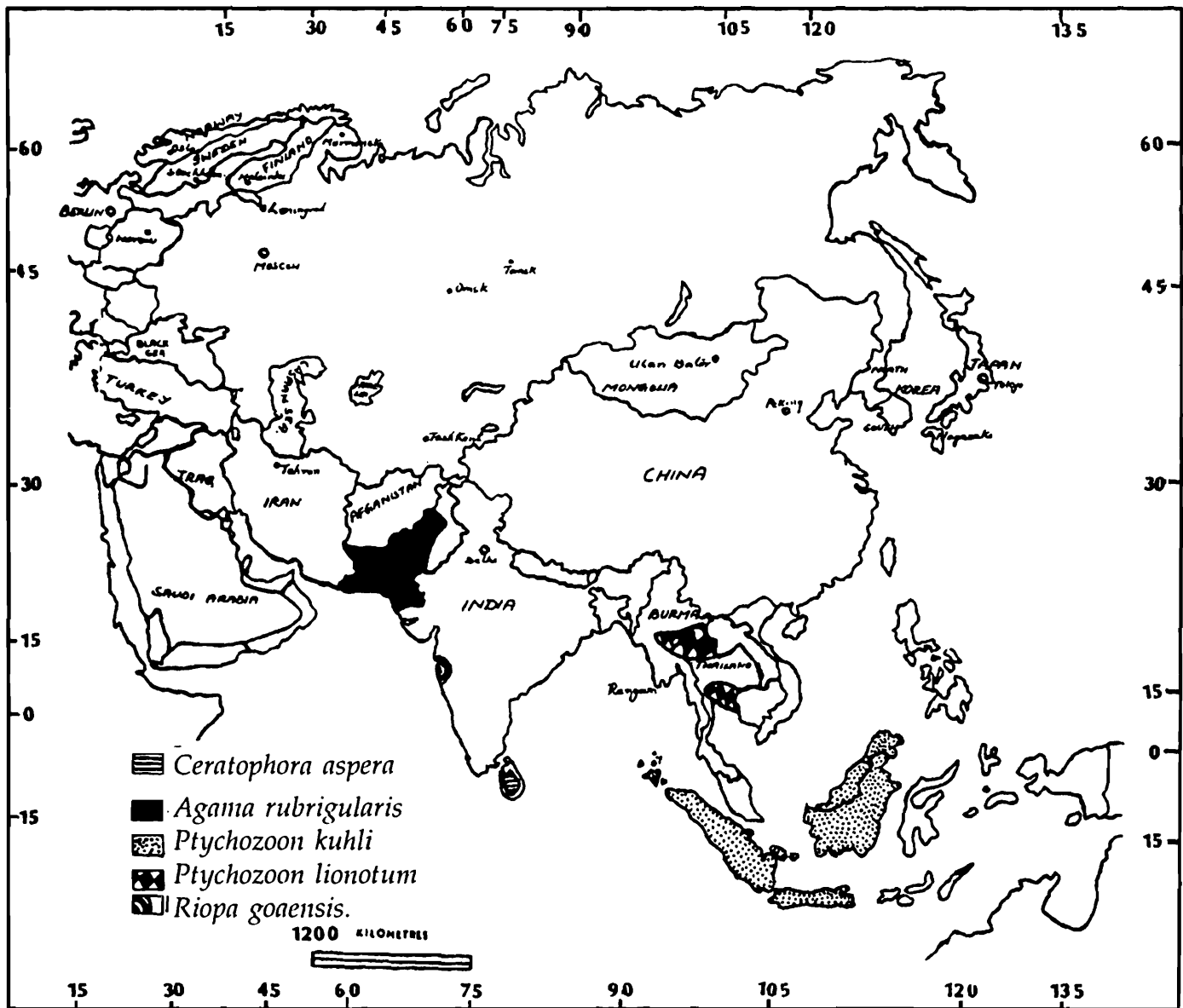
The dorsal colour of this strongly compressed agamid is green; ventrum is white with a bluish tinge; gular sac and antehumeral fold is yellow, the enlarged scales of the gular sac are green. The juveniles are brownish. The head is small but prominent, covered above with most unequal, keeled scales; a distinct crest is most prominent over eyes, which extends almost to the nostrils and terminates posteriorly in a triangular compressed spine; the occiput is with a pair of small spines; a series of 20-25 enlarged keeled scales on each side of the head emerging from the nostril, passing below the eye and terminating on the temple, the last two or three scales are quite large. Upper labials 12-15 and same is the number of lower labials. Dorsum is with small, smooth scales pointing upwards and backwards, intermixed with much larger scales; on the nape and upper parts of the back the scales form regular longitudinal series; on the lower down parts these scales are more scattered and with strong keels. Gular region is with large, shortly keeled scales, which are arranged in regular rows; ventral scales are small but strongly keeled. The upper surface of limbs are with unequal keeled scales; fourth toe is distinctly larger than the third; the hind-limb reaches to the neck. A low nuchal crest is present, which is formed by the thickening of the cuticle and is with closely set triangular scales above; dorsal crest is in continuation with the nuchal crest is formed by the triangular scales which are separated from one another. Tail is quite short, strongly compressed, and with a blunt tip; it is crested above, covered on the lateral aspects and below with large, strongly keeled scales; the scales on the underside of tail are with more prominent keels and much larger than broad. Gular pouch is well developed in both sexes but is larger

in males. The most characteristic feature is the presence of a globular hump on the tip of the snout in adults but in juveniles this structure is not developed. The gular hump is composed of thick sponge-like tissue and is with a covering of large smooth scales. Standard length 170 mm., tail length 170 mm.

Distribution : Sri Lanka

Habits and habitat : Most agile, terrestrial, arboreal, insectivorous, frugivorous agamid. Four eggs (24×15 mm.) are laid and buried in the soil.

Status : Very common near Kandy.



Map 33 : Distribution of *Ceratophora aspera*, *Agama rubrigularis*, *Ptychozoon kuhli*, *Ptychozoon lionotum* and *Riopa goensis*.

Genus 31. *Goniocephalus* Kaup 1825.

1825. *Gonocephalus* Kaup, *Isis* : p. 590
 1826. *Lophyrus* Fitzinger, *Class Rept.* : p. 49 (type *kuhli*)
 1827. *Goniocephalus*, Kaup, *Isis* : pp. 610 & 614 (type *tigrinus*=*Chamaeleontinus*).
 1831. *Acanthosaura* Gray, in Griffith's *Anim. King.* 9 : Suppl. p. 5 (type *armata*)
 1837. *Tiaris* Dum. & Bibr., *Erp. Gen.* 4 : p. 419, and Atlas pl. 46 (type *diloplus*)
 1843. *Lophosaurus* Fitzinger, *Syst. Rept.* : pp. 15 & 45 (subst. name for *Tiaris*).
 1845. *Dilophyrus* Gray, *Cat. Liz. Brit. Mus.* : p. 238 (type *grandis*).
 1861. *Coryphophylax* Fitzinger, *S. B. Akad. Wiss. Wien* 40 : pp. 387. 399 (nom. nud.)
 1867. *Coryphophylax* (Fitzinger), Steindachner, *Reise Novara, Rept.* : p. 30. (type *maximiliani*).
 1867. *Hypsilyrus* Peters, *Mon. Akad. Berlin* : p. 707 (type *godeffroyi*).
 1874. *Aruna* Doria, *Ann. Mus. Civ. Geneva* 6 : p. 345 (type *inonatus*).
 1878. *Lophosteus* Peters & Doria, *Ann. Mus. Civ. Genova* 13 : p. 377 (type *albertisii*).
 1885. *Gonyocephalus*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 282.
 1935. *Goniocephalus*, Smith, *Fauna Brit. Ind.* 2 : p. 157.

This genus includes five species inhabiting the Malayan Subregion, Indo-China, Indo-Australian Archipelago and the Philippine Islands. These agamids are with a strongly compressed body, dorsum is with heterogeneous, unequal scales, a dorsal crest and gular pouch is available; a strong fold is present in front of the shoulder which generally extend across the throat; tympanum is naked. Tail is compressed, the subcaudal scales are strongly keeled and longer than broad, tail is not swollen at the base and no alteration of the scales is available in this region. Femoral and preanal pores are not present.

Key to the species of genus *Goniocephalus*

- I. Postorbital and nuchal spines are present
 (a) A gular pouch is present *Goniocephalus crucigerus*
 (b) Gular pouch is not present *Goniocephalus lepidogaster*
 II. Postorbital and nuchal spines are not present *Goniocephalus subcristatus*

104. *Goniocephalus armatus crucigerous* (Boulenger 1885)

(Map 13)

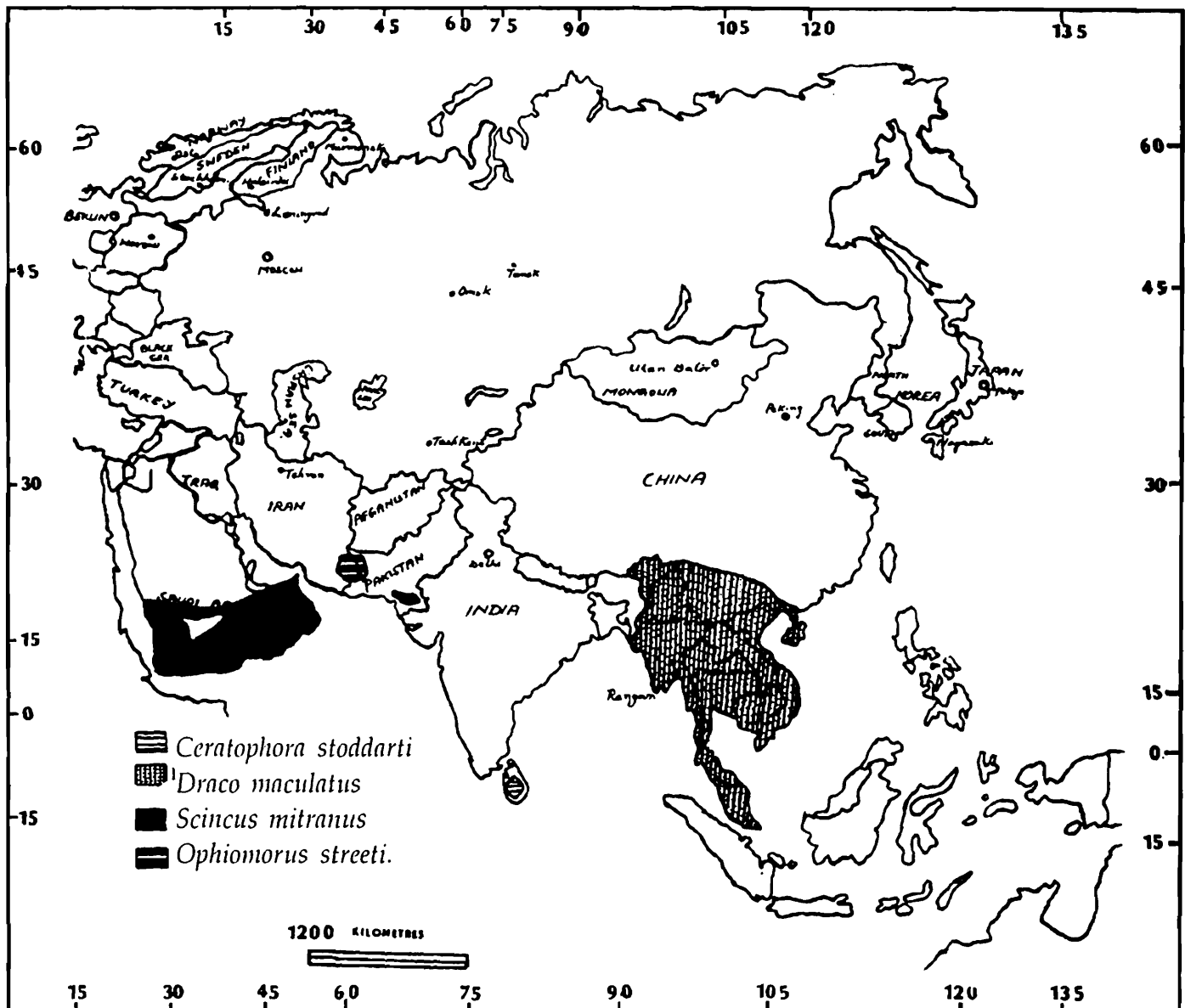
1879. *Acanthosauria armata* Blanford, *J. Asiat. Soc. Beng.* 48 : p. 130 and (in part) Gunther, Boulenger, Flower and Smith as in synonymy of *Armatus*).
 1885. *Acanthosauria crucigera* Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 302, pl. 22, fig. 2 (type loc. Tavoy, Tenasserim).
 1916. *Acanthosauria horrescens* Lonnberg, *Kungl. Sv. Vet.-Akad. Handl. Bd.* 55, No. 4 : p. 5 (type loc. Doi Nga Chang, north of Pre, N. Siam).
 1935. *Goniocephalus armatus crucigerus*, *Fauna Brit. Ind.* 2 : p. 160.

This comparatively large agamid exhibits lot of colour variations. Dorsal colouration is grey, brown, olive or blackish with a reddish tinge; with light and dark patterns on the lateral aspects; neck is with a large diamond-shaped spot; in most individuals a triangular spot on the head which encloses the eyes also; general colour of the rest of head is pale green or yellow; in many lizards, the crown of head is with dark cross-bars and dark streaks radiate from the eyes; ventrum is whitish, in some lizards it is with black spots; tail is with alternate patches of light and dark colour. The head is moderately large; one and half times larger than broad; snout shorter than the orbit; forehead deeply concave; dorsal scales of head are unequal, obtusely keeled, scales on the posterior portion of head are comparatively smaller; canthus rostralis and supraciliary edge strongly projecting; a moderately long spine, almost as long as the orbit is present at the end of supercilium; one spine is present on the back of the head at neck (mid-way between the tympanum and the nuchal crest), it is most variable in length, in some lizards as long as the orbit, in others very short, but always present and usually with smaller spines or enlarged scales at the base; tympanum is distinct, one third to one-half the diameter of the orbit. Upper labials 10-13 and lower labials are also in the same number. Dorsum is with minute scales intermixed with larger, strongly keeled scales; dorsal scales point directly upwards or downwards; ventral scales are strongly keeled, equal to the largest dorsal scales. A distinct gular sac is present; gular scales are strongly keeled, smaller than the ventral scales; a strong oblique fold in front of the shoulders, almost extending across the throat. Nuchal crest is distinct and comprises long, narrow, compressed spines which are generally broader at the base; in fully grown adults the largest nuchal spine may exceed the diameter of the orbit. Dorsal crest is distinct but not in continuation with the nuchal crest, in the posterior part its spines are as large as the spines of the nuchal crest but these gradually reduce in size posteriorly and ultimately assume the shape of a low ridge over the sacrum and on the base of the tail; these spines are generally broader at the base. Limbs are moderately large; third and fourth fingers are almost of the same size; third toe is shorter than the fourth; the hind-limb reaches to the ear, in some individuals it extends up to the eye. Tail is slightly compressed, triangular at the base, its dorsal aspect is with keeled scales of equal size; sub caudal scales are elongated and strongly keeled. Femoral and preanal pores are not present. Standard length 140 mm., tail length 240 mm.

Distribution : Burma (Tenasserim), Thailand (Patani, Isthmus of Kra; adjacent hills to Burma; hills north of Pre and Dong Paya Fai Mountains, N. Thailand; Chatabun district, Koh Chang, South East Thailand) Cambodia (hills adjacent to Thailand), Vietnam (Dak-to, lat. 15°N.) (Map 13).

Habits and habitat : This is a sluggish, terrestrial, subarboreal, diurnal, dense forest dwelling, insectivorous and worm-eating species. About 10-12 (12×20 mm.) eggs are laid in a single clutch.

Status : Common throughout the range.



Map 34 : Distribution of *Ceratophora stoddarti*, *Draco maculatus*, *Scincus mitranus* and *Ophiomorus streeti*.

105. *Goniocephalus lepidogaster* (Cuvier 1829)

(Map 14)

1829. *Calotes lepidogaster* Cuvier, *Regne Anim*, 2nd ed. 2 : p. 39 (type loc. Cochin-China)
1837. *Lophyrus tropidogaster* Dum. & Bibr., *Erp. Gen.* 4 : p. 413, emendation for *lepidogaster* Cuvier.
1861. *Acanthosaura coronata* Gunther, *Proc. Zool. Soc.* : p. 187 (type loc. Cambodia).
1885. *Acanthosaura lamnidentata* Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 302, pl. 22, fig. 3. (type loc. Pegu, Tenasserim).
1899. *Acanthosaura hainanensis* Boulenger, *Proc. Zool. Soc.* : p. 957, pl. 46, fig. 2, (type loc. Five finger Mountain, Hainan).
1914. *Acanthosaura braueri* Vogt, *Sitz. Gesell. Nat. Fr. Berlin*, : p. 97 (type loc. S. China).
1935. *Goniocephalus lepidogaster*, Smith, *Fauna Brit. Ind.* 2 : p. 161.

The general habitus and scalation etc. are quite similar to *Goniocephalus armatus* but differs in having the size smaller; body less compressed; postorbital and occipital spines are shorter, not more than half the diameter of the orbit; nuchal crest shorter, the spines broader and more triangular in shape; dorsal crest is just like a prominent ridge, having broad, triangular scales; hind-limbs are comparatively longer, often reaching to the tip of the snout or still further. Standard length 125-130 mm., tail length 230 mm.

Distribution : Burma (Hills of Southern Burma, Pegu district, Karen Hills), Thailand (northern part), Cambodia, South Vietnam (Langbian Plateau), North Vietnam (adjoining area of Langbian Plateau), Hainan, Southern China (Map 14).

Habits and habitat : Sluggish, subarborescent, terrestrial, diurnal, insectivorous forest species. Nothing is known about breeding habits.

Status : Very common throughout the range.

106. *Goniocephalus subcristatus* (Blyth 1860)

1860. *Tiaris subcristata* Blyth, *J. Asiat. Soc. Beng.* **29** : p. 109 (type loc. Port Blair, Andaman Is.).
 1867. *Coryphophylax maximiliani* (Fitz.) Steindachner, *Reise Novara, Rept.* : p. 30, pl. 2, fig. 6 (type loc. Nicobar Is.)
 1873. *Tiaris humei* Stoliczka, *J. Asiat. Soc. Beng.* **42** : p. 167 (type loc. Nicobar Is.)
 1885. *Gonyocephalus humii*, Boulenger, *Cat. Liz. Brit. Mus.* **1** : p. 293.
 1885. *Gonyocephalus subcristatus*, Boulenger, *Cat. Liz. Brit. Mus.* **1** : p. 292.
 1935. *Goniocephalus subcristatus*, Smith, *Fauna Brit. Ind.* **2** : p. 163.

This moderately large agamid is with a brownish or olivaceous dorsum, which in some individuals is profusely spotted or reticulated with black on the lateral aspects, some lizards are with a dark-edged stripe on the sides of neck; ventrum is brownish. The head is long, the length is $1\frac{1}{2}$ to 2 times of the breadth; forehead distinctly concave; cheeks swollen in adult males; anterior portion of head is with unequal strongly keeled scales; with a prominent inverted Y-shaped series of enlarged scales on the anterior aspect of head; posterior part of head is with regularly disposed enlarged conical scales; canthus rostralis and supraciliary edge is sharp; tympanum is distinct, almost half of the diameter of the orbit. Upper labials 7-9 and same is the number of lower labials. Dorsum is with minute, keeled intermixed with few large and strongly keeled scales, all point backwards and upwards; ventral scales are equal in size to the dorsal scales, strongly keeled and mucronate, scales round the body are in 85-100 rows. Gular sac is a small structure and present only in the males; gular scales are feebly keeled and smaller in size than the ventral scales; in both the sexes there is a strong oblique fold in front of the shoulders extending across the throat. Nuchal crest in adult males comprises 16-20 compressed pointed scales, emerging from a projecting cutaneous vertebral fold; the largest scales of

the nuchal crest is almost equal to the diameter of the orbit. The dorsal crest is generally not in continuation to the nuchal crest and is like a serrated ridge. Both the crests in females are much lower and less developed in comparison to the males. Limbs are slender; third and fourth fingers are almost equal; third toe is much smaller than the fourth; the hind limb reaches generally to the tip of snout, in some individuals the limbs are still longer. Tail is much longer, compressed; with a median series of enlarged scales on the dorsal aspect, forming a serrated ridge; ventral aspect of tail is with two rows of elongated strongly keeled scales. Standard length 100 mm., tail length 270 mm. (tail is longer in males than females), tail is extremely fragile but generally regenerated.

Distribution : India (Andaman and Nicobar Islands) (Map 14).

Habits and habitat : Most agile, strongly arboreal, diurnal, insectivorous, dense forest dwelling species. 10-12 eggs are laid in a single clutch. The lizards are with a power of changing colour.

Status : Common in Andamans; in abundance at Nicobar Is.

32. *Mictopholis* Smith 1935

1935. *Mictopholis* Smith, *Fauna Brit. Ind.* : p. 164 (type *Salea austeniana* (Annandale))

This monotypic genus from India (Assam), comprises the agamids with compressed body; dorsum is with very unequal and irregular scales; ventral scales are unequal; nuchal and dorsal crests are present; a strong fold in front of the shoulders is available; a gular sac is present; tympanum is naked; femoral and preanal pores are not available.

107. *Mictopholis austeniana* (Annandale 1908)

(Fig 74, Map 19)

1908. *Salea horsfieldi* (not of Gray), annandale, J. & P. *Asiat. Soc. Beng.* 1 : p. 86

1908. *Salea austeniana* annandale, *Rec. Ind. Mus.* 2 : p. 97 (type loc. near Harmatti, Dafla Hills, Assam),

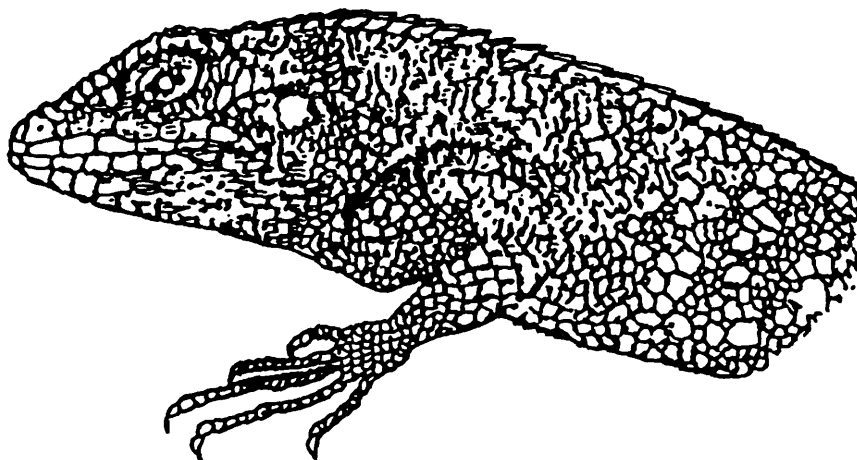


Fig. 74 : *Mictopholis austeniana* : Lateral view of head and anterior body.

This is a strongly compressed olive-green lizard. Its head is light-green with dark-green lines; neck is profusely dotted or vermiculated with green; belly is light green. The enlarged dorsal scales are paler. Head scales are large, unequal, obtusely keeled; upper labials 6; lower labials 7; tympanum is exposed; four enlarged keeled scales from the eye reaching up to the superior margin of tympanum; dorsal scales most unequal, irregular in shape, smooth or keeled; the upper dorsals pointing upwards and backwards, the scales in lower rows are almost straight and always pointing backwards; ventral scales broader than long, smooth, unequal and smaller than the largest dorsals; gular fold is small; gular scales subquadrangular and smooth; nuchal crest is low and formed by separated spines; dorsal crest is present and is in continuation with the nuchal crest. Limbs moderately large; third and fourth fingers are equal, fourth toe is longer than the third; the hind-limb reaches to the posterior margin of the eye. Tail compressed, covered with subequal keeled scales.

Distribution : India : (Dafla Hills, Assam) (Map 19).

Status : Known only by a single type specimen.

Genus 33. *Oriocalotes* Gunther 1864

1864. *Oriocalotes* Gunther, *Rept. Brit. Ind.* : p. 146 (type *Calotes minor* Gray)

1890. *Acanthosaura*, Boulenger, *Fauna Brit. Ind.* p. 129.

This monotypic genus from India (Khasi hills) and Sikkim is with agamids having dorsal scales unequal, not heterogenous and regularly arranged; dorsal crest is represented by denticulations, not quite distinct and developed; gular sac and transverse gular fold are not present; tympanum naked or covered with scales; tail rounded, not swollen at base in adult males; femoral and preanal pores are not present.

108. *Oriocalotes paulus* Smith, 1935 (Map 20)

1845. *Calotes minor* Gray, *Cat. Liz. Brit. Mus.* : p. 244 (type loc. Khasi Hills).

1864. *Oriocalotes minor*, Gunther, *Rept. Brit. Ind.* : p. 147.

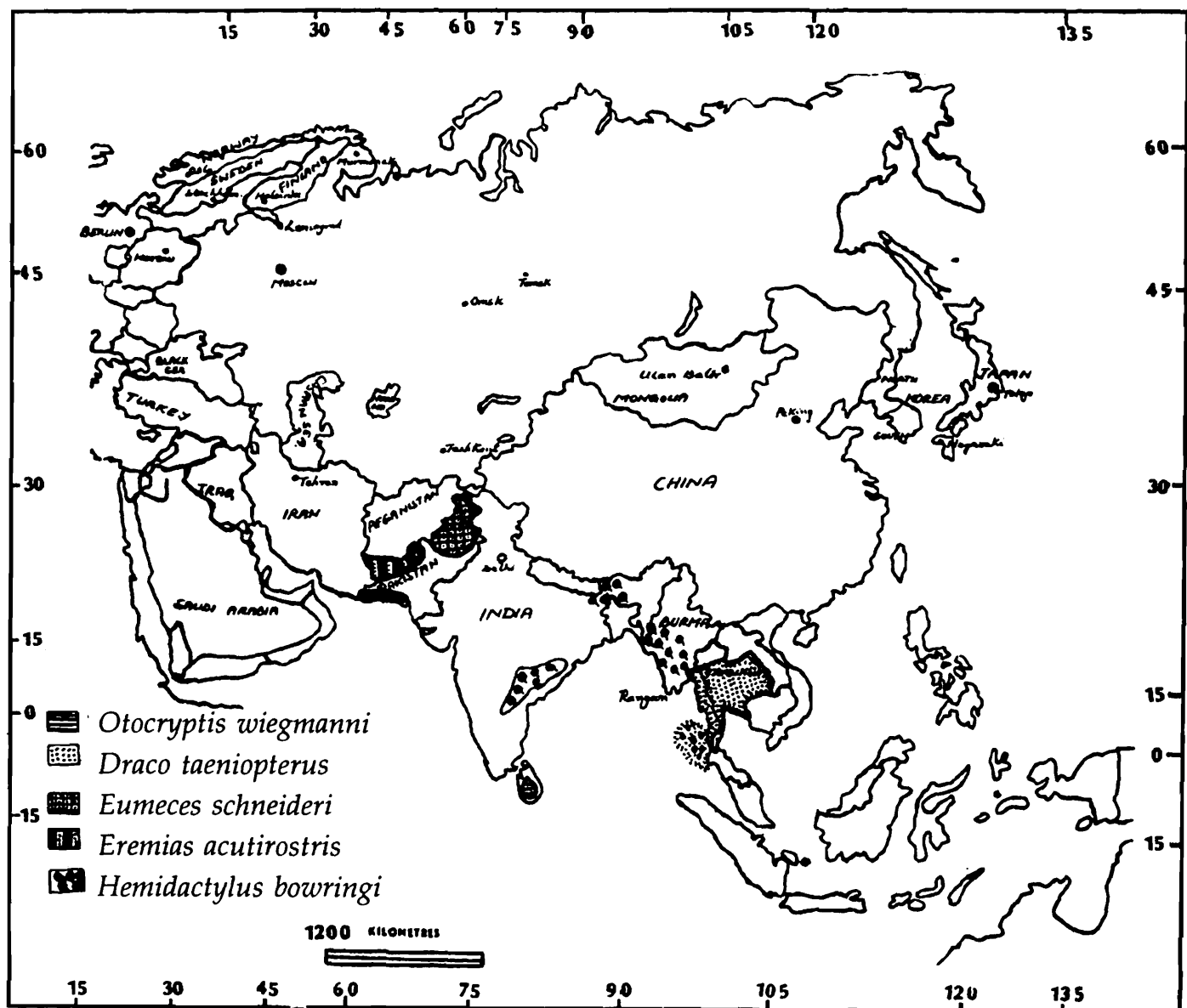
1885. *Acanthosaura minor*, Boulenger, *Cat. Liz. Brit. Mus.* 1, p. 304, pl. 23, fig. 2.

1935. *Oriocalotes paulus* Smith, *Fauna Brit. Ind.* 2 : p. 166.

This moderately large agamid is with a feebly compressed body. Dorsal colouration is light-brownish; plenty of dark brown spots on the back looking like irregular cross-bars; dark brown bars or spots on the forehead, above the eye and on the angle of mouth; throat with dark transverse stripes; belly is light-brown. Head is large with large, unequal, strongly keeled, granulate dorsal scales; one spine is present on the postorbital region and two above the ear; tympanum is naked or may be concealed under scales; Upper labials

7-9 and as many lower labials; dorsal body scales large, strongly keeled, unequal, largest scales on the lateral aspects; the dorsal scales in upper few rows pointing upwards and backwards, the lower ones pointing backwards only; ventral scales of the body smaller than the dorsals, strongly keeled and mucronate. Gular pouch is missing; gular scales smaller than the ventrals; a distinct fold is present in front of the shoulder covered with small granular scales. Nuchal crest is made up of 8-10 short separated spines; dorsal crest is represented simply by denticulation. Limbs moderately large; fourth finger is longer than third; fourth toe is longer than third; the hind-limb reaches to the ear. Tail much longer than the head and body, round in transverse section, not swollen at the base, covered above with almost equal keeled scales, the scales on the under side of tail are squarish. Standard length 70 mm.; tail length 130 mm.

Distribution : India : The Khasi Hills, Assam (Map 20).



Map 35 : Distribution of *Otocryptis wiegmanni*, *Draco taeniopterus*, *Eumeces schneideri*, *Eremias acutirostris* and *Hemidactylus bowringi*.

Habits and habitat : Insectivorous, diurnal, arboreal. Nothing is known about other habits.

Status : Rare.

Genus 34. *Japalura* Gray 1853

1853. *Japalura* Gray, *Ann. Mag. Nat. Hist.* (2) 12 : p. 387 (type *variegata*)
 1853. *Binacia* Gray, *Ann. Mag. Nat. Hist.* (2) 12 : p. 387 (type *niger*)
 1860. *Diploderma* Hallowell, *Proc. Acad. Philad.* : p. 490 (type *polygonatum*)
 1864. *Oriotiaris* Gunther, *Rept. Brit. Ind.* : p. 150 (type *Tiaris elliotti* Gunther, 1860).
 1885. *Acanthosaura*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 299.
 1890. *Pelturagonia* Mocquard, *LeNatur.* : p. 144 (type *cephalum*).
 1935. *Japalura*, Smith, *Fauna Brit. Ind.* 2 : p. 167.

This mountain genus comprises about 16 species which are distributed in the Himalayan and Trans-Himalayan Regions. South west and Central China; Taiwan; the Riu Kiu Islands; Sumatra; Borneo, and the Natunas. The main characters of this genus are : Body may or may not be compressed; length of head one and a half times its breadth; snout a little longer than the orbit; forehead concave; canthus rostralis and supraciliary edge sharp; upper head-scales unequal; multi-keeled of tuberculate; 7-9 upper and as many lower labials; dorsal scales unequal, heterogeneous; a low nuchal crest may be present or absent; dorsal crest is merely a denticulation, sometimes it is absent; gular sac is small or absent; an oblique fold is present in front of the shoulders, which is covered with small scales; in some species extends across the throat; tympanum concealed or naked; tail long and slender; in adult males it may be swollen and rounded at the base; scales at the base of tail are enlarged and thickened; femoral and preanal pores are not present.

Key to the species of genus Japalura

I. Tympanum naked

- A. A prominent crest on each side of the back of head..... *J. tricarinata*
 B. No prominent crest on head.
 1. Back with enlarged scales; a transverse gular fold is present; back with dark triangular markings *J. major*
 2. Nape and fore-part of body with a row of enlarged scales; no transverse gular fold; back with dark triangular markings..... *J. kumaonensis*

II. Tympanum hidden.

- A. Body subquadrangular; ridge of scales provide margin to the each side of back. *J. planidorsata*

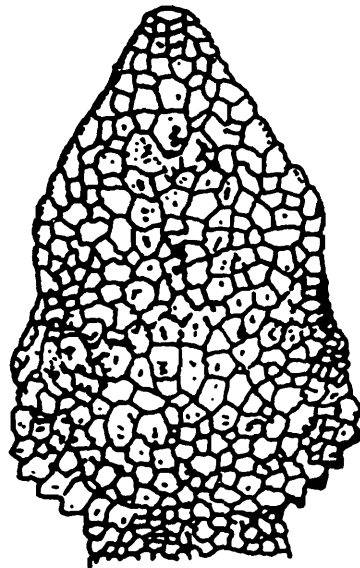
B. Body not quadrangular.

1. Enlarged dorsal scales not arranged in regular rows; the leg reaches to the tip of the snout or beyond *J. andersoniana*
2. Enlarged dorsal scales not arranged in regular rows; the leg reaches to the eye or beyond; throat is with a black spot..... *J. variegata*
3. Enlarged dorsal scales not arranged in regular rows; the leg reaches to the eye; head of adult male is large; a distinct oblique white stripe on the anterior half of each flank..... *J. hamptoni*

109. *Japalura tricarinata* (Blyth 1854)

(Fig. 75, Map 19)

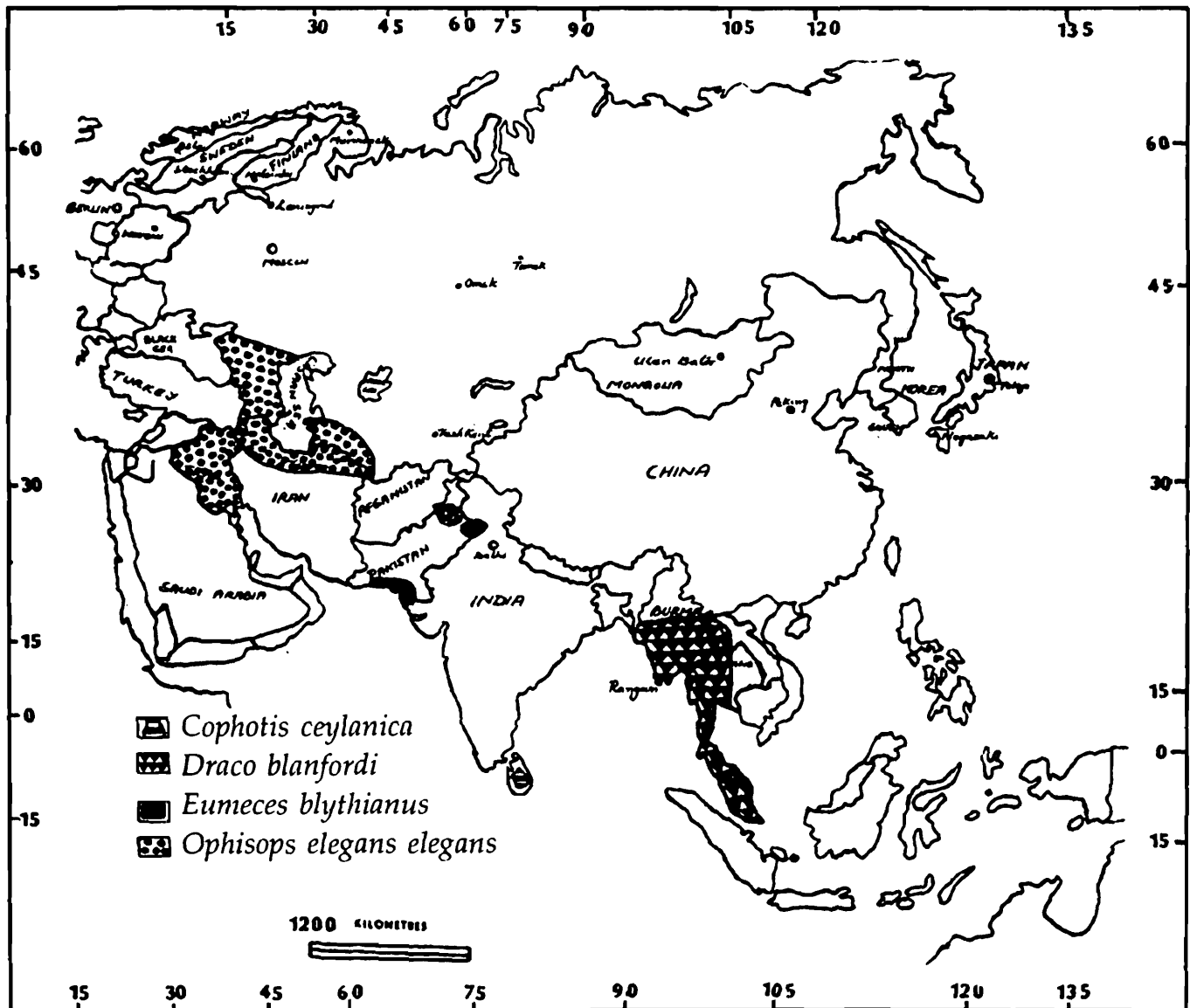
1854. *Calotes tricarinatus* Blyth, *J. Asiat. Soc. Beng.* 22 : p. 650 (type loc. Sikkim)
1860. *Tiaris ellioti* Gunther, *Proc. Zool. Soc.* : p. 151, pl. 25, fig. B. (type loc. Sikkim, 9200 feet).
1871. *Oriotiaris tricarinata*, Anderson, *Proc. Zool. Soc.* : p. 167.
1872. *Charasia (Oriotiaris) tricarinata*, Stoliczka, *J. Asiat. Soc. Beng.* 41 : p. 112.
1885. *Acanthosaura tricarinata*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 306.
1935. *Japalura tricarinata*, Smith, *Fauna Brit. Ind.* 2 : p. 169.

Fig. 75 : *Japalura tricarinata* : Dorsal view of head.

This is a small lizard having pale-brownish colour above, with V-shaped markings on the back and tail; the enlarged scales on the head, body and limbs are green; belly is dirty-white and dotted with black. Head is with large and unequal scales; posterior end of the supercilium has got small tubercles; 6-8 multi-keeled spinose scales from each aspect form a curved ridge on the hinder portion of head; tympanum is naked; supralabials 5-7 and as many lower labials; dorsal scales of body most unequal; the larger ones are strongly keeled; scales on the neck, shoulders and upon the loin portion form almost parallel rows; on rest of the dorsum the scales are arranged in an angular series; the

upper dorsals point upwards and backwards, the lower dorsals point backwards and downwards; ventral scales keeled, almost as large as the largest dorsals. Gular pouch is not present, gular scales feebly keeled; quite smaller than the other ventrals; no fold is available across the throat; a feeble fold in front of the shoulders is generally available; no nuchal or dorsal crests are available; vertebral row of scales are enlarged and keeled and as such forming a denticulation down the back. Limbs feeble, slender with enlarged and strongly keeled scales above; fourth toe much longer than the third; the hind-limb reaches to the eye or the nostril. Tail longer than the head and body, round in transverse section, covered with keeled scales, the ventral tail scales are broader than dorsals. Standard length 50 mm.; tail length 120 mm.

Distribution : India : Sikkim, Darjeeling district of North Bengal. Elsewhere : Eastern Nepal (Map 19).



Map 36 : Distribution of *Cophotis ceylanica*, *Draco blanfordi*, *Eumeces blythianus* and *Ophisops elegans elegans*.

Habits and habitat : This is a terrestrial, rock dwelling species available up to an altitude of 900 metres. Lizards bask in the sun while lying quietly on the huge rocks and boulders. They are insectivorous and most docile.

Status : Undeterminate.

110. *Japalura planidorsata* Jerdon 1870
(Map 23)

1870. *Japalura planidorsata* Jerdon, *P. Asiat. Soc. Beng.* : p. 76 (type loc. Khasi Hills)

1935. *Japalura planidorsata*, Smith, *Fauna Brit. Ind.* 2 : 170.

This lizard is comparatively smaller. Dorsal colouration is yellowish or brownish, back is with prominent dark streaks; upper lip yellowish; yellow dorsolateral stripes in many individuals; belly is light-yellow. Snout with numerous, spinose tubercles; tympanum is concealed; body subquadrangular and slightly flat at the mid-back portion; lateral aspects with ridged, enlarged, keeled scales forming a ridged series; on the complete back same type of scales form V-shaped ridges at intervals; flanks with numerous enlarged, strongly keeled scales; ventral scales are strongly keeled and are not larger than the largest dorsal scales; Gular pouch is not present; a short fold in front of the shoulder is always present; transverse gular fold is missing; the scales on the thorax almost equal to the ventral scales. Limbs are weak, slender; the hind-limb reaches to the ear or the nostril. Tail longer than the head and body, compressed, covered with keeled scales, dorsal caudals intermixed with larger scales. Standard length 50 mm.; tail length 90 mm.

Distribution : India : Assam (Garo and Khasi Hills, Cachar) (Map 23).

Habits and habitat : A rock dwelling, terrestrial, insectivorous and diurnal species.

Status : Underterminate.

111. *Japalura major* (Jerdon 1870)

1870. *Oriocalotes major* Jerdon, *P. Asiat. Soc. Beng.* : p. 77 (type loc. near Kotgarh, W. Himalayas).

1885. *Acanthosaura major*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 306, pl. 23, fig. 3.

1935. *Japalura major*, Smith, *Fauna Brit. Ind.* 2 : p. 171.

This moderately large mountain lizard is with a slightly compressed body. Dorsal colouration is light-brown, with dark-brown V-shaped spots on the complete back up to the base of tail; upper side of the head is with deep-brown cross-bars; a dark-brown line is most prominent between the eye and the ear; flanks with dark-brown reticulations; belly is whitish; many individuals are with dark-brown spots or streaks on the ventrum. Dorsal body scales are large, intermixed with smaller scales; the scales on the lateral aspects are generally arranged in vertical series; the scales of the upper dorsal rows are pointing upwards and backwards, the scales in lower dorsal rows are pointing backwards;

ventral scales are strongly keeled, smaller than the largest dorsals. Gular pouch is in the shape of a longitudinal fold; transversely the gular fold is covered with small scales; a feeble fold is visible in front of the shoulders; nuchal and dorsal crests are represented by a denticulation. Limbs are weak; fourth toe is longer than the third as long as the tibia; the hind-limb reaches to the ear or the eye. Tail much longer than the head and body, slightly compressed, covered above with small keeled scales. Standard length 85 mm.; tail length 155 mm.

Distribution : India : Western Himalayas (Simla, Garhwal, Chamba) (Map 18).

Habits and habitat : The species is terrestrial, rock dwelling, insectivorous, diurnal recorded up to 850 metres.

Status : Underterminate.

112. *Japalura kumaonensis* (Annandale 1907)
(Map 21)

1907. *Acanthosaura kumaonensis* Annandale, *Rec. Ind. Mus.* 1 : p. 152 (type loc. Nainital, W. Himalayas).

1914. *Acanthosaura major* (not of Jerdon), Annandale, *Rec. Ind. Mus.* 10 : p. 320.

1935. *Japalura kumaonensis*, Smith, *Fauna Brit. Ind.* 2 : p. 171.

This species is closely resembles with *Japalura major* in colouration and general pholidosis but smaller in size. Back with the triangular markings. It is with a row of much enlarged scales on the snout and anterior portion of the body, which are exactly parallel with the median dorsal rows of scales; upper labials are 6 in number; transverse gular fold is not present; the scales on the thorax are almost as large as the ventral scales; fourth toe is longer than the third toe, as long as the tibia, the hind-limb reaches to the ear or the eye. Standard length 60 mm.; tail length 155 mm.

Distribution : India : Western Himalayas (Almora, Nainital, Kumaon) (Map 21).

Habits and habitat : Rock dwelling, terrestrial, insectivorous and diurnal.

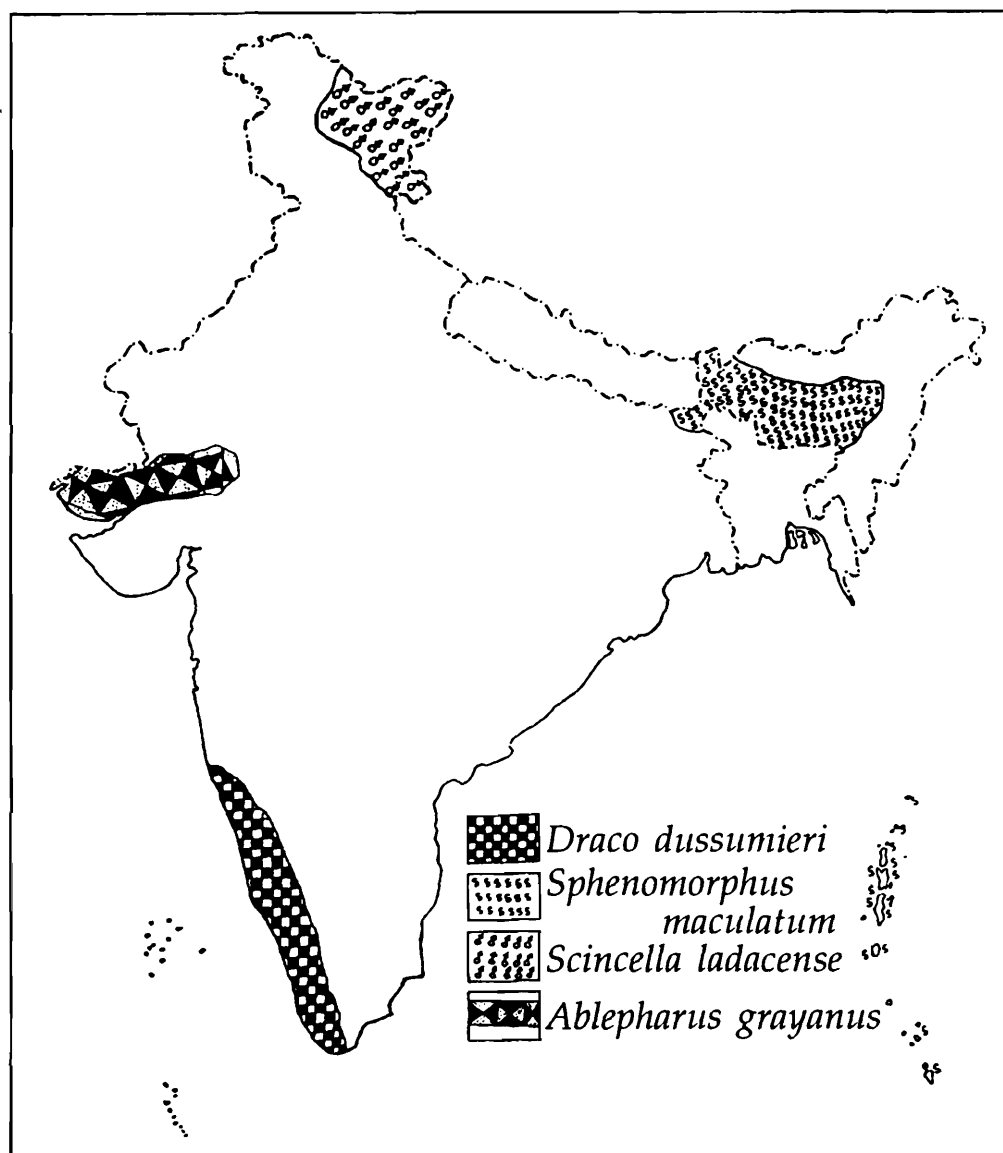
Status : Undeterminate.

113. *Japalura andersoniana* Annandale 1905.

1905. *Japalura andersoniana* Annandale, *J. Asiat. Soc. Beng.* 1 : p. 85, pl. 2, fig. 4 (type loc. Dafla Hills, Assam-Bhutan border).

1935. *Japalura andersoniana*, Smith, *Fauna Brit. Ind.* 2 : p. 173.

This moderately large agamid is having a compressed body. Dorsal colour is dark-brown clouded under a paler shade; throat is dark-blue or green, with a median yellow spot in the males. Tympanum is concealed; dorsal scales of the body are small, slightly keeled, intermixed with quite larger, strongly keeled scales arranged in five rows on the back up to the base of tail; neck is with a series of large scales on both the sides which are almost parallel to the nuchal crest; the upper dorsal scales on the back are pointing upwards and backwards; the dorsal scales in the lower rows are pointing backwards and



Map 37 : Distribution of *Draco dussumieri*, *Sphenomorphus maculatum*, *Scincella ladacense* and *Ablepharus grayanus*.

downwards; ventral scales of body are as large as the largest dorsal scales and are strongly keeled. Gular sac is represented by a fold; gular scales are smaller than the other ventral scales, these are feebly keeled; a faint fold is present in front of the shoulders; a transverse gular fold is present; nuchal and dorsal crests are present, dorsal crest is somewhat like a serrated ridge and nuchal crest is set on a fold of skin. Limbs are weak, slender; fourth toe is much longer than third; the hind-limb reaches to the tip of the snout or slightly beyond. Tail much longer than the head and body, compressed, covered above with keeled scales; scales on the under side of tail are uniform, about as large as the ventral scales of body in size. Standard length 75 mm.; tail length 160 mm.

Distribution : India : Dafla-Hills on Arunachal Pradesh-Bhutan border; Arunachal Pradesh (Map 22).

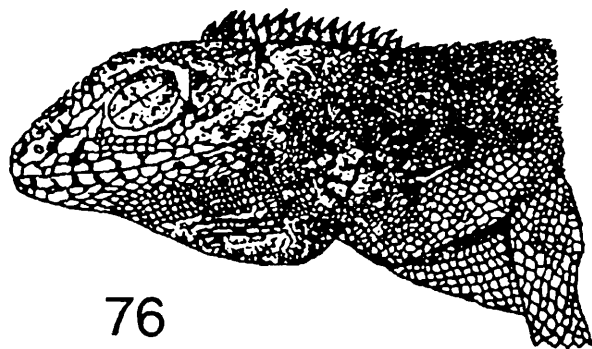
Habits and habitat : Terrestrial, mountain dwelling species; insectivorous diurnal.

Status : Rare.

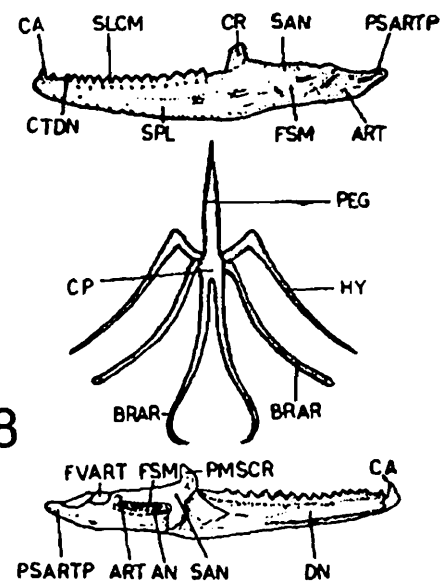
114. *Japalura variegata* Gray 1853

(Figs. 10, 11, 76-78, Map 21)

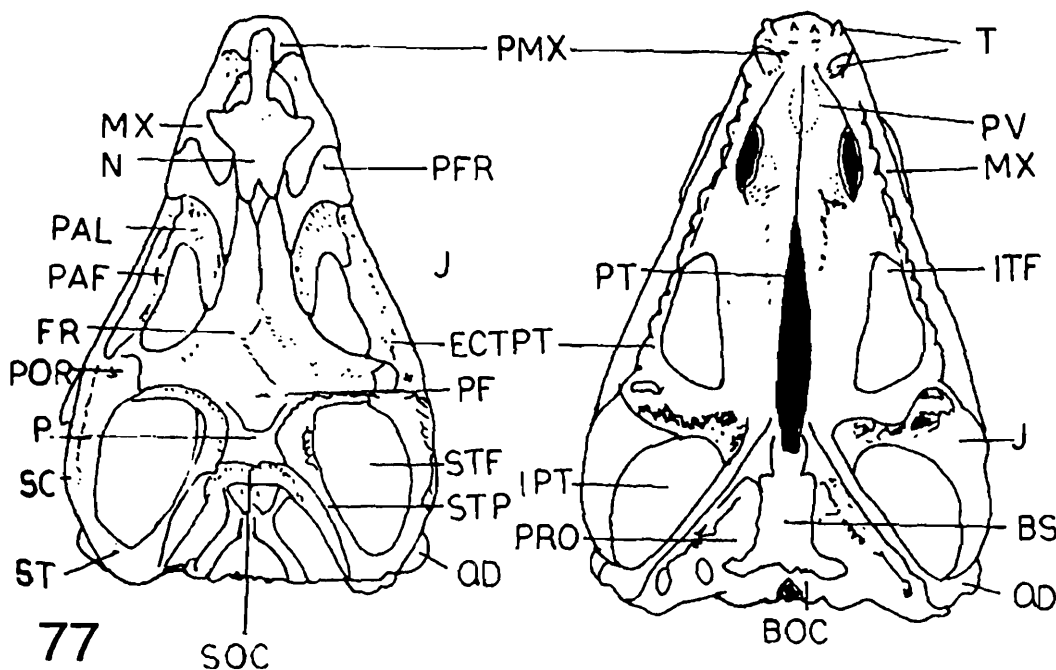
- 1853. *Japalura variegata* Gray, *Ann. Mag. Nat. Hist.* (2) 12 : p. 388 (type loc. Sikkim).
- 1853. *Biancia niger* Gray, *Ann. Mag. Nat. Hist.* (2) 12 : p. 387 (type loc. Sikkim)
- 1870. *Japalura microlepis* Jerdon, *P. Asiat. Soc. Beng.* : p. 76 (type loc. Sikkim).
- 1906. *Japalura yunnanensis* (not of Anderson), Annandale, J. & P. *Asiat. Soc. Beng.* 2 : p. 288.
- 1912. *Japalura bengalensis* Annandale, *Rec. Ind. Mus.* 8 : p. 57, pl. 5, fig. 4 (type loc. Buxa, Jalpaiguri district, Bengal).
- 1935. *Japalura variegata*, Smith, *Fauna Brit. Ind.* 2 : 173.



76



78



77

Figs. 76-78 : 76. *Japalura variegata* : Lateral view of head and anterior body; 77. Skull : *Japalura variegata* Gray; 78. *Japalura variegata* Gray : Mandible and Hyoid apparatus.

This is comparatively a larger species with a compressed body and concealed tympanum. Dorsal colour is Olive, brown or green with brown, red and yellow spots; back is striped with light-brown; neck is with a white streak on sides; top of head with brownish cross-bars; upper labials absolutely white, tail is annulated with light-brown and dark-brown colour; gular pouch is with a large deep-blue or black spot; ventrum is greenish white. Head with keeled scales intermixed on the hinder portion with scattered conical tubercles 2-4 on each side near the origin of the nuchal crest; dorsal body scales small, unequal, keeled and intermixed with larger strongly keeled scales; all the scales of dorsum (except the scales of lowermost row) are pointed upwards and backwards; ventral

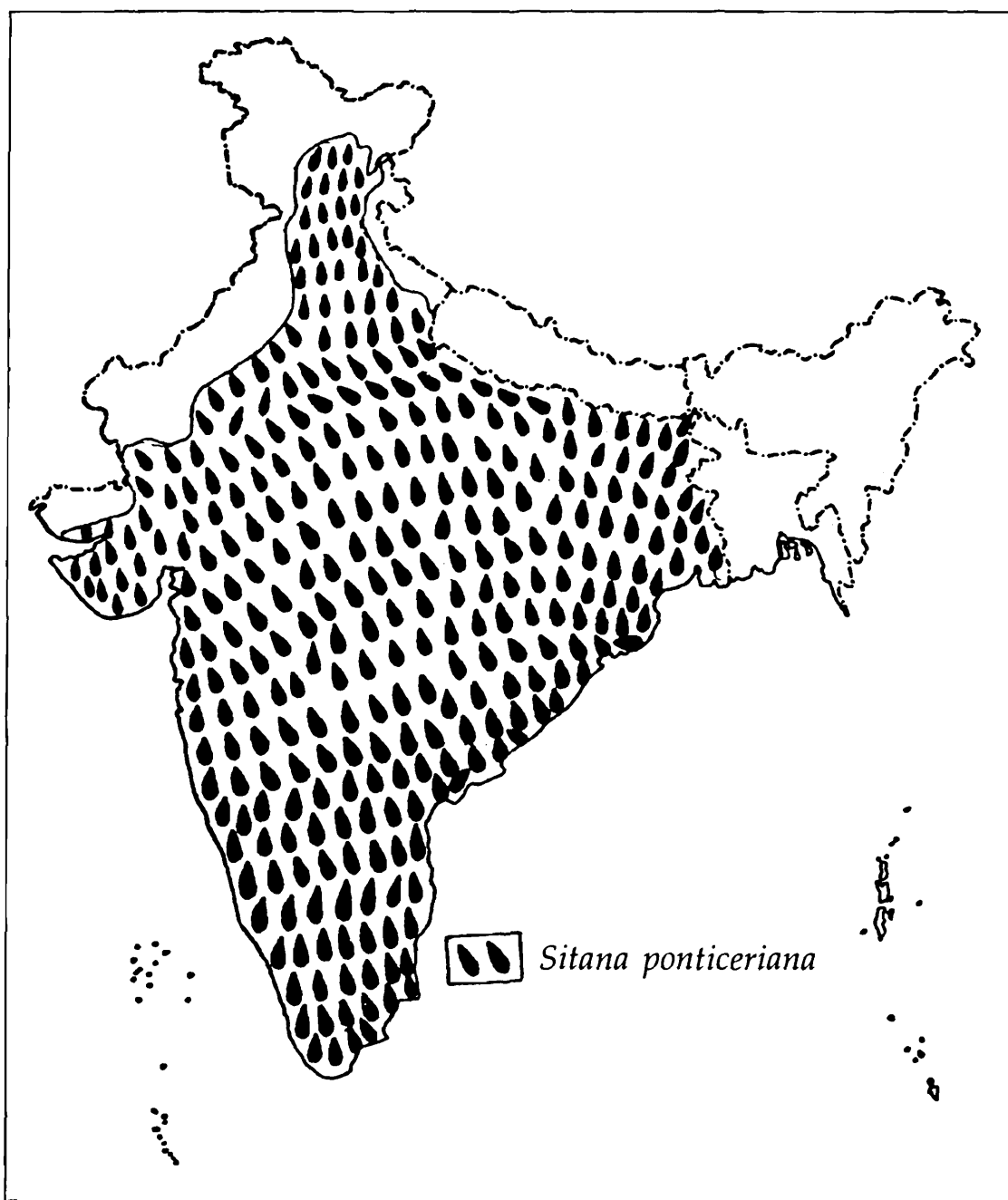


Fig. 38 : Distribution of *Sitana ponticeriana*.

scales are strongly keeled and as large as or slightly larger than the largest dorsal scales. Gular pouch is small which becomes well developed during the breeding season, gular scales are smaller than the other ventral scales; fold in front of the shoulders is feeble; in male there is a low nuchal crest, set on a fold of skin; dorsal crest is serrated, ridged. Limbs strong, well developed; fourth toe much longer than third; the hind-limb reaches to the eye. Tail much longer than the head and body; covered with smaller and larger keeled scales; the under side with uniform, strongly keeled scales. Standard length 110 mm.; tail length 205 mm.

Distribution : India : Eastern Himalayas (Sikkim, Darjeeling, Jalpaiguri) (Map 21).

Habits and habitat : Strongly terrestrial and high mountain dwelling available from 100-1000 metres. It can change its colour, insectivorous, and diurnal.

Status : Not endangered.

115. *Japalura hamptoni* Smith 1935
(Map 13)

1935. *Japalura hamptoni* Smith, *Fauna Brit. Ind.* 2 : p. 175.

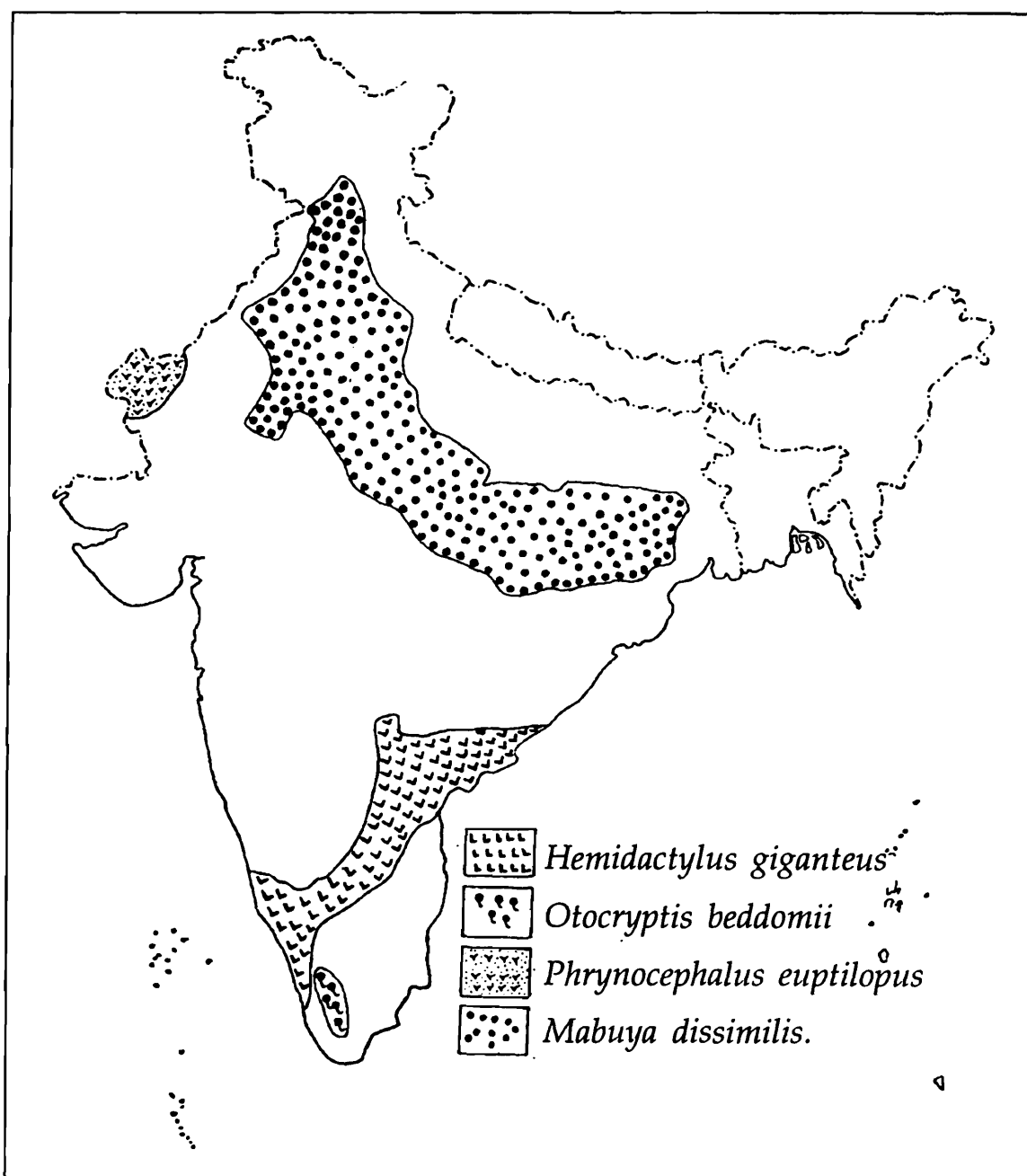
This moderately large agamid exhibits vivid colouration. The posterior part of head is deep green; anterior lateral half of body is with a distinct broad white stripe, which emerges just above the shoulders and stretches obliquely backwards and downwards; the interspaces of the dorsum and flanks, below the said white stripe are dark brown; the remaining parts of the body, limbs and tail are olive-grey and profusely dotted with black; ventral aspect of the complete body and tail is dirty-white, some black lines are distinctly available on the throat. The species is closely allied with *Japalura yunnanensis* from Southern China (Yunnan) from which it differs in having a comparatively larger head and marked colouration. The body is compressed. The head is quite large, one and a half times as long as broad, forehead concave; snout is slightly longer than the orbit; anterior head scales are unequal and rugose; canthus rostralis and supraciliary edge quite sharp; some spinose scales on the back of the head. Upper labials 8. lower labials 8; tympanum is hidden with scales; cheeks are generally swollen. Dorsum is with small, keeled scales, intermixed with much larger, more strongly keeled scales which are scattered all over; the scales on the anterior portion point backwards and upwards, the posterior scales point straight backwards; ventral scales are strongly keeled and almost half the size of largest dorsal scales; a small gular sac is present, which is covered by small scales which are equal in size to the scales available on the lateral aspects of throat but are almost half in size than the ventral scales; a feeble fold covered with small scales is present in front of the shoulders, this fold almost extends across the throat; nuchal crest is low and comprises six separated triangular spines; dorsal crest is like a serrated ridge. Limbs are moderately strong; third and fourth fingers are almost equal; third toe is slightly smaller than the fourth toe; the hind-limb extends to the posterior aspect of the

orbit. Tail is quite long, slightly swollen at the base; dorsal aspect covered with equal, keeled scales, except the scales in the median row, which are much larger and more strongly keeled than the adjoining scales. Standard length 75 mm.; tail length 165 mm.

Distribution : Burma (Mogok, Upper Burma). This species is known only by one specimen, collected by Mr. H. Hampton from the mentioned locality in 1908 (Map 13).

Habits and habitat : Terrestrial, rock dwelling, insectivorous, diurnal. Nothing is known about other habits.

Status : Rare.



Map 39 : Distribution of *Hemidactylus giganteus*, *Otocryptis beddomii*, *Phrynocephalus euptilopus* and *Mabuya dissimilis*.

Genus 35. *Salea* Gray 1845

1845. *Salea* Gray, *Cat. Liz. Brit. Mus.* : p. 242 (type *horsfieldi*)
 1851. *Mecolepis* Dumeril, *Cat. Meth. Coll. Rept.* : p. 87 (type *trispinosus*)
 1878. *Lophosalea* Beddome, *Proc. Zool. Soc.* : p. 153 (type *anamallayana*).
 1935. *Salea*, Smith, *Fauna Brit. Ind.* 2 : p. 177.

This genus from South India is represented by two species which have a compressed body; dorsum is with large, unequal (not heterogeneous) strongly imbricate scales; males are with a nuchal crest, dorsal crest and a gular sac, tail strongly compressed; femoral and preanal pores are not present.

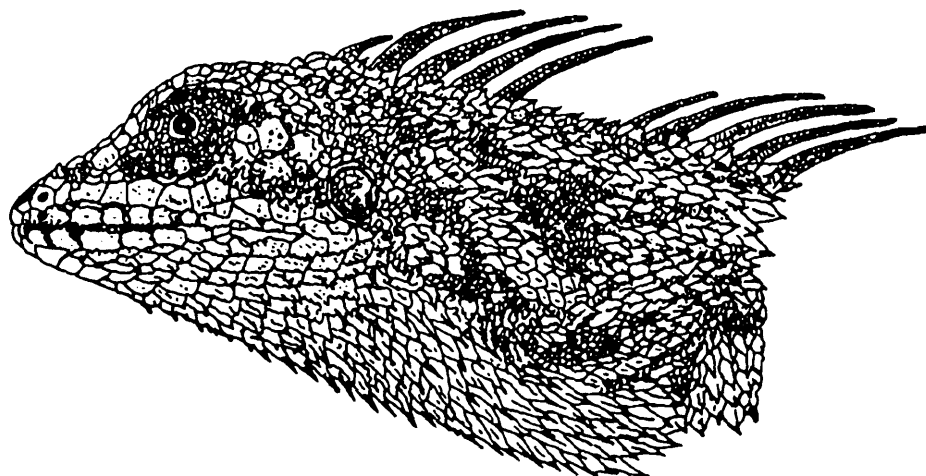
Key to the species of genus Salea

1. Dorsal scales uniform in size; no fold in front of the shoulder *S. horsfieldi*
2. Dorsal scales are most unequal in size; there is prominent fold in front of the shoulder.
 *S. anamallayana*

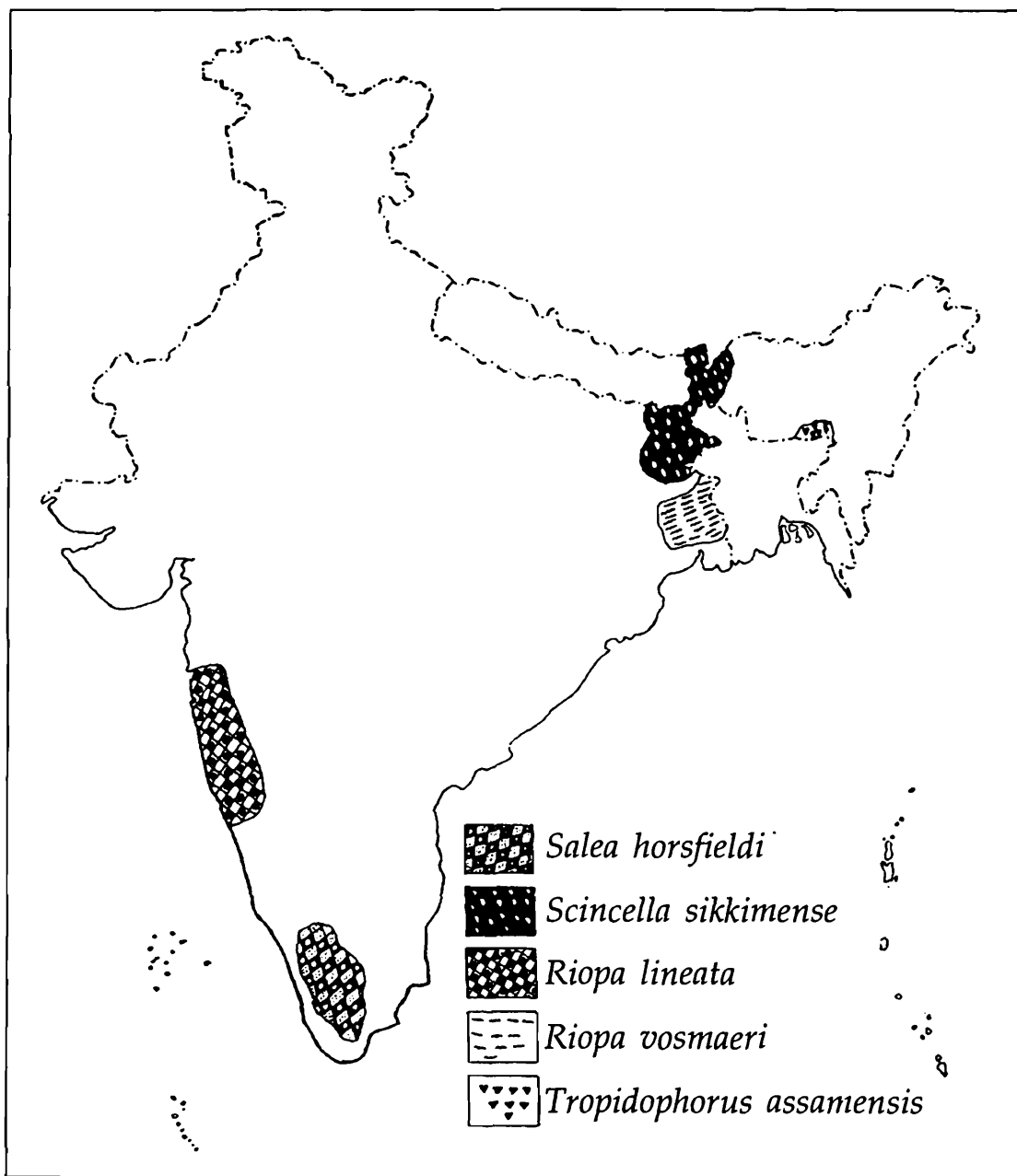
116. *Salea horsfieldi* Gray 1845

(Fig. 79, Map 40)

1845. *Salea horsfieldi* Gray, *Cat. Liz. Brit. Mus.* : p. 242 (type loc. India).
 1846. *Salea jerdonii* Gray, *Ann. Mag. Nat. Hist.* 18 : p. 429 (type loc. Nilgiri Hills)
 1851. *Mecolepis trispinosus* Dumeril, *Cat. Meth. Coll. Rept.* : p. 88 (type loc. Nilgiri Hills).
 1851. *Mecolepis hirsutus* Dumeril, *Cat. Meth. Coll. Rept.* : pp. 88 & 566, pl. 24, fig. 2 (type loc. Bengal).
 1851. *Mecolepis sulcatus* Dumeril, *Cat. Meth. Coll. Rept.* : pp. 89 & 567, pl. 24, fig. 3 (type loc. Nilgiri Hills).
 1935. *Salea horsfieldi*, Smith, *Fauna Brit. Ind.* 2 : p. 177.

Fig. 79 : *Salea horsfieldi* : Lateral view of head

This is a large lizard with compressed body and exposed tympanum. Dorsal colour is greenish-yellow or green in life, preserved examples look yellowish-brown; back and sides with broken up cross-bars or spots; enlarged scales on the flanks are whitish; a black band edged with white on both aspects, continuous from eye to the shoulder; thigh and tail are spotted or annulated with light brown and dark-brown colour; belly is whitish, spotted with brown. Head is long, covered above with unequal and rugose scales; Upper labials 7-9 and as many lower labials. Dorsal scales strongly imbricate, keeled, uniform with few larger scales on the flanks; the upper dorsal scales directed backwards; the lower dorsal scales are directed backwards and downwards; ventral scales including the gular ones are very strongly imbricate, keeled and mucronate; all scales of body more



Map 40 : Distribution of *Salea horsfieldi*, *Scincella sikkimense*, *Riopa lineata*, *Riopa vosmaeri* and *Tropidophorus assamensis*.

strongly imbricate in the male. The fold in front of the shoulders not present. Nuchal crest in male consists of 5-6 lanceolate spines directed backwards; dorsal crest is composed of shorter spines, not continuous with the nuchal crest, dorsal crest is not available in females but the nuchal crest is represented by a double row of short alternating, oblique spines; the gular sac in male is very short and extends up to the chest, in female the gular sac is indicated by a fold. Limbs moderately strong; fourth toe is slightly longer than the third; hind-limb reaches to the shoulder or the ear. The tail is much longer than the head and body, compressed in the male, with a low upper crest on its basal part, less compressed and devoid of a crest in the female; covered above with subequal strongly keeled scales. Standard length 75-95 mm.; tail length 155-250 mm.

Distribution : India : Nilgiri and Palni Hills (Map 40).

Habits and habitat : Found in bushes, hedges, gardens. It has the power of changing colour up to certain extent, insectivorous, diurnal and arboreal. Three to four oval eggs are laid with a diameter of 17×19 mm.

Status : Very common.

117. *Salea anamallayana* (Beddome 1878)
(Map 41)

1878. *Lophosalea anamallayana* Beddome, *Proc. zool. Soc.* : p. 153, pl. 14 (type loc. Anaimalai Hills, 6000 feet).
1828. *Salea anamallayana triangularis* Roux, *Rec. Suisse Zool.* 35 : p. 452 (type loc. Mariyanshola, Palni Hills).
1935. *Salea anamallayana*, Smith, *Fauna Brit. Ind.*, 2 : p. 179.

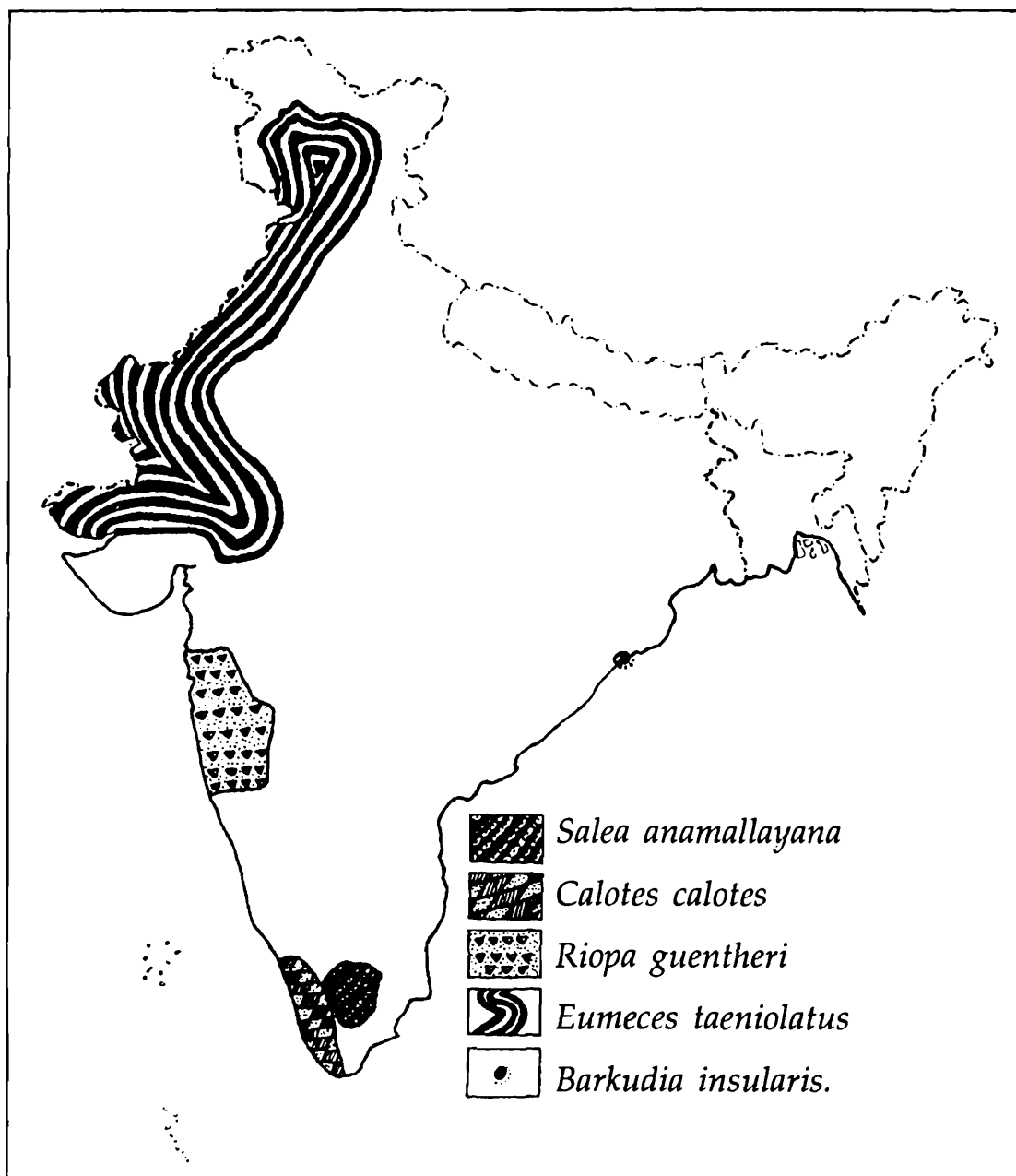
This is slightly larger and more robust than *Salea horsfieldi*. Dorsal colour is light brown with whitish spots; back with four most prominent triangular or V-shaped deep brown marks, these triangular marks are separated from each other by narrow whitish interspaces; upper lip white; a white stripe on the shoulders; limbs and tail annulated with light brown and dark colours; a short light streak on the lower thigh in continuation to the adjacent part of the tail; belly is white. The body is compressed; tympanum exposed; head is long, covered above with unequal, smooth or keeled, rugose scales; Upper labials 7-10 and as many lower labials. Dorsal scales unequal, strongly imbricate and keeled; the upper dorsal scales pointing upwards and backwards; the scales on flanks are pointing backwards or backwards and downwards; ventral scales including gulars are very strongly imbricate in the male than in the female. A strong fold in front of the shoulders is always present, the fold is somewhat curved and is covered with small scales. Nuchal and dorsal crests are continuous in males; both the crests are formed by large lanceolate spines, almost of equal length; nuchal crest of female consists of 6-8 short spines, which are continuous on the back as a serrated ridge. Male is with a large gular sac, which extends up to the chest; in female the gular sac is represented by a short fold. Limbs are moderately

long; fourth toe is slightly longer than the third; third and fourth fingers are equal; the hind limb reaches to the neck. Tail is much longer than the head and body; strongly compressed in the male and is with a well developed crest; the female is with a comparatively less compressed tail, which is devoid of a crest; covered above with almost equal, strongly keeled scales. Standard length 85-110 mm; tail length 165-200 mm.

Distribution : Anaimalai, Palni and other hills of South-western India; Malabar coast (Map 41).

Habits and habitat : Rock dwelling, terrestrial, insectivorous, diurnal species recorded up to 700 metres altitude.

Status : Rare.



Map 41 : Distribution of *Salea anamallayana*, *Calotes calotes*, *Riopa guentheri*, *Eumeces taeniolatus* and *Barkudia insularis*.

Genus 36. *Calotes* Rafinesque 1815

1815. *Calotes* Rafinesque, *Anal. Nat.* : p. 75 (nom. nud.).
 1817. *Calotes* Cuvier, *Regne Anim.* 2 : p. 35 (type *Lacerta calotes* Linn).
 1827. *Bronchocela* Kaup, *Isis* : p. 619 (type *Agama cristatella* Kuhl).
 1843. *Lophodeira* Fitzinger, *Syst. Rept.* : pp. 15 & 46 (type *Bronchiocela cristatellus* Kaup).
 1843. *Pseudocalotes* Fitzinger, *Syst. Rept.* : pp. 15 & 46 (type *Bronchocela tympanistriga*).
 1885. *Goniocephalus* and *Acanthosaura* (in part), Boulenger, *Cat. Liz. Brit. Mus.* 1.
 1935. *Calotes*, Smith, *Fauna Brit. Ind.* 2 : p. 180.

This genus is large and comprises about 30 species from Oriental Region, East Indian Archipelago and west of New Guinea. These agamids are with compressed body; dorsal scales are regularly arranged, uniform (except in *Calotes kakhienensis*); a dorsal crest is generally present, in some cases is less developed as more denticulations; gular sac is generally available; an oblique fold or pit is generally present with the exception of few species where such structures are missing, tympanum is open, not covered with scales. Tail is comparatively longer, slender, in males swollen and rounded at the base, the scales on the swollen and rounded basal part are enlarged and thickened; femoral and preanal pores are not present.

Key to the species of genus Calotes

- I. Lateral scales of body pointing backwards and downwards; fourth finger as long as the fifth toe.
- A. The hind-limb reaches at least to the eye; dorsal body scales are smaller than the ventral scales.
1. Colour is green; 6-10 upper dorsal scale-rows pointing backwards and upwards; scales round the body 60-100..... *Calotes cristatellus*
 2. Colour is green; 2-4 upper dorsal scale-rows pointing backwards and upwards; scales round the body 45-55..... *Calotes jubatus*
 3. Colour is blackish or reddish chocolate; 5-6 upper dorsal scale-rows pointing backwards and upwards; scales round the body 48..... *Calotes danieli*
- B. The hind-limb reaches to the shoulder; dorsal body scales are not smaller than the ventral scales; colour is brownish; 65-72 scales round the body.
 *Calotes microlepis*
- II. Lateral scales of body pointing backwards and upwards.
- A. No fold or pit in front of the shoulder.
1. Colour is brown; 35-52 scales round the body; two erect and separated spines above the tympanum; no erect row of scales by the side of neck; snout is long.
 *Calotes versicolor*

2. Colour is whitish with black variegations; 50 scales round the body; two erect separated spines above the tympanum; one erect row of scales by the side of neck; snout is short *Calotes bhutanensis*
 3. Colour is green; 53-63 scales round the body; no spines above tympanum; two parallel rows of compressed scales above tympanum..... *Calotes maria*
- B. An oblique fold or triangular pit is available in front of the shoulder which is covered with small granular scales.
- (a) Dorsal scales are unequal in size *Calotes kakhienensis*
 - (b) Dorsal scales are equal in size.
 1. Ventral scales are smaller than the dorsal scales.
 - i. Colour is green; two parallel rows of compressed scales above the tympanum; 45-57 scales round the body. *Calotes jerdoni*
 - ii. Colour is brown; 49-65 keeled scales round the body; a postorbital spine is present *Calotes emma*
 - iii. Colour is olivaceous or brownish-grey; 48-58 keeled scales round the body; postorbital spine not present; fourth toe is longer than third. *Calotes mystaceus*
 - iv. Colour is greenish-brown; 36-43 scales round the body; fourth toe is slightly longer than the third; lateral body scales are smooth. *Calotes nemoricola*
 - v. Colour is green; 27-35 scales round the body; fourth toe is slightly longer than the third; lateral body scales are smooth. *Calotes grandisquamis*
 2. Ventral scales are not smaller than the dorsal scales; a row of 8-9 compressed spines above the tympanum; colour is brilliant green above. *Calotes calotes*
- III. Lateral scales of body pointing backwards or backwards and downwards; an oblique fold or slight pit in front of the shoulders.
1. Dorsal crest not present; head with two separated spines above the tympanum; lateral scales pointing straight backwards; ventral scales are smaller than the dorsals; 54-60 scales round the body; colour is olivaceous or brownish above. .. *Calotes ceylonensis*
 2. Dorsal crest is present; head with two well separated spines or groups of 2 or 3 spines above the tympanum; lateral scales pointing backwards and downwards; ventral scales are much smaller than the dorsals; 33-39 scales round the body; colour is green, olivaceous or brown above. *Calotes liolepis*

3. Dorsal crest is present; head without the spines above the tympanum; lateral scales pointing backwards and downwards; ventral scales as large as the dorsal scales; 43-50 scales round the body; colour is green, bluish-green or olivaceous above *Calotes liocephalus*
 4. A nucho-dorsal crest is present, head without the spines above the tympanum; lateral scales pointing backwards and downwards; ventral scales are smaller than the dorsals; 45 scales round the body; colour is greyish-brown above.
..... *Calotes kingdom-wardi*
 5. Dorsal crest is like a serrated ridge; head without the spines above the tympanum; lateral scales pointing backwards and downwards; ventral scales are as large as the dorsals; 67 scales round the body; colour is green above.
..... *Calotes andamanensis*
 6. Dorsal crest is moderately developed; head with a row of spines above and posterior to the tympanum; ventral scales are larger than the dorsals; 42-50 scales round the body; colour is greenish above. *Calotes nigrilabris*
- IV. A long fold is present in front of the shoulders, which extends across the throat; two spines on each side of the back of the head.
1. Dorsal crest is a mere denticulation; no spine behind the supercilium; 50-60 scales round the body; no white spot below the eye, colour is olive-brown above.
..... *Calotes rouxi*
 2. Dorsal crest is a mere denticulation; a spine is present behind the supercilium; 53-60 scales round the body; a white spot is present below the eye; colour is olive above. *Calotes elliotti*

118. *Calotes cristatellus* (Kuhl 1820)

(Map 11)

1820. *Agama cristatellus*, Beitr, Zool. Vergl. Anat. 1 : p. 108 (type loc. unknown)
1820. *Agama gutturosa* Merrem, Tent. Syst. Amphib. : p. 51 (type loc. "America"; based on Seba, 1, pl. 89, fig. 1 & 2).
1827. *Bronchocela cristatella*, Kaup, isis, : p. 619.
1830. *Agama moluccana* Lesson, Voy, Conquille, Rept. : pl. 1, fig. 2.
1861. *Pseudocalotes archiducissae* Fitzinger, Sitz. Acad. wiss. wien, Bd. 42 (nom. nud.)
1878. *Bronchocela burmana* Blanford, J. Asit. Soc. Beng. 48 : p. 127 (type loc. Tavoy)
1885. *Calotes cristatellus*, Boulenger, Cat. Liz. Brit. Mus. 1 : p. 316.
1935. *Calotes cristatellus*, Smith, Fauna Brit. Ind. 2 : p. 184.

This is a long headed, strongly compressed bodies, slender-limbed, long tailed green coloured species. Oblique fold or pit is not present in front of the shoulder; a horizontal

projecting fold of skin extends from behind the lower jaw to above the shoulder. Upper labials 8-10 and as many as lower labials. Cheeks not swollen; fore-head concave, upper head scales unequal strongly keeled; 4-5 scales on temple. The scales on the side of the body pointing downwards and backwards; six to ten upper dorsal scale rows pointing backwards and upwards. In the adult male the base of the tail is not much swollen; caudal scales are keeled, of the same type, lower ones largest. The hind-limb reaches at least to the eye; fourth finger as long as the fifth toe; ventral scales three to five times larger than the dorsal scales; strongly keeled, mucronate; 60-100 scales round the middle of body; gular pouch reduced to a slight fold; gular scales smaller than the ventrals; nuchal crest is made up of about 10 erect and compressed spines; dorsal crest is like a serrated ridge. Standard length 130 mm.; tail length 440 mm.

Distribution : India : Nicobar and Great Nicobar Islands. Elsewhere : Almost complete Indo-Malayan and Indo-chinese sub regions (Map 11).

Habits and habitat : This is an arboreal, insectivorous, diurnal species having a power of changing colour from green to yellow, grey, black brownish very fast. It lays about 30 oval eggs each with a length of about 11 mm.

Status : Number is reducing.

119. *Calotes jubatus* (Dum. & Bibr. 1837) (Map 12)

1837. *Bronhocela jubata* Dum. & Bibr., *Erp. Gen.* 4 : p. 397 (type loc. Java).

1935. *Calotes jubatus*, Smith, *Fauna Brit. Ind.* 2 : p. 185.

Resembles *Calotes cristatellus* in general configuration but size is slightly larger, dorsal colour is green with large yellow or red spots, elongated markings or vertical stripes (mainly on the anterior part of the body); large chocolate spots on flanks and throat; lips are of chocolate colour; light greenish belly. Fore-head concave; upper head scales unequal, strongly keeled, a well marked Y-shaped series on the crown; 4-5 compressed scales on the temple; 8-10 upper labials and as many as lower labials; dorsal scales keeled the upper 2-4 rows pointing upwards and backwards; the scales on the flanks pointing backwards and downwards; ventral scales two to three times as large as the laterals, strongly keeled, mucronate; from 45-55 scales round the middle of the body; nuchal and dorsal crests are present; limbs long and slender; fourth toe longer than the third, third and fourth fingers are almost equal; the hind-limb reaches to between the eye and the tip of the snout. Tail quite long, subtriangular at the base, covered with regular keeled scales, at the underside the scales are largest. Standard length 150 mm., tail length 450 mm.

Distribution : India : Nicobar Islands. Elsewhere : Java, Philippine Islands (Map 12).

Habits and habitat : Arboreal, insectivorous, diurnal. Lays spindle shaped eggs.

Status : Number is reducing.

120. *Calotes microlepis* Boulenger 1887

(Map 12)

1887. *Calotes microlepis* Boulenger, *Civ. Genova*, (2) 5 : p. 476, pl. 6, fig 1 (type loc. Pla-pu, 1200 metres, w. of Mt. Muleyit, N. Tenasserim).

1935. *Calotes microlepis*, Smith, *Fauna Brit. Ind.*, 2 : p. 187.

This moderately large strongly compressed agamid is with a golden-brown dorsum with black specks, black streaks radiate from eyes; gular pouch in males is of chocolate colour. The head is large, two times longer than wide; snout one and a half times long as the orbit; fore-head is almost flat; the scales on the upper part of head are unequal and keeled; fore-head is with an inverted Y-shaped series of enlarged scales; canthus rostralis and supraciliary edge is moderately sharp. Upper labials 8-10 and same is the number of lower labials; diameter of the tympanum is not more than half that of orbit. Dorsum is with smooth feebly keeled scales, all pointing backwards and downwards, larger than the median ventral scales; ventral scales are strongly keeled; 62-72 scales round the middle of the body, the upper 2 or 3 dorsal rows pointing straight backwards. Gular pouch is very small in the male; gular scales are keeled, as large as or little smaller than the ventral scales. Nuchal crest comprises 6-9 erect, compressed spines; dorsal crest is like a serrated ridge, not found in females. Limbs are weak, third and fourth fingers are almost equal in length; third and fourth toes are subequal; the hind-limb reaches to the axilla or the shoulder. Tail is compressed, covered with keeled scales; the basal part of the tail is swollen in the mature males, the scales on this part are thickened; the caudal scales on the dorsal median row are enlarged and form a serrated ridge. Standard length 65-85 mm., tail length 150-185 mm.

Distribution : Burma (Mt. Muleyit, Tenasserim), India (Manipur), Vietnam (Langbian Plateau) (Map 12).

Habits and habitat : Arboreal, insectivorous, diurnal. Nothing is known about other habits.

Status : Rare.

121. *Calotes kakhienensis* (Anderson 1878-9)

(Map 12)

1878.-9 *Oriocalotes kakhienensis*, Anderson, *Zool. Res. W Yunnan* : p. 806, pl. 76, fig. 1 (type loc. Pensee, W. Yunnan).

1885. *Acanthosaura kakhienensis*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 305.

1887. *Calotes feae* Boulenger, *Ann. Mus. civ. Genova*, (2) 5 : p. 477, pl. 6, fig. 2.

1935. *Calotes kakhienensis*, Smith, *Fauna Brit. Ind.* 2 : p. 188.

This large compressed agamid is pale greenish-olive above, with light and dark-brown variegations on the back and other parts of the body; these colours form broad transverse

markings upon the body; ventral parts are light greenish with brown dots or streaks all over; lips with dark vertical bars; a dark stripe from the eye to the ear. The head is large, one and two-thirds to one and a half times longer than broad; snout is prominent, longer than the orbit; dorsal aspect of head is with unequal, obtusely keeled scales; canthus rostralis and supraciliary edge is moderately sharp; one, two or three separated spine like scales between the nuchal crest and the ear; diameter of the tympanum is at least half that of the orbit; cheeks are swollen in adult males. Upper labials are 7-9 and same is the number of the lower labials. Dorsum is with moderately large keeled scales, intermixed with larger keeled scales, which are more in number on the flanks either singly or in patches; the upper dorsal scales point backwards and upwards, the lower dorsals point backwards and downwards; ventral scales are strongly keeled, almost as large as the small dorsals; 56-66 scales round the middle of the body. Gular pouch is absent; gular scales smooth or feebly keeled; median gular scales smaller than the ventral scales; median gular scales are much smaller than the scales present on cheeks, which are subquadrangular in shape. A small triangular pit is present in front of the shoulders which is covered with small scales. Nuchal crest is well developed, comprises 7-9 separated spines, the longest, in the male is almost as long as the orbit, dorsal crest is a mere denticulation, which is not present in females. Limbs moderately large; third and fourth fingers are almost equal; third toe is slightly smaller than the fourth; the hind-limb reaches to the neck or the axilla. Tail is compressed, covered with subequal keeled scales; in the adult male tail is strongly swollen at the base and covered with large thickened scales; the scales of the upper median row form a serrated ridge. Standard length 125 mm., tail length 225 mm.

Distribution : Burma (Hilly areas east of the Irrawadi river), western Yunnan (Map 12).

Habits and habitat : Insectivorous, arboreal, diurnal.

Status : Rare.

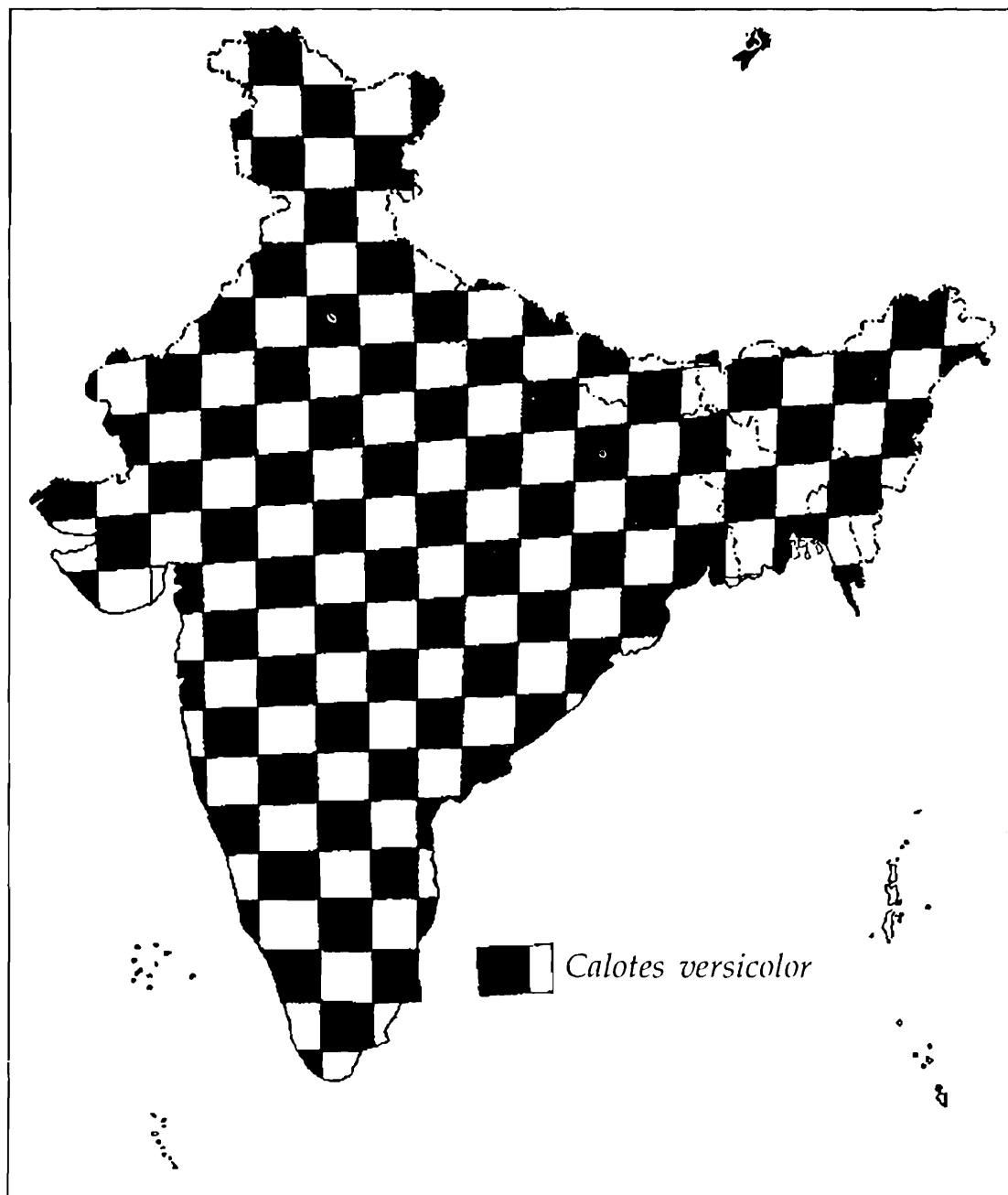
122. *Calotes versicolor* (Daudin 1802)

(Fig. 3, Map 42)

- 1802. *Agama versicolor* Daudin, *Hist. Nat. Rept.* 3 : p. 395, pl. 44, (type loc. India).
- 1820. *Agama tiedmanni* Kuhl, *Beitr. Zool. Vergl. Anat.* 1 : p. 109 (type loc. Pondicherry).
- 1825. *Agama vultuosa* Harlan, *J. Acad. Philad.* 4 : p. 296, pl. 19 (type loc. Calcutta).
- 1827. *Agama indica* Gray, *Zool. Journ.* 3 : p. 217 (type loc. Dum-Dum, Calcutta).
- 1827. *Calotes tiedmanni*, Kaup, *Isis.* : p. 619, pl. 8.
- 1844. *Calotes cristatus* Jacquemont, *Voy. dans l'Indie, Zool. Atlas*, 2 : Descript des collections, pl. 11.
- 1846. *Calotes viridis* Gray, *Ann. Mag. Nat. Hist.* 18 : p. 429 (type loc. Madras).
- 1853. *Calotes versicolor*, Jerdon, *J. Asiat. Soc. Beng.* 22 : p. 470.
- 1853. *Calotes gigas* Blyth, *J. Asiat. Soc. Beng.* 12 : p. 648 (type loc. Not known).
- 1921. *Calotes versicolor major* Annandale, *Rec. Ind. Mus.* 22 : p. 331.
- 1935. *Calotes versicolor*, Smith, *Fauna Brit. Ind.* 2 : p. 189.

The body is compressed, dorsal colour light-brown greyish, transverse spots on back and sides, dark streak from eyes; head is large, swollen at angle of jaws in males; eye large; males with gular sac; limbs long well developed; digits long, slender, slightly compressed laterally, strongly clawed; tail almost round, slender. Head scales irregular, juxtaposed; 10-13 upper labials, 11-14 lower labials; body scales keeled, imbricate, with pointed tips; scales in 37-47 rows at mid-body; a dorsal crest is present, which is more prominent in males. Standard length 86-129 mm.; tail length 300-350 mm.

Distribution : India : whole of India, Elsewhere : Sumatra to South China, Sri Lanka, Pakistan, Afghanistan (Map 42).



Map 42 : Distribution of *Calotes versicolor*.

Habits and habitat : Arboreal species in a true sense, available where shrubs and trees are present; most plentiful in the vicinity of streams, riversides, gardens, desert oases. These lizards are excellent climbers and can jump from branch to branch, their prehensile toes and long tail proves to be most useful in balancing the body for such an arboreal mode of existence. These lizards are mainly insectivorous and the food comprises grasshoppers and their nymphs (Acrididae, Blattidae); butterflies, moths and their caterpillars; ants; beetles; earwigs; spiders; centipedes and vegetables matter like grass, leaves, twigs of delicate plants and seeds. The observations further add in its diet like arthropod eggs, honey bees, small crustaceans (Conchostraca), bugs and dipterous maggots. The presence of maggots in the gut suggests that the lizard is a carion feeder also. Breeding takes place in summer and in May and June males acquire most brilliant breeding colours and become most pugnacious and aggressive towards other males. Females with large ovidual eggs are available from June to September. About 6-25 eggs are laid generally between June to September. Generally a female lays 7 clutches of eggs in a season. Eggs are deposited in 10-12 cm. deep holes dug by the female itself in soft soil. Eggs are generally 10-15 mm. long and 4-9 mm. broad; the egg shells are smooth, soft and pliable.

Status : Most common, throughout its range.

123. *Calotes maria* Gray 1845

(Map 2)

1845. *Calotes maria* (in part) Gray, *Cat. Liz. Brit. Mus.* : p. 243 (type loc. "Afghanistan" and Khasi Hills).

1852. *Calotes platyceps* Blyth, *J. Asiat. Soc. Beng.* 21 : p. 354 (type loc. Cherrapunji).

1935. *Calotes maria*, Smith, *Fauna Brit. Ind.* 2 : p. 193.

The body is compressed, dorsal colour is green with red streaks and spots, the head of male assumes a brilliant red colour in the breeding season. Head is large; males are not with a gular pouch; limbs are moderately developed, third and fourth finger almost equal, fourth toe larger than third, the hind-limb reaches to the eye or a little more; tail almost round, slender, feebly compressed, covered with keeled scales. Head scales unequal, keeled and tuberculated; 9-11 upper labials, as many as lower labials; body scales large keeled, pointing backwards and upwards, larger than ventral scales; ventral scales strongly keeled, mucronate; scales in 53-63 rows at mid-body; nuchal and dorsal crests are moderately developed in both the sexes. Standard length 120 mm; tail length 370 mm.

Distribution : India : Khasi Hills in Assam (Map 2).

Habits and habitat : Insectivorous, arboreal and diurnal. Other habits are more or less like *Calotes versicolor*.

Status : Rare, Undeterminate.

124. *Calotes jerdoni* Gunther 1870
(Map 28)

1845. *Calotes maria* (in part) Gray, *Cat. Liz. Brit. Mus.* : p. 243.
 1870. *Calotes platyceps* (not of Blyth) Jerdon, *P. Asiat. Soc. Beng.* : p. 77.
 1870. *Calotes jerdonii* Gunther. *Proc. Zool. Soc.* : p. 778, pl. 45, fig. A (type loc. Khasi Hills).
 1878-79. *Calotes maria* (not of Gray), Anderson, *Zool. Res. w. Yunnan* : p. 806.
 1905. *Calotes yunnanensis* Annandale, *J. Asiat. Soc. Beng.* 1 : p. 87 (type loc. Teng-Yuch (Momein), w. Yunnan).
 1935. *Calotes jerdoni*, Smith, *Fauna Brit. Ind.* 2 : p. 194.

This compressed bodied lizard is with a deep-green dorsal colouration with yellow, orange or brown spots. The species resembles *Calotes maria* in pholidostic and other characters except that 45-57 scales round the body; gular scales much larger than the ventral scales; there is an oblique curved fold covered with small granular scales in front of the shoulders; nuchal crest is less prominent; the hind-limb reaches to the eye or not quite so far. Standard length 100 mm.; tail length 285 mm.

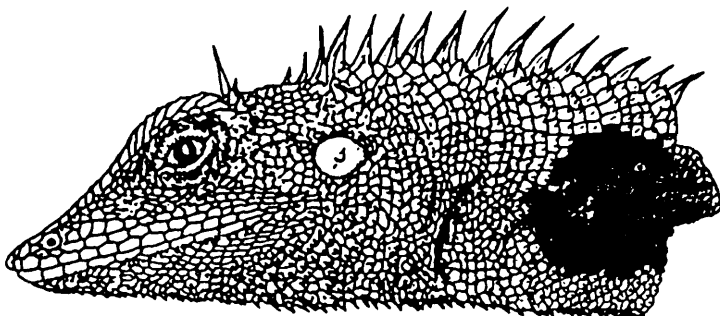
Distribution : India : Khasi Hills, Assam, Elsewhere : Burma, Southern China (Map 28).

Habits and habitat : Insectivorous, diurnal, terrestrial and arboreal. Said to be laying 12 eggs in a clutch.

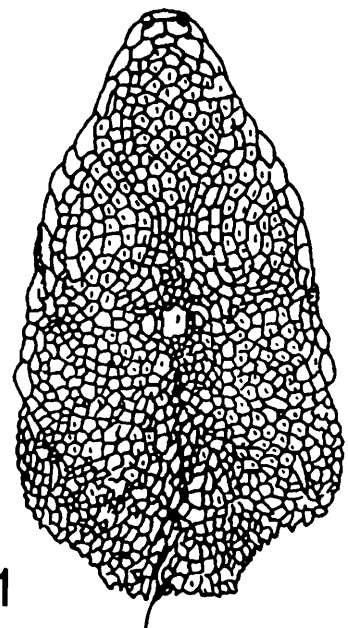
Status : Rare, Undeterminate

125. *Calotes emma* Gray 1845
(Figs. 80 & 81, Map 30)

1845. *Calotes emma* Gray, *Cat. Liz. Brit. Mus.* : p. 244 (type loc. "Afghanistan")
 1925. *Calotes alticristatus* Schmidt, *Amer. Mus. No. 175* : p. 2, (type loc. Yunnan-fu).
 1935. *Calotes emma*, Smith, *Fauna Brit. Ind.* 2 : p. 195.



80



81

Figs. 80-81 : 80. *Calotes emma* : Lateral view of head; 81. *Calotes emma* : Dorsal view of head.

The body is compressed. Dorsal colour is faint olive-brown, with dark brown transverse bars on the back; fold in front of the shoulders black; gular bulging blackish; dirty white below. Head is moderately large; gular pouch is not available, but during the breeding season male develops some bulging; limbs are moderately developed, fourth toe is longer than third toe, third and fourth fingers are equal, the hind-limb reaches to the eye or not quite so far; tail slightly compressed covered with equal scales. Head scales unequal, keeled or tuberculated; 9-12 upper labials and as many as lower labials; body scales large, keeled, pointing backwards and upwards, scales of the flanks generally pointing backwards or backwards and downwards and are larger than the ventral scales, ventral scales are strongly keeled and mucronate; scales in 49-65 rows at mid-body; nuchal and dorsal crests are present and well developed in both the sexes anteriorly. Standard length 115 mm.; tail length 290 mm.

Distribution : India : Assam (Golpara to Garo Hills). Elsewhere : Burma, Thailand, South Vietnam, Southern China and Malaysia (Map 30).

Habits and habitat : Strictly arboreal on mountain forests; insectivorous, diurnal, lays 4-12 oval eggs (17×11 mm) on excitement its head region become blackish.

Status : Rare.

126. *Calotes mystaceus* Dum. & Bibr. 1837
(Map 43)

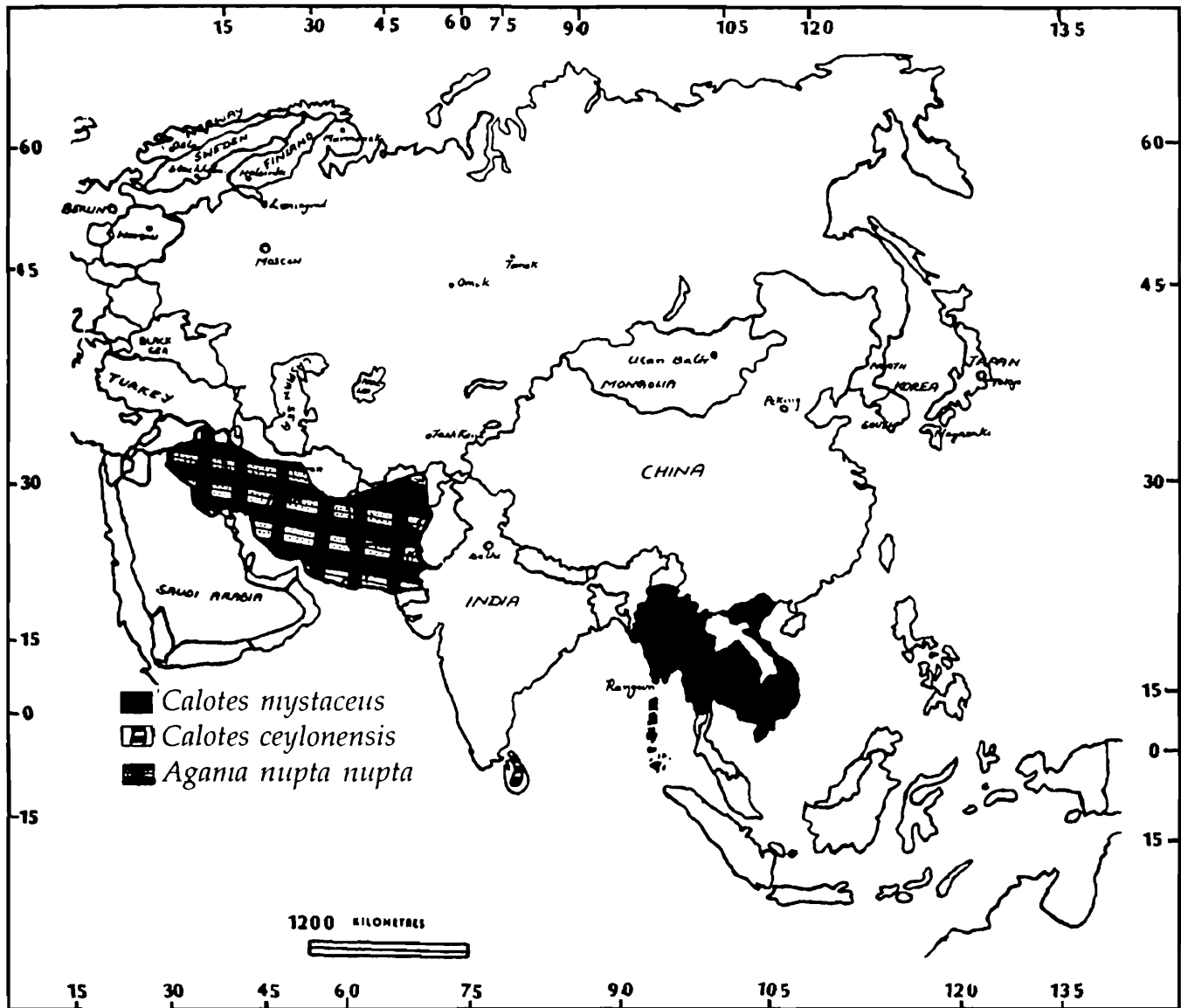
1837. *Calotes mystaceus* Dum. & Bibr., *Erp. Gen.* 4 : p. 408 (type loc. Burma)

1935. *Calotes mystaceus*, Smith, *Fauna Brit. Ind.* 2 : p. 197.

The body is compressed. Dorsal colour is brownish, greyish, olivaceous with faint spots all over; three to five large brick-red spots on each flank; upper lip whitish or yellowish; belly is dirty white. Head is moderately large; gular pouch is small, becomes larger in males during the breeding season; limbs are moderately developed, fourth toe is longer than the third toe, third and fourth fingers are almost equal, the hind-limb reaches to the neck or the posterior border of the orbit; tail is slightly compressed, covered with almost equal, keeled scales. Head scales unequal, smooth or keeled; 9-13 upper labials and as many lower labials; body scales strongly keeled, pointing backwards and upwards, two times larger than the ventral scales; ventral scales are strongly keeled; 48-58 scales round the middle of the body; nuchal and dorsal crests are present which are continuous and well developed in the male. Standard length 140 mm.; tail length 200 mm.

Distribution : India : Andaman and Nicobar Islands. Elsewhere : The complete Indo-chinese subregion (Map 43).

Habits and habitat : Insectivorous, diurnal, arboreal. Generally 15-18 eggs (10×11 mm.) are laid in a single clutch which are buried by female about 2 to 3 inches deep in soft soil.



Map 43 : Distribution of *Calotes mystaceus*, *Calotes ceylonensis* and *Agama nupta nupta*.

127. *Calotes nemoricola* Jerdon 1853
(Map 22)

1853. *Calotes nemoricola* Jerdon, J. Asiat. Soc. Beng. 22 : p. 471 (type loc. Coonoor Ghat, Nilgiri Hills).

1935. *Calotes nemoricola*, Smith, Fauna Brit. Ind. 2 : p. 199.

The body is compressed. Dorsal colour is green or brownish with faint markings; throat is with black streaks; belly is dirty white; gular pouch is pink. Head is moderately large; gular pouch is small; a short oblique pitted, fold in front of the shoulder covered with small granular scales; limbs are moderately developed, fourth toe is slightly longer than the third toe, third and fourth fingers are almost equal; the hind-limb reaches to the tympanum or slightly less; tail is slightly compressed, covered with almost equal keeled scales. Head scales unequal, smooth or feebly keeled; 9-11 upper labials and as many

lower labials; dorsal body scales are very large about three times as large as the median ventrals, smooth, pointing upwards and backwards; ventral scales are strongly keeled; 36-43 rows of scales round the middle of the body; nuchal and dorsal crests are present. Standard length 145 mm.; tail length 330 mm.

Distribution : India : Nilgiri Hills (Map 22).

Habits and habitat : Insectivorous, diurnal and perfectly arboreal.

Status : Rare.

128. *Calotes grandisquamis* Gunther 1875

(Map 31)

1875. *Calotes grandisquamis* Gunther, *Proc. Zool. Soc.* : p. 226, pl. 30 (type loc. foot of Canoot Ghat, near manantoddy, Bramagherry Hills).

1935. *Calotes grandisquamis* Smith, *Fauna Brit. Ind.* 2 : p. 200.

In size, pholidostic and other characters this species is closely similar to *Calotes nemoricola* except that the head is comparatively larger; dorsal and ventral body scales are larger; 27-35 rows of scales round the middle of body; scales on each side of the lower jaw are larger and smooth; nuchal and dorsal crests are well developed comparatively in male; the hind-limb reaching to the tympanum or slightly further. Dorsal colour is green, sometimes with prominent transverse bars on the back.

Distribution : India : Anaimalai and Bramagherry Hills; Ponmudi (Malabar coast) (Map 31).

Habits and habitat : Insectivorous, diurnal, arboreal; lays 6-12 oval eggs.

Status : Rare.

129. *Calotes calotes* (Linnaeus 1758)

(Map 41)

1758. *Lacerta calotes* Linnaeus, *Syst. Nat.* 10th ed. : p. 207 (type loc. Sri Lanka)

1802. *Agama calotes*, Daudin, *Hist. Nat. Rept.* 3 : p. 361, pl. 42.

1820. *Agama lineata* Kuhl, *Beitr. Zool. Vergl. Anat.* : p. 108.

1820. *Agama ophiomachus* Merrem, *Tent. Syst. Amphib.* : p. 51.

1846. *Calotes ophiomachus*, Blyth, *J. Asiat. Soc. Beng.* 15 : p. 376.

1896. *Calotes calotes*, Lonnberg, *Bih. Svensk. Vet-Akad. Stockholm*, 22 : p. 15.

1935. *Calotes calotes*, Smith, *Fauna Brit. Ind.* 2 : p. 201.

The body is compressed, cheeks are swollen in adult male. Dorsal colour is bright green, with 5-6 dark green stripes on the back and tail; head yellowish-green; throat is red; belly light green and tail is dull brown. Head is moderately large; gular pouch is not present; a short oblique fold in front of the shoulder covered with small granular scales;

limbs are moderately developed, fourth toe is longer than the third toe, third and fourth fingers are almost equal, the hind-limb reaches to the front of the eye or slightly beyond; tail is very long and slender. Head scales unequal and smooth; 9-11 upper labials and as many lower labials; dorsal body scales are large, feebly keeled or smooth pointing upwards and backwards; ventral scales strongly keeled, mucronate almost as large or a little larger than the dorsal scales; 30-35 rows of scales round the middle of the body; nuchal and dorsal crests are present, more developed in males. Standard length 130 mm.; tail length 500 mm.

Distribution : India : Shevaroy Hills, Malabar coast, Nicobar Islands. Elsewhere : Sri Lanka (Map 41).

Habits and habitat : Insectivorous, diurnal and arboreal. Lays 6-12 eggs (18×12 mm.) at a time.

Status : Undeterminate.

130. *Calotes ceylonensis* Muller 1887

(Map 43)

1887. *Calotes mystaceus*, var. *ceylonensis* F. Muller, *Naturf. Ges. Basel*, 8 : p. 292, pl. 3 (type loc. Kambukan-aar, S.W. Sri Lanka).

1887. *Calotes kelaartii* Bevill, *Taprobanian*, 2 : p. 134 (type loc. N.W. Provinces, Sri Lanka).

1890. *Calotes ceylonensis*, Boulenger, *Fauna Brit. Ind.* p. 139.

1896. *Calotes saleoides* Werner, *Verh. Zool. bot. Ges. wien*, 44 : p.7 (type loc. Sri Lanka)

1935. *Calotes ceylonensis*, Smith, *Fauna Brit. Ind.* 2 : p. 202.

This is a small agamid with compressed body. The general dorsal colouration is olivaceous or brownish; posterior part of head and anterior dorsum are reddish brown and are with an alternate arrangement of distinct spots and transverse bars; posterior dorsum, including the tail is with dark cross-bars; upper lip is with a prominent pink stripe extending beyond the ear; sides of neck and chest are black or with black reticulations; gular portion is greyish or blackish; ventrum is light brown, with prominent angular bands. The head is distinct, one and a half times longer than broad; snout is slightly longer than the orbit; anterior portion of head is concave; upper portion of head is with smooth unequal scales; canthus rostralis and supraciliary edge is sharp; two well separated spines above the tympanum, the upper and anterior spine is in mid-way between the tympanum and the nuchal crest; diameter of the tympanum is almost half that of the orbit; cheeks are swollen in the mature male. Upper labials 10-12 and same is the number of the lower labials. Dorsum is with small, smooth or most feebly keeled scales, the anterior upper scales point backwards and upwards, while the others scales point straight backwards; dorsal scales are larger than the ventral scales; ventral scales are strongly

keeled and mucronate; 54-60 scales round the middle of the body. Gular sac is not present; gular scales are strongly keeled; gular scales are almost as large as the ventral scales. An oblique fold is present in front of the shoulders, which is covered with small granular scales. Nuchal crest is distinctly prominent in males and composed of 10-12 small spines. Dorsal crest is missing. Limbs are moderately long; third and fourth fingers are almost equal; third toe is smaller than the fourth toe; the hind-limb reaches to the tympanum or slightly more. Tail is quite long in comparison to the body, slender; in the adult male the tail is much swollen at the base, with large, thick, keeled scales; the scales of the upper median row form a feeble serrated ridge. Standard length 70 mm.; tail length 165 mm.

Distribution : Sri Lanka (Map 43).

Habits and habitat : Arboreal, forest dwelling, insectivorous, diurnal.

Status : Common.

131. *Calotes liolepis* Boulenger 1885
(Map 44)

1869. *Calotes nemoricola* (not or Jerdon), Gunther, *Proc. Zool. Soc.* : p. 507.

1885. *Calotes liolepis* Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 326, pl. 25, fig. 2 (type loc. Sri Lanka).

1935. *Calotes liolepis*, Smith, *Fauna Brit. Ind.* 2 : p. 203.

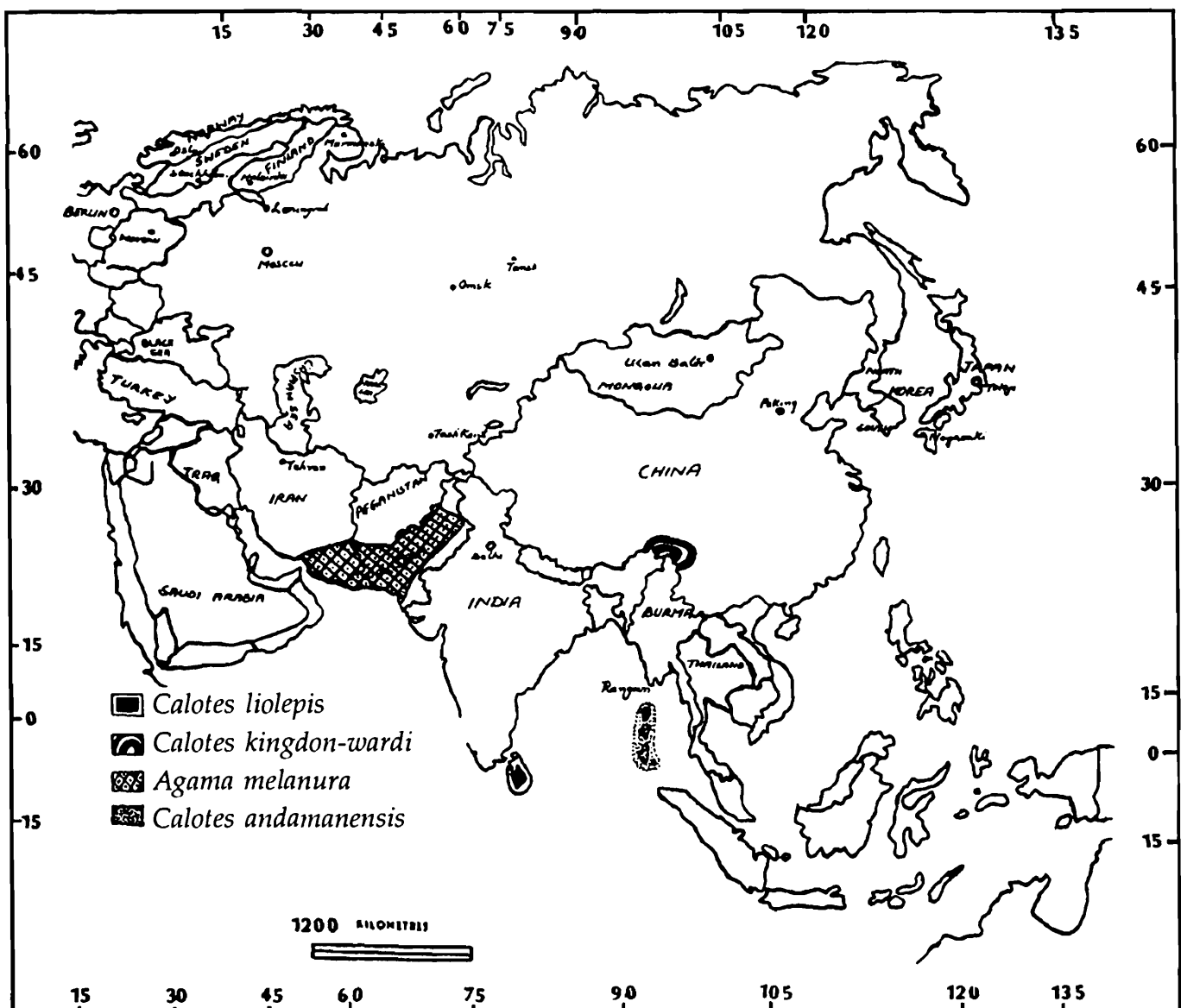
The agamid is moderately large, with compressed body. Dorsal colouration is green with white markings, a spot just below the eye, a streak behind the tympanum, and three transverse bars on the body, base of tail is greenish-brown; ventrum is whitish or greenish. In many individuals there are dark-brown spots on the head and other parts of body; gular fold is deep red with white spots. The head is distinct, one and a half times longer than broad; snout is slightly longer than the orbit; fore-head concave; upper portion of head is with smooth, unequal scales; canthus rostralis and supraciliary edge sharp; two well separated spines or groups of 2 or 3 spines above the tympanum, the upper and anterior spine is in mid-way between the tympanum and the nuchal crest; diameter of the tympanum is almost half that of the orbit; cheeks are swollen in the adult males. Upper labials 10-12 and same is the number of the lower labials. Dorsum is with large, smooth scales generally pointing backwards and downwards, in certain individuals upper one or two rows point backwards, dorsal scales are two to three times larger than the ventral scales; ventral scales are strongly keeled and mucronate; 33-39 scales round the middle of the body. Gular sac is not present or sometimes is represented by a fold in adult males; gular scales are feebly keeled, about as larger as the ventral scales. A short oblique fold is present in front of the shoulders, which is covered with small granular scales. Nuchal crest is distinctly prominent in males and composed of narrow, separated, lanceolate spines, the longest of which is equal to the diameter of the orbit. The dorsal crest is present and in continuation with the nuchal crest, its spines gradually decrease in size

posteriorly, ultimately forming a serrated ridge; in the females the dorsal crest is less prominent and lower. Limbs are moderately large; third and fourth fingers are almost equal; third toe is slightly smaller than the fourth toe; the hind-limb reaches to the tympanum or slightly farther. Tail is quite long in comparison to the body, slender, in the adult male it is much swollen at the base, with large, thick, keeled scales; the scales of the upper median form a feeble serrated ridge. Standard length 85 mm.; tail length 210 mm.

Distribution : Sri Lanka (Hilly areas of Punduluoya, Kandy, and Gammaduwa) (Map 44).

Habits and habitat : Rock dwelling, sub-arboreal, diurnal, insectivorous.

Status : Rare.



Map 44 : Distribution of *Calotes liolepis*, *Calotes kingdon-wardi*, *Agama melanura* and *Calotes andamanensis*.

132. *Calotes liocephalus* Gunther 1872
(Map 2)

1872. *Calotes liocephalus* Gunther, *Ann. Mag. Nat. Hist.* (4) 9 : p. 86 (type loc. Peradeniya district, Sri Lanka).

1935. *Calotes liocephalus*, Smith, *Fauna Brit. Ind.* 2 : p. 204.

This agamid is moderately large, closely allied to *Calotes liolepis* but differs in the following characters. General dorsal colour is green or bluish-green or olivaceous, with 5 or 6 angular reddish-brown cross-bars; upper lip and cheeks are with a brown streak or spotted with brown; in certain individuals dark cross-bars are present on the top of the head; ventrum is greenish-white; tail is alternately banded with light and dark except the basal portion of tail, which is light olive-brown. The head is large in males, devoid of spines; dorsal scales are smaller, feebly keeled and almost as large as the ventral scales; gular scales are as large as or slightly larger than the ventrals; 43-50 scales round the middle of the body; the hind-limb almost reaches to the eye. In adult males the head is quite large. The base of the tail is more swollen in comparison to the *liolepis*. Standard length 90 mm.; tail length 250 mm.

Distribution : Sri Lanka (Gammaduwa, Agrapatnas, Punduluoya) (Map 2).

Habits and habitat : Arboreal, diurnal, insectivorous.

Status : Rare.

133. *Calotes kingdom-wardi* Smith 1932
(Map 44)

1935. *Calotes kingdom-wardi* Smith, *Fauna Brit. Ind.* 2 : p. 204.

This little agamid is based on a single male example collected by captain Kingdom-ward in the Adung Valley, 7000 feet, on the Burma-Tibetan border. The general dorsal colouration is greyish-brown with dark brown markings, some small longitudinal ones on the neck and four angular larger ones upon the back; top of head dark brown; a dark streak between the eye and the ear; limbs with dark cross-bars; tail with alternate light and dark bars; some pinkish marks upon the nape and base of the tail; ventrum is greyish-white with small dark spots. The head is distinct, about one and half times longer than broad; snout is slightly longer than the orbit; forehead concave; upper portion of head is with large, unequal, strongly keeled scales; no spines on the head; canthus rostralis and supraciliary edge is sharp. Upper labials are 7, lower labials are 7; tympanum is open, not covered with scales, its diameter is about one third that of the orbit. The body is compressed. Dorsum is with large, strongly keeled scales, all pointing backwards and downwards except the upper two or three rows, which point slightly upwards; ventral scales are smaller than the dorsal scales and are strongly keeled; 4-5 scales round the middle of the

body. A gular sac is present; gular scales are keeled, almost as large as the ventrals. A long curved fold is present in front of the shoulders. A nucho-dorsal crest is present. Limbs are short; third and fourth fingers are equal; third toe is slightly smaller than the fourth toe; the hind-limb reaches to the shoulder. Tail is feebly compressed, covered with subequal keeled scales. Standard length 40 mm., tail length 80 mm.

Distribution : Burma (Adung Valley, 7000 feet on the Burma-Tibetan border) (Map 44).

Habits and habitat : Rock dwelling, subarboreal, diurnal, insectivorous.

Status : Rare.

134. *Calotes andamanensis* Boulenger, 1891
(Map 44)

1891. *Calotes andamanensis* Boulenger, *Ann. Mag. Nat. Hist.* (6) 8 : p. 288 (type loc. Andaman Is.).

1935. *Calotes andamanensis*, Smith, *Fauna Brit. Ind.* 2 : p. 205.

The body is strongly compressed. Dorsal colour is green, with white spots on back; head yellow; greenish white below. Head is moderately large; gular pouch is small; a feeble fold in front of the shoulder; limbs are moderately large, fourth toe longer than the third, third and fourth fingers are equal, the hind-limb reaches to between the eye and the ear; tail is long and slender, feebly swollen at the base. Head scales are large, equal in size, obtusely keeled; 10 upper labials and 10-11 lower labials; dorsal body scales are small, smooth, the upper 4-5 rows pointing backwards and upwards, the scales on the flanks pointing backwards and downwards; ventral scales are as large as the dorsal scales and are strongly keeled; 67 scales round the middle of the body; gular scales are keeled and almost half of the ventral scales size; nuchal crest is set upon a fold of skin and is well developed, formed by 15 compressed, separated spines; dorsal crest is just like a serrated ridge. Standard length 85 mm.; tail length 165 mm.

Distribution : India : Andaman Islands (Map 44).

Habits and habitat : Arboreal, insectivorous and diurnal.

Status : Rare.

135. *Calotes nigrilabris* Peters 1860
(Map 13)

1853. *Calotes rouxii* (not of Dum. & Bibr.), Blyth. *J. Asiat. Soc. Beng.* 22 : p. 647.

1860. *Calotes (Bronchocele) nigrilabris* Peters, *Mon. Acad. Berlin*, p. 183 (type loc. Newerelia, Sri Lanka).

1935. *Calotes nigrilabris*, Smith, *Fauna Brit. Ind.* 2 : p. 206.

The moderately large agamid is with a compressed body. Dorsum is with angular whitish, black edged, transverse bars or spots on a uniform greenish background; head

is with black veriegations, upper lips and cheek are with black stripe, which in many individuals is separated from the eye by a white line; many lizards are with a brown vertebral stripe, throat is greenish or bluish; ventrum is greenish-white; basal part of the tail is dark olive or brownish. The head is moderately large, one and half times longer than broad; snout is slightly longer than the orbit; forehead is concave; upper portion of head is with unequal, smooth scales; canthus rostralis and supraciliary edge is sharp; a row of 5-9 compressed spines are present above the tympanum and extend posteriorly; diameter of the tympanum is almost half that of the orbit; cheeks are swollen in the adult male. Upper labials 10-12, lower labials 10-12. Dorsum is with keeled scales, pointing backwards and downwards, except the upper 2 or 3 rows, which point straight backwards; dorsal scales are much smaller than the ventral scales; ventral scales are strongly keeled and mucronate; 42-50 scales round the middle of the body. Gular sac is not present; gular scales are keeled and as large as the ventral scales; a short oblique pit or fold is present in front of the shoulders which is covered with small granular scales. Nuchal crest is present, in continuation with the dorsal crest; both the crests are moderately developed, comprising sharp spines, gradually become shorter posteriorly; the longest spines on the neck is shorter than the diameter of the orbit, females are with a less developed and lower nucho-dorsal crest, which becomes like a ridge on the posterior end. Limbs are moderately large; third and fourth fingers are equal in length; third toe is smaller than the fourth toe; the hind-limb reaches to the orbit or the temple. Tail is much longer and slender; in adult males it is much swollen at the base, general caudal scales are large, thick and keeled, those of the upper median row form a serrated ridge. Standard length 105 mm., tail length 310 mm. Males are larger than females.

Distribution : Sri Lanka (Hilly areas at high altitude) (Map 13).

Habits and habitat : Rock dwelling, subarboreal, insectivorous, diurnal.

Status : Rare.

136. *Calotes rouxi* Dum. & Bibr. 1837
(Map 45)

1837. *Calotes rouxi* Dum. & Bibr., *Erp. Gen.* 4 : p. 407 (type loc. India).

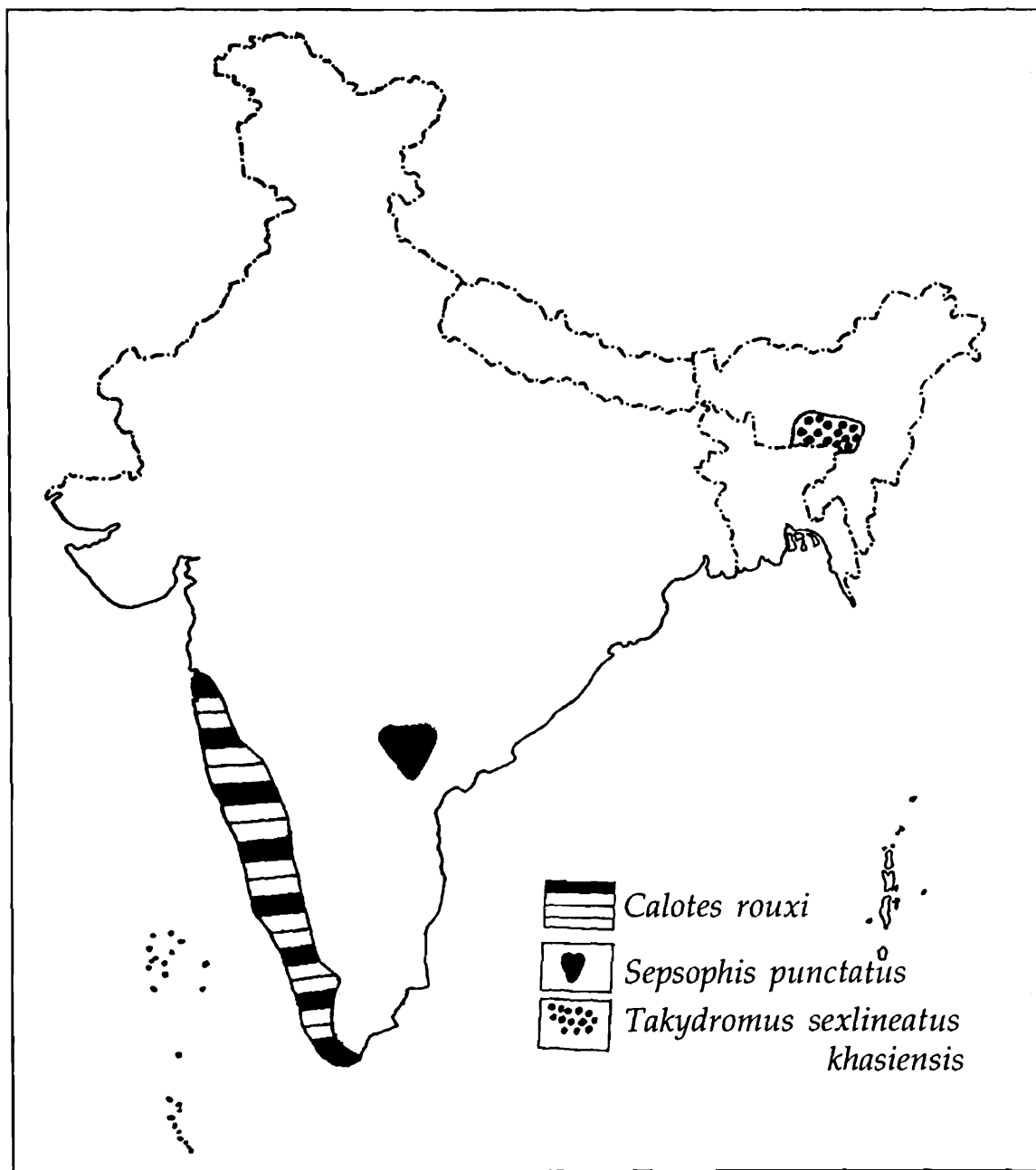
1872. *Calotes elliotti* (not of Gunther), Stoliczka, *J. Asiat. Soc. Beng.* (2) 41 : p. 113.

1935. *Calotes rouxi*, Smith, *Fauna Brit. Ind.* 2 : p. 206.

The body is dwarfed, cheeks swollen in adult male. Dorsal colour is olive-brown; head, nape and gular pouch red; side of head and neck banded with brown; antehumeral fold black; dark brown lines radiate from the eye; belly is brownish. Head is moderately large; gular pouch is very small, missing in the female; a long oblique, curved fold in front of the shoulder, extends across the throat, covered with small granular scales; limbs are moderately developed, slender, fourth toe is longer than the third toe, the hind-limb

reaches to the temple; tail is long, slightly compressed, in adult male swollen at the base. Head scales unequal, strongly keeled; 9-10 upper labials and as many lower labials; dorsal body scales are keeled, the upper rows pointing upwards and backwards, the lower rows pointing backwards and downwards; ventral scales are strongly keeled and mucronate, about as large as the dorsals; 50-60 rows of scales round the middle of the body; nuchal and dorsal crests are present but are less prominent and feebly developed. Standard length 29-77 mm.; tail length 49-170 mm.

Distribution : India : Western coastal areas from Bombay to Kerala. (Matheran, Khandala, Kanara, Jog, Goa and Malabar) (Map 45).



Map 45 : Distribution of *Calotes rouxi*, *Sepsophis punctatus* and *Takydromus sexlineatus khasiensis*.

Habits and habitat : Insectivorous, diurnal, terrestrial and arboreal.

Status : Vulnerable on account of habitat destruction.

137. *Calotes elliotti* Gunther 1864

(Map 46)

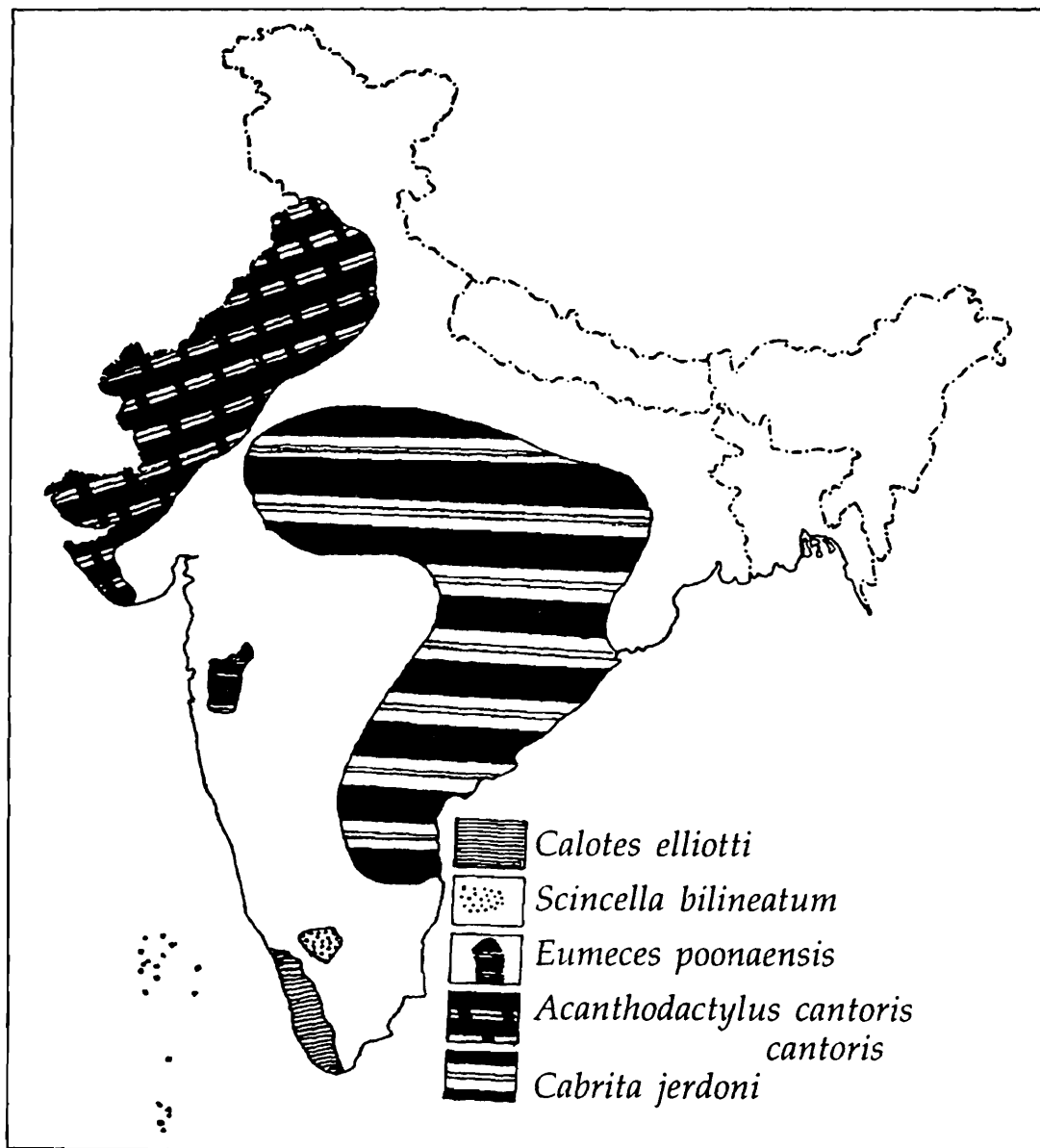
1853. *Calotes rouxi* (not of Dum. & Bibr.). Jerdon, *J. Asiat. Soc. Beng.* 22 : p. 471.

1864. *Calotes elliotti* Gunther, *Rept. Brit. Ind.* : p. 142 (type loc. Malabar).

1876. *Bronchocela indica* Theobald, *Cat. Rept. Brit. Ind.* : p. 105. (type loc. South India).

1935. *Calotes elliotti*, Smith, *Fauna Brit. Ind.* 2, p. 207.

The body is dwarfed. Dorsal colour is olive, with distinct dark-brown cross-bars on the body; neck is with angular black mark on each side; a white spot below the eye; dark-



Map 46 : Distribution of *Calotes elliotti*, *Scincella bilineatum*, *Eumeces poonaensis*, *Acanthodactylus cantoris cantoris* and *Cabrita jerdoni*.

brown lines radiating from the eye; ante-humeral fold is black; belly is white. Head is moderately large; gular pouch is very small, not available in a female; a long fold in front of the shoulder extending across the throat, covered with small granular scales; limbs are moderately large, slender, fourth toe is longer than the third toe, fourth finger is slightly longer than third, the hind-limb reaches to the eye or the nostril; tail long, slightly compressed, slightly swollen at the base in the adult male. Head scales are unequal, keeled; 9-10 upper labials and as many lower labials; dorsal body scales are keeled, the upper two or three rows pointing straight backwards, the scales in the remaining lower rows are pointing backwards and downwards; ventral scales are as large or little smaller than the dorsal body scales, these are strongly keeled and mucronate; 53-60 scales round the middle of the body; gular scales are smaller than the ventral scales in size; nuchal and dorsal crests are not well developed, dorsal crest being represented by a mere denticulation. Standard length 70 mm.; tail length 170 mm.

Distribution : India : Anaimalai, Tinnevely and Sivagiri Hills, Malabar coast (Map 46).

Habits and habitat : Insectivorous, arboreal, diurnal and terrestrial, found in hills up to 600 metres.

Status : Rare.

138. *Calotes danieli* Tiwari & Biswas 1973
(Fig. 82, Map 11)

1973. *Calotes danieli* Tiwari & Biswas, *J. Zool. Soc. India* 25 (1 & 2) : pp. 57-63. (type loc. Great Nicobar Islands, Campbell Bay).

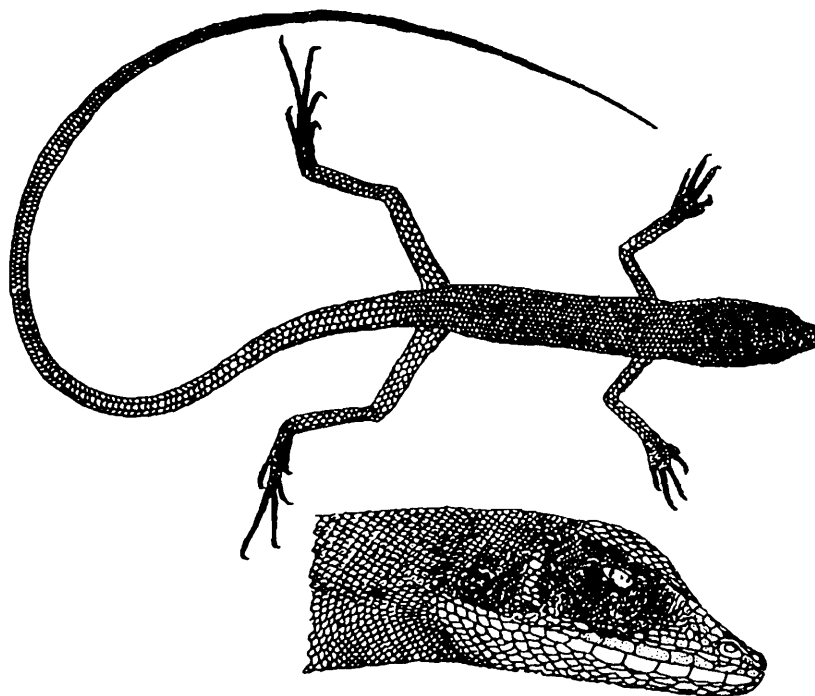


Fig. 82 : *Calotes danieli* : Entire dorsal view of lizard and side view of head.

The body is strongly compressed. Anterior dorsum including the head is blackish-brown, hinder portion of body reddish-brown; a black patch around the eye and tympanum; one white spot behind and two in front of eye. Head is quite large; gular pouch is small; a fold of skin from lower jaw projecting dorsally over the shoulder; limbs are long and slender, fourth toe is longer than the third toe; fourth finger is slightly longer than the third, the hind-limb reaches to the snout; tail long, slightly compressed, not swollen keeled; 9 upper labials and as many lower labials; dorsal body scales small, strongly keeled, the upper 5-6 rows of scales pointing upwards and backwards, the scales in the remaining rows on sides are pointing backwards and downwards; ventral scales are nearly five times as large as the dorsal scales, strongly keeled and pointed; scales on the anterior edge of vent are pointed and keeled but smaller than ventrals; scales on the posterior edge of vent are not keeled, round and smaller than those on the anterior edge; 48 scales round the middle of body; gular scales are much smaller than the other ventral scales in size; dorsal crest is prominent, extending to tail. Standard length 79 mm; tail length 271 mm.

Distribution : India : Great Nicobar Island (Map 11).

139. *Calotes bhutanensis* Biswas 1973
(Map 11)

1973. *Calotes bhutanensis* Biswas, *J. Bombay nat. Hist. Soc.* 72(3) : pp. 774-777.

The body is compressed, cheeks are swollen. Dorsum is whitish with black, transverse, wavy or variegated patches on the back and sides of the body. Four lines or stripes from sides of head on or below the neck, first from sides of temporal region on the neck like a V, second from above tympanum on neck, third from just below the eye through tympanum on the side of neck, fourth from upper jaw to the arm. From lower jaw four lines run on the throat and chin. Ventral side is white with longitudinal faint blackish lines, but one line along the middle of ventral side up to the base of tail more prominent, then continues under the tail being interrupted at regular intervals. Head is comparatively smaller; gular pouch is missing but the throat is inflatable; no fold or pit is present in front of the shoulder; limbs are moderately long, third and fourth fingers are almost equal, fourth toe is longer than the third. Head scales unequal, not keeled but feebly rugose; 12 upper labials; 11 lower labials; dorsal body scales keeled, rounded, pointed backwards and upwards; ventral scales almost equal to or slightly smaller than dorsals, strongly keeled and mucronate; 50 scales round the middle of body; nuchal and dorsal crests are present. Standard length 61 mm.; tail length 135 mm.

Distribution : Janjurmane, Bhutan (Map 11).

Genus 37. *Psammophilus* Fitzinger 1843.

1843. *Psammophilus* Fitzinger, *Syst. Rept.* : pp. 17 & 79 (type *Agama dorsalis* Gray).

1845. *Charasia* Gray, *Cat. Liz. Brit. Mus.* : p. 246 (type *dorsalis*).

1935. *Psammophilus*, Smith, *Fauna Brit. Ind.* 2 : p. 208.

This genus includes two species, both are from India. Agamids with depressed body, covered with regularly arranged, uniform keeled scales; devoid of dorsal crest; there is a deep fold on either side of neck in front of the shoulder united across the throat by a distinct transverse fold; gular sac is not present; tympanum open, quite distinct; femoral and preanal pores are not present; tail is long and slender.

Key to the species of genus Psammophilus

Scales round the middle of body 115-150 *P. dorsalis*
 Scales round the middle of body 80-100 *P. blanfordanus*

140. *Psammophilus dorsalis* (Gray 1831)

(Map 47)

1831. *Agama dorsalis* Gray, in *Griffith Anim, King.* 9, Syn. : p. 56 (type loc. India).

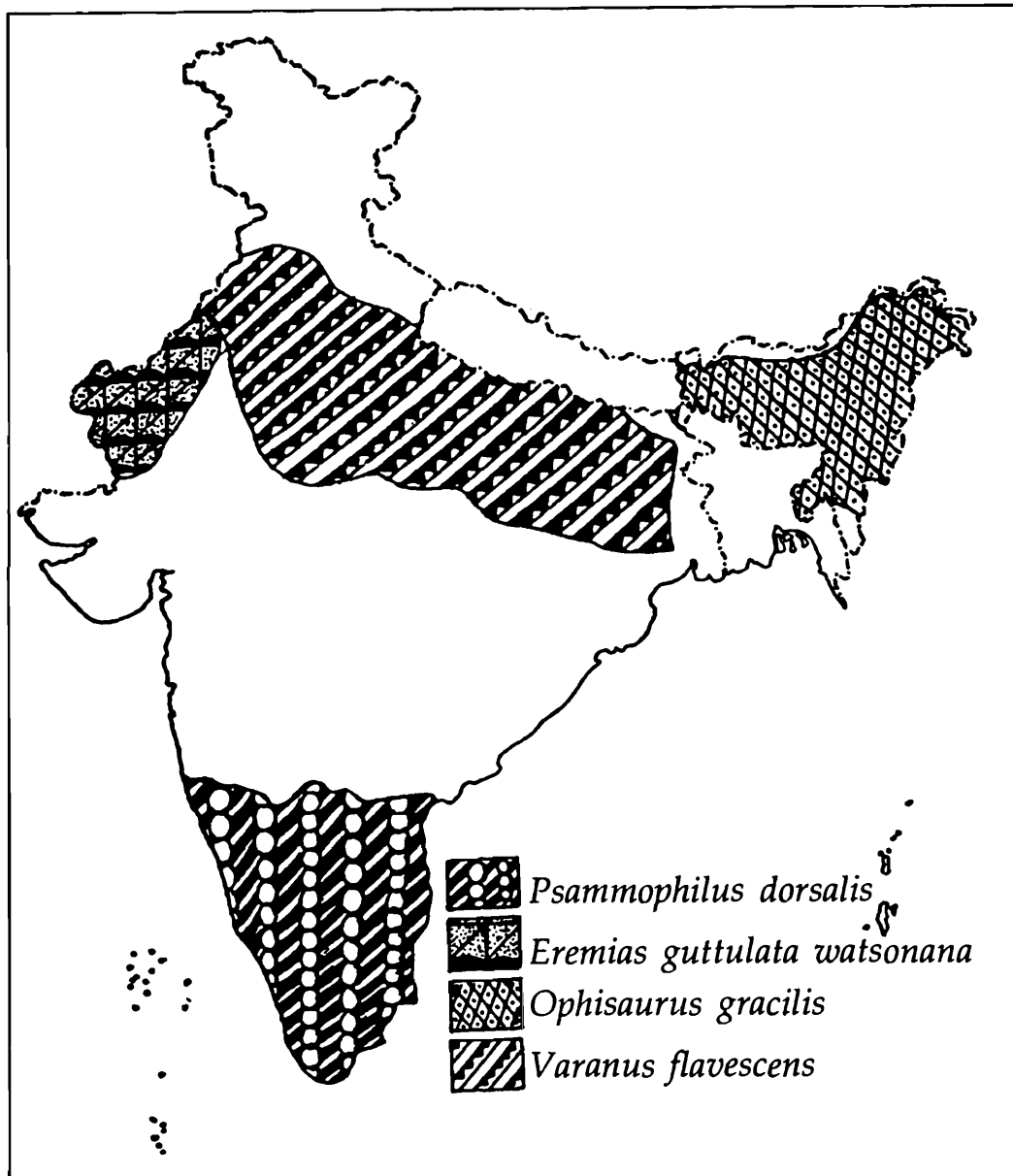
1935. *Psammophilus dorsalis*, Smith, *Fauna Brit. Ind.* 2 : p. 209.

The body is feebly depressed, cheeks swollen in the adult male. Dorsal colouration is olive-brown in young and female, pale-brownish in adult male, a series of white elongated spots on sides and back; lips yellowish brown; yellowish on the ventral aspect; throat generally speckled with grey. Head very large, elongated and flat; no gular sac; a deep fold on either side of the neck in front of the shoulder connected across the throat by a transverse fold; Limbs are strong, covered above with uniform keeled scales, the hind-limb reaches to the ear or the orbit; tail is long, slender, slightly compressed, dorsal scales of tail are larger than the ventral scales, in the adult male the tail is swollen at the base, scales on that swollen part are thickened and the scales of the upper median row are enlarged. Head scales unequal, smooth, sometimes obtusely keeled; 10-13 upper labials and as many lower labials; dorsal body scales small, uniform, smooth or feebly keeled in the adult (strongly keeled in juveniles), all scales pointing backwards and upwards; nuchal and dorsal crests are indicated by a ridge of enlarged scales; ventral scales are smooth in adult and keeled in the juvenile, as large as the dorsal scales in size; 115-150 scales round the middle of the body; gular scales are slightly smaller than the other ventral scales; 4-5 enlarged scales on the chin parallel to the anterior labials, separated from them by two rows of scales. Standard length 135 mm.; tail length 290 mm.

Distribution : India : India south of 16°N. (Malabar coast, Karnataka, Nilgiri and Nallamalai Hills, South Arcot, Bangalore) (Map 47).

Habits and habitat : Strictly terrestrial or rock dwelling available in the crevices up to 700 metres. This is a most agile, insectivorous and diurnal lizard.

Status : In abundance.



Map 47 : Distribution of *Psammophilus dorsalis*, *Eremias guttulata watsonana*, *Ophisaurus gracilis* and *Varanus flavescens*.

141. *Psammophilus blanfordanus* (Stoliczka 1871)

(Map 48)

1870. *Charasia dorsalis* (not of Gray), Blanford, *J. Asiat. Soc. Beng.* 39 : p. 368.

1871. *Charasia blanfordana* Stoliczka, *P. Asiat. Soc. Beng.* : p. 194 (type loc. Central India).

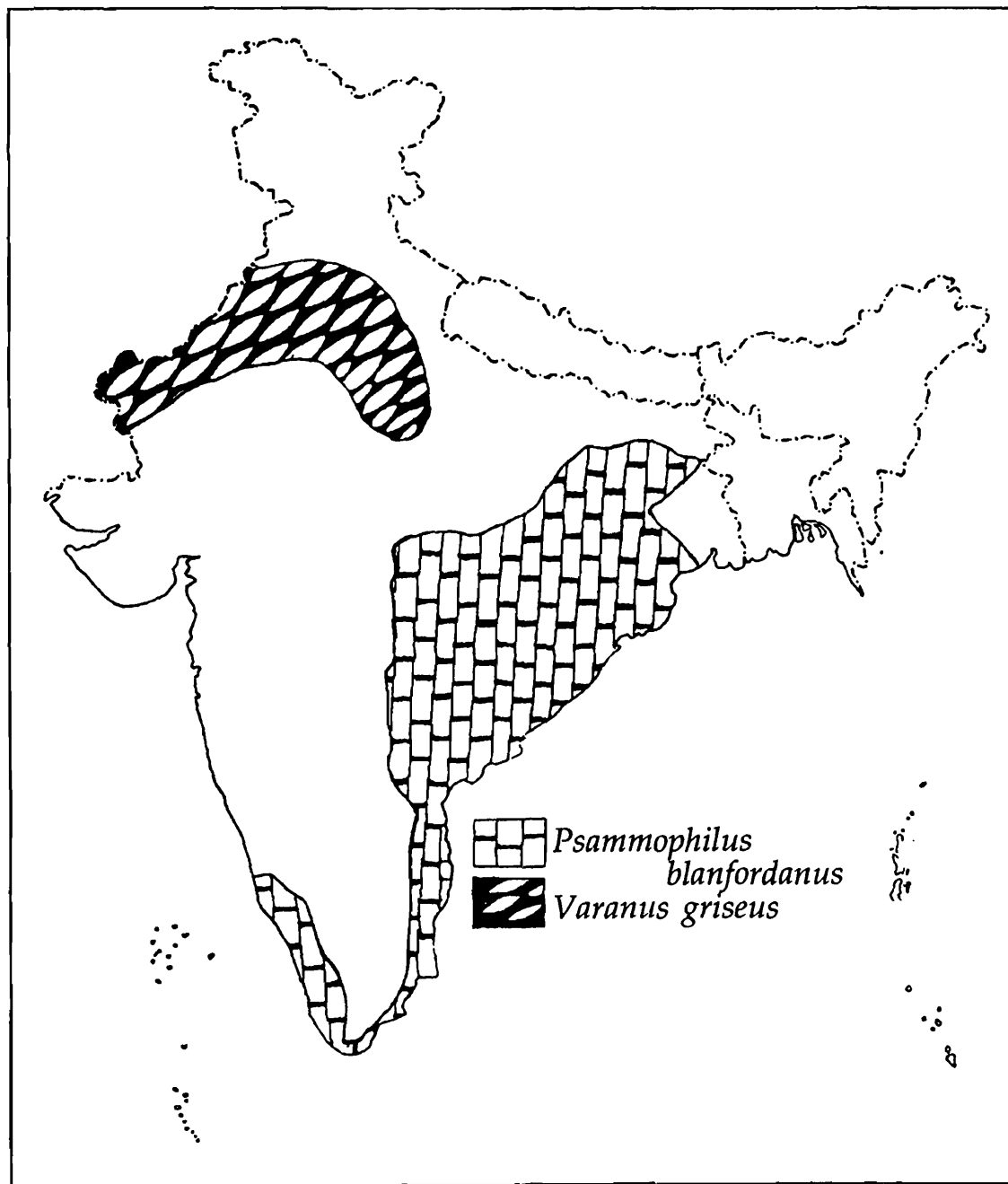
1876. *Charasia blanfordiana*, Theobald, *Cat. Rept. Brit. Ind.* : p. 115.

1935. *Psammophilus blanfordanus*, Smith, *Fauna Brit. Ind.* i : P. 210.

This species closely resembles with *Psammophilus dorsalis* in general body shape and pholidostic characters except that it is olive-bronze or dark-brown in dorsal colouration, spotted profusely with brown and usually with a series of large, boat shaped dark-brown

spots with light brown or pale centres on the complete back and tail. In the adult male these markings of back and tail merge out and giving the lizard somewhat brownish appearance. It also differs by having a deeper ante-humeral fold; dorsal body scales are comparatively larger, always keeled and imbricate, 80-100 scales round the middle of the body; the hind-limb reaches to the orbit or a little beyond; flanks are with a few scattered, slightly enlarged scales; size is smaller, standard length 100 mm.; tail length 200 mm.

Distribution : India : Andhra Pradesh, Bihar, Orissa, Madhya Pradesh, Eastern Ghats and Western Ghats (Map 48).



Map 48 : Distribution of *Psammophilus blanfordanus* and *Varanus griseus*.

Habits and habitat : Absolutely rock dwelling, lives in the crevices and holes in rocks up to 800 metres. It is insectivorous and diurnal, most agile and docile in disposition. Breeding takes place from April-July, during this period males assume a brilliant red colour.

Status : In abundance

Genus 38. *Agama* Daudin 1802

1802. *Agama* (in part) Daudin, *Hist. Nat. Rept.* 3 : p. 333 (type *Lacerta agama* Linn).
 1826. *Tapaya* Fitzinger, *Neue Class. Rept.* : pp. 17 & 49 (type *orbicularis*).
 1829. *Trapelus* Cuvier, *Regne Anim.* 2 : p. 37 (type *aegyptius*).
 1843. *Phrynopsis* Fitzinger, *Syst. Rept.* : pp. 17 & 79 (type *Agama atra* Daudin).
 1843. *Podorrhoa* Fitzinger, *Syst. Rept.* : pp. 18 & 80 (type *colonorum* Daudin).
 1843. *Pseudotrapelus* Fitzinger, *Syst. Rept.* : pp. 18 & 81 (type *sinaita* Heyd.).
 1843. *Planodes* Fitzinger, *Syst. Rept.* : pp. 18 & 81. (type *agilis* Olivier).
 1843. *Trapeloidis* Fitzinger, *Syst. Rept.* : pp. 18 & 81.
 1843. *Psammorrhoea* Fitzinger, *Syst. Rept.* : pp. 18 & 82 (type *Agama Sculeata* Merr.).
 1843. *Eremioplanis* Fitzinger, *Syst. Rept.* : pp. 18 & 82 (type *Trapelus aegyptius* Cuvier).
 1843. *Acanthocercus* Fitzinger, *Syst. Rept.* : pp. 18 & 84 (type *Stellio cyanogaster* Ruppell).
 1845. *Laudakia* Gray, *Cat. Liz. Brit. Mus.* p. 254 (type *tuberculata*).
 1856. *Brachysaura* Blyth, *J. Asiat. Soc. Beng.* 25 : p. 448 (type *ornata*).
 1860. *Barycephalus* Gunther, *Proc. Zool. Soc.* : p. 150 (type *sykesii*).
 1935. *Agama*; Smith, *Fauna Brit. Ind.* 2 : p. 211.

This large genus is distributed largely to Africa, western Asia and southern Europe, comprising more than 50 species, with a number of subspecies. The main characters are : The head and body are depressed; head may be short or elongate; tympanum is not covered with scales, distinct, may be large or small, diameter may be less than half or exactly half that of the orbit, may be superficial or may be deeply sunk; dorsal crest may be altogether absent or feebly developed; gular sac may be present or absent; there is a fold in front of the shoulders which is generally united with a transverse gular fold; dorsal scales may be uniform or may be intermixed with larger scales; toes may be longer or shorter, may be compressed or not; fifth toe may or may not extend beyond the first toe; tail is rounded, depressed or compressed, tail scales may or may not form distinct annuli; in males callose preanal and abdominal scales may be present or absent, in many species both preanal and abdominal scales are available, in many species only callose preanal scales are available and in *agama minor* both are absent.

Key to the species of genus *Agama*

- I. Tail longer than the head and body.
 A. Tail scales form distinct rings; tympanum large and superficial; caudal segments

are formed by more than two whorls of scales; tail scales are small, 30-50 round the base of the tail.

- i. Dorsum with smooth enlarged scales; no enlarged scales on the flanks
..... *A. himalayana*
- ii. Dorsum with keeled enlarged scales which are as large as the ventral scales of the body; flanks with a few enlarged scales *A. tuberculata*.
- iii. Dorsum with keeled enlarged scales which are larger than the ventral scales of the body; flanks with a large number of enlarged scales *A. agrorensis*

Other characters are same as available in above three species except that tail scales are comparatively larger; 25 to 35 around the base of the tail; scales on the mid-dorsal region are broader than long.

- i. Median dorsal scales form a distinct longitudinal series comprising 8 to 10 scales across the middle of the back. *A. melanura*
 - ii. All the dorsal scales are in oblique longitudinal series comprising 16 to 20 scales across the middle of the back *A. nupta*
Each tail segment is formed by two whorls of scales. Other characters are same as above species; 6 to 10 scales across the middle of the back *A. caucasica*
- B. Tail scales do not form rings; tympanum small deeply sunk.
- i. Dorsal body scales are equal *A. agilis*
 - ii. Dorsal body scales are unequal, the smaller scales are intermixed with larger ones.
 - (a) The enlarged dorsal scales are numerous, irregularly arranged, strongly keeled and pointed. *A. ruderata baluchiana*
 - (b) The enlarged dorsal scales are few in number, almost transversely arranged, broader than long, keel is present on the tip only; dorsum is with numerous small yellow spots *A. rubrigularis*
 - (c) Dorsal scales are small, unequal, with larger scales arranged in groups; a vertebral series of pale spots *A. megalonyx*
- II. Tail not longer than the head and body *A. minor*

142. *Agama himalayana himalayana* (Steindachener 1867)

(Map 23)

- 1867. *Stellio himalayanus* Steindachener, *Reise Novara, Rept* : p. 22, pl. 1, fig. 8 (type loc. Ladakh, Kashmir).
- 1885. *Agama himalayana*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 362.
- 1899. *Agama isozona* Werner, *Zool. Anz.* 22 : p. 479 (type loc. Margelan, Turkistan).
- 1935. *Agama himalayana*, Smith, *Fauna Brit. Ind.* 2 : P. 213.
- 1966. *Agama himalayana himalayana*, Minton, *Bull. Amer. Mus. nat. Hist.* 134 : p. 93.

Head is depressed, more elongated, tympanum large, superficial. Dorsal colour is olive, with black round spots on the back; sometimes black spots arranged on both sides of vertebral line in a series; tail with dark bars; belly greenish white; throat spotted with dark grey. Upper head scales unequal, convex, smooth or keeled, largest on the snout; nostril situated below the canthus rostralis, directed outwards; 10-12 upper labials; median dorsal scales are almost equal, rounded, hexagonal; imbricate, smooth or feebly keeled, 8-14 across the middle of back; scales on the flanks smaller, no enlarged scales intermixed with them, except sometimes in adult males which may have a patch of such enlarged scales in the middle of the flank; ventral scales smooth, smaller than the median dorsals; gular scales smaller than the ventrals; no gular sac; skin of the neck and sides of the body loose. Limbs moderately strong, toes longer, compressed, fifth toe extending beyond the first toe, the hind-limb reaches to the ear or the eye. Tail depressed at the base, longer than the head and body, oval in transverse section, covered with strongly keeled almost equal scales, 30-50 (more than 40) round the base of tail at the thickest portion, caudal scales forming distinct annuli. Male with 2 or 3 rows of callose preanal scales; no abdominal patch of the enlarged scales. Standard length 95mm.; tail length 150 mm.

Distribution : India : Kashmir, Elsewhere : Pakistan, Turkistan, Western Tibet (Map 23).

Habits and habitat : Terrestrial, high mountain dwelling recorded up to 1200 metres in Western Himalayas. It is herbivorous and insectivorous, diurnal and agile.

Status : Abundant.

143. *Agama tuberculata* Hardwicke and Gray 1827

(Fig 3, Map 26)

1827. *Agama tuberculata* Hardwicke and Gray, *Zool. Journ.* 3 : p. 218 (type loc. Bengal).
 1853. *Stellio indicus* Blyth, *J. Asiat. Soc. Beng.* 22 : p. 646 (type loc. Upper Hindustan).
 1860. *Barycephalus sykesii* Gunther, *Proc. Zool. Soc.* : p. 150, pl. 25, fig. A (type loc. Simla).
 1864. *Stellio tuberculatus*, Gunther *Rept. Brit. Ind.* : p. 157.
 1871. *Stellio dayanus* Stoliczka, *P. Asiat. Soc. Beng.* : p. 194 (type loc. Hardwar, U.P.).
 1885. *Agama dayana*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 362.
 1935. *Agama tuberculata*, Smith, *Fauna Brit. Ind.* 2 : p. 214.
 1966. *Agama tuberculata*, Minton, *Bull. Amer. Mus. Nat. Hist.* 134, p. 93.

Head is depressed, more elongated, tympanum is large and superficial. Dorsal colour is Dark-olive brown with numerous dark-brown spots on either side of a lighter vertebral line. In adults the spots are replaced by a dark-brown and yellowish colouration; upper side of head is light brown; throat and chest are brownish, profusely spotted with dark blue; belly is whitish. Males during the breeding season acquire beautiful and brilliant shades of bright yellow, orange, bluish-black, purple and black on shoulders, breast, flanks, under-parts and throat. Upper head scales unequal, convex, smooth or may be

keeled; nostril is situated below the canthus rostralis, pointing outwards; 10-12 upper labials; median dorsal scales are almost equal, rounded, hexagonal, imbricate, keeled, 10-15 across the middle of back; scales on the flanks quite smaller, with a few scattered, separated, enlarged keeled scales; ventral scales smooth, equal in size to the large dorsal scale; gular scales are much smaller than the ventral scales; gular sac is not formed; skin of the neck region is much loose. Limbs moderately strong, toes longer, compressed fifth toe extending beyond the first toe, the hind-limb reaches to the ear or the eye. Tail depressed, longer than the head and body, annulated, oval in the transverse section, the upper portion is with strongly keeled, almost equal scales, more than 40 round the thickest portion. Male with 6 or 7 rows of callose preanal scales; an elongated patch of enlarged scales on the middle of belly. Standard length 140 mm.; tail length 250 mm.

Distribution : India : Western Himalayas (Kashmir, Northern Punjab, Himachal Pradesh, Northern Uttar Pradesh), Elsewhere : Afghanistan, Pakistan and Nepal (up to slightly east of Kathmandu) (Map 26).

Habits and habitat : These lizards are strictly terrestrial inhabiting the holes, crevices and such other rocky structures. In most of the localities of the range these agamas can be seen basking on rocks, more commonly between the altitudes of 300-700 metres; during the early hours of the day. The species is omnivorous and its food mainly comprises the insects like ants, small orthopterans, lepidoptera and other insects; it also has a liking towards the vegetable food like tender leaves, flowers and seeds of wild plants. Breeding season is May to August. It lays 7-10 eggs in a single clutch.

Status : Not endangered.

144. *Agama agrorensis* (Stoliczka 1872)

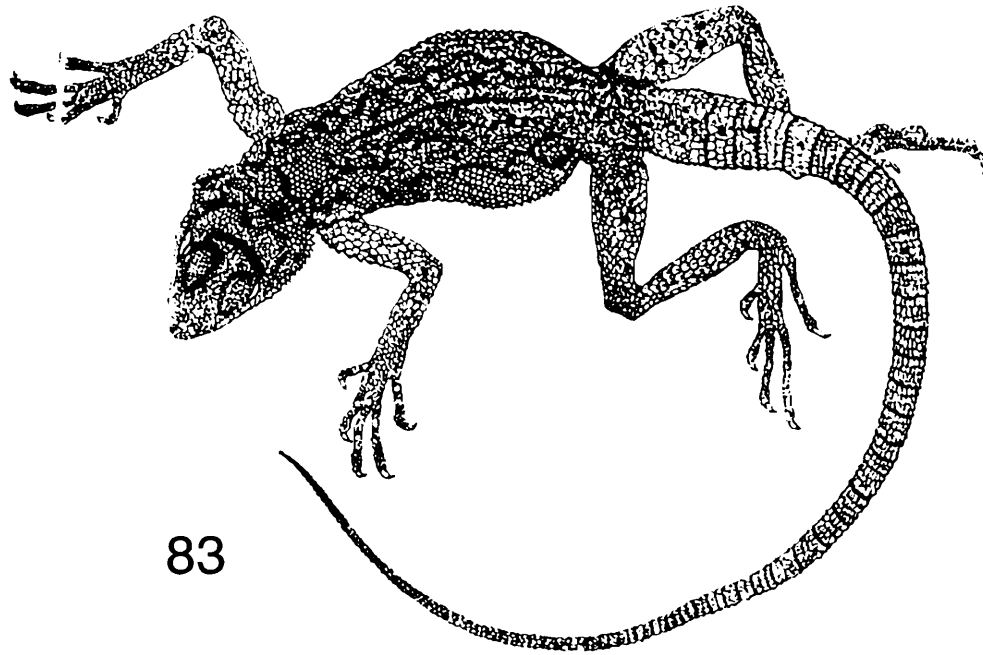
(Figs. 83 & 84 Map 28)

1872. *Stellio agrorehsis* Stoliczka, *P. Asiat. Soc. Beng* : p. 128 (type loc. Sussel Pass, at the entrance to the Agror Valley, 600 ft. Hazara district, N.W. Punjab).

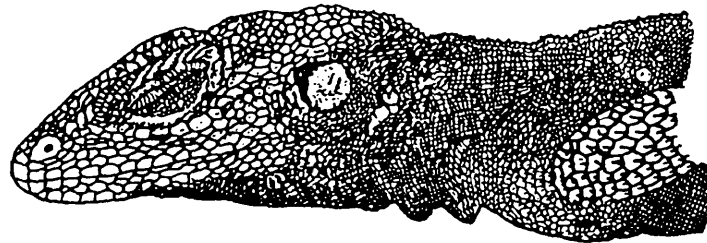
1885. *Agama agrorensis*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 363.

1935. *Agama agrorensis*, Smith, *Fauna Brit. Ind.* 2 : p. 216.

Head is depressed, more elongated, tympanum is large and superficial. Dorsal colour is olive in juveniles, profusely spotted with black and light yellow, many individuals are with three yellow longitudinal stripes, the middle one continues up to the tail, most of the underparts are white but the throat in most cases is reticulated with brown or black. In adults the dorsal colouration assumes a marked olive hue, darker spots and brownish-black reticulations becomes more imposing and prominent. In many individuals the spots on the back are arranged in longitudinal rows; head, throat and chest in adults become more pale; in most of the adult males the throat and chest are profusely spotted with dark



83



84

Figs. 83-84 : 83. *Agama agrorensis* : Entire dorsal view; 84. *Agama agrorensis* : Lateral view of head.

blue; belly is white in most of the cases. In body configuration and general pholidostic characters this species closely resembles with *Agama tuberculata* except that upper head scales are always keeled; the spine-like scales on the sides of head and neck are more prominent and numerous; median dorsal scales are longer, almost two times of the size of the largest ventral scales; ventral scales are more strongly keeled; the median dorsal scales are in 8-12 rows, sometimes divided by a vertebral series of small scales; flanks are with numerous enlarged strongly keeled scales, a large oblong patch on the flank is always present; hind-limb is slightly longer, reaching to the eye or the tip of the snout; 30-40 scales round the base of the tail: enlarged abdominal scales are sometimes not present. Standard length 110 mm.; tail length 250 mm.

Distribution : India : Kashmir, Punjab, Elsewhere : Pakistan (Map 28).

Habits and habitat : Similar to *Agama tuberculata*.

Status : Not endangered.

145. *Agama melanura* (Blyth 1854)
(Fig. 85)

1854. *Laudakia (Ploceoderma) melanura* Blyth, *J. Asiat. Soc. Beng.* 23 : p. 738 (type loc. Salt Range, Punjab).
1871. *Stellio melanurus*, Anderson, *P. Asiat. Soc. Beng.* : p. 189.
1874. *Stellio liratus* Blanford, *Ann. Mag. Nat. Hist.* (4) 8 : p. 453 (type loc. Saman, Dashi Province, Baluchistan).
1885. *Agama lirata*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 364.
1885. *Agama melanura*, Boulenger, *Cat. Liz. Brit. Mus.* 1, p. 363.
1935. *Agama melanura*, Smith, *Fauna Brit. Ind.* 2 : p. 218.
1966. *Agama melanura*, Minton, *Bull. Amer. Mus. nat. Hist.* 134 : p. 92.

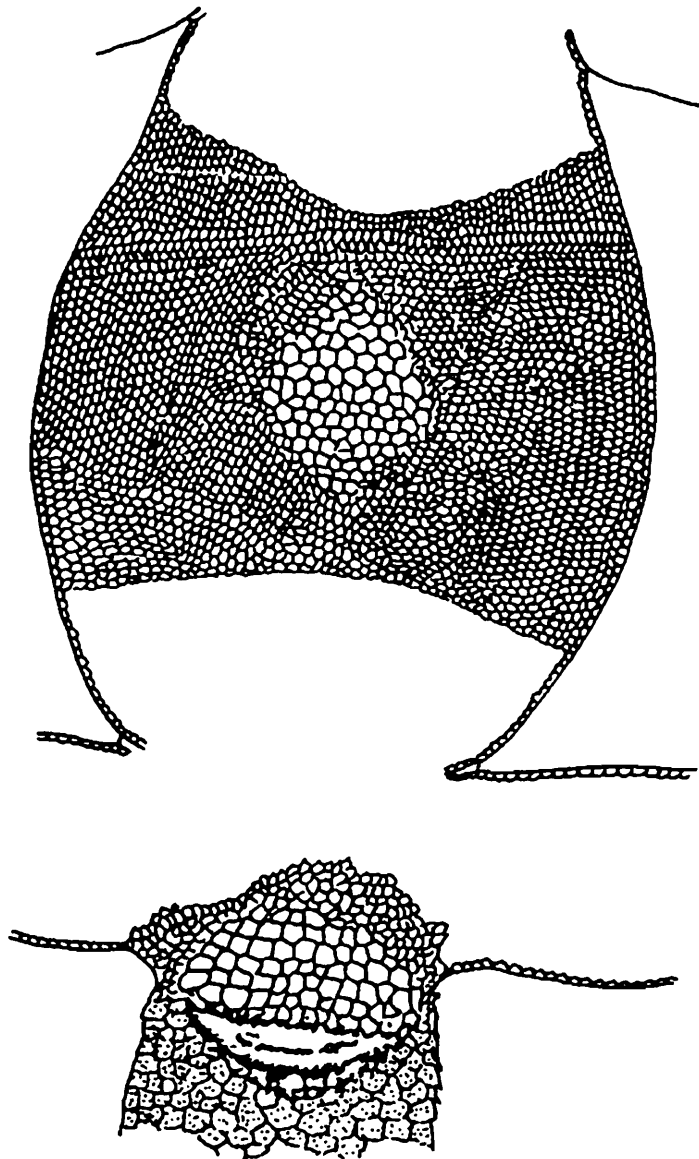


Fig. 85 : *Agama melanura* : Callose preanal and abdominal scales.

This large agama is with a yellowish-brown dark colouration, in many individuals small yellow spots are available on the dorsum; ventrum including the tail and limbs are light-brown; in most of the lizards a black spot is present on the ante-humeral fold, in many individuals two spots are available. The juveniles are olive above, yellowish-white below; complete head, chin and anterior part of breast is with black reticulations; neck, body, limbs and upper side of the basal portion of tail is with small black and yellow spots; eyelids and supraciliary ridge are yellow; the tip of the tail is smoky-black. In the breeding season the adult males become jet-black. The head is subtriangular, its anterior dorsal scales are large, subequal, smooth or obtusely keeled; nostrils are present on the canthus rostralis, pointing upwards and outwards; latero-posterior part of head is with groups of short spines; general dorsal neck scales are minute, except the scales of the median dorsal row, which are comparatively larger and form a feeble crest-like structure. Upper labials are 11-16; same is the number of lower labials. Dorsum is with two type of scales; about 6-11 straight longitudinal rows of median dorsal scales, across the middle of back are broader than long, smooth or keeled, mucronate in few individuals; lateral dorsal scales are quite small and point backwards and downwards; flanks are devoid of enlarged scales; ventral scales are smooth and almost less than half the size of the median dorsal scales. Gular sac is not present, gular scales are smaller than the ventral scales. Limbs are strongly built; the hind-limb reaches to the eye or at least to the ear. Tail is long, moderately or strongly depressed, rounded at the base, covered with large subequal scales, dorsal and lateral scales are strongly mucronate, subcaudal scales are flat. Males are with a large patch (comprising 4-5 rows of scales) of callose preanal scales and another patch on the middle of the belly. Standard length 119-142 mm.; tail length 300 mm.

Distribution : Iran (Eastern Part), Pakistan (Baluchistan; Salt Range, Punjab and western hilly areas of Sind; Waziristan).

Habits and habitat : Rock dwelling, diurnal, mainly herbivorous; breeds from April-June.

Status : Common.

146. *Agama nupta nupta* de Filippi 1843.

1843. *Agama nupta* de Filippi, *Giorn. Ist. Lomb. eBib. Ital.* 6 : p. 407 (type loc. Persiopolis, Iran).

1851. *Stellio carinatus* Dumeril, *Cat. Meth. Rept.* : p. 107 (type loc. Persia).

1876. *Stellio nuptus*, Blanford, *Zool. E. Persia*, p. 317, pl. 19, fig. 1.

1935. *Agama nupta*, Smith, *Fauna Brit. Ind.* 2 : p. 219.

1966. *Agama nupta nupta*, Minton, *Bull. Amer. Mus. nat. Hist.* 134 : p. 91.

This medium sized agama is with a dull brown or pale buff dorsum, with numerous irregularly scattered black and yellow spots which are confined to the scales; the colour of head in males is slightly lighter in comparison to the body; tail is faintly annulated with light and dark rings, the posterior most part of the tail is deep brown or blackish; the

throat and chest of males, deep blue; ventrum is brownish or straw coloured; the dorsal colouration of limbs is similar to the general dorsal colouration but yellow mottling is more thick. Juveniles are with alternate cross-bars or light and dark olive-brown upon the back and tail. The head is subtriangular, its anterior dorsal scales are subequal, smooth or obtusely keeled; nostrils are present on the canthus rostralis, pointing outwards and slightly upwards; latero-posterior part of head and sides of the neck are with numerous groups of long spines; general dorsal neck scales are minute, except the scales of the median dorsal row, which are comparatively larger and constitute a feeble crest-like structure; scales of throat are quadrangular, smaller than the ventral scales, subimbricate. Upper labials are 14-18; lower labials 14-17. Dorsum is with two type of scales; about 16-20 oblique rows (converging towards the vertebral line) of median dorsal scales, across the middle of back which are broader than long, keeled, mucronate and markedly different from the lateral dorsals, which are quite small and point backwards and downwards; flanks are devoid of enlarged scales; ventral scales are smooth and almost less than half the size of the median dorsal scales. Gular sac is not present, gular scales are smaller than the ventral scales. A prominent gular fold is present. Limbs are long and strongly built, digits are slender, laterally compressed, claws large, the hind-limb reaches to the ear or the eye, scales of hind-limbs are large, mucronate. Tail is long and depressed, oval in section, covered with large, subequal, mucronate scales, those on the dorsal and lateral aspects are strongly mucronate, subcaudal scales are flat; each whorl of tail scales contains three annuli, basal annuli, excluding two or three just behind the vent are composed of 18-25 scales. Males are with 3 or 4 rows of callose preanal scales and another patch is present in midventral area of the belly. Standard length 118-151 mm; tail length 300 mm.

Distribution : Afghanistan, Eastern Iraq, Iran, Pakistan (Upper Sind, Baluchistan).

Habits and habitat : Rock dwelling, shy, diurnal and most docile lizards living in rock crevices up to 6000 ft. altitude; perfectly herbivorous, live on grasses and flowers; breeding season is from February to March, juveniles appear in June and are seen up to late November.

Status : Common.

147. *Agama nupta fusca* (Blanford 1876)

1876. *Stellio nuptus fuscus* Blanford, *Zool. E. Persia* 2 : p. 319 (type loc. Kalagan near Jalk, Baluchistan).

1935. *Agama nupta*, Smith, *Fauna Brit. Ind.* 2 : p. 319.

1966. *Agama nupta fusca*, Minton, *Bull. Amer. Mus. nat. Hist.* 134 : p. 92.

This medium sized lizard, slightly larger than *Agama nupta nupta* is with a canary yellow head; body, limbs and tail are dark-brown to black dorsally; ventrum is straw coloured, dark-brown or blackish; generally yellow specks are present on both the surfaces. Juveniles are yellowish-grey, with irregular cross bands of brown colour on dorsum, in some individuals these bands are represented as fine reticulations, head is black, large

yellow spots are present on crown, temporal region, occiput, neck and shoulders; complete tail is with black bands. This subspecies differs from *Agama nupta nupta* in colouration and scalation. Upper labials are 13-16, lower labials 14-16; about 13-16 oblique rows (converging towards the vertebral line) of median dorsal scales, across the middle of back are broader than long, keeled, mucronate and significantly differing from the lateral dorsals, which are quite small and point backwards and downwards; dorsal scales are more strongly mucronate than *Agama nupta nupta*; tail is long, basal annuli, excluding two or three just behind the vent are composed of 13-22 scales. Standard length 129-162 mm.; tail length 300 mm.

Distribution : Pakistan (Baluchistan and Sind).

Habits and habitat : Similar to the *Agama nupta nupta*.

Status : Common.

148. *Agama caucasica* (Eichwald 1831)
(Map 49)

1831. *Stellio caucasicus* Eichwald, *Zool. Spec.* 3 : p. 187 (type loc. Tiflis and Baku, Caucasus).

1872. *Stellio persicus* Anderson, *Proc. Zool. Soc.* : p. 382, fig. (type loc. Teheran, Persia).

1885. *Agama caucasica*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 367.

1935. *Agama caucasica*, Smith, *Fauna Brit. Ind.* 2 : p. 220.

1966. *Agama caucasica*, Minton, *Bull. Amer. Mus. nat. Hist.* 134 : p. 94.

This moderately large robust rock agama is with a yellowish-brown dorsum, with yellow and black spots; in many lizards back is with regular yellow spots with black margin or cross-bars of the same colour, which are more distinct on the anterior part of the body; the head is yellow, in certain individuals spotted with black. Tail is yellowish or olivaceous, generally with dark annulations, in many lizards this dark annuli is missing, ventral aspect of tail is yellow; throat is generally dark blue or black; belly and under side of the limbs are deep blue. Juveniles are greyish or olivaceous with jet-black spots or cross bars on the dorsum. The head is subtriangular., its anterior dorsal scales are unequal, smallest upon the upper eyelids; nostrils are situated below the canthus rostralis, pointing outwards; lateroposterior and posterior part of head, and sides of neck are with numerous groups of large spine-like tubercles; rest of the scales on neck are quite small. Upper labials are 12-16 and same is the number of the lower labials. Dorsum is with 6-10 rows of median dorsal scales across the middle of back, which are hexagonal in shape, imbricate, smooth or obtusely keeled; these median dorsal scales are abruptly separated from the other lateral dorsal scales, which are very small; the lateral dorsal scales are intermixed with large square-shaped spinose scales, a large patch of which is generally present at the middle of the flanks; ventral scales are smooth, almost equal or slightly smaller than the

median dorsal scales. Gular sac is not present; gular scales are smaller than the ventral scales. Limbs are strong; the hind-limb reaches to the ear or at least to the eye. Tail is depressed at the base, oval in section, each tail segment is made up of two annuli, annuli at base of tail is composed of 25-30 scales; dorsal aspect of tail is with large spine-like scales arranged in rings. Males are with 4-5 rows of callose preanal scales and one more elongated patch is present on the middle of the belly. Standard length 112-140 mm., tail length 200 mm.

Distribution : Caucasus, Iran, Pakistan (Baluchistan, Waziristan, Kelat and the Bolan Pass near Quetta, frontier between Baluchistan and Afghanistan, North west Frontier Provinces, mountains from Kalat to Ziarat) (Map 49).

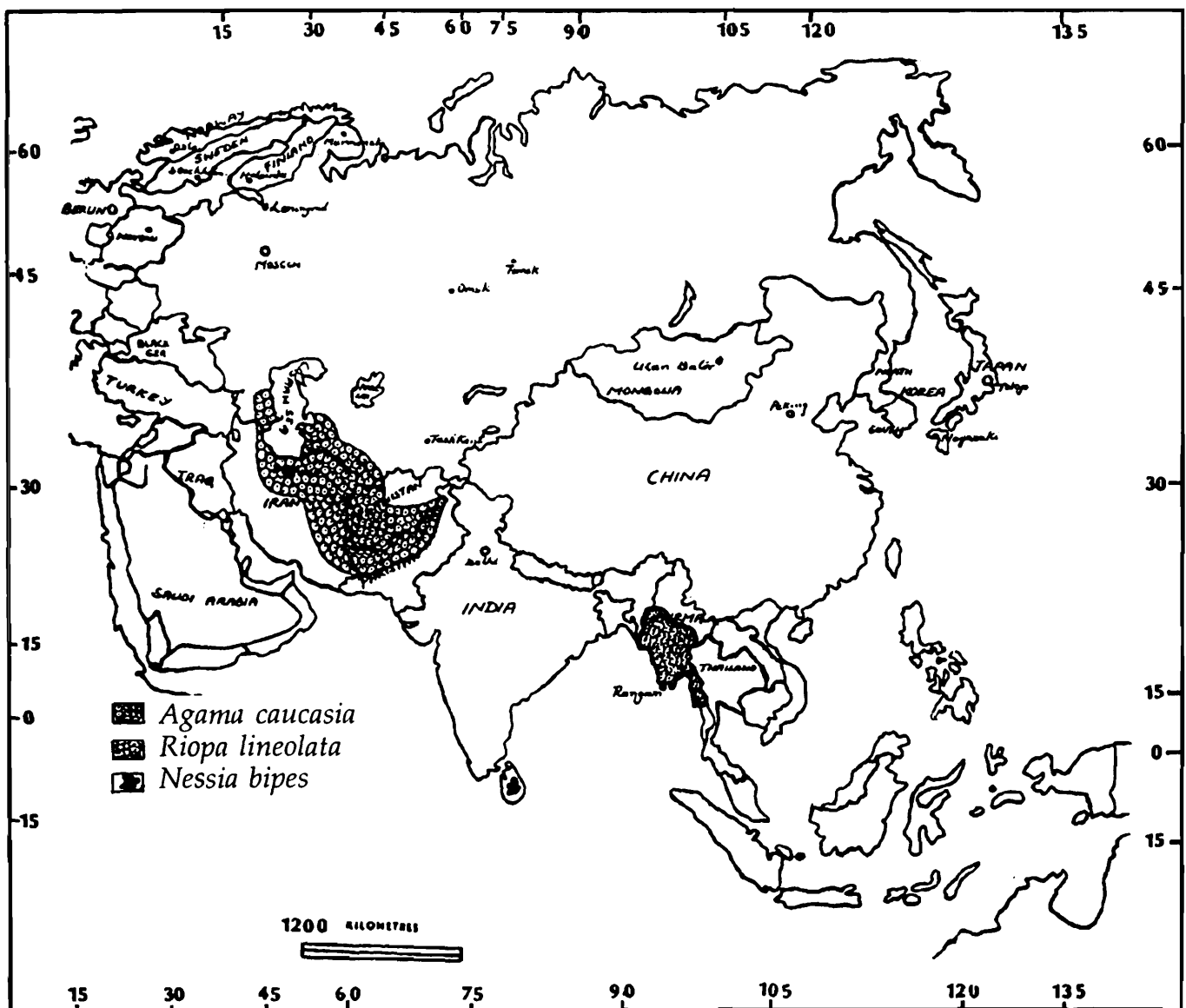


Fig. 49 : Distribution of *Agama caucasia*, *Riopa lineolata* and *Nessia bipes*.

Habits and habitat : Strictly a rock dwelling species, inhabits rocky elevations between 6000 to 9000 feet; diurnal; most docile; herbivorous, insectivorous and occasionally devours small geckonid lizards, juveniles are mainly insectivorous; breeding season is from May to July, about 10-12 eggs are laid in a single clutch in June or July.

Status : Abundant.

149. *Agama agilis* Olivier 1807

(Fig. 86, Map 23)

1807. *Agama agilis* Olivier, *Voy. Emp. Otho.* 4 : p. 394 (type loc. neighbourhood of Baghdad).

1870. *Trapelus* sp. Jerdon, *P. Asiat. Soc. Beng.* : p. 78.

1872. *Trapelus megalonyx* (not of Gunther), Stoliczka, *P. Asiat. Soc. Beng.* : p. 128.

1885. *Agama isolepis* Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 342.

1935. *Agama agilis*, Smith, *Fauna Brit. Ind.* 2 : p. 221.

1966. *Agama agilis*, Minton, *Bull. Amer. Mus. nat. Hist.* 134 : p. 94.

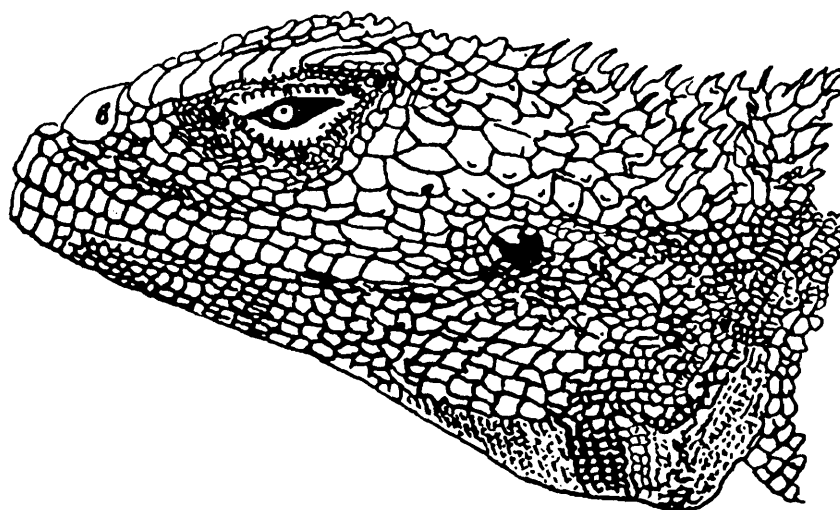


Fig. 86 : *Agama agilis* : Lateral view of head.

Head is high and short, snout is short and strongly curved, tympanum small, deeply sunk. Dorsal colouration of males is brown, grey, dull yellow, with faint brownish cross-bands and light spots on flanks. In the fully grown up individuals the back becomes somewhat sandy with a shining blue tinge; throat, chest and belly are whitish with a bluish tinge, in some specimens heavily streaked or spotted with dark blue. Juveniles and young individuals are with a vertebral and two dorso-lateral series of dark brown cross-bars enclosing light-brown oval spots with in; females are generally brown, with black cross bands enclosing a vertebral row of reddish rhomboidal spots and two rows of lateral light spots, many individuals are sometimes profusely marked on back and sides with orange, yellow or pale grey spots or cross bars. Upper head scales unequal, convex,

smooth or keeled, largest on the snout; nostril is situated on the canthus rostralis or slightly above it; 15-18 upper labials; median dorsal scales are equal, rhomboidal, imbricate, keeled and sometimes mucronate pointing straight backwards; dorsal scales are larger than the laterals which point backwards and downwards; ventral scales as large as the laterals, smooth or feebly keeled; gular scales are slightly smaller than the ventrals; male is having a very small gular pouch. Limbs are weak, toes shorter, not compressed, fifth toe not extending as far as first, the hind-limb reaches to the ear or the middle of the eye. Tail rounded, longer than the head and body, not annulated, covered above with almost equal keeled scales. Male with 1-3 rows of callose preanal scales; no enlarged scales on the middle of belly. Standard length 105 mm., tail length 160 mm.

Distribution : India : Rajasthan : Jodhpur district (Pichyak Dam, Bhopalgarh, Osian), Barmer district (Jasol near Balotra). Elsewhere : Afghanistan, Arabia, Iran, Iraq, Pakistan (Map 23).

Habits and habitat : This species is equally comfortable in arid desert rocky, sandy areas with some xerophytic vegetation or in moist river basins, from sea-level to an altitude of 600 metres. This is a most agile, diurnal species and is fond of climbing on small bushes for basking. Generally it prefers to stay on ground under the shade of small bushes in the company of a lacertid *Acanthodactylus cantoris* in the desert of Rajasthan. Its food in Rajasthan comprises crickets, grasshoppers; beetles larvae of the family Scarabaeidae; bugs and hymenopterous insects. The breeding takes place from May to August.

Status : Not endangered.

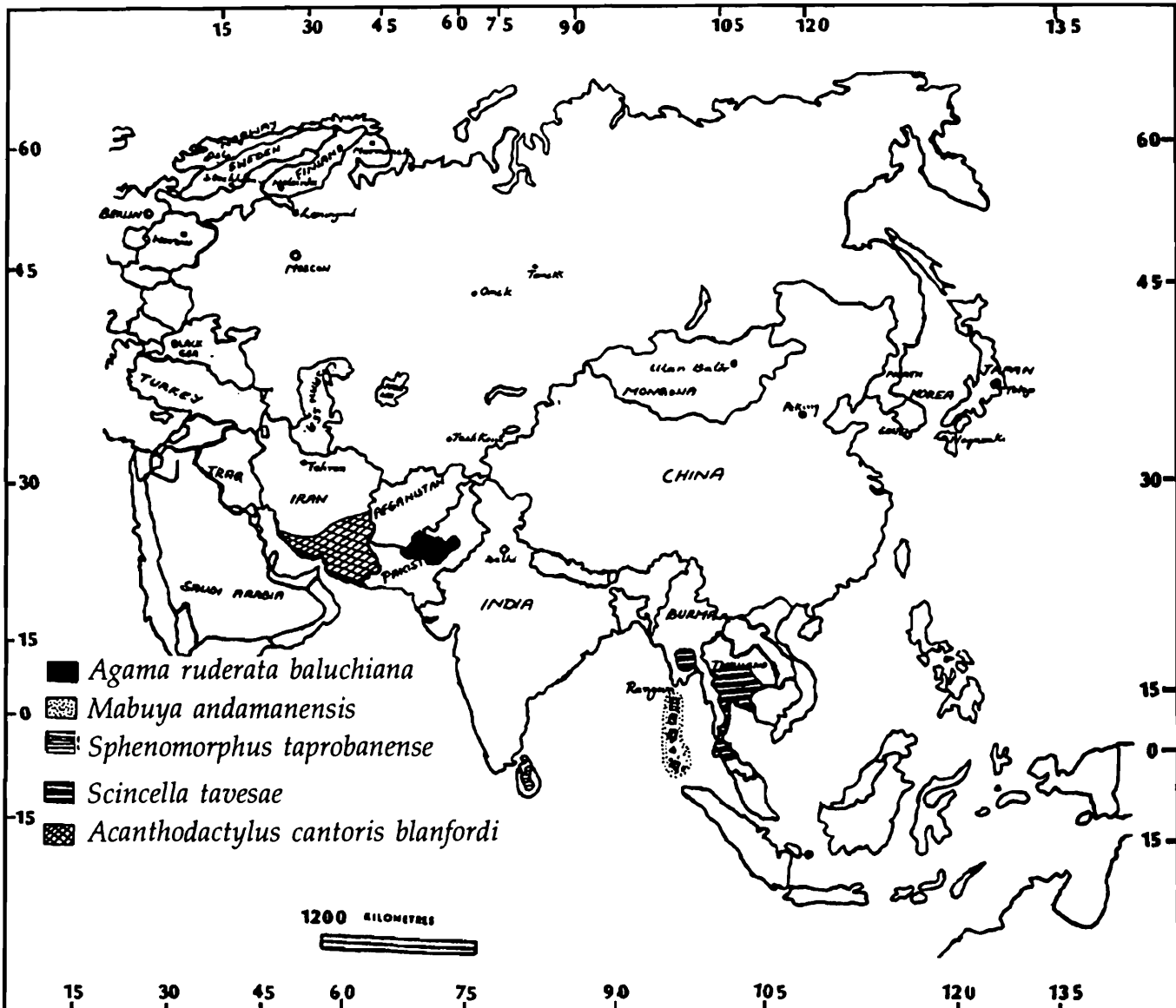
150. *Agama ruderata baluchiana* Smith 1935
(Map 50)

1807. *Agama ruderata* Olivier, *Voy. Emp. Otho.* 2 : p. 429 (type loc. Persia and northern Arabia).
1935. *Agama ruderata baluchiana* Smith, *Fauna Brit. Ind.* 2 : p. 223 (type loc. Quetta district, Baluchistan).
1966. *Agama ruderata baluchiana*, Minton, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 95.

This small, short, stocky, dorsoventrally flat agama is with a greyish-brown dorsum and pale ventrum; a series of faint, paired dark brown spots are present on each side of the vertebral line. The head is subtriangular, anterior upper portion of head is with unequal, convex, strongly keeled shields; posterior portion of head with spinose shields; snout is short, slightly curved; nostril is situated in canthus rostralis. Upper labials 15-19; lower labials are with same number; lower margin of upper labials is denticulated. Dorsum is with imbricate, strongly keeled and pointed, partly erect, vary in size or unequal, rhomboidal, irregularly arranged, larger ones numerous, all pointing straight backwards; lateral scales on flanks are smaller and point more or less backwards and downwards; 80-82 scales round the body; ventral scales are smooth or feebly keeled, about as large as the

lateral scales. Gular sac is not present, gular scales are almost as large as the ventral scales. Limbs are slender, long, moderately built, hind-limb reaches to the neck; scales on the hind leg are not strongly differentiated. Tail rounded, covered with almost equal strongly keeled scales. Standard length 75-88 mm., tail length 90 mm.

Distribution : Pakistan (Sibi and Quetta districts, Baluchistan) (Map 50).



Map 50 : Distribution of *Agama rudrata baluchiana*, *Mabuya andamanensis*, *Sphenomorphus taprobanense*, *Scincella tavesae* and *Acanthodactylus cantoris blanfordi*.

Habits and habitat : Rock and ground dwelling, shy, secretive, most sluggish, with a strict homing sense, insectivorous, diurnal. Breeding season is from May to June, 7 subspherical eggs (11-13 mm. in greatest diameter) are laid in a single clutch.

Status : Rare.

151. *Agama rubrigularis* Blanford 1875

(Map 33)

1875. *Trapelus rubrigularis* Blanford, *P. Asiat. Soc. Beng.* p. 233 (type loc. foot of the Khirthar Hills, W. Sind).
 1885. *Agama rubrigularis*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 346.
 1935. *Agama rubrigularis*, Smith, *Fauna Brit. Ind.* 2 : p. 224.
 1966. *Agama rubrigularis*, Minton, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 96.

This moderately large ground agama is with a olive or greyish dorsum, with small yellow or golden spots; juveniles are with a paired series of 3-5 black spots down the dorsum; a distinct dark line is present on each side of the nape; a large red spot is present on throat in both the sexes; ventrum is whitish. The head is subtriangular, upper side of head is with unequal, keeled scales which are largest on the snout; snout is short, strongly sloped in profile; nostrils are present above the canthus rostralis, pointing upwards and outwards. Upper labials 16-18; lower labials 14-18; upper labials are denticulated along their free margin; occiput is devoid of spines. Dorsum is with subequal, feebly keeled, imbricate, rhomboidal scales which are intermixed with separated, much larger, strongly keeled scales; these larger dorsal scales are arranged in regular transverse rows. Gular pouch is present in males but it is not well developed; gular scales are smooth and almost as large as the small dorsal scales; ventral scales are smooth and as large as the small dorsals; 100-112 scales are present round the middle of body. Limbs are weak, the hind-limb reaches to the back of head or the ear. Tail is feebly depressed, oval in section, covered with subequal keeled scales, the tip of the tail is blunt. Males are with one or two rows of callose preanal scales. Standard length 68-85 mm., tail length 100 mm. In hatchlings the tail is not longer than the head and body.

Distribution : Pakistan (Khirthar Hills, Kotei, Lehri near Jacocabad, all places in Sind; Kaur Bridge and Manzai in Waziristan; Sibi district in Baluchistan) (Map 33).

Habits and habitat : Terrestrial, diurnal, insectivorous, breeds in June-August.

Status : Rare.

152. *Agama megalonyx* (Gunther 1864)

(Map 14)

1864. *Trapelus megalonyx* Gunther, *Rept. Brit. Ind.* : p. 159. pl. 14, fig. C (type loc. Afghanistan).
 1885. *Agama megalonyx*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 347.
 1935. *Agama megalonyx*, Smith, *Fauna Brit. Ind.* 2 : p. 224.
 1966. *Agama megalonyx*, Minton, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 95.

This robust and short agama is with a olive-brown dorsal colouration, back with lighter and darker transversely arranged markings and a vertebral series of six large,

light, black-edged spots; a dark line is present along each side of the nape; fold in front of the shoulders is black; ventrum is whitish. The species is similar to that of *Agama rubrigularis* and *Agama agilis* but differs in the following way. The body is more robust and shorter; tail is tapering abruptly posterior to the vent; Upper labials 15-16; lower labials 16-18; dorsal scales most unequal, the largest ones are generally arranged in groups, some smooth, some feebly keeled, some strongly keeled, some with a raised mucro, scales are more strongly imbricate and less regularly rhomboidal; 71-88 round the middle of body; ventral scales are as large as the small dorsals and feebly keeled. Standard length 53-47 mm., tail length 75 mm.

Distribution : Afghanistan, Pakistan (Quetta and northern Kalat districts in Baluchistan). Irano-Baluchistan border (Map 14).

Habits and habitat : Terrestrial, insectivorous, diurnal sluggish lizards. Nothing is known about other habits.

Status : Rare.

153. *Agama minor* Hardwicke & Gray 1827

(Fig. 87, Map 28)

1827. *Agama minor* Hardwicke & Gray, *Zool. Journ.* 3 : p. 218 (type loc. Chittagong).
 1856. *Brachysaura ornata* Blyth, *J. Asiat. Soc. Beng.* 25 : p. 448 (type loc. Saugor, C. India.)
 1885. *Charasia ornata*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 334.
 1935. *Agama minor*, Smith, *Fauna Brit. Ind.* 2 : p. 225.

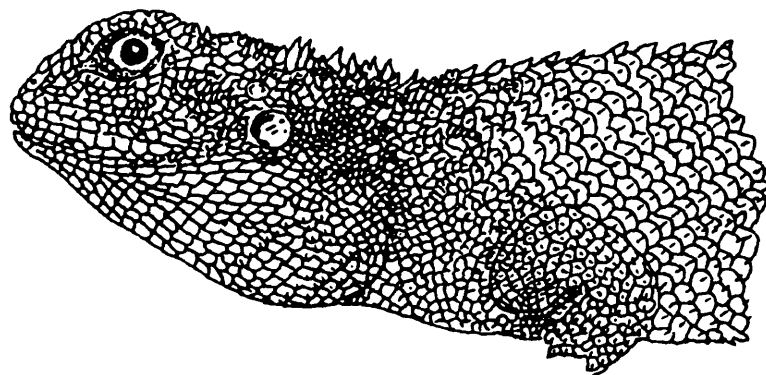


Fig. 87 : *Agama minor* : Lateral view of head.

Head is high and large but short, body is feebly depressed tympanum small, deeply sunk. Dorsal colour is olive-brown, with three rows of dark-brown light-edged spots on the back and base of the tail; the spots of the middle row are most prominent and rhomboidal; a white stripe on sides of nape, an oblique yellowish stripe from the eye to the angle of the mouth; limbs with dark-brown cross-bars; throat profusely spotted with

grey; belly is yellowish-white. Upper head scales large, unequal, strongly keeled or tubercular; 11-15 upper labials and as many lower labials; dorsal scales do not show much difference, these are large, strongly imbricate and keeled, generally mucronate, pointing backwards and upwards; ventral scales are small, smaller than the dorsals, keeled; 48-58 scales round the middle of the body; gular scales are large, as large or larger than the ventrals; a short oblique fold in front of the shoulder, not extending across the throat, nuchal and dorsal crests are present but are not well developed. Limbs are short, toes shorter, not compressed, fifth toe not extending as far as first, the hind-limb reaches to the back of the head or not quite so far. Tail is shorter than the head and body, rounded, slightly compressed, not annulated, its upper surface is covered with almost equal keeled scales, swollen at the base in adult males. Standard length 53-90 mm.; tail length 45-86 mm.

Distribution : India : Gujarat, Madhya Pradesh, Uttar Pradesh. Elsewhere : Pakistan (Map 28).

Habits and habitat : It is a nocturnal agama living in burrows made by rats during the day. It is a sluggish and docile species and consumes grasshoppers and their nymphs, earwigs, beetles, bugs, arthropod eggs and spiders.

Status : Vulnerable, on account of habitat destruction and urbanisation for man.

Genus 39. *Phrynocephalus* Kaup 1825.

1801. *Megalochilus* Eichwald, *Zool. Spec.* 3 : p. 185 (type *auritus*).

1825. *Phrynocephalus* Kaup, *Isis* : p. 591 (type *guttatus*).

1843. *Saccostoma* Fitzinger, *Syst. Rept.* : pp. 18 & 87 (type *auritus*).

1843. *Helioscopus* Fitzinger, *Syst. Rept.* : pp. 18 & 88 (type *P. helioscopus*).

1843. *Phrynosaurus* Fitzinger, *Syst. Rept.* : pp. 18 & 88 (type *P. olivieri*).

In this genus comprises 42 species which are restricted to western and central Asia. The Toad headed agamas are specially adapted to lead a life in deserts and have become subjected to numerous special structural changes in their body parts so as to fit themselves in hostile desert environment. The main generic characters are : The body is depressed; head is quite high; the crown is flat; snout is very short; dorsal crest is not present; gular sac is missing; a transverse gular fold is available; dorsal scales are uniform or intermixed with larger scales; tympanum is rudimentary or absent, when present is concealed under the thick skin; tympanic membrane is under developed; extra columella cartilage is present; columella auris is extremely stout and well developed; tail rounded, depressed at the base; femoral and preanal pores are not present; the eye-opening is very small; the eyes are much thickened, strongly projecting and bear a fringe of pointed scales; when closed both the lower and upper eyelids make a tight covering around the eyes and do not allow

sand to enter; in many species the supraciliary ridge is strongly projected and forms a roof like cover above the eyes; the nostrils are very close, can be closed; strong lateral fringes are present on both the sides of the toes, which are formed by an expansion of the small lateral scales of the digit; limbs are weak; rostral not larger than the other labials; 12-15 upper labials with denticulated free margin; labial border protudes out.

Key to the species of genus Phrynocephalus

- I. Tail longer than the head and body.
- A. Dorsal scales are unequal.
1. Dorsal scales are enlarged, nail-like; with free posterior margin; no spinous scales upon the neck and back of head. *Phrynocephalus scutellatus*
 2. Dorsal scales are enlarged; without free posterior margin; spinous scales are present upon the neck and back of head. *Phrynocephalus luteoguttatus*
- B. Dorsal scales are almost equal.
- (a) No spine like scales upon the neck and back of the head.
1. Nasal shields are separated by three or more scales.
 - i. The hind-limb not extending beyond the ear. ... *Phrynocephalus theobaldi*
 - ii. The hind-limb reaches to the eye. *Phrynocephalus reticulatus*
 2. Nasal shields are in contact or partly separated; the hind-limb reaches to the tip of the snout or further. *Phrynocephalus ornatus*
 3. Nasal shields are separated by 1 or 2 scales; the hind-limb reaches to the eye. *Phrynocephalus maculatus*
- (b) Spine-like scales are present upon the neck and back of the head, nasal shields are in contact with one another; digits are with very long denticulations. *Phrynocephalus euptilopus*
- II. Tail shorter than the head and body; spine-like scales are present upon the neck and back of the head; nasal shields are not in contact with one another; the hind-limb reaches to the eye. *Phrynocephalus laungwalansis*

154. *Phrynocephalus scutellatus* (Olivier 1807)

(Map 52)

1807. *Agama scutellata* Olivier, *Voy. Emp. Otho.* 3 : p. 110 (4th ed.), and 5, p. 196 (8th ed.) and Atlas pl. 42, fig. 1 (type loc. near Ispahan, Persia).
1837. *Phrynocephalus olivieri* Dum. & Bibr., *Erp. Gen.* 4 : p. 517 (based on Olivier's specimen).
1845. *Phrynocephalus tickellii* Gray, *Cat. Liz. Brit. Mus.* : p. 260 (type loc. Afghanistan).
1935. *Phrynocephalus scutellatus*, Smith, *Fauna Brit. Ind.* 2 : p. 229.
1966. *Phrynocephalus scutellatus*, Minton, *Bull. Amer. Mus. nat. Hist.* 134 : p. 96.

The dorsum of this small toadheaded agama is greyish-brown with faint and dark spottings; in most of the individuals there is a large pale spot with a dark grey border, in the middle of the back; two black cross-bars are present just anterior to this spot and two of the same colour just behind it; dorsal aspect of the limbs is with two broad cross-bars; tail is with black or brown spots, this pattern is more dense on the ventral aspect of the tail; ventral aspects of body and limbs are whitish; some individuals are densely spotted with black and grey; many lizards are with a grey dorsum with small white spots or brownish all over the dorsal aspect of head and body. The males are generally more brownish with a reddish tinge; the females are greyish all over. Nasal shields are large and in contact with one another; in few individuals the nasals are separated by many scales; snout is vertical; nostrils are directed straight forwards; scales on the dorsal aspect of head are very large and most unequal; a patch of large scales is present on the mid-occipital region; a curved bony ridge is present on the posterior portion of head which extends between the posterior extremities of the orbit; the portion of the head behind the ridge is at a distinctly lower level than the crown of the head; back of the head is with short spine-like scales in males, these are generally not available in females; a prominent fold of skin is present on the neck, which is covered with enlarged scales, arranged in groups. Dorsum is with smooth, unequal, juxtaposed, feebly imbricate scales, intermixed with scattered larger nail-like scales; these enlarged nail-like scales are generally larger and more numerous in the males than in the females; flanks are with small granular scales, intermixed with scattered tubercles; gular and ventral scales are absolutely smooth; 38-48 scales across the middle of the belly. Upper labials 13-14; lower labials 12-14; from 2-4 rows of enlarged scales, parallel to the lower labials are present, which are in contact anteriorly with the mental shield; mental is larger than the adjoining labials. Toes are elongate, with multikeeled subdigital lamellae; outer margins of third and fourth toes are denticulate, the length of the denticulations is almost equal to the width of the toe; the hind-limb reaches almost to the eye. Tail is feebly depressed, covered all over with smooth or feebly keeled scales, those on the dorsal aspect are intermixed with large scales; some of the lateral scales at the base of the tail are pointed. Femoral pores are not present. Patches of callose scales in males are not available. Standard length 42-50 mm., tail length 70 mm.

Distribution : Afghanistan, Iran, Pakistan (Baluchistan, Ormara on the Mekran Coast, Quetta and along the Agthan-Baluchistan border). Recorded up to 7000 feet (Map 52).

Habits and habitat : Inhabits gravel and stony areas; very active and fast running; diurnal; insectivorous, mainly the ants. Nothing is known about breeding and other habits.

Status : Common.

155. *Phrynocephalus theobaldi* Blyth 1863
(Map 29)

1862. *Phrynocephalus olivieri* (not of Dum. & Bibr.) Theobald, *J. Asiat. Soc. Beng.* 31 : p. 518.
 1863. *Phrynocephalus theobaldi* Blyth, *J. Asiat. Soc. Beng.* 32 : p. 90 (type loc. Lake Tsho-maravi, Rupshu Province, Tibet)
 1867. *Phrynocephalus stoliczkai* Steindachner, *Reise Novara, Rept.* : p. 23, pl. 1, figs. 6 * 7.
 1872. *Phrynocephalus caudivolvulus*, Anderson, *Proc. Zool. Soc.* : p. 387.
 1935. *Phrynocephalus theobaldi*, Smith, *Fauna Brit. Ind.* 2 : p. 230.

This toad headed agama is with a greyish dorsum profusely spotted with black, brown yellow and white, in many individuals the hinder part of back is with large paired black spots, many have faint dorso-lateral stripes and longitudinal spots arranged in the same fashion; throat is spotted with black; upper side of limbs and tail is spotted with black (spots or cross-bars); belly is whitish, with a black patch in the middle; underside of the tip of tail in males is deep black while in the females it is grey. The body is depressed; the head is high; crown is almost flat; snout is extremely short; nostrils are closed together; eyelids well developed, with fringed margin; dorsal crest is missing, gular sac is not present, a transverse gular fold is always present. Rostral is almost equal to the other labials, 12-15 upper labials, their free margins denticulated. Dorsal scales are almost equal, homogenous; neck and back of the head are devoid of spine like scales; gular scales smaller than the ventrals; ventrals are keeled; nasal shield are separated by 1-3 scales. Claws very long, toes short with keeled lamellae below, the hind-limb is not extending beyond the ear. Tail round longer than head and body; the tip is blunt, upper side is covered with small almost equal scales. Standard length 54 mm.; tail length 58 mm.

Distribution : India : Kashmir. Elsewhere : Southern Tibet, Eastern Turkistan (Map 29).

Habits and habitat : This agile, diurnal toad agama prefers to live in colonies in sandy places and can run with a great speed on the sand and can bury itself in loose sand with a marked swiftness, by means of lateral movements of the body. This species is said to be cuniculine and monogamous, the pair share a common burrow, concealed by a stone or vegetation. The burrow is roughly 10-15 cm. deep and thereafter about 20-25 cm. long horizontally. In Kashmir the species has been recorded up to 1800 metres or more. This is mainly insectivorous and food comprises beetles, ants and vegetable matter. This toad agama is viviparous and two young ones are produced.

Status : Rare.

156. *Phrynocephalus reticulatus* Eichwald 1831
(Map 30)

1831. *Phrynocephalus reticulatus* Eichwald, *Zool. Spec.* : p. 186 (type loc. banks of Oxus)
 1885. *Phrynocephalus caudivolvulus*, (in part) Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 375.

1909 *Phrynocephalus caudivolvulus* var. *reticulatus*, Bedriaga, *Sci. Result Przewalski's exped. C. Asia* 3 : (1), p. 367.

1935. *Phrynocephalus reticulatus*, Smith, *Fauna Brit. Ind.* 2 : p. 231.

Dorsal colour is grey and the complete background is reticulated with dark brown lines, in many individuals a series of paired brown spots are present, which are arranged in the complete vertebral region of the back; belly is white; upper surface of the tail is with black cross-bars; in many lizards the tip of the tail is jet black. The body is depressed, the head is high, crown is almost flat; snout is extremely short; nostrils are close together; eyelids are well developed, with much fringed margin; dorsal crest is missing; gular sac is not present; a transverse gular fold is always present, rostral is almost equal to the other labials; 12-15 upper labials, their free margins denticulated. Dorsal scales are almost equal, homogenous; neck and back of the head are devoid of spine like scales; gular scales are smooth, smaller than the ventrals; ventrals are keeled; nasal shields are separated by 3-5 small scales, upper head scales are unequal, largest scales are available on the snout; mid occipital region is always keeled. Claws are very long, toes are short, with keeled lamellae below, the hind-limb reaches to the eye. Tail is flat, quite longer than the head and body, oval in the transverse section, tapers to a fine point, upper side is covered with almost equal scales. Standard length 45 mm.; tail length 60 mm.

Distribution : India : Ladakh, Kashmir, Elsewhere : Turkistan, the range in the west extends up to the shores of the Caspian Sea (Map 30).

Habits and habitat : Insectivorous, saltatorial, terrestrial and diurnal.

Status : Rare.

157. *Phrynocephalus ornatus* Boulenger 1887 (Map 51)

1887. *Phrynocephalus ornatus* Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 496 (type loc. between Nushki and Helmand River, Afghan-Baluchistan frontier).

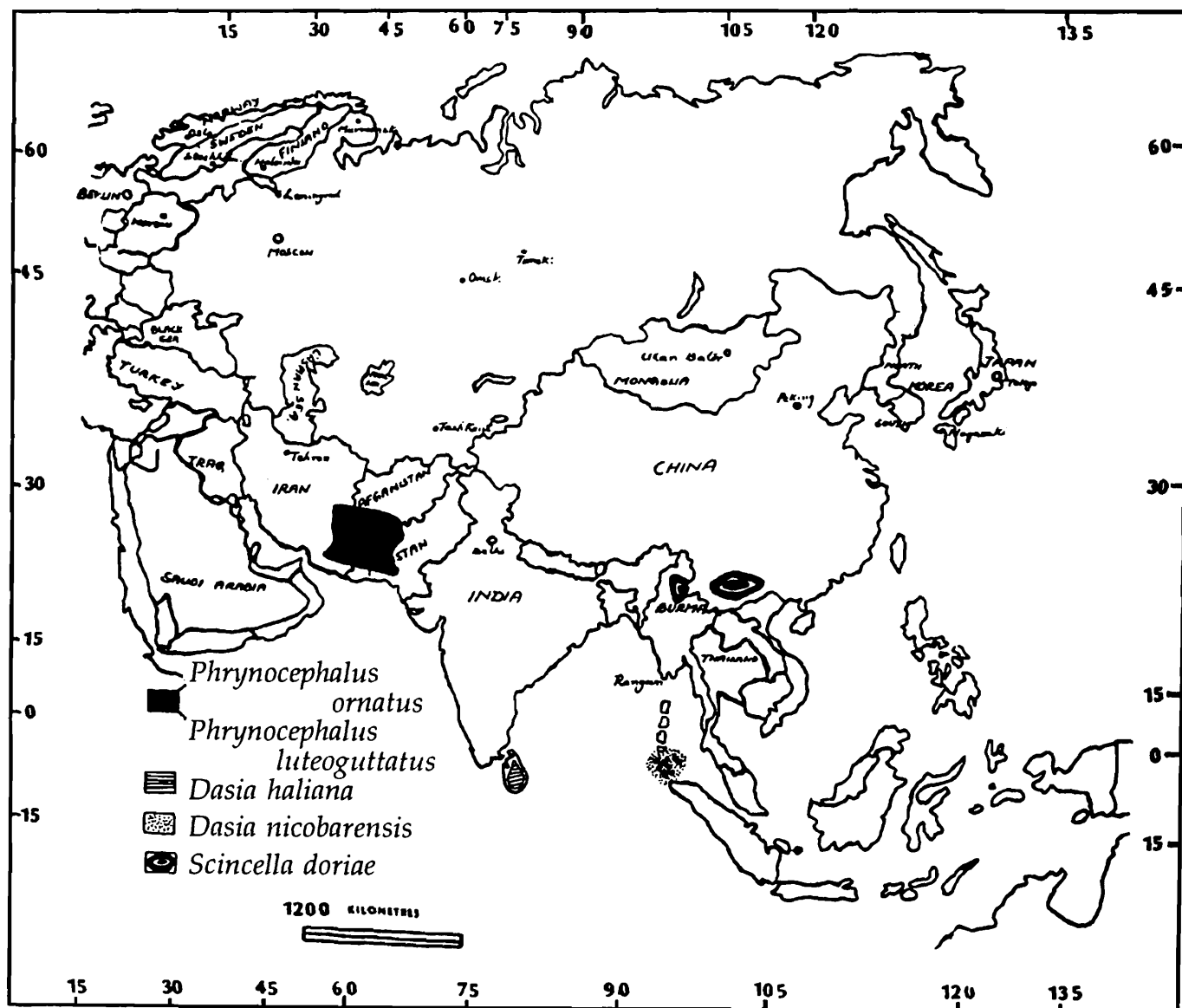
1935. *Phrynocephalus ornatus*, Smith, *Fauna Brit. Ind.* 2 : p. 232.

1966. *Phrynocephalus ornatus*, Minton, *Bull. Amer. Mus. nat. Hist.* 134 : p. 97.

The dorsal colour of this most beautiful lizard is greyish, with black and white specks or larger black spots, almost regularly arranged; lateral aspects of body is with a light longitudinal stripe with a black margin on both the sides; limbs are generally with dark spots, in some individuals these are missing; hinder aspect of thigh is generally with a dark band; ventrum is whitish; the tail is with 4-5 jet-black transverse bars.

The body is depressed, the head is high, crown is almost flat; the snout is short and projecting downwards; nasal shields are large, generally in contact with one another or partly separated in few lizards; nostrils are directed upwards and forwards, eyelids are

well developed with much fringed margin, dorsal crest is missing; gular sac is not present; a transverse gular fold is always present; rostral is almost equal to the other labials; 12-15 upper labials, their free margins denticulated; scales on the dorsal aspect of head are moderately large, unequal and keeled; no spine-like scales on the back of the head and neck; folds of the skin of the neck with groups of slightly enlarged scales; dorsal scales are almost equal, feebly imbricate; scales on the flanks are slightly smaller than those on the back; gular and ventral scales are perfectly smooth; ventral scales are mucronate; 3-4 rows of enlarged scales are parallel with the infralabials, in contact anteriorly with the mental shield; mental shield is larger than the adjoining labials; the hind-limb generally reaches to the nostril or little far, in some individuals only up to the eye; toes elongate, subdigital lamellae keeled; outer margins of third and fourth toes are denticulated, the



Map 51 : Distribution of *Phrynocephalus ornatus*, *Phrynocephalus luteoguttatus*, *Dasia haliana*, *Dasia nicobarensis* and *Scincella doriae*.

length of the denticulations is almost equal to the width of the toe. Tail depressed, oval in section, tapering to a point, covered with subequal keeled scales. Standard length 38 mm., tail length 52 mm.

Distribution : Afghanistan, Pakistan (Las Bela and Kharan districts in Baluchistan, and Afghan-Baluchistan frontier), Iran (Map 51)

Habits and habitat : Terrestrial, prefers gravel plains near bushes, most agile, insectivorous. Nothing is known about breeding habits.

Status : Very common in Balushistan and Afghan-Baluchistan frontier.

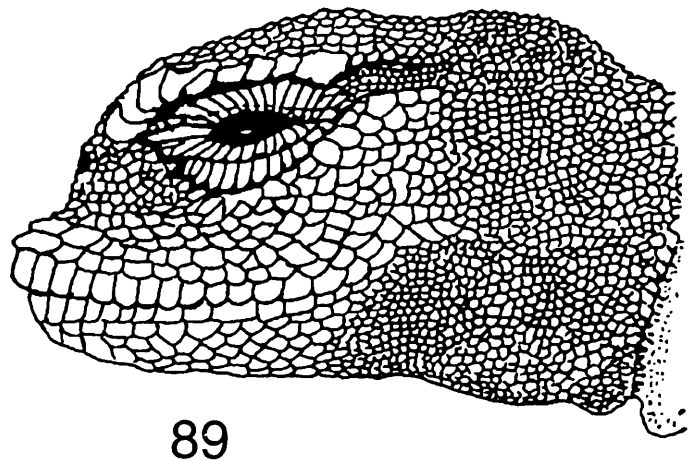
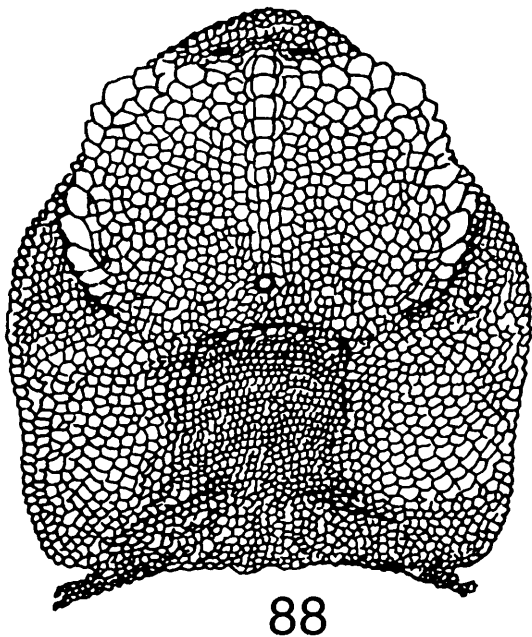
158. *Phrynocephalus maculatus* Anderson 1872

(Figs. 88 & 89, Map 53)

1872. *Phrynocephalus maculatus* Anderson *Proc. Zool. Soc.* : p. 389, fig. (type loc. Awada, Shiraz)

1935. *Phrynocephalus maculatus*, Smith, *Fauna Brit. Ind.* 2 : p. 233.

1966. *Phrynocephalus maculatus*, Minton, *Bull. Amer. Mus. nat. Hist.* 134 : p. 98.



Figs. 88-89 : 88. *Phrynocephalus maculatus* : Dorsal view of head; 89. *Phrynocephalus maculatus* : Lateral view of head.

The dorsal colouration of this large toad headed agama is greyish, with black and white specks; in many individuals the dorsum is with black spots or cross-bars; same pattern is available on the upper aspect of limbs; ventrum is whitish; tail is generally with dark cross-bars; in certain individuals the entire tip of the tail is dark grey. Nasal shields are separated by 1 or 2 scales; snout is vertical; nostrils directed straight forwards; scales on the dorsal aspect of head are large, almost equal, convex, smooth; back of the head and

neck are without spine-like scales. Dorsum is with small, subequal, subimbricate scales; lateral dorsal scales are smaller than the other dorsal scales; gular and ventral scales are absolutely smooth; the ventral scales are mucronate; 3-4 rows of enlarged scales are parallel with the lower labials and are in contact anteriorly with the mental shield; mental shield is much larger than the adjoining labials; 13-16 upper and 13-15 lower labials; ventral scales are in 49-52 rows across the middle of the belly. The hind-limb reaches to the eye or to the tip of snout; toes elongate; subdigital lamellae is multikeeled; outer margins of third and fourth toes are feebly denticulated. Tail feebly depressed, oval in section, the tip is bluntly pointed, prehensile, covered with subequal keeled scales. Standard length 73-85 mm., tail length 120 mm.

Distribution : Arabia, Iraq, Iran, Pakistan (Kharan and between Nushki and Helmand River, Afghanistan-Baluchistan frontier in northern Baluchistan) (Map 53)

Habits and habitat : Terrestrial, prefers to live in flat, hard clay soil areas and avoid sand dune localities; diurnal; most agile; on provocation these lizards raise their tail upwards, curl it dorsally in to a spiral fashion and wave it from side to side; on being chased constantly, these lizards stop suddenly and flatten against the ground; they are in the habit of perching on any elevated object; these toad headed agamas are insectivorous and herbivorous, the food mainly comprises beetles and their grubs, grasshoppers, crickets and other small insects. Their gut contents revealed that they also consume small wild seeds and other plant material occasionally. Nothing is known about the breeding habits.

Status : Common.

159. *Phrynocephalus euptilopus* Alcock & Finn. 1896

(Map 39)

1896. *Phrynocephalus euptilopus* Alcock & Finn., *J. Asiat. Soc. Beng.* : 65, p. 556 (type loc. Darband, 3000 feet, Baluchistan).

1935. *Phrynocephalus euptilopus*, Smith, *Fauna Brit. Ind.* 2 : p. 234.

Dorsal colour is sandy brown; back and tail are densely speckled with black; dorsal aspect of head, nape and shoulders are spotted; belly is white; tip of the tail is jet black.

The body is depressed, the head is high, crown is flat; snout is extremely short and vertical; nostrils are close together, directed almost straight forward; eyelids are well developed, with much fringed margin; dorsal crest is missing; gular sac is not present; a transverse gular fold is available; rostral is equal to the other labials; 12-15 upper labials, their free margins denticulated.

Dorsal scales are almost equal, homogenous; sides of neck and sides of the back of head are having long spine like scales; gular and other ventral scales are smooth and mucronate; nasal shields are in contact with one another; upper head scales are small and equal. Claws are very long, digits long with smooth or feebly keeled lamellae beneath,

lateral denticulations of lamellae is greater than the breadth of the digit, slightly longer than the head and body, oval in transverse section, tip is blunt, upper side is covered with almost equal scales. Standard length 60 mm., tail length 65 mm.

Distribution : India : Western Rajasthan (Mandla ca. 100 Km. South west of Ramgarh, Jaisalmer; Dhanana). Elsewhere : Pakistan (Western Baluchistan and Afghan-Baluchistan frontier) (Map 39).

Habits and habitat : Insectivorous, diurnal and saltatorial (fossorial).

Status : Rare.

160. *Phrynocephalus leuteoguttatus* Boulenger 1887
(Map 51)

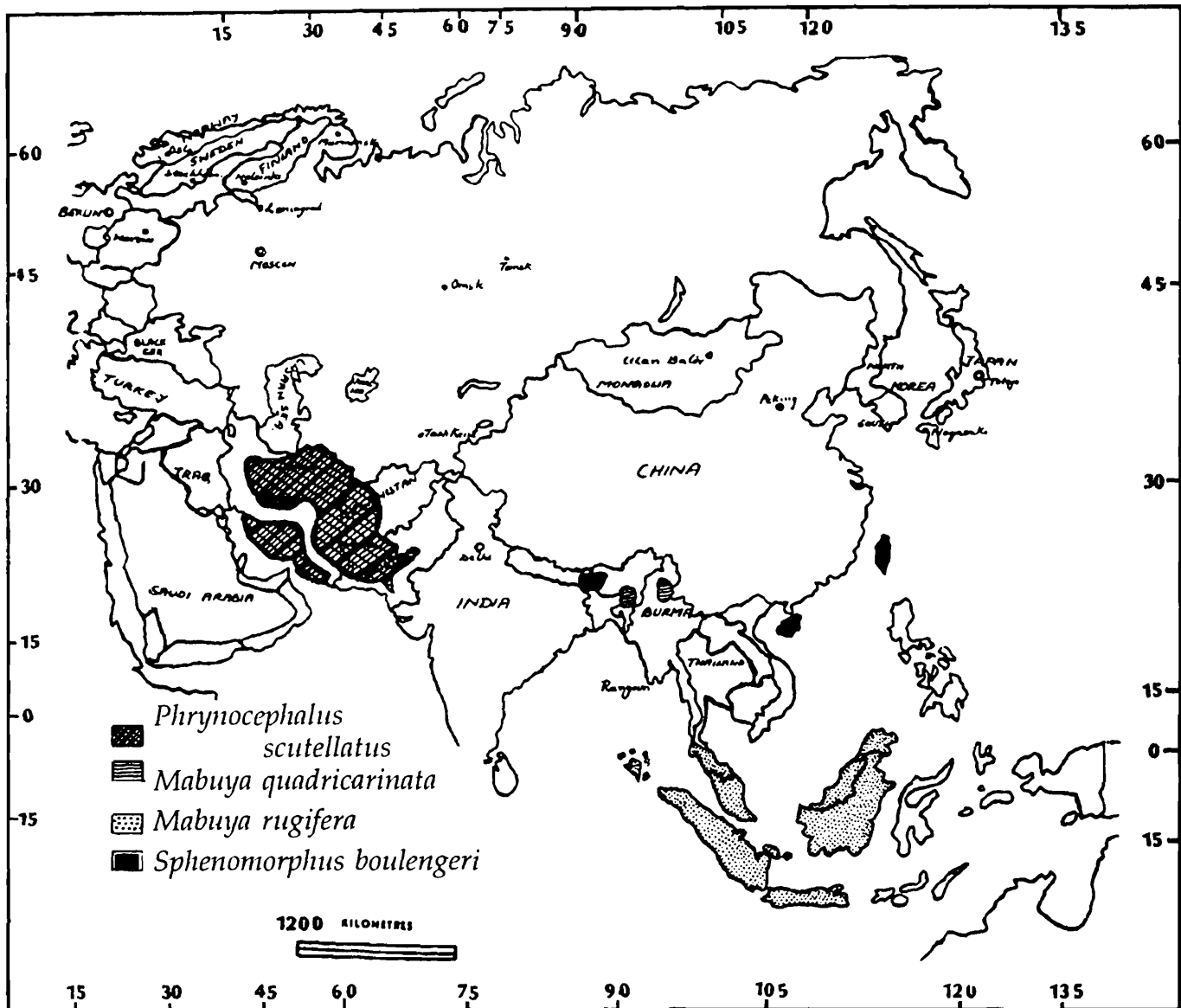
1887. *Phrynocephalus leuteoguttatus* Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 497 (type loc. between Nushki and the Helmand River, Afghan-Baluchistan border).

1935. *Phrynocephalus leuteoguttatus*, Smith, *Fauna Brit. Ind.* 2 : p. 235.

1966. *Phrynocephalus leuteoguttatus*, Minton, *Bull. Amer. Mus. nat. Hist.* 134 : p. 97.

The dorsal colouration of this small toad headed agama is yellowish-brown or pale buff with black mottelings and light yellow or golden spots; these are blackish in few individuals; in most of the lizards there is a blackish streak along the outer aspect of the legs; ventrum is white with a pink tinge. Top of the tail is with black cross-bars or the complete tip is black. Nasal shields are in contact with one another or partly separated; snout is verticle; nostrils directed straight forward; scales on the dorsal aspect of head are small, subequal and keeled, front portion of the crown of head is bordered by a series of enlarged scales; lateral aspect of the back of head and sides of the neck are with the spine like tubercles; dorsum is with unequal, subimbricate, small scales intermixed with numerous scattered larger scales, all these scales are strongly keeled; lateral dorsal scales are smaller than the dorsal scales on the back; gular and ventral scales are smooth, mucronate, two rows of enlarged scales, separated from one another by smaller scales, are parallel with the lower labials; these enlarged scales are separated by smaller scales from the larger scales which are present at the middle portion of the gular region; mental shield is very small, not larger than the adjoining labials; 12-15 upper and 11-14 lower labials are present; ventral scales are larger than the dorsal scales, these are quadrangular and subimbricate, in 35-44 rows across the middle of the belly. Dorsal aspect of limbs are with mucronate scales, the hind-limbs reach to the eye; digits are elongated, subdigital lamellae are smooth or keeled, with most prominent lateral denticulations, the length of the longest denticulation is equal to the width of the toe. Tail strongly depressed, oval in section, the tip is pointed, covered with subequal mucronate keeled scales. Standard length 38-44 mm., tail length 40 mm.

Distribution : Afghanistan (Helmund River district), Pakistan (desert basins in western Baluchistan east to Nushki and western Las Bela). Must be available in to the adjoining portion of Iran (Map 51).



Map 52 : Distribution of *Phrynocephalus scutellatus*, *Mabuya quadricarinata*, *Mabuya rugifera*, and *Sphenomorphus boulengeri*.

Habits and habitat : Terrestrial, prefers to live in sandy areas with sparse vegetation, buries itself in the sand when alarmed, with fast lateral shivering movements; it is most docile, sluggish and diurnal, lizard; insectivorous; breeding season is from May to July.

Status : Abundant.

161. *Phrynocephalus laungwalansis* Sharma 1978
(Plates 9 & 10, Map 53)

1978. *Phrynocephalus laungwalansis* Sharma, *Bull. Zool. Surv. Inda*, 1(3) : pp. 291-294 (type loc. Sand-dunes near Laungwala, Jaisalmer district, Rajasthan, India).

The body is long, stout flattened dorso-ventrally; snout is vertical, comparatively more acute than in other allied species of the genus; nostrils are close together, directed vertically

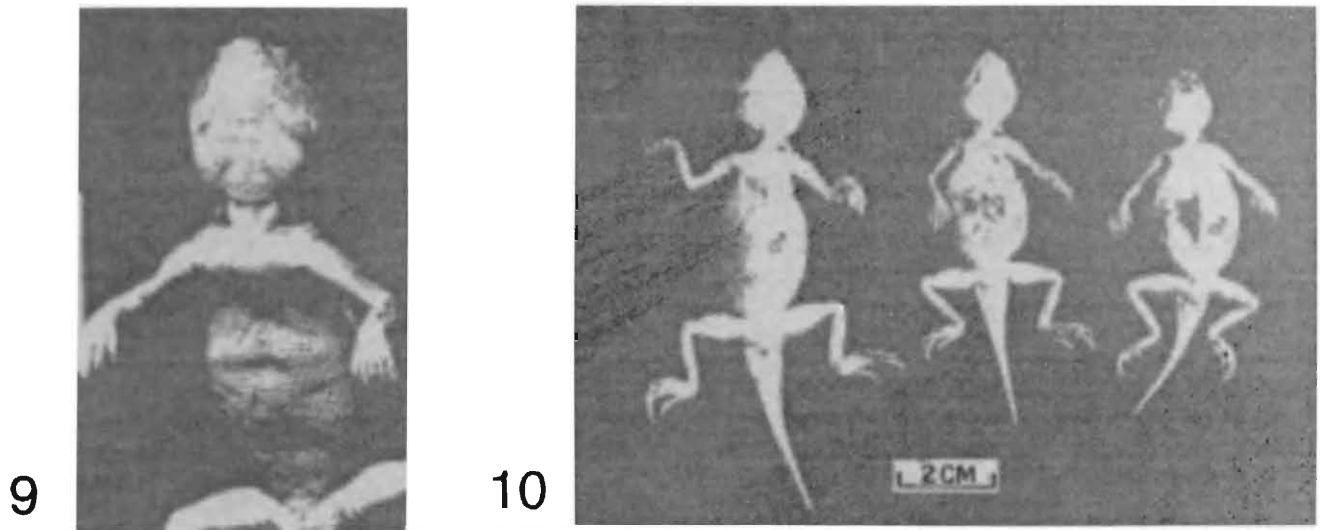
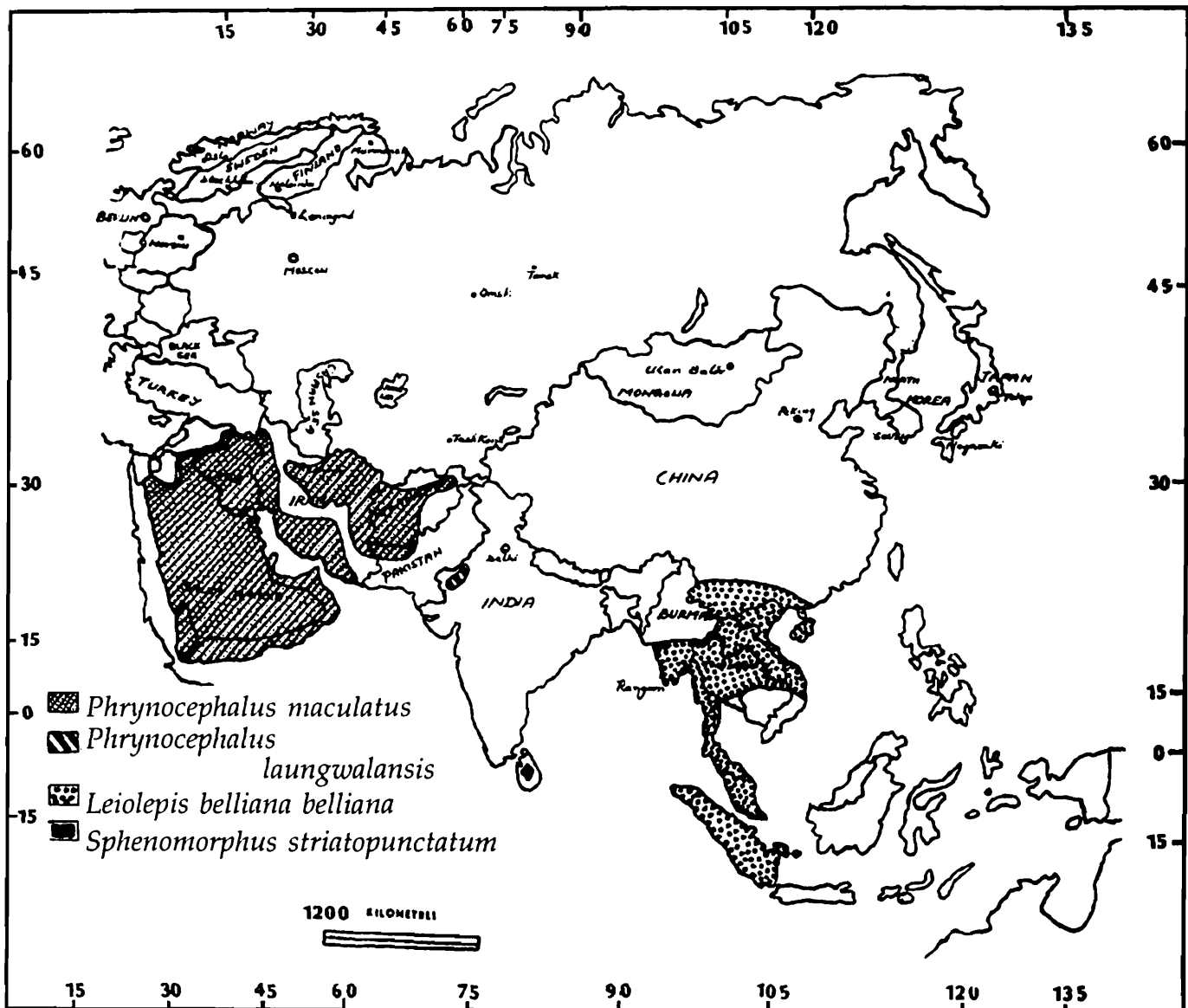


Plate 9 : *Phrynocephalus loungwalansis* Sharma & **Plate 10 :** *Phrynocephalus loungwalansis* Sharma

upward and forward. Dorsum is dark, greyish and thickly speckled with black; black spots on the back arranged in more or less longitudinal rows; chin, neck, shoulders, dorsal aspect of tail, upper surface of limbs, gular region, and dorsal and lateral aspects of head liberally spotted with black; the complete ventrum is whitish. All the examples from the sand-dunes of Sam village possessed two blue spots on the ventral aspect, slightly below the neck. Nasal shields are not in contact with one another, separated by a vertical row of 1-3 scales; nasal region is much bulged; supra-orbital ridge is prominent and composed of strongly keeled scales; eyes are small, eyelids with acute and fringed scales, pupil is round; gular fold is most distinct; head region is with mixed smaller and larger scales which are largest and grouped together on the parietal region (roughly on the middle of head); upper labials 16 or 17, lower labials 16; sides of back of head and of neck are with long spinous tubercles; dorsal scales subequal, imbricate and bearing spinous tubercles or keels; scales on flanks are just like the dorsal scales; gular scales are strongly keeled and bear a spine-shaped posterior tip; two rows of enlarged scales parallel to the infra labials not separated from one another by smaller one; mental shield large, almost two times larger than the adjacent labials. Limbs are long and stout; digits are long, with keeled spinous lamellae beneath and with lateral spinous denticulations whose length is not more than the breadth of the digit; the hind-limb reaches to the eye. A strong postanal fold is available in all the individuals collected so far. Tail swollen and compressed dorsoventrally, shorter than head and body, it becomes round slender posteriorly and ultimately tapering in to a bluntly pointed tip; covered above with large, strongly keeled, spinous scales intermixed with a few smaller ones. Standard length 29-69 mm.; tail length 15-42 mm.

Distribution : India : Rajasthan : Laungwala, Sam, Lunar (all in Jaisalmer district) (Map 53).



Map 53 : Distribution of *Phrynocephalus maculatus*, *Phrynocephalus laungwalansis*, *Leiolepis belliana belliana* and *Sphenomorphus striatopunctatum*.

Habits and habitat : *P. laungwalaensis* inhabits the most western sandy desert parts of Jaisalmer district where the dry almost barren, vegetation-less, 5-20 metres high, shifting type of sand-dunes prevail. Scarcity of water, intense head and wind erosion hazards add severe constraints on plant animal life and on human beings. The dunes are composed of loose sand of a light brown to whitish-yellow colour. In between the dunes, patches of gravel make a marked feature. The inter-dunal spaces, which run for miles, are covered with dense, xerophytic vegetation, comprising mainly the small to medium herbs, shrubs and trees, like *Acacis senegal*, *A. jaquemontia*, *Prosopis spicigera*, *Acacia juliflora*, *Erianthus munja*, *Tacoma undulata*, *Euphorbia neriifolia*, *Commiphora mukul*, *Salvadora cleoides*, *Aerus tomentosa*, *Calligonum polygonoides*, *Capparis aphylla*, *Crotoiaria burhis*, *Leptodesmia sparticum* and *Lycium barbatum*, etc. Such inter-dunal spaces provide a favourable zone for various

animals for shelter and food. Innumerable burrows of rodents, lizards and insects represent a characteristic feature of these spaces. Among the various species which were noticed in the runnels of such inter-dunal spaces are : two species of rodents, two species of lizards (*Agama agilis* and *Acanthodactylus cantoris*) and various orthopterans and beetles. *Phrynocephalus laungwalaensis* does not dwell in this inter-dunal zone of vegetation but lives considerably above, on barren sand-dunes. It does not make burrows and is diurnal in habit.

During March to June these lizards were found to be most active during morning up to 11 AM. Activities were also noticed during the afternoon after 4 PM., but movements were slower. During noon, either they remained under the cover of sand or the activities were quite slow. They were capable of running extremely fast over loose sand, and even while climbing the steep elevations of the sand-dunes the speed was kept up. The lizards are capable of burying themselves in loose sand by vigorous, wriggling movements of the body, limbs and the tail, and on many occasions of the body, limbs and the tail, and on many occasions they were found concealed up to a depth of c. 30 cm. The spinous lamellae beneath and the lateral spinous denticulations on the toes help them a great deal in going under the cover of loose sand, barely in 3 to 4 seconds. Their capability of closing the nostrils and a built in sand trap in their nose help them to breathe under the sand without suffocation. Their strongly projecting and fringed scaly eyelids are most suited for their fossorial-saltatorial habits, and when closed do not permit sand to enter their eyes. It was interesting to observe that when the lizards are distributed they immediately sink into loose sand up to 3 or 4 cm., leaving a clear trail on the sand. Many lizards were caught easily with the help of a long forcep by inserting it quickly on both the sides of this trail. If the lizard is not caught in the first attempt, it sinks deeper into the sand and escapes. A few lizards were noticed in the open when the wind velocity was too high, but otherwise they were seen in considerable numbers on the edges of the sand-dunes in the morning up to 10.30 AM. and after 4 PM. in the afternoon during May.

Food and feeding : The food, as evidenced by the stomach contents, comprises mainly of small red ants (*Monomarium aberrans*, family Formicidae), which are found in abundance on sand-dunes the year round. The food also includes large black ants; various hymenopterous insects (families Apidae and Braconidae); many species of small beetles (family Scarabaeidae); various orthopterous insects like *Chrotogonus* sp. and *Schizodactylus* sp., and grubs of beetles. The optimum feeding of these lizards was noticed at about 10.30 AM.

On many occasions it was observed at Sam village that the lizards are capable of capturing grasshoppers (*Chrotogonus* sp) and other insects with a marked accuracy even at the time of high wind velocity. They thrust their snout into the burrows of the hoppers and catch the victims without giving them a chance to escape. On seeing an insect within their reach, they lie motionless and then suddenly grab insect with surprising agility.

Related climatic factors : The main factors which influence the life of these diurnal lizards in such a difficult habitat are temperature, humidity and wind velocity (Table 1.)

Table 1. Related climatic factors affecting the life of *Phrynocephalus laungwalansis*

(Range is given for the complete month of May, 1976).										
		TEMPERATURE			RELATIVE HUMIDITY			WIND VELOCITY (For 24 hrs. averaged for the whole month) KMPH		
AIR		SOIL								
Maximum	Minimum	Morning			Evening			Morning	Evening	
		5 cm depth	15 cm depth	30 cm depth	5 cm depth	15 cm depth	30 cm depth			
39.2°-45.8°C	22.8°-30.5°C	23.0°- 34.0°C	31.0°- 37.4°C	29.5°- 38.7°C	49.6°- 57.2°C	36.0°- 40.5°C	29.5°- 38.8°C	53%	10%	12.6- 28.1

Genus 40. *Leiolepis* Cuvier 1829.

1829. *Leiolepis* Cuvier, *Regne Anim.* 2nd ed. 2 : p. 37 (type *guttatus*)

1831. *Cynosaura* Schlegel, Gray, in *Griff. Cuv. Anim. King. Syn.* : p. 62 (type *punctatus*)

This genus is monotypic with two subspecies or races distributed in Indo-chinese and Indo-Malayan regions. Only one *Leiolepis belliana belliana* covers the scope of this work. The main generic characters are : The body is depressed; devoid of crest; tympanum is distinct; no gular pouch; a strong transverse gular fold is present; dorsum is with minute, granular, uniform scales; tail is long, rounded, feebly depressed, covered with uniform scales. Femoral pores are present.

Key to the subspecies of the species Leiolepis belliana.

1. Ventral scales are 3-4 times broader than the dorsal scales; 7-13 scales across the middle of the tibia; flanks with black and orange bars *Leiolepis belliana belliana*
2. Ventral scales are 2 times broader than the dorsal scales; 14-24 scales across the middle of the tibia; flanks with black and white bars *Leiolepis belliana guttata*

162. *Leiolepis belliana belliana* (Gray 1827)

(Figs. 90 & 91, Map 53)

1827. *Uromastyx belliana* Gray, *Zool. Journ.* 3 : p. 220 (type loc. Penang).

1831. *Uromastyx reevesii* Gray, in *Griff. Cuv. Anim. King 9, Syn.* : p. 62 (type loc. China)

1831. *Uromastyx maculatus* Gray, in *Griff.-Cuv. Anim. King* p. 62.

1831. *Cynosaura punctatus* Schlegel, Gray, in *Griff. Cuv. Anim. King. Syn.* : p. 62

1845. *Leiolepis bellii*, Gray, *Cat. Liz. Brit. Mus.* : p. 263.

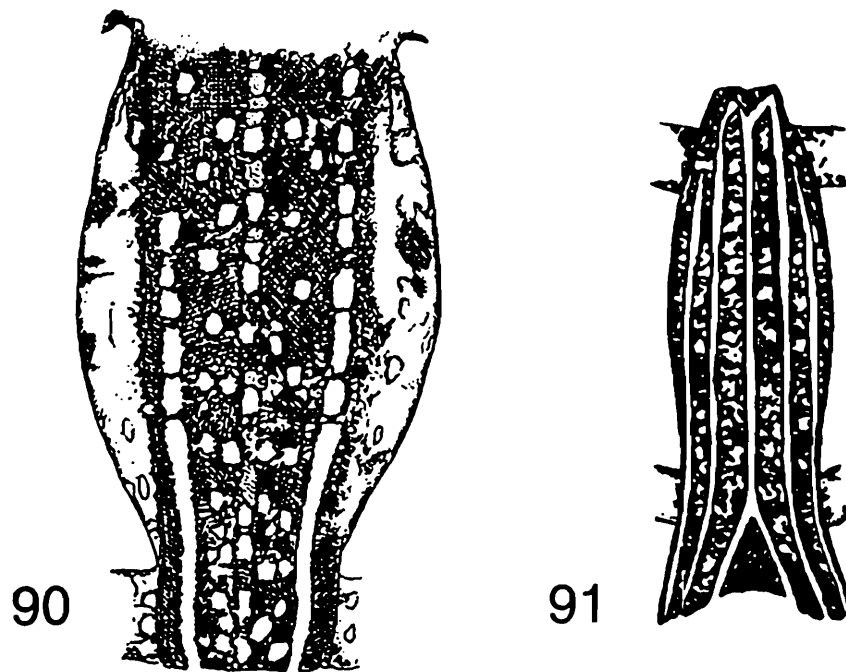
1847. *Lirolepis bellii*, Cantor, *Cat. Rept. Mal. Pen.* : p. 41.

1868. *Leiolepis reevesii*, Theobald, *J. Linn. Soc.* 10 : p. 34.

1890. *Lirolepis belliana*, Boulenger, *Fauna Brit. Ind.* : p. 156.

1935. *Leiolepis belliana belliana*, Smith, *Fauna Brit. Ind.* 2 : p. 238.

These large agamids are with greyish, olive or blackish dorsum with yellow black-edged spots and three longitudinal stripes, one stripe is vertebral and two lateral; flanks are with bluish-black, white or orange vertical streaks; dorsal portion of head is dark olive-brown; tail is light yellow, with small spots along with the vertebral stripe; ventrum is whitish or yellow, in some lizards belly is with dark-blue bars or variegations. Juveniles are somewhat blackish in dorsal aspect, with five yellow longitudinal stripes, the vertebral stripe bifurcate on the neck; tail is with a fast brick-red colour. In specimens from Burma dorsal spots are less in number and widely set apart and dorsal longitudinal stripes are more consistent in adults. The head is quite small in comparison to the body, one and half



Figs. 90-91 : 90. *Leiolepis belliana* : Dorsal colouration of adult; 91. *Leiolepis belliana* : Dorsal colouration of juvenile.

times longer than broad; snout is longer than the orbit and is strongly curved; nostrils are large; tympanum is vertically oval, its diameter is more than half that of the orbit. Dorsal aspect of head with small, keeled scales, which are largest upon the snout and between the eyes, the scales are minutely granular upon the upper eyelids and on the posterior part of the head; canthus rostralis is blunt. Dorsum is with small, granular and keeled scales; ventral scales are large and smooth, almost 3-4 time broader than the dorsal scales. The scales in the gular region are rounded, juxtaposed and smaller than the ventral scales; lateral aspects of jaws are with a series of enlarged scales, which are parallel with the lower labials and separated from them by 2 or 3 rows of smaller scales. A strong and most prominent fold is available across the throat, which is covered with small granular scales; a second less distinct fold is available in many individuals just anterior to the stronger fold; lateral aspect of neck is folded; skin of the flanks is quite loose and flexible. Limbs are strong and moderately large; claws are very long; the hind-limbs reaches to the neck or the ear; scales on the front of tibia are distinctly larger than those on the front of the thigh; from 7-13 across the middle of the tibia; in the basal portion of the fifth toe the subdigital lamellae are modified to form from 3-5 strong triangular spurs along the inner side of the toe. Tail is quite long, thick at the base, oval in section, depressed, tapering to a fine point, covered with small, equal, keeled scales which are largest on the underside. On each side there are from 13-20 femoral pores are present. Standard length 150 mm.; tail length 300 mm. Males are distinctly larger than the females.

Distribution : Burma (as far north as lat. 18°N); Thailand; Vietnam; Hainan, Southern China; Malaysia and Sumatra (Map 53).

Habits and habitat : Terrestrial lizard, inhabits sandy areas, dig their own burrows with their feet and snout, the burrows are generally 3 to 4 feet in length and about one foot below the soil surface, each lizard keeps its own burrow; most shy but bites vigorously on mishandling; most active and fast runner; monogamous; insectivorous and herbivorous, diurnal, breeds from February to April, large oval eggs are laid; are capable of flattening of their body.

Status : Endangered in Thailand, on account of excessive killings by man for their flesh for food.

Genus 41. *Uromastix* Merrem 1820.

1820. *Uromastix* Merrem, *Tent. Syst. Amphib.* : p. 56 (type *spinipes*).
 1822. *Mastigura* Fleming, *Phil. Zool.* 2 : p. 277 (type *spinipes*).
 1843. *Centrocercus* (not of Swainson, 1801), Fitzinger, *Syst. Rept.* : pp. 18 & 86 (type *griseus*)
 1845. *Saara* Gray, *Cat. Rept. Brit. Mus.* : p. 262 (type *hardwickii*).
 1863. *Centrotrachelus* Strauch, *Bull. Acad. Sci. St. Petersb.* 6 : p. 479.
 1885. *Uromastix*, Boulenger, *Cat. Liz. Brit. Mus.* 1 : p. 405.
 1935. *Uromastix*, Smith, *Fauna Brit. Ind.* 2 : p. 242.

This genus is distributed in arid areas of S.W. Asia and N. Africa. Eleven species are recognised, only two cover the scope of this work. The main generic characters are : Body is depressed, no crests are present, dorsum is with small scales which are uniform or intermixed with the larger scales; gular sac is not available, tympanum is distinctly open. Tail short, depressed, covered with whorls of spine like scales; preanal and femoral pores are present. In adults the incisor teeth are fused to form large cutting teeth; at birth juveniles have four incisor teeth in each maxilla and mandibles. In adults, as the growth takes place the two central upper incisors are replaced by a single large cutting "tooth", resulted as a downward extension of the pre-maxillary bone; the lateral incisors keep a firm contact to the central "tooth", but may disappear in later life. In the lower jaw the incisors of each mandible unite and form two cutting surfaces. Proper canines are not present, anterior molars are generally worn down, thus leaving a toothless gap.

Key to the species of genus *Uromastix*

1. Greatly enlarged, sharply pointed tubercles are not present on the dorsum; caudal spines are small, 20-24 in a cross series at the base of the tail.... *Uromastix hardwicki*
2. Greatly enlarged, sharply pointed tubercles are present in a cross-series on the dorsum; caudal spines are large, 8-10 in a cross series at the base of the tail.
 *Uromastix asmussi*

163. *Uromastix hardwicki* Gray 1827

(Fig. 3, Map 31)

1827. *Uromastix hardwickii* Gray, *Zool. Journ.* 3 : p. 219 (type loc. Kanauj district, U.P.).1829. *Uromastix reticulatus* Cuvier, *Regne, Anim.* 2nd ed. 2 : p. 34 (type loc. Bengal)1829. *Uromastix griseus* Cuvier, *Regne Anim.* 2nd ed. 2 : p. 34.1935. *Uromastix hardwickii*, Smith, *Fauna Brit. Ind.* 2 : p. 244.1966. *Uromastix hardwicki*, Minton, *Bull. Amer. Mag. nat. Hist.* 134 : p. 90.

Dorsum is sandy-brown or yellowish-brown, with dark-brown reticulation, throat white, with dark-brown spots; belly is white, a dark blue spot in the groin region.

The body is dorsoventrally depressed, head is small and broad behind; snout blunt; eyes small; nostril is large; ear-opening is like a vertical slit, as large as the eye, deeply sunk, anterior margin of the ear-opening slightly denticulate. Upper head scales are not equal, smooth or obtusely keeled, comparatively larger on the snout, smaller over the outer part of the upper eyelid; cheeks with the oval scales; upper labials 11-14, their free margins are denticulated; lower labials 12-14; dorsal scales small, equal, smooth, some individuals are with scattered larger scales on their back, ventral are almost quadrangular, smooth, as large as or larger than the largest dorsals; gular scales round comparatively smaller than the ventrals; a series of enlarged scales on each side of the jaw parallel to the infralabials, separated from them by 3-8 rows of small scales; a prominent cutaneous transverse fold originating from behind the ear, passes to flanks through the shoulders across the throat. Limbs strong, short not reaching to the axilla. Tail shorter than the head and body, thick at the base, oval in transverse section, strongly depressed dorso-ventrally, covered above with transversely arranged 20-24 cross series of strongly spinose thorny tubercles, which are largest and most strong on the sides; these whorls of spines are separated from one another by 4-6 rows of small keeled scales; lower surface of the tail with squarish scales about as large as the ventrals of the body, the hinder portion of the tail is annulated. Preano-femoral pores are 12-18 on each side. Standard length 168-240 mm.; tail length 143-207 mm.

Distribution : India : Andhra Pradesh, Gujarat, Uttar Pradesh, Rajasthan, Elsewhere : Pakistan (Map 31).

Habits and habitat : The spiny tailed lizard frequents hard, gravel or rocky soil. The sparse vegetation in its habitat mainly comprises of xerophytic shrubs and grass. These lizards live in colonies and make their own burrows. These lizards maintain a strict homing behaviour and fresh burrows are dug during rainy season. The mouth of the living burrows are plugged with pulverised earth. The end of the burrow dilates into a chamber where only one lizard rests with its head facing blind end of the burrow. On being chased lizard dashes immediately straight into the burrow to seek refuge. It can

always locate its own burrow even after the lapse of time or on being removed to a considerable distance. It spends most of the time in its burrow and comes out only for feeding on grass and other vegetable matter. In winter it comes out only in the warm hours of the day for basking and grazing and during summer in morning and evening. When any intruder enters the burrow the lizard shakes the spiny tail violently in self defence. The burrows are 50-60 cm. deep from the ground level. Food wholly comprises the vegetable matter like grasses and leaves of tender plants. The hatchlings feed on small insects also. It is a most docile lizard and even on rough handling never make any attempt to bite. Its breeding season extends from March to July. About 8-14 oval eggs (25-30 mm. in greatest diameter) are laid from middle of April to third week of June in their burrows. Hatchlings in Rajasthan emerge from late June to July.

Status : Endangered on account of excessive killing by man for its fat, meat and skin.

164. *Uromastix asmussi* (Strauch 1863)

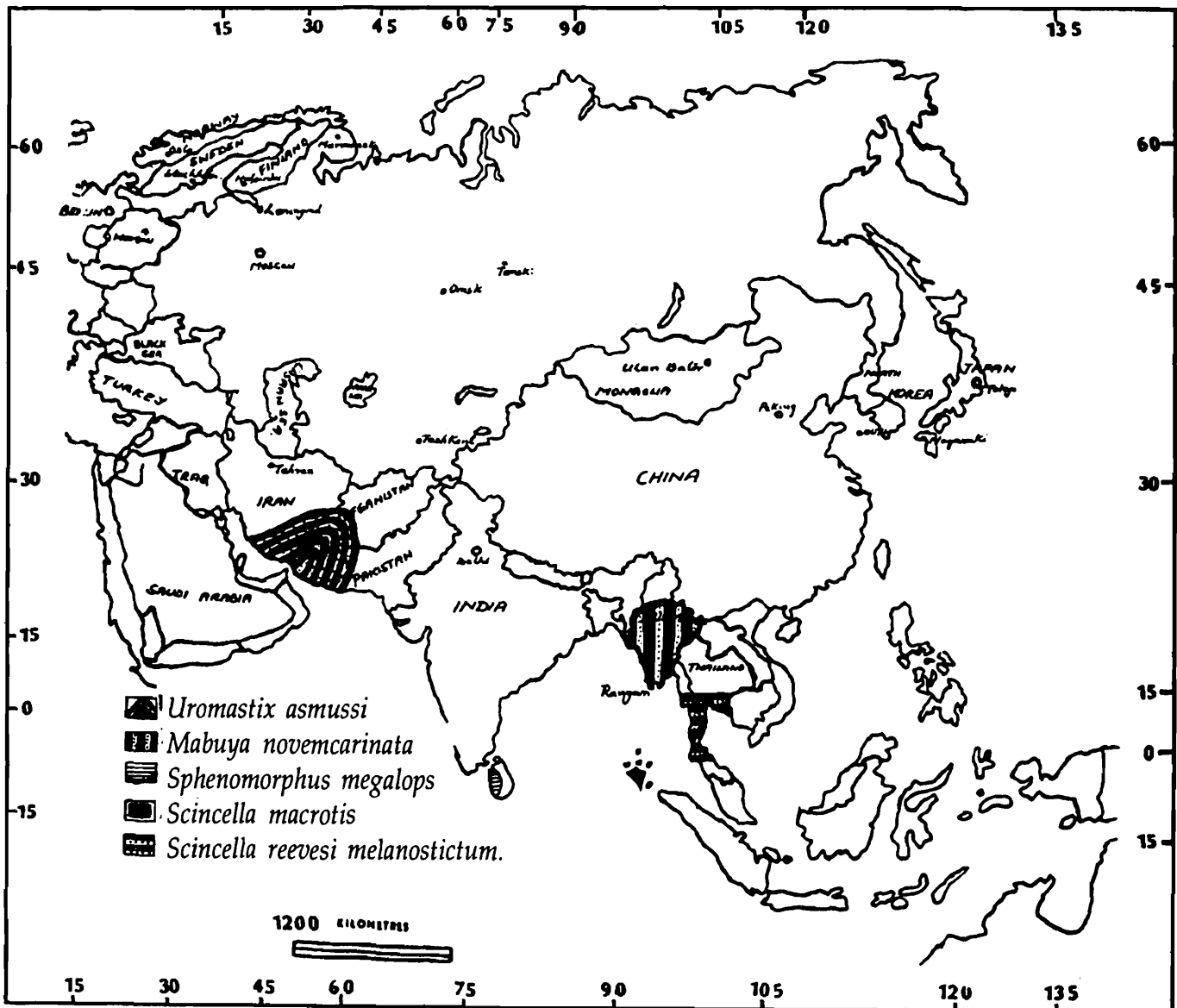
(Map 54)

1863. *Centrotrachelus asmussi* Strauch, *Bull. Acad. Sci. St. Petersb.* 6 : p. 479 (type loc. Sar-e-teschah, Persia).
 1896. *Uromastix asmussi*, Alcock & Finn., *J. Asiat. Soc. Beng.* 65 : p. 557.
 1935. *Uromastix asmussi*, Smith, *Fauna Brit. Ind.* 2 : p. 247.
 1966. *Uromastix asmussi*, Minton, *Bull. Amer. Mus. nat. Hist.* 134 : p. 90.

The dorsum is light greenish-brown, colour on head, limbs and tail is comparatively more darker; ventrum is dull yellowish-brown; densely speckled except the belly portion which is dark olive; sometimes the head, limbs and tail are blackish in dorsal aspect, back and flanks may be buff. The body is dorsoventrally depressed, head is small and broad behind; snout blunt, strongly curved, eyes are small; nostril is large; ear-opening is like a vertical slit, deeply sunk, anterior margin is distinctly denticulated. Upper head scales are not equal, generally much larger and obtusely keeled, except upon the upper eyelid, where the scales are much smaller; upper labials are 16-22 and as many as lower labials, the free margin of the upper labials is denticulated; canthus rostralis rounded; area from below the eye to above the ear is with a series of enlarged scales; small granular scales intermixed with numerous spine-like tubercles are present on the nape, these spinose tubercles on the nape are longer in the males; dorsal scales are small, almost equal, keeled and with numerous equidistant cross series of large pointed tubercles; ventral scales are smooth, rhomboidal and comparatively larger in males than the females. The ventral scales in *Uromastix asmussi* are larger than the *Uromastix hardwicki*; 20-30 transverse rows on the middle of the belly on a space corresponding to the length of the head; gular region is with small tubercles, much smaller than the ventral scales; jaws are with 2-3 rows of enlarged scales on either side which are parallel with the infralabials and are separated

from them by a row of small scales; a distinctly prominent transverse fold is available across the throat; the skin of the throat and sides of the neck is loose. Limbs are short but strong; large spine-like tubercles are present on the outer side of the hind-limb, which extend almost to the axilla. Tail is thick at the base, oval in section, strongly depressed, covered above with cross series of very large, subequal, spine-like tubercles, which are rounded at the base; the cross-series are separated from one another by 3-4 rows of keeled scales, the anterior of which are quite small; sub-caudal scales are subequal, larger than the ventrals and are segmented as in *Uromastix hardwicki*. About 9-15 preano-femoral pores are present on each side. Standard length 260 mm., tail length 210 mm.

Distribution : Southern Iran, Pakistan (Baluchistan-Afghanistan border) (Map 54).



Map 54 : Distribution of *Uromastix asmussi*, *Mabuya novemcarinata*, *sphenomorphus megalops*, *Scincella macrotis* and *Scincella reevesi melanostictum*.

Habits and habitat : Terrestrial, abodes are large holes, dug by itself, the borrows are usually two feet underground and about four feet in length; the species is perfectly diurnal and herbivorous; most gentle and docile, but lashes its spiny tail against any intruder. Nothing is known about its breeding habits.

Status : Vulnerable on account of large scale killing by man for skin.

Family 4. CHAMAELEONIDAE Gray 1825

(Fig. 6)

1825. *Cameleonidae* Gray, *Ann. Phil.* (2) 10 : p. 200.

1887. *Chamaeleontidae*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 437.

1935. *Chamaeleonidae*, Smith, *Fauna Brit. Ind.* 2 : p. 249.

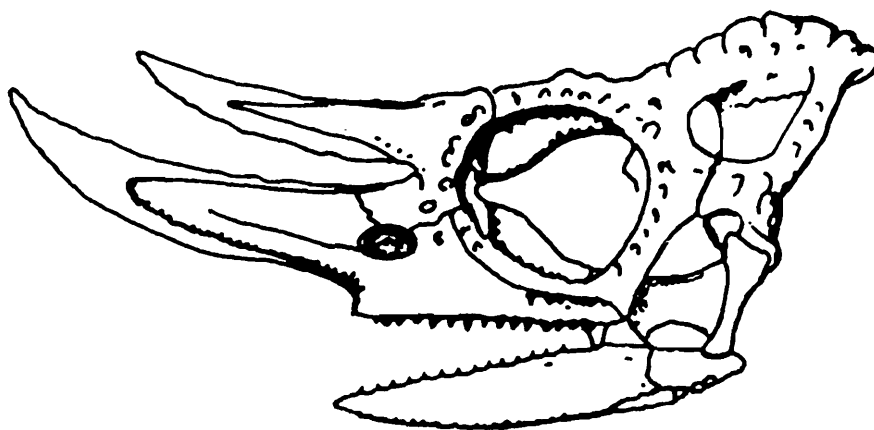
1966. *Chamaeleonidae*, Minton, *Bull. Amer. Mus. nat. Hist.* 134 : p. 98.

The family includes highly specialised arboreal, insectivorous, diurnal lizards available in 2 genera and about 50 species from Africa, Southern Spanish peninsula, Arabia, Peninsular India, Madagascar and Sri Lanka. Madagascar has more than half the species available in whole world. One species has been included in this work. The main family characters are : The body is laterally compressed; the skin is granular suitable for quick and extensive colour change; the teeth are compressed, small, triangular, tricuspid, uniform, acrodont (born on the summit of the jaws), the palate is toothless; the tongue is club-shaped, sticky at the tip and quickly extensible up to a distance of 15-20 cm for catching the insect prey; the skull is strongly ossified, typically diapsid and both the temporal and post-orbital arcades are well developed, with prominent crests dorsally; parietals are united, which along with the squamosal bone extend upwards and backwards, meet at a point and form a casque and thus enclose a very large supratemporal fossa; the jugal is widely separated from the quadrate bone; the external nasal opening is roofed over by extensions from the prefrontal and maxillary bones, so that the bony aperture falls on lateral aspect; the supranasal fontanella is bordered by the nasal, the prefrontal, and the frontal; frontal is a single bone; the premaxillary is small, with two or three small teeth; epityrgoid is rudimentary or absent; vertebrae are procoelous; abdominal ribs are available. The feet are with the digits permanently opposed in groups of two and three for grasping; the tail is prehensile; the eyes are large and move independently; the upper and lower eyelids are fused and form a complete ring around the eye with a small opening at the centre; the ear is devoid of tympanum and tympanic cavity; the columella auris is attached at right angles to an elongated cartilagenous rod which is attached to the postero-inner aspect of the quadrate bone.

Genus 42. *Chamaeleo* Laurenti 1768

(Fig. 92)

1763. *Chamaeleon* Gronovius, *Zooph. Anim.* 1 : p. 12 (type *lacerta chamaeleon* Linn).
 1768. *Chamaeleo* Laurenti, *Syn. Rept.* : p. 46 (type *zelonius*).
 1935. *Chamaeleon*, Smith, *Fauna Brit. Ind.* 2 : p. 251.
 1966. *Chamaeleo*, Minton, *Bull. Amer. Mus. nat. Hist.* 134 : p. 98.

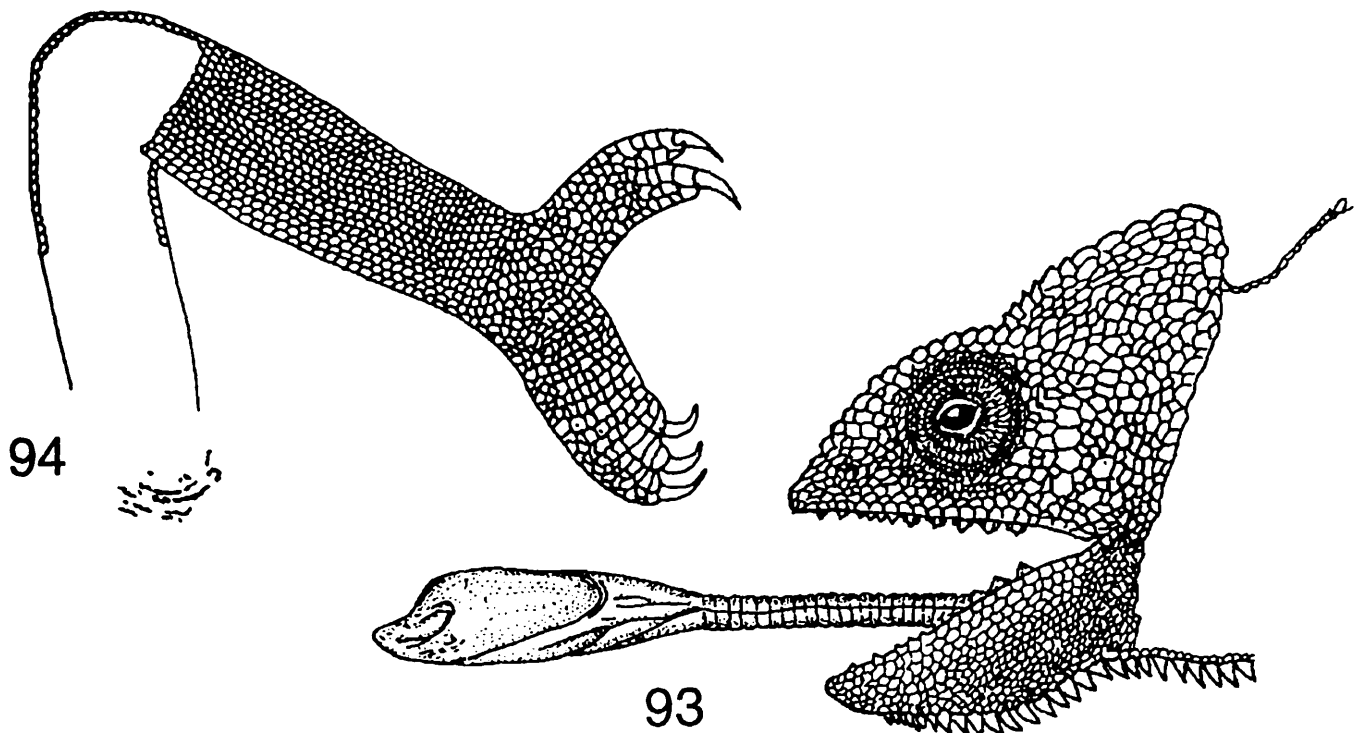
Fig. 92 : Skull of *Chamaeleo*

The genus *Chamaeleo* is with simple claws; scales on the soles are smooth; tail is prehensile at least as long as the head and body.

165. *Chamaeleo zeylanicus* Laurenti 1768

(Figs. 93 & 94, Map 55)

1768. *Chamaeleo zeylanicus* Laurenti, *Syn. Rept.* : p. 46 (based on Seba, 1, pl. 82, fig. 3, type loc. not given, probably Sri Lanka).
 1768. *Chamaeleo mexicanus* Laurenti, *Syn. Rept.* : p. 45 (based on Seba, 1, pl. 82, fig. 1)
 1823. *Chamaeleo zebra* Bory de St. Vincent, *Dict. Hist. Nat.* 3 : p. 97, Atlas, pl. 121 (type loc. India).
 1843. *Chamaeleon coromandelicus* Fitzinger, *Syst. Rept.* : p. 41 (type loc. India.)
 1851. *Chamaeleo pumilus* (not of Latreille, 1802), Jerdon, *J. Asiat. Beng.* 22 : p. 466.
 1853. *Chamaeleo zeylonicus*, Jerdon, *J. Asiat. Soc. Beng.* 22 : p. 466.
 1864. *Chamaeleo vulgaris* (not of Daudin, 1802), Gunther, *Rept. Brit. Ind.* : p. 162.
 1864. *Chamaeleo vulgaris marmoratus* Gray, *Proc. Zool. Soc. London*, : p. 469 (type loc. Deccan).
 1872. *Chameleo ceylonicus*, Stoliczka, *P. Asiat. Soc. Beng.* : p. 81.
 1887. *Chamaeleon calcaratus*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 445, pl. 39, fig. 2 (head).
 1935. *Chamaeleon zeylanicus*, Smith, *Fauna Brit. Ind.* 2 : p. 251.
 1966. *Chamaeleo zeylanicus* Minton, *Bull. Amer. Mus. nat. Hist.* 134 : p. 99.



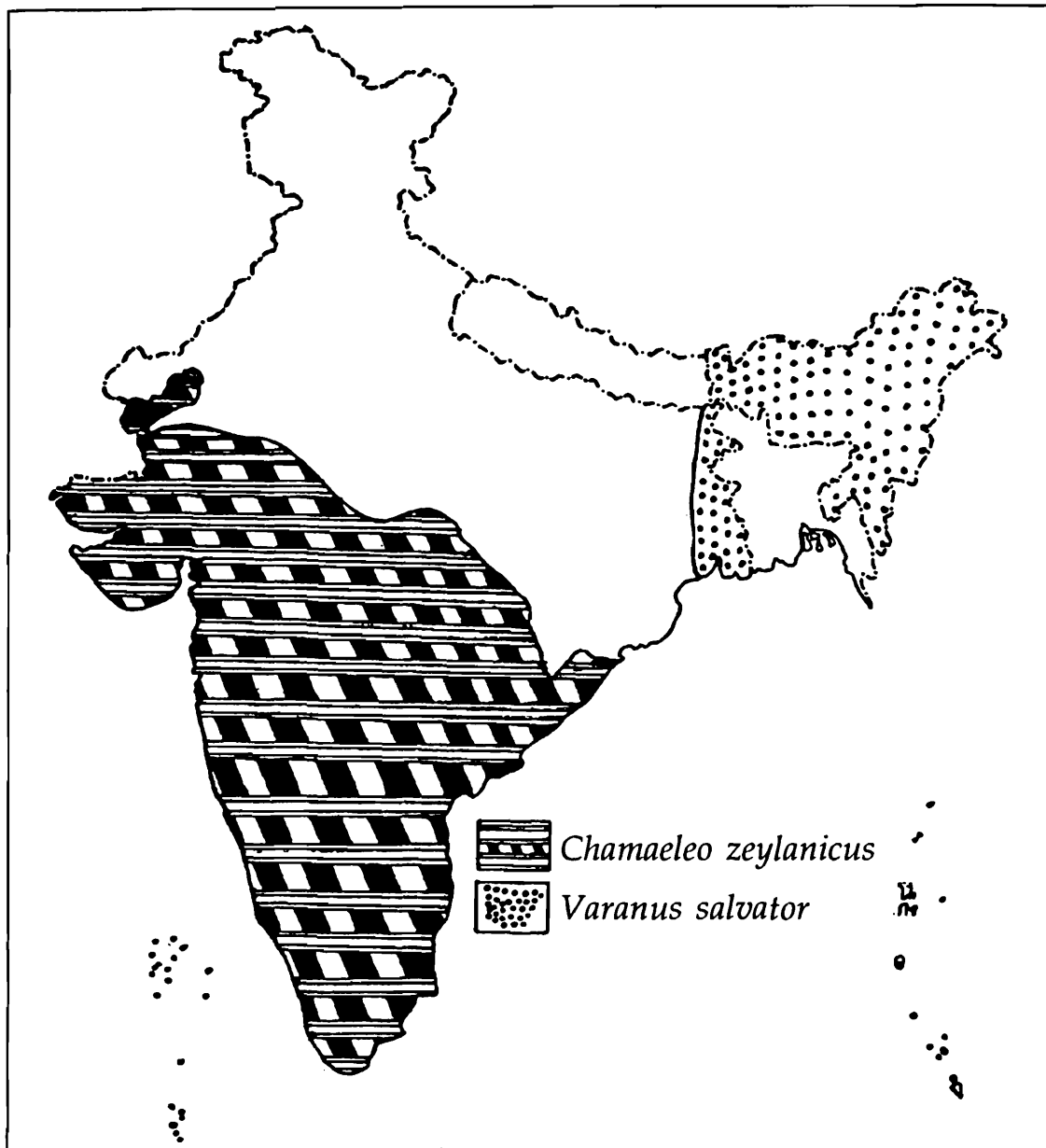
Figs. 93-94 : 93. *Chamaeleo zeylanicus* : Lateral view of head; 94. *Chamaeleo zeylanicus* : Hand.

The skull of this green coloured species is strongly ossified, anterodorsal crest is most prominent, which bends slightly on the posterior direction and form a army cap like structure called as casque; tympanum is not present; the eyes are large, opening for the pupil is just like a transverse slit otherwise the whole eye is covered by a lid, eyes have the power of independent movement and they can revolve in all directions like a search light. The tongue is cylindrical and extremely extensive, and is made up of extremely elastic tissue, its anterior end is club-shaped, almost like a cup at the tip and provided with a viscid secretion; the tongue is fixed on the hyoid apparatus like a coiled spring, when fully extended it exceeds the standard length of the lizard. It can be shot out with marked speed and most accuracy. The Indian chameleon has got a remarkable power of changing its colour. The hands and feet have been modified for claspings, claws are simple, scales on the soles are smooth, tail is prehensile at least as long as the head and body. Head and body covered with uniform flat granular tubercles; dorsal crest is low serrated. Male is with a spur like tarsal process. Standard length 175 mm.; tail length 200 mm.

Distribution : India : Peninsular India, Cutch. Elsewhere : Sri Lanka (Map 55).

Habits and habitat : Insectivorous, strictly arboreal and diurnal. Breeding season is from October to December. Generally 13-31 oval eggs (13-19 by 7-12 mm.) are laid in a hole, about 23-30 cm. deep; which is dug by the female only.

Status : Endangered in India on account of the habitat loss, due to urbanisation for man.



Map 55 : Distribution of *Chamaeleo zeylanicus* and *Varanus salvator*.

Family 5. SCINCIDAE Gray 1825.

1825. *S(c)incidae* Gray, *Ann. Phil.* 26 : p. 201 (in part).
 1845. *Ophiomoridae* Gray, *Cat. Liz. Brit. Mus.* : p. 120.
 1845. *Sepsidae* Gray, *Cat. Liz. Brit. Mus.* : p. 121.
 1845. *Acontiadae* Gray, *Cat. Liz. Brit. Mus.* : p. 126.
 1845. *Typhlinidae* Gray, *Cat. Liz. Brit. Mus.* p. 128 (in part).
 1935. *Scincidae*, Smith, *Fauna Brit. Ind.* 2 : p. 254.

The family includes the terrestrial lizards which are cosmopolitan in distribution, generally inhabiting the warmer parts of the world. The maximum species are available

in Asia, Africa and Australia. Their food mainly comprises, small invertebrates, and vegetables matter like tender leaves, fruits and fungi. The family includes 50 genera and about 600 species.

The body is subcylindrical and almost circular in cross section without showing marked distinction between the head and body, head is generally in continuation with the body without any evidence of neck. The scales are overlapping and the body, limbs and tail are protected with osteoderms; the head is covered with symmetrical shields; the pupil is round; lower eyelid is generally with a transparent disc. The skull is markedly ossified; with bony dermal plates providing a roof over the supratemporal fossa and united with the skull bones when lying above them; temporal arcade is quite distinct in terrestrial, diurnal species but in burrowing, crepuscular (nocturnal) forms it is considerably reduced; the postorbital bone is generally not present and the temporal fossa is roofed by a posterior prolongation of the postfrontal bone; premaxilla, maxilla, nasal, prefrontal, lachrymal, jugal, frontal, postfrontal, postorbital squamosal, quadrate, supratemporal, exoccipital bones are paired; parietal, supraoccipital and basioccipital bones are single; external naris are generally situated between the premaxilla, maxilla and nasal bones; teeth are pleurodont (borne on the side of the jaws) postorbital arch is complete, except in degenerate forms; postfronto-squamosal arch is complete. Teeth are conical; in many cases hooked; or with spheroidal or compressed crowns; the new teeth generally hollow out the base of the old ones; pterygoid teeth are present in most of the species. The tongue may be short or moderately long, covered with imbricate scale-like papillae, feebly nicked anteriorly. Limbs may be present or absent; legs are markedly short and exhibit different degrees of reduction in different species; many species have lost their limbs completely but the vestiges of pectoral and pelvic girdles are always present; clavicle is generally dilated at its proximal end and is perforated. In burrowing and semi-burrowing species the abdominal (parasternal) ribs are present. The tail may be long or reduced; extremely fragile but regenerates quickly. Generally these lizards are oviparous but many (four) species exhibit vivipary also. Under the scope of this work this family includes the following 17 genera and 86 species and subspecies.

Key to the genera of family SCINCIDAE

- I. Union of palatine bones takes place at the mid-line of the palate.
 - (a) Pterygoid bones are not touching one another; supranasals are present; limbs are well developed. *Mabuaya*
 - (b) Pterygoid bones are in contact anteriorly; limbs are well developed.
 1. Tympanum is distinct but sunk.
 - i. Lower eyelids are scaly; supranasals present *Dasia*
 - ii. Lower eyelids are scaly; no supranasals. *Sphenomorphus*

- iii. Lower eyelids with a small semitransparent disc; no supranasals. *Scincella*
- iv. Lower eyelid with a very large semitransparent disc which is fused with the upper eyelid; no supranasals. *Ablepharus*
- v. Lower eyelid scaly; no supranasals; claws retractile into a sheath. . *Ristella*
- 2. Tympanum is distinct and superficial; lower eyelids scaly; no supranasals. *Tropidophorus*
- (c) Pterygoid bones are in contact; limbs short, vestigial or absent.
 - 1. Limbs short or vestigial; lower eyelid scaly or with a semitransparent disc. *Riopa*
 - 2. Limbs and ear-opening not present. *Ophioscincus*
- II. Union of palatine bones not taking place at the mid-line of the palate.
 - (a) Nostril in the nasal or between the nasal and supranasal.
 - 1. Limbs pentadactyle, without denticulations. *Eumeces*
 - 2. Limbs pentadactyle, with lateral denticulations. *Scincus*
 - 3. Limbs very small, fingers and toes are 3 in number; body elongated. *Ophiomorus*
 - (b) Nostril is between the rostral and nasal or between the rostral and first labial.
 - 1. Limbs developed; nostril between the rostral and nasal. *Chalcides*
 - 2. Limbs are not present; body much elongated; nostril is between the rostral and a nasal; top of the head with 3 large azygous scales *Barkudia*
 - 3. Limbs vestigial; body much elongated; nostril is situated in a much reduced nasal which is situated between rostral, first labial and supranasal; top of the head with 4 large azygous scales. *Sepsophis*
 - (c) Nostril is in the rostral.
 - 1. Nostril close to the posterior border of the rostral *Chalcidoseps*
 - 2. Nostril in the anterior part of a large rostral, connected with its posterior border by a horizontal suture. *Nessia*

Genus 43. *Mabuya* Fitzinger 1826.

- 1815. *Mabuya* Rafinesque, *Anal. Nat.* : p. 76, n.n.
- 1826. *Mabuya* Fitzinger, *Class. Rept.* : pp. 23 & 52 (type *Lacertus mabouya* dela Cedepe).
- 1826. *Spondylurus* Fitzinger, *Class. Rept.* : p. 23 (type *Scincus sloanii* Daudin)
- 1830. *Euprepis* Wagler, *Syst. Amphib.* : pp. 132 and 161 (type *mabouia* Dum. & Bibr.)
- 1838. *Herinia* Gray, *Ann. Mag. Nat. Hist.* 2 : p. 332 (type *capensis*)
- 1843. *Trachylepis* Fitzinger, *Syst. Rept.* : p. 22 (type *Euprepes savignyi* Dum. & Bibr.)

1843. *Oxtropis* Fitzinger, *Syst. Rept.* : p. 22 (type *Euprepes merremi*).
1843. *Eutropis* Fitzinger, *Syst. Rept.* : p. 22 (type *Euprepes sebae* Dum. & Bibr.)
1845. *Xystrolepis* Tschudi, *Fauna Peru.* : p. 44 (type *punctata*).
1845. *Copeoglossum* Tschudi, *Fauna Peru.* : p. 45.
1887. *Mabuya*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 150.
1935. *Mabuya*, Smith, *Fauna Brit. Ind.* 2 : p. 257.

This genus includes more than 80 species (only 17 cover the scope of this work) from Africa, Madagascar, Southern Asia, the East Indies, Central and South America and the West Indies. The main generic characters are : The palatine bones are in contact at the median aspects; palatal depression completely separates the pterygoid bones; pterygoid teeth are minute or absent; maxillary teeth are conical or bicuspid, nostril is in a single nasal; supranasals are available; prefrontals are present; in many species fronto-parietals unite to form a single large shield; inter-parietal in many cases unite with the parietals; eyelids are movable, the lower eyelid may be with or without a transparent disc; ear is distinct, tympanum is most cases deeply sunk. Limbs are well developed; pentadactyle; digits subcylindrical or compressed, with transverse subdigital lamellae. Snout is obtusely pointed, slightly longer than the orbit; frontal shield is variable in length but generally not longer than joint length of fronto-parietal and interparietal are well developed; interparietal separates the parietals on their posterior aspect; fifth, rarely sixth, supralabial subocular, almost two times longer than the preceding labials; supraoculars are 4 in number, the second is the largest and in broad contact with the frontal; the first and the third supraoculars are in contact with or separated from the frontal; 5-7 supraciliaries are present, the first is largest (slightly larger than the other supraciliaries); temporal scales are small and exactly similar to the body scales, preanal scales are generally not enlarged, in certain species are scarcely enlarged; palms of hands and soles of feet are with flattened or subconical tubercles, the heels are generally with larger scales.

Key to the species of genus Mabuya

- I. Lower eyelids with a semitransparent disc.
1. 28-30 scales round the middle of body; dorsal scales with 5-7 strong keels.
..... *M. bibroni*
 2. 34-38 scales round the middle of body; dorsal scales with 2-3 strong keels.
..... *M. dissimilis*
 3. 34-36 scales round the body, dorsals feebly tricarinate or smooth..... *M. aurata*
 4. 32-34 scales round the middle of body; dorsal scales feebly keeled ... *M. innotata*
 5. 32-34 scales round the middle of body; dorsal scales with 7-11 sharp keels, two of which are stronger than the others..... *M. novemcarinata*

II. Lower eyelids scaly.

1. 28-30 scales round the middle of body; dorsal scales with 5-9 strong keels; 12-17 lamellae under the fourth toe. *M. macularia*
2. 26-30 scales round the middle of body; dorsal scales with 3-7 strong keels; 15-18 lamellae under the fourth toe. *M. allapallensis*
3. 30-34 scales round the middle of body; dorsal scales with 5-7 moderate keels; 14-18 lamellae under the fourth toe. *M. carinata*
4. 28 scales round the middle of body; dorsal scales with 5 weak keels; 18 lamellae under the fourth toe. *M. clivicola*
5. 30-34 scales round the middle of body; dorsal scales with 3-5 moderate keels; 17-23 lamellae under the fourth toe. *M. m. multifasciata*
6. 24-26 scales round the middle of body; dorsal scales with 3 obtuse keels; 27-30 lamellae under the fourth toe. *M. tytleri*
7. 30-32 scales round the middle of body; dorsal scales with 5-7 moderate keels; 27-29 lamellae under the fourth toe; interparietal very small, not separating the parietals. *M. andamanensis*
8. 24-28 scales round the middle of body; dorsal scales with 5 strong keels; 22-27 lamellae under the fourth toe; interparietal very small, not separating the parietals. *M. rugifera*
9. 26-28 scales round the middle of body; dorsal scales with 4 strong keels; 17-18 lamellae under the fourth toe. *M. quadricarinata*
10. 30-32 scales round the middle of body; dorsal scales with 5-7 moderate keels; 16-22 lamellae under the fourth toe; back with 3 white longitudinal stripes. *M. nagarjuni*
11. 30-32 scales round the middle of body; dorsal scales with 3-5 feeble keels; 12-15 strongly keeled lamellae under the fourth toe; back with 4 dark longitudinal stripes. *M. beddomii*
12. 34-36 scales round the middle of body; dorsal scales with 5-7 moderate keels; 13-14 lamellae under the fourth toe; back with 5 broad, black edged yellowish-white longitudinal stripes. *M. trivittata*

166. *Mabuya bibroni* (Gray 1838)

(Fig. 95, Map 56)

1838. *Tiliqua bibronii* Gray, *Ann. Mag. Nat. Hist.* 2 : p. 290 (type loc. Not known).
 1839. *Euprepes bibronii*, Dum & Bibr., *Erp. Gen.* 5 : p. 675.
 1846. *Euprepis trilineata* Gray, *Ann. Mag. Nat. Hist.* 18 : p. 430 (type loc. Madras)

1887. *Mabula bibronii*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 173.

1935. *Mabuya bibroni*, Smith, *Fauna Brit. Ind.* 2 : p. 260.

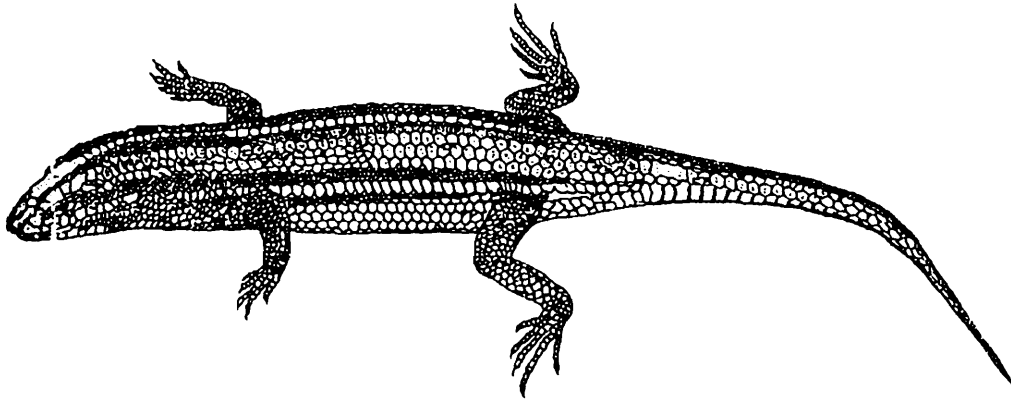


Fig. 95 : *Mabuya bibroni* : Entire dorsal view.

This is an olive brown skink, with a yellowish vertebral stripe broadly edged with black; a black dorsolateral stripe, extending from the eye to the base of the tail; belly is whitish. Supranasals separated or slightly touching each other; two pairs of multi-keeled nuchals; a postnasal is present; lower eyelids with an undivided semitransparent disc; temporal scales keeled; ear-opening oval, with 2 or 3 long pointed lobules anteriorly; dorsal and lateral scales with 5-7 keels; 28-30 scales round the middle of the body, dorsal scales largest. Digits long with smooth or feebly keeled lamellae, fourth toe is with 14-20 lamellae beneath, the leg reaches to the wrist or the elbow. Standard length 50 cm.; tail length 65 mm.

Distribution : India : Kerala, Orissa and Tamil Nadu. Elsewhere : Sri Lanka (Map 56).

Habits and habitat : This species generally inhabiting the sea coasts. It makes its burrows under the vegetation or in sand dunes, hardly few hundred yards away from the sea water. It is insectivorous, saltatorial and diurnal.

Status : Abundant.

167. *Mabuya novemcarinata* (Anderson 1871)

(Map 54)

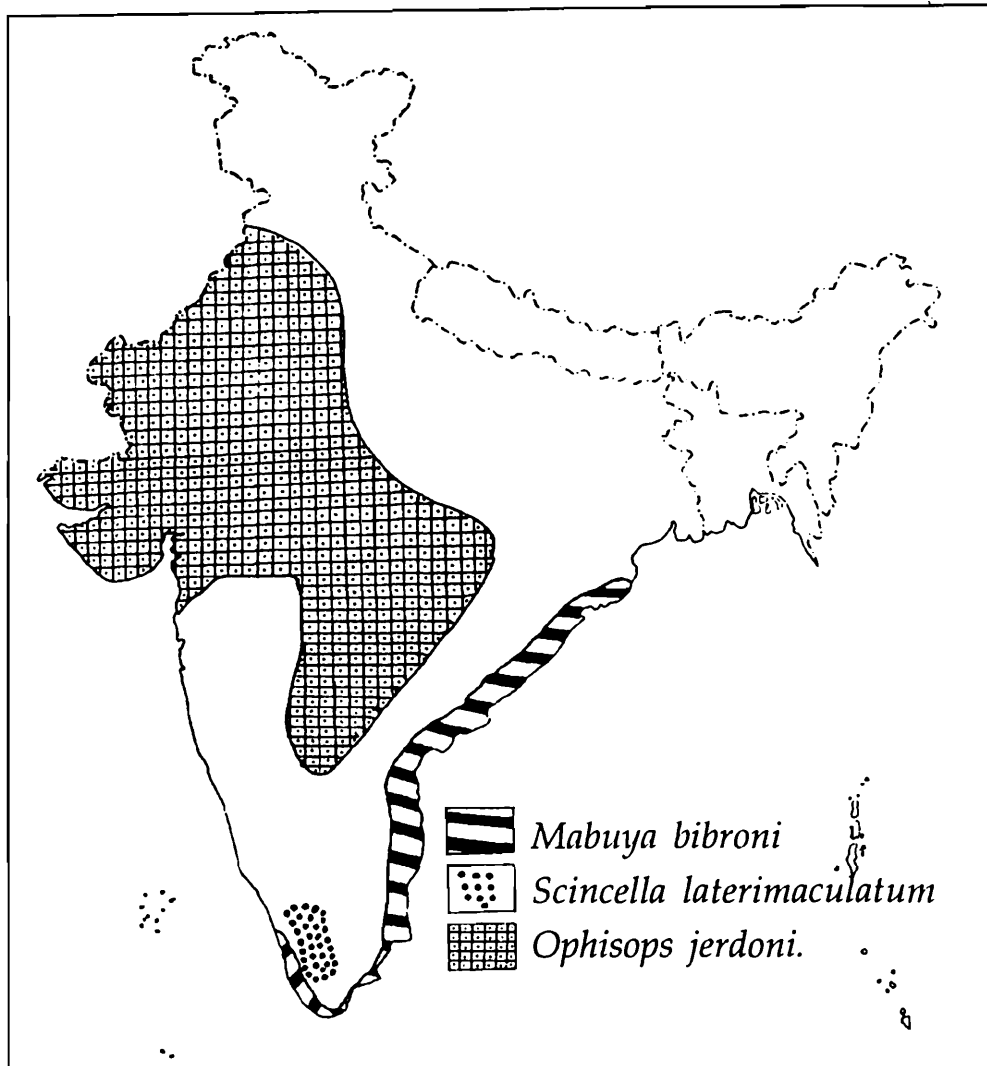
1871. *Euprepes novemcarinatus* Anderson, *J. Asiat. Soc. Beng.* 40 : p. 12 (type loc. Mandalay), Burma.

1887. *Mabuya novemcarinata*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 179.

1887. *Mabuia doriae* Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 174, pl. 10; fig. 4 (type loc. Minhla, Burma).

1935. *Mabuya novemcarinata*, Smith, *Fauna Brit. Ind.* 2 : p. 261.

This is a light brown skink, with dark brown spots arranged in longitudinal series on the back; the lateral aspect of head and the upper part of the flanks are with a broad dark brown or bronze stripe, the upper margin of which is with a white border; upper lip and



Map 56 : Distribution of *Mabuya bibroni*, *Scincella laterimaculatum* and *Ophisops jerdoni*.

lower portion of flanks are whitish and are generally with dark brown spots; ventrum is whitish with a pale green tinge. Supranasals are in contact with one another; fronto-nasal is slightly broader than long, prefrontals are generally not touching with one another, in some cases prefrontals are just touching; a pair of nuchals is available; postnasal is missing; lower eyelids are with an undivided transparent disc; temporal region is with keeled scales; ear opening is oval or subcircular, almost as large as a lateral scale, with 2 or 3 pointed lobules anteriorly. Dorsal and lateral scales are with 7-11 sharp keels, 2 or 3 median keels in few individuals are more prominent than others; 32-34 subequal scales round the middle of the body. Digits are quite long, subdigital lamellae are obtusely keeled; 18-21 lamellae beneath the fourth toe; the hind-limb generally reaches to the wrist. Standard length 90 mm., tail length 105 mm.

Distribution : Burma (Minhla, Rangoon district, Mandalay), Malaysia (Penang Hill) (Map 54).

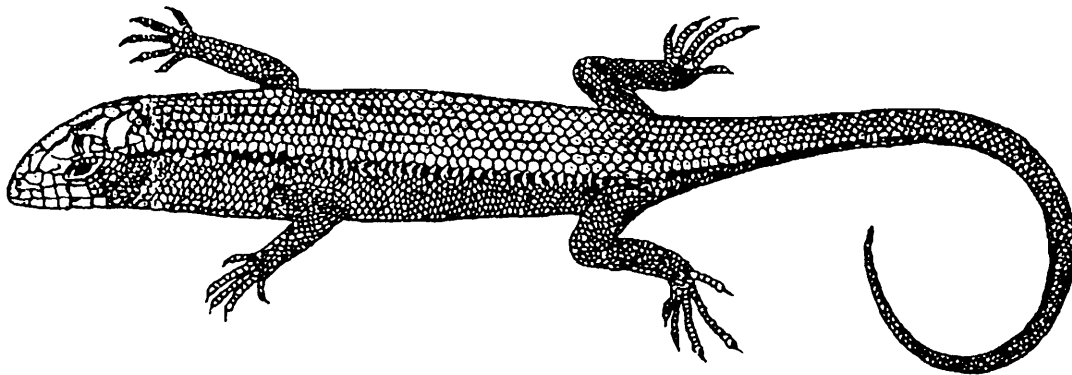
Habits and habitat : Diurnal, insectivorous. Nothing is known about other habits.

Status : Rare.

168. *Mabuya dissimilis* (Hallowell 1857)

(Fig. 96, Map 39)

1857. *Euprepis dissimilis* Hallowell, *Trans. Amer. Phil. Soc.* (2) 11 : p. 78 (type loc. Bengal).
 1864. *Euprepes monticola* Gunther, *Rept. Brit. Ind.* : p. 80, pl. 10, fig. C (type loc. Sikkim)
 1867. *Euprepes petersi* Steindachner, *Reise Novara Rept.* : p. 43 (type loc. Chamba, Himachal Pradesh).
 1879. *Euprepes guentheri* Blanford, *J. Asiat. Soc. Beng.* 48 : p. 123 (nom. nov. for *monticola* Gunther)
 1885. *Euprepes (Euprepis) warthii* Fischer, *Jahrb. Wiss. Anst. Hamb.* 2 : p. 90 (type loc. Dehra Dun, United Provinces)
 1887. *Mabuya dissimilis*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 175.
 1927. *Mabuya hodgarti* Hora, *Rec. Ind. Mus.* 29 : p. 2, pl. 1, figs. 2 and 3 (type loc. Rawalpindi, Pakistan).
 1935. *Mabuya dissimilis*, Smith, *Fauna Brit. Ind.* 2, p. 261.

Fig. 96 : *Mabuya dissimilis* : Entire dorsal view.

This is a light brown skink generally with 3 prominent greenish-white stripes on the back, one vertebral and two dorsolateral. In many individuals these stripes are provided with a black margin or spots; sides are with black and white spots; belly is yellowish white; eyelids are with 4 yellow rims. Supranasals are in contact with one another, nuchals and postnasals missing, lower eyelids are with an undivided transparent disc; temporal scales are keeled; ear opening is oval, with 3-4 pointed lobules anteriorly. Dorsal and lateral scales are equal; dorsals are with 2-3 strong keels; ventrals are with 3 strong keels; 34-38 scales round the middle of the body. Digits short, fourth toe is with 12-16 smooth lamellae beneath, the legs reach to the wrist. Standard length 77-92 mm., tail length 149-178 mm.

Distribution : India : Bengal, Bihar and Rajasthan (Ajmer), Elsewhere : Pakistan (Map 39).

Habits and habitat : Prefers dry open country with plenty of bushes, sand and rocks. Diurnal, insectivorous. It lays 6-7 eggs (10x7 mm.)

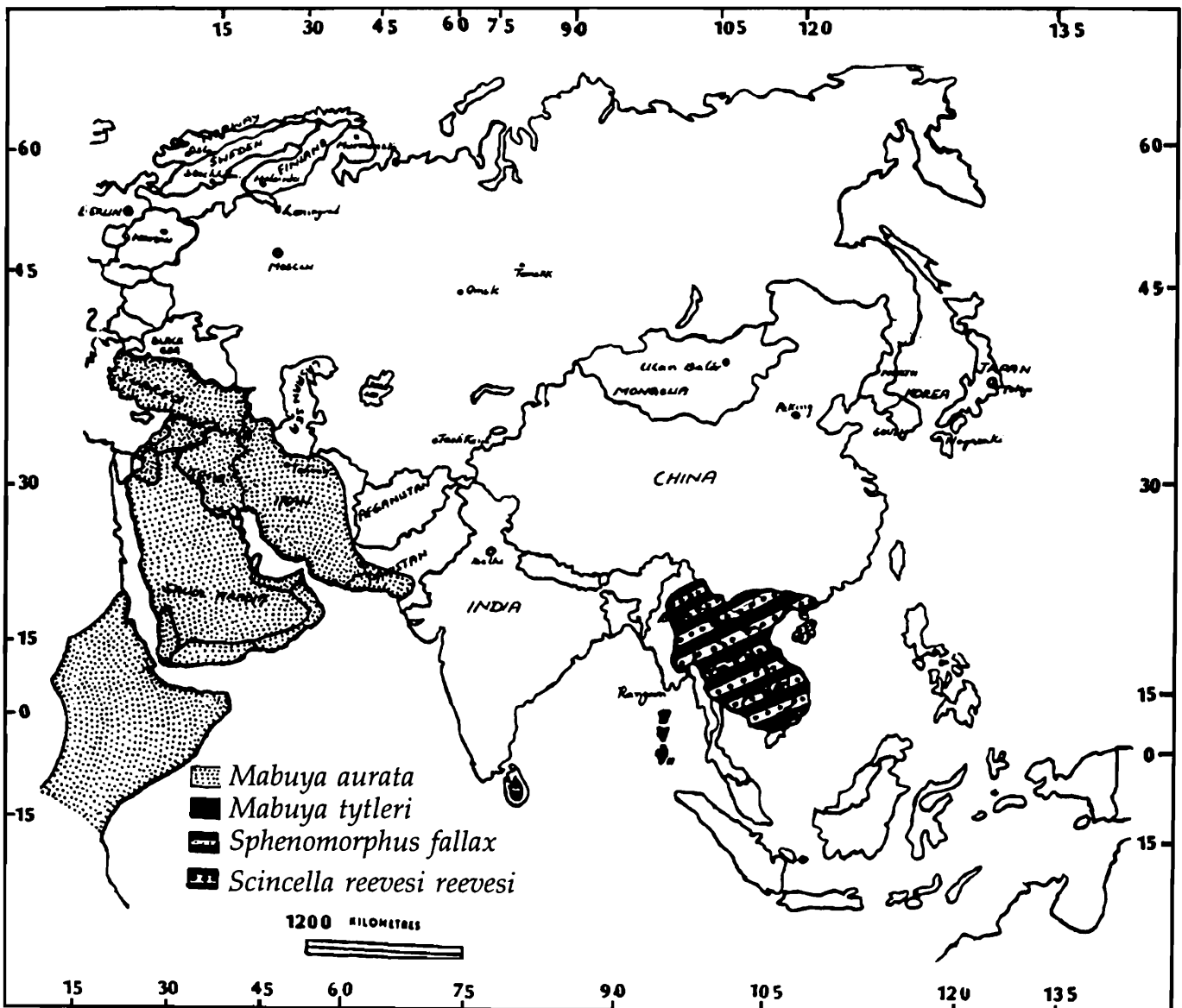
Status : Rare, on account of habitat loss.

169. *Mabuya aurata* (Linnaeus, 1758)

(Map 57)

1758. *Lacerta aurata* (in part) Linnaeus, *Syst. Nat.* ed. 10 : p. 209.1834. *Euprepis septemtaeniatus* Reuss, *Mus Senckenb.* 1 : p. 47, pl. 3, fig. 1 (type loc. Abyssinia).1865. *Euprepes affinis* deFilippi, *Viag. in Persia* 1 : p. 354 (type loc. Kazvin, Persia).1887. *Mabula septemtaeniata*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 177.1900. *Mabuya aurata*, Anderson, *Kungl. Sv. Vet. Akad. Handl Stockholm*, 26 : 4, 1, p. 14.1935. *Mabuya aurata*, Smith, *Fauna Brit. Ind.* 2 : p. 262.

This light brown skink with dark brown longitudinal stripes on back; four of these stripes emerge from the occiput, remain distinct upon the nape, then break up into spots posteriorly, sometimes completely disappear on the hinder part of the back; a much



Map 57 : Distribution of *Mabuya aurata*, *Mabuya tytleri*, *Sphenomorphus fallax* and *Scincella reevesi reevesi*.

broader stripe with white spots starts from the eye and passes along the upper half of the flank; this broader lateral stripe is with white border on both the sides; ventrum is white. This species is very similar to *Mabuya dissimilis* in scalation, size and other characters but differs in the following characters : Prefrontals are separated from one another; dorsal scales feebly tricarinate or absolutely smooth, 34-38 scales round the middle of the body; toes are comparatively longer, 16-22 lamellae under the fourth toe. Standard length 76-90 mm., tail length 145-175 mm.

Distribution : The Middle East, Iraq, Iran, Pakistan (Western Mekran, Baluchistan) (Map 57).

Habits and habitat : Terrestrial, Diurnal, insectivorous, viviparous (gives birth from 6-8 young ones).

Status : Most rare in its eastern range but a common skink in the Middle East.

170. *Mabuya innotata* (Blanford 1870)

(Map 32)

1870. *Euprepes innotatus* Blanford, *J. Asiat. Soc. Beng.* 39 : p. 354, pl. 16, fig. 9 (type loc. Pemganga Valley, S.E. Berar).

1887. *Mabuya innotata*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 178.

1935. *Mabuya innotata*, Smith, *Fauna Brit. Ind.* 2 : p. 263.

This is a bronzy-olive skink with dark brown lateral aspects; belly is whitish; each half of the dorsum with light brown black edged lines; throat is profusely spotted with brown. Supranasals are not touching one another; prefrontals separated, rarely touching one another; a pair of nuchals is always present; postnasal is missing; lower eyelids with an undivided transparent disc; ear-opening is almost circular, with 3-4 pointed lobules on the anterior margin; dorsal and lateral scales are almost equal with 3-5 short obtuse keels, 32-34 scales round the middle of the body. Digits long, 17-18 feebly keeled lamellae beneath the fourth toe, the leg reaches to the wrist. Standard length 55 mm., tail length 100 mm.

Distribution : India : Madhya Pradesh and the adjoining area of Maharashtra (Map 32).

Habits and habitat : Insectivorous, diurnal, terrestrial.

Status : Rare.

171. *Mabuya allapallensis* Schmidt 1926

(Plate 11)

1926. *Mabuya allapallensis* Schmidt, *Pub. Field. Mus. nat. Hist. (Zool). Chicago*, 12 : p. 170 (type loc. Allapalli Forest near Chanda, Maharashtra).

1935. *Mabuya macularia*, Smith, *Fauna Brit. Ind.* 2 : p. 264.

1973. *Mabuya allapallensis*, Sharma, J. Zool. Soc. India, 25(1 & 2) : p. 150.

The complete dorsum of this skink is very dark brown with black spots (in some individuals arranged in a vertebral series) between neck and base of tail; flanks brownish black with or without black spots; a white line from the upper lip to the shoulders; belly is greenish white. Supranasal widely separated; frontonasal broader than long; prefrontals markedly separated; single pair of nuchals is present; postnasal absent; anterior loreal wider than long; lower eyelids scaly, 4 or 5 central scales much larger than others; temporal scales smooth or feebly keeled; ear-opening is almost circular, smaller than a lateral scale, with a few indistinct lobules anteriorly. Fronto-parietals united as a single large shield. Dorsal and lateral scales are almost equal, each with 3-7 distinct, strongly marked keels; 26-30 scales round the middle of body; digits moderately long, 15-18 obtusely keeled lamellae beneath the fourth toe, hind-limb not reaching elbow; ventral scales with very feeble keel-like markings. Standard length 24-50 mm.; tail length 32-64 mm.

Distribution : India : Andhra Pradesh (Ellore), Bihar, Goa, Karnataka, Madhya Pradesh.

Habits and habitat : Insectivorous, diurnal, terrestrial.

Status : Common.

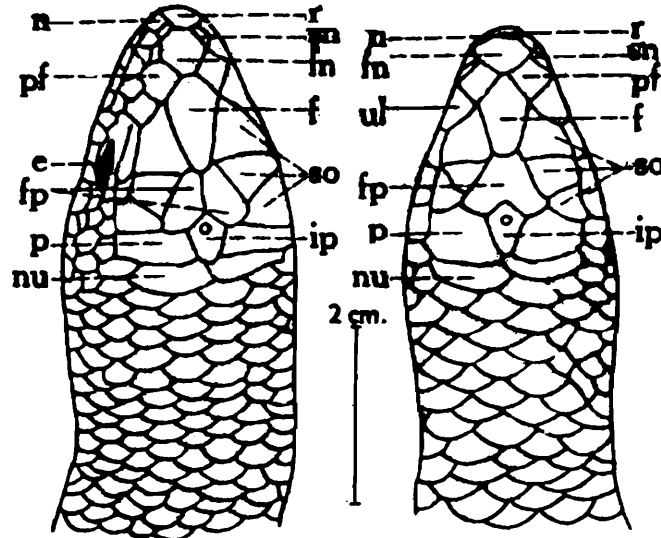


Plate 11 : *Mabuya macularia* (Blyth); *Mabuya allapallensis* Schmidt

172. *Mabuya macularia* (Blyth 1853)
(Plate II, Map 58)

1839. *Euprepes sebae* (in part) Dum. & Bibr., *Erp. Gen.* 5 : p. 692.

1846. *Tiliqua rabriventris* (not of Gray, 1829), *Ann. Mag. nat. Hist.* 18 : p. 430.

1853. *Euprepes macularius* Blyth, *J. Asiat. Soc. Beng.* 22 : p. 652 (type loc. Rangpur, Bengal).

1864. *Euprepes rufescens* (not of Shaw), Gunther, *Rept. Brit. Ind.* : p. 79 (in part).
 1870. *Euprepes (Tiliqua) macularius*, Blanford, *J. Asiat. Soc. Beng.* 39 : p. 358.
 1875. *Euprepes brevis* Gunther, *Proc. Zool. Soc. London*, : p. 225 (type loc. Travancore and Anaimalai Hills).
 1879. *Euprepes macularius subunicolor* Blanford, *J. Asiat. Soc. Bengal*, 48 : p. 112 (type loc. Central Provinces)
 1887. *Mabuia macularia*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 183, pl. 11, fig. 1.
 1897. *Mabuia madaraszii* Mehely, *Termes Fuzetek, Budapest*, 20 : p. 59 (type loc. Ceylon).
 1909. *Lygosoma dawsoni* Annandale, *Rec. Ind. Mus.* 3 : p. 257 (type loc. Maddathorey, Travancore).
 1935. *Mabuya macularia*, Smith, *Fauna Brit. Ind.* 2 : p. 264.

The skink is brown, olive or bronzy, with or without longitudinally arranged black spots; light dorsolateral stripe is always present; sides of neck and flanks dark-brown generally spotted with white. Supranasals are apart; prefrontals rarely touch each other; a pair of nuchals is generally available; lower eyelid scaly; temporal scales keeled; ear-opening is circular, smaller than the lateral scale, with a few lobules anteriorly; dorsal and lateral scales are almost equal, with 5-9 keels; 28-34 scales round the middle of the body; digits moderately long, with 12-17 obtusely keeled lamellae beneath the fourth toe. Standard length 60-75 mm.; tail length 110-140 mm.

Distribution : India : Whole of India. Elsewhere : Burma, Pakistan, Thailand, North Vietnam, South Vietnam, Malaysia (Map 58).

Habits and habitat : Insectivorous, diurnal, terrestrial, oviparous, lays 3-4 (11 mm.) eggs in April to May in hole dug by itself.

Status : Very common every where.

173. *Mabuya nagarjuni* Sharma 1969

1969. *Mabuya nagarjuni* Sharma, *Bull. Syst. Zool., Calcutta*, 1(2) : pp. 71-75 (type loc. Vijaypuri South near right bank of R. Krishna 16° 35'N, 79° 28'E. alt. 500 ft.)

The dorsum of this skink is dark brown, almost black, with white equidistant longitudinal stripes (three on the back, the middle one being vertebral); the stripes indistinct on the tail; scales of head with dark brown centres and light brown margins; dorsal surface of limbs dark brown; hind-limbs sculptured with white above. Head is small in comparison to the body, moderately slender; supranasals not in contact with one another, separated by frontonasal; frontonasal square; prefrontals not in contact with one another; three pairs of nuchals; postnasal is small; lower eyelids scaly; ear-opening is oval, twice the size of the lateral scales, always with 3-4 pointed, spur like lobules on anterior margin; dorsal and lateral scales are almost equal; each dorsal scale with 5-7 keels; 30-32 scales round the middle of body; digits moderately long, 16-22 lamellae beneath the fourth toe;

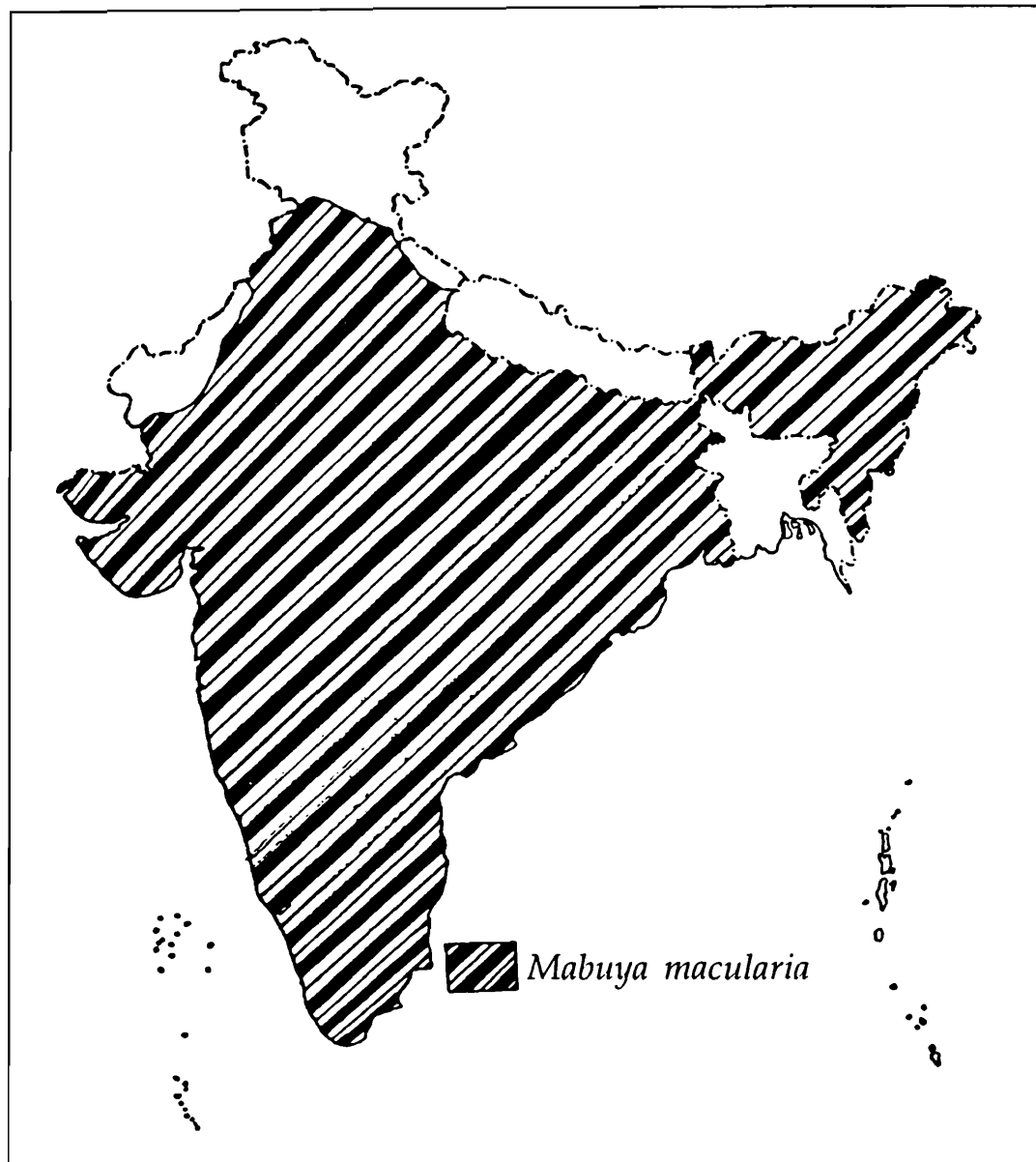


Fig. 58 : Distribution of *Mabuya macularia*.

ovary is white, 6 mm. long 4 mm. wide; peritoneum yellow. Standard length 57 mm.; tail length 69 mm.

Distribution : India : Andhra Pradesh (Right bank of River Krishna 16°35'N and 79°28'E.)

Habits and habitat : Terrestrial, insectivorous, diurnal.

Status : Rare.

174. *Mabuya carinata* (Schneider 1801)

(Fig. 4, Map 59)

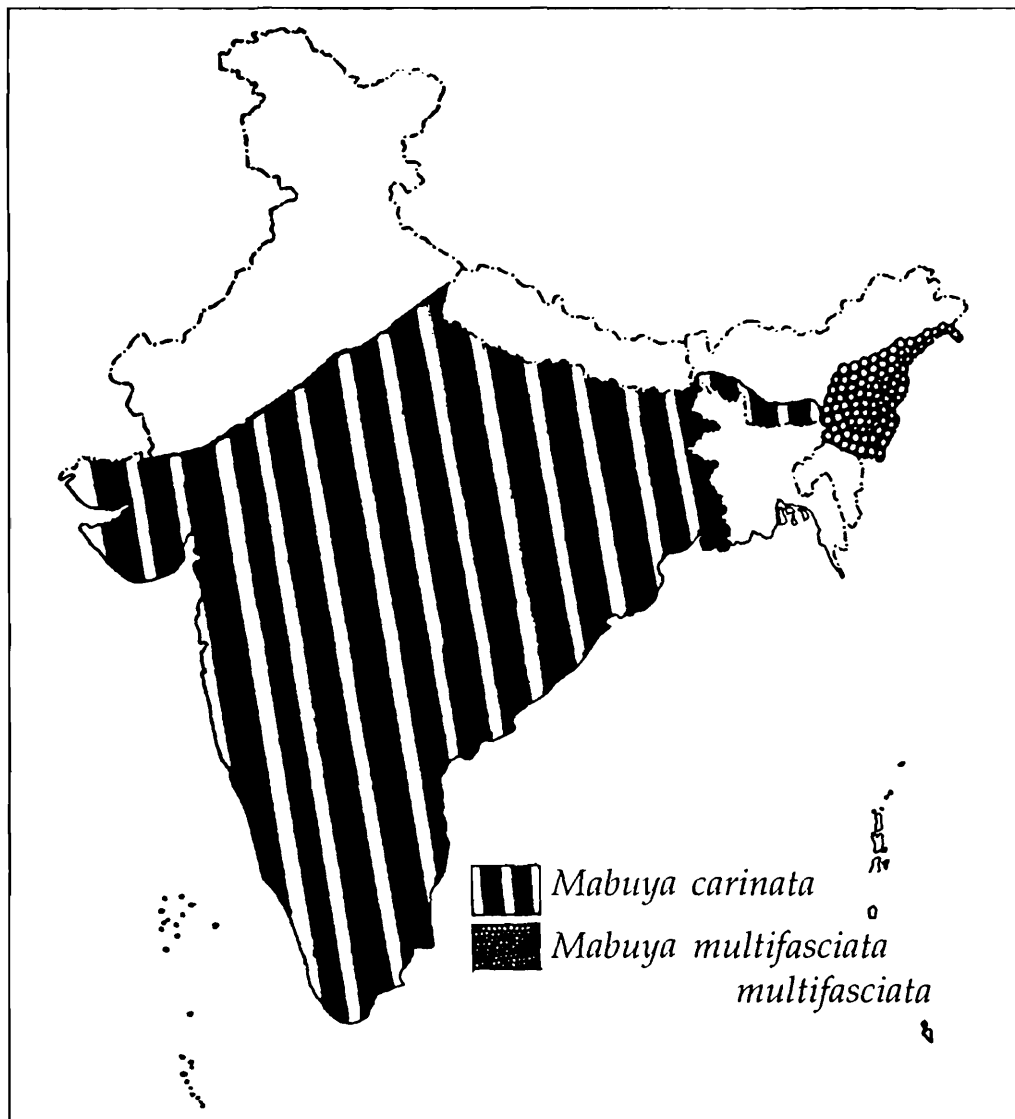
1801. *Scincus carinatus* (in part) Schneider, *Hist. Amphib.* 2 : p. 183 (type loc. not given)

1827. *Tiliqua carinata*, Gray, *Zool. Journ.* 3 : p. 227 (Dum-Dum, Calcutta).

1829. *Tiliqua rubriventris* Hardwicke & Gray, *Ill. Ind. Zool.* 2 : pl. 75 (type loc. Dum-Dum, Calcutta).

1837. *Euprepes sebae* (in part) Dum. & Bibr., *Erp. Gen.* 5 : p. 692.
 1864. *Euprepes rufescens* (not of Shaw), Gunther, *Rept. Brit. Ind.* : p. 79, pl. 10. fig. B (in part).
 1864. *Euprepis carinatus*, Peters, *Mon. Akad. Berlin*, : p. 50.
 1870. *Euprepis (Tiliqua) carinatus*, Blanford, *J. Asiat. Soc. Beng.* 39 : p. 355.
 1887. *Mabuia carinata*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 181.
 1935. *Mabuya carinata*, Smith, *Fauna Brit. Ind.* 2 : p. 266.

The skink is olivaceous-brown or of shining bronz colour dorsally; back and anterodorsal portion of the tail is with dark-brown to black spots or longitudinal lines along the lateral margins of the scales; lateral aspects are dark brown or slightly lighter in colour, generally with brown spots; two somewhat lighter dorsolateral stripes are present; belly is yellowish-white. Supranasals just touching or separated from one another; frontonasal is broader than long; prefrontals in contact with one another; a pair of nuchals is always



Map 59 : Distribution of *Mabuya carinata* and *Mabuya multifasciata multifasciata*.

present; postnasal is not available; lower eyelids are scaly, the two or three central scales are much enlarged and are larger than others; temporal scales are keeled; ear-opening circular, smaller than a lateral scale, with short, pointed lobules anteriorly; dorsal and lateral scales are almost equal, with 3-5 prominent keels; 30-34 scales round the middle of the body; digits are moderately long, with 14-18 smooth or obtusely keeled lamellae beneath the fourth toe; the hind-limb reaches to the wrist or the elbow. Standard length 125 mm.; tail length 165 mm.

Distribution : India : Indian Peninsula, Assam, Bengal. Elsewhere : Sri Lanka, Nepal (Map 59).

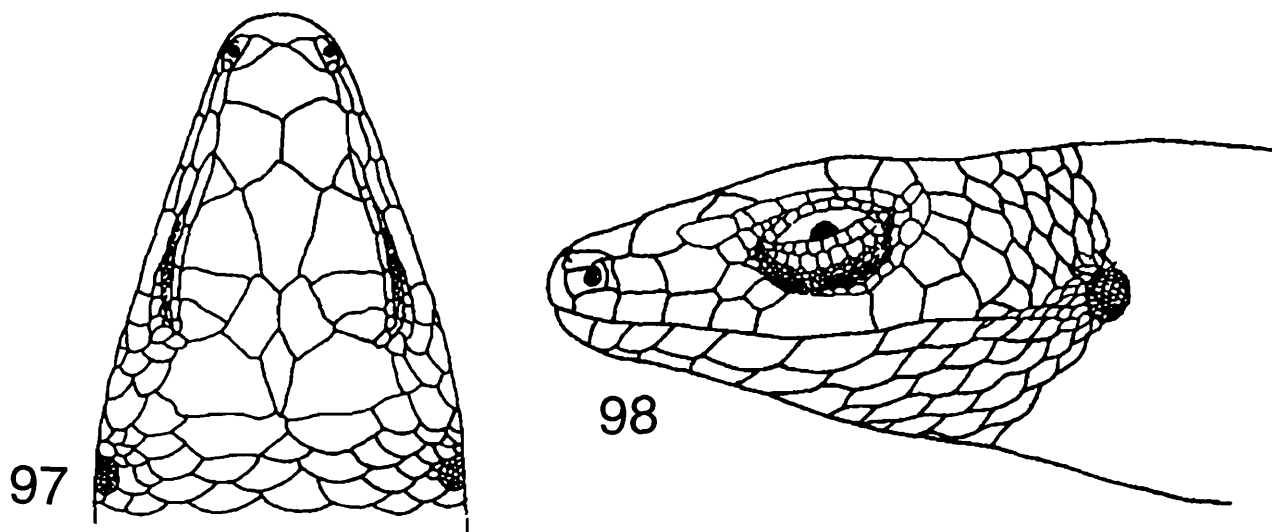
Habits and habitat : Insectivorous, terrestrial, diurnal, oviparous, lays 22 or 23 (13x8 mm.) in a clutch.

Status : Very common.

175. *Mabuya multifasciata multifasciata* (Kuhl 1820)

(Figs. 97 & 98, Map 59)

1801. *Scincus carinatus* (in part) Schneider, *Hist. Amphib.* 2 : p. 183.
 1820. *Scincus multifasciatus* Kuhl, *Beitr. Zool. Vergl. Anat.* : p. 126 (type loc. not given)
 1826. *Mabuya multifasciata*, Fitzinger, *N. Class. Rept.* : p. 52 (Java)
 1839. *Euprepes sebae* Dum. & Bibr., *Erp. Gen.* 5 : p. 692.
 1851. *Euprepes carinatus*, Gravenhorst, *Nov. Acta Acad. Leop.-Carol.* 23 : i, p. 338.
 1853. *Plestiodon sikkimensis* Gray, *Ann. Mag. Nat. Hist.* (2) 12 : p. 388 (type loc. Sikkim).
 1860. *Tropidolepisma macrurus* Bleeker, *Naturg. Tijdschr. Nederl. Ind.* 20 : p. 328.
 1864. *Euprepes rufescens*, Gunther, *Rept. Brit. Ind.* : p. 79 (in part).
 1905. *Mabuia monticola*, Annandale, *J. Asiat. Soc. Beng.* (2) 1 : p. 141.
 1935. *Mabuya multifasciata multifasciata*, Smith, *Fauna Brit. Ind.* 2 : p. 268.



Figs. 97-98 : 97. *Mabuya multifasciata* : Dorsal view of head; 98. *Mabuya multifasciata* : Lateral view of head.

This skink is olive-brown, with dark brown to black lines or spots along the lateral margins of the scales; flanks are from dark-brown to black; head is speckled with black dots; belly is whitish. Supranasals are separated or just touch one another; frontonasal broader than long; prefrontals are in contact with one another; a pair of nuchals is always present; postnasal is always available; lower eyelids scaly; temporal scales are feebly keeled or smooth; ear-opening is circular, smaller than the lateral scale, with small pointed lobules anteriorly; dorsal and lateral scales subequal; dorsal scales are with 3-5 strongly keeled scales; lateral scales are absolutely smooth; 30-34 scales round the middle of body; digits are moderately long, 17-23 smooth obtusely keeled lamellae beneath the fourth toe; the hind-limb reaches to the wrist or the elbow. Standard length 125 mm.; tail length 180 mm.

Distribution : India : Cachar, Naga Hills and Sibsagar in Assam. Elsewhere : The complete Indo-chinese subregion (Map 59).

Habits and habitat : Insectivorous, diurnal, terrestrial and viviparous, 5-7 young ones are produced. Not found on hills.

Status : Very common.

176. *Mabuya tytleri* (Theobald 1868)
(Map 57)

1868. *Tiliqua rufescens* (not of Shaw), Theobald, *Cat. Rept. Asiat. Soc. Mus.* : p. 23 (in part).

1868. *Scincus tytleri* Tytler MSS., Theobald, *Cat. Rept. Asiat. Soc. Mus.* : p. 23.

1870. *Tiliqua carinata* (in part), Stoliczka, *J. Asiat. Soc. Beng.* 39 : p. 169.

1887. *Mabuya tytleri*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 187 (type loc. Andaman Is.).

1935. *Mabuya tytleri*, Smith, *Fauna Brit. Ind.* 2 : p. 270.

This swollen cheeked, largest of all the Indian skinks is bronzy-brown above, back is with faint brownish spots; belly is greenish-white; juveniles are always with dark-brown lateral stripe which merges in general body colour on the advancement of age. Supranasals are generally in contact with one another, in many individuals are very narrowly separated; frontonasal is broader than long; prefrontals are generally in contact with one another, may be separated narrowly in many individuals; a postnasal is always present; lower eyelids are scaly; temporal scales are smooth; ear-opening is almost circular, smaller than a lateral scale, with 2-3 small pointed lobules on the anterior margin; dorsal and lateral scales are almost equal, with 3 obtusely pointed keels; 24-26 scales around the middle of body at the thickest part; digits long with 27-30 smooth lamellae beneath the fourth toe; the hind-limb generally reaches to the axilla. Standard length 150 mm.; tail length 300 mm.

Distribution : India : Native of Andaman Islands (Map 57).

Habits and habitat : Insectivorous, diurnal, terrestrial.

Status : Quite common.

177. *Mabuya andamanensis* Smith 1935

(Map 50)

1869. *Euprepes carinatus*, Steindachner, *Reise Novara*, Rept. : p. 43.1904. *Mabuia multifasciata*, Annandale, *J. Asiat. Soc. Beng.* 73 : p. 19.1935. *Mabuya andamanensis* Smith, *Fauna Brit. Ind.* 2 : p. 271 (type loc. Andaman Is.)

The skink is brown, profusely spotted with black on the neck and half of the anterior back. The spots are arranged in a longitudinal way, thus forming a series on both sides of the vertebral line; a broad dark-brown stripe edged with black spots on both the sides originates from just behind the eye and extend up to the lateral aspect of tail through the neck and upper half of the flanks; belly is yellowish-white. In breeding season the anterior body parts become somewhat reddish and the entire side of the body and tail possess large irregular, white and black spots. Supranasals not touching one another; frontonasal is slightly broader than long; prefrontals never touch each other; interparietal is present but not separating the parietals in the posterior region; a pair of nuchals is always present; a postnasal is present; lower eyelids are scaly; temporal scales are keeled; ear-opening is circular, smaller than a lateral scale, with a few pointed lobules anteriorly; dorsal and lateral scales are almost equal, with 5-7 very prominent keels; 30-32 scales round the middle of the body at the thickest part; digits long, with 25-29 smooth lamellae under the fourth toe; the hind-limb reaches to the axilla. Standard length 105 mm.; tail length 150 mm.

Distribution : India : Andaman and Nicobar Islands (Map 50).

Habits and habitat : Insectivorous, terrestrial and diurnal.

Status : Rare.

178. *Mabuya rugifera* (Stoliczka 1870)

(Map 52)

1870. *Tiliqua rugifera* Stoliczka, *J. Asiat. Soc. Beng.* 39 : p. 170. pl. 10, fig. 3 (type loc. Camorta, Nicobars).1871. *Euprepes (Tiliqua) percarinatus* Peters, *Mon. Acad. Berlin.* : p. 571 (type loc. Malang E. Java).1871. *Euprepes percarinatus borneensis* Peters, *Mon. Acad. Berlin* : p. 572 (type loc. Sarawak, Borneo).1895. *Mabuia rubricollis* E. Bartlett, *Crocod. Liz. Broneo*, p. 87 (type loc. Kuching, Borneo).1896. *Mabuia quinquecarinata* Werner, *Verh. Zool.-bot. Ges. Wien*, 46 : p. 12 (type loc. Sumatra).1935. *Mabuya rugifera*, Smith, *Fauna Brit. Ind.* 2 : p. 273.

This skink is very dark brown in dorsal aspect, generally with 5-7 greenish-white longitudinal lines on the back, sometimes in many individuals the white lines are reduced into a longitudinal series of spots; belly is greenish white; in many young lizards the neck and chest profusely spotted with black. Supranasals are not touching each other; frontonasal

is generally broader than long; prefrontals are also separated from one another; interparietal is very small; parietals are in contact with one another on the posterior aspects, which are keeled; a pair of nuchals is always available and is keeled; in many lizards the postnasal is absent but generally it is present; lower eyelids are scaly; ear-opening is almost circular, about half the size of a lateral scale, with small pointed lobules anteriorly; sixth labial is subocular and is three times longer than the other labials; dorsal and lateral scales are almost equal; dorsals are with 5 keels; the laterals are with 7, very strong keels; 24-28 scales round the middle of the body; digits are moderately long, with 22-27 smooth lamellae under the fourth toe; the hind-limb reaches to the axilla. Standard length 65 mm.; tail length 130 mm.

Distribution : India : The Nicobar Islands. Elsewhere : Java, Sumatra, Borneo and Malaysia (Map 52).

Habits and habitat : Insectivorous, diurnal and terrestrial.

Status : Undeterminate, seems to be rare.

179. *Mabuya quadricarinata* Boulenger 1887

(Map 52)

1871. *Euprepes longicaudata* (not of Hallowell), Anderson, *J. Asiat. Soc. Beng.* (2) 40 : p. 13.

1887. *Mabuya quadricarinata* Boulenger, *Ann. Mus. Civ. Genova*, (2) 4 : p. 618 (type loc. Bhamo and hills to the east).

1905. *Mabuya anakular* Annandale, *J. & P. Asiat. Soc. Beng.* 1 : p. 143 (type loc. Cachar).

1935. *Mabuya quadricarinata*, Smith, *Fauna Brit. Ind.* 2 : p. 273.

This small skink is olive-brown in dorsal colouration, back is with small black spots arranged in longitudinal series; generally with a dark brown dorsolateral line; upper lip is white; belly is whitish. Supranasals not touching each other; frontonasal is broader than long; prefrontals are in contact with one another; interparietal is very well developed, parietals touch each other posteriorly; a pair of nuchals is always present; a postnasal is usually present; lower eyelids are scaly; temporal scales are keeled; ear-opening is almost circular, slightly smaller than a lateral scale, with 2-3 minute projecting lobules anteriorly; dorsal and lateral scales are almost equal, strongly quadricarinate; nuchal shields are present, generally tricarinate; 26 or 28 scales round the middle of the body; digits moderately long, with 17-18 smooth lamellae beneath the fourth toe; the hind-limb hardly reaches to the elbow. Standard length 50 mm.; tail length 90 mm.

Distribution : India : Assam (Cachar). Elsewhere : Burma (Bhamo district) (Map 52).

Habits and habitat : Insectivorous, diurnal, terrestrial.

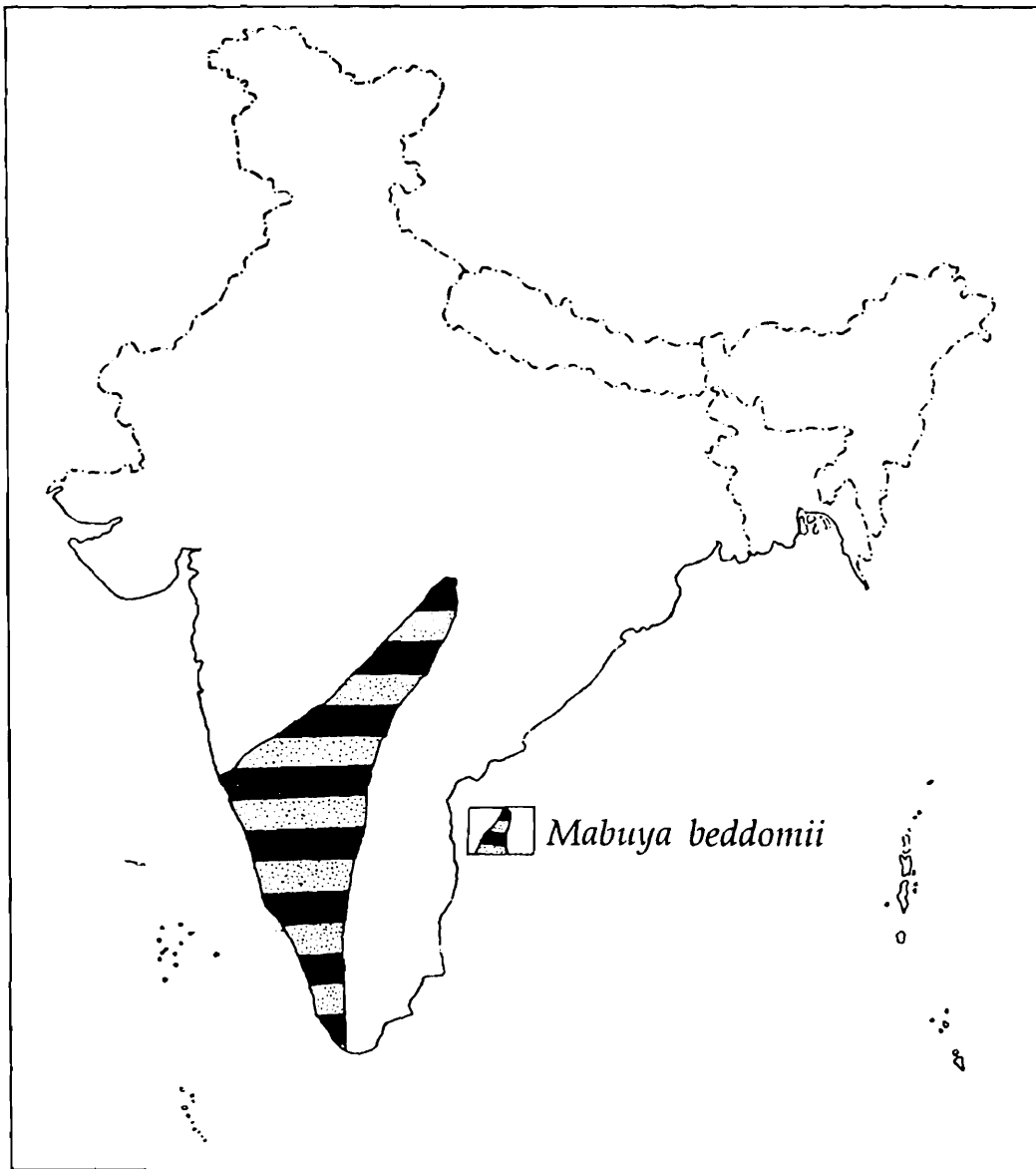
Status : Very rare.

180. *Mabuya beddomii* (Jerdon 1870)

(Map 60)

1870. *Euprepes beddomii* Jerdon, *P. Asiat. Soc. Beng.* : p. 73 (type loc. Mysore).1870. *Euprepes (Tiliqua) septemlineatus* Blanford, *J. Asiat. Soc. Beng.* 39 : p. 360, pl. 16, figs. 7 & 8 (type loc. Penganga Valley, S.E. Berar).1887. *Mabuia beddomii*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 179.1935. *Mabuya beddomii*, Smith, *Fauna Brit. Ind.* 2 : p. 274.

This moderately large skink is brownish above with 4 dark-brown longitudinal stripes on the whole length of the back up to the base of the tail; a broader stripe of the same colour is present on the lateral aspect of the head and antero-dorsal aspects of the flanks, this broad band is edged on both the sides with a white border; top of the head is with

Map 60 : Distribution of *Mabuya beddomii*.

dark-brown spots or longitudinal markings; belly is whitish. Supranasals are in contact with one another; frontonasal broader than long; prefrontals are in contact with one another; a pair of nuchal shields is always available; postnasal is missing; lower eyelids are scaly; temporal scales are smooth; ear-opening is circular, almost of the size of a lateral scale, with 3 or 4 short pointed lobules anteriorly; dorsal and lateral scales are almost equal, these are smooth in most of the lizards, but in few individuals these scales are having 3-5 feeble keels; 30-32 scales round the middle of body; digits moderately long, with 12-15 strongly keeled lamellae beneath the fourth toe; the hind-limb reaches to the wrist. Standard length 55 mm.; tail length 115 mm.

Distribution : India : The whole of Peninsular India, Anaimalai Hills, Sivagherry Hills, Tinnevely Hills; Hills of Malabar coast; Salem and Karnataka and Southern portion of Madhya Pradesh, North-Eastern part of Maharashtra. Elsewhere : Sri Lanka (Map 60).

Habits and habitat : Insectivorous, diurnal and terrestrial.

Status : Rare, on account of the habitat loss.

181. *Mabuya trivittata* (Hardwicke & Gray 1827)
(Map 61)

1827. *Tiliqua trivittata* Hardwicke & Gray, *Zool. Journ.* 3 : p. 227 (type loc. Dum-Dum, Bengal).

1870. *Euprepes trivittatus*, Blanford, *J. Asiat. Soc. Beng.* 39 : p. 357.

1871. *Eumeces trivittatus*, Anderson, *Proc. Zool. Soc. London*, : p. 158.

1872. *Euprepes (Tiliqua) trivittatus*, Stoliczka, *J. Asiat. Soc. Beng.* 41 : p. 119.

1887. *Mabuia vertebralis* Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 180 (type loc. Belgaum, Maharashtra).

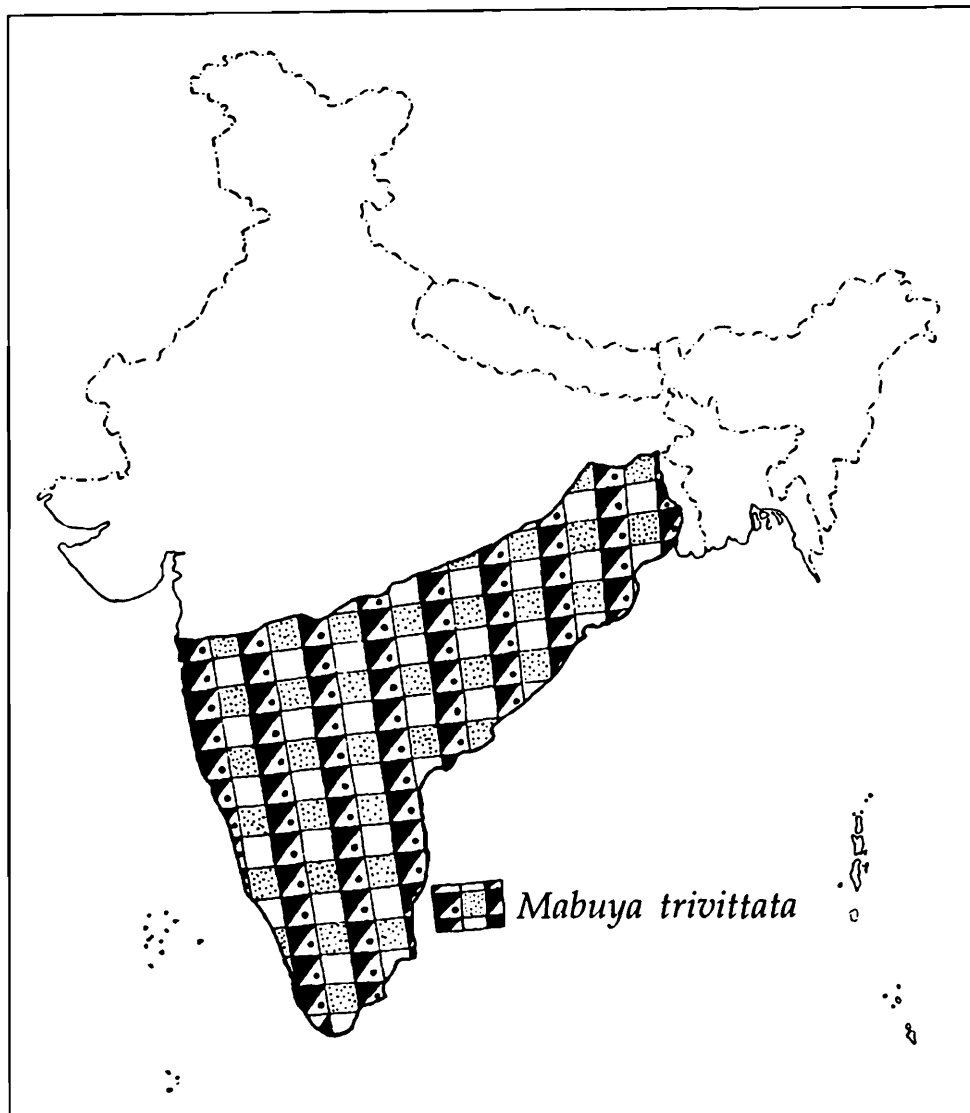
1935. *Mabuya trivittata*, Smith, *Fauna Brit. Ind.* 2 : p. 275.

This moderately large skink is greyish-brown, with 5 broad, black-edged, yellow longitudinal stripes extending the whole length of the body and on the base of the tail; the vertebral and dorso-lateral stripes are most prominent; the belly is whitish. Supranasals in contact with one another; frontonasal is broader than long; prefrontals in contact with one another; a pair of nuchals is generally present; postnasal is missing; lower eyelids are scaly; ear-opening is almost circular, smaller than a lateral scale, with a few, short pointed lobules on its anterior margin; dorsal and lateral scales are almost equal, with 5-7 strong keels; 34-36 scales round the middle of the body; digits moderately long, with 13-14 smooth lamellae beneath the fourth toe; the hind-limb reaches to the wrist; palms and soles with enlarged subconical tubercles, mixed with small scales. Standard length 80 mm.; tail length 80 mm.

Distribution : India : Andhra Pradesh (Jalna, Hyderabad), Bengal (Dum-Dum), Bihar (Rajmahal), Maharashtra (Belgaum, Poona, Nasik), Tamil Nadu (Madras) (Map 61).

Habits and habitat : Insectivorous, diurnal and terrestrial.

Status : Undeterminate, nowhere common.



Map 61 : Distribution of *Mabuya trivittata*.

182. *Mabuya clivicola* Inger, Shaffer, Koshy & Bakde 1994
(Map 5)

1982. *Mabuya clivicola* Inger, Shaffer, Koshy & Bakde 1984

1984. *Mabuya, clivicola* Inger, Shaffer, Koshy & Bakde, *J. Bombay nat. Hist. Soc.* 81(3) : pp. 560-563
(type loc. Ponmudi, Trivandrum district, Kerala).

This moderately large skink is olive-brown, with a dark vertebral stripe, from shoulder region to the hind-limbs; dark lateral bands emerging from eyes as narrow stripes, continue over ears and abruptly widen, covering 4 scale rows of trunk; bands are with faint light margins on the dorsum; between eye and shoulder, band with a distinct light stripe ventrally which in turn bordered by short, thin dark line; between limbs band bordered ventrally by dark grey area that fades into greyish white of underside; ventral aspect of head is without the markings. Supranasals are widely separated from each other; frontonasal is almost as wide as long, prefrontals in contact with one another; a pair of

nuchals is present; postnasal is missing; lower eyelids are scaly; a row of very small scales between eyelid and subocular labial; ear-opening is almost circular, smaller than the second loreal, with 3 small scales projecting into opening from dorsal portion of anterior border; dorsal and ventral scales are almost equal, mid-dorsal scales are with 5 feeble keels; 28 scales round the middle of the body; scales on dorsal surface of fore limbs are smooth, those of hind-limbs with 2 weak keels; digits moderately long, with 17-19 obtusely keeled lamellae beneath the fourth toe; palms and soles are with rounded scales; dorsal and lateral tail scales are weakly tricarinate; subcaudal scales are not enlarged. Standard length 53-55 mm.

Distribution : India : (Ponmudi, Trivandrum district, Kerala) (Map 5).

Habits and habitat : Terrestrial, diurnal, insectivorous.

Status : Rare.

Genus 44. *Dasia* Gray 1838

1838. *Dasia* Gray, *Ann. Mag. Nat. Hist.* 2 : p. 331 (type *olivacea*)
 1843. *Lamprolepis* Fitzinger, *Syst. Nat.* : p. 22 (type *Scincus smaragdinus* Lesson).
 1843. *Liotropis* Fitzinger, *Syst. Nat.* : p. 22 (type *Euprepes ernestii* Dum, & Bibr.).
 1845. *Keneuxia* Gray, *Cat. Liz. Brit. Mus.* : p. 79 (type *Scincus smaragdinus* Lesson).
 1863. *Apterygodon* Ederling, *Nat. Tijd. Ned.-Ind.* 26 : p. 483 (type *Apterygodon vittatum*).
 1890. *Lygosoma*, Boulenger, *Fauna Brit. Ind.* : p. 192.
 1906. *Theconyx* (not of Gray, 1845) Annandale, *Spol. Zeyl.* 3 : p. 191 (type *halianus*).
 1935. *Dasia*, Smith, *Fauna Brit. Ind.* 2 : p. 276.

The genus comprises about 9 species distributed in Malayan Subregion, southern Vietnam, the Philippines, South India and Sri Lanka. Most of the species are more or less adapted to lead a arboreal life and with the adhesive digital pads in their digits. The inferior lamellae upon the basal phalanges are expanded transversely and are shorter than those upon the terminal phalanx. Other generic characters are : Palatine bones meet with each other in their median aspect; pterygoid bones are in contact anteriorly; the palatine depression never extend forward to between the centers of the eyes; maxillary bone is with conical teeth; pterygoid bone is not more than one or two teeth, in many cases these are absent; eyelids are well developed, the lower eyelid is scaly; nostrils are situated in nasal bones; supranasal bones are available; prefrontals, frontoparietals and interparietal bones are well developed; ear opening is small; tympanum deeply sunk; limbs are well developed and pentadactyle.

Key to the species of genus Dasia

1. Dorsum is uniformly coloured or with spots.
 - (a) Preanal scales are not enlarged.

- i. 28-30 scales round the body. *Dasia olivacea*
- ii. 26 scales round the body *Dasia nicobarensis*
- (b)Preanal scales are enlarged *Dasia subcaerulea*
- 2. Dorsum is with broad, black transverse bars; 24 scales round the body.
..... *Dasia haliana*

183. *Dasia olivacea* Gray 1838

- 1838. *Dasia olivacea* Gray, *Ann. Mag. Nat. Hist.* 2 : p. 331 (type loc. Penang).
- 1839. *Euprepes ernestii* Dum, & Bibr., *Erp. Gen.* 5 : p. 696 (type loc. Java).
- 1864. *Euprepes olivaceus*, Gunther, *Rept. Brit. Ind.* p. 80, pl. 10, fig. D.
- 1870. *Tiliqua olivacea*, Stoliczka, *J. Asiat. Soc. Beng.* 39 : p. 172.
- 1887. *Lygosoma olivaceum*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 251.
- 1935. *Dasia olivacea*, Smith, *Fauna Brit. Ind.* 2 : p. 277.

The dorsal and lateral colour is greenish-brown, with transversely arranged black spots (with white central portions); back of the head with black markings which are confined to the edges of the scales; belly is pale-blue, green or yellowish. Snout is moderately pointed; supranasals are not in the contact with one another; frontonasal is of square shape; prefrontals large, generally in contact with one another; frontal is as long as or a little longer than the frontoparietals and inter-parietal together; interparietal completely separates the parietals; a pair of nuchals is always present; supraoculars are 4 in number (second is the largest, first two in contact with the frontal), supraciliaries are 8, the first one is longer than the others; both the anterior and posterior temporal scales not enlarged; ear-opening is small; tympanum is deeply sunk; upper labials are 7, fifth one is the longest is below the eye; dorsal scales are equal, with 3-7 keels; 28-30 scales round the body; preanals not enlarged. Limbs are moderate, 17-22 lamellae beneath the fourth toe, palms of hands and soles of feet with flat tubercles, the keel is with 2-3 much enlarged ones. Tail tapers to a point, the median series of scales on the under side are transversely enlarged. Standard length 115 mm.; tail length 153 mm.

Distribution : India : Andaman and Nicobar Islands. Elsewhere : Small islands of Indo-chinese and Indo-Malayan subregions. Thailand, Indonesia, Malayan Peninsula South of Lat. 15°N.

Habits and habitat : Insectivorous, arboreal, oviparous (lays 6 eggs at a time).

Status : Rare, the population is decreasing on account of habitat destruction and fast urbanisation of small islands.

184. *Dasia subcaerulea* (Boulenger 1891)

1891. *Lygosoma subcaeruleum* Boulenger, *Ann. Mag. Nat. Hist.* (6) 8 : p. 289 (type loc. Bodanai-Kanur, Travancore).

Dorsal colour is greyish-brown, with irregular black and white spots, two black stripes down the neck, which emerge from the fronto-parietals; ventrum is bluish. General scalation and characters are quite similar to the *Dasia olivacea* but differs as follows : The snout is comparatively longer and distinctly more pointed; prefrontal scales are intimately touching each other, frontal shield is shorter than the fronto-parietals and interparietal together; 28 scales round the middle of the body; dorsal scales are with 3 faint keels; a pair of enlarged preanal scales is always available. Standard length 57 mm.; tail length 59 mm. This species is based on a single specimen only.

Distribution : India (Bodanai-Kanur, Travancore, Kerala).

Habits and habitat : Arboreal, diurnal, other habits are not known.

Status : Rare.

185. *Dasia haliana* (Haly & Nevill 1887)

(Map 51)

1887. *Euprepes halianus* Haly & Nevill, *Taprobanian*, 2 : p. 56 (type loc. Henaratgoda and Anuradhapura, Sri Lanka).

1906. *Theconys halianus*, Annandale, *Spol. Zeyl.* 3 : p. 191, figs. 1-4.

1931. *Lygosoma (Keneuxia) halianus*, Deraniyagala, *Ceylon J. Sci. B.* 16 : p. 174. pl. 37.

1935. *Dasia haliana*, Smith, *Fauna Brit. Ind.* 2 : p. 278.

The dorsal colour is yellowish-olive, with broad black cross-bars which are almost as broad as their interspaces, 5 or 6 bars are on the neck and body; occiput is with a black mark which extends anteriorly and converts as two streaks on the dorsal aspect of head and in to two lateral streaks through the eyes up to the nostrils; ventrum is yellowish. In juveniles dorsal black bars are more prominent. Snout is moderately pointed, longer than the orbit; supranasals not touching each other; frontonasal not broader than long; prefrontal shields are large, slightly separated from one another; combined length of fronto-parietals and interparietal is almost equal or slightly more than the length of frontal shield which is narrow; the size of interparietal is most variable, in certain individuals this shield is quite large and separates the parietals; a pair of nuchals is generally available; supraoculars are 4 in number, second is the largest, first and second supraoculars are in contact with the frontal; supraciliaries are 7 or 8, first one is longer than the others; an anterior and a posterior loreal present, both are longer than high; temporal scales are slightly larger than the scales on the lateral aspects of neck; ear opening is small, less than one-quarter the size of the eye-opening, with crenate margin, tympanum deeply sunk; dorsal scales are

with 3 or 5 obtuse keels, the two vertebral series of scales are broader than the adjoining scales; 24 scales are present round the middle of body; preanal scales are slightly enlarged. Tail is almost equal or slightly smaller than the combined length of head and body, tapers to a fine point; the median series of subcaudal scales are transversely enlarged. Limbs are slightly short; the adpressed limbs fail to meet or just overlap; toes moderately long 17-18 lamellae beneath the fourth toe; palms of hands and soles of feet with flat tubercles, heel with large scales, comparatively these scales are larger in males than in the females. Standard length 80 mm., tail length 78-80 mm.

Distribution : Sri Lanka (Dambulla, Elahara, Horana, Anuradhapur, Palutupana, Gampaha, Jaffna) (Map 51).

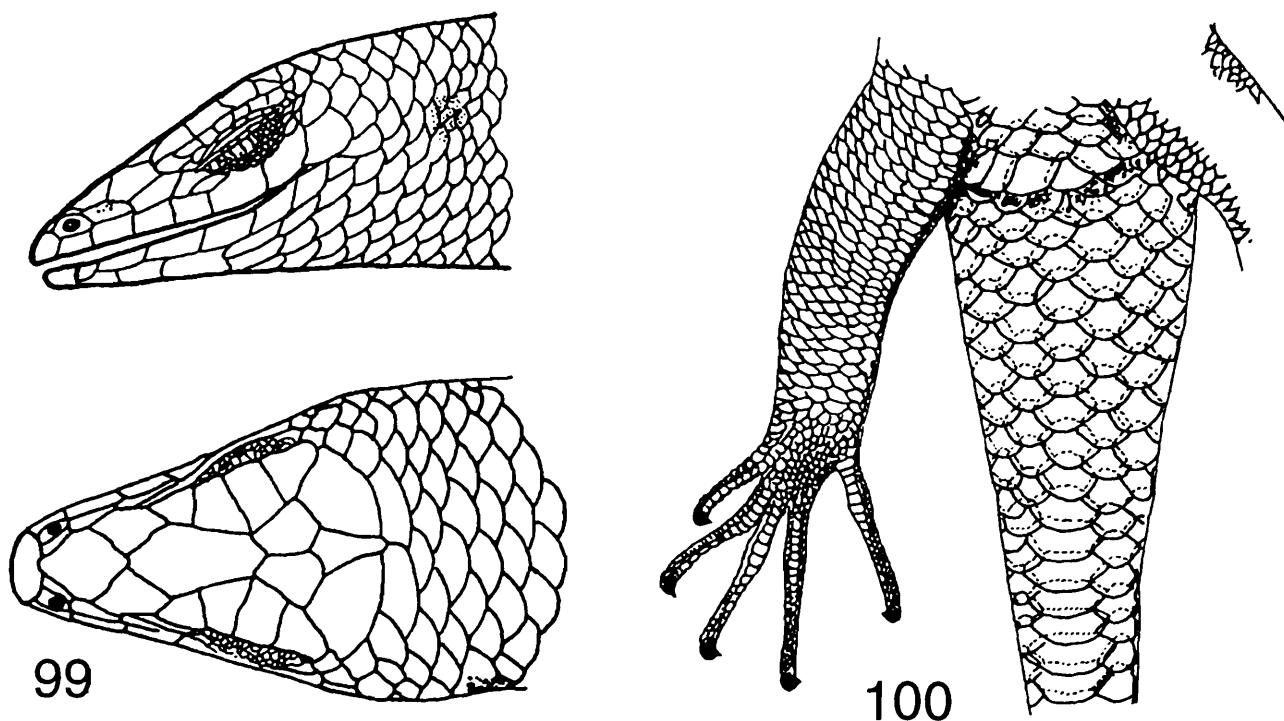
Habits and habitat : Perfectly arboreal, lives on the tops of high trees; diurnal; insectivorous. Other habits are not known.

Status : Nowhere common but not endangered.

186. *Dasia nicobarensis* Biswas & Sanyal 1977

(Figs. 99 & 100, Map 51)

1977. *Dasia nicobarensis* Biswas & Sanyal, *J. Bombay nat. Hist. Soc.* 74(1) : pp. 133-136 (type loc. Car Nicobar Is.).



Figs. 99-100 : 99. *Dasia nicobarensis* : Upper and side view of head; 100. *Dasia nicobarensis* : Ventral view of leg and tail.

The dorsal colour is uniformly dark-brown with a pale stripe along the hind part of the flank and base of the tail. Pale bluish-white below, ventral scales are almost white in centre with bluish tinge along the borders. Body and head narrower; snout obtusely pointed, distance between the end of the snout and the fore limb more than one and less than one and a half the distance between axilla and groin; lower eyelid scaly; supranasals entire, narrow behind but not triangular and not in contact with one another, frontal considerably longer than frontoparietal (nearly twice) and almost equal to the frontoparietal and interparietal taken together; interparietal just separates parietal; prefrontal separate, its length slightly more than its breadth; fronto-nasal about as long as broad; two enlarged temporals; four large supraoculars, second the largest, first in contact with frontal and prefrontal, second in contact with frontal, prefrontal and anterior corner of the frontoparietal, 3rd touching frontal and frontoparietal, 4th frontoparietal and parietal; 8 supraciliaries, 1st longer and higher than others. Ear-opening very small, slightly larger than the nostril with one projecting lobule in the anterior border; anterior and posterior loreals both longer than high and almost equal in length; 7 supralabials, fifth longest and below the eye; 7 infralabials, 4th longest; 2 pairs of enlarged postmentals; body scales subequal, dorsal scales comparatively broader than long in relation to that of *D. olivacea* and with 3 (rarely five) prominent keels; 26 scales round the body and 38 longitudinal scales on the back (from below head shield to just above the hip joint), tail tapering to a point, slightly longer than head and body; middle row of ventral caudal scales with 9 small scales after the vent, followed by transversely enlarged scales that gradually become narrower posteriorly; the leg reaches nearly beyond the elbow. 18 lamellae beneath the fourth toe. Standard length 96-98 mm.; tail length 102-121 mm.

Distribution : This species is available in Car Nicobar Is. The distribution of *D. grisea* is in Malay Peninsula, Indonesia, Phillipines, but *D. olivacea* is more extensive as it includes Thailand and Indonesia, Peninsula south of Lat. 15°N; Andaman and Nicobar Island (Map 51).

Genus 45. *Sphenomorphus* Fitzinger 1843

- 1827. *Lygosoma* Hardwicke & Gray, *Zool. Journ.* 3 : p. 228 (type *serpens quadrupes*).
- 1831. *Siaphos* Gray, in *Griffith's Anim. King.* 9, *Syn.* : p. 72 (type *aequalis*).
- 1834. *Peromeles* Wiegmann, *Herp. Mex.*, : p. 11 (type *aequalis*).
- 1834. *Podophis* Wiegmann, *Herp. Mex.* : p. 11 (type *Anguis quadrupes*).
- 1843. *Eulamprus* Fitzinger, *Syst. Rept.* : p. 22 (type *Lygosoma quoyi* Dum & Bibr.).
- 1843. *Sphenomorphus* Fitzinger, *Syst. Rept.* : p. 23 (type *Lygosoma melanopogon*).
- 1845. *Hinulia* Gray, *Cat. Liz. Brit. Mus.* : p. 74 (type *naevis*=*melanopogon*).
- 1845. *Elania* (not of Sundevall, 1836) Gray, *Cat. Liz. Brit. Mus.* : p. 80 (type *Scincus mulleri* Schlegel).
- 1851. *Anomalopus* Dumeril, *Cat. Meth. Rept.* : p. 185 (type *Anomalopus verreauxii*).

1853. *Lissonota* (not of Gravenhorst 1829) Blyth, *J. Asiat. Soc. Beng.* **22** : p. 653 (type *Lissonota maculata*).
1876. *Coloscincus* Peters, *Mon. Akad. Berlin* : p. 532 (type *Coloscincus truncatus*).
1935. *Lygosoma*, Smith, *Fauna Brit. Ind.* **2** : p. 279.

This genus comprises about 19 species from Polynesia, and Australia to Africa. Only 9 species cover the scope of this work. The main generic characters are : The palatine bones are in contact with one another in their median aspect; pterygoid bones in contact anteriorly, the palatal depression not extending forward to between the centres of the eyes; pterygoid bone is either devoid of teeth or with minute teeth; maxillary bones are with conical teeth; the eyelids are generally well developed, the lower eyelid is scaly; nostrils are situated in nasal bones; supranasals are not available; bones like prefrontals, fronto-parietal(s), and interparietal are quite prominent; ear-opening is distinct; body not much elongated; limbs are well developed, pentadactyle.

Key to the species of genus Sphenomorphus

- I. The adpressed limbs overlap.
- A. Rostral is convex.
1. 30-38 scales round the body; a dark stripe along the side of head and flank.
..... *Sphenomorphus indicum indicum*
 2. 36-40 scales round the body; back of the thigh is with a patch of enlarged scales.
..... *Sphenomorphus boulengeri*
- B. Rostral is flat or concave; 38-42 scales round the body.
1. The leg reaches to the elbow or to the axilla. *Sphenomorphus maculatum*
 2. The leg reaches to the shoulder or beyond. *Sphenomorphus dussumieri*
- II. The adpressed limbs do not overlap or only just overlap; 24-28 subequal scales round the body.
- A. Ear-opening not more than half the size of the eye-opening; tympanum deeply sunk.
1. Two fronto-parietal shields; prefrontals are generally in contact with one another.
..... *Sphenomorphus taprobanense*
 2. Two fronto-parietal shields; prefrontals are small and distinctly separated from one another. *Sphenomorphus striatopunctatum*
 3. Two fronto-parietal shields; ventral scales are keeled *Sphenomorphus megalops*
 4. A single fronto-parietal is available. *Sphenomorphus fallax*
- B. Ear-opening more than half the size of the eye-opening; tympanum not deeply sunk *Sphenomorphus courcyanum*

187. *Sphenomorphus indicum indicum* (Gray 1853)
(Figs. 48 & 101)

1853. *Hinulia indica* Gray, *Ann. Mag. Nat. Hist.* (2) 12 : p. 388 (type loc. Himalayas)
 1871. *Eumeces indicus*, Anderson, *Proc. Zool. Soc. London*, : p. 158.
 1887. *Lygosoma indicum*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 241, pl. 16, fig. 1.
 1887. *Lygosoma zebratum* Boulenger, *Ann. Mus. Civ. Genova*, (2) 5 : p. 478, pl. 7, fig. 1 (type loc. Mt. Muleyit, Tenasserim, Burma).
 1905. *Lygosoma cacharensis* Annandale, *J. Asiat. Soc. Beng.* 1 : p. 145 (type loc. Nemotha, Cachar).
 1922. *Lygosoma bowringi* (not of Gunther), *Mell. Arch. f. Nat. Berlin*, 88 : p. 113 (in part).
 1928. *Sphenomorphus indicus*, Schmidt, *Copeia* : p. 80.
 1935. *Lygosoma indicum indicum*, Smith, *Fauna Brit. Ind.* 2 : p. 281.

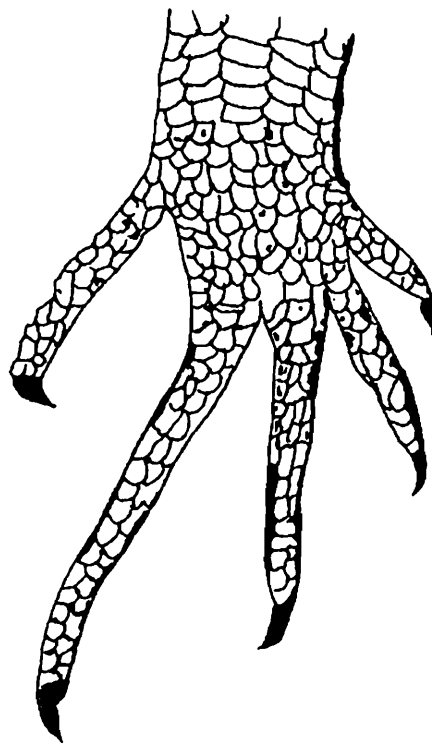


Fig. 101 : *Sphenomorphus indicum* : Foot

The dorsal colouration of the skink is uniform brownish or with small brown or black spots, arranged in longitudinal series; a black or dark brown stripe along the lateral aspect of head, body and tail (in upper aspect of its margin is whitish); labials are generally with dark vertical bars; belly is white. The body is not much elongated; rostral convex, in contact with frontonasal; frontonasal broader than long; prefrontals never contact with each other; frontal as long as or longer than the fronto-parietals and interparietal together; nuchals are not available; supraoculars are 6 in number 4 larger ones are followed by two

smaller scales; supraciliaries 8-10; temporal scales are large, 2 in number and are superposed; ear-opening is oval, tympanum is deeply sunk; Upper labials 7, the fifth and sixth below the eye, separated from it by small scales; body scales are almost equal, smooth 30-38 round the middle of the body; a pair of enlarged preanal is always present; Tail tapers to a point, covered with equal scales, 1 1/2 to 2 times longer than the head and body; limbs are well developed and moderately long, the hind-limb reaches to the elbow, digits long and compressed, 16-22 keeled lamellae beneath the fourth toe; Standard length 90 mm., tail length 130-175 mm.

Distribution : India : Eastern Himalayas (Darjeeling, Sikkim), Elsewhere : The whole of Indo-chinese subregion.

Habits and habitat : Insectivorous, diurnal, terrestrial and oviparous.

Status : Becoming rare on account of habitat loss.

188. *Sphenomorphus boulengeri* Van Denburgh 1912
(Map 52)

1912. *Sphenomorphus boulengeri* Van Denburgh, *P. Calif. Acad. Sci.* 3 : p. 232 (type loc. Formosa).

1925. *Sphenomorphus leveretti* Schmidt, *Amer. Mus. Nov. no.* 157 : pl. 1 (type loc. Nodoo, Hainan).

1935. *Lygosoma boulengeri*, Smith, *Fauna Brit. Ind.* 2 : p. 282.

Dorsal colouration is uniform brown like *S. indicum* but more densely spotted with black and the blackish stripes on the flanks are less prominent and broken up; one stripe emerges from the upper lip and passes along the neck and flank, sometimes this stripe is broken into dark spots; the space between these two lateral stripes is whitish. In other characters this species is quite similar to *S. indicum* except that it bears enlarged patch of scales on the back of the thigh and 36-40 scales round the middle of body. Standard length 90 mm., tail length 135-180 mm.

Many specimens from E. Himalayas with 36 scales round the body and a patch of enlarged scales on the back of the thigh are actually belonging to *Sphenomorphus boulengeri* and have wrongly placed under *S. indicum*.

Distribution : Hainan, Formosa, India (Eastern Himalays, Darjeeling) (Map 52).

Habits and habitat : Diurnal, arboreal, insectivorous.

Status : Rare.

189. *Sphenomorphus maculatum* (Blyth 1853)
(Map 37)

1853. *Lissonota maculata* Blyth, *J. Asiat. Soc. Beng.* 22 : p. 653 (type loc. Assam).

1868. *Hinulia maculata*, Theobald, *Cat. Rept. Asiat. Soc. Mus.* : p. 25.

1887. *Lygosoma maculatum*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 242.

1905. *Lygosoma mitanense* Annandale, J. & P. *Asiat. Soc. Beng.* (2)1 : p. 144 (type loc. Meetan, South Burma).

1935. *Lygosoma maculatum*, Smith, *Fauna Brit. Ind.* 2, p. 285.

The dorsal colouration is bronzy or dark brown, generally with faint, small golden-green spots and two median series of small black spots; sometimes a single vertebral row of spots is available in few individuals; lateral aspect is brownish or blackish with white spots; lower flanks are profusely dotted with black and white; belly is whitish. Snout is short and obtusely pointed; rostral is concave, in contact with the frontonasal; prefrontals small, not touching one another; frontal is equal or longer than the combined distance of fronto-parietals and inter-parietal; supraoculars are 5, first is longest and fifth is smallest; supraciliaries 10-12; both the loreals are higher than long; 2 large supreposed temporal scales; tympanum is not deeply sunk; upper labials 7, the fifth and sixth are below the eye, separated from it by small scales; scales of the body smooth, dorsal scales are much larger than the lateral scales; 32-42 scales round the middle of the body; a pair of large preanal scales is present; tail tapering gradually to a point, almost two times longer than the head and body, the median row of scales on the underside are transversely enlarged. Limbs are moderately long, the hind-limb reaches to the elbow or axilla or even beyond, digits long and compressed, with 16-22 keeled lamellae beneath the fourth toe. Standard length 62 mm.; tail length 121 mm.

Distribution : India : Assam, Bengal (Parasnath hills, Sikkim, Darjeeling, Andamans and Nicobar Islands. Elsewhere : Burma, Southern, China, Thailand, South Vietnam, North Vietnam (Map 37).

Habits and habitat : This is a terrestrial, low-mountain dwelling species, ascends up to 800 metres in Darjeeling. Insectivorous, diurnal and oviparous (lays 4-5 eggs in a single clutch).

Status : Population is reducing on account of habitat loss.

190. *Sphenomorphus dussumieri* (Dum. & Bibr. 1839)

(Map 62)

1839. *Lygosoma dussumieri* Dum, & Bibr., *Erp. Gen.* 5 : p. 725 (type loc. Malabar).

1870. *Eumeces dussumieri*, Beddome, *Madras Month. J. Med. Sci.* p. 175.

1872. *Hinulia dussumieri*, Stoliczka, *J. Asiat. Soc. Beng.* 41 : p. 124, pl. 4, fig. 3.

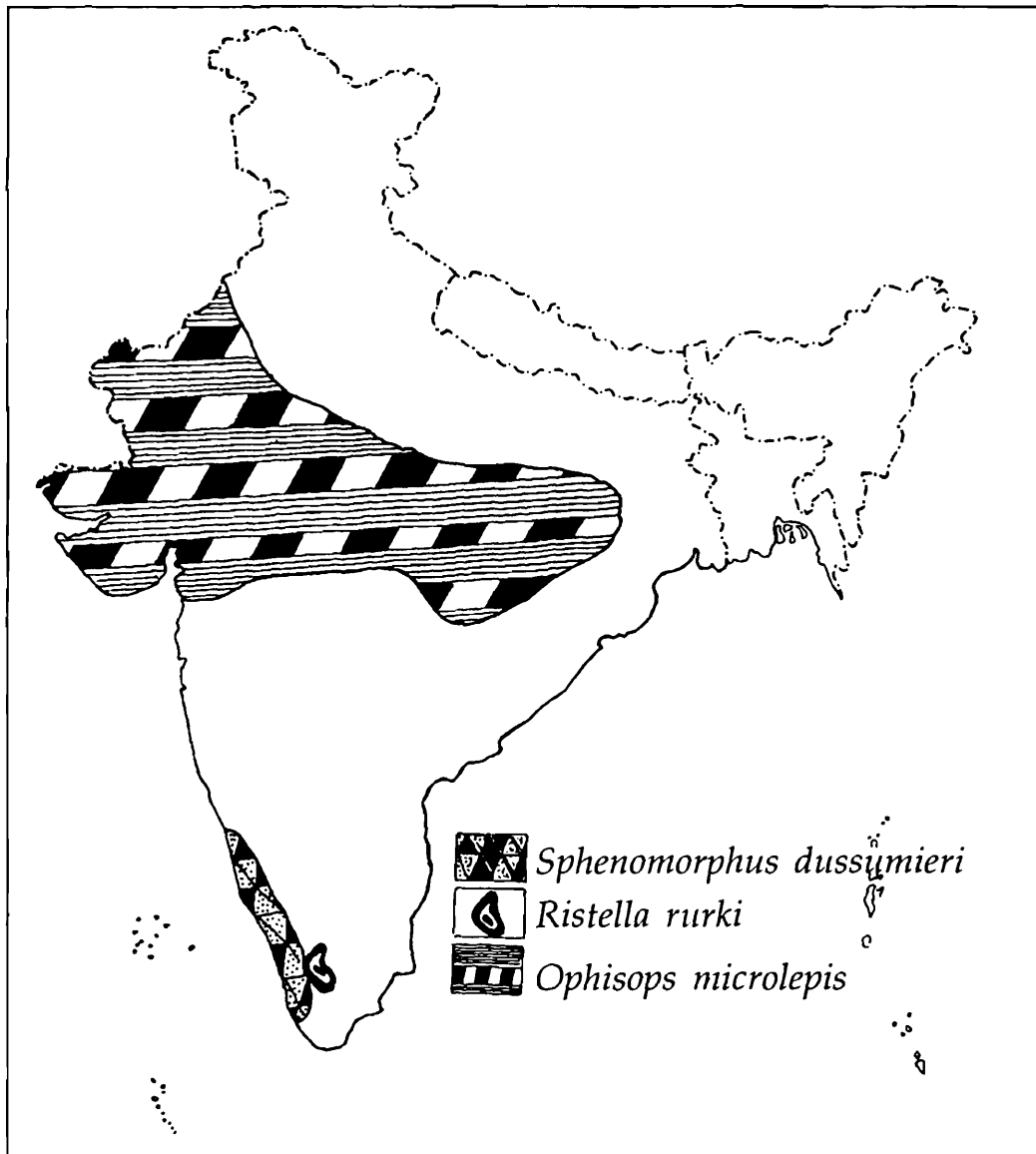
1905. *Lygosoma dussumieri concolor* Annandale, *J. Asiat. Soc. Beng.* (2)1 : p. 145 (type loc. Kanara).

1931. *Lygosoma (Sphenomorphus) dussumieri*, Deraniyagala, *Ceylon J. Sci.*, B, 16, p. 169.

1935. *Lygosoma dussumieri*, Smith *Fauna Brit. Ind.* 2, p. 286.

This skink is similar to *Sphenomorphus maculatum* in scalation, its dorsal colouration is olivaceous-brown with a light brown dorso-lateral stripe and the most of dorsolateral aspect with white spots; a brownish, broad white edged, lateral stripe is also prominent; throat and belly are white; tail is light brown or yellowish. In aged individuals most of this colouration merges and the whole colouration becomes uniform pale olive or bronzy with a beautiful green tinge; tail of male is bright red and of female is brownish, but is differentiated in prefrontals in contact with one another; supraoculars 4-5; dorsal scales are, slightly larger than the lateral scales and are striated; 40 scales around the middle of the body; 20-25 lamellae beneath the fourth toe; the hind-limb reaches to the shoulder or to the tympanum. Standard length 60 mm.; tail length 120 mm.

Distribution : India : South-western portion from Kanara to Trivandrum, thus covering the complete western Ghats. Elsewhere : Sri Lanka (Map 62).



Map 62 : Distribution of *Sphenomorphus dussumieri*, *Ristella rurki* and *Ophisops microlepis*.

Habits and habitat : This is a ground and foot hill dwelling, terrestrial, forest skink. It is insectivorous, diurnal and oviparous.

Status : Very common.

191. *Sphenomorphus taprobanense* (Kelaart 1852)

1852. *Eumeces taprobanensis* Kelaart, *Prodr. Fauna Zeyl.* ii : p. 21 (type loc. Nuwora Eliya, Ceylon).

1887. *Lygosoma taprobanense*, Boulenger, *Cat. Liz. Brit. Mus.* iii : p. 319.

1931. *Lygosoma (Sphenomorphus) taprobanensis* Deraniyagala, *Ceylon J. Sci.*, B, xvi : p. 170.

1935. *Sphenomorphus taprobanense*, Smith, *Fauna Brit. Ind.* 2 : p. 287.

Dorsal colouration of this skink is uniformly brown or with dark longitudinal dotted lines; lower parts are whitish; throat of adult male dark blue or purple, generally with white spots. The snout is short, obtusely pointed; length from snout to the fore-limbs contained about one and one-third to one and three-fifth times in the distance between the axilla and groin; rostral is convex, intimately united with fronto-nasal; pre-frontals are generally in contact with one another; frontal shield is equal to the combined length of fronto-parietals and inter-parietals; nuchal shields are not present; supraocular shields are 6 in number, 4 larger ones followed by 2 smaller shields; second supraocular is generally the largest, first and second supraoculars are in contact with the frontal; supraciliaries are 9 or 10, first one is largest; 2 subequal loreals are available; temporal scales are larger than the scales of the neck; ear opening is small, almost half or less than half the size of the eye-opening, with 1 or 2 minute projecting lobules; tympanum deeply sunk; supralabials are 7, the fifth is below the middle of the eye. The body is covered with smooth scales, 24-26 scales round the middle of body; preanals are generally not enlarged, in many individuals are scarcely enlarged. Tail is quite long, almost one and half time to two times longer than the head and body, tapers sharply to a point, thick at the base; subcaudal scales are not enlarged transversely. Limbs are short; adpressed limbs generally not meeting, in rare cases just touch; digits moderately large; 12-18 feebly keeled lamellae beneath the fourth toe; palms of hands and soles of feet covered with conical tubercles. Standard length 58 mm., tail length 84-116 mm.

Distribution : Sri Lanka (Map 50).

Habits and habitat : Terrestrial, rock-dwelling, diurnal, subarboreal, insectivorous.

Status : Common.

192. *Sphenomorphus striatopunctatum* (Ahl 1927) (Map 53)

1907. *Lygosoma punctatolineatum* (not of Boulenger, 1893) Boulenger, *Spol. Zeyl.* 4 : p. 173 (type loc. Hukgalla, Sri Lanka).

1925. *Lygosoma striatopunctatum* Ahl. *Zool. Anz.* 65, 1/2 : p. 20.

1931. *Lygosoma (Sphenomorphus) punctatolineatus* Deraniyagala, *Ceylon J. Sci.*, B, 16 : p. 169.

1935. *Lygosoma striatopunctatum*, Smith, *Fauna Brit. Ind.* 2 : p. 288.

Most closely allied to *Sphenomorphus taprobanense* in colouration and other characters but differs from it in the following. Prefrontal shields are smaller and widely separated from one another; limbs are comparatively shorter, much separated when adpressed; toes are shorter; 10 or 12 lamellae beneath the fourth toe. The size is smaller. Standard length 40 mm., tail length 60-80 mm.

Distribution : Sri Lanka (Hakgalla., 5000 feet alt., Pattipola and Peradeniya) (Map 53)

Habits and habitat : Terrestrial, subarboreal, diurnal, insectivorous.

Status : Rare.

193. *Sphenomorphus fallax* (Peters 1860)

(Map 57)

1860. *Lygosoma fallax* Peters, *Mon. Akad. Berlin* : p. 184 (type loc. Ratnapura, Trincomali, Sri Lanka).

1864. *Eumeces taprobanensis* Gunther, *Rept. Brit. Ind.* : p. 89 (in part)

1931. *Lygosoma (Sphenomorphus) fallax*, Deraniyagala, *Ceylon J. Sci.*, B, 16 : p. 172.

1935. *Lygosoma fallax*, Smith, *Fauna Brit. Ind.* 2 : p. 288.

This species is also closely allied to *Sphenomorphus taprobanense* in colouration and other characters but differs in the following way. Frontal shield is smaller, as long as or a little longer than the interparietal, which is large, undivided, and almost heart-shaped; 24-28 scales round the body; toes comparatively shorter, 13-16 lamellae beneath the fourth toe. The size is smaller. Standard length 42 mm., tail length 63-84 mm.

Distribution : Sri Lanka (Hilly areas of central, eastern and western Provinces) (Map 57).

Habits and habitat : Terrestrial, subarboreal, diurnal, insectivorous. Found to be living with a perfect harmony with allied *S. taprobanense* at Punduloya.

Status : Vulnerable.

194. *Sphenomorphus megalops* (Annandale 1906)

(Map 54)

1906. *Lygosoma megalops* Annandale, *Spol. Zeyl.* 3 : p. 190. (type loc. Sri Lanka)

1935. *Lygosoma megalops*, Smith, *Fauna Brit. Ind.* 2 : p. 289.

Dorsal colouration is uniform dark brown. The snout is short, obtusely pointed; eyes large; length of snout is equal to the diameter of the orbit; distance from orbit to ear-opening is much longer than snout; length from snout to fore-limb contained about one and a half times in the length from axilla to groin, ear-opening is small, circular, much smaller than eye opening, devoid of denticulations; rostral much broader than high, forms

a straight suture with the fronto-nasal; supranasals are not present; nasal shield is single, not divided; length of the fronto-parietal and interparietal together is equal to the length of frontal; interparietal separates the parietals completely; nuchal shields are not present; four large subequal supraoculars are present; seven or eight supraciliaries are distinct; Supralabials are 6; infralabials are 5. Dorsal and lateral scales are smooth; ventral scales are feebly keeled; body scales are almost equal, imbricate, in 24 or 26 rows round the middle of body; anal scales are not enlarged. Tail is longer than the body; subcaudal scales are not enlarged. Limbs are well developed, pentadactyle; overlapping when adpressed; no enlarged scales on heels; digits moderately large, 12-14 lamellae beneath the fourth toe. Standard length 50 mm., tail length 60 mm.

Distribution : Sri Lanka (Puttalam, Kitulgala) (Map 54).

Habits and habitat : Terrestrial, subarboreal, diurnal, insectivorous.

Status : Rare.

195. *Sphenomorphus courcyanum* (Annandale 1912)

(Fig. 102, Map 32)

1912. *Lygosoma courcyanum* Annandale, *Rec. Ind. Mus.* 8 : p. 43, pl. 5, fig. 5. (type loc. Rotung, N. Assam).

1935. *Lygosoma courcyanum*, Smith, *Fauna Brit. Ind.* 2, p. 289.

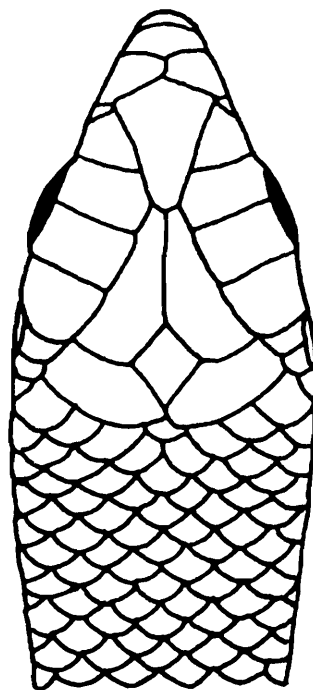


Fig. 102 : *Sphenomorphus courcyanum* : Head scales.

The dorsum is brown with brownish-black spots; a dark-brown dorso-lateral stripe edged above by a light brown line; lateral aspects speckled with brown; belly is whitish. Snout is quite short and obtusely pointed; rostral is convex, in contact with the fronto-nasal; fronto-nasal is broader than long; prefrontals are touching one another; frontal is shorter than the combined length of fronto-parietals and interparietal; nuchal shields are wanting; supraoculars are almost equal, 4 in number, the first and second are in contact with the frontal; supraciliaries are 8-9; out of the two loreals, the posterior one is triangular in shape (with a downward apex); 2 superposed temporal scales are larger than the others; upper labials are 7, fifth below the middle of the eye, sixth longest; tympanum slightly sunk; body scales smooth, dorsal and ventral scales are almost equal in size, slightly larger than the laterals; 26 scales round the middle of body; a pair of enlarged preanals is generally present. Limbs short; 12-13 lamellae beneath the fourth toe; tail swollen at the base. Standard length 44 mm.; tail length 57 mm.

Distribution : India : Arunachal Pradesh (Routang), Assam (Khasi Hills) (Map 32).

Habits and habitat : Insectivorous, diurnal, terrestrial, forest dwelling species.

Status : Very rare.

Genus 46. *Scincella* Mittleman 1950

1839. *Leiopisma* Dum. & Bibr., *Erp. Gen.* 5 : p. 742 (type *Scincus telfairii*).
1843. *Lampropholis* Fitzinger, *Syst. Rept.* : p. 22 (type *Lygosoma guichenoti* Dum. & Bibr.)
1843. *Eulepis* Fitzinger, *ibid.* : p. 22 (type *Lygosoma duperreyi* Dum. & Bibr.)
1845. *Lipinia* Gray, *Cat. Liz. Brit. Mus.* : p. 84 (type *pulchella*).
1845. *Mocoo* Gray, *Cat. Liz. Brit. Mus.* : p. 80 (type *guichenoti*).
1857. *Cyclodina* Girard, *Proc. Acad. Philad.* : p. 195 (type *aenea*)
1857. *Oligosoma* Girard, *Proc. Acad. Philad.* : p. 196 (type *Mocoo zelandica* Gray).
1857. *Lygosomella* Girard, *Proc. Acad. Philad.* : p. 196 (type *aestuosa*).
1857. *Hombrovia* Girard, *Proc. Acad. Philad.* : p. 196 (type *fasciolaris*).
1873. *Lioscincus* Bocage, *J. Acad. Sci. Lisbon*, 4 : p. 228 (type *steindachneri*).
1873. *Tropidoscincus* Bocage, *J. Acad. Sci. Lisbon*, 4 : p. 230 (type *aubrianus*).
1879. *Saurosincus* Peters, *Sitz. Ges. Nat. Fr. Berlin*, : p. 149 (type *braconnieri*).
1887. *Lygosoma*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 209.
1935. *Leiopisma*, Smith, *Fauna Brit. Ind.* 2 : p. 293.

This genus was established by Mittleman in 1950 for the 35 species of small skinks occurring in southeast Asia, Indonesia, Japan, Philippines, Central America, Pakistan, southern United States. This work includes 17 species. The main generic characters are : Palatine bones are in contact on their median aspect; pterygoid bones in contact anteriorly;

the palatal depression never exceeds the line between the centres of the eyes; pterygoid bones are generally devoid of teeth, if present these are minute and one or two in number; maxillary bone is with conical teeth. Eyelids are well developed, the lower eyelid is with an undivided transparent disc; nostrils are situated in the nasal shields; supranasals are not present; prefrontals, fronto-parietal(s), and interparietal are well developed; ear-opening is prominent; limbs are available, which are pentadactyle; snout is short and obtuse; rostral is broader than long, in intimate contact with the frontonasal; frontonasal is broader than long; parietals are in contact with one another on their posterior aspect, just behind the interparietal; Supraoculars are large, 4 in number, followed by 1 or 2 small scales, first and second supraoculars are in contact with the frontal; loreals are 2, the anterior one is higher but shorter than the posterior loreal; temporal shields are superposed, 2 in number, the upper temporal shield is much larger than the lower; Supralabials are 7, fifth or fifth and sixth are just below the eye, larger than the preceding labials. Tail is long. tapers to a point; one or two pairs of enlarged preanals are present; palms of hands and soles of feet are covered with conical tubercles.

Key to the species of genus Scincella

- I. Dorsal and lateral scales are subequal or dorsals are slightly larger; enlarged nuchal shields are not present; ear-opening is without the projecting scales.
 1. The adpressed limbs just meet or overlap.
 - i. 28-32 scales round the middle of body; dorsum is with small black dots.
..... *Scincella reevesi reevesi*
 - ii. 34-38 scales round the middle of body; dorsum is more profusely dotted with black. *Scincella reevesi melanostictum*
 2. The adpressed limbs much separated; 24-28 scales round the middle of body.
 - i. Distance between end of snout and fore-limb twice in distance between axilla and groin; third and fourth toes are equal. *Scincella punctatolineatum*
 - ii. Distance between end of snout and fore-limb is $1 \frac{3}{5}$ times in distance between axilla and groin; third toe is shorter than the fourth. *Scincella tavesae*
- II. Dorsal scales are larger than the lateral scales; 4-6 median series of dorsals are almost two times larger than the lateral scales; 3-6 pairs of nuchal shields are present.
 1. Snout is short and obtuse; dorsum is without a light vertebral stripe.
 - A. Ear is without projecting scales (lobules); in certain cases with small granules anteriorly.
 - (a) Ear-opening is equal to the palpebral disc; 32-34 scales round the middle of body; preanal scales are not enlarged or feebly enlarged
..... *Scincella formosum*

- (b) Ear-opening is smaller than the palpebral disc; 22-24 scales round the middle of body. *Scincella sikkimense*
- (c) Ear-opening is not smaller than the palpebral disc.
- i. Ear-opening is much larger than palpebral disc; 28-32 scales round the middle of belly; 16-18 lamellae under the fourth toe; belly is white. *Scincella doriae*
 - ii. Ear-opening is much larger than palpebral disc; 31 or 32 scales round the middle of the body; 10-16 lamellae under the fourth toe; the leg reaches to the axilla; belly is white. *Scincella macrotis*
 - iii. Ear-opening is not, or not much larger than the palpebral disc; 22-26 scales round the middle of body; fronto-parietal is complete (single shield) or partly divided; belly is grey. *Scincella travancoricum*
 - iv. Ear-opening is not, or not much larger than the palpebral disc; 28-30 scales round the middle of body; fronto-parietal is complete (single shield); belly is grey. *Scincella palnicum*
 - v. Ear-opening is not, or not much larger than the palpebral disc; 20-24 scales round the middle of body; fronto-parietal is divided into two shields; belly is grey. *Scincella beddomei*
 - vi. Ear-opening is not, or not much larger than the palpebral disc; 26-28 scales round the middle of body; fronto-parietal is divided into two shields; belly is grey. *Scincella laterimaculatum*
- B. Ear is with projecting scales (lobules)
- i. 26-30 scales round the middle of body. *Scincella himalayanum*
 - ii. 32-38 scales round the middle of body. *Scincella ladacense*
 - iii. 22-26 scales round the middle of body; preanal shields longer than broad; ear-lobules are very small. *Scincella bilineatum*
2. Snout is pointed; dorsum is with a light vertebral stripe.
- i. Two fronto-parietal shields are present; ear-opening is much smaller than palpebral disc; dorsum is with one light vertebral stripe.
..... *Scincella vittigerum vittigerum*
 - ii. A single fronto-parietal shield is present; ear-opening is larger than the palpebral disc. *Scincella macrotympanum*

196. *Scincella reevesi reevesi* (Gray 1838)

(Map 57)

1838. *Tiliqua reevesii* Gray, *Ann. Mag. Nat. Hist.* 2 : p. 292 (type loc. China).

1878. *Lygosoma nigropunctatum* Bocourt, *Ann. Sci. Nat.* (6) 8 : art. 16 (type loc. Whampoa, Canton Province, China).

1887. *Leiolopisma laterale*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 264 (in part).
1887. *Lygosoma kakhienense* Boulenger, *Ann. Mus. Civ. Genova*, (2) 4 : p. 621 (type loc. Kakhien Hills, N.E. Bhamo, Burma).
1927. *Leiolopisma eunice* Cochran, *Proc. Biol. Soc. Washington*, 40 : p. 187 (type loc. Pak Jong, Dong Paya Fai Mts.).
1927. *Leiolopisma reevesi*, Schmidt, *Bull. Amer. Mus. Nat. Hist.* 54 : p. 423.
1935. *Leiolopisma reevesi reevesi*, Smith, *Fauna Brit. Ind.* 2 : p. 295.

Dorsal colour is light brown or dark brown with black spots; these dorsal black spots sometimes are arranged in a vertebral series; a black stripe, densely spotted with white, emerges from the posterior aspect of the eye and extends up to the upper half of the flanks; lower portion of the flanks is with small black spots; ventrum is whitish. Along with the characters already given under genus, the other characters are : Distance between the end of snout and the fore-limb contained one and a half time to nearly two times in the distance between axilla and groin; prefrontal shields are large, generally in contact with or just separated from one another; combined length of fronto-parietals and interparietal is equal or more than the length of frontal shield; generally the nuchal shields are not present, rarely a single pair may be present; supraciliaries are 6 or 7; ear-opening is oval, almost as large as the eye-opening, devoid of projecting scales (lobules), body scales are smooth, the dorsal scales may or may not be slightly larger than the lateral scales; 28-32 scales round the middle of body, 8 across the back. Limbs are moderately large, the adpressed limbs almost fail to meet or the leg may reach just up to the wrist; digits are long, compressed; 15-20 obtusely keeled lamellae under the fourth toe. Tail is quite long, almost one and a half to two times longer than the head and body, the median subcaudal scales are slightly enlarged transversely. Standard length 50 mm.; tail length 75-100 mm.

Distribution : Complete Indo-chinese region, Burma (Bhamo district; Dawna Hills; Pegu Yomas). Thailand (Chantaban district), Hainan, Hong-Kong, China south of the West River (Map 57).

Habits and habitat : Prefers grassy areas at higher elevations up to 1500 metres, the species is terrestrial, rock dwelling, diurnal and insectivorous.

Status : Common in many parts of its range (Hong-Kong, Hainan and South Vietnam); rare in Burma.

197. *Scincella reevesi melanostictum* (Boulenger 1887)
(Map 54)

1887. *Lygosoma melanostictum* Boulenger, *Ann. Mus. Civ. Genova*, (2) 5 : p. 479, pl. 7, fig. 2 (type loc. Plapoo, N. Tenasserim, Burma).
1935. *Leiolopisma reevesi melanostictum*, Smith, *Fauna Brit. Ind.* 2 : p. 296.

This subspecies is quite similar to the typical form *Scincella reevesi reevesi* in scalation and other characters and differs only in having 34-38 scales round the middle of body; Slight difference in colouration is also present, many specimens from Peninsular Thailand are more profusely spotted with black on the dorsum; the material from S.E. Thailand is with paler colouration; in many individuals the back is almost uniformly coloured and the lateral stripe is indistinct. Standard length 58 mm.; tail length is not known.

Distribution : Burma (Tenasserim), Thailand (Peninsula); S.E. Portion, Chantabun district) (Map 54).

Habits and habitat : Diurnal, terrestrial, insectivorous.

Status : Rare.

198. *Scincella punctatolineatum* (Boulenger 1873)

1893. *Lygosoma punctatolineatum* Boulenger, *Ann. Mus. Civ. Genova*, (2) 13 : p. 321 (type loc. Bia-po, Karin Hills, Burma).

Dorsal colouration is light brown, with dark longitudinal lines, one corresponding to each series of scales; a dark dorso-lateral stripe is distinct; lateral aspects of body are with brown spots; ventrum is light brown. Distance between end of the snout and the fore-limb is two times or slightly more, in the distance between the axilla and groin; prefrontal shields are narrowly separated from one another; combined length of fronto-parietals and interparietal is more than the length of frontal shield; enlarged nuchal shields are not present; supraciliaries are 6 or 7; ear-opening is very large, almost as large as the eye-opening, quite smooth all round its margin and devoid of spur like scales on the anterior margin; tympanum is almost superficial, scarcely sunk. Body scales are smooth; dorsal scales are slightly larger than the ventral scales; 24-26 scales round the middle of the body, 6 across the back; a pair of very large preanal shields are present. Limbs are quite short, widely separated when adpressed; third and fourth toes are equal in length; 12-14 smooth lamellae under the fourth toe. Tail is 1 1/2 times longer than the head and body, thick at the base, the median subcaudal scales are slightly expanded transversely. Standard length 37 mm., tail length 54 mm.

Distribution : Burma (Bia-po, Karin Hills) Known only from two type-specimens.

Habits and habitat : Diurnal, terrestrial, insectivorous.

Status : Rare.

199. *Scincella tavesae* (Smith 1935)

(Map 50)

1935. *Leiolopisma tavesae* Smith, *Fauna Brit. Ind.* 2 : p. 298 (type loc. Bong Tee Valley, west of Kanburi, C. Thailand).

Dorsal colouration is light brown, with indistinct darker longitudinal lines; a dark dorsolateral stripe is present; lateral aspects of neck and flanks are with longitudinal streaks; ventrum is whitish. Distance between the end of the snout and the fore-limb contained one and three fifth times in the distance between the axilla and groin; prefrontal shields are narrowly separated from one another; combined length of fronto-parietals and interparietal is almost equal to the length of the frontal; enlarged nuchal shields are not present; supraciliaries are 8 in number, first one is quite large; anterior loreal is longer than high; anterior and posterior loreals are sub equal or the anterior loreal much larger than the posterior loreal; ear-opening, quite smooth all round its margin; tympanum is superficial, scarcely sunk. Body scales are smooth, almost equal, 26-28 scales round the middle of the body, 6 across the back; a pair of very large preanal shields are present. Limbs are short, do not meet when adpressed by nearly the length of the fore-limb; fourth toe is longer than the third toe; 14 subcaudal lamellae beneath the fourth toe; tail almost two times longer than the head and body, the median series of sub-caudal scales are not transversely enlarged. Standard length 38 mm., tail length 76 mm.

Distribution : Burma (Paunglin Forest Reserve, Pegu district), Thailand (Bong Tee Valley, West of Kanburi, Central Thailand; Peninsular Thailand) (Map 50).

Habits and habitat : Terrestrial, diurnal, insectivorous.

Status : Rare.

200. *Scincella formosum* (Blyth 1853)

1853. *Mococa formosa* Blyth, *J. Asiat. Soc. Beng.* 22, p. 651 (type loc. Mirzapur, N.W.P., and Wazirabad, Punjab).

1905. *Lygosoma formosum*, Annandale, *J. Asiat. Soc. Beng.* 1 : p. 146.

1935. *Leiolopisma formosum*, Smith, *Fauna Brit. Ind.* 2 : p. 298.

Dorsal colouration is olive-green, with longitudinally arranged black spots, many of which are with a central shaft of white; flanks densely spotted with black; ventrum is greenish-plumbeous. Distance between the end of the snout and fore-limb contained one and a half to one and three-quarter times in the distance between the axilla and groin; prefrontal shields are narrowly separated from one another; combined length of fronto-parietals and interparietal is almost equal to the length of frontal shield; 4 or 5 pairs of nuchal shields are present; supraciliaries are 8 in number; ear-opening is subcircular, almost as large as the eye-opening, devoid of projecting scales (lobules) on the anterior margin; tympanum deeply sunk; supralabials 6 or 7, subequal, the fifth or fifth and sixth are below the eye. Body scales are smooth; dorsal and ventral scales are almost equal, larger than the lateral scales; 32-34 scales round the middle of the body; marginal preanal scales are very slightly enlarged. Limbs short, the adpressed limbs do not meet or just

overlap; digits are long, not compressed; 18-22 smooth lamellae beneath the fourth toe. Tail is not longer than the head and body, almost equal. Standard length 90 mm., tail length 90 mm.

Distribution : Pakistan (Wazirabad, Punjab; Northwest Frontier Provinces).

Habits and habitat : Diurnal, terrestrial, insectivorous.

Status : Most rare.

201. *Scincella himalayanum* (Gunther 1864)

(Map 32)

1864. *Eumeces himalayanus* Gunther, *Rept. Brit. Ind.* : p. 86, pl. 10, fig. H (type loc. W. Himalayas).

1869. *Euprepes blythi* Steindachner, *Reise Novara, Rept.* : p. 46 (type loc. Wangu Valley, Kashmir).

1872. *Mococa himalayana*, Stoliczka, *J. Asiat. Soc. Beng.* **41** : p. 127.

1887. *Lygosoma himalayanum*, Boulenger, *Cat. Liz. Brit. Mus.* **3** : p. 257. pl. 17. fig. 2.

1935. *Leiopisma himalayanum*, Smith, *Fauna Brit. Ind.* **2** : p. 299.

This is a small skink with an iridescent bronze dorsum, with indistinct lighter and darker markings; many individuals are with a dark-brown vertebral stripe; lateral stripe is of brass colour and is having irregular margin; there is a broad, dark-brown stripe emerging from snout and reaching up to the proximal part of tail through eye and upperside of the fore-limbs; this lower broad stripe is bordered below by a narrow, irregular, white stripe edged with black; distal body portion is bronzy, with numerous light and dark-brown spots; top of the head and upperside of the limbs are bronzy, with dark dots all over; belly is bluish-white. The lower eyelids are with semitransparent disc; devoid of supranasals; four supraoculars; supraciliaries 6-8; six to seven upper labials; frontonasal and rostral wider than long; snout is bluntly pointed; ear-opening is oval, smaller than eye; frontoparietals paired; prefrontals are generally separated from each other; body scales are smooth, in 24-30 rows at middle of the body, the four median series of dorsal scales are nearly two times larger than the lateral scales; a pair of very large preanal scale is present; tail is 1 1/2 times longer than the head and body; limbs are weak, short, digits long, sub cylindrical, 14-20 smooth or obtusely keeled lamellae beneath the fourth toe. Standard length 65 mm., tail length 93 mm.

Distribution : India : Kashmir, Himachal Pradesh (Simla), Uttar Pradesh (Garhwal, Allahabad, Mussooree, Nainital), Elsewhere : Pakistan, Nepal, S. Turkistan (Map 32).

Habits and habitat : Prefers damp areas or open grassy areas between 400 to 1200 metres, also available in lake sides, banks of rivers and gardens. The species is insectivorous and viviparous (produces 3 or 4 young at a time).

Status : Very common in certain areas of its range.

202. *Scincella ladacense* (Gunther 1864)

(Map 37)

1864. *Eumeces ladacensis* Gunther, *Rept. Brit. Ind.* : p. 88, pl. 10, fig. 1 (type loc. Ladak, Kashmir).
 1869. *Euprepes stoliczkai* Steindachner, *Reise Novora, Rept.* : p. 45 (type loc. Spiti River Valley).
 1869. *Euprepes kargilensis* Steindachner, *Reise Novara, Rept.* : p. 46 (type loc. Kargil, Kashmir).
 1887. *Lygosoma ladacense*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 258, pl. 17, fig. 3.
 1935. *Leiolopisma ladacense*, Smith, *Fauna Brit. Ind.* 2 : p. 300.
 1966. *Scincella ladacense*, Minton, *Bull. Amer. Mus. nat. Hist.* 134 : p. 105.

The mid-dorsal region of this skink is bronzy, there is a dark-brown lateral stripe from eye to groin, enclosing light brown spots; belly is bluish-white. Habitus and pholidosis is similar to the *Scincella himalayanum* except that the frontoparientals are broken up into irregular shields; prefrontals are not in contact; upper labials are 8 in number; scales at the middle of body are in 32-38 rows; 20-24 lamellae beneath the fourth toe. Standard length 50-55 mm.; tail length 54-59 mm.

Distribution : India : Ladakh in Kashmir. Elsewhere : Nepal to Karakoram in the alpine region, Pakistan (Map 37).

Habits and habitat : It is a terrestrial species and has been found to be occurring up to 1800 metres altitude (the highest altitude attained by a reptile so far). Insectivorous and diurnal.

Status : Very common.

203. *Scincella sikkimense* (Blyth 1854)

(Fig. 103, Map 40)

1854. *Mococa sikkimensis* Blyth, *J. Asiat. Soc. Beng.* 22 : p. 652 (type loc. Sikkim).
 1860. *Tiliqua schlegelii* Gunther, *Proc. Zool. Soc. London* : p. 153, pl. 25, fig. C. (type loc. Sikkim).
 1864. *Eumeces schlegelii*, Gunther, *Rept. Brit. Ind.* : p. 96.
 1871. *Mococa sacra* Stoliczka, *P. Asiat. Soc. Beng.* : p. 195.
 1887. *Lygosoma sikkimense*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 257.
 1935. *Leiolopisma sikkimense*, Smith, *Fauna Brit. Ind.* 2, p. 301.

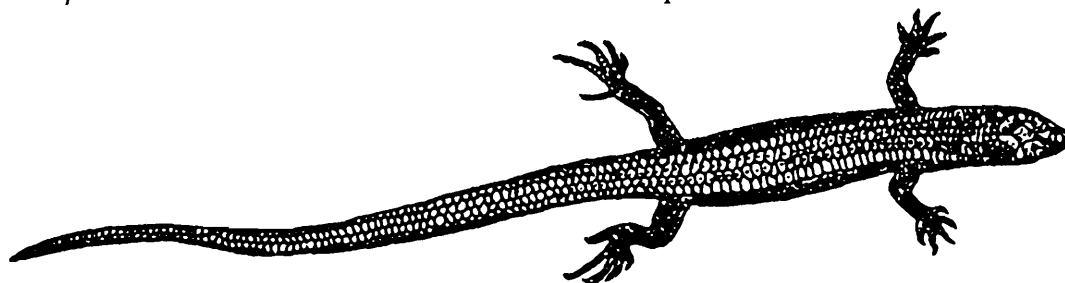


Fig. 103 : *Scincella sikkimense* : Entire dorsal view.

This small skink is of dark bronze dorsum; in most of the examples back is with small gold spots arranged in longitudinal series; a dark-brown streak on the dorso-lateral aspects of head, neck and body; flanks are generally with white spots; many individuals have got a white lateral line; belly is bluish-white. The species is closely allied to *Scincella himalayanum* in pholidosis and habitus but differs in the following way : Dorsal scales two times larger than the lateral scales; 22-24 scales round the middle of the body; hind-limb reaching to the wrist; digits more compressed, 15-17 lamellae beneath the fourth toe. Standard length 53 mm.

Distribution : India : Sikkim, Darjeeling, North Bengal, Bihar, Elsewhere : Nepal, Southern Tibet (Map 40).

Habits and habitat : Strictly terrestrial (300 to 1000 metres), subarctic, insectivorous, diurnal and oviparous. The breeding takes place between April to August. Four oval eggs (10x6 mm) are laid in damp wooden logs, mosses, tree trunks and on other such places up to late June.

204. *Scincella doriae* (Boulenger 1887)
(Map 51)

1887. *Lygosoma doriae* Boulenger, *Ann. Mus. Civ. Genova*, (2) 4, p. 620 (type loc. hills of Bhamo, Burma).

1935. *Leiopisma doriae*, Smith, *Fauna Brit. Ind.* 2 : p. 302.

Dorsal colouration is bronze-brown or golden, with numerous black spots; a dark brown stripe along the upper half of the flank and neck much broken up by lighter spots; lower parts of flanks with small black spots; ventrum is whitish. Distance between the end of the snout and the fore-limb contained one and one-third to one and two third times in the distance between the axilla and groin, prefrontal shields are narrowly separated from or just touching one another; combined length of fronto-parietals and interparietal is almost equal to the length of frontal shield, 3-4 pairs of nuchal shields are present; supraciliaries are 7 or 8; ear-opening is much larger than the palpebral disc, without projecting sclae (lobules) or granules on its anterior aspect. Body scales are smooth, dorsal scales are larger than the lateral scales, but not two times larger; 28-32 scales round the middle of body, 6 across the back; a pair of large preanal scales is present; the limbs are short; the adpressed limbs do not meet or the leg in some individuals reach up to the wrist; digits long; 16-18 lamellae beneath the fourth toe; tail is one and three-quarter times as long as the head and body; median series of subcaudal scales are transversely enlarged. Standard length 58 mm.; tail length 100 mm.

Distribution : Burma (Kachien Hills in N. Burma) Yunnan-fu, Thailand (Doi Suthep in North Thailand) (Map 51).

Habits and habitat : Terrestrial, diurnal, insectivorous.

Status : Rare.

205. *Scincella macrotis* (Steindachner 1869)

(Map 54)

1869. *Euprepes macrotis* Steindachner, *Reise Novara, Rept.* : p. 48 (type loc. Nicobar Islands).1887. *Lygosoma macrotis*, Boulenger, *Cat. Liz. Brit. Mus.* 3, p. 265.1935. *Leiolopisma macrotis*, Smith, *Fauna Brit. Ind.* 2, 303.

Dorsal colouration is brown, with a deep black lateral band; ventrum is yellowish-white. Distance between the end of the snout and the fore-limb is slightly shorter than the distance between the axilla and groin, prefrontal shields are separated; combined length of the fronto-parietals and interparietal is almost equal to the length of frontal shield; 2 pairs of nuchal shields are available; ear-opening is almost as large as the eye-opening, with completely smooth edge all round; tympanum is scarcely sunk; 31-32 smooth scales round the middle of body; dorsal scales are almost equal to the ventral scales but larger than the lateral scales; a pair of large preanal shields are present; the leg reaches nearly to the axilla; tail is slightly longer than the head and body; median series of subcaudal scales are transversely enlarged. Standard length 24 mm., tail length 26 mm.

Distribution : India (Nicobar Islands) (Map 54).

Habits and habitat : Terrestrial, subarboreal, diurnal, insectivorous.

Status : Rare.

206. *Scincella travancoricum* (Beddome 1870)

(Map 63)

1870. *Mococa travancorica* (in part) Beddome, *Madras Monthl. J. Med. Sci.* : p. 34 (type loc. Travancore Hills).1887. *Lygosoma travancoricum*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 261, pl. 18, fig. 4.1935. *Leiolopisma travancoricum*, Smith, *Fauna Brit. Ind.* 2 : p. 304.

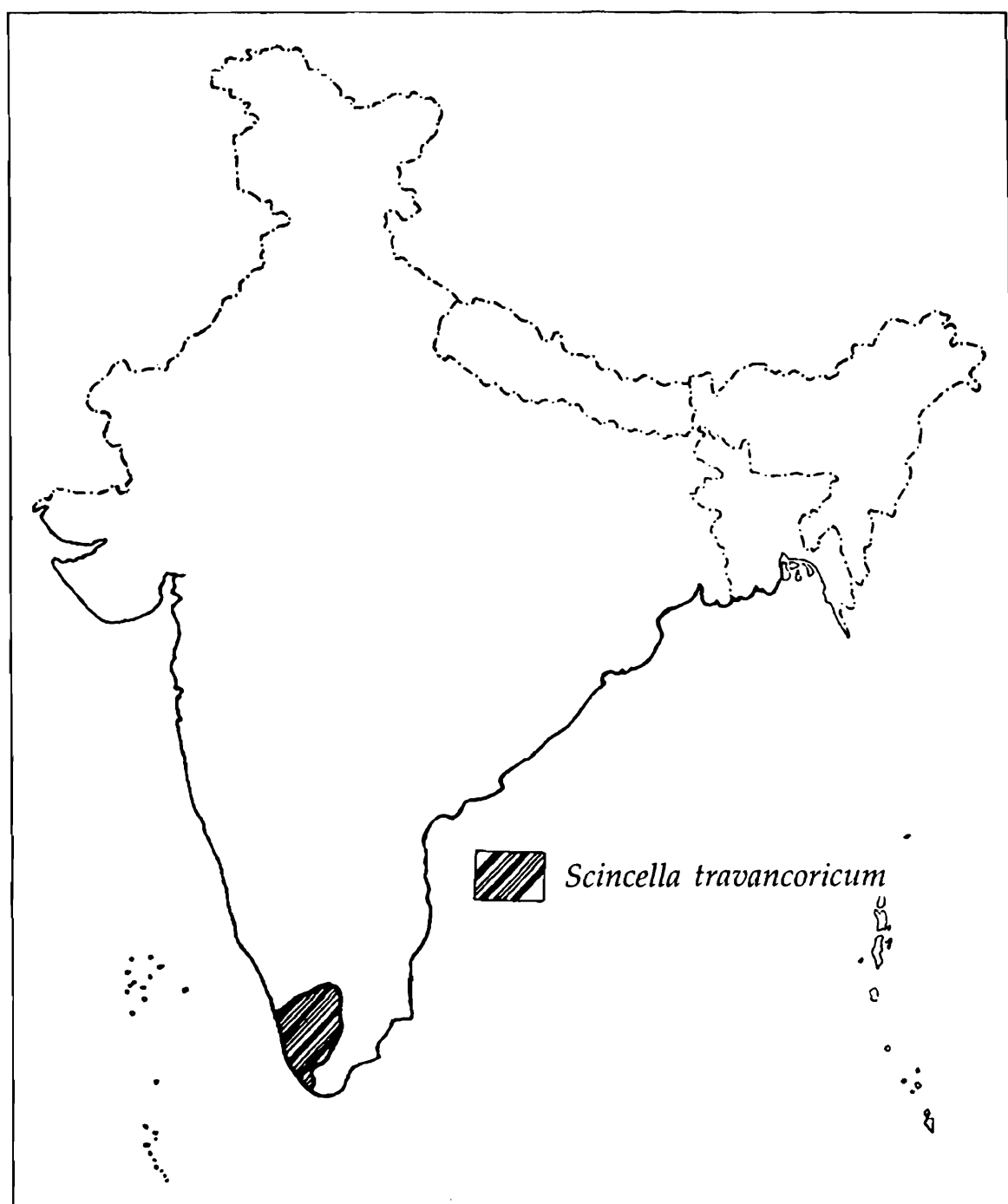
The skink is bronzy brown or greyish-brown above. Back is generally with few black spots arranged on the vertebral line in a row; a dark brown or black stripe along the lateral aspects of head, neck and dorso-lateral parts of flanks, at many places this stripe is edged with light-brown or yellowish dorso-lateral line; lower side of neck, flanks are densely spotted with dark brown; belly is dark grey. Prefrontals are not having any contact with each other; frontal is shorter or as long as the combined fronto-parietal and interparietal together; frontoparietal forms a single shield, in some individuals a suture divides them; 3-4 pairs of nuchals are available; supraciliaries are 7-8, first one is largest; body scales are smooth, dorsal scales are much larger than the lateral scales, generally two times broader than long, 22-26 scales round the middle of the body, 4 scales are across the back; limbs are short, digits long, sub cylindrical, 18-24 lamellae beneath the fourth toe; tail more than 1 1/2 times longer than the head and body, the median series

of scales on the underside of tail are transversely enlarged. Standard length 53 mm.; tail length 80 mm.

Distribution : India : Anaimalai Hills, Palni Hills, Malabar coast (Map 63).

Habits and habitat : Insectivorous, diurnal, terrestrial, subarboreal (recorded up to 500 metres).

Status : Common.



Map 63 : Distribution of *Scincella travancoricum*.

207. *Scincella palnicum* (Boettger 1892)
(Map 68)

1892. *Lygosoma (Leiopisma) travancoricum* var. *palnica* Boettger, *Ber. Offenb. Ver. Nat.* 29/32 : p. 72 (type loc. Kodaikanal, Palni Hills, S. India).

1935. *Leiopisma palnicum*, Smith, *Fauna Brit. Ind.* 2 : p. 305.

Dorsal colouration much similar to *L. travancoricum*, but the light dorsolateral stripe is more distinct, margined on its inner aspect with dark brown; ventrum is greyish-white. General characters and scalation etc. are quite similar to *travancoricum* but differs in having entire fronto-parietal shield; supraocular not entering the supraciliary margin; 28-30 scales round the middle of body; dorsal scales are almost or three times as broad as long; in certain cases interparietal is united with the parietal.

Distribution : India (The Palni Hills, up to 2400 metres; Coimbatore, Tamil Nadu) (Map 68).

Habits and habitat : Diurnal, terrestrial, subarboreal, insectivorous.

Status : Rare.

208. *Scincella beddomei* (Boulenger 1887)
(Map 64)

1870. *Mococa travancorica* (in part) Beddome, *Madras Month. J. Med. Sci.* : p. 34.

1887. *Lygosoma beddomei* Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 261, pl. 18, fig. 3 (type loc. Travancore Hills).

1935. *Leiopisma beddomei*, Smith, *Fauna Brit. Ind.* 2 : p. 305.

This skink is extremely close to *Scincella travancoricum* in habitus, pholidosis and colouration, possibly it is just a variant of this species but differs as follows :- Fronto-parietals completely divided; 20-24 scales round the middle of the body; 17-18 lamellae beneath the fourth toe.

Distribution : Kerala (Malabar Hills), Nilgiri Hills (Coonoor) (Map 64).

Habits and habitat : Insectivorous, terrestrial, subarboreal and diurnal.

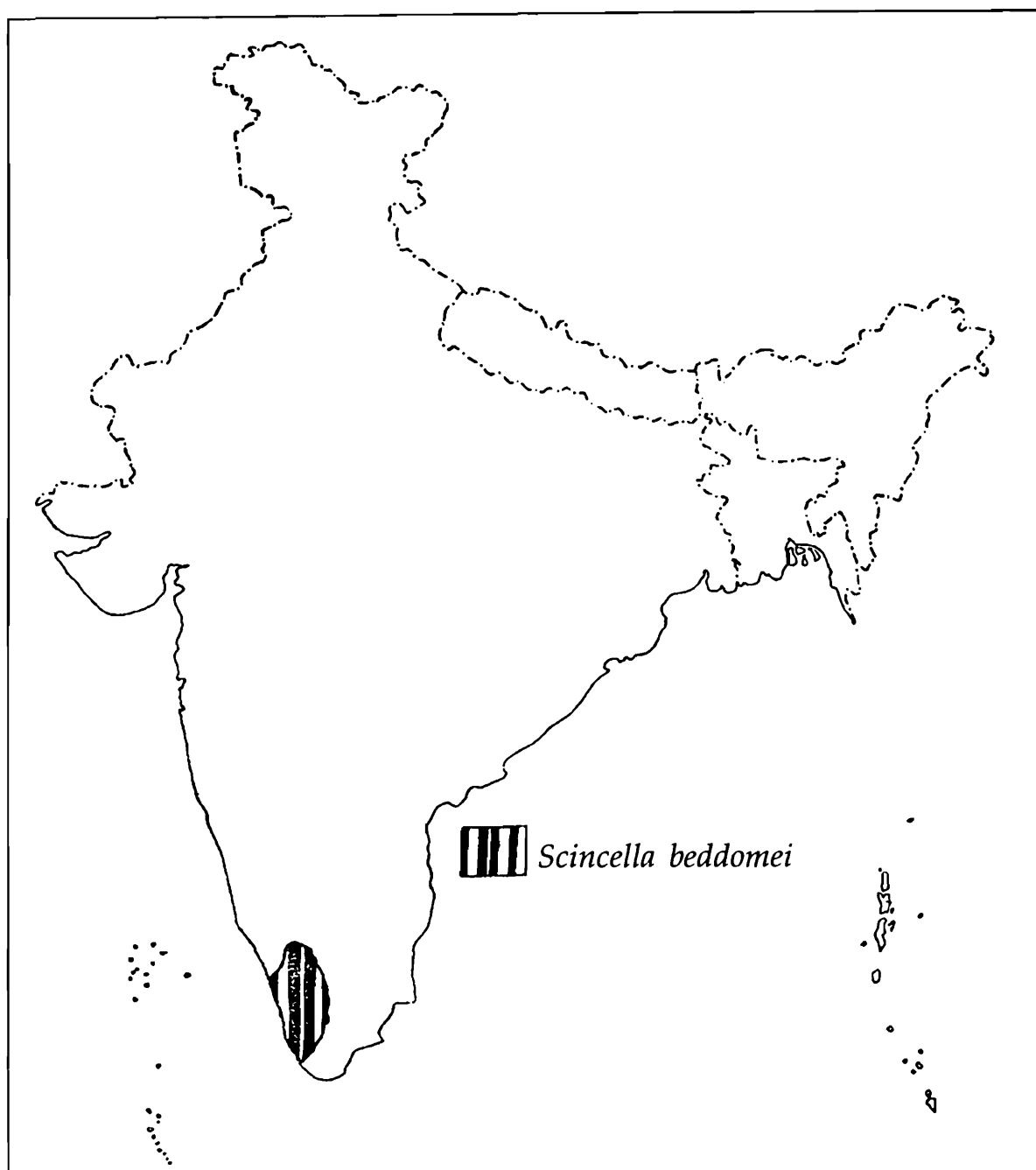
Status : Undeterminate.

209. *Scincella laterimaculatum* (Boulenger 1887)
(Map 56)

1887. *Lygosoma laterimaculatum* Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 260, pl. 18, fig. 2 (type loc. top of Sivagiri Ghat, Tinnevely district).

1990. *Lygosoma laterimaculatum* Boulenger, *Fauna Brit. Ind.* : p. 202.

1935. *Leiopisma laterimaculatum*, Smith, *Fauna Brit. Ind.* 2 : p. 305.



Map 64 : Distribution of *Scincella beddomei*

This very tiny skink is brownish above with a light-edged black stripe on the dorso-lateral aspects of body; lateral aspects of neck and flanks are richly spotted with black; two sharp black lines on the back along the outer margins of the two vertebral series of scales; belly is greyish; tail is deep blue in the young. Prefrontals are minute, widely separated from one another; frontal length is less than the combined length of frontoparietal and interparietal; 3-4 pairs of nuchals are available; supraciliaries are 7 or 8; body scales smooth, dorsal scales feebly multi-carinate; dorsal and ventral scales are slightly larger than the lateral scales; 26-28 scales round the middle of the body, 6 across the back;

a pair of enlarged preanal shields is generally present, the scales are broader than long; limbs are feeble; digits long, subcylindrical, 20-25 smooth lamellae under the fourth toe, the hind-limb reaches to the wrist or the elbow, tail 1 1/2 times larger than the head and body, median sub-caudals very strongly enlarged transversely. Standard length 16 mm.; tail length 54 mm.

Distribution : Tinnevely Hills, Nilgiri Hills, Malabar coast (Map 56).

Habits and habitat : Insectivorous, diurnal, terrestrial, subarboreal.

Status : Undeterminate.

210. *Scincella bilineatum* (Gray 1846)
(Map 46)

1846. *Mococa bilineatum* Gray, *Ann. Mag. Nat. Hist.* 18 : p. 430 (type loc. Summit of Nilgiris).

1887. *Lygosoma bilineatum*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 259, pl. 18, fig.1.

1935. *Leiopisma bilineatum*, Smith, *Fauna Brit. Ind.* 2 : p. 306.

In colouration, habitus and pholidosis this skink has got a close similarity with *Scincella laterimaculatum* and slightly differs as follows :- Lateral aspects are not spotted with black; in the young and semiadult individuals the colour of tail is violet. The scales round the middle of body are 22-26 in number; preanal are large, pointed, and 4 in number, these are longer than broad; tail slightly swollen at the base; 16-20 lamellae under the fourth toe. Standard length 65 mm.

Distribution : India : Nilgiri Hills (Map 46).

Habits and habitat : Insectivorous, diurnal, terrestrial and subarboreal.

Status : Undeterminate.

211. *Scincella vittigerum vittigerum* (Boulenger 1894)

1894. *Lygosoma vittigerum* Boulenger, *Ann. Mus. Civ. Genova*, (2) 14 : p. 615 (type loc. Sereinu, Mentawi Is.).

1905. *Lygosoma pulchellum* (not of Boulenger 1908), Annandale, J. & P. *Asiat. Soc. Beng.* 1 : p. 145.

1930. *Leiopisma pranensis* Cochran, *Proc. U.S. Nat. Mus.* 77 : p. 18, fig. (type loc. Pran, Thailand, lat. 12°40' N.)

1935. *Leiopisma vittigerum vittigerum*, Smith, *Fauna Brit. Ind.* 2 : p. 306.

Dorsal and lateral colouration is light brown, or greenish, speckled with black, a broad green or golden coloured vertebral stripe emerges from the snout and proceeds almost up to the tip of tail, it is bordered on each side by a broad black stripe which terminates on the base of the tail; a prominent, dark dorso-lateral stripe is present in most of the lizards, at least on the anterior portion; ventrum is white with a greenish tinge; tail is light brown

or orange. Juveniles are more distinctly coloured and dorsolateral stripes are more prominent, in certain cases dark dorso-lateral stripe is altogether missing. Distance between the end of the snout and the fore-limb contained one and quarter to one and one-fifth times in the distance between the axilla and groin; snout is pointed, almost two times longer than the eye; fronto-nasal is almost as long as broad; prefrontal shields are in an intimate contact with one another; combined length of fronto-parietals and interparietal is more than the length of frontal shield; frontal shield is narrow on its posterior aspect and in contact with 2 or 3 supraocular shields; 2-4 pairs of nuchal shields are present; posterior loreal elongate, two times longer than the anterior loreal; supraciliaries are 9 or 10; two large temporal shields are present bordering the parietal shield; ear-opening is smaller than the palpebral disc, devoid of projecting sclae (lobules); tympanum is deeply sunk. Body scales are smooth, the 2 or 4 vertebral series are broadest, much broader than the lateral scales; 28-30 scales round the middle of body; a pair of large preanal shields is present. Limbs are moderately large, the leg reaches to the wrist or the elbow; digits long, subcylindrical or feebly depressed; 20-26 lamellae beneath the fourth toe, those upon the basal phalanges are shorter and more erect than those present on the terminal phalanx; tail is slightly longer than the head and body; the median series of subcaudal scales are transversely enlarged.

Distribution : Burma (Tenasserim); Thailand (Tasan, Isthmus of Kra; west of Kanburi; Pran, Chantaboon; Raheng district, Meh Lem, Meh Wang in North Thailand); Malaysia.

Habits and habitat : Terrestrial; rock dwelling (found from sea-level to hills up to 1700 metres); arboreal; diurnal; oviparous, lays 3 very large eggs; insectivorous.

Status : Rare.

212. *Scincella macrotympanum* (Stoliczka 1873)

(Map 1)

1873. *Mococa macrotympanum* Stoliczka, *J. Asiat Soc. Beng.* **42** : p. 166 (type loc. S. Andamans).

1887. *Lygosoma macrotympanum*, Boulenger, *Cat. Liz. Brit. Mus.* **3** : p. 265.

1935. *Leiolopisma macrotympanum*, Smith, *Fauna Brit. Ind.* **2** : p. 308.

The skink is brown dorsally, with three longitudinal white stripes on the back, one is vertebral and others are on sides, these are continuous up to the base of the tail; lower parts and belly with light to deep orange colour. Prefrontals are much smaller, slightly separated from one another; frontal length is much less than the combined length of fronto-parietals and interparietals together; frontal shield is in contact with two supraoculars; fronto-parietal is a single shield; loreals are almost equal in size; tympanum is slightly sunk; 22 scales are around the middle of the body; limbs are shorter, 15 lamellae beneath the fourth toe. Standard length 45 mm.; tail length 50 mm.

Distribution : India : South Andamans (Map 1).

Habits and habitat : Nothing is known except that a gravid female contained large eggs.

Status : Rare.

Genus 47. *Ablepharus* Fitzinger 1823

1823. *Ablepharus* Fitzinger, in Lichtenstein, *Ver. Doub. Zool. Mus. Berlin*, : p. 103 (type *pannonicus brandti*)
1833. *Lerista* Bell, *Proc. Zool. Soc. London*, : p. 99 (type *lineatus*)
1834. *Cryptoblepharus* Wiegmann, *Herp. Mex.* : p. 12 (type *paecilopleurus = boutoni*)
1843. *Microblepharis* Fitzinger, *Syst. Rept.* : p. 23 (type *Ablepharus menestriesii* Dum. & Bibr.)
1843. *Ophiopsis* Fitzinger, *Syst. Rept.* : p. 23 (type *Lerista lineata* Bell).
1845. *Morethia* Gray, *Cat. Liz. Brit. Mus.* : p. 65 (type *anomalus*).
1845. *Menetia* Gray, *Cat. Liz. Brit. Mus.* : p. 65 (type *greyi*).
1845. *Miculia* Gray, *Cat. Liz. Brit. Mus.* : p. 66 (type *elegans*)
1866. *Panaspis* Cope, *Proc. Acad. Philad.* : p. 317 (type *aeneus*).
1872. *Blepharosteres* Stoliczka, *P. Asiat. Soc. Beng.* : p. 74 (type *grayanus*).
1881. *Phaneropus* Fischer, *Arch. f. Naturg. Berlin*, : p. 236 (type *nuelleri*).
1935. *Ablepharus*, Smith, *Fauna Brit. Ind.* 2 : p. 309.

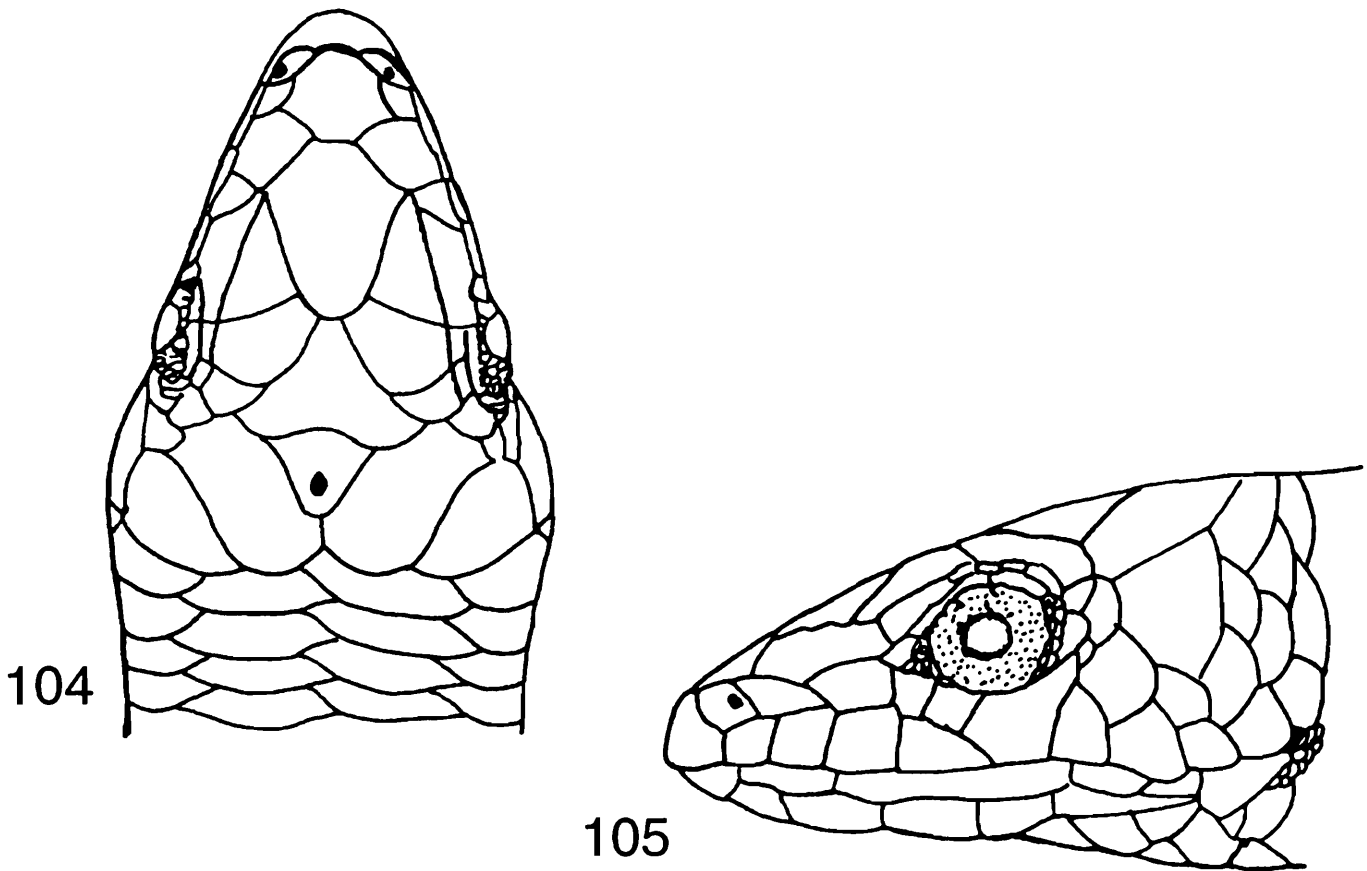
This genus includes about 25 species, which are popularly called as dwarf skinks and are distributed from southeastern Europe through the s.w. Asia, Africa, Australia, Pölynesia, the East Indies, west coast of South America through the Pacific islands. In the oriental Region proper this genus has been recorded at Mt. Abu in Sirohi district of Rajasthan. The main generic character is the fusion of both the eyelids, resulting in the formation of a transparent eye cap or disc. This covering process of the eye, by a transparent disc initially evolved in the lower eyelid of the two genera *Leiolopisma* and *Emoia* and this character further improved in the genus *Ablepharus* resulting in the maximum fusion of the upper and lower lids. The fusion of eye lids is still not so complete and in certain species like *Ablepharus pannonicus*, a small palpebral fissure still exists under the supercilium. The main characters commonly available in most of the species of this genus exhibit degeneration up to certain degree and is evidenced by the fusion of head shields, closure of the ear-opening, degeneration of the limbs and reduction in the number of digits, elongation of the body while the size remains small, lacking supranasal shields altogether or if present unite anteriorly with the nasal shield. Other main generic characters are : Palatine and pterygoid bones meet on their median aspect; the palatal depression is not up to the centres of the eyes; teeth are not present on pterygoids; maxillary teeth are conical; lower eyelid (as already stated) is with a large transparent disc which is immovable, more or less completely united with the upper eyelid; ear may be distinct or hidden; nostrils are pierced in the nasal, supranasals are present or absent; scales of body are smooth; limbs more or less developed, digits 5, 5 or reduced in number.

Key to the species of genus Ablepharus

1. Ear-opening is small but distinct *Ablepharus pannonicus*
2. Ear-opening is hidden *Ablepharus grayanus*

213. *Ablepharus pannonicus* Fitzinger 1823
(Figs. 104 & 105, Map 65)

1823. *Ablepharus pannonicus* Fitzinger, in *Lichtenstein, Eversmann's Reise nach Buchara*, : p. 145 (type loc. Bokhara)
1868. *Ablepharus brandtii* Strauch, *Mel. Biol. Acad. St. Petersb.* 6 : p. 565 (type loc. Samarkand, Turkistan).
1872. *Blepharosteres agilis* Stoliczka, *P. Asiat. Soc. Beng.* : p. 126 (type loc. S.W. of Kalabagh, Punjab).
1874. *Ablepharus pusillus* Blanford, *Ann. Mag. Nat. Hist.* (4) 14 : p. 33 (type loc. Basra)
1905. *Ablepharus brandtii brevipes* Nikolski, *Ann. Mus. St. Petersb.* 10 : p. 282 (type loc. Persia).
1923. *Ablepharus grayanus* (not of Stoliczka) Proctor, *J. Bombay nat. Hist. Soc.* 29 : p. 126.
1935. *Ablepharus pannonicus*, Smith, *Fauna Brit. Ind.* 2 : p. 310.



Figs. 104-105 : 104. *Ablepharus pannonicus* : Dorsal view of head; 105. *Ablepharus pannonicus* : Lateral view of head.

Dorsal colouration is olive or brownish with metallic gloss; dorso lateral aspect with dark brown stripes, with a whitish upper margin, flanks are with faint dark longitudinal lines; upper lip is whitish; lateral aspects of tail are with small spots regularly arranged in longitudinal series; limbs are with light and dark longitudinal series; limbs are with light and dark longitudinal lines on dorsal aspect; ventrum is whitish. The head is small, snout is short and obtuse; eyes are small, surrounded by small scales; fronto-nasal shield is in contact with the rostral and frontal; supraocular shields are 3, the first one is the largest; first and second are in contact with the frontal; three distinct shields are present between the small postoculars and temporals, which continue backwards and downwards from the supraoculars; Supraciliaries are 5 in number, the first and second are largest, fronto-parietals form a single large shield; interparietal shield is distinct, its posterior margin is in contact with the parietals; 2 or 3 pairs of nuchal shields are present; upper eyelid is formed by 3 or 4 large scales, covering the upper margin of the lower eyelid; both the eyelids are fused or sometimes with a minute palpebral fissure; loreals are 2, two superposed temporal shields are present, the upper one is comparatively larger; 7 upper and 6 lower labials are present; fifth upper labial is subocular; distinctly larger than the preceding labials; one distinct postmental shield is available; ear-opening is small, smaller than pupil, partly hidden by scales; from occiput to point above vent 53-57 scales are present along the dorsal midline; 20-22 scales round the middle of body; dorsal scales are largest; a pair of enlarged preanal scales are present. Limbs are short, pentadactyle, slender, adpressed toes are separated by three to five scales, adpressed limbs do not meet with each other; tail is much longer than the head and body; with transversely arranged plates on the underside. Standard length 29-35 mm., tail length 52-60 mm.

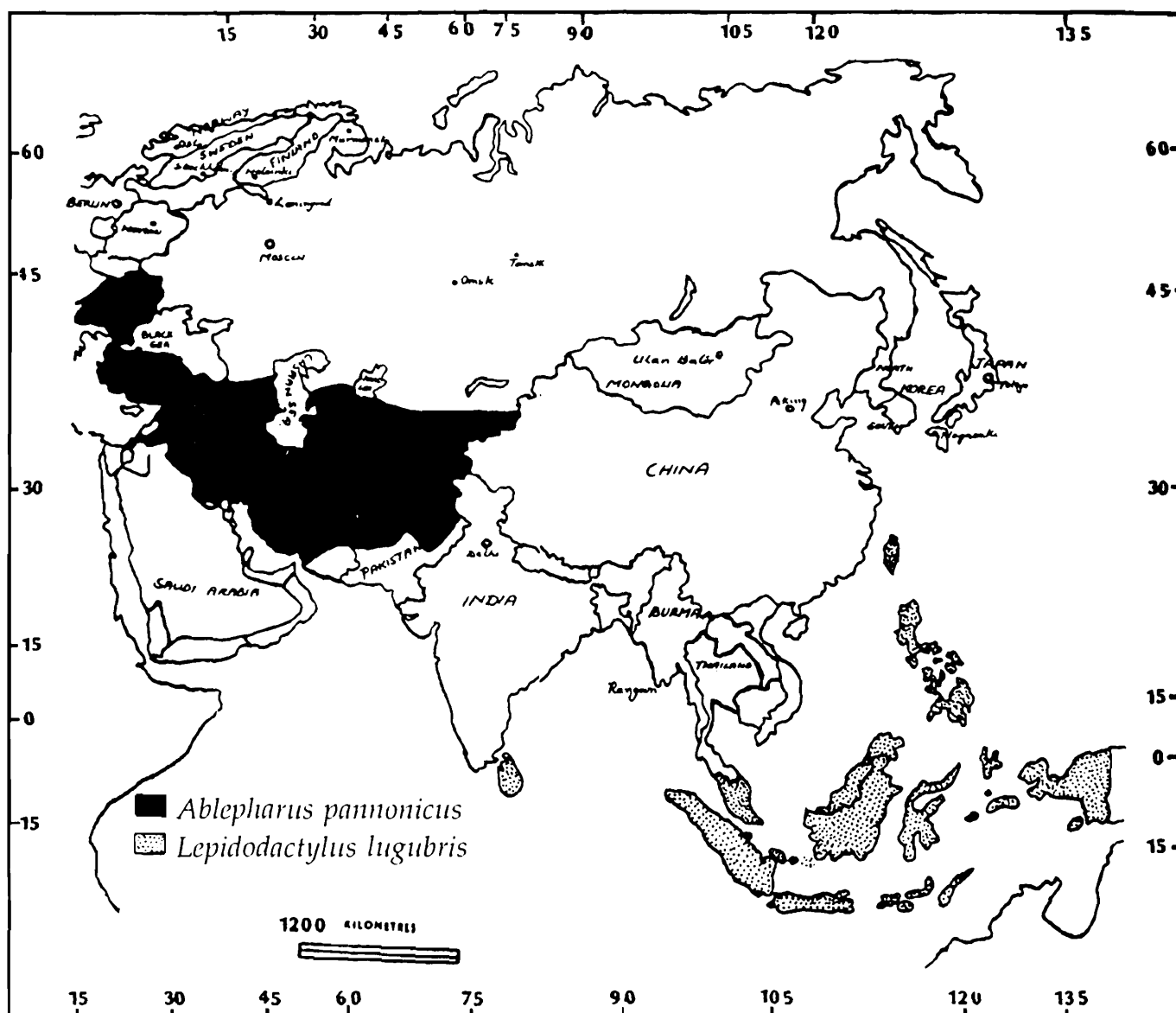
Distribution : Europe (Hungary, Greece, islands of the eastern Mediterranean to Todzhikstan), Afghanistan, Iraq, Turkistan, Pakistan (Kalabagh, Punjab; Karachi, Sind; Ladha, Waziristan, Helmand, Afghan-Baluchistan border, Hilly regions of northern parts from Quetta to Chitral) (Map 65).

Habits and habitat : Terrestrial, rock-dwelling; diurnal; insectivorous (mainly ants), sluggish in movements; oviparous, lays 3 large, spherical eggs. The species in Pakistan has been recorded in rocky hillsides sparsely forested, at an altitude of 2300 metres. The lizards prefer to live under the rocks and come out on the flat forest ground in search of ants and other insects in the fallen leaves.

Status : Available but not in large numbers.

214. *Ablepharus grayanus* (Stoliczka 1872)
(Map 37)

1872. *Blepharosteres grayanus* Stoliczka, *P. Asiat. Soc. Beng.* : p. 74 (type loc. Waggur district, N.E. Cutch).



Map 65 : Distribution of *Ablepharus pannonicus* and *Lepidodactylus lugubris*.

1887. *Ablepharus grayanus*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 352.

1935. *Ablepharus grayanus*, Smith, *Fauna Brit. Ind.* 2 : p. 311.

1966. *Ablepharus grayanus*, Minton, *Bull. Amer. Mus. nat. Hist.* 134 : p. 103.

This tiny skink is greenish-olive above with a shining metallic lustre, speckled dorsoventrally with dark brown; a silver green line emerges from the supraciliary margin and goes to the base of the tail, this line is with a black margin on both sides; dorsal aspect of the limbs with faint longitudinal lines; belly is greenish-white; tail is somewhat pinkish. Snout is short and obtusely pointed; devoid of supranasals; fronto-nasal in contact with the rostral and frontal; supraoculars are three in number, the first is largest, first and second in contact with the frontal; supraciliaries are 5; frontoparietal is a single shield; interparietal is distinct; nuchal shields are in 2 or 3 pairs; upper eyelid is composed of 3

or 4 scales; loreals are 2; out of the two superposed temporals, the upper one is the larger; ear-opening is hidden; 18-20 scales round the middle of the body, dorsal scales are largest; limbs short and pentadactyle; underside of the tail is with transversely enlarged plates. Standard length 30 mm.; tail length 55 mm.

Distribution : India : Cutch, Rajasthan (Mt. Abu).

Elsewhere : Pakistan (eastern Baluchistan, Punjab, North West Frontier Provinces) Map 37.

Habits and habitat : Insectivorous (ants) diurnal, terrestrial, oviparous.

Status : Common.

Genus 48. *Riopa* Gray 1839

1837. *Campsodactylus* Cocteau, in Dumeril, C. R. Acad. Sci. 4 : p. 16 (nom. nud.).
 1839. *Campsodactylus* Dum, & Bibr., *Erp. Gen.* 5 : p. 761 (type *lamarrel* = *vosmaeri*).
 1839. *Riopa* Gray, *Ann. Mag. Nat. Hist.* 2 : p. 332 (type *Lygosoma punctata*)
 1839. *Chiamela* Gray, *Ann. Mag. Nat. Hist.* 2 : p. 332 (type *Chiamela lineatus*)
 1839. *Hagria* Gray, *Ann. Mag. Nat. Hist.* : p. 333 (type *Scincus vosmaeri*)
 1843. *Liosoma* (not of Brandt 1834) Fitzinger, *Syst. Nat.* : p. 22 (type *Eumeces microlepis*)
 1843. *Sphenosoma* (not of Dejean 1834) Fitzinger, *Syst. Nat.* : p. 23 (type *Eumeces punctatus* Wiegmann)
 1843. *Eugongylus* Fitzinger, *Syst. Nat.* : p. 23 (type *Eumeces oppelii* = *rufescens*).
 1864. *Mochilus* Gunther, *Proc. Zool. Soc. London*, : p. 308 (type *punctulata*)
 1870. *Eumecia* Bocage, *J. Acad. Sci. Lisbon*, 3 : p. 67 (type *anchietae*).
 1880. *Sepacontias* Gunther, *Ann. Mag. Nat. Hist.* (5) 6 : p. 235 (type *Sepacontias modestus*).
 1935. *Riopa*, Smith, *Fauna Brit. Ind.* 2 : p. 312.

This genus includes about 33 species distributed in Indonesia, Southern Asia, Australia, Africa and certain Polynesian islands. About 15 species are available in the Oriental Region, out of which 11 cover the scope of this faunal work. The main generic characters are : Frontonasal shield is broader than long; prefrontal shields are quite separated from one another; parietal shields are large and in contact with one another behind the interparietal; supraoculars are 4, quite large, the first two are largest and in contact with the frontal, supraciliaries are 6 or 8, first and last are largest; anterior loreal is higher and shorter than the posterior; palms of hands and soles of feet with conical tubercles, tail tapering to a point, covered with subequal scales; palatine bones meet at their median aspect; pterygoid bones touch each other anteriorly; the palatal depression or notch do not extend forward to between the centres of the eyes; pterygoid bones are devoid of teeth, if present are not more than one or two; maxillary bones are with conical teeth. Eyelids are well developed; the lower eyelid may be scaly or in certain species with a transparent disc; nostrils are present in the nasal shields; supranasal shields are present, which may be entire or may be united anteriorly with the nasal; profrontals, fronto-

parietal(s), and interparietal shields are distinct; ear-opening is distinct, tympanum deeply sunk; limbs short or vestigial.

Key to the species of genus Riopa

I. Lower eye-lid scaly.

1. 26-32 smooth scales round the body; 52-58 rows of scales down middle of back between the parietals and hind-limbs. *R. bowringi*
2. 26-28 smooth scales round the body; 63-72 rows of scales down middle of back between the parietals and hind-limbs. *R. albopunctata*
3. 28-32 smooth scales round the body; 45-60 rows of scales down middle of back between the parietals and hind-limbs. *R. ashwamedhi*
4. 30 smooth scales round the body; 64 rows of scales down middle of back between the parietals and hind-limbs. *R. goaensis*
5. 32-34 smooth scales round the body; 50 rows of scales down middle of back between the parietals and hind-limbs. *R. pruthi*

II. Lower eyelid with a semitransparent disc.

A. With five fingers and five toes.

1. 24-28 scales round the body; 62-76 rows of scales down middle of back between the parietals and hind-limbs. *R. punctata*
2. 24-26 scales round the body; 87-100 rows of scales down middle of back between the parietals and hind-limbs. *R. guentheri*
3. 22 scales round the body; third toe is longer than sole of foot. *R. lineolata*
4. 22 scales round the body; third toe is not longer than sole of foot. *R. anguina*

B. With 5 fingers and 4 toes. *R. vosmaeri*

C. With 4 fingers and 4 toes. *R. lineata*

215. *Riopa bowringi* (Gunther 1864)

(Map 68)

1864. *Eumeces bowringii* Gunther, *Rept. Brit. Ind.* : p. 91 (type loc. Hongkong)

1871. *Euprepes (Riopa) punctatostratus* Peters, *Mon. Akad. Berlin* : p. 31 (type loc. Philippine Is.).

1887. *Lygosoma bowringi*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 308, pl. 13, fig. 3.

1887. *Lygosoma comotti* Boulenger, *Ann. Mus. Civ. Genova*, (2) 4 : p. 622 (type loc. Minhla, Burma).

1890. *Lygosoma whiteheadi* Mocquard, *Le Naturaliste*, 12 : p. 144 (type loc. N. Borneo).

1935. *Riopa bowringi*, Smith, *Fauna Brit. Ind.* 2 : p. 315.

This little skink is brownish dorsally; each dorsal scale is with a dark-brown spot, thus forming longitudinal lines on the back; a blackish or dark-brown dorsolateral stripe is

present, its upper border is greyish; lateral aspects of neck and body are red, densely spotted with black and white; belly is yellow; tail is fast red. Snout obtusely pointed, lower eyelids are scaly; supranasals are generally in contact with one another; frontal length is equal or slightly more than the combined length of fronto-parietals and interparietals; a pair of nuchals is generally available; temporal scales are slightly enlarged; ear-opening is almost circular, with 1-2 small projecting lobules on its anterior margin; upper labials are 7, fifth is longest and is below the eye; body scales smooth, dorsals and ventrals are slightly larger than lateral scales; 26-32 round the middle of the body; 52-58 scales down the middle of the back; marginal preanal scales are slightly enlarged. Limbs are small, digits are long, slightly compressed, 10-15 lamellae under the fourth toe, fourth toe is longer than the third; tail is swollen at the base, longer than the head and body. Standard length 53 mm.; tail length 65 mm.

Distribution : India : Andaman Islands. Elsewhere : Burma, Malaysia, Philippine Islands, South Vietnam, Thailand, Hong Kong, Southern Tenasserim (Map 68).

Habits and habitat : It is a terrestrial species available in plains as well as in hills up to 500 metres. It is insectivorous, oviparous (lays 2-4 eggs in a clutch).

Status : Rare.

216. *Riopa albopunctata* (Gray 1846) (Map 66)

1845. *Riopa albopunctata* Gray, *Ann. Mag. Nat. Hist.* 18 : p. 430 (type loc. Madras).

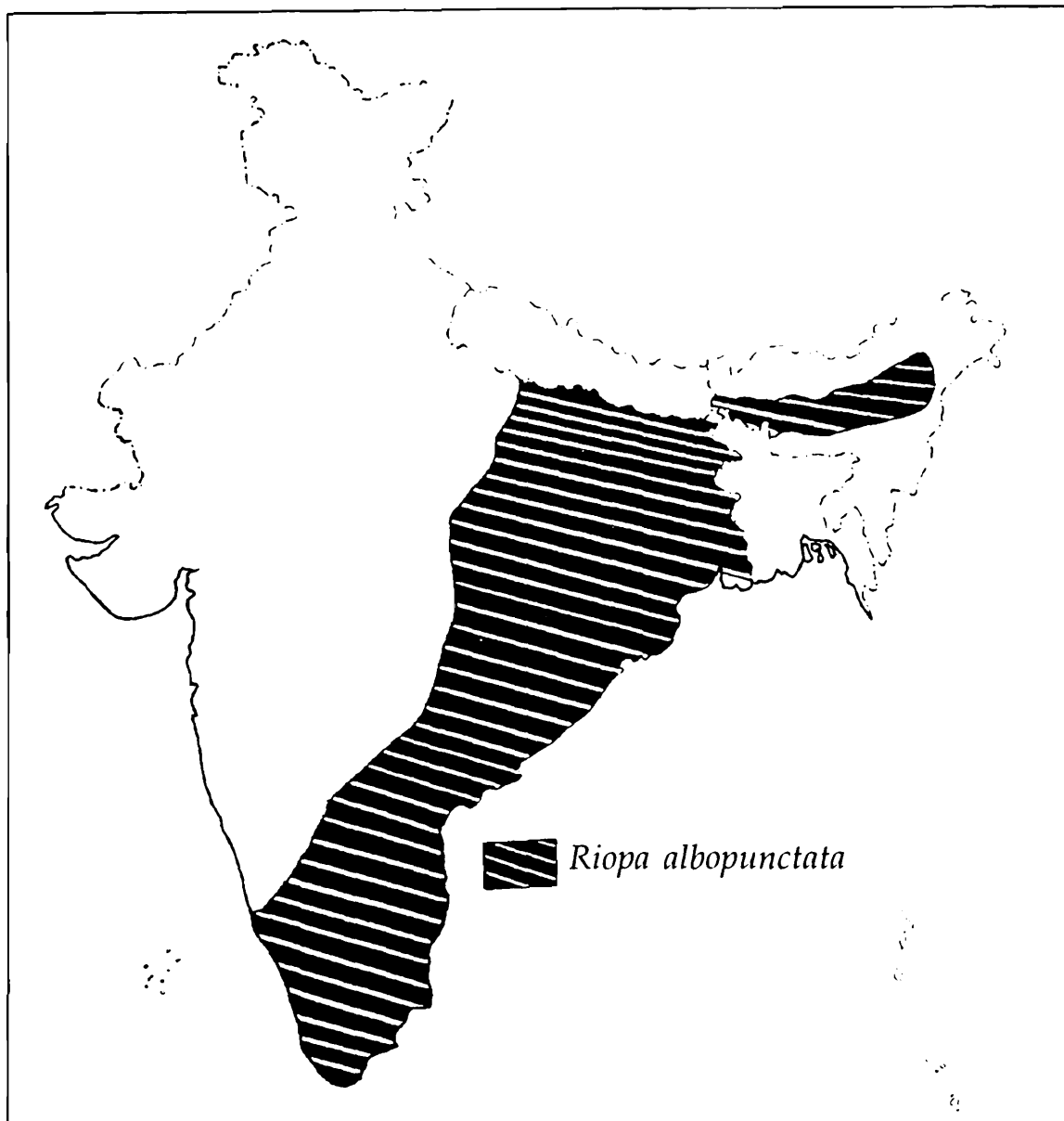
1871. *Eumeces albopunctatum*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 309.

1878. *Eumeces (Riopa) fischerii* Bocourt, *Ann. Sci. Nat.* (6) 7 : art. 16 (type loc. Puerto-Cabello).

1935. *Riopa albopunctata*, Smith, *Fauna Brit. Ind.* 2 : p. 316.

Dorsum is generally reddish brown; each dorsal scale is with a prominent black or dark-brown spot, thus forming longitudinal lines; sides of neck and anterior portion of body are dark-brown or black, densely spotted with white; belly is yellowish white. The species is quite close to the *R. bowringi* but differs in having more elongated body; two or three central scales of lower eyelid are larger than the others; nuchals are not prominent more or less indistinct; fifth supralabial is generally not larger than the other labials; body scales are almost equal, dorsals may or may not be larger than the lateral scales; 26-28 scales round the middle of body; 63-72 scales are down the middle of back. The limbs are moderately large, digits are short, 12-15 lamellae under the fourth toe; tail swollen at the base. Standard length 60 mm.

Distribution : India : Andhra Pradesh (Godavari district), Assam (Dibrugarh), Madhya Pradesh (Bilaspur), Bengal (Calcutta), Bihar (Purnea, Muzaffarpur), Uttar Pradesh (Mundighat), Kerala (Malabar coast) (Map 66).



Map 66 : Distribution of *Riopa albopunctata*

Habits and habitat : Insectivorous, terrestrial, oviparous.

Status : Commonly available.

217. *Riopa punctata* (Linnaeus 1766)

(Fig. 106, Map 67)

1799. *Scincus punctatus* Gmelin, *Hist. Amphib.* : p. 197, (based on Seba's fig. 2, pl. 12, fig. 6.)
 1829. *Seps scincoides* Cuvier, *Regne Anim.* 2nd ed. 2 : p. 54.
 1845. *Riopa hardwickii* Gray, *Cat. Liz. Brit. Mus.* : p. 96 (type loc. Madras).
 1845. *Mabuya elegans* Gray, *Cat. Liz. Brit. Mus.* : p. 95 (type loc. India).
 1845. *Riopa punctata*, Gray, *Cat. Liz. Brit. Mus.* : p. 96.

1887. *Lygosoma punctatum*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 310.
 1931. *Lygosoma (Riopa) punctata*, Deraniyagala, *Ceylon J. Sci., B*, 16 : p. 172.
 1935. *Riopa punctata*, Smith, *Fauna Brit. Ind.* 2 : p. 318.

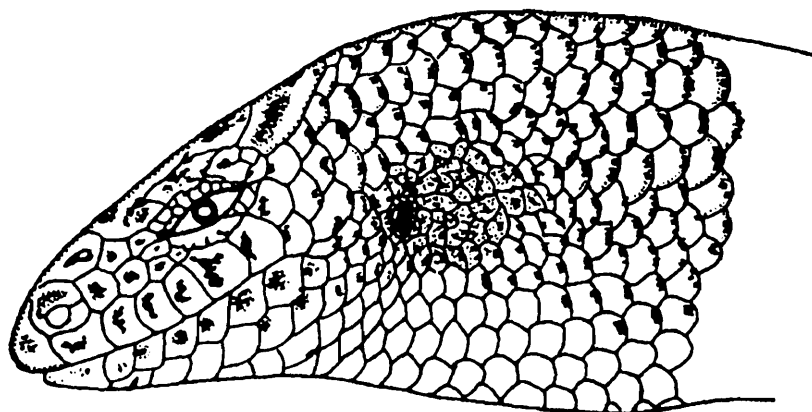


Fig. 106 : Head of *Riopa*

The dorsum is brown, each scale is with a dark basal spot, which form longitudinal series and in juveniles and semiadult individuals confluent into 4-6 lines down the back; a yellow dorsolateral stripe start from the snout; belly is yellowish-white, each scale dotted with black; tail is red in young lizards. Snout obtusely pointed; lower eyelid is with an undivided semi-transparent disc; supranasals are in contact with one another behind the rostral; frontal length is more than the combined length of fronto-parietal and interparietal; a pair of nuchal is always present; an enlarged temporal scale borders the outer margin of the parietal; ear-opening is small, with one or two minute lobules on the anterior margin; Upper labials are 7, the fifth is below the middle of the eye, longer than the other labials; body scales are smooth, almost equal, 24-28 scales round the body; 62-76 down the middle of the back; marginal preanals slightly enlarged; digits long, fourth toe is longer than the third, 11-14 keeled lamellae under the fourth toe. Tail swollen at the base, slightly longer than the head and body. Standard length 85 mm., tail length 92 mm.

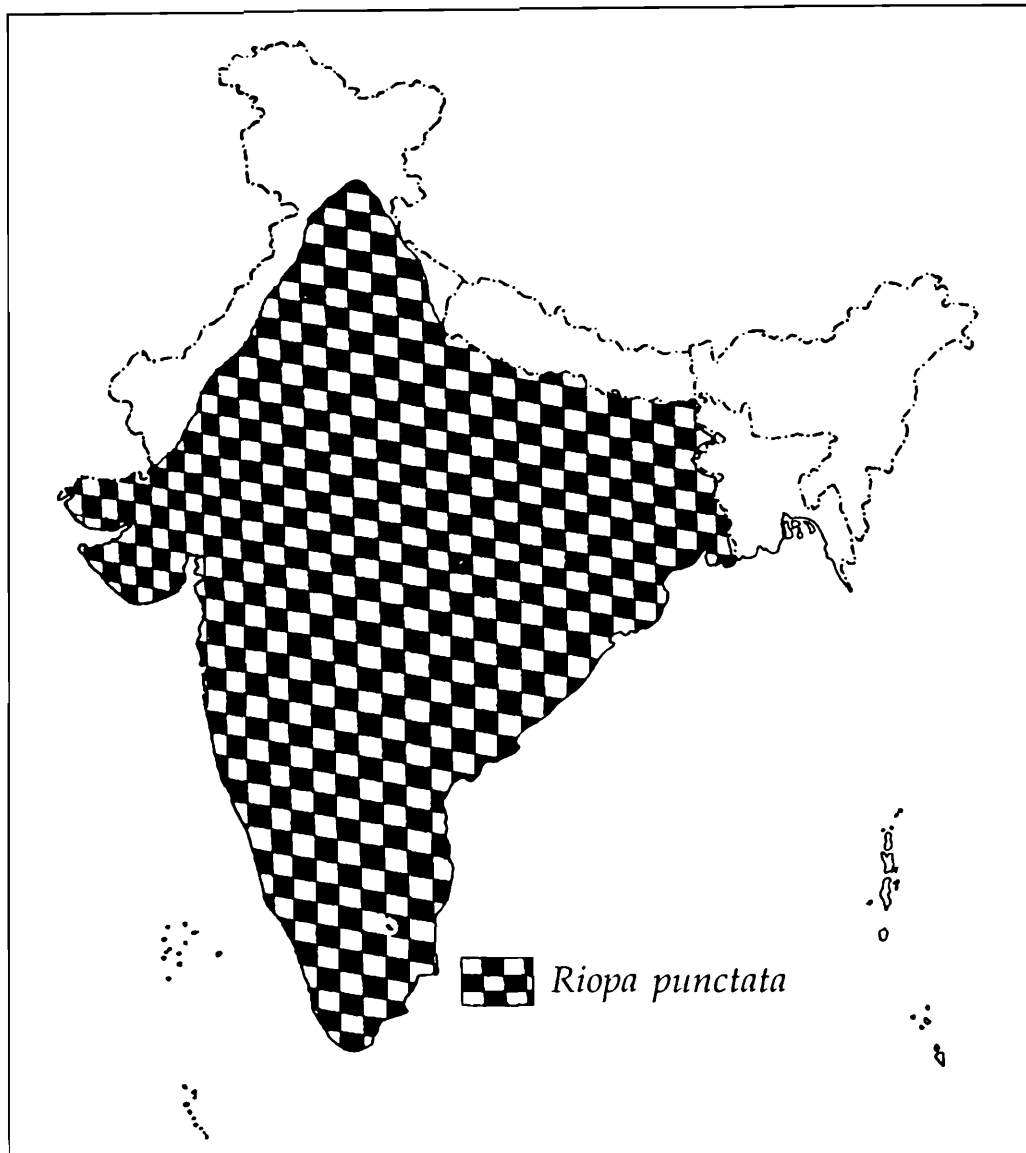
Distribution : India : Almost whole of India. Elsewhere : Sri Lanka and Man-son mountains, Tonking (Map 67).

Habits and habitat : Generally ground dwelling, insectivorous and oviparous.

Status : Most common.

218. *Riopa guentheri* (Peters 1879)
 (Map 41)

1831. *Lygosoma punctata* Gray, in *Griffith's Anim. King., App.* : p. 71.
 1839. *Riopa punctata* Gray, *Ann. Mag. Nat. Hist.* 2 : p. 332 (type loc. India).



Map 67 : Distribution of *Riopa punctata*

1879. *Eumeces guentheri*, Peters, Sitz. Ges. Nat. Berlin Fr. : p. 36 (type loc. Ostindien)

1890. *Lygosoma guentheri*, Boulenger, Cat. Liz. Brit. Mus. 3 : p. 311.

1935. *Riopa guentheri*, Smith, Fauna Brit. Ind. 2 : p. 319.

The dorsum is brown, each scale is with a dark basal spot, which form longitudinal lines on the back; a light brown dorso-lateral streak, starting from the canthus rostralis is more prominent in juveniles and semiadult individuals. In fully grown individuals all the lines merge into a glossy brown colour; belly is white with a yellow tinge, each ventral scale is having a small dark-brown dot at the centre. The species is closely similar to *Riopa punctata* but differs in having a more elongated body; frontal length is equal to the combined length of fronto-parietals and interparietal; ear-opening is more smaller, without projecting lobules; 87 to 100 scales down the middle of the back; digits shorter, fourth toe is slightly larger than the third. Standard length 110 mm.

Distribution : India : Western Maharashtra (Matheran, Sholapur, Kurduwadi), Western Karnataka (Belgaon, N. Kanara), Goa, Kerala (Malabar coast) (Map 41).

Habits and habitat : Terrestrial (ground dwelling, subterranean) insectivorous, oviparous.

Status : Nowhere common, but not endangered.

219. *Riopa lineolata* Stoliczka 1872

(Fig. 107, Map 49)

1868. *Riopa anguina* Theobald, *J. Linn. Soc., Zool.* 10 : p. 27 (in part).

1870. *Riopa lineolata* Stoliczka, *J. Asiat. Soc. Beng.* 39 : p. 175, pl. 10, fig. 2 (type loc. Martaban, Burma).

1872. *Riopa cyanella* Stoliczka, *J. Asiat. Soc. Beng.* 41 : p. 130, pl. 5, fig. 3 (type loc. Pegu district, Burma).

1887. *Lygosoma cyanellum*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 312.

1887. *Lygosoma feae* Boulenger, *Ann. Mus. Civ. Genova*, (2) 4 : p. 623 (type loc. Rangoon, Burma).

1887. *Lygosoma calamus* Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 314, pl. 25, fig. 1 (type loc. Minhla, Upper Burma).

1890. *Lygosoma lineolatum*, Boulenger, *Fauna Brit. Ind.* : p. 207.

1935. *Riopa lineolata*, Smith, *Fauna Brit. Ind.* 2 : p. 320.

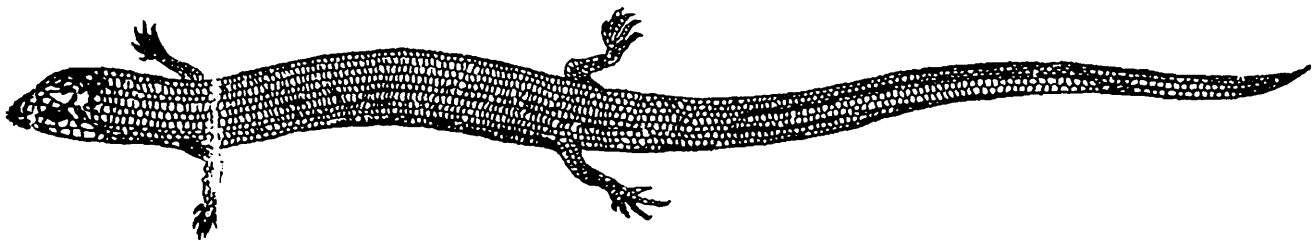


Fig. 107 : *Riopa lineolata* : Entire dorsal view.

Dorsal colouration is brown with indistinct dark dots arranged in fine longitudinal lines; dorsolateral aspects with distinct, light dark edged lines; white spots may be present on lateral aspect of neck and anterior portion of flanks. The distance between the end of the snout and the fore-limb contained $2\frac{1}{2}$ to 3 times in the distance between the axilla and groin; snout is obtuse; lower eyelid with an undivided semitransparent disc; supranasal shields are entire, in contact with one another behind the rostral; combined length of fronto-parietal(s) and interparietal is almost equal to the length of frontal shield; frontoparietal may be single or partially or completely divided, a pair of nuchal shields is generally present; 3 enlarged temporal scales are present, the upper one is much elongated and bordering the parietal shields, ear-opening is subcircular, less than half of the eye-opening; 7 supralabials, fifth supralabial is subocular, not longer than the adjacent labials;

22 smooth and equal scales round the middle of body; 78-84 scales down the middle of the back; marginal preanal scales are slightly enlarged; limbs are weak; the adpressed limbs fail to meet by three to four times the length of the fore-limb in the adult, by not much more than two times in half-grown individuals; digits are moderately long; 8-10 lamellae under the fourth toe; third toe is slightly smaller than the fourth toe; third toe is distinctly longer than sole of foot; tail is as long as or slightly longer than the head and body, tail, from its base to considerable length is as thick as the body. Standard length 63 mm., tail length 61 mm.

Distribution : Burma (Pegu district; Moulmein; Martaban; Rangoon; Prome; Pyinmana; N. Chin Hills; Dawna Hills; Minhla) (Map 49).

Habits and habitat : Terrestrial, insectivorous, oviparous.

Status : Nowhere common, but not vulnerable.

220. *Riopa anguina* (Theobald 1869)
(Map 1)

1868. *Riopa anguina* (in part) Theobald, *J. Linn. Soc.* 10 : p. 27 (type loc. Pegu district).

1887. *Lygosoma anguinum*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 313.

1935. *Riopa anguina*, Smith, *Fauna Brit. Ind.* 2 : p. 321.

This species bears a close similarity with *Riopa lineolata* in scalation and other characters. The dorsal colouration is brown, with a distinct dark brown dorsolateral streak; ventrum is paler. The species can be differentiated by *lineolata* in having shorter limbs; digits shorter, more cylindrical; third and fourth toes are almost equal; 6-9 lamellae beneath fourth toe; third toe is generally not longer than the sole of the foot, in few individuals it was found to be a little longer. Standard length 55 mm., tail length 57 mm.

Distribution : Burma (Pegu district) (Map 1).

Habits and habitat : Terrestrial, insectivorous, oviparous.

Status : Rare.

221. *Riopa lineata* (Gray 1839)
(Map 40)

1839. *Chiamela lineata* Gray, *Ann. Mag. Nat. Hist.* 2 : p. 333 (type loc. India)

1887. *Lygosoma lineatum*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 316, pl. 25, fig. 3.

1935. *Riopa lineata*, Smith, *Fauna Brit. Ind.* 2 : p. 321.

The dorsum is golden brown, with dark brown dots forming distinct longitudinal lines. The body is much elongated but size is smaller; snout is obtusely pointed; lower eyelids are with an undivided semitransparent disc; supranasals entire, just touching one another behind the rostral; frontal is smaller than the single fronto-parietal; 22 scales

round the middle of body; 104-110 scales down the middle of the back. Limbs are quite weak, each one with four digits only (the outer toe is absent), third and fourth toes are equal, 8-10 lamellae under the fourth toe. Standard length 53 mm.

Distribution : India : Maharashtra : Bombay district, Poona, Karnataka (N. Kanara) (Map 40).

Habits and habitat : Insectivorous, terrestrial (ground dwelling, subterranean), oviparous.

Status : Rare, Undeterminate.

222. *Riopa vosmaeri* (Gray 1839)
(Map 40)

1839. *Hagria vosmaeri* (Gray, *Ann. Mag. Nat. Hist.* 2 : p. 333 (type loc. Java).

1839. *Campsodactylus lamarrei* Dum. & Bibr., *Erp. Gen.* 5 : p. 762 (same type)

1887. *Lygosoma vosmaeri*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 315, pl. 25, fig. 2.

1935. *Riopa vosmaeri*, Smith *Fauna Brit. Ind.* 2 : p. 322.

The species is exactly similar to *Riopa lineata* in habitus, pholidosis, colouration, habits and habitat but differs with it by having five fingers instead of four. It is most secretive and leads a subterranean life.

Distribution : India : Bengal (Map 40).

Status : Very rare.

223. *Riopa ashwamedhi* Sharma 1969
(Fig. 108)

1969. *Riopa ashwamedhi* Sharma, *Bull. Syst. Zool.* 1(2) : pp. 71-75 (type loc. 5 km. S.W. of Pullareddygudem (south of excavated "ashwamedh site"). Nagarjunakonda Valley, Guntur district, Andhra Pradesh).

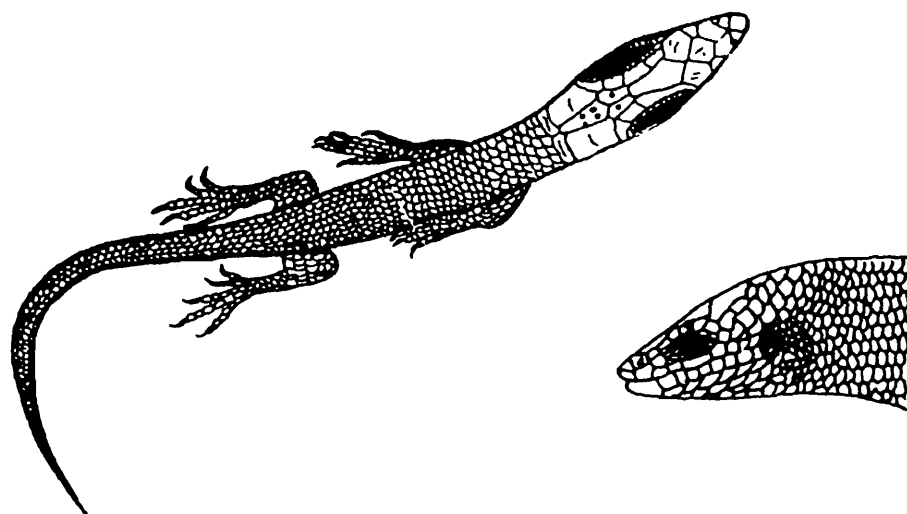


Fig. 108 : *Riopa ashwamedhi* Sharma : Entire dorsal view and lateral view of head.

Dorsum and sides with 10-12 white lines edged with dark brown to black marginal lines; each scale on back and sides provided with a large white central spot and dark brown margins, the colour-pattern thus being of alternate white and dark brown longitudinal stippled lines on back, tail and sides. Scales of head dark brown to black; limbs brown above, yellowish-white below. Head prominent; distance between axilla and groin one and a half times that between tip of snout and fore limb; snout more or less acute. Scales: Lower eyelids scaly, central scales of the lid much enlarged and thinned to appear as a semi-transparent disc; supranasals in contact with one another behind the rostral; frontal shorter than the combined length of frontoparietal and interparietal; a pair of nuchals present; scales bordering the outer margins of parietals equal in size; ear-opening about half as large as eye-opening, with 3 to 4 minute lobules on anterior margin; supralabials 8 in number, the 5th below the middle of eye being longer than the adjacent labials; 28-32 smooth scale rows round the body; 45-60 scales down the middle of back; marginal preanals enlarged; 13-15 lamellae under the fourth toe. Tail longer than head and body together, slightly thick at base and tapering to a point at the end. Standard length 20-32 mm.; tail length 32-39 mm.

Distribution : India : Andhra Pradesh (Pullareddygudem, Nagarjunakonda Valley, Guntur District; Nandikonda Valley, Nalgonda District).

Habits and habitat : Diurnal, terrestrial, insectivorous, oviparous.

Status : Rare.

224. *Riopa goaensis* Sharma 1976

(Map 33)

1976. *Riopa goaensis* Sharma, *Rec. zool. Surv. India*, 71 : p. 157 (type loc. Goa; ca. 5 km N.E. of Forest Rest House, Molem).

Dorsum dark-brown to blackish; a black dorsolateral streak beginning from Canthus rostralis and reaching almost to the end of tail; lower surface light bronze; back and sides densely spotted with brown. Head very small, snout obtuse, distance between the end of snout and the forelimb contained less than two times in the distance between the axilla and groin; lower eyelids scaly, with a large semitransparent scale in the centre, supranasals entire, in contact with one another behind the rostral; frontal larger than the frontoparietals and interparietals together; a pair of nuchals; an enlarged temporal scale borders the outer margin of the parietal; ear opening, with two minute lobules anteriorly; 7 supralabials, the 5th below the eye, longer than the adjacent labials; body covered with smooth subequal scales, 30 round the middle of body; 64 scales down the middle of the back; marginal preanals moderately enlarged. Digits long, fourth toe longer than the third; 13 lamellae under the fourth toe. Tail thick at the base, smaller than the head and body. Standard length 53 mm.; tail length 49 mm.

Distribution : India : Goa (c. 5 km. N.E. of Forest Rest House, Mollem) (Map 33).

Habits and habitat : Diurnal, terrestrial, insectivorous, oviparous.

Status : Rare.

225. *Riopa pruthi* Sharma 1977

(Fig. 109)

1977. *Riopa pruthi* Sharma, *Rec. zool. Surv. India*, 73 : pp. 77-93 (type loc. Chitteri range, Salem district, Tamil nadu).

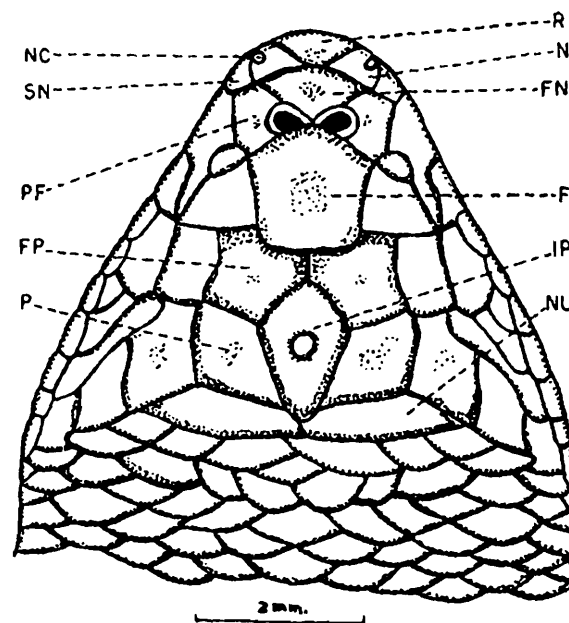


Fig. 109 : *Riopa pruthi* Sharma : Dorsal view of head.

Dorsum deep brown, with black equidistant longitudinal lines; top of head with dark spots and longitudinal markings; whitish below; tail brownish. Head small, snout obtuse; distance between the end of snout and forelimb contained $1\frac{1}{2}$ to $1\frac{3}{4}$ times in the distance between the axilla and groin; lower eyelids scaly, with a large semitransparent scale in the centre; supranasals entire, in contact with one another behind the rostral; frontal shorter than the fronto-parietals and interparietal together; two pairs of nuchals; an enlarged temporal scale borders the outer margin of parietal; ear opening about half as large as the eye opening, with 6 minute lobules; 7 supralabials, 5th below the middle of the eye, longer than the adjacent labials; body covered with 32-34 smooth subequal scales; 50 scales down the middle of the back; marginal preanals slightly enlarged; digits long, fourth toe distinctly longer than third; 16 strongly keeled lamellae under the fourth toe; tail thick at the base, a little longer than the head and body. Standard length 67 mm.; tail length 72 mm.

Distribution : India : Tamil Nadu (Chitteri range lat. 11°50'N long. 78°25'E, Salem district).

Habits and habitat : Diurnal, terrestrial, insectivorous, oviparous.

Status : Rare.

Genus 49. *Tropidophorus* Dum. & Bibr. 1839

1839. *Tropidophorus* Dum, & Bibr., *Erp. Gen.* 5 : p. 554 (type *cocincinensis*).

1845. *Norbes* Gray, *Cat. Liz. Brit. Mus.* : p. 101, (type *brooki*)

1853. *Aspris* Blyth, *J. Asiat. Soc. Beng.* 22 : p. 650 (type *berdmorei*).

1871. *Amphixestus* Peters, *Mon. Akad. Berlin.* : p. 573 (type *beccarii*).

1879. *Enoplosaurus* Sauvage, *Bull. Soc. Philom.* (7) 3 : p. 211 (type *insignis*)

1935. *Tropidopherus*, *Smith Fauna Brit. Ind.* 2 : p. 322.

This genus comprises about 20 species distributed in the complete Indo-chinese Region, Borneo, Calesbes, Philippines and North Queensland. The main generic characters are : The palatine bones meet with each other on the mid-line of the palate; pterygoid bones are in contact with each other at their anterior end; devoid of teeth, if present are not more than one or two; palatal depression never extend to the level of the centre of the eyes; teeth are conical; tympanum is large, not sunk but distinctly superficial; eyelids are well developed, the lower one is scaly; nostrils are pierced in nasal, which is a single shield (not two nasals); supranasal shields are not present; prefrontals, fronto-parietals, and interparietal shields are present and quite distinct, limbs are well developed; pentadactyle; digits are cylindrical, with transverse subdigital lamellae.

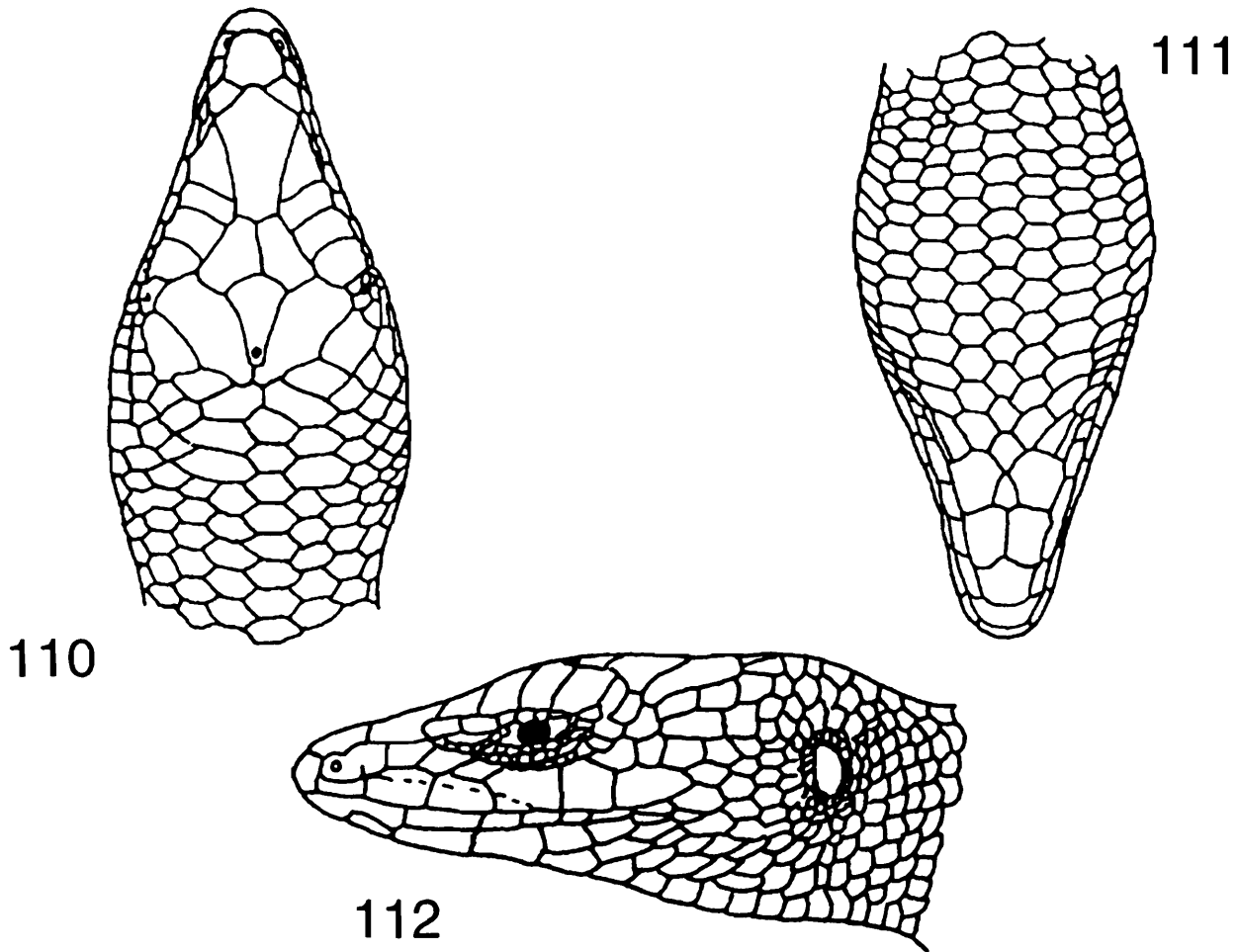
All the species of this genus are nocturnal and mountain dwelling and inhabit the vicinity of rocky streams. During the day they hide under stones and rock crevices or other suitable places. These are the water loving creatures and sometimes completely immersed in water on the expectation of any sudden danger they immediately take refuge to the water pools for safety. At dusk these lizards come out of their hiding places in search of food, which mainly consists of insects, crustaceans and smaller arthropods. They are viviparous, produce 6-9 young at a time. The lizards are not so agile and maintain a limited range of distribution. Only two species are included in the present work.

Key to the species of genus Tropidophorus

- I. Upper head shield are smooth; dorsal scales are smooth or obtusely keeled; frontonasal shield is entire. *Tropidophorus berdmorei*
- II. Upper head shields rugose or striated; dorsal scales are sharply keeled; lateral scales strongly oblique; no small scales between the loreals and supralabials.
..... *Tropidophorus assamensis*

226. *Tropidophorus berdmorei* (Blyth 1853)

(Figs. 110-112, Map 25)

1853. *Aspris berdmorei* Blyth, *J. Asiat. Soc. Beng.* 22 : p. 651 (type loc. Mergui).1876. *Tropidophorus berdmorei*, Theobald, *Cat. Rept. Brit. Ind.* : p. 48.1887. *Tropidophorus yunnanensis* Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 362 (type loc. Hotha Valley, Yunnan).1935. *Tropidophorus berdmorei*, Smith, *Fauna Brit. Ind.* 2 : p. 325.

Figs. 110-112 : 110. *Tropidophorus berdmorei* : Dorsal view of head.; 111. *Tropidophorus berdmorei* : Ventral view of head; 112. *Tropidophorus berdmorei* : Lateral view of head.

Dorsal and lateral colouration is dark brown; back with reddish black-edged spots or transverse or angular markings, flanks are with small white spots; labials with white bars or spots; ventrum is yellowish-white; the throat and tail is generally with dark spots. Snout is subacuminate; almost as long as the orbit; prefrontals in contact with one another or just apart or a small azygous shield interposed between them; combined length of fronto-parietals and interparietal is equal or less than the length of frontal shield, which

is long and narrow (broader in front than behind); 4 supraoculars, the first two are in contact with the frontal, the fourth generally enters the supraciliary margin; 6-8 supralabials; the first not much larger than the second; fronto-parietals and interparietal shields are well developed; interparietal do not separate the parietals on their posterior aspect; postmental shield is distinct and followed by three pairs of submaxillary shields; the first pair is in contact with one another, the second is generally separated by a small scale, the third is smaller and separated by many scales; tympanum is quite large, almost two third of the eye-opening; tail is cylindrical, almost as long as or a little longer than the head and body, with a medium series of enlarged sub-caudal plates; sub maxillary shields are well differentiated from the other gular scales. Head is much broader in adult males than the females. Dorsal aspect of head with smooth shields; fronto-nasal shield is entire, 2 or 3 scales border the parietals on each side; loreal shields are 2; the first one is generally divided by a horizontal suture (undivided in Burmese examples); 6 supralabials; the fourth one is subocular; 32-40 scales round the middle of the body; dorsal and ventral scales are almost equal; lateral scales are smallest; directed straight backwards or with a slight obliquely upwards; dorsal and lateral scales are keeled in the juveniles but smooth or obtusely keeled in the adults; 2 large preanal plates are present; the leg reaches to the fore-limb or may extend as far as the wrist. Standard length 82 mm, tail length 85 mm.

Distribution : Burma (Central Tenasserim, Pegu, Bhamo), Yunnan (Hotha Valley), Thailand (North Thailand) (Map 25).

Habits and habitat : Nocturnal, rock-dwelling, water loving, insectivorous, slow in movements and viviparous.

Status : Rare.

227. *Tropidophorus assamensis* Annandale 1912

(Map 40)

1912. *Tropidophorus assamensis* Annandale, *Rec. Ind. Mus.* 8 : p. 58 (type loc. Harigaj Range, Sylhet Hills, Assam).

1935. *Tropidophorus assamensis*, Smith, *Fauna Brit. Ind.* 2 : p. 327.

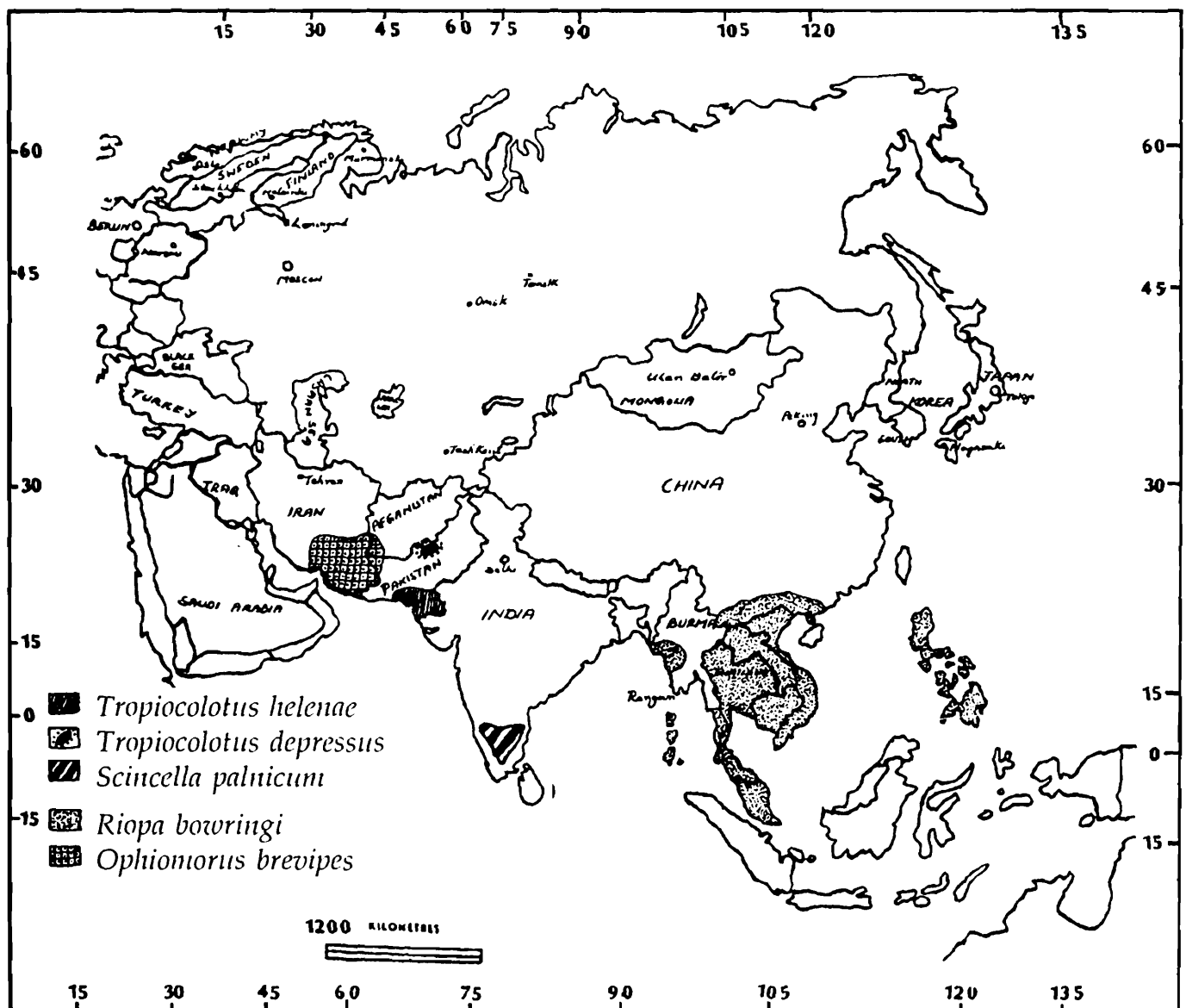
The dorsum of this small skink is brownish with light brown and dark brown spots and markings; two distinct, quite broad somewhat yellowish cross bars (one near fore limbs and another at the base of the tail) are present, these cross bars have got a dark brown lining on both the front and back aspects; many less distinct bars and spots are present at places on the back and the dorsal aspect of tail; upper aspect of arms and thighs are with a yellow spot; belly is light brown with dark brown longitudinal streaks. Snout subacuminate about as long as the orbit; tympanum large, superficial; eyelids well developed, the lower eyelids scaly; nostril is pierced in a single nasal, supranasals are not present; prefrontals, frontoparietals, and interparietal are prominent; prefrontals are in contact with one another; 3 scales form a border for each parietal; upper head shields

are strongly striated; upper labials are 6, fourth one is largest and just below the eye; 30 scales round the middle of the body, dorsal and lateral scales are strongly keeled and mucronate; ventral scales are obtusely keeled; lateral scales are small (smallest), directed upwards and backwards in an oblique fashion; 2 large preanal plates are always present. Limbs are well developed, pentadactyle, digits cylindrical, with transverse lamellae beneath, the hind limb reaches to the wrist. Standard length 40 mm.

Distribution : India : Assam (Map 40).

Habits and habitat : The species is hill dwelling found near the hill streams, under stones and damp leaf heaps in forests. These lizards are insectivorous and nocturnal. They devour other arthropods also. They are sluggish in nature.

Status : Rare.



Map 68 : Distribution of *Tropiocolotus helenae*, *Tropiocolotus depressus*, *Scincella palnicum*, *Riopa bowringi* and *Ophiomorus brevipes*.

Genus 50. *Ristella* Gray 1839.

1839. *Ristella* Gray, *Ann. Mag. Nat. Hist.* 2 : p. 333 (type *rurki*).

1935. *Ristella*, Smith, *Fauna Brit. Ind.* 2 : p. 329.

The genus is restricted to the hills of South India and represented by 4 species. The main generic characters are : The snout is short, obtusely pointed; fronto-nasal is two times broader than long, in broad contact with the rostral; combined length of fronto-parietal and interparietal is more than the length of frontal shield; 5 supraocular shields are present, the first two are always in contact with the frontal, sometimes third also touches the frontal; supraciliaries are 8-10, parietal shields are large, in contact with one another behind the interparietal; nuchal shields are not present; fourth or fifth supralabial is below the middle of the eye, not distinctly longer than the preceding labials; a series of small scales is present between the supralabials and the eye; upper temporal shield is large; Palatine and pterygoid bones are in contact on the median line of the palate, which is devoid of teeth; palatal notch is far back in the mouth; maxillary bones are with conical teeth; lower eyelids are scaly; nostrils are pierced in the centre of a large nasal; supranasal shields are not present; prefrontal shields are small and are separated; fronto-parietals and interparietal shields are distinct; ear opening is distinct; preanal shields are generally not enlarged, in some individuals these are slightly bigger; limbs are small but well developed, the hand is with 4, the foot with 5 digits; claws are completely retractile into a large compressed sheath formed of one large scale cleft underside. Tail is cylindrical, thick at the base, the median series of subcaudal scales is not enlarged transversely.

Key to the species of genus Ristella

- I. Prefrontals are well separated from one another.
 - 1. Dorsal scales smooth or feebly keeled; ear-opening is much larger than the nostril. *Ristella rurki*
 - 2. Dorsal scales are sharply keeled; ear opening is not or but slightly larger than the nostril. *Ristella travancorica*
- II. Prefrontals are united in to a large azygous shield.
 - 1. 22-24 scales round the middle of body. *Ristella guentheri*
 - 2. 26-28 scales round the middle of body. *Ristella beddomii*

228. *Ristella rurki* Gray 1839

(Fig. 113, Map 62)

1839. *Ristella rurki* Gray, *Ann. Mag. Nat. Hist.* 2 : p. 333 (type loc. N. India)

1870. *Ateuchosaurus travancoricus* (in part) Beddome, *Madras Month. J. Med. Sci.* : p. 33.

1871. *Ristella travancorica* (in part) Beddome, *Madras Month. J. Med. Sci.* : p. 402.

1871. *Ristella malabarica* Stoliczka, *P. Asiat. Soc. Beng.* : p. 195 (type loc. S. India)

1935. *Ristella rurki*, Smith, *Fauna Brit. Ind.* 2 : p. 331.

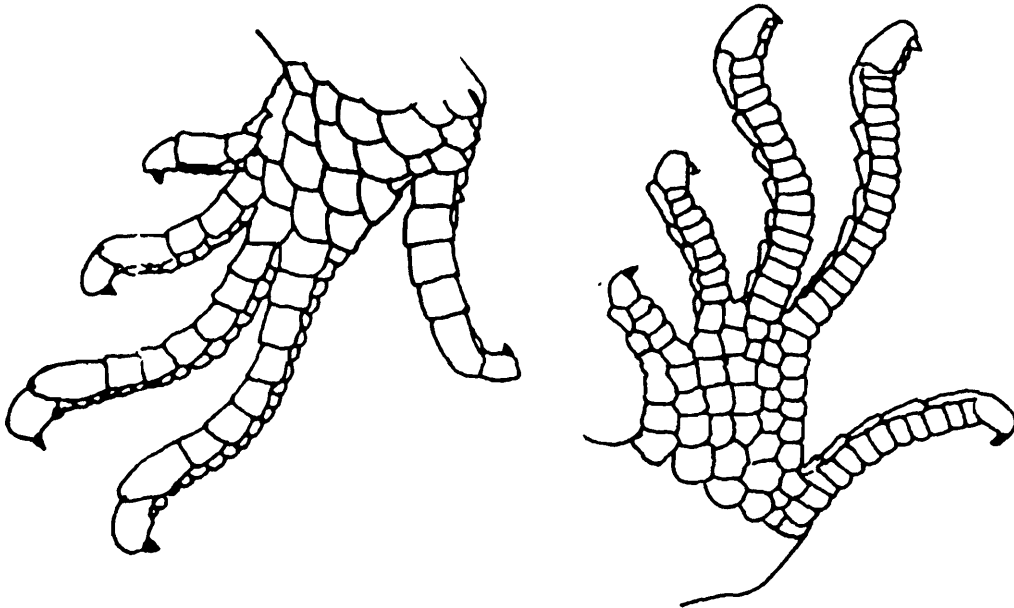


Fig. 113 : *Ristella rurki* : Upper and lower views of foot.

The dorsum is reddish-brown, each dorsal scale is with a small black spot, which in adults become confluent and form six longitudinal lines on the back; lateral aspects are dark-brown (blackish) and densely spotted with white; throat and upper aspect of tail spotted with dark brown; belly is white. Snout is short and obtusely pointed; fronto-nasal is in contact with the frontal; prefrontals small, not touching one another; loreals are two, posterior one is divided into two scales; ear opening much larger than the nostril, partly concealed by scales; 26-28 scales round the middle of the body; lateral scales are smaller than the dorsal and ventral scales; dorsal scales are hexagonal in shape and are feebly bi- or tricarinate (sometimes quite smooth). Limbs are small but well developed, the fore limb with 4 and hind limb with 5 digits; claws are completely retractile into a large compressed sheath formed of one large scale cleft beneath; tail cylindrical, thick at the base, on the under side is not with a median row of transversely enlarged scales. Standard length 47 mm; tail length 80 mm.

Distribution : India : Anaimalai Hills, Palni Hills, Malabar (Map 62).

Habits and habitat : Strictly terrestrial and subarboreal, recorded up to 700 metres. It is insectivorous and diurnal.

Status : Rare.

229. *Ristella travancorica* (Beddome 1870)

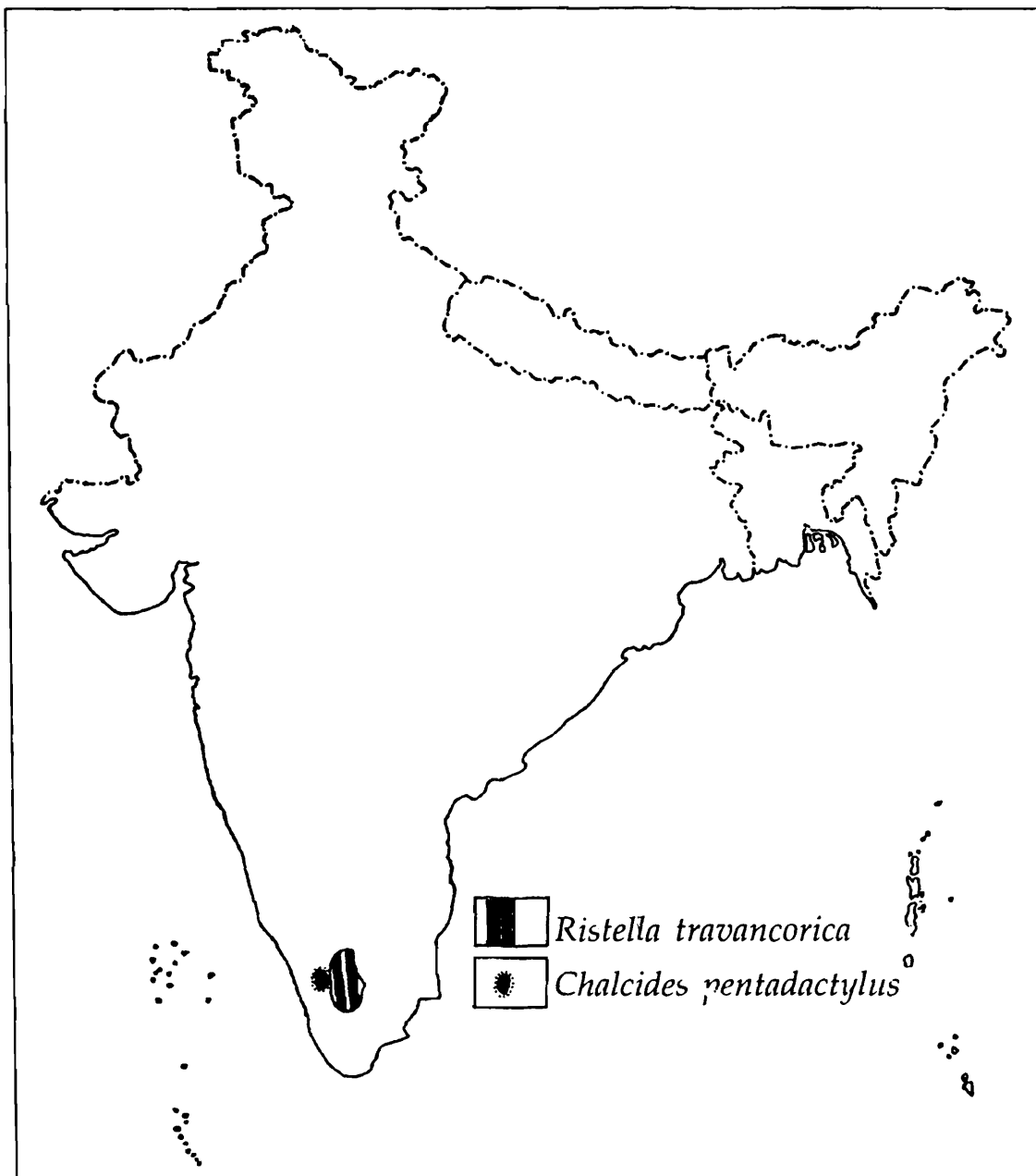
(Map 69)

1870. *Ateuchosaurus travancoricus* (in part) Beddome, *Madras Month. J. Med. Sci.* : p. 33 (type loc. Western Ghats).

1871. *Ristella travancorica*, Beddome, *Madras Month. J. Med. Sci.* : p. 402 (in part)

1935. *Ristella travancorica*, Smith, *Fauna Brit. Ind.* 2 : p. 331.

The dorsum is reddish-brown, with dark-brown spots (which are confined to the middle part of each dorsal and lateral scale); a dark stripe along the flanks is usually present; flanks are usually spotted with light yellow colour; belly is white; in many



Map 69 : Distribution of *Ristella travancorica* and *Chalcides pentadactylus*.

individuals throat and dorsal aspect of tail spotted with brown. The species resembles with *R. rurki* in general habitus and pholidosis but differs in the following way :- Posterior loreal is not divided; ear-opening is generally not larger than the nostril; dorsal scales sharply bicarinate, sometimes tricarinate; 22-26 scales round the middle of the body. Standard length 40 mm., tail length 60 mm.

Distribution : Anaimalai Hills, Palni Hills, Tinnevely Hills, Malabar coast (Map 69).

Habits and habitat : Terrestrial, subarboreal, diurnal has been recorded up to 500 metres altitude in moist forests. Insectivorous and oviparous.

Status : Rare.

230. *Ristella guentheri* Boulenger 1887 (Map 70)

1887. *Ristella guentheri* Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 358, pl. 29, fig. 3 (type loc. Sirimallai Hills, Madurai district, Tamil Nadu).

1935. *Ristella guentheri*, Smith, *Fauna Brit. Ind.* 2 : p. 332.

The dorsum is reddish-brown, the scales centrally spotted with dark-brown; these spots sometimes become confluent and form longitudinal lines on the back; flanks are generally with dark lines, with small yellow spots in many individuals; throat is dotted with dark brown; belly is whitish. Prefrontal is single or divided and almost equal to the fronto-nasal in size; out of the two loreals, the posterior one is divided; ear-opening is larger than the nostril, partly hidden by the scales; 22-24 scales round the middle of the body; dorsal scales sharply bicarinate. Limbs short, separated, when adpressed. Standard length 40 mm.; tail length 60 mm.

Distribution : India : Anaimalai Hills, Tenmalai Hills, Malabar coast, Madura (Map 70).

Habits and habitat : Terrestrial, subarboreal recorded up to 400 metres in Anaimalai Hills. It is insectivorous and oviparous.

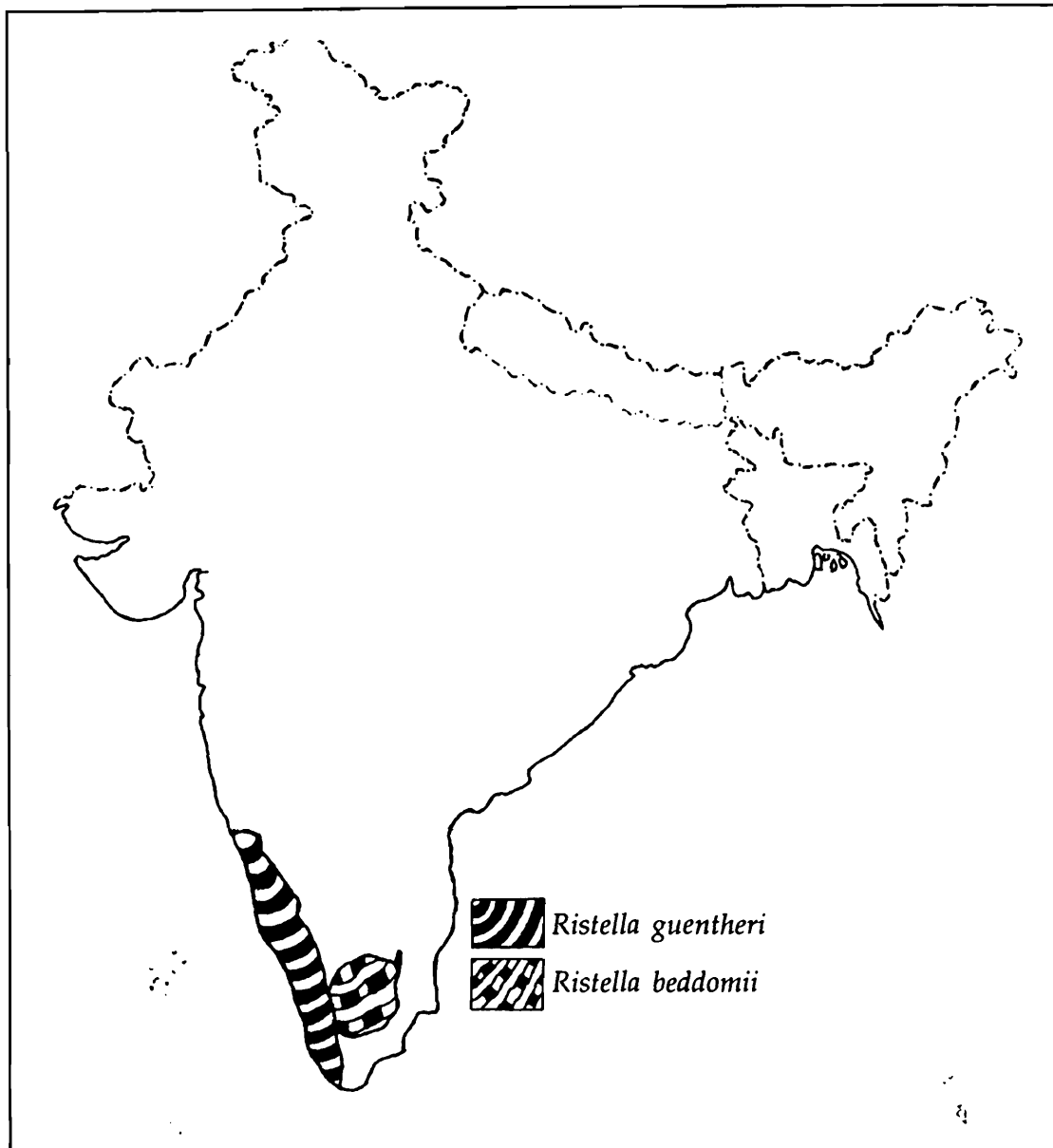
Status : Rare.

231. *Ristella beddomii* Boulenger 1887 (Map 70)

1887. *Ristella beddomii* Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 359, pl. 29, fig. 4 (type loc. S.W. India).

1935. *Ristella beddomii*, Smith, *Fauna Brit. Ind.* 2 : p. 332.

The dorsal colouration is almost like *Ristella guentheri*, but the dark lines on flanks are less and yellow spots are more distinct; most of the individuals are having large black blotch above the fore-limb; in most of the individuals light brown dorsal stripes remain distinct. In habitus and scalation also the species resembles with *Guentheri* very much except that anterior loreal generally much higher than long; ear-opening a little larger; 26-28 scales round the middle of the body; the adpressed limbs may fail to meet, but generally overlap.



Map 70 : Distribution of *Ristella guentheri* and *Ristella beddomii*.

Distribution : India : Tenmalai Hills; Malabar coast, Parambikulam (near Cochin); N. Kanara district (Map 70).

Habits and habitat : Terrestrial, subarboreal, diurnal, insectivorous and oviparous.

Status : Rare.

Genus 51. *Eumeces* Wiegmann 1834

- 1834. *Eumeces* (in part) Wiegmann, *Herp. Mex.* : p. 36 (type *pavimentatus schneideri*).
- 1839. *Plestiodon* Dum. & Bibr., *Erp. Gen.* 5 : p. 697 (type *aldrovandii = schneideri*).
- 1843. *Pariocela* Fitzinger, *Syst. Rept.* : p. 22 (type *Plestiodon laticeps*).
- 1852. *Lamprosaurus* Hallowell, *Proc. Acad. Philad.* 6 : p. 206 (type *guttulatus*).

1854. *Eurylepis* Blyth, *J. Asiat. Soc. Beng.* 23 : p. 739 (type *taeniolatus*).

1935. *Eumeces*, Smith, *Fauna Brit. Ind.* 2 : p. 337.

This genus includes about 46 species, mainly confined to the north temperate areas of the world (North and Central America; South East and S.W. Asia; North Africa). The main generic characters are : The snout is obtusely pointed, slightly longer than the orbit; nasal shield is not entire, divided into an anterior and posterior part; supranasal shields are well developed, in contact with one another; fronto-nasal shield is broader than long; prefrontals are well developed, in contact with or a little separated from one another; 5 supraoculars are present, fifth is small and descends behind the supraciliary margin, the first and second always remain in contact with the frontal shield, the third supraocular may or may not touch the frontal; supraciliaries are 6 or 7; supralabials are 7 or 8, the four or five anterior to the eye are smaller than the others, seventh or eighth is the largest; a pair of superposed temporal scales is present; ear-opening is oval, quite large, smaller than a lateral scale; scales of the body are quite smooth; a pair of preanal plates is present; tail is always with transversely enlarged scales on the underside. The palatine bones do not meet on the mid-line of the palate; pterygoid bones are devoid of teeth; lateral teeth are conical or with curved crowns, eyelids are well developed, lower eyelid is scaly; tympanum is quite distinct, deeply sunk; nostrils are pierced in the nasal; supranasals, prefrontals, fronto-parietals and interparietal shields are distinctly developed. Limbs are well developed, pentadactyle, digits are with the transversely enlarged subdigital lamellae. The dorsal longitudinal scale counts are made between the parietal shields and the beginning of the tail. The lizards of this genus exhibit parental care and guard their eggs during the incubation period.

Key to the species of genus Eumeces

- I. The two median vertebral rows of dorsal scales broader than those on the flanks; no postnasal scale is present.
 1. 28-30 scales round the middle of the body; one or two azygous postmental shield is present. *Eumeces blythianus*
 2. 26-30 scales round the middle of the body; two azygous postmental shields are present. *Eumeces schneideri*
- II. The two median vertebral rows of dorsal scales united to form a single broad shield; a post-nasal shield is present; body much elongated; tail may be longer or shorter than the body.
 1. 21-23 scales round the middle of body; vertebral scales in the longitudinal series of 72-80; fourth toe longer than third; tail longer than the body.
..... *Eumeces taeniolatus*

2. 23 scales round the middle of body; vertebral scales in longitudinal series of more than 80 (85); third toe longer than fourth; tail shorter than body.
 *Eumeces poonaensis*

232. *Eumeces schneideri* (Daudin 1802)

(Map 35)

1802. *Scincus schneideri* Daudin, *Hist. Nat., Rept.* 4 : p. 291 (type loc. not given).
 1802. *Lacerta rufescens* (in part) Shaw, *Gen. Zool.* 3 : p. 285 (based on Aldrovani's figure in *Quad. Ovip.* 1637, p. 660).
 1827. *Scincus pavimentatus* Geoffroy de St. Hilaire, *Deser. Egypte* : p. 138, pl. 4, fig. 3 (type loc. Egypt.).
 1876. *Eumeces pavimentatus*, Blanford, *Zool. E. Persia*, : p. 387.
 1887. *Eumeces schneideri*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 383.
 1935. *Eumeces schneideri*, Smith, *Fauna Brit. Ind.* 2 : p. 341.

The dorsal colouration is light brown, with golden spots all over. Juveniles are olive-grey or brown, with three prominent dark-brown longitudinal lines on the dorsum or with golden spots or stripes; a golden stripe bordered above by a light brown band is present on the flanks; ventrum is yellowish white. As the age increases the colour fades out in to uniform light brown. Second supraocular is larger than the first; fronto-parietal shields touch with each other and are much smaller than the inter-parietal; inter-parietal completely separates the parietals; 3-5 pairs of nuchal shields are present; nasal shield is large; postnasal shield is not present; anterior loreal is higher than long, smaller than the posterior loreal, in contact with the supranasal; supralabials 7-8; infralabials are 6 or 7; first supralabial is not higher than second, not or just touching the loreal; ear-opening is with 3 or 4 large, pointed lobules anteriorly; 2 azygous postmental shields are present; body is stout and elongate, 26-30 scales round the middle of body, the two median dorsal rows are distinctly broader than the lateral scales; 58-62 longitudinal rows of vertebral dorsal scales are present between the parietals to the beginning of the tail; the hind-limb reaches to the wrist or the elbow in the juveniles; in adults, the adpressed limbs fail to meet. Standard length 170 mm.; tail length 200 mm.

Distribution : Pakistan (Omara and Mand on the Mekran coast; North Baluchistan; Waziristan, North west Frontier Provinces), Iran, Arabia, Turkey, Transcaspia, North Africa (Map 35).

Habits and habitat : Terrestrial; diurnal, burrow dwelling; insectivorous. Nothing is known about the breeding habits.

Status : Nowhere common, throughout the range.

233. *Eumeces blythianus* (Anderson 1871)
(Map 36)

1871. *Mabouia blythiana* Anderson, *P. Asiat. Soc. Beng.* : p. 186 (type loc. not known).
 1887. *Eumeces blythianus* Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 385.
 1899. *Eumeces zarudnyi* Nikolski, *Ann. Zool. Mus. Acad. Sci. Petersburg*, 4 : p. 399 (type loc. Scistan & Kirman, eastern Iran).
 1935. *Eumeces schneideri blythianus*, Minton, *Bull. Amer. Mus. nat. Hist.* 134 : p. 101.
 1969. *Eumeces zarudnyi*, Hass & Werner, *Bull. Mus. comp. Zool.* 136(6) : p. 359.

The dorsal colouration is olive-brown, with dark brown longitudinal stripes, three upon the back; flanks are with a light-brown stripe which emerges from the upper lip, this stripe is bordered above by a broad dark dorso lateral stripe and on the lower margin by a narrow dark stripe; ventrum is whitish. Second supraocular is slightly larger than the first; fronto parietals are well developed, in contact with one another; interparietal shield is nearly two times larger than the fronto parietal; interparietal completely separates the parietals; 2-4 pairs of nuchal shields are present; nasal shield is large; postnasal shields are not present; anterior loreal is slightly shorter than the posterior loreal, in contact with the supranasal; supralabials are 8; infralabials are 6 or 7; first supralabial is not higher than the second, narrowly separated from the anterior loreal; ear opening is with 3 or 4 large scales (lobules) anteriorly; one or two azygous postmental shields are present; body is comparatively slender; 28-30 scales round the middle of the body, the two median vertebral rows are distinctly broader than the lateral scales; 58-60 longitudinal rows of vertebral dorsal scales are present between the parietals to the beginning of the tail; the hind limb reaches to the wrist. Standard length 85-111 mm., tail length 150-196 mm.

Distribution : Pakistan (Afridi country, Afghan border near Khyber pass; Mekran Coast; Astola Island; Ormara, Las Bela district; Turbat, Chughtai and Saradoo in Baluchistan; Karachi). Iran (Siestan and Kirman in eastern Iran) India (Amritsar, Punjab?) (Map 36).

Habits and habitat : Terrestrial, rock dwelling, diurnal; pugnacious (bite savagely); insectivorous.

Status : Rare.

234. *Eumeces taeniolatus* (Blyth 1854)
(Figs. 4 & 114, Map 41)

1854. *Eurylepis taeniolatus* Blyth, *J. Asiat. Soc. Beng.* 23 : p. 470 (type loc. Salt Range, Punjab, Pakistan).
 1868. *Plestiodon scutatus* Theobald, *Cat. Rept. Asiat. Soc. Mus.* : p. 25 (based on Blyth's types of *taeniolatus*).
 1870. *Plestiodon (Eumeces) scutatus* Jerdon, *P. Asiat. Soc. Beng.* : p. 73.

1871. *Mabouia taeniolata*, Anderson, *P. Asiat. Soc. Beng.* : p. 184.
 1872. *Eumeces taeniolatus*, Stoliczka, *P. Asiat Soc. Beng.* : p. 75.
 1887. *Eumeces scutatus*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 382.
 1905. *Eumeces taeniolatus*, Annandale, *J. Asiat. Soc. Beng.* 1 : p. 148.
 1935. *Eumeces taeniolatus*, Smith, *Fauna Brit. Ind.* 2 : p. 342.

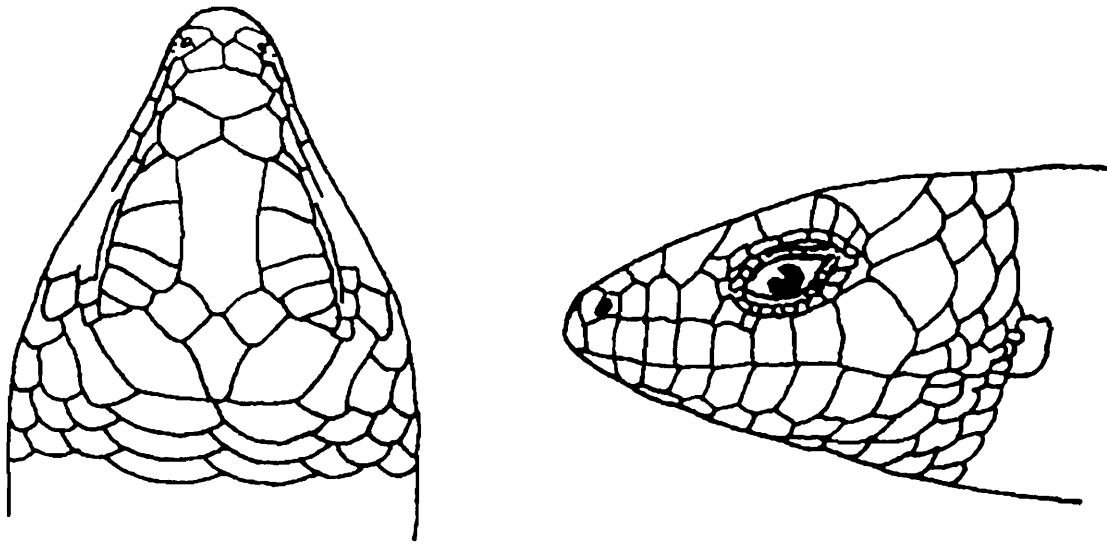


Fig. 114 : *Eumeces taeniolatus* : Head shields.

The dorsum of this mole skink is sandy to light bronze, richly speckled with cream colour; three dark brown stripes enclosing the pale spots; tail variegated with black, brown or grey; lower parts including the belly are shining yellow. Head is small; lower eyelids are scaly; ear opening is like a vertical slit, with 2-3 small lobules anteriorly; upper labials are 8; lower labials are 6-8; postmentals are two; median dorsal scales are enlarged and almost two times wider than the other dorsals, these large dorsal shields are divided anteriorly, these large scales are in the longitudinal series of 72-80; scales round the middle of body are 20-23; limbs and toes are short; tail round and thick at the base, longer than the head and body. Standard length 120-150 mm.; tail length 180 mm.

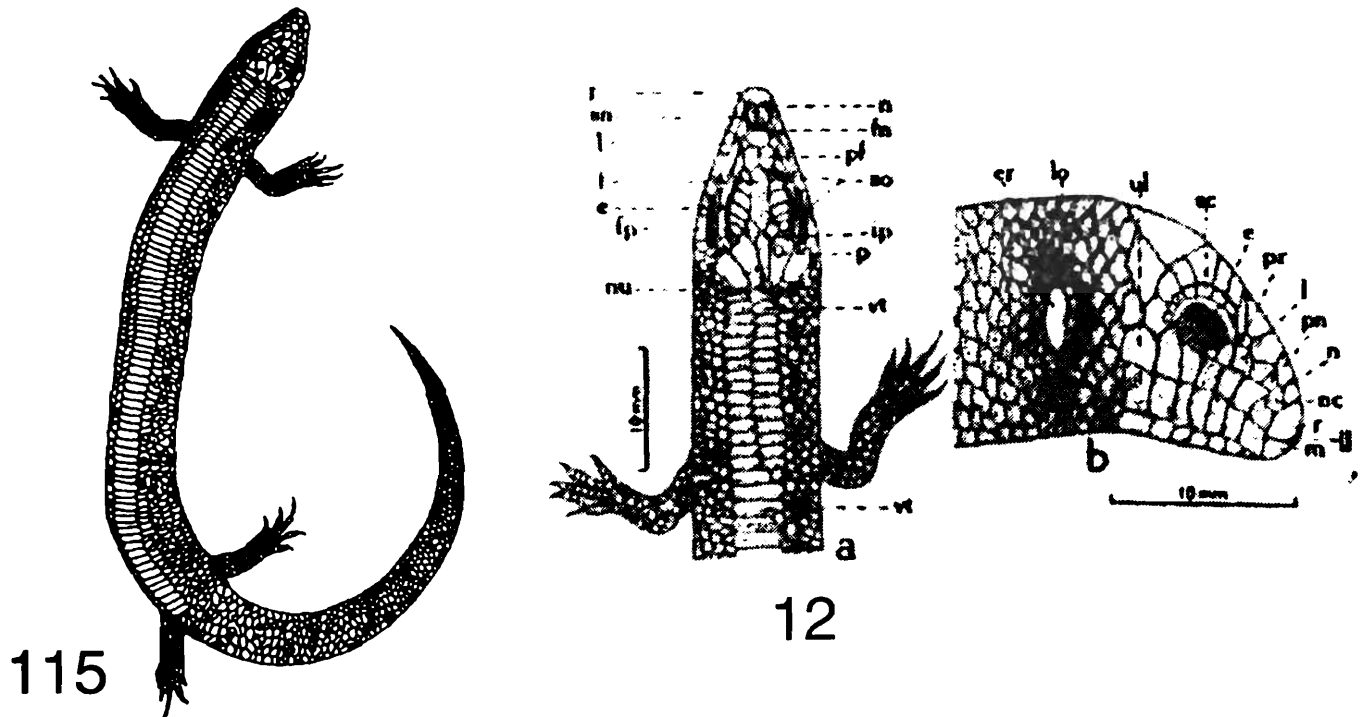
Distribution : India : Cutch, Rajasthan, Kashmir, Elsewhere : Arabia to Transcaspia, Pakistan (Map 41).

Habits and habitat : This lizard has been observed to be equally comfortable in sandy burrows and understones in rocky habitats. The food of this lizard comprises the beetles and their larvae and ants. This is a most secretive and agile lizard.

Status : Nowhere common but not endangered.

235. *Eumeces poonaensis* Sharma 1964

(Fig. 115, Plate 12, Map 46)

1964. *Eumeces poonaensis* Sharma, *Rec. zool. Surv. India*, 62(3-4) : p. 239 (type loc. Katrajghat, Poona).Fig. 115 : *Eumeces poonaensis* Sharma : Entire dorsal viewPlate 12 : *Eumeces poonaensis* Sharma

Dorsum and limbs dark brown to deep bronze, with a lateral series of round white spots arranged regularly and extending from head to half the tail; sides from snout to half the tail with deep brown stripes ending vertically downwards to a point; stripes more prominent on labials and neck; ventrum yellowish white with numerous brown spots on ventral scales of tail. Head very small in comparison to body and tapering anteriorly; body long and slender. Scales : First supraocular slightly smaller than second; fronto parietals small (smaller than interparietal); interparietal entirely separating the parietals; 5 pairs of nuchal shields present; nasal shield moderate-sized and semipentagonal; a small postnasal present; two pentagonal supranasals in close contact; anterior loreal slightly broader than long and smaller than posterior loreal; supralabials 7 in number, the first not higher than second and touching almost half of the border of postnasal; rostral shield subtriangular and almost 3 times the size of first supralabial; infralabials 7 in number; mental shield subtriangular, almost 3 times the size of first infralabial; 2 postmental shields present, the anterior one smaller than the posterior. Ear opening oval and with 6 spur-like projecting lobules on anterior margin. Eyelids well developed; lower eyelid

scaly. With 23 scales round the middle of body, of which the vertebral on back being in form of shields and about twice the size of other dorsal scales; vertebral scales in series, 4 1/2 times as broad as long and formed by fusion of two median rows of dorsal scales, the fusion occurring at the 17th vertebral scale. With 85 dorsal scales (including nuchal scales) in longitudinal series of which 16 anterior scales in two rows; scales on nape and near base of tail not fused. Limbs moderate-sized, pentadactyle, third toe longest (and also longer than the fourth); with 3 transverse lamellae under fourth and 10 under third toe. Standard length 118 mm.; tail length 85 mm.

Distribution : India : Maharashtra (Katrajghat, Poona) (Map 46).

Habits and habitat : Terrestrial (subterranean), diurnal, insectivorous.

Status : Rare.

Genus 52. *Scincus Gronovius* 1763.

1763. *Scincus Gronovius*, *Zooph. Anim.* 1 : p. 11 (type *Lacerta scincus* Linnaeus).

1837. *Pedorychus* Wiegmann, *Arch. f. Naturg. Berlin* (1) : p. 128 (type *hemprichii*).

1866. *Otolepis* Strauch, *Bull. Acad. Sci. St. Petersb.* 10 : p. 459 (type *Cyclodus brandtii*).

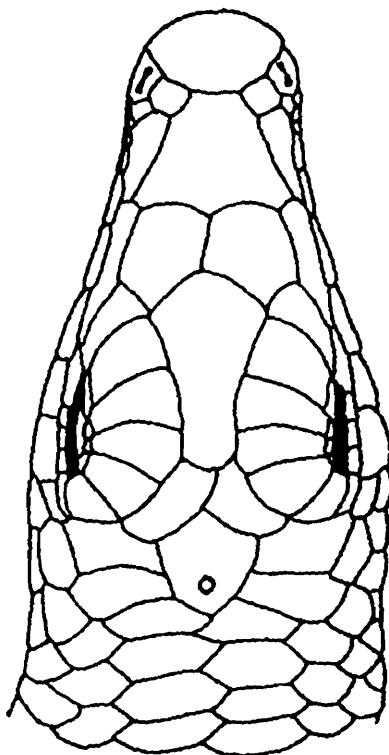
1935. *Scincus*, Smith, *Fauna Brit. Ind.* 2 : p. 343.

This genus is distributed from North Africa to Sind (Pakistan) and comprises 8 species. Only one covers the scope of this work. The main generic characters are : The ear-opening is hidden under the scales and indicated by one or two posteriorly denticulated scales; the tympanum is in the usual position, and the auditory meatus is greatly lengthened; the slit-like nostril is completely closed; digits are with strong lateral denticulations and are suitable for living in sandy habitats. The palatine bones do not meet on the mid-line of the palate; pterygoid bones are with teeth, premaxillary bones are prolonged forward into pointed projection; maxillary teeth are conical or with obtuse tubercular crowns; eyelids are well developed and scaly; snout is depressed; cuneiform, mouth inferior; nostril is between an upper and a lower nasal; supranasals, prefrontals, fronto-parietals and interparietal shields are prominently distinct; limbs are well developed, pentadactyle, digits are flattened, serrated laterally, with transverse subdigital lamellae; tail is shorter than the body.

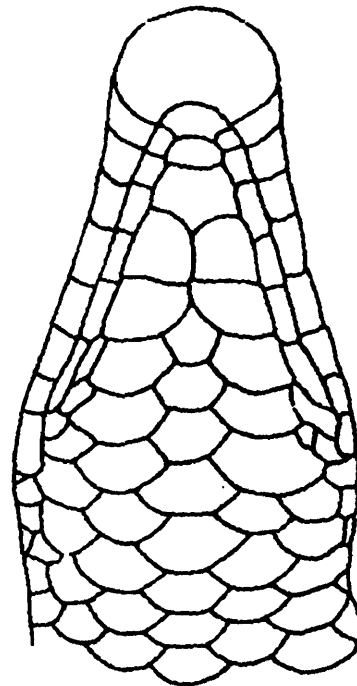
All the species of this genus are closely related to one another and inhabit desert areas of the range. Their body contour and general structure is specially modified and the lizards are adapted to lead a suitable life in the sandy habitats. All the species are capable of burrowing mainly by means of their wedge-shaped snout, wriggling and diving into the soil with remarkable ease. The fore-limbs are folded back along the sides of the body and not used in progression, and the locomotion becomes almost like the swimming on the soft sand. On account of such rapid movements like a fish these lizards are popularly known as "Sand Fish"

236. *Scincus mitranus* (Anderson 1871)
(Figs. 116-118, Map 34)

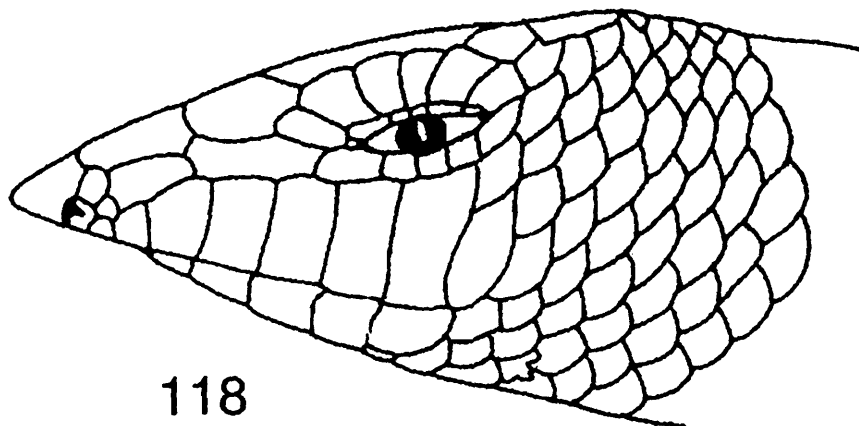
1871. *Scincus mitranus* Anderson, *P. Asiat. Soc. Beng.* : pp. 96 & 115 (type loc. Arabia).
1884. *Scincus arenaria* Murray, *Zool. Sind.* : p. 353, pl. 10. fig. 2 (type loc. Hubb Plains, Sind).
1935. *Scincus mitranus*, *Smith Fauna Brit. Ind.* 2 : p. 344.



116



117



118

Figs. 116-118 : 116. *Scincus mitranus* : Dorsal view of head; 117. *Scincus mitranus* : Ventral view of head; 118. *Scincus mitranus* : Lateral view of head.

The dorsal colouration is creamy, each dorsal scale is edged or tipped with brown and with a whitish spot which may be divided in to two; flanks are with 7-10 deep reddish-brown vertical blotches; ventrum is whitish. The snout is much longer than the orbit; rostral is large, with depressed, strongly projecting edge; supranasal shields are much separated from one another; fronto-nasal shield is as long as broad; prefrontal shields are in intimate contact with one another; combined length of fronto-parietals and interparietal is quite less than the length of frontal shield; parietals are small, shorter than the interparietal, 3 or 4 pairs of nuchal shields are present; supraocular shields are 5, the first 3 are in contact with the frontal; 5 supraciliaries, the first one is very large, and occupies the front part of the supraorbital region; the second supraciliary shield is quite long and narrow; a postnasal shield is present; loreals are 2, slightly elongated; eyes are small; lower eyelid is with a semitransparent disc formed by many large scales; 8 supralabials, separated from the lower eyelid by smaller scales, the seventh supralabial is below the middle of the eye; ear opening is quite large, completely covered by the scales, hidden. Body is stout, with angular latero-ventral edge; scales are quite smooth, lateral scales are smallest; 28-32 scales round the middle of the body; a pair of large preanal plates is present; limbs are short; the adpressed limbs overlap; digits are much flattened, with strong lateral overlap; digits are much flattened, with strong lateral denticulations, the outer series is formed by the extensions of the upper while the inner by the extensions of the lower lamellae, the two terminal lamellae, which enclose the claw, together form an oval disc; tail is short, thick at the base, terminate to a fine point; the median subcaudal scales are transversely enlarged; a small, projecting, keeled bony scale on each side of the base of the tail behind the vent. Standard length 115 mm., tail length 90 mm.

Distribution : Pakistan (Hubb, Sind); Arabia (Map 34).

Habits and habitat : Diurnal, saltatorial (fossorial). insectivorous.

Status : Rare.

Genus 53. *Ophiomorus* Dum. & Bibr. 1839

1839. *Ophiomorus* Dum. & Bibr., *Erp. Gen.* 5 : p. 799 (type *Ophiomorus miliaris* Dum. & Bibr., by monotypy (= junior objective synonym of *Anguis punctatissimus* Bibron and Bory St. Vincent, 1833)).
1853. *Sphenocephalus* (not of Agassiz, 1838) Blyth *J. Asiat. Soc. Beng.*, 22 : p. 654 (type *S. tridactylus*)
1867. *Hemipodion* Steindachner, *Sitz. Akad. Wiss. Wien.*, 55 (1) : p. 265 (type *Hemipodion persicum* Steindachner, by monotypy).
1874. *Zygnopsis* Blanford, *Ann. Mag. Nat. Hist.* (4) 14 : p. 33 (type *Z. brevipes*).
1875. *Sphenoscincus* Peters, *Mon. Akad. Berlin*, : p. 553 (type *Sphenocephalus tridactylus* Blyth, by monotypy).
1879. *Zygnidopsis* Blanford, *J. Asiat. Soc. Beng.* 48 : p. 128 (corrected spelling of *Zygnopsis* Blanford, 1874; type scies *Zygnopsis brevipes*, 1874).

1935. *Ophiomorus*, Smith, *Fauna Brit. Ind.* 2 : p. 345.

1966. *Ophiomorus*, Anderson & Leviton, *Proc. Calif. Acad. Sci.*, 33 (16), pp. 499-534; 8 figs.; 1 table.

This genus which includes 9 species has got a range of distribution from S.E. Europe (Greece) to the N.W. India, through south west Asia. Only 5 species have been included in this work. It seems to be allied most closely to the genera *Eumeces*, *Scincus* and *Chalcides*, but further studies are required to establish exact relationship and ancestry of *Ophiomorus*. The main generic characters are : Palatine bones do not meet on the mid-line of the palate; pterygoid bones are generally with teeth; teeth are conical; nostril is situated in the suture between the nasal and supranasal, quite close to the rostral; prefrontal shields are distinct; fronto-parietals and interparietal shields are prominent; eyes are small, lower eyelids are with an undivided transparent disc; ear-opening is minute, hidden under the scales or absent. Body is elongate; limbs are either very small or absent.

Key to the species of genus Ophiomorus

I. Fingers are 4, toes 3.

1. 20 scales round the middle of the body..... *Ophiomorus blanfordi*
2. 22 scales round the middle of the body..... *Ophiomorus brevipes*

II. Fingers are 3, toes 3.

1. 20 scales round the middle of the body; parietals in contact posteriorly, prefrontals do not touch supralabials *Ophiomorus streeti*
2. 20-22 scales round the middle of the body; parietals are not in contact posteriorly; prefrontals touch the supralabials.
 - i. Postocular shield almost as large as posterior suboculars; parietals are in contact with anterior temporals; generally 7 or 8 scales on the third toe; ...
..... *Ophiomorus tridactylus*
 - ii. Postocular shield much larger than the posterior suboculars; parietals are not in contact with anterior temporals; generally 4-6 scales on the third toe.
..... *Ophiomorus raithmai*

237. *Ophiomorus tridactylus* (Blyth 1855)

(Figs. 5 & 119, Map 72)

1855. *Sphenocephalus tridactylus* Blyth, *J. Asiat. Soc. Beng.* 22 : p. 654 (type loc. Afghanistan).

1875. *Sphenoscincus tridactylus*, Peters, *Mon. Akad. Berlin*, : p. 553, pl., figs. 6-12.

1887. *Ophiomorus tridactylus*, Boulenger (in part), *Cat. Liz. Brit. Mus.* 3 : p. 394.

1935. *Ophiomorus tridactylus*, Smith, *Fauna Brit. Ind.* 2 : p. 346.

1966. *Ophiomorus tridactylus*, Anderson & Leviton, *Prof. Calif. Acad. Sci.* 33(16) : p. 517.

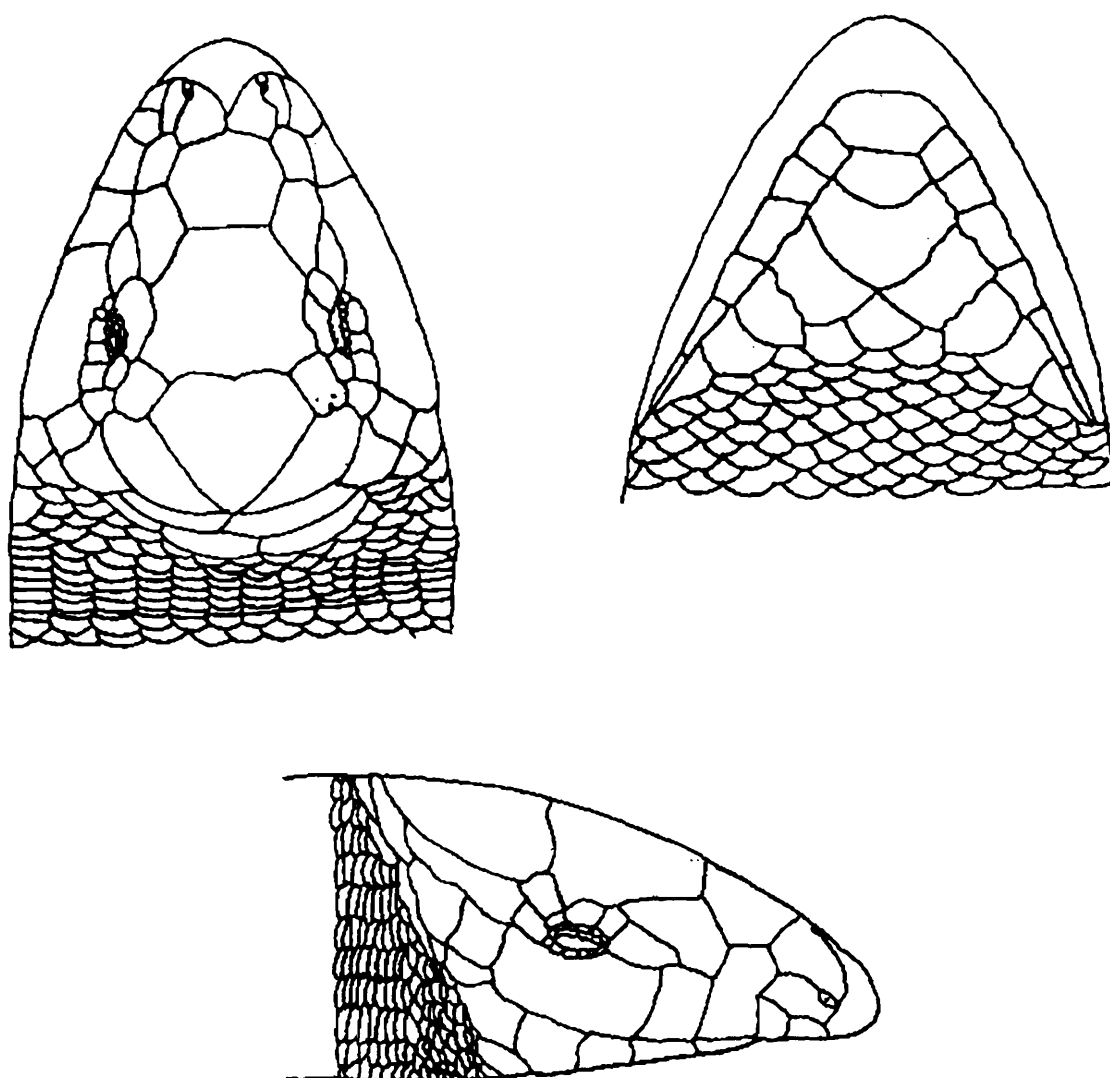


Fig. 119 : *Ophiomorus tridactylus* : Dorsal, ventral and side views of head.

The skink is of uniform cream colour dorsally, with a dorsolateral brown stripe on each side, from nostril, through the eyes, on body and further reaching up to the base of the tail, the stripe is composed of more or less confluent spots on 1-2 scale rows; in many individuals the dorsum is profusely spotted with dark-brown; numerous brown dots are arranged in longitudinal rows on dorsal aspect of tail; dorsal aspect of hind limbs with numerous dark brown spots; belly is of light cream colour. Snout is pointed, with a sharp angular labial edge; supranasals are in contact; prefrontals are in contact with the upper labials; frontonasal broader than long; parietal in contact with anterior temporal; postocular is about as large as posterior subocular; 20-22 smooth scales round the middle of body; a distinct ventrolateral edge from snout to groin. Fingers three; toes three; usually 7-8 scales on the third toe, which is largest. Standard length 71-105 mm.; tail length 80 mm.

Distribution : Afghanistan (southern part); Iran, (Helmand basin and adjacent regions of eastern Iran), Pakistan (northern Baluchistan) (Map 72).

Habits and habitat : It is insectivorous, fossorial (saltatorial), nocturnal species. Its main food comprises the termites and ants. They live in the sand with a perfect ease, can swim and dive in loose sand with marked agility, in the same way a fish can do in water. This species was first recorded from Rajasthan by Rathore (1969), who states that termites (Isoptera) form by far the majority of its food throughout the year while beetles, butterflies, moths, crickets and grasshoppers are also consumed. Minton (1966) also mentions termites and Neuroptera (antlions) as its food.

Status : Very common.

238. *Ophiomorus streeti* Anderson and Leviton 1966

(Map 34)

1966. *Ophiomorus streeti* Anderson and Leviton, *Proc. Calif. Acad. Sci.* 33(16) : p. 512 (type loc. 11 miles west of Iranshahr, Iran; Baluchistan).

Dorsal colouration is creamy, each scale of the eight dorsal rows is with a dark brown spot, thus forming 8 longitudinal lines emerging from the posterior head shields and extend up to the level of insertion of the hind limbs; tail is with 6 dark brown lines; ventrum and flanks are whitish. The head is depressed; snout cuneiform, with sharp angular labial edge; mouth is inferior; rostral is triangular on its upper aspect, convex; the posterior angle of the rostral is obtuse and not separating the supranasal shields partially, frontonasal shield is septagonal, three-fourths as broad as long, two times longer than the suture formed by the supranasals; frontal ten-sided, broader than long, as long as the distance between the anterior border and the apex of the rostral; interparietal broader than long, longer than the frontal and as broad as the frontal, its straight anterior border forming a broad suture with the straight posterior border of the frontal; parietals are elongate, curved, about one third as broad as long, obliquely arranged, meet behind the interparietal to form a short suture; two enlarged nuchal shields on the left, three on the right; nostril is situated in the suture between the nasal and the supranasal, narrowly separated from the rostral; nasal is as high as long, and pointed behind; supranasal is longer than broad; prefrontals are quadrangular, distinctly pointed on the posterior aspect, about three-fifth as broad as long, broadly separated from the supralabials by the loreal and the preocular, broadly separated from one another by the suture formed by the frontal and frontonasal; loreal is as high as long, higher than the preocular, which is as long as high, and longer than the loreal; 3 small supraoculars are present, the anterior two are larger than the posterior; a small shield interposed between the frontal and the suture formed by the first and second supraoculars, two small fronto-parietal shields are present, which are widely separated from one another, and slightly larger than the postocular; 4 elongate supraciliaries are present; upper eyelid is rudimentary, lower eyelid is with a large transparent disc like scale and 13 much smaller scales; only one postocular scale is

present, which is much larger than the posterior subocular scales; 2 large temporals are present, the anterior one is higher, the posterior one is longer, both bordering the parietals; 7 supralabials are present, fifth and sixth are below the eye, the fifth is longest, first is smallest, the seventh much smaller than the sixth and lying below the anterior temporal; ear-opening is not present; mental is quadrangular, the posterior border is concave, two azygous post-mentals are present, the posterior is much longer; a series of four enlarged shields on either side of the chin; bordering the lower labials, which are 7 in number. Body is much elongated, with a distinct ventrolateral edge, which continues the labial angulation to the groin. Length of hind limb goes slightly more than five times in to distance between axilla and groin. Body scales are smooth, imbricate, more than two times broader than long; 20 scales round the middle of the body; 109 scales between the parietals and a line drawn at the level of the vent; a pair of enlarged preanal scales are present, fore limbs are less than one-half of the hind limbs in length; 3 fingers are present, the one on the radial side is shortest, that of the ulnar side is very slightly larger than the middle one; six lamellae beneath the third (longest) finger; 3 toes are present, the toe of the tibial side is the shortest, slightly more than one-half the length of the toe of the fibular side, which is longer than the middle toe. Eleven lamellae under the longest toe, seven scales on the lateral aspect, four lamellae under the shortest toe, seven under the middle toe. All fingers and toes are clawed; tail is slightly depressed, dorsal scales of the tail are subequal; the median series of sub-caudal scales are slightly enlarged. Standard length 84-91 mm., tail length 52-53 mm. (regenerated).

Distribution : Iran; Pakistan (Baluchistan) : 11 miles west of Iran shahr (Map 34).

Habits and habitat : Sand-dwelling, saltatorial (fossorial), a sand burrowing form; nocturnal, insectivorous; oviparous.

Status : Rare.

239. *Ophiomorus raithmai* Anderson & Leviton 1966
(Map 11)

1872. *Sphenocephalus tridactylus* Stoliczka, *Proc. Asiat. Soc. Beng.* : pp. 76 & 88.

1887. *Ophiomorus tridactylus* Boulenger, (in part), *Cat. Liz. Brit. Mus.* 3 : pp. 394-395.

1935. *Ophiomorus tridactylus*, Smith, *Fauna Brit. Ind.* 2 : p. 346

1966. *Ophiomorus raithmai* Anderson and Leviton, *Proc. Calif. Acad. Sci.* 33(16) : p. 519 (type loc. Ghizri, Karachi district, Sind, Pakistan)..

Dorsal colouration is creamy or pale brown, each of the 8 or 10 dorsal and dorsolateral longitudinal scale rows are with a dark brown line composed of discrete dots extending from the nape to the level of the hind limbs, reducing to 6 or 8 lines on the tail; dorsal aspect of hind limbs is with brown dots; a dark brown line emerges from nostril, passes through eyes across the temporal region; median head shields are with dark brown markings; ventrum is immaculate cream or tan. The species is most closely allied to the

Ophiomorus tridactylus from which it differs in the colour pattern; scalation of the temporal region postocular scale much larger than posterior suboculars; parietal not in contact with the anterior temporal (posterior temporal intervenes); shorter toes (the third toe is having 4-6 scales rather than 7 or 8). Standard length 63-99 mm.; tail length 43-58 mm.

Distribution : The sandy arid areas of southern and eastern Pakistan and north western India (western Rajasthan, Kutch). The species comprises a distinct population, inhabiting Pakistan east of Sulaiman Range and Punjab. The species is widely distributed in the Barmer, Jodhpur, and Nagaur districts of Rajasthan (Map 11).

Habits and habitat : Sand-dwelling, saltatorial (fossorial), a sand burrowing form; nocturnal; insectivorous (Isoptera, bugs, ants, beetles, moths, crickets, grasshoppers, antlions and insect eggs); oviparous.

Status : Common.

240. *Ophiomorus blanfordi* Boulenger 1857
(Map 71)

1879. *Zygnidopsis brevipes* (not of Blandford, 1874), Blandford, *J. Asiat. Soc. Beng.* 48 : p. 128 (type loc. Iran or Baluchistan, Pakistan)

1887. *Ophiomorus blanfordii* Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 395, pl. 33, fig. 1.

1935. *Ophiomorus blanfordi*, Smith *Fauna Brit. Ind.* 2 : p. 347.

1966. *Ophiomorus blanfordi*, Anderson and Leviton, *Proc. Calif. Acad. Sci.* 33(16) : p. 511.

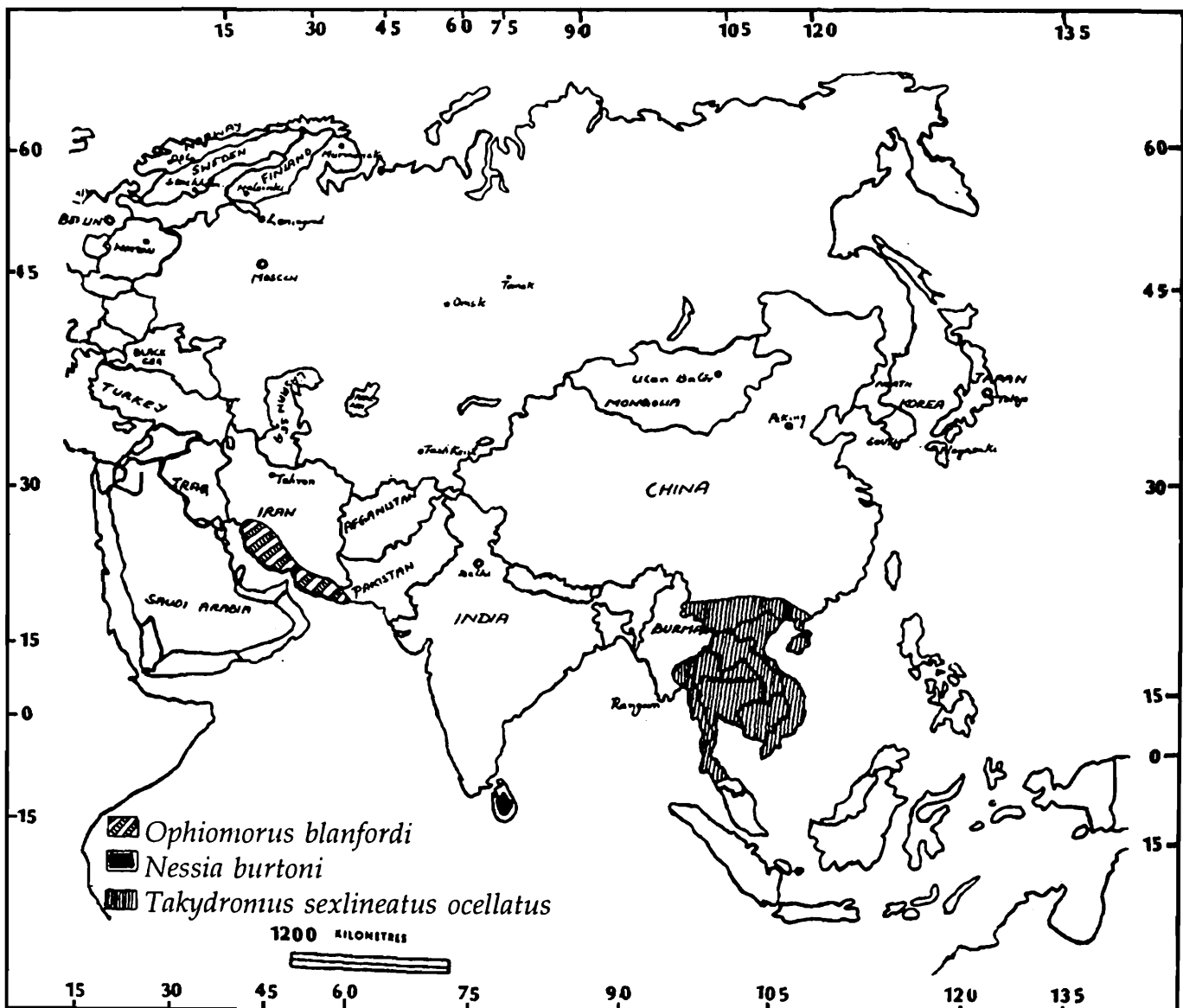
Dorsal colouration is creamy or pale brown; the two median dorsal scale rows with scattered dark spots, forming more or less distinct longitudinal lines; the scale rows immediately lateral to these median dorsal rows without dark markings; the third and fourth rows from the vertebral line is with dark brown dots forming distinct lines which extend forward along sides of head. Dorsal aspect of head may or may not be with a central dark streak. Snout is cuneiform, with angular labial edge, rounded above, flat beneath, the mouth is inferior; rostral scale is large, distinctly visible from above, pointed on the posterior aspect; supranasals are in the intimate contact with one another; frontonasal is small, broader than long; prefrontals are elongate, quite separated from one another; frontal is large, longer than broad; supraoculars are 3 in number, first one is largest, third just reaches the supraciliary margin; 3 supraciliaries, first is the largest and enters the supraorbital region; fronto-parietal shields are very small, widely separated from one another, much smaller than the interparietal shield; interparietal shield is quite large and as long as broad; parietal shields are narrow, obliquely placed, do not meet behind the interparietal shield and are bordered by two shields on either side; a pair of nuchal shields may be present or absent; nostrils are much close to the rostral; anterior and posterior loreals are almost equal or anterior one is larger; eyes are small; lower eyelid is with a transparent disc; upper eyelid is rudimentary; 7 supralabials are present, first one is smallest, fifth is largest, fifth and sixth are below the eye; ear-opening is not present; 2 azygous postmental shields are present, the posterior postmental is much larger

than the anterior one; body is much elongated, with feeble angular latero-ventral edge; the distance between the axilla and groin is seven or eight times greater than the length of the fore-limb; 20 subequal; smooth scales are round the middle of the body; a pair of enlarged preanal shields is available; fore-limbs are less developed than the hind-limbs, fitting into a groove on the lateral aspect of the body; fore-limb is with 4 toes; hind-limb is with 3 toes only; tail is cylindrical, almost as thick as the body at the base, shorter than the head and the body. Standard length 80 mm., tail length 75 mm.

Distribution : Costal sand dunes of Iran (Fars Province) and Pakistan (Chah Bahar, Baluchistan; Ras Jiwani, 10 air miles east of Iranian border, on the coast) (Map 71).

Habits and habitat : Sand-dwelling, saltatorial (fossorial), a sand burrowing form; nocturnal; insectivorous; oviparous.

Status : Not in abundance, Rare.



Map 71 : Distribution of *Ophiomorus blanfordi*, *Nessia burtoni* and *Takydromus sexlineatus ocellatus*.

241. *Ophiomorus brevipes* (Blanford 1874)

Map 68

1874. *Zygnopsis brevipes* Blanford, *Ann. Mag. Nat. Hist.* (4) 14 : p. 33 (type loc. Saadatabad, S.W. of Karman, Iran).
1887. *Ophiomorus brevipes*, Boulenger, *Bull. Soc. Zool. France*, 12 : p. 525.
1935. *Ophiomorus brevipes*, Smith, *Fauna Brit. Ind.* 2 : p. 348.
1966. *Ophiomorus brevipes*, Anderson and Lewviton, *Proc. Calif. Acad. Sci.*, 33(16) : p. 510.

Dorsal colouration is creamy or pale brown; each scale of the two median dorsal rows is with a central brown spot, thus forming two prominent lines on the complete length of body and tail. The scale rows immediately lateral to these median rows lack dark markings. The next three lateral rows each with a dark marking on each scale, forming either three prominent lateral stripes, or a single broad stripe on the complete length of the body and tail; ventrum is whitish; a dark line emerges from nostril, passes through eyes and the temporal region and contact the lateral stripes on the body; a single line on frontonasal and frontal, divided on posterior part of the frontal and reuniting on the posterior portion of the interparietal shield. This species is closely allied to *Ophiomorus blanfordi* but differs in the following way. Snout is less depressed, less cuneiform; interparietal is considerable broader than long, frontonasal is approximately two times broader than long; eyes are larger; 22 scales round the middle of the body. Standard length 76-95 mm., tail length 78-89 mm.

Distribution : Sandy areas of eastern Iran (Saadatabad, between Kerman and Shiraz; Sargad; Bazman; Tuftan, Kerman Province; between Zahedan and Chahbar; Sabzavaran; Minab). Pakistan (Irano-Baluchistan frontier) (Map 68).

Habits and habitat : Sand-dwelling, saltatorial (fossorial), a sand burrowing form; nocturnal; insectivorous; oviparous.

Status : Rare.

Genus 54. *Chalcides* Laurenti 1768.

1768. *Chalcides* (in part) Laurenti, *Syn. Rept.*, : p. 64 (type *tridactylus*)
1816. *Zygnis* Oken, *Lehrb. Naturg.* 3 : p. 284 (type *tridactylus*).
1830. *Sphaenops* Wagler, *Nat. Syst. Amphib.* : p. 161 (type *capistrata*).
1830. *Gongylus* (not of Thunberg, 1815), Wagler, *Nat. Syst. Amphib.* : p. 162 (type *ocellata*)
1839. *Heteromeles* Dum, & Bibr., *Erp. Gen.* 5 : p. 772 (type *mauritanicus*).
1856. *Anisoterma* Dumeril, *Rev. Mag. Zool.* 8 : p. 421 (type *sphenopsiforme*).
1876. *Allodactylus* Lataste & Rochebrune, *Journ. de Zool.*, 5 : p. 238 (type *delislei*)
1883. *Gongyloseps* Boettger, *Abh. Senck. Ges.* 13 : p. 122 (type *mionecton*).
1935. *Chalcides*, Smith, *Fauna Brit. Ind.* 2 : p. 349.

This genus includes about 15 species distributed in southern Europe, north Africa and south west Asia. Only two species have been included in this work. The main generic characters are : Palatine bones do not meet in the mid-line of the palate, which is devoid of teeth; teeth are subconial; nostrils are between the nasal and the rostral, in an emargination of the latter; supranasal shields are present; prefrontals and fronto-parietal shields are missing; lower eyelid is with an undivided transparent disc; body is elongated, limbs are either short or rudimentary.

Key to the species of genus Chalcides

1. Ear-opening is present; limbs are moderately large *Chalcides ocellatus*
2. Ear-opening is not present; limbs are very small..... *Chalcides pentadactylus*

242. *Chalcides ocellatus* (Forskål 1775)

(Fig. 120, Map 72)

1775. *Lacerta ocellata* Forskål, *Descrip. Anim.*, etc. : p. 13 (type loc. Egypt).
 1872. *Gongylus ocellatus*, Anderson, *Proc. Zool. Soc. London* : p. 377.
 1876. *Seps (Gongylus) ocellatus*, Blanford, *Zoo. E. Persia*, 2 : p. 395.
 1887. *Chalcides ocellatus*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 400.
 1935. *Chalcides ocellatus ocellatus*, Smith, *Fauna Brit. Ind.* 2 : p. 349.
 1966. *Chalcides ocellatus*, Minton, *Bull. Amer. Mus. Nat. Hist.* 134 : p. 102.

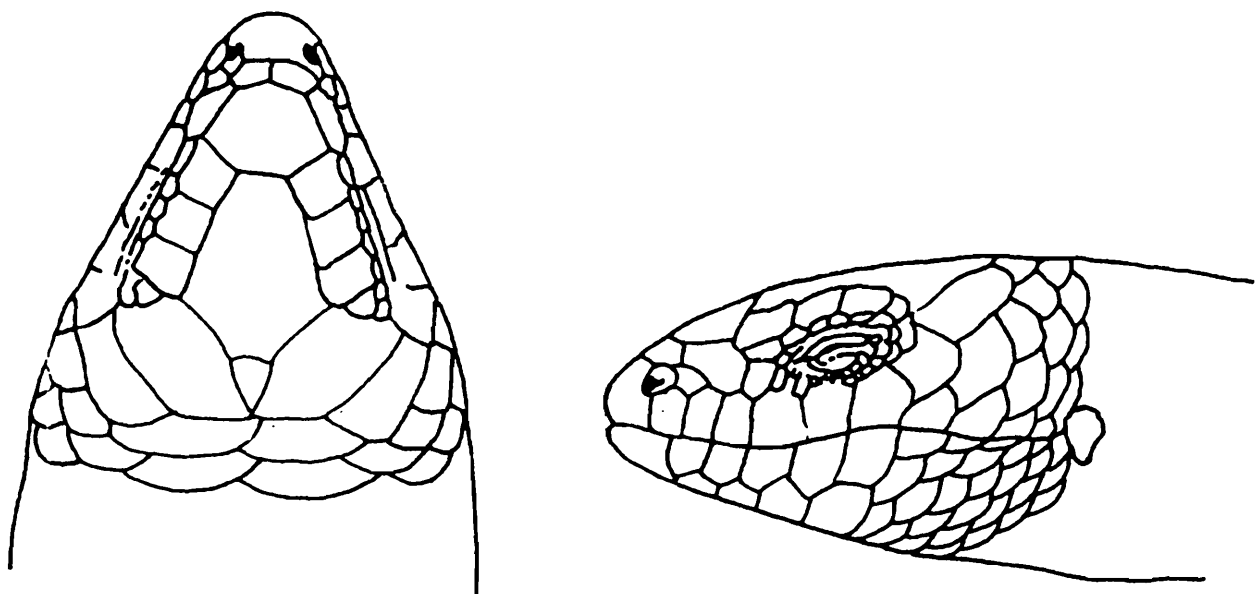
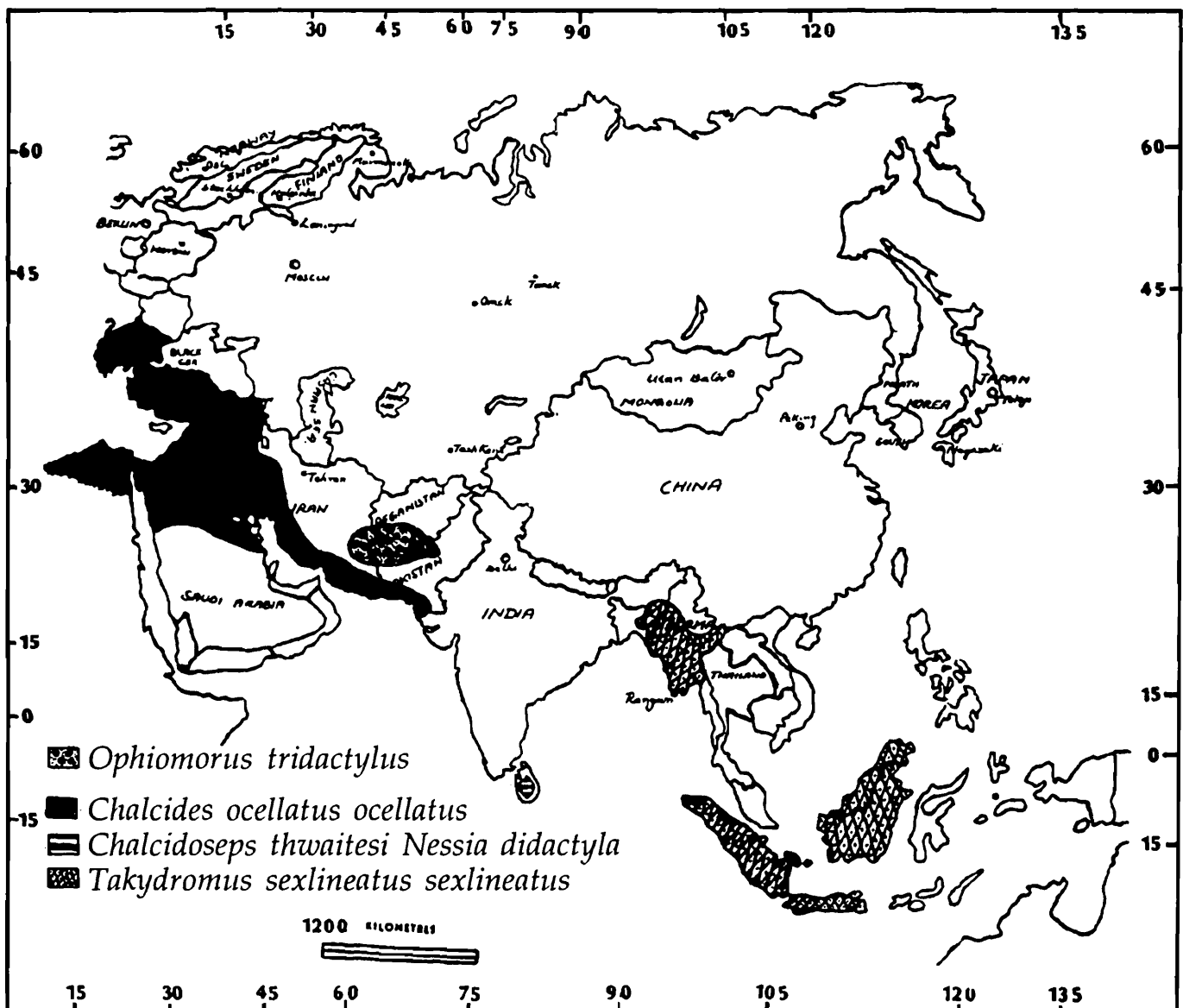


Fig. 120 : *Chalcides ocellatus* : Upper and side views of head.

Dorsal colouration is light brown, with black spots transversely arranged or merge to form irregular transverse bands, each black spot is with a central white dot or longitudinal shaft; labials are with a black margin; sides of neck are with black spots; ventrum is whitish. The head is small, snout is short, bluntly pointed, longer than the orbit, not projecting beyond the lower jaw; rostral is with lateral emarginations and bears the major portion of the nostril; nasals are small, crescentic; supranasal shields are in contact with one another; frontonasal shield is large, quite variable as regards to the length and breadth; frontal is a large shield, distinctly longer than broad; interparietal shield is very small; a pair of large parietal shields are present, which are in contact with one another behind the interparietal, one or two pairs of nuchal shields are present; supraoculars are 4, the first 3 are quite large and in contact with the frontal; 6 supraciliaries are present; a



Map 72 : Distribution of *Ophiomorus tridactylus*, *Chalcides ocellatus*, *Chalcidoseps thwaitesi*, *Nessia didactyla* and *Takydromus sexlineatus sexlineatus*.

postnasal shield is always present; anterior loreal is larger than the posterior, which is divided into two or three shields; an elongated temporal shield borders the parietal; 7 or 8 supralabials; fifth and sixth are below the eye; ear-opening is subcircular, without projecting scales (lobules) on the anterior margin, it is smaller than a lateral scale. The body is slightly elongate, with 28-32 subequal, smooth scales round the middle of the body; 62-71 scales on mid-line of back from base of head to point above the vent; preanal shields are not enlarged; limbs are short but well developed, pentadactyle, widely separated when adpressed; the distance between the axilla and groin is three to four times the length of the fore-limb; digits are slightly compressed, with transverse subdigital lamellae; tail is thick at the base, tapering to a fine point, almost as long as the head and body. Standard length 90-115 mm., tail length 88-114 mm.

Distribution : Complete Mediterranean region, Saudi Arabia, shores of the Persian Gulf to the Mekran coast, Ormara, Astola Island; east to the Miani Horsk and Karachi. The species ranges from North Africa to Pakistan (Map 72).

Habits and habitat : Sand and rock-dwelling; viviparous; nocturnal, insectivorous.

Status : Not abundant but not endangered.

243. *Chalcides pentadactylus* (Beddome 1870)

(Fig. 121)

1870. *Sphenocephalus pentadactylus* Beddome, *Madras Month. J. Med. Sci.* : p. 30, pl. 1 (type loc. Beypore, Malabar district, Kerala).
1890. *Chalcides pentadactylus*, Boulenger, *Fauna Brit. Ind.* : p. 224.
1935. *Chalcides pentadactylus*, Smith, *Fauna Brit. Ind.* 2 : p. 350.

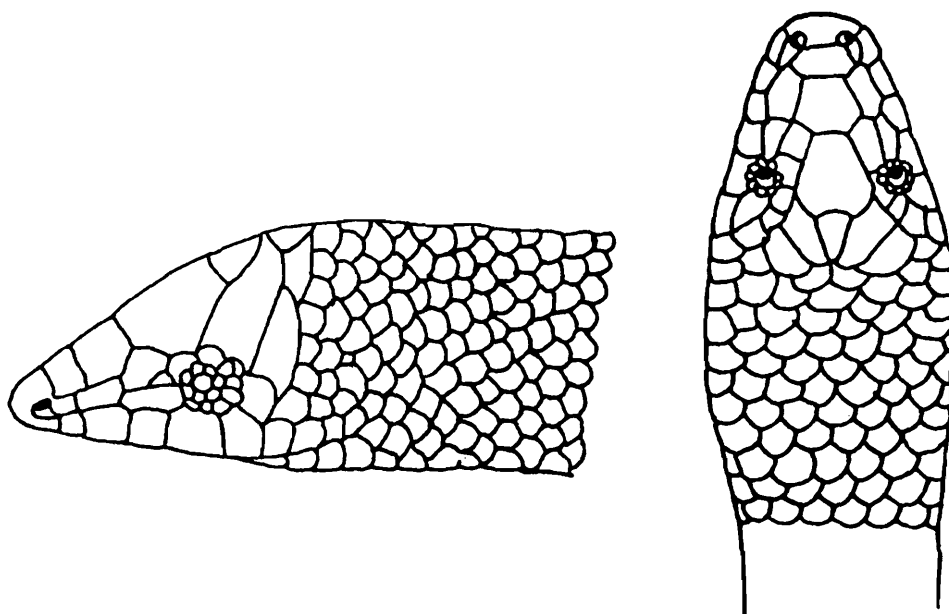


Fig. 121 : *Chalcides pentadactylus* : Head.

The dorsal colour uniform dark brown. "The anterior legs minute and fitting into a groove, fingers five, the third slightly longer than the fourth, first and fifth very small; posterior legs well formed, toes five, the fourth longer than the third, the fifth very small; form slender, four and quarter inches long, as thick as a goose-quill, two thirds, cylindrical, flat and laterally angled beneath as far as the vent; the body and tail covered with, small, smooth, lustrous, hexagonal scales, with a median row of broader subcaudals; upper lip covering the mouth, eyes minute, surrounded by small scales; no external trace of ears; nostrils in small single shields let into the posterior side of the rostral, with a small postnasal behind each, and two large shields in the loreal region between the post-nasal and the eye; rostral square behind, a single prefrontal narrow and a parallelogram in shape; post-frontal single, six-sided, vertical, broader behind; occipitals rounded behind, with a small shield between them, which is let into the posterior base of the vertical; five plates (some divided) over the eye, and between it and the vertical and post-frontal; upper labials 8-9, the fourth and fifth below the eye, some large shields over the posterior ones; the distance between the axilla of the fore and hind limbs is a little more than one and three-quarter inch; colour of a uniform dark brown; hind limbs a little more than half an inch long; fore limbs very slender, and not quite a quarter inch long. On the sandy banks of the Kuddle Poondy, a tidal river near Beypore. Described and figured from a unique specimen in Madras Museum collected by Mr. Cartor. It is very similar to Mr. Blyth's *Sphenocephalus tridactylus* from the Punjab, but as it has five fingers and toes instead of three, and the shields of the head differ considerably, it will probably have to be formed into a new genus. The eyes were injured, and I could not detect whether the lower eyelid was transparent or not." The above is the Beddome's description, quoted in full. The type and only known specimen is missing now and the true status of this species is subject to the availability of the fresh material. Many attempts were made by the author but every attempt was proved to be futile and the examination of the fresh material is still awaited.

Distribution : India (Beypore, Malabar district, Kerala).

Habits and habitat : Not known.

Status : Possibly extinct.

Genus 55. *Barkudia* Annandale 1917

1917. *Barkudia* Annandale, *Rec. Ind. Mus.* 13 : p. 20 (type *insularis*)

This genus includes a single species from Barkuda Island in Chilka Lake, Orissa, India. The main generic characters are : Palatine bones do not meet on the mid-line of the palate, which is devoid of teeth; nostril is between the nasal and the rostral, in an emargination of the rostral; supranasal shields are available; prefrontals and fronto-parietal shields are not present; body is much elongate and devoid of limbs.

244. *Barkudia insularis* Annandale 1917

(Figs. 4 & 122)

1917. *Barkudia insularis* Annandale, *Rec. Ind. Mus.* 13 : p. 20, figs. (type loc. Barkudia Island, Chilka Lake, Orissa, India).

1935. *Barkudia insularis*, Smith, *Fauna Brit. Ind.* 2 : p. 352.

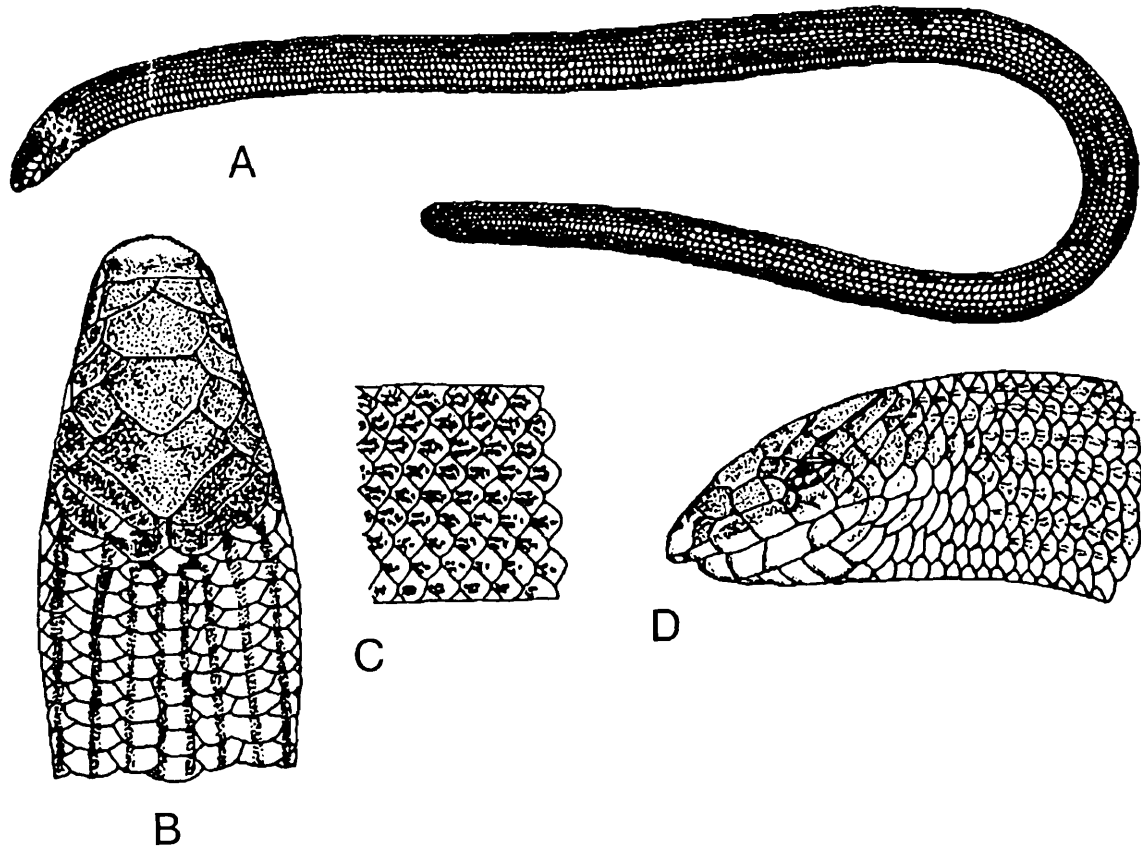


Fig. 122 : *Barkudia insularis* : A. Lateral view of the entire lizard. B. Dorsal view of head. C. Enlarged scales at middle of body. D. Lateral view of head.

This much elongated skink is with a light brown dorsal colouration; each dorsal scale is with a central dot which form 12-14 longitudinal lines on the back continuing along the tail; top of head is brownish; underside is whitish. The body is much elongated and devoid of limbs; snout is depressed, obtusely pointed, projecting strongly beyond the labial margin; nostril is between the nasal and the rostral; large supra-nasals are present in contact with one another; prefrontals and fronto-parietals are not present; frontonasal is broader than long, quite larger than the frontal; interparietal much longer than the frontal; parietals narrow, in contact with one another; supraocular are 3, the first enters the supraciliary margin, the first two in contact with the frontal; one large supraciliary in the angle formed by the 3 suboculars; nasal shield is comparatively large, the nostril is at its anterior extremity; 1 large loreal; one preocular; lower eyelid is composed of 2-3, opeque scales; upper eyelid is rudimentary; upper labials are 4 in number, the third is

below the eye; ear opening is minute; a single postmental is present; 140 ventral scales are present between the postmental and preanal plates; 20 smooth scales round the middle of the body; tail shorter than the head and body, tip is blunt, slightly narrow than the base of the tail. Standard length 115 mm.; tail length 58 mm.

Distribution : India : Orissa (Barkuda Island, Chilka Lake).

Habits and habitat : It burrows in the loose earth, in roots of trees. Insectivorous, nocturnal, most agile.

Status : Rare.

Genus 56. *Sepsophis* Beddome 1870

1870. *Sepsophis* Beddome, *Madras Month. J. Med. Sci.* 2 : p. 172 (type *punctatus*).

1887. *Sepsophis*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 423.

1935. *Sepsophis*, Smith, *Fauna Brit. Ind.* 2 : p. 353.

The genus is monotypic and distributed in Golconda Hills (Darakondah) and Gorge Hills (Godavari Valley) in Andhra Pradesh, India. The main generic characters are : Palatine bones do not meet on the mid-line of the palate; which is toothless; teeth are conical; nasal shield is reduced to a rim of tissue surrounding the nostril, which lies between the rostral, first labial, and supranasal shield; 2 azygous frontal shields are present; fronto-parietals and interparietal shields are quite distinct; lower eyelid is scaly; body is much elongate but limbs are rudimentary.

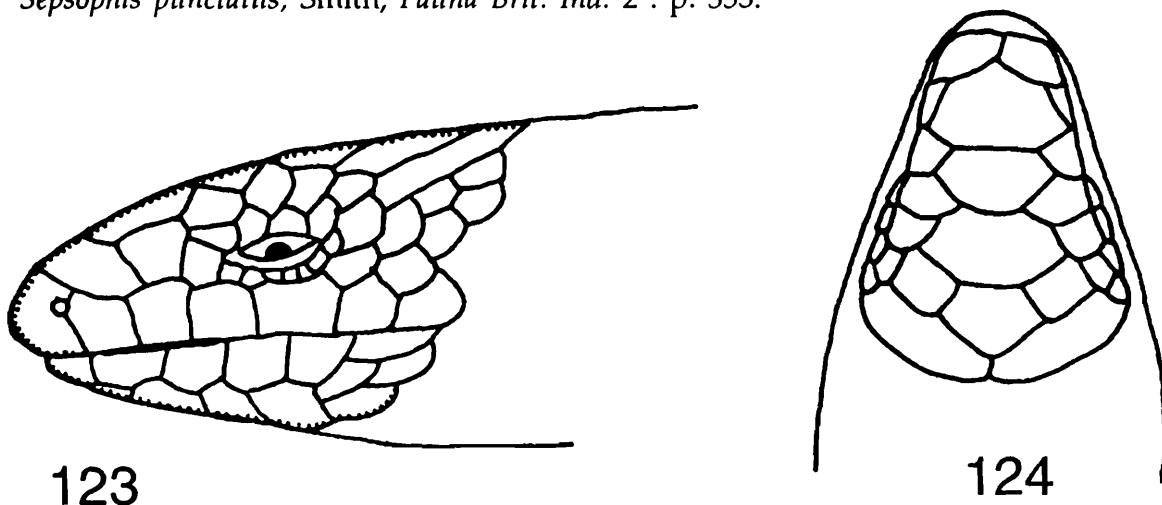
245. *Sepsophis punctatus* Beddome 1870.

(Figs. 123 & 124)

1870. *Sepsophis punctatus* Beddome, *Madras Month, J. Med. Sci.* : p. 172 (type loc. Darakondah, Golconda Hills, Andhra Pradesh).

1887. *Sepsophis punctatus*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 423, pl. 37, fig. 2.

1935. *Sepsophis punctatus*, Smith, *Fauna Brit. Ind.* 2 : p. 353.



Figs. 123-124 : 123. *Sepsophis punctatus* : Lateral view of head; 124. *Sepsophis punctatus* : Dorsal view of head.

The dorsal colouration is light brown, with two series of black spots which look like lines at about the middle of the body and such 4 lines continue on the complete dorsal aspect of the tail. Lateral aspects of the head and body are black; belly is whitish with large number of dark brown spots all over; the under side of the tail is with dark brown longitudinal lines. Body much elongated and limbs are vestigial. Snout is bluntly pointed, rarely projecting beyond the labial margin; rostral large, emarginate laterally to receive the nostril; supranasals large, in contact with one another and with the first and second labials; frontonasal broader than long, larger than the anterior frontal; 2 azygous frontal shields; supraoculars 4 in number, first two large, the first in contact with both frontals; supraciliaries are 4, first very large, entering the supraorbital region, third very small; fronto-parietals separated from one another, almost as large as the interparietal; parietals narrow, obliquely placed, in contact with one another; one or two pairs of nuchals; anterior loreal is larger than the posterior; lower eyelid is composed of 3 or 4 opeque scales; upper eyelid vestigial; upper labials are 6, the fourth is below the eye; temporal scales and body scales are alike; ear opening is minute, partly hidden by the scales; postmental is single; 117-122 ventral scales are between the postmental and the preanal plates; 20 smooth scales round the middle of the body; fore-limbs are reduced to bud-like projections situated at about the level of the 24th ventral scale; hind-limbs are indicated by a minute spur, which may be absent; tail about as long as the head and body, terminating in a blunt point.

Distribution : India : Andhra Pradesh (Golconda Hills, George Hills, Godavari Valley).

Habits and habitat : Terrestrial hill species recorded up to 300 metres, insectivorous.

Status : Rare.

Genus 57. *Chalcidoseps* Boulenger 1887

1887. *Chalcidoseps* Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 423.

1935. *Chalcidoseps*, Smith, *Fauna Brit. Ind.* 2 : p. 354.

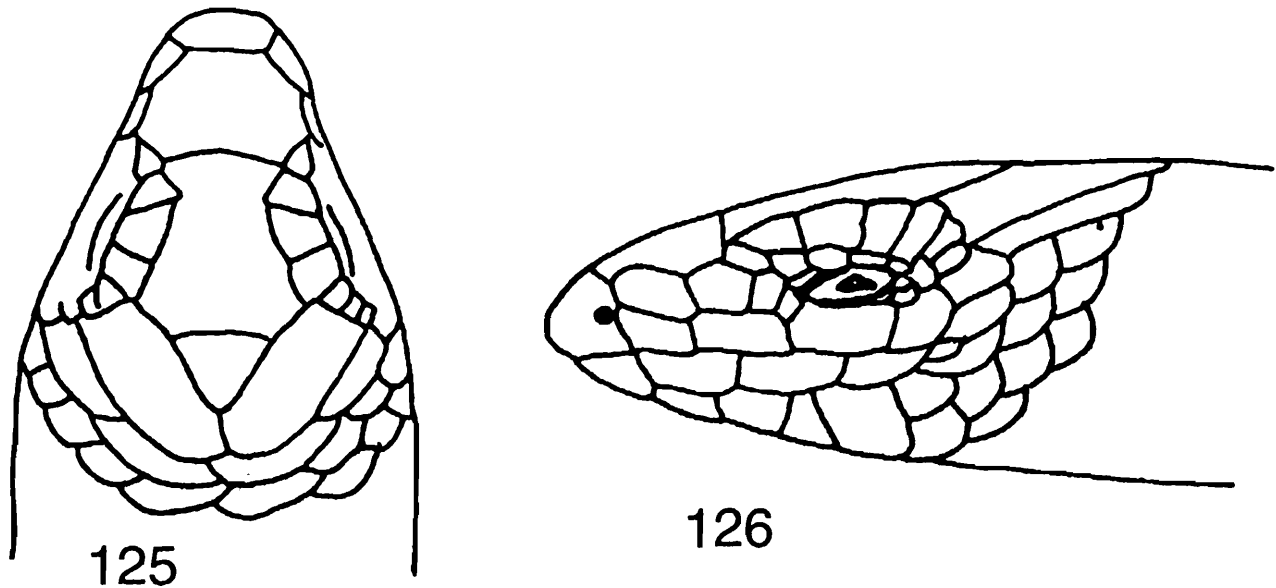
The monotypic genus is from Sri Lanka. The main generic characters are : Palatine bones do not meet on the mid-line of the palate, which is toothless; teeth are conical; nostril is pierced in the rostral, quite close to its posterior margin; supranasals are available, widely separated; prefrontals and fronto-parietals are not present; lower eyelid is scaly; body is much elongate; limbs are very short and tetradactyle.

246. *Chalcidoseps thwaitesi* (Gunther 1872) (Figs. 125 & 126, Map 72)

1872. *Nessia thwaitesii* Gunther, *Ann. Mag. Nat. Hist.* (4) 9 : p. 86 (type loc. Sri Lanka).

1887. *Chalcidoseps thwaitesi*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 423, pl. 38, fig. 1.

1935. *Chalcidoseps thwaitesi*, Smith, *Fauna Brit. Ind.* 2 : p. 355.



Figs. 125-126 : 125. *Chalcidoseps thwaitesi* : Dorsal view of head; 126. *Chalcidoseps thwaitesi* : Lateral view of head.

Dorsal colouration is dark brown or olive -brown; ventrum is light brown with a pink tinge; each scale is with a dark dot at its centre; flanks are pinkish-yellow. Snout is not depressed, slightly projecting beyond the labial margin; rostral is moderately large; supranasals are wide apart from one another, probably fused with the anterior loreal; fronto-nasal is very large, broader than long; frontal shield is quite large, as long as broad; 4 supraoculars, the first entering the lateral margin of the frontal shield, the fourth may be divided (not touching the frontal), 6 or 7 supraciliaries, the first is largest and enter into the supraorbital region; parietals are large, elongate, obliquely placed, in contact with one another behind the interparietal shield; parietals are bordered posteriorly by 4 elongated shields; a large loreal shield is present; preoculars are 1 or 2; lower eyelid is scaly; upper eyelid is rudimentary; 5 supralabials, the third is below the eye; the first two supralabials are longer than the others and may be united in to a single shield; ear-opening is minute; a single azygous postmental shield is present; body very elongate, 24 smooth scales round the middle of the body; 70-75 ventral scales between the fore-limbs and the vent; preanal shields are slightly enlarged; limbs are very short, each with 4 short toes, the length of the fore-limb is contained about nine times in the distance between axilla and groin; tail is cylindrical, as thick as the body at its base; a little shorter than the head and body. Standard length 75 mm., tail length 70 mm.

Distribution : Sri Lanka (Mousakanda; Gammaduwa, Central Provinces (Map 72).

Habits and habitat : Diurnal, Terrestrial, found among dead leaves and vegetation at between 4000 to 5200 feet altitude (*Deraniyagala*), insectivorous. Nothing is known about other habits.

Status : Rare.

Genus 58. *Nessia* Gray 1839

1839. *Nessia* Gray, *Ann. Mag. Nat. Hist.* 2 : p. 336 (type *burtoni*)
 1839. *Evesia* Gray, *Ann. Mag. Nat. Hist.* 2 : p. 336 (type *monodactyla*).
 1843. *Pseudodactylus* Fitzinger, *Syst. Rept.* : p. 23, (type *Evesia belli*).
 1860. *Tetrapedos* Jan, *Arch. f. Naturg Berlin*, : p. 69 (type *smithii*)
 1887. *Acontias*, (in part) Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 424.
 1931. *Acontias (Nessia)*, Deraniyagala, *Ceylon J. Sci.*, B, 16 : p. 176.
 1934. *Auguinicephalus* Deraniyagala, *Ceylon J. Sci.* B, 18 : p. 232 (type *layardi*).
 1935. *Nessia*, Smith, *Fauna Brit. Ind.* 2 : p. 356.

This genus from Sri Lanka includes 6 species. The main generic characters are : Palatine bones do not meet on the mid-line of the palate, which is toothless; pterygoid bones deeply emarginate on their inner, posterior borders; teeth are pointed and projecting backwards; nostril is pierced in the anterior portion of a large rostral, connected with its posterior margin by a horizontal suture; supranasals, prefrontals, and fronto-parietals are not present; eyes are small; lower eyelid is movable; ear opening is minute or may be absent; body very elongate; limbs are rudimentary or may be absent.

Key to the species of genus *Nessia*

- I. Frontal is narrower than interparietal.
1. Limbs are present, tridactyle; 24 scales round the middle of the body.
 *Nessia burtoni*
 2. Limbs are present, didactyle; 24 scales round the middle of the body
 *Nessia didactyla*
 3. Limbs are present, but bud-like; 24-26 scales round the middle of the body.....
 *Nessia monodactyla*
 4. Only hind-limbs are present, but bud-like; 28 scales round the middle of the body.
 *Nessia bipes*
 5. Limbs are not at all present; 22-24 scales round the middle of the body; no ear-opening *Nessia layardi*
- II. Frontal is broader than interparietal; only hind-limbs are present, but bud-like; 22 scales round the middle of the body. *Nessia sarasinorum*

247. *Nessia burtoni* Gray 1839

(Map 71)

1839. *Nessia burtonii* Gray, *Ann. Mag. Nat. Hist.* 2 : p. 336 (type loc. not known.)
 1887. *Acontias burtonii*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 425.
 1931. *Acontias (Nessia) burtonii*, Deraniyagala, *Ceylon J. Sci.*, B, 16(2) : p. 177.
 1935. *Nessia burtoni*, Smith, *Fauna Brit. Ind.* 2 : p. 357.

Dorsal colouration is light brown, the scales are tipped or edged with dark brown, the general appearance being almost uniform brown or reddish-brown; ventrum is light brown. Snout is subacuminate, at least two times longer than the orbit, strongly projecting beyond the lower jaw; rostral is about two-fifths as long as the snout; fronto-nasal shield is longer than the rostral, always narrower in front than behind; frontal shield is longer than the fronto-nasal, mesially notched on each side by the first supraocular; interparietal is broader than the frontal; parietal shields are narrow, obliquely placed, in contact with each other behind the interparietal, bordered on each side by an elongated temporal shield; 4 supraocular shields are present, the first two are in contact with the frontal; 5 supraciliaries are present, the first one is quite large; one long loreal is present, which is sometimes divided in the middle; a preocular shield is available; the lower eyelid is with an opeque disc or partly divided into scales; upper eyelid is rudimentary; 4 supralabials are present, the first one is very long, the second is below the eye; mental shield is large, with an azygous shield behind it; ear-opening is punctiform; body is much elongated; 26-28 smooth scales round the fore-part of the body, 24 scales round the middle, dorsal scales are largest; preanal scales may or may not be enlarged, in some individuals these are feebly enlarged; limbs are very short, tridactyle, clawed; fore-limb originate at about the level of the 20th ventral scale, about as long as four scales, shorter than the hind-limb; tail is about three-quarters the length of the head and body, bluntly pointed. Standard length 75 mm., tail length 57 mm.

Distribution : Sri Lanka (central, western, and Sabaragamuwa Provinces) (Map 71).

Habits and habitat : Found in hilly areas about 100 feet above sea level, lives in earth, under decaying vegetable matter or under stones; food mainly comprises the worms but the diet is supplemented by soft bodied insects and other arthropods; oviparous, eggs are large, elongate and generally 2 in number.

Status : Common.

248. *Nessia didactyla* (Deraniyagala 1934)
(Map 72)

1934. *Acontias (Nessia) didactylus* Deraniyagala, *Ceylon J. Sci.*, B. 18 : p. 232 (type loc. Polgehavala, Central Province, Sri Lanka).

1935. *Nessia didactyla*, Smith, *Fauna Brit. Ind.* 2 : p. 358.

The species is quite similar to *Nessia burtoni* in colouration, habitus etc. but differs in having snout is broader and more obtuse; rostral shield is larger; fronto-nasal is broader and shorter. Limbs are with two minute toes only; the fore-limb originates at about the 24th ventral scale, not much longer than one scale, shorter than the posterior limb; 28 scales round the fore-part of the body, 24 scales round the middle of the body. Standard length 65 mm., tail length 49 mm.

Distribution : Sri Lanka (Polgehavala, Central Province). Known from the two type specimens only (Map 72).

Habits and habitat : Must be similar to the *N. burtoni*.

Status : Rare.

249. *Nessia monodactyla* (Gray 1839)

(Map 74)

1839. *Evesia monodactylus* Gray, *Ann. Mag. Nat. Hist.* 2 : p. 336 (type loc. not known).

1864. *Nessia monodactyla*, Gunther, *Rept. Brit. Ind.* : p. 97.

1887. *Acontias monodactylus* Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 425.

1931. *Acontias (Nessia) monodactylus*, Deraniyagala, *Ceylon, J. Sci.*, B, 16 : p. 178.

1935. *Nessia monodactyla*, Smith, *Fauna Brit. Ind.* 2 : p. 358.

Similar to *N. burtoni* in colouration and general scalation but differs in the following characters : Snout broader and more obtuse; rostral larger; fronto-nasal is broader and shorter, as long as the rostral, not much narrower in front than behind; 3 supraocular shields, the first notching the lateral border of the frontal; first supraciliary is larger, limbs are reduced to undivided bud-like appendages; 24 or 26 scales round the middle of the body. Standard length 90 mm., tail length 68 mm.

Distribution : Sri Lanka (Central and Uva Provinces) (Map 74).

Habits and habitat : Must be similar to *N. burtoni*

Status : Rare.

250. *Nessia bipes* Smith 1934

(Map 49)

1934. *Acontias (Evesia) smithi* Deraniyagala, *Ceylon J. Sci.* B, 18 : p. 232 (type loc. Gammaduva, C.P., Sri Lanka).

1935. *Nessia bipes* Smith, *Fauna Brit. Ind.* 2 : p. 359.

This species is quite similar to the *Nessia monodactyla* and other species in colouration and head-scalation but differs in having a bud-like pair of hind-limbs only and in having 28 scales round the middle of the body and also the same scale count at the anterior part of the body. Standard length 80 mm., tail length 60 mm.

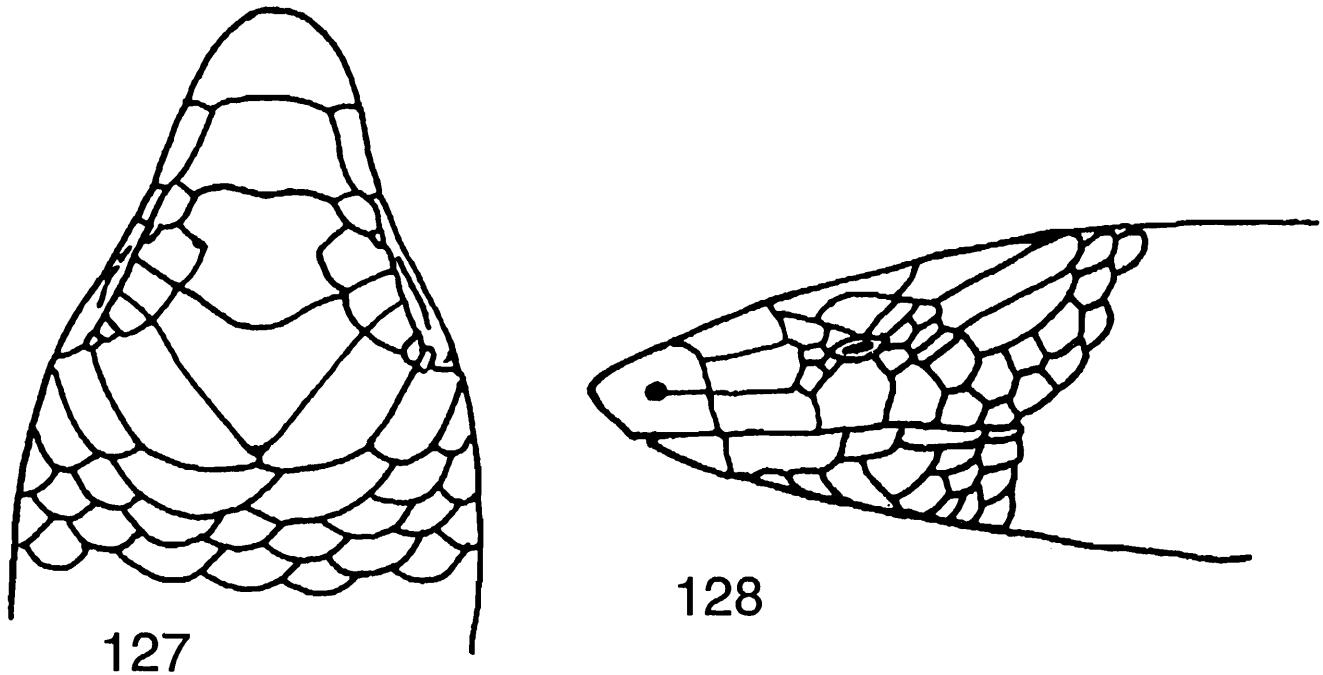
Distribution : Sri Lanka (Gammaduva, Central Province). Known from the type locality only (Map 49).

Habits and habitat : Must be similar to the preceding species.

Status : Rare.

251. *Nessia layardi* (Kelaart 1853)

(Figs. 127 & 128)

1853. *Acontias layardi* Kelaart, *Prodr. Faun. Zeyl.* 2 : p. 12 (type loc. Colombo)1931. *Acontias (Nessia) layardi*, Deraniyagala, *Ceylon J. Sci.*, B, 16 : p. 179, pl. 38.1934. *Acontias (Anquinicephalus) layardi* Deraniyagala, *Ceylon J. Sci.*, B, 18 : p. 231.1935. *Nessia layardi* Smith, *Fauna Brit. Ind.* 2 : p. 359.

Figs. 127-128 : 127. *Nessia layardi* : Dorsal view of head; 128. *Nessia layardi* : Lateral view of head.

The species is quite similar to *N. burtoni* in general scalation and colouration but differs in the following characters : Fronto-nasal is broader and shorter, shorter than the frontal shield; 3 supraocular shields, the first only is contact with the frontal, notching its lateral margin; first supraciliary is much larger, entering the supraorbital region; a pair of nuchal shields is generally present; there is no ear opening, 24-26 scales round the anterior portion of the body, 22 or 24 scales round the middle of the body; limbs are not present; on each side of the vent, in a depression of the body and more or less hidden by scales, a minute horny tubercle is present, which represents the rudiment of the hind-limb.

Distribution : Sri Lanka (Central Province).

Habits and habitat : Nothing is known.

Status : Rare.

252. *Nessia sarasinorum* (Muller 1889)

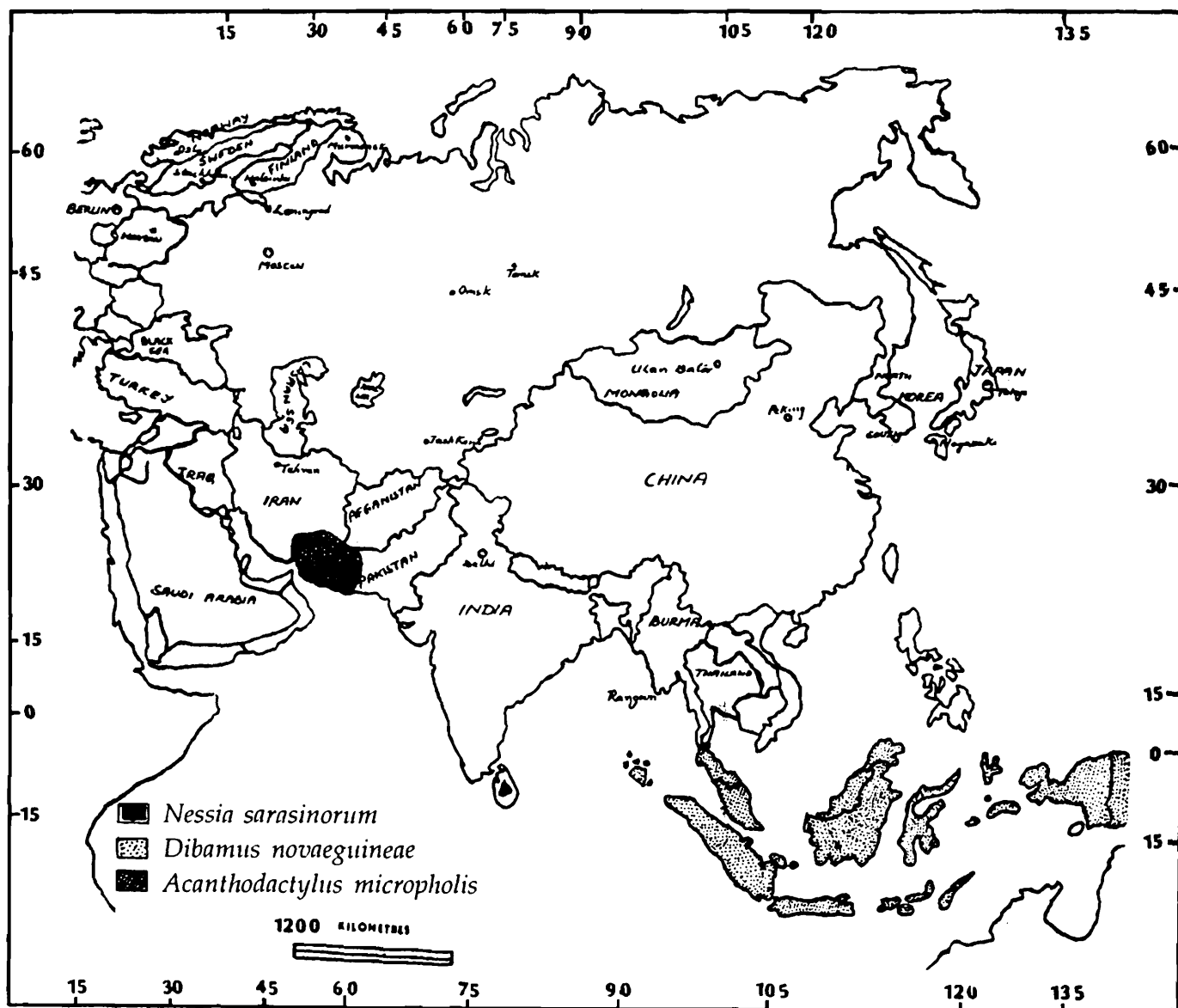
(Map 73)

1889. *Acontias sarasinorum* Muller, *Verh. Nat. Ges. Basel*, 8 : p. 702. pl. 10 (type loc. Inamalua, Sri Lanka).

1931. *Acontias (Nessia) sarasinorum*, Deraniyagala, *Ceylon. J. Sci.*, B. 16(2) : p. 178.

1935. *Nessia sarasinorum* Smith, *Fauna Brit. Ind.* 2 : p. 360.

This species is also quite similar to *Nessia burtoni* in general scalation and colouration but differs in the following characters: Snout is shorter and broader, fronto-nasal is broader and shorter than the frontal; interparietal shield is narrower than the frontal shield; 2 loreals are present; 22 scales round the middle of the body; preanal shields are prominent and distinctly enlarged; fore-limbs are not available; hind-limbs are present, which are undivided and bud-like.



Map 73 : Distribution of *Nessia sarasinorum*, *Dibamus novaeguineae* and *Acanthodactylus micropholis*.

Distribution : Sri Lanka (Inamalua village near Dambulla in the northern part of central Province; Batticaloa, Eastern Province) (Map 73).

Habits and habitat : Nothing is known.

Status : Rare, known by two specimens only.

Family 6. DIBAMIDAE Boulenger 1884.

1884. *Dibamidae* Boulenger, *Ann. Mag. Nat. Hist.* (5) 14 : p. 120.

1935. *Dibamidae* Smith, *Fauna Brit. Ind.* 2 : p. 360.

This family comprises the degraded burrowing lizards, of uncertain origin, accumulated in a single genus *Dibamus* from Southern Vietnam and the Philippine Islands to the New Guinea Archipelago (the Moluccas, Celebes, the Nicobar Islands and New Guinea). These lizards are popularly called as "old world burrowing lizards". The body is worm-like, covered with cycloid imbricate scales; devoid of osteoderms. Eyes and ears are covered by skin. Fore-limbs are not present but the hind-limbs are represented in males by the short, scaled stump-like or flipper-shaped vestiges, lying in a deep groove in the body on either side of the vent. Tail is very short. The tongue is short; bifid behind; pointed or arrow-shaped; undivided in front; covered with transverse, slightly curved lamellae or papillae. Teeth are pointed and hooked; palate is toothless; insertion of teeth is not known. Preanal pores are available. Pectoral girdle is represented by the vestiges of the scapulo-coracoid and sternum, other parts have disappeared; pelvic girdle is reduced to an elongated ilium and a short structure representing ischium and pubis, which form the acetabulum cavity. All these structures of pelvis are firmly united with the ilium. The rudimentary hind-limb still bears an united tibia and fibula and a fragment of the tarsus, the femur is not represented. The temporal arcade is absent; there are no cranial arches; epiptyerygoid bones and infra orbital foramen are missing; the premaxillaries are fused; the quadrate bone is greatly expanded antero-posteriorly. Vertebral column is composed of 116 vertebrae (between the occiput and the sacrum); tail is with 22 vertebrae. Abdominal (parasternal) ribs are available and complete except in the posterior part of the body. A chain of tracheal rings extend more than half way down the body.

Genus 59. *Dibamus* Dumeril and Bibron 1839

1839. *Dibamus* Dum. & Bibr., *Erp. Gen.* 5 : p. 833 (type *novae-guineae*).

1864. *Typhloscincus* Peters, *Mon. Akad. Berlin.* : p. 271 (type *martensi*).

1867. *Rhinophidon* Steindachner, *Reise Novora, Rept.* : p. 53 (type *nicobaricum*).

1935. *Dibanus*, Smith, *Fauna, Brit. Ind.* 2 : p. 361.

The genus includes 3 species distributed in Vietnam, Philippine Islands, the Moluccas, Celebes, the Nicobar Islands and New Guinea. Only one species has been included in the

present work. The main generic characters are : Snout is covered by a thickened shield which is distinctly divided by sutures, nostril is pierced in the anterior portion of this snout-scale and connected to the posterior margin by a horizontal suture; frontal, interparietal and two oculars on each side are distinct (in all 4 head shields), labials are united into a long shield. Ear-opening is not present. Tail is quite short and tip is obtusely pointed.

253. *Dibamus novae-guineae* Dumeril and Bibron 1839
(Figs. 129 & 130, Map 73)

1839. *Dibamus novae-guineae* Dum. & Bibr., *Erp. Gen.* 5 : p. 834 (type loc. New Guinea).
 1839. *Acontias subcaecus* Dum. & Bibr., *Erp. Gen.* 5 : p. 835 (*nom. manuscrip*).
 1860. *Typhlina leucurus* Bleeker, *Natur. Tijdschr. Ned. Ind.* 20 : p. 328 (type loc. Agam, Sumatra).
 1860. *Typhlina ludekingi* Bleeker, *Natur. Tijdschr. Ned.-Ind.* 21 : p. 297.
 1864. *Typhloscincus martensi* Peters, *Mon. Akad. Berlin*, : p. 271, pl., fig. 1 (type loc. Ternate).
 1867. *Rhinophidion nicobaricum* Steindachner, *Reise Novara, Rept.* : p. 53 (type loc. Nicobar Islands).
 1867. *Typhloscincus nicobaricus*, Steindachner, *Reise Novara, Rept.* : Appendix p. 94, pl. 3, figs. 6-8.
 1873. *Dibamus nicobaricus*, Stoliczka, *J. Asiat. Soc. Beng.* 42 : p. 168.
 1935. *Dibamus novae-guineae*, Smith, *Fauna Brit. Ind.* 2 : p. 362.

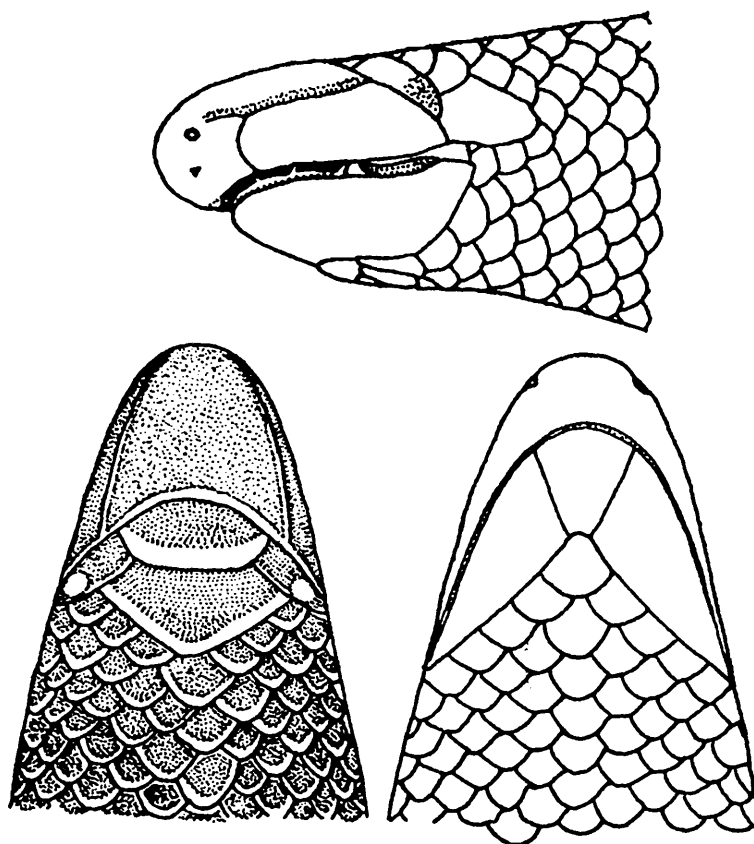


Fig. 129 : *Dibamus novae-guineae* : Upper, lower and side views of head.

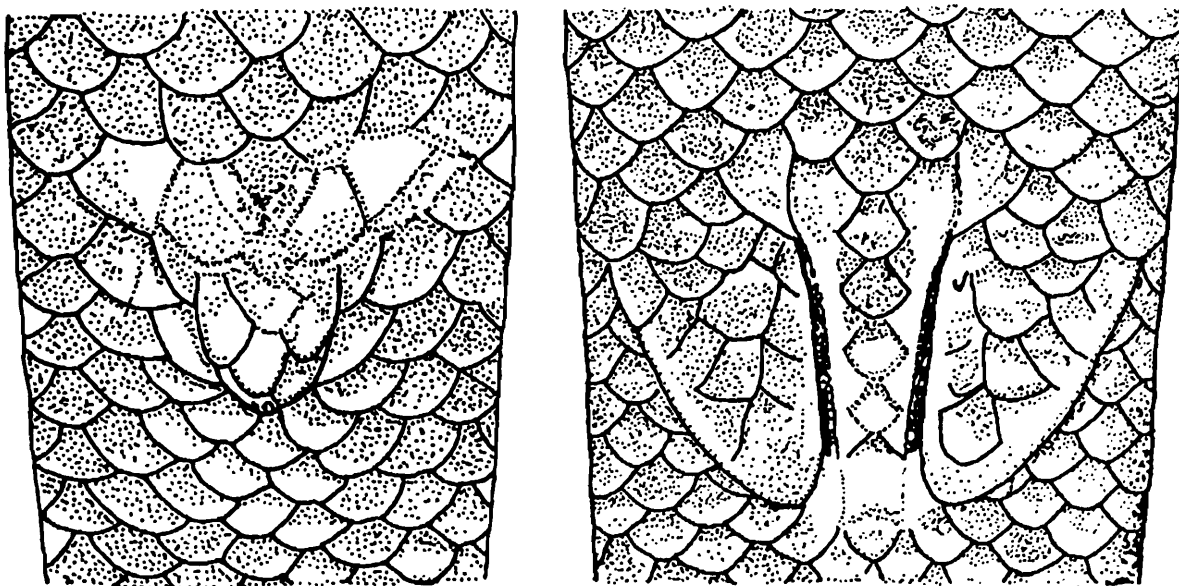


Fig. 130 : *Dibamus novae-guineae* : A. Anal region of female. B. Anal region of male.

The dorsum is uniform purplish-brown; belly is light yellow. The body is vermiform, covered with cycloid imbricate scales, no osteoderms; eyes concealed under the skin, fore limbs absent; the hind pair if represented in the male by a pair of short, scaled, flipper-like appendages, lying in a deep groove in the body on either side of the vent; Tail short and obtusely pointed; Preanal pores present. Snout conical, slightly depressed, obtusely pointed, projecting beyond the lower jaw; the shields covering the snout are entire; interparietal is larger than the frontal, both are broader than long; postero-dorsal aspect of head is with uniform cycloid scales; all the scales of the upper lip unite and form a single long supralabial, behind it one more small scale partly borders the mouth; mental is elongate; one long infralabial is present on either side; body scales equal, smooth, 22-26 round the body; preanals slightly enlarged. Standard length 165 mm.; tail length 20 mm.

Distribution : India : Nicobar Islands. Elsewhere : All the islands from Nicobar to New Guinea (Map 73).

Habits and habitat : Fossorial (burrowing), oviparous (lays a single oval egg at a time, shell is brittle and highly calcareous), insectivorous.

Status : Nowhere common but not endangered.

Family 7. LACERTIDAE Gray 1825

1825. *Lacertinidae* Gray, *Ann. Philos.* 26 : p. 200.

1864. *Lacertidae*, Cope, *Proc. Acad. Philad.* : p. 228 (in part)

1935. *Lacertidae*, Smith, *Fauna Brit. Ind.* 2 : p. 363.

This family during recent times is confined to the parts of the old world and mostly comprises the terrestrial, ground dwelling lizards, which prefer to live in open rocky or sandy places. They are available in Europe, Asia and Africa, but not found in Madagascar and Australia. They are comparatively in a larger number in Africa than the other parts of their range, their number is least in the Oriental Region. The exact phylogeny of the Lacertidae is not known, but according to Boulenger it might have evolved from the family Teiidae, now inhabiting America, but which may have had its few ancestral forms in the old world in Eocene period, and it seems to be at least as old as the Cretaceous. Both the families Lacertidae and Teiidae are closely allied and the difference exists only in the dermal ossification over the skull and in dentition.

The main food of the Lacertids, comprises small invertebrates; amphibians; small lizards, snakes and mammals (anything which they can over power easily). At present family represents 20 genera and over 60 species. The main character of the family are : The body is covered with scales, the head scales have osteoderms, which in most species fuse with the top of the skull. The head is quite distinct from the neck. Limbs are always well developed and the tail is quite long. The tongue is long, deeply notched anteriorly, covered with scale-like papillae or transverse or V-shaped plicae directed forwards; Teeth are pleurodont (born on the sides of the jaws); hollow at the base, the lateral teeth are generally bi-or tricuspid. Temporal and postorbital arches are present, but the temporal fossa is reduced and covered by the postfrontal; premaxillary bones are fused and form a single bone; nasal and frontal bones are paired; parietal is single; postorbital and post-fronto-squamosal arches are entire (complete); palatine and pterygoid bones do not meet on the mid-line; skull is completely roofed by the bony dermal plates over the supratemporal fossae, which fuse with the bones of the skull, when in contact with them; dermal ossification is not present on the body. The dorsal aspect of head is covered with symmetrical shields and the ventral and dorsal scalation is distinctly differentiated. Femoral organs are present in most species.

Key to the genera of family LACERTIDAE

1. Dorsal scales are large and keeled; flanks are with granule like scales; only 3 femoral pores are present *Takydromus*
2. Dorsal scales are 26-36 across the middle of the body; 14-20 median dorsal scales are much larger, strongly keeled, overlapping; nostril between the two nasals and the first labial; digits are fringed laterally..... *Acanthodactylus*
3. Dorsal scales are pointed, strongly keeled and overlapping; a fold is present in front of the shoulder; collar is not present; lower eye-lid is with a large semitransparent disc. distinct from the small upper lid; nostril is between the two or three nasals, not touching the first labial. *Cabrita*

4. Dorsal scales are pointed, strongly keeled and overlapping; a fold is available in front of the shoulder; no distinct collar is present; lower eyelid is with a large semitransparent disc, completely fused with the upper eyelid (which is extremely small or vestigial); nostril is between 2-4 nasals. *Ophisops*
5. Dorsal scales are small or granular, subimbricate or juxtaposed; a distinct collar is available; lower eyelid is scaly or with a semitransparent disc formed of two or more scales; nostril is between the two large anterior and a small posterior shield.
..... *Eremias*

Genus 60. *Takydromus* Daudin 1802

1802. *Takydromus* Daudin, *Hist. Nat. Rept.* 3 : p. 251 (type *quadrilineatus*).

1888. *Tachydromus*, Gunther, *Ann. Mag. Nat. Hist.* (6)1 : p. 166.

1935. *Takydromus*, Smith, *Fauna Brit. Ind.* 2 : p.

This genus comprises about 10 species from S.E. China and Japan; Vietnam and Malaysian region. The main generic characters are : The head shields are normal, comprising a fronto-nasal, a pair of parietal shields, a pair of prefrontals, a frontal, a pair of frontoparietals, an interparietal and an occipital; nostril is between the nasal, one or two postnasals, and the first labial; lower eyelid is scaly; collar may be present or absent; back with large, strongly keeled plates which form continuous lines; flanks with small granular or pointed scales; ventral plates are large, imbricate, the outer plate is always keeled. Limbs are well developed, digits are cylindrical, long or very long; femoral pores are 1-3.

Key to the species of genus *Takydromus*

- I. 4-6 rows of longitudinal dorsal plates; submaxillary shields are in 3 pairs.
1. Seven to ten vertical series of granular scales on the flanks.
 - i. Two femoral pores on either side *Takydromus sexlineatus sexlineatus*
 - ii. One femoral pore on each side. *Takydromus sexlineatus ocellatus*
 2. Three to five vertical series of pointed and keeled scales on the flanks, 2 or 3 femoral pores on either side. *Takydromus sexlineatus khasiensis*
- II. Always 6 rows of longitudinal dorsal plates; submaxillary shields are in 4 pairs.
..... *Takydromus haughtonianus*

254. *Takydromus sexlineatus sexlineatus* (Daudin 1802)

(Fig. 131, Map 72)

1802. *Takydromus sexlineatus* Daudin, *Hist. Nat. Rept.* 3 : p. 256, pl. 39 (type loc. Indes orientalis).

1802. *Takydromus quadrilineatus* Daudin, *Hist. Nat. Rept.* 3 : p. 252 (type loc. not known).

1863. *Tachydromus sexlineatus aeneofuscus* Peters, *Mon. Akad. Berlin*, : p. 405 (type loc. not known)
 1864. *Tachydromus sexlineatus*, Gunther, *Rept. Brit. Ind.* : p. 69, pl. 8, fig. C.
 1935. *Tachydromus sexlineatus sexlineatus*, Smith, *Fauna Brit. Ind.* 2 : p. 366.

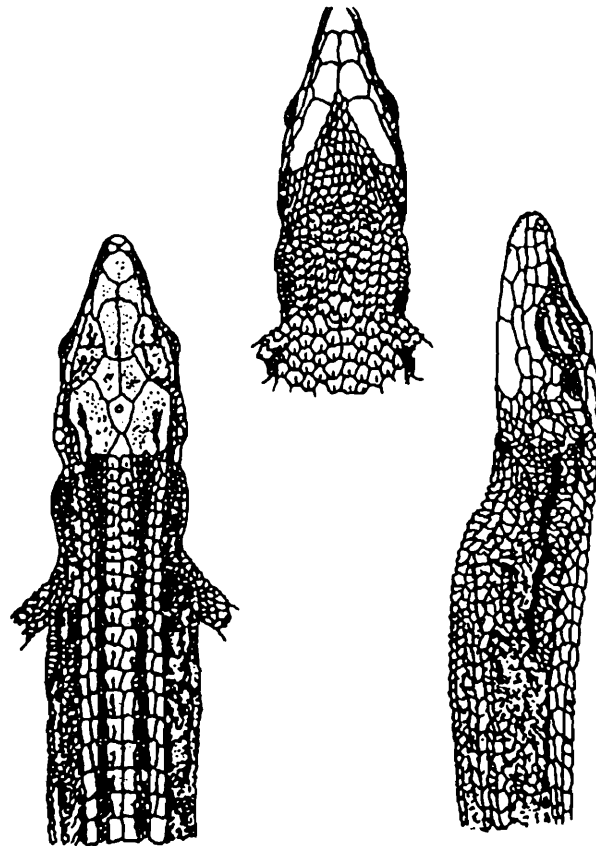


Fig. 131 : *Tachydromus sexlineatus* : A. Lower view; B. Dorsal view. C. Side view.

The dorsum brown or greenish-brown, with a metallic gloss; a light green dorso-lateral stripe emerging from above the eye and reaching up to the base of the tail; this stripe is generally edged above and below with black; flanks are with white black-edged spots; upper head shields and upper parts of tail are with small black spots; upper lip greenish-white; belly is whitish with a greenish tinge. Snout acute; nasals touching each other behind the rostrail; frontonasal single, as long as broad; prefrontals in contact with one another; supraoculars are 3, in contact with the supraciliaries, the first two are largest, the first supraocular is in contact with the posterior loreal; generally 3 and rarely 4 supraciliaries; interparietal is about half the size of the frontoparietals, usually larger than the occipital; anterior loreal is smaller than the posterior loreal; temporal scales are strongly keeled, the upper two or three make a border with the parietal are larger than the others; generally fifth rarely sixth, supralabial is subocular; there are three pairs of submaxillary shields; collar indistinct, not free; 17-24 gular scales on a line between submaxillary shields and collar, those on the anterior half of the gular region are more elongate and much

smaller than those on the posterior half; dorsal plates truncate and mucronate behind, in 6 rows across the nape, 4 across the back; scales on the flanks are small, granular and wedged between the larger scales (7-10 scales in a vertical series between the dorsal and ventral plates); ventral plates strongly keeled and mucronate, in 10 longitudinal series (six of these are on the belly proper, others on the lower flanks); 21-28 scales between the collar and the groin; a single large preanal plate is present; tail is extremely long, caudal scales are as large as the dorsal plates. Strongly keeled and mucronate; two femoral pores on each side; the hind-limb reaches to the elbow or to the axilla. Standard length 60 mm., tail length 300 mm.

Distribution : India : Assam. Elsewhere : Burma, Java, Sumatra and Borneo (Map 72).

Habits and habitat : Insectivorous, diurnal, terrestrial.

Status : Quite common.

255. *Takydromus sexlineatus ocellatus* Guerin 1829

(Map 71)

1829. *Tachydromus ocellatus* (Cuv.) Guerin, *Regne Anim., Rept.* : pl. 5, fig. 3 (type loc. les Indes Orientales).
1838. *Tachydromus typus* Gray, *Ann. Mag. Nat. Hist.* 1 : p. 389 (type loc. China).
1845. *Tachydromus typicus*, Gray, *Cat. Liz. Brit. Mus.* : p. 52.
1864. *Tachydromus meridionalis* Gunther, *Rept. Brit. Ind.* : p. 70, pl. 8, fig. D (type loc. S. China; same specimens as *Tachydromus typus* Gray).
1916. *Tachydromus sexlineatus*, Smith, *J. Nat. Hist. Soc. Siam*, 2 : p. 155.
1923. *Tachydromus sexlineatus*, Smith, *J. Nat. Hist. Soc. Siam*, 6 : p. 200.
1925. *Tachydromus sexlineatus meridionalis*, Stejneger, *Proc. U.S. Nat. Mus.* 66 : p. 55.
1935. *Takydromus sexlineatus ocellatus*, Smith, *Fauna Brit. Ind.* 2 : p. 368.

General dorsal colouration and scalation etc. are quite similar to *Tachydromus sexlineatus sexlineatus* but differs from it in the following way : Upper head shields are rough and rugose; dorsal plates in many individuals are in 6 rows across the middle of the back; reduction of dorsal plates from 6 to 4 never takes place until past the middle of the body, ventral plates are generally in 10-12 longitudinal series but in rare cases some individuals are with 14 longitudinal series. Only one femoral pore is present on each side.

Distribution : Burma (Kalaw, Martban) , Thailand, Vietnam, Southern China; Hong-Kong, Hainan; northern Malaysia (Jalor in Patani, Kelantan) (Map 71).

Habits and habitat : Terrestrial; inhabit grassy areas; diurnal, insectivorous; oviparous, 2 or 3 eggs are laid on the ground under the cover of grass tuft or in the root branchings of trees and bushes.

Status : Common in Thailand and Vietnam but its population seems to be comparatively less in Burma and Malaysia.

256. *Takydromus sexlineatus khasiensis* (Boulenger 1890)
(Map 45)

1890. *Tachydromus sexlineatus*, Boulenger, *Fauna Brit. Ind.* : p. 169 (in part)
 1917. *Tachydromus khasiensis* Boulenger, *Mem. Asiat. Soc. Beng.* 5 : p. 221 pl. 47, fig. 1 (type loc. Khasi Hills).
 1935. *Takydromus sexlineatus khasiensis*, Smith, *Fauna Brit. Ind.* 2 : p. 369.

The dorsum is greenish-brown with a metallic gloss; a light dorsolateral stripe emerges from the eye and extends up to the base of the tail, it is bordered above and below with black spots which in many individuals form a continuous line; a black streak along the side of the head through the ear, and along the flank to the hind-limb; under parts are greenish-white. In habitus and general pholidosis this species resembles much with *T.s. sexlineatus* except that frontonasal is generally broader than long; fourth or fifth labial subocular; scales on the flanks are larger, pointed, keeled, bordered above and below by larger strongly keeled scales, 3-5 small scales in a vertical series between the larger ones; 2-3 femoral pores on each side. Standard length 52 mm.; tail length 120 mm.

Distribution : India : Assam (The Khasi Hills, Cachar). Elsewhere : Burma (Map 45).

Habits and habitat : Insectivorous, diurnal, terrestrial.

Status : Rare.

257. *Takydromus haughtonianus* Jerdon 1870

1870. *Tachydromus haughtonianus* Jerdon, *P. Asiat. Soc. Beng.* : p. 72 (type loc. Golpara, Assam).
 1890. *Tachydromus tachydromoides* (not of Schlegel). Boulenger, *Fauna Brit. Ind.* : p. 169 (in part).
 1905. *Tachydromus septentrionalis* (not of Gunther), Annandale, *P. Asiat. Soc. Beng.* (2) 1 : p. 139.
 1935. *Takydromus haughtonianus*, Smith, *Fauna Brit. Ind.* 2 : p. 369.

The dorsal colouration is reddish-brown, with a broad light green stripe on either side emerging from the supraciliary edge; just below this, a dark brown lateral streak is also available in most of the examples; belly is greenish-white. In general habitus and scalation this species resembles much with the *T. s. sexlineatus* except that head is longer and narrower; fronto-nasal distinctly longer than broad; 5 or 6 supraciliaries, the last 3 or 4 are much smaller than the others; interparietal larger; anterior loreal not half as large as the posterior; fifth supralabial subocular; 4 pairs of submaxillary shields, the first two pairs are in contact with their follows : 27 gular scales are on the median line; dorsal plates are in 6 rows across the neck and back, in 8 rows just behind the occiput; 29 ventral plates between the collar and groin; a single femoral pore on either side; the hind-limb reaches to the elbow. Standard length 60 mm.; tail length 145 mm.

Distribution : India : Assam (Goalpara).

Habits and habitat : Insectivorous, terrestrial and diurnal.

Status : Very rare.

Genus 61. *Acanthodactylus* wiegmann 1834

1834. *Acanthodactylus* Wiegmann, *Herp. Mex.* : p. 10 (type *Lacerta boskiana* Lichtenstein)
 1838. *Ida* (not of Gray 1828), Gray, *Ann. Mag. Nat. Hist.* 1 : p. 281.
 1843. *Photophilus* Fitzinger, *Syst. Rept.* : p. 20 (type *A. scutellatus*)
 1935. *Acanthodactylus*, Smith, *Fauna Brit. Ind.* 2 : p. 370.

This genus includes about 12 species distributed from North Africa and the Mediterranean coast of France to desert portion of north western India; Spain and Portugal. The main generic characters are : Head-shields normal (a fronto-nasal, a pair or prefrontals, a frontal, a pair of fronto-parietals, a pair of parietals, an interparietal and an occipital) except that the occipital is sometimes rudimentary or may be even absent; nostril is between the two nasals and the first labial; lower eyelid is scaly; collar is distinct; dorsal scales are small and juxtaposed or large and imbricate; ventral plate like shields are subquadrangular, smooth and imbricate; digits are subcylindrical, with keeled lamellae below and a distinct lateral denticulation, at least on the outer side of the toes. Femoral pores are available.

Key to the species of genus Acanthodactylus

- I. Dorsum is with large strongly keeled scales. which are much larger than the scales present on flanks.
 1. 26-36 dorsal scales across the middle of the body.
 *Acanthodactylus cantoris cantoris*
 2. 40-46 dorsal scales across the middle of the body.
 *Acanthodactylus cantoris blanfordi*
- II. Dorsum is with scarcely larger feebly keeled scales than the scales present on flanks; more than 54 dorsal scales across the middle of the body.
 *Acanthodactylus micropholis*

258. *Acanthodactylus cantoris cantoris* Gunther 1864

(Fig. 7, Map 46)

1864. *Acanthodactylus cantoris* Gunther, *Rept. Brit. Ind.* : p. 73 (type loc. Ramnagar)
 1884. *Acanthodactylus micropholis* (not of Blanford), Murray, *Zool. Sind* : p. 348.
 1935. *Acanthodactylus cantoris cantoris*, Smith, *Fauna Brit. Ind.* 2 : p. 371.

The dorsum of juveniles and semiadults is with black and white longitudinal streaks, 5 white streaks on the nape, 4 or 5 on the middle of back and three on the base of tail; a light lateral denticulated streak starting from the ear and terminating at the groin; head with black symmetrical markings; upper lip is with black vertical bars which in some individuals extend up to the temple. Limbs with large round light black or dark brown

spots; in many examples the tail is blue. The streaks are generally retained by the adults also but the males are generally greyish or brownish, uniform or with round, light, dark-edged spots; lower parts are white. Snout acuminate; nasal shields swollen, in contact with one another; frontonasal single, square shaped; prefrontals in contact with one another; frontal long and narrow, with a median groove which extends on to the fronto-nasal; 4 supraocular; interparietal very small; occipital shield is missing; subocular not bordering the mouth, separated from it by the fifth and sixth supralabials; temporal scales are keeled; ear-opening is with a well marked denticulation upon its anterior border; 5 pairs of submaxillary shields; collar curved, free or bound just in the mid-line, its marginal scales are distinctly enlarged; 26-38 gular scales on a line between submaxillary shields and collar; median dorsal scales large, strongly keeled, imbricate, from 14-20 oblique longitudinal rows, larger than those on the nape or on the flanks; 26-36 dorsal scales across the middle of the body; ventral plates in regular longitudinal and transverse series, outer most row broader than long; 8 or 12 or 14, longitudinal and 28-32 transverse series; the outer two rows of plates always smaller than the others, merging into the lateral scales; two large preanal plates are present. The hind-limb reaches to between ear and the collar in the male, to between the collar and the axilla in the female. Fourth toe with well-developed lateral denticulation, no enlargement of the unguis lamellae. Caudal scales large, the upper ones keeled, not twice as large as the posterior dorsal scales; 16-23 femoral pores. Standard length 64-76 mm.; tail length 115-185 mm.

Distribution : India : Gujarat, Haryana, Punjab, Rajasthan, Uttar Pradesh. Elsewhere : Pakistan, Eastern Iraq, Saudi Arabia, Southern Afghanistan and Iran (Map 46).

Habits and habitat : At many places in Gujarat and Rajasthan these lizards were in large numbers in sandy inland areas. The dense xerophytic bushes provide them an excellent shelter; at many places they live in burrows dug by themselves under the dense bushes. At Porbandar in Gujarat these lizards were observed while they were digging their burrows on the granular sand of the sea coast. In the process of digging generally the forelimbs were employed but occasionally the help was taken, also by the hind limbs and tail in pushing the sand behind. The digging was most quick and the limb movements were extremely fast. The depth of the burrows varied from 11-65 centimetres and generally the each burrow was occupied by a single individual. The lizards were most abundant beneath the bushes and their activities were fast during the early hours of the day reaching at the optimum by 11.30 A.M. The food of this lizard as observed in the field and as evidenced by the study of gut contents consists of various insects like lepidopterous larvae, beetles, ants, bugs, nymphs and adults of orthopterous insects, flies, mole crickets, field crickets, earwigs, small cockroaches and the nymphs of various insects. Spiders and isopoda (crustaceans) are also devoured. The presence of large number of young ones in many areas denote a general post breeding season. But at Somnath and Veraval many gravid females were noticed with 3-5 large oval eggs (10-15 mm. long and 7-9 mm. wide) in their oviduct.

Status : Very common.

259. *Acanthodactylus cantoris blanfordi* Boulenger, 1918

(Map 50)

1876. *Acaanthodactylus cantoris* Blanford, *Zool. E. Persia*, : p. 381, pl. 26, fig. 3 (in part)
 1918. *Acanthodactylus cantoris blanfordii* Boulenger, *Bull. Soc. Zool. France*, : p. 154 (type loc. Bam, Iran and Mand, Baluchistan).
 1935. *Acanthodactylus cantoris blanfordi*, Smith, *Fauna Brit. Ind.* 2 : p. 372.

This subspecies is quite similar to the *A.c. cantoris* but differ in having the higher average number of scales and in the absence of any marked gradation between the median dorsal and the lateral dorsal scales; 32-38 gular scales on the median line; median dorsal scales in 18-20 transverse series; 40-46 dorsal scales across the middle of the body.

Distribution : Southern Iran, S.W. Baluchistan, Pakistan (Mand, Dasht, Bam, Jask) (Map 50).

Habits and habitat : Sand-dwelling, prefer to live in dunes, sandy beaches, clay areas of land, gravel areas; diurnal, most active during the forenoon, come out of their burrows at dawn and retreat back about mid-day or in some cases they rest in the shady areas; the activity again starts at late afternoon which stops just one hour before the sunset. These lizards generally make their own burrows but sometimes use the dwellings made by other creatures like crabs, rodents and other lizards. The breeding season is from March to July. The food mainly comprises crickets, grasshoppers, butterflies, caterpillars, beetles and numerous other insects. These lizards have been seen licking droplets of dew or rain from rocks and plants.

Status : Common.

260. *Acanthodactylus micropholis* Blanford 1874

(Map 73)

1874. *Acanthodactylus micropholis* Blanford, *Ann. Mag. Nat. Hist.* (4) 14 : p. 33 (type loc. Magas, Baluchistan).
 1935. *Acanthodactylus micropholis*, Smith, *Fauna Brit. Ind.* 2 : p. 373.

Dorsal colouration is greyish, with whitish longitudinal streaks, which are generally seven in number including the lateral, the vertebral streak bifurcates on the nape; the interspaces between the streaks are blackish or with small white and black spots. Head is uniformly grey or speckled with darker; ventrum is white. This species is much similar to *A. cantoris* but differs in the following way : Fronto-nasal broader than long; first supraocular smaller, sometimes completely separated from the second supraocular by small granules; fourth supraocular is broken up into small scales or granules; subocualr almost reaches to the mouth or separated from the labial margin by the fourth or fifth supralabials; temporal scales are smooth or feebly keeled, the lower most two or three

series are separated by a large median area of smaller scales form a large superior shield which borders the parietal; 30-32 gular scales on the median line; median dorsal scales are smaller, less strongly keeled, less markedly differentiated from the lateral dorsal scales; 54-60 scales across the middle of the body; ventral plates are in regular longitudinal and transverse series, all broader than long except the outermost row; in 10 longitudinal and 28-31 transverse series; one large preanal plate of several small ones. The hind-limb reaches to the ear or the eye. Caudal scales more than two times larger than the posterior dorsals. Femoral pores are 21-25. Standard length 62 mm., tail length 125 mm.

Distribution : Pakistan (Magas & Bampur in Baluchistan); South East Iran (Rigan) (Map 73).

Habits and habitat : Same as *Acanthodactylus cantoris* : breeding season extends from February to September.

Status : Common.

Genus 62. *Cabrita* Gray 1838

1838. *Cabrita* Gray, *Ann. Mag. Nat. Hist.* 1 : p. 282 (type *brunnea*).

1839. *Calosaura* Dum. & Bibr., *Erp. Gen.* 5 : p. 261 (type *leschenaultii*).

1870. *Cabritopsis* Beddome, in Blanford, *J. Asiat. Soc. Beng.* 39 : p. 348 (type *jerdoni*)

1935. *Cabrita*, Smith, *Fauna Brit. Ind.* 2 : p. 374.

This genus includes two species from Peninsular India and Sri Lanka. The main generic characters are : Head shields are normal except that the occipital is generally missing in *O. jerdoni*. Nostril is between two or three nasals. Lower eyelid is very large, distinct from the small upper eyelid, and having a very large transparent disc. A fold is distinctly present in front of the shoulder; proper collar is not available. Dorsal scales are imbricate and strongly keeled; ventral scales are imbricate and smooth; subdigital lamellae are sharply keeled; tail is cylindrical; Femoral pores are present.

Key to the species of genus Cabrita

1. Labials are keeled anteriorly forming a projecting ridged margin; occipital shield is present. *C. leschenaulti*
2. Labials not keeled; occipital shield not present. *C. jerdoni*.

261. *Cabrita leschenaulti* (Milne-Edwards 1829) (Map 75)

1829. *Lacerta leschenaultii* Milne-Edwards, *Ann. Sci. Nat. Paris*, 16 : pp. 80, 86, pl. 6, fig. 9 (type loc. Coromandal coast).

1838. *Cabrita brunnea* Gray, *Ann. Mag. Nat. Hist.* 1(4) : p. 282 (type loc. not known).

1870. *Cabrita leschenaultii*, Blanford, *J. Asiat. Soc. Beng.* 39 : p. 345.

1935. *Cabrita leschenaulti*, Smith, *Fauna Brit. Ind.* 2 : p. 374.

The dorsum is brownish with a tinge of golden colour; a light brown stripe margined above with deep black starts from the supraciliary margin and gradually passes along the lateral aspects of body and tail; a second stripe borders the upper lip and passes along the flanks, the space between these two stripes is generally black or in many individuals green spotted on a black background; in many individuals the lower stripe is margined with black colour on the lower aspects; ventrum is greenish-white; the tail and hind-limbs are generally red. Upper head shields are strongly keeled and extensively striated, smooth; a projecting margin is formed by the strong ridges on the anterior lips; canthus rostralis is sharp; the nostril is between two large swollen nasals which are followed by 1-2 small postnasals; frontonasal is one, which is broader than long; prefrontals in contact with one another; frontal is long and narrow touching the first three supraoculars; interparietal is small in contact with a small occipital; out of the two loreals the anterior one is distinctly smaller than the posterior; temporal scales are strongly keeled and small except the upper two which are larger and form a marginal border with the parietal; tympanic shield is very large and smooth; a fold in front of the shoulder is always present and it is called as ante-humeral fold; no proper collar is present, which is indicated by enlarged scales; dorsal scales subequal, much smaller than the caudals, in oblique series converging towards the vertebral line; ventral scales are large in 6 longitudinal and 24-28 transverse series (the median pair is narrowest); 42-50 scales round the middle of the body; a large preanal plate is always available; digits with sharply keeled lamellae beneath, the hind-limb reaches to the ante-humeral fold or just beyond the ear in the male and only up to the axilla in the female; tail is cylindrical; femoral pores are 12-16 on each side. Standard length 50 mm.; tail length 100 mm.

Distribution : India : The Indian Peninsula, Andhra Pradesh, Bihar, Orissa, Madhya Pradesh, Tamil Nadu (Nilgiri Hills and Chitteri Hills). Elsewhere : Sri Lanka. (Map 75).

Habits and habitat : Insectivorous, burrowing, diurnal and oviparous (breeding season is from April to July, six eggs are laid in a clutch.)

Status : Not rare or endangered.

262. *Cabrita jerdoni* Beddome 1870

(Map 46)

1870. *Cabrita jerdoni* Beddome, *Madras Month J. Med. Sci.*, : p. 34 (type loc. between Kollegal and Caverypuram, State of Mysore).

1935. *Cabrita jerdoni*, Smith, *Fauna Brit. Ind.* 2 : p. 375.

The dorsum is brownish with a tinge of golden colour; two light-brown lateral stripes are present, the upper one is more prominent than the lower one; these stripes are bordered with a longitudinal series of black spots; lips and throat are profusely speckled with

black. The habitus and general scalation is much alike the *Cabrita leschenaulti* with which it differs in having upper head-shields are less striated; nostril is between a large anterior and two small posterior nasal scales which are not exactly swollen; labial shields are not ridged; one or two small shields separate the prefrontals; interparietal is larger and quite broader, completely separating the parietals; first supraocular is generally broken into many small scales; loreal region is feebly concave, dorsal scales larger, almost as large as the caudals, larger than the lateral scales; ventral shields are almost equal, in 6-8 longitudinal and 19-23 transverse series; 26-30 scales round the middle of the body; femoral pores 11-15.

Distribution : India : Andhra Pradesh (Godavari district), Bihar (Chota Nagpur), Madhya Pradesh (Bilaspur), Maharashtra (Chanda Bhandara, S.E. Berar), Uttar Pradesh (Agra) (Map 46).

Habits and habitat : Terrestrial, insectivorous, diurnal.

Status : Quite common in certain localities.

Genus 63. *Ophisops* Menetries 1832

1832. *Ophisops* Menetries, *Cat. Rais* : p. 63 (type *elegans*).
 1835. *Amystes* Wiegmann, *Arch. f. Nat.* 2 : p. 1 (type *ehrenbergi*).
 1870. *Gymnops* (not of spix, 1824), Blanford, *J. Asiat. Soc. Beng.* 39 : p. 351 (type *microlepis*).
 1870. *Pseudophiops* Jerdon, *P. Asiat. Soc. Beng.* : p. 71 (type *theobaldi*).
 1873. *Chondrophiops* Blanford, *J. Asiat. Soc. Beng.* 42 : p. 144 (type *microlepis*, substitute name for *Gymnops*, preoccupied).
 1887. *Ophiops*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 72.
 1935. *Ophisops*, Smith, *Fauna Brit. Ind.* 2 : p. 376.

This genus includes 5 species distributed in North Africa. Turkey and South West Asia. The main generic characters are : Nasal shields are in contact with one another; frontal long and narrow; anterior loreal distinctly smaller than the posterior; loreal region is concave; subocular bordering the lip; 6, sometimes only 5, pairs of submaxillary shields, normally the first three are in contact with other supramaxillaries. Head shields are normal; nostril is between the two to four nasals. Lower eyelid is with a very large transparent disc, completely or absent; a fold in front of the shoulder is generally available; a distinct collar is not present; dorsal scales are pointed, imbricate and strongly keeled; ventral scales are imbricate and smooth; subdigital lamellae are sharply keeled; tail is cylindrical. Femoral pores are available.

Key to the species of genus *Ophisops*

- I. Upper head shields are rugose, keeled and striated.
 1. Only one fronto nasal is present; 28-35 scales round the middle of the body
 *O. jerdoni*

2. Two or three fronto nasals are present; 26-32 scales round the middle of the body *O. beddomi*
- II. Upper head shields are smooth; 56-66 scales round the middle of the body; snout as long as the breadth of the head across the eyes. *O. microlepis*

263. *Ophisops jerdoni* Blyth 1853

(Map 56)

1853. *Ophiops jerdonii* Blyth, *J. Asiat. Soc. Beng.* 22 : p. 653 (type loc. Mhow, Indore, Madhya Pradesh).
1868. *Tropidosaura jerdoni*, Theobald, *Cat. Rept. Asiat. Soc. Mus.* : p. 22.
1870. *Pseudophiops jerdoni*, Jerdon, *P. Asiat Soc. Beng.* : p. 71.
1870. *Pseudophiops theobaldi* Jerdon, *P. Asiat. Soc. Beng.* : p. 71 (type loc. Alpine Punjab).
1870. *Ophiops bivittata* Jerdon, in Beddome, *Madras Month. J. Med. Sci.* 2 : (9), p. 172 (type loc. Punjab).
1884. *Calosaura chaperi* Sauvage, *Bull. Soc. Philom.* (7) 8 : p. 142 (type loc. Bellary, Karnataka).
1935. *Ophisops jerdoni*, Smith, *Fauna Brit. Ind.* 2 : p. 377.

The dorsum is olive-brown, golden or greyish with a golden tinge; with two golden lateral stripes, the upper is extending from the supraciliary margin to the tail, the lower stripe borders the upper lip and extends along the flanks to the base of the hind-limb; the space between the two stripes and the upper margin of the upper stripe is densely spotted with black, belly is yellowish white. Upper head shield strongly keeled and striated, smooth in juveniles; nostril is in a large anterior nasal; two postnasals are generally present; frontonasal single; prefrontals in contact with one another or separated by a small scale; four supraoculars are generally available, the second and third are the largest and are separated from the supraciliaries by a row of small scales; interparietal is larger than the occipital; fifth labial is subocular; temporal scales are strongly keeled, the upper two form the border with the parietal are the largest; tympanic shield moderately large; no distinct collar is present, but the region is having enlarged scales; dorsal scales are almost equal, rhomboidal, almost as large as the caudal, in oblique longitudinal series converging towards the vertebral line; ventral plates are in 6 longitudinal and 23-29 transverse series; 28-35 scales round the middle of the body; a large preanal plate is present; digits with sharply keeled scales beneath, the hind limb reaches to the ante-humeral fold or between it and the ear in male, to the axilla or nostril so far in the female; 6-12 femoral pores are available on each side. Standard length 45 mm.; tail length 90 mm.

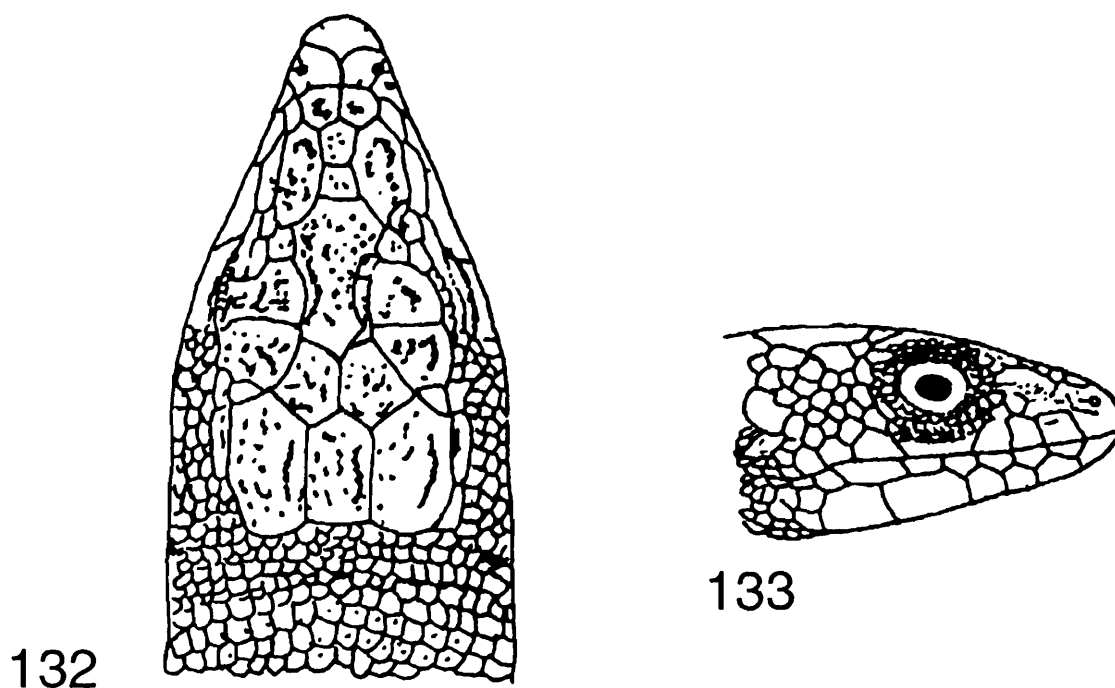
Distribution : India : Andhra Pradesh, Maharashtra, Cutch, Madhya Pradesh (Sarai, Rewa), Rajasthan, Tamil Nadu. Elsewhere : Pakistan (Map 56).

Habits and habitat : Burrowing on soft soil, diurnal. The food consists of termites, caterpillars, ichneumonids, ants, orthopterans and their eggs and spiders.

Status : Commonly available in various localities of its range.

264. *Ophisops beddomei* (Jerdon 1870)

(Figs. 132 & 133, Map 76)

1870. *Pseudophiops beddomei* Jerdon, *P. Asiat. Soc. Beng.* : p. 72 (type loc. Bramagherry Hills, Wynaad).1870. *Pseudophiops monticola* Beddome, *Madras Month. J. Med. Sci.*, : p. 172.1872. *Ophiops beddomii*, Stoliczka, *J. Asiat. Soc. Beng.* 41 : p. 90.1935. *Ophisops beddomei*, Smith, *Fauna Brit. Ind.* 2 : p. 378.

Figs. 132-133 : 132. *Ophisops beddomei* : Dorsal view of head; 133. *Ophisops beddomei* : Lateral view of head.

This species resembles with *Ophisops jerdoni* in habitus, scalation and colouration but differs as follows :- Generally the upper lateral light-brown stripe is missing; two or three frontonasals are in a transverse series; prefrontals are generally separated from one another by one or two shields; first and fourth supraoculars usually broken up into small scales; lateral scales smaller than the dorsals; 26-32 scales round the body; femoral pores 8-13 on each side. Standard length 34 mm.; tail length 60 mm.

Distribution : India : Maharashtra (Satra district), Karnataka (South Kanara), Tamil Nadu (Bramagherry Hills in Wynaad district) (Map 76).

Habits and habitat : It is a terrestrial, diurnal and insectivorous species collected up to 500 metres in Bramagherries in the Wynaad. It prefers grassy patches.

Status : Undeterminate, but not endangered.

265. *Ophisops elegans elegans* Menetries 1832

(Map 36)

1832. *Ophisops elegans* Menetries, *Cat. Rais.* : p. 63 (type loc. near Baku, Caspian Sea).
 1872. *Ophiops elegans*, Anderson, *Proc. Zool. Soc. London.* : p. 374.
 1872. *Gymnops meizolepis* Stoliczka, *P. Asiat. Soc. Beng.* : p. 12 (type loc. S.W. of Kalabagh, Mianwali district, Punjab).
 1876. *Ophiops meizolepis*, Blanford, *Zool. E. Persia*, 2 : p. 369, pl. 25, fig. 2.
 1918. *Ophiops elegans persicus* Boulenger, *Ann. Mag. nat. Hist.* (9) 2 : p. 160.
 1921. *Ophiops elegans mizolepis*, Boulenger, *Monogr. Lacert.* 2 : p. 216.
 1931. *Ophisops elegans elegans*, Lantz, *Bull. Mus. Georgia*, 6 : p. 31.
 1935. *Ophisops elegans elegans*, Smith, *Fauna Brit. Ind.* 2 : p. 379.

Dorsal colouration is olive-greenish or brownish, with two light dorso-lateral stripes starting from the supraciliary margin; the second stripe starts from below the eye, and passes through the ear and along the flank to the hind-limb; the upper margin of the dorso-lateral stripe is spotted with black; a series of small vertebral spots may be present. Lips, sides of the neck, and the space between the two light stripes also spotted with black; ventrum is greenish white. Snout is obtusely pointed, shorter than the breadth of the head across the eyes; upper head shields are smooth; canthus rostralis is sharp; nostril is between the two large protuberant nasals, an upper and a lower; 2 small postnasals are present; frontonasal is a single shield; frontal shield is touching the 3 supraoculars, with a longitudinal groove in the middle which extends on to the fronto-nasal; four supraocular shields are present, the second and third are the largest and separated from the supraciliaries by a row of small granules; first supraocular is subtriangular, larger than the fourth; which is transversely elongate; interparietal is narrow, in contact with or just separated from the small occipital; fifth labial is subocular; temporal scales are small, keeled except the upper two which form the margin with the parietal, these scales are smooth and much larger, tympanic shield is large and smooth; distinct collar is not present but its position is indicated by the enlarged scales; dorsal scales are rhomboidal, subequal, all except the outermost, which are much larger, and are almost as large as the adjoining ventral scales; these scales are arranged in oblique longitudinal series converging towards the vertebral line, and are not much smaller than the caudal scales; ventral plates in 6 longitudinal and 23-29 transverse series; 31-38 scales round the middle of the body; a large preanal plate is present. The hind-limb reaches to about the ear in the male, to the shoulder or a little beyond in the female. Femoral pores are 10-12 on each side. Standard length 55 mm., tail length 100 mm.

Distribution : Pakistan (Kalabagh, Mianwali district, Punjab); Iran; Baku, Caspian Sea (Map 36).

Habits and habitat : Nothing is known.

Status : Rare in Pakistan; nowhere common in other parts of its range.

266. *Ophisops microlepis* Blanford 1870

(Map 62)

1870. *Ophiops (Gymnops) microlepis* Blanford, *J. Asiat. Soc. Beng.* 39 : p. 351, pl. 15, figs. 1-5 (type loc. Korba, Bilaspur, Madhya Pradesh)
1872. *Gymnops microlepis*, Stoliczka, *J. Asiat. Soc. Beng.* 41 : p. 90.
1935. *Ophisops microlepis*, Smith, *Fauna Brit. Ind.* 2 : p. 380.

The dorsum is olive-greenish or brownish; a light dorso-lateral stripe starts from behind the supraciliary edge and extends on the base of the tail; it is bordered above with black, or black spots; a second stripe, much less distinct passes along the upper lip and along the flanks as far as the base of the hind-limb; sides of neck and flanks are densely spotted with black and white; ventrum is greenish-white; in the juveniles the tail is red; the juveniles are brownish, with the most distinct stripes and bordered with black. Snout elongated and pointed; upper head shields smooth; canthus rostralis sharp; nostril is between two large nasals (upper and lower); frontonasal is single; supralabials are four, the second and third are large and separated from the supraciliaries by a row of small granular scales; the first supraocular is subtriangular, larger than the fourth, which is small and transversely elongate; interparietal long and narrow, narrower than the occipital; fifth labial is subocular; temporal scales are keeled, the upper two, which border the parietal, being smooth and much larger than the others; tympanic shield is large, smooth; no proper collar, but its position is indicated by a series of enlarged plates; dorsal scales rhomboidal, almost equal, except the outermost rows, in oblique longitudinal series converging towards the vertebral line, these are much smaller than the caudal scales; ventral plates in 6 longitudinal and 24-27 transverse series; 56-66 scales round the middle of the body; a large preanal plate is generally present; digits with very sharply keeled scales beneath, the hind-limbs reaches to the ear or a little beyond; 12-16 femoral pores on each side; tail is cylindrical, long and tapering to a point. Standard length 65 mm.; tail length 145 mm.

Distribution : India : Bihar, Gujarat, Madhya Pradesh, Rajasthan (Map 62).

Habits and habitat : These diurnal, most agile lacertids, share the same ecological environment with *Acanthodactylus cantoris* in Gujarat coastal areas. They make thin burrows on the soft soil under the dense bushes of *Acacia juliflora* and *Cactus* sp. The lizards are having an acute sense of homing behaviour and always choose to live in the burrows made by themselves. At Porbandar in Gujarat their population was observed to be the maximum and they live with a perfect harmony in the association of tiny member of the family *Ophisops jerdoni*, in the crevices on the railway tracks and other such places. At Rajkot numerous such lizards were found under a huge pile of loose, flat stones in the association of snakes (*Oligodon taeniolatus* and *Echis carinatus*), gekkonid lizards

(*Hemidactylus brooki*), toads (*Bufo melanostictus*), scorpions, centipedes and different kinds of spiders. They feed on various orthopterous insects, termites, beetles of Staphylinidae and of other families, flies of family Muscidae, earwigs, bugs, grubs of beetles, spiders and isopods (crustaceans). It is a strong predator on termites in Rajasthan. In Gujarat the presence of seven large oval eggs (8.5-10 mm. long and 5-6 mm. wide) in the oviduct of a female indicate the continuation of its breeding season also through the September.

Status : Very common.

Genus 64. *Eremias* Wiegmann 1834

1834. *Eremias* Wiegmann, *Herp. Mex.* : p. 9 (type *Lacerta velox* Pallas)
1834. *Scapteira* (Fitz. Wiegmann, *Herp. Mex.* : p. 9 (type *Lacerta grammica* Lichtenstein).
1838. *Mesalina* Gray, *Ann. Mag. Nat. Hist.* 1 : p. 282 (type *lichtensteinii*).
1838. *Meroles* (in part) Gray, *Ann. Mag. Nat. Hist.* 1 : p. 282 (type *knoxii*).
1841. *Aspidorhinus* Eichwald, *Faun. Casp. Cauc.* : p. 74 (type *Lacerta gracilis*)
1843. *Eremioscopus* Fitzinger, *Syst. Rept.* : p. 20 (type *Eremias paradalis* Dum. & Bibr.)
1843. *Dioptroblepharis* Fitzinger, *Syst. Rept.* : p. 21 (type *Eremias paradalis* Dum. & Bibr.).
1869. *Saurites* Peters, *Mon. Akad. Berlin*, : p. 60 (type *cuneirostris*).
1883. *Pseuderemias* Boettger, *Abh. Senck. Ges.* 13 : p. 118 (type *Eremias lineolata*).
1885. *Boulengeria* Lataste, *Ann. Mus. Civ. Genova*, (2)2 : p. 116 (type *mucronata*).
1918. *Macmahonia* Boulenger, *J. Zool. Res.* 3 : p. 2 (type *Scapteria aporosceles*).
1928. *Rhabderemias* Lantz, *Bull. Mus. Georgia* : p. 36 (type *scripta*).
1928. *Ommateremias* Lantz, *Bull. Mus. Georgia* : p. 37 (type *arguta*).
1935. *Eremias*, Smith, *Fauna Brit. Ind.* 2 : p. 381.

This genus includes about 45 species and numerous subspecies distributed in S.E. Europe; Central Asia and Africa. The main generic characters are : Head-shields are smooth, normal except that the occipital scale is sometimes missing or if present, rudimentary; nostril is situated between the three or four nasals, which are swollen, in contact with one another, not touching the labial; fronto-nasal anterior loreal is much smaller than the posterior loreal; loreal region is feebly concave, 5 pairs of submaxillaries are present, the fifth is comparatively small and sometimes absent, generally the first three are in contact with other submaxillaries; lower eyelid is scaly or with a transparent disc formed of two or more scales; collar is complete or nearly complete; dorsal scales are small or granular, subimbricate or juxtaposed; ventral scales are subquadrangular, imbricate, smooth; digits with or without a lateral fringe. Tail is cylindrical. Femoral pores are present except in *Eremias aporosceles*.

Key to the species of genus *Eremias*

- I. Occipital shield is not present; lower nasal rests on 2 or 3 supralabials; ventral plates in oblique longitudinal series.
- A. Femoral pores are present.
1. Two large supraoculars are present; subocular shield bordering the mouth; dorsum with dark longitudinal stripes, at least in juveniles.
 - i. Supraoculars in contact with frontal and fronto-parietals; interparietal not longer, generally shorter than the suture between the parietals; collar slightly curved, 25-35 gular scales in the median line; 56-68 scales across the back; fringe of scales not present along the outer side of the fourth toe; caudal scales smooth or obtusely keeled; back of juvenile is with 3 or 4 dark stripes, flank with large white spots enclosed in a black stripe; 18-24 femoral pores. *Eremias velox persica*
 - ii. Supraoculars are generally separated from frontal and fronto-parietals by small granules; interparietal is shorter than the suture between the parietals; collar is slightly curved; 23-30 gular scales in the median line; 44-56 scales across the back; fringe of scales not present along the outer side of the fourth toe; caudal scales are strongly keeled; back and sides of adult with 5 or 7 narrow dark stripes, no white spots on the sides, head above cream-coloured, uniform; 15-18 femoral pores.
..... *Eremias fasciata*
 - iii. Supraocular is separated from the frontal and fronto-parietals by small granules; interparietal is shorter than the suture between the parietals; collar is curved, with distinctly enlarged scales; 19-25 gular scales in the median line, 56-65 scales across the back; a distinct fringe of scales along the outer side of the fourth toe; caudal scales are moderately keeled; back with narrow, longitudinal stripes or with vermiculations; head above grey, with darker spots; 12-16 femoral pores. *Eremias scripta*
 2. Three large supraoculars are present; subocular not bordering the mouth.
..... *Eremias acutirostris*
- B. Femoral pores not present; 3 large supraoculars are present; subocular not bordering the mouth. *Eremias aporosceles*
- II. Occipital shield is present; lower nasal rests on first supralabial only; ventral plates are in a straight longitudinal series.
- A. Occipital shield is in contact with the interparietal. .. *Eremias guttulata watsonana*
 - B. Occipital shield is not in contact with the interparietal. *Eremias brevirostris*

267. *Eremias velox persica* Blanford 1874

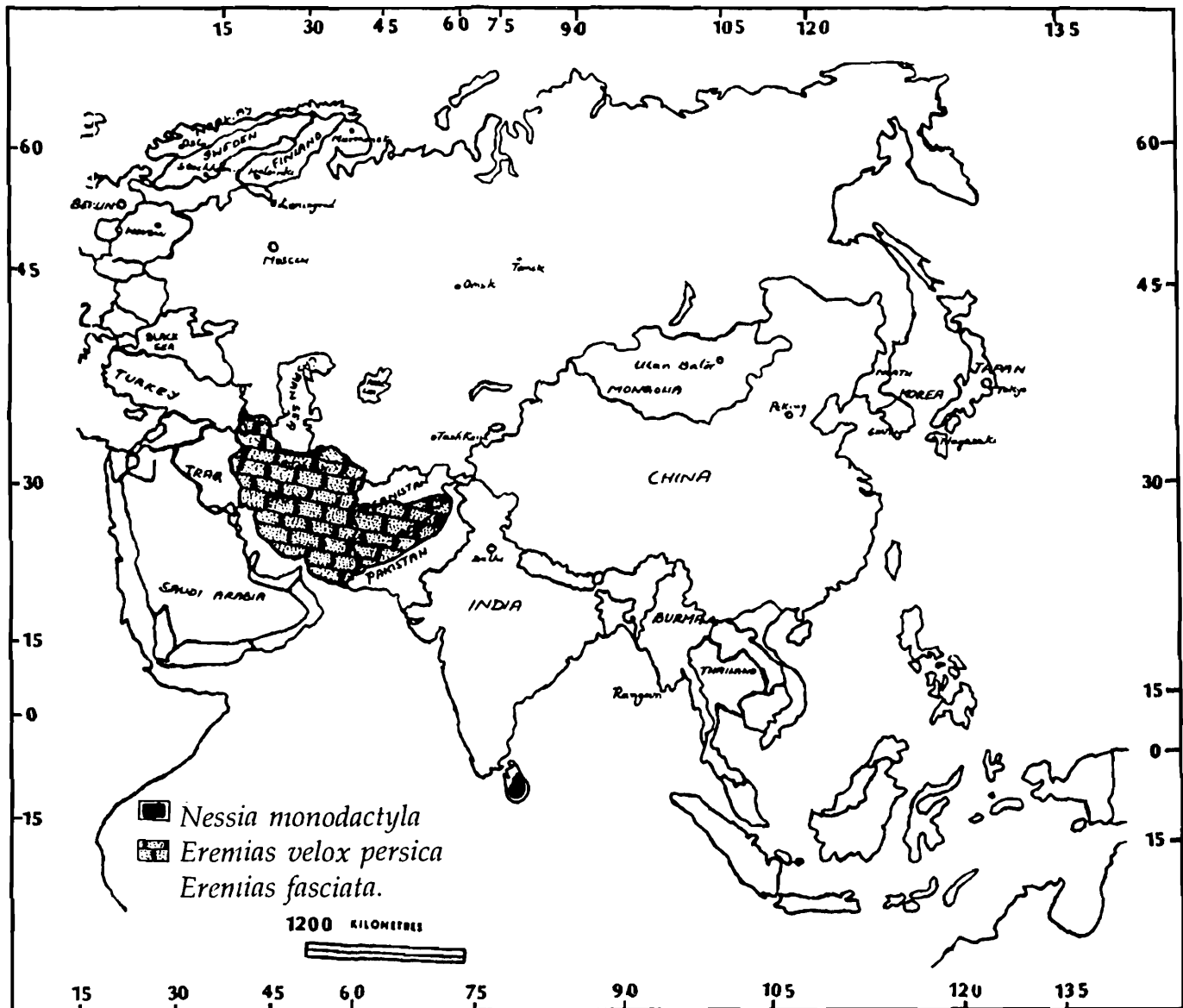
(Map 74)

1771. *Lacerta velox* Pallas, *Reise Russ. Reichs.* 1 : p. 457 (type loc. Lake Inder, Kirghiz Steppes).
 1874. *Eremias persica* Blanford, *Ann. Mag. Nat. Hist.* (4) 14 : p. 370 (type loc. near Ispahan, Persia).
 1890. *Eremias velox*, Boulenger, *Fauna Brit. Ind.* : p. 178 (in part).
 1921. *Eremias velox persica*, Boulenger, *Monogr. Lacert.* 2 : p. 312.
 1928. *Eremias (Eremias) persica*, Lantz, *Bull. Mus. Georgie* : p. 53.
 1935. *Eremias velox persica*, Smith, *Fauna Brit. Ind.* 2 : p. 383.

In juveniles the dorsal colouration is pale with black dorsal stripes, which extend from nape to the base of the tail; at mid dorsum three stripes are distinct (in some individuals four); on the anterior aspect these stripes generally bifurcate and thus form 5-7 stripes; lateral aspects of body and neck are with white spots enclosed in a black stripe; one more dark stripe is generally available just below the said stripe; dorsal aspect of the limbs is blackish with large white spots. All these markings available in juveniles fade out on the advancement of age and adults bear a greyish or brownish dorsal colouration, spotted or longitudinally streaked with black; whitish spots may or may not be available on the dorso-lateral aspects of body and limbs. In certain adult individuals a series of large blue or black ocelli is present on either side; ventral surface is white. Snout is subacuminate; lower eyelid is covered with small scales; nostril is between two large anterior and a small posterior shield, the lower anterior nasal is touching the rostral and two or three labials; two large supraoculars are present, the second and third are in contact with the frontal and fronto-parietal, first supraocular is divided into small scales, fourth supraocular is divided into small scales, fourth supraocular is small and transversely elongate; supraciliary margin is made up by elongated scales, separated completely from the supraoculars by small granule like scales; interparietal is much smaller than the fronto-parietals, generally shorter than the suture between the parietals; occipital shield is not present; anterior loreal is not elongate; in most cases seventh and rarely sixth supralabial is below the eye and bordering the mouth; temporal region is with small, flat scales; a small tympanic shield is present; collar is slightly curved, free, and its marginal scales are enlarged; 25-35 gular scales on a line between the submaxillary shields and the collar. Dorsal scales are small, granular, subimbricate or juxtaposed, the outermost rows are slightly larger than the others, 56-68 scales across the middle of the back; ventral, plate-like, subquadrangular, in oblique longitudinal series, converging posteriorly; 30-34 ventral plates are in transverse and 14-16 in longitudinal series; preanal plates are small and irregular; the hind-limb reaches to the collar or the ear in the male, to the axilla or the collar in the female. Digits are keeled on the underside and devoid of lateral denticulations. Tail is much longer than the head and body; caudal scales are longer than broad, about half the size of the ventral

shields, smooth or feebly keeled; femoral pores are 18-24 on either side. Standard length 90 mm., tail length 140 mm.

Distribution : Iran (all parts of Iranian Plateau) : Southern Afghanistan (Helmand) : Pakistan (near Quetta, Baluchistan; Ladha & Wana, Southern Waziristan) (Map 74).



Map 74 : Distribution of *Nessia monodactyla*, *Eremias velox persica* and *Eremias fasciata*.

Habits and habitat : Prefers to live in open rocky areas with bushes, sparse grass lands and other vegetation, avoids absolute desert conditions, the species has been recorded up to an altitude of 7500 feet; most agile; diurnal; do not make burrows; insectivorous; oviparous, breeding season is from May to July.

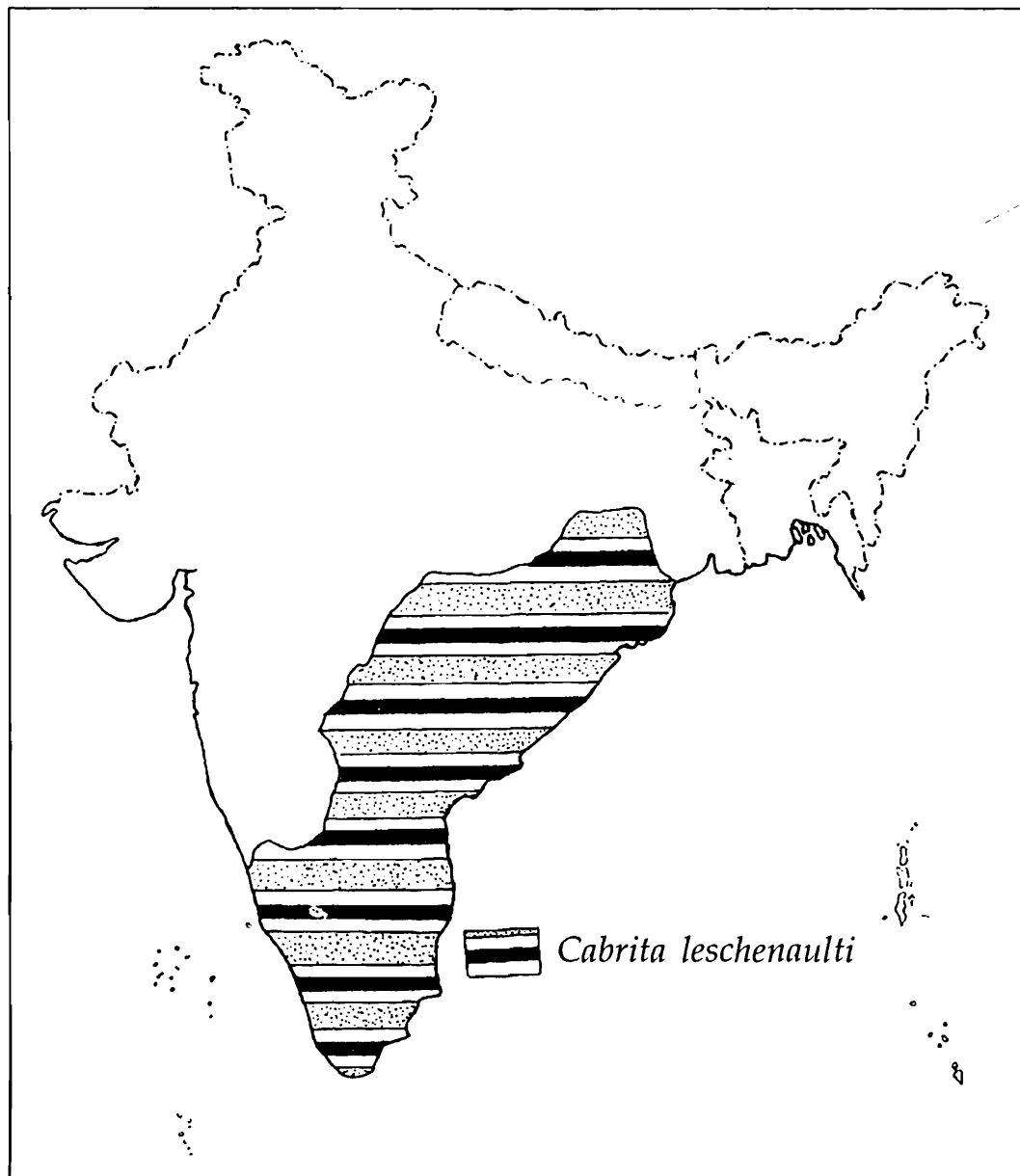
Status : Not so common, but not vulnerable.

268. *Eremias fasciata* Blanford 1874

(Map 74)

1874. *Eremias fasciata* Blanford, *Ann. Mag. Nat. Hist.* (4) 14 : p. 32 (type loc. Saidabad, S.W. of Karman, Iran).
1928. *Eremias (Rhabderemias) fasciata* Lantz, *Bull. Mus. Georgia*, : p. 90.
1935. *Eremias fasciata*, Smith, *Fauna Brit. Ind.* 2 : p. 386.

This species is quite similar to *Eremias velox persica* in general scalation but differs in the following characters: The size is comparatively smaller. The colour is different, as the dorsal colouration is much light grey or sandy brown, with 5-9 narrow, dark longitudinal streaks on the neck, which reduce to 5-7 on the back; a dorsolateral stripe emerges from

Map 75 : Distribution of *Cabrita leschenaulti*

the eye and passes above the ear, there is one more narrow stripe along the outer margin of the ventral shields; dorsal aspect of head is creamish; ventrum is white. The more differences are same as given in the key of species of genus *Eremias*. Standard length 58 mm.; tail length 115 mm.

Distribution : Iran; southern Afghanistan; Pakistan (Kharan, Kohak, Baluchistan; Dera Ismil Khan, Wana, southern Waziristan) (Map 74).

Habits and habitat : Prefers to live in bushy plains; diurnal; most agile; insectivorous, oviparous.

Status : Vulnerable but not endangered.

269. *Eremias scripta* (Strauch 1867)

(Map 78)

1867. *Podarces (Scapteira) scripta* Strauch, *Mel. Biol. Ac. St. Petersb.* 6 : p. 424 (type loc. Aralo-Caspian Desert).

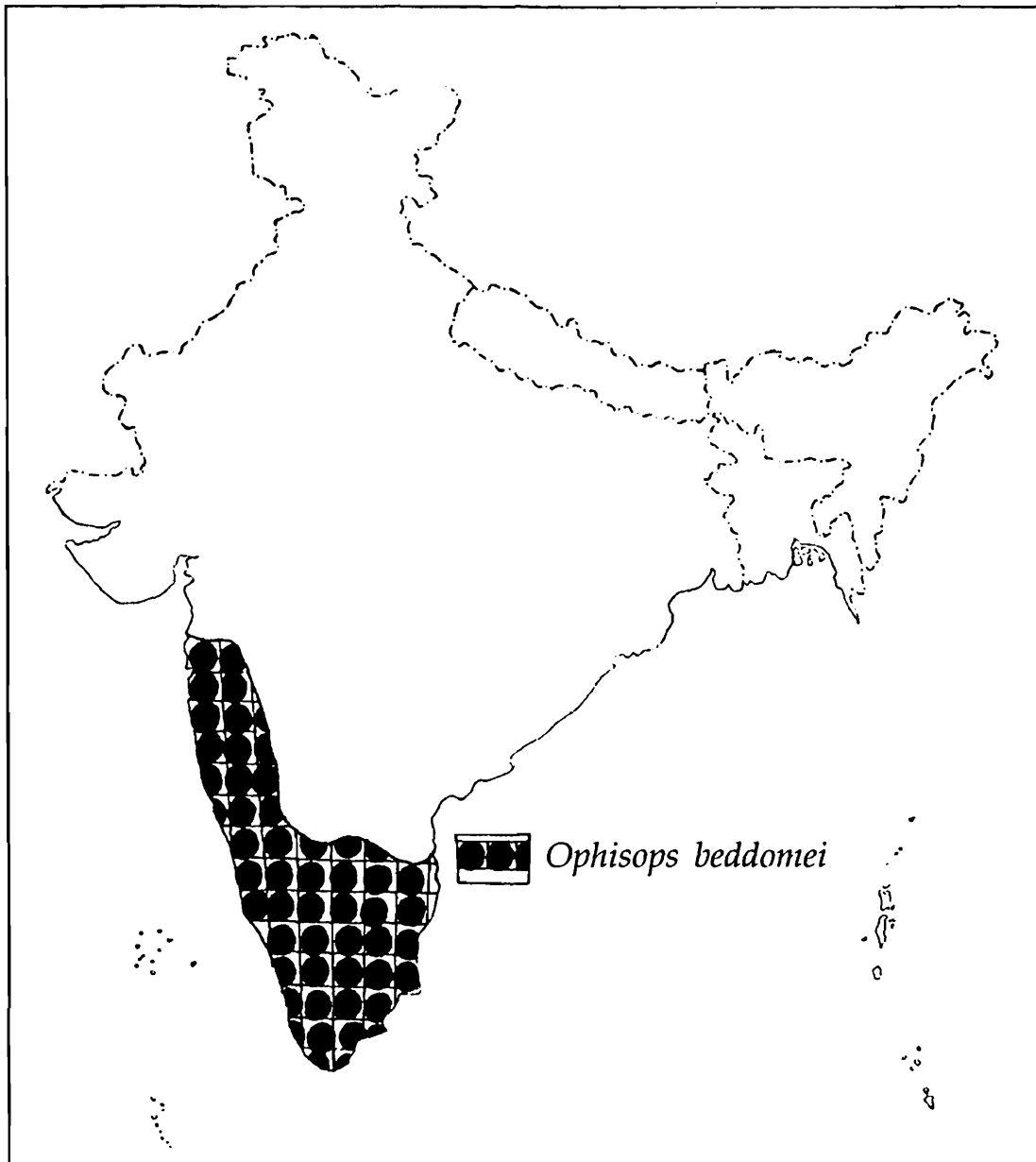
1887. *Scapteira scripta*, Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 112.

1928. *Eremias (Rhabderemias) scripta*, Lantz, *Bull. Mus. Georgie.* : p. 73.

1935. *Eremias scripta*, Smith, *Fauna Brit. Ind.* 2 : p. 386.

The dorsal colouration is light sandy grey; head is grey; 5-7 narrow, dark stripes (some or all of them may be arranged in a vermiculate pattern) emerge from the parietals and extend down to the back; a broader dorsolateral stripe starts from the eye, diverges slightly downward and passes along the margin of the ventral shields; slightly below this stripe there is one more narrow lateral stripe, almost running parallel to it; dorsal aspect of the limbs with wide-meshed dark brown reticulations; ventrum is whitish. Snout is subacuminate; lower eyelid is covered with small scales; nostril is between the two large anterior and a small posterior shield (in some cases posterior shield is absent); lower nasal is separated from rostral, 2 large supraoculars are present, which are completely surrounded by a ring of granular scales, the first and the fourth supraocular shields are broken up into small granular scales or in some individuals a fourth supraocular shield is available; supraciliary margin is composed of elongated scales; interparietal shield is small, widely separated from the occipital, which is minute; anterior loreal is not elongate; sixth or seventh supralabial is largest and subocular; temporal scales are small; the upper temporals are granular; tympanic shield is not present; collar is slightly curved, its marginal scales are enlarged; 19-25 granule like scales on a line between the submaxillary shields and the collar. Dorsal scales are very small, granular, slightly larger on the sides than on the dorsum; 58-65 scales across the middle of the back; Preanal scales are small and irregular; the hind-limb reaches to the axilla or the collar, subdigital lamellae are keeled; digits with moderately developed lateral denticulations upon the outer sides of the toes; tail is with small dorsal scales, smaller than the ventral caudal scales, feebly keeled; femoral pores are 12-16 on either side. Standard length 42 mm.; tail length 85 mm.

Distribution : Distributed from Transcaspia to eastern Khazakistan and south to Iran and northern Baluchistan (east of Nushki) in Pakistan; Afghan-Baluchistan Frontier (Map 78).



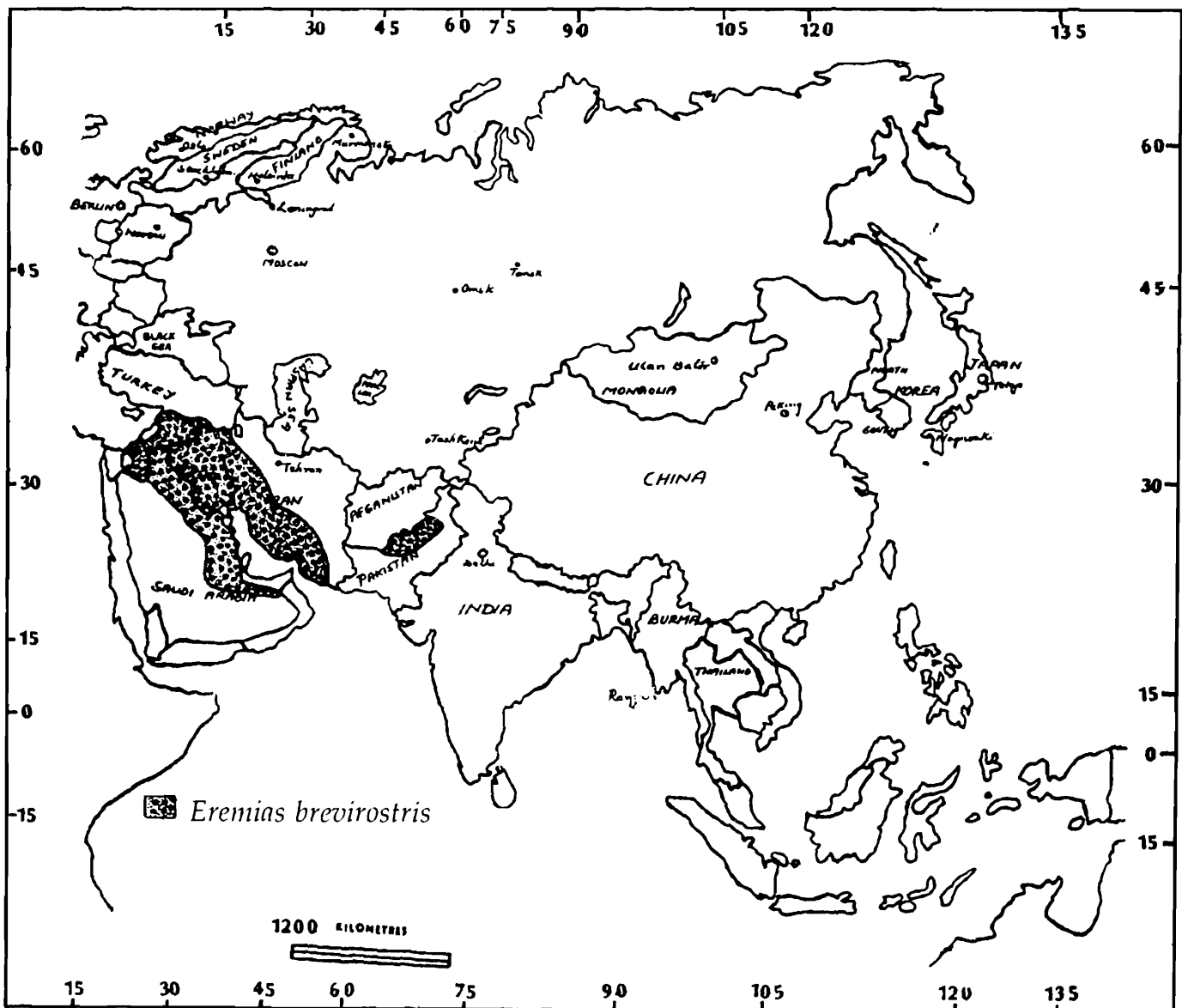
Map 76 : Distribution of *Ophisops beddomei*

Habits and habitat : Inhabit sandy places (dunes) up to the elevation of 3500 feet, also found in flat, sandy areas with shrubs and grass; diurnal; insectivorous, oviparous, most agile.

270. *Eremias acutirostris* (Boulenger 1887)

1887. *Scapteria acutirostris* Boulenger, *Cat. Liz. Brit. Mus.* 3 : p. 114 (type loc. between Nushki and Helmand, Baluchistan)
1928. *Eremias (Scapteira) acutirostris*, Lantz, *Bull. Mus. Georgie*, : p. 41.
1935. *Eremias acutirostris*, Smith, *Fauna Brit. Ind.* 2 : p. 387.

The dorsal colouration is sandy, with blackish net-work; head is with symmetrical black markings; ventrum is whitish. Snout is acuminate; nostril is between the two large nasals (an upper and lower), the upper nasal is not touching the rostral, with a small posterior scale wedged in between them; 4 supraoculars, the first is almost half the size of the second and third; the second and the third supraoculars are surrounded by small granular scales; fourth supraocular is small and transversely elongate; supraciliary margin is formed of elongated scales; interparietal is small; occipital shield is not present; anterior loreal is not elongate; 8-9 supralabials are present; the sixth and seventh are below the eye; but separated from it by a large elongate subocular; temporal scales are small and granular; tympanic shield is not present; collar is straight, complete, its marginal scales are feebly enlarged; 25-28 gular scales on a line between the submaxillary shields and the collar; dorsal scales are very small, granular, subequal, 70-78 across the middle of the



Map 77 : Distribution of *Eremias brevirostris*

back; ventral plates are subquadrangular, in oblique longitudinal series; 34-38 transverse and 18-22 longitudinal series; a large preanal plate is present; the hind-limb reaches to the posterior border of the eye; sub-digital lamellae are almost smooth, with well-developed lateral denticulations on either side of the fourth toe; the unguis lamellae are enlarged, forming a suboval disc; caudal scales are small, smaller than the ventrals, keeled; femoral pores are from 12-17 on either side. Standard length 48 mm., tail length 75 mm.

Distribution : Pakistan (Nushki district, Dalbandin, Chagai district, all in Baluchistan)

Habits and habitat : Diurnal, terrestrial; sand-dwelling; agile; insectivorous, oviparous.

Status : Rare.

271. *Eremias aporosceles* (Alcock & Finn. 1896)

1896. *Scapteira aporosceles* Alcock and Finn., *J. Asiat. Soc. Beng.* 65 : p. 559, pl. 13 (type loc. near Nushki, North Baluchistan).

1921. *Macmahonia aporosceles*, Boulenger, *Monogr. Lacert* 2 : p. 373.

1928. *Eremias (Scapteira) aporosceles*, Lantz. *Bull. Mus. Georgie* : p. 127.

1935. *Eremias aporosceles*, Smith, *Fauna Brit. Ind.* 2 : p. 388.

The dorsal colouration is sandy or greyish, with blackish net-work; head with symmetrical black markings; ventrum is whitish. Snout is acuminate; nostril is between the two large anterior and a small posterior shield; 4 supraoculars, the first is almost half the size of the second or third, which are completely surrounded by small granular scales; fourth supraocular is small and transversely elongate; supraciliary margin is formed of elongated scales; interparietal is quite small; occipital shield is not present; anterior loreal is not elongate, 8-10 supralabials, sixth and seventh or seventh and eighth are below the eye, but separated from it by a large elongate subocular; temporal scales are small, flat and granular; tympanic shield is not present; collar is straight, complete, the marginal scales are feebly enlarged; 28-33 gular scales on a line between the submaxillary shields and the collar; dorsal scales are very small, granular, subequal, 68-82 scales across the middle of the back; ventral plates are subquadrangular, in oblique series; 34 or 36 transverse and 18-20 longitudinal series; a single large preanal shield is available, which is sometimes divided in to two scales; the hind-limb reaches to the ear or the posterior of the eye, digits are almost smooth below, with well developed lateral denticulations on either side of the fourth toe; unguis lamellae is enlarged, forming a suboval disc caudal scales are keeled, smaller than the ventral scales; femoral pores are not present. Standard length 65 mm., tail length 130 mm.

Distribution : Afghan-Baluchistan frontier, near Koh Malik-do-khand; Pakistan (Nushki, North Baluchistan).

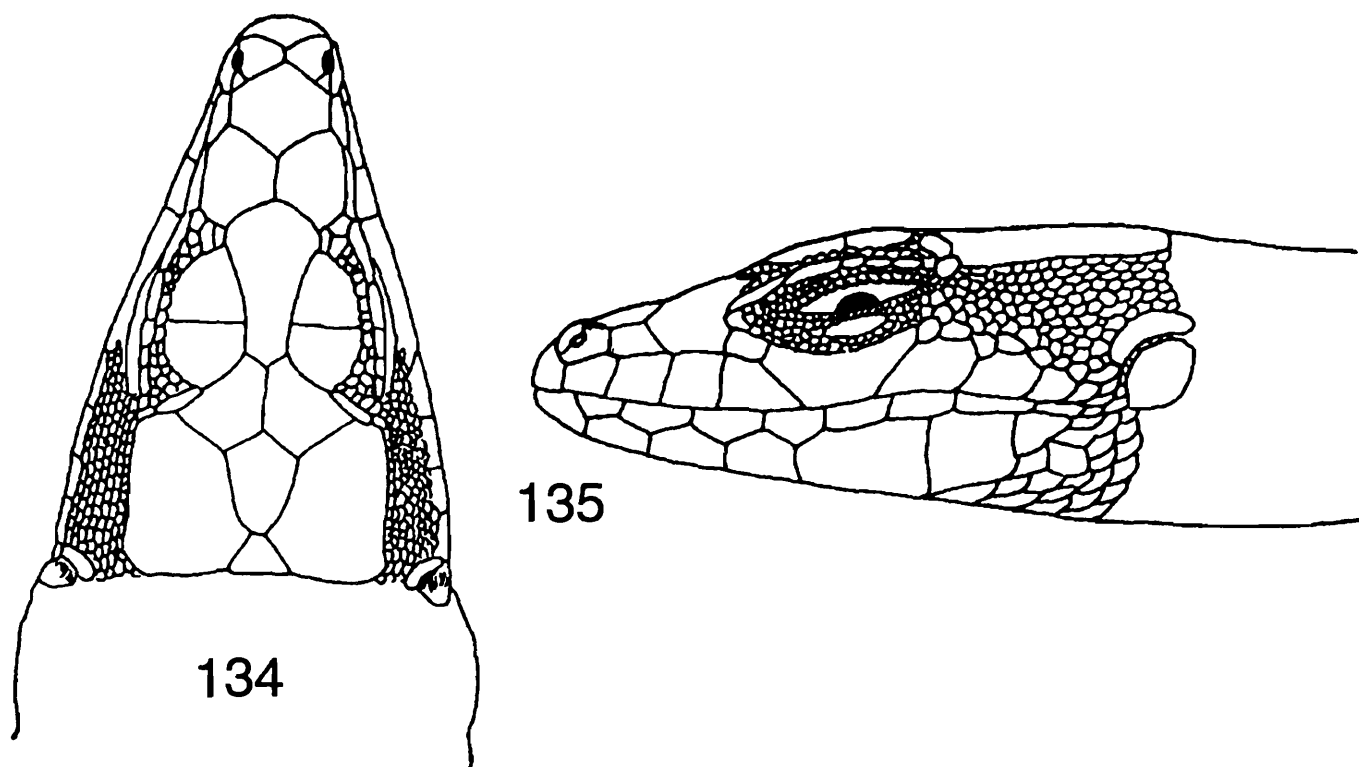
Habits and habitat : Inhabit sandy, bushy and grassy areas; diurnal; most agile, insectivorous, oviparous.

Status : Common.

272. *Eremias guttulata watsonana* Stoliczka 1872

(Figs. 134 & 135, Map 47)

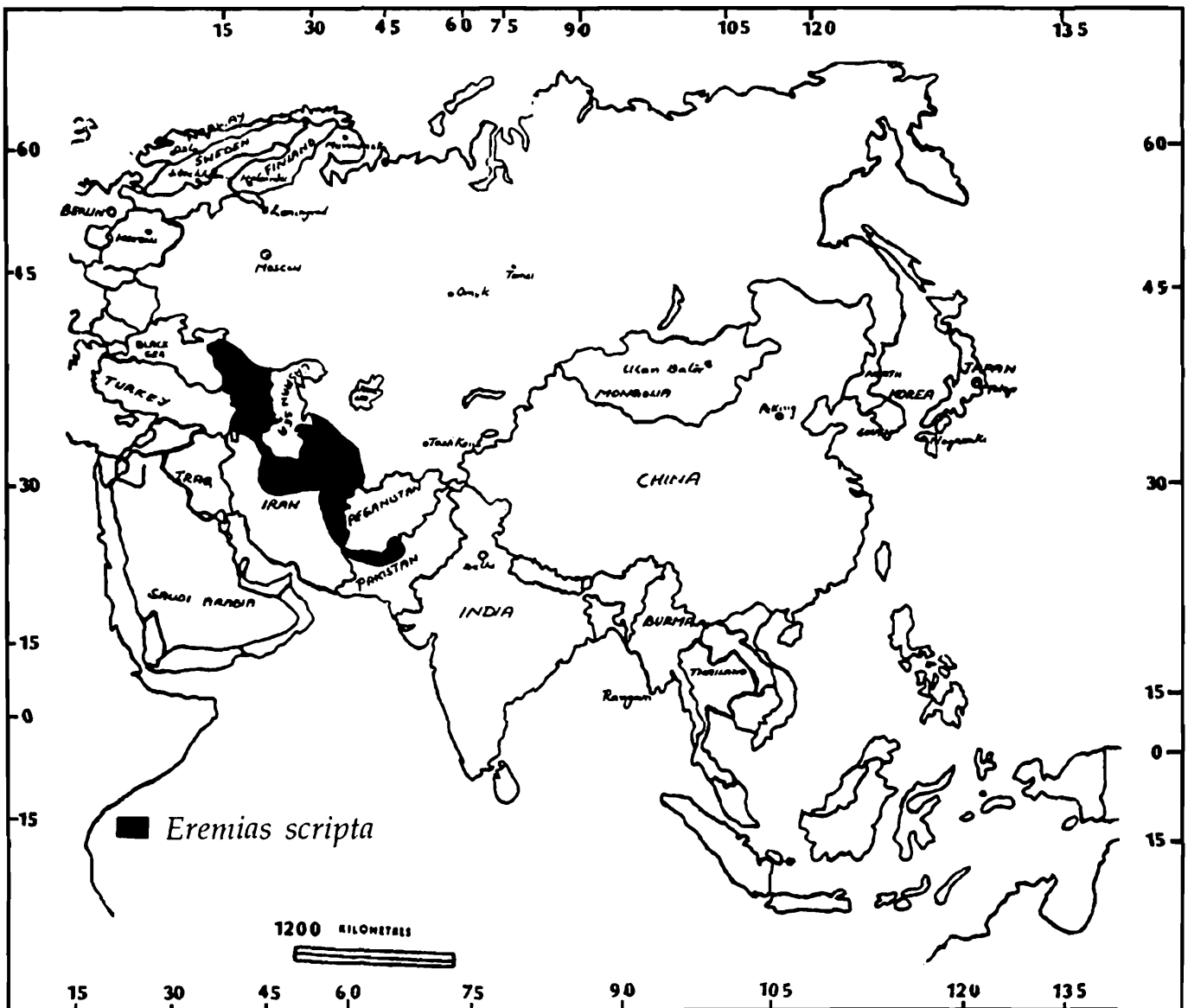
1823. *Lacerta guttulata* Lichtenstein, *Verz. Doubl. Zool. Mus. Berlin*, : p. 101 (type loc. Egypt).
1872. *Eremias (Mesalina) watsonana* Stoliczka, *P. Asiat. Soc. Beng.* : p. 86 (type loc. Sind. between Karachi and Sukkur).
1874. *Mesalina pardaloides* Blanford, *Ann. Mag. Nat. Hist.* (4) 14 : p. 32 (type loc. Menjam Island, Persian Gulf).
1876. *Mesalina pardalis* (not of Licht), Blanford, *J. Asiat. Soc. Beng.* 45 : p. 26.
1879. *Mesalina guttulata*, Blanford, *J. Asiat. Soc. Beng.* 48 : p. 127.
1884. *Mesalina watsonana*, Murray, *Zool. Sind* : p. 349.
1890. *Eremias guttulata*, Boulenger, *Fauna Brit. Ind.* : p. 177.
1935. *Eremias guttulata watsonana*, Smith, *Fauna Brit. Ind.* 2 : p. 389.



Figs. 134-135 : 134. *Eremias guttulata* : Dorsal view of head; 135. *Eremias guttulata* : Lateral view of head

The dorsum is olivaceous-grey, with longitudinal series of small white spots, edged by black spots, down the back; lateral aspects of body are with small white black edged spots; most of the individuals are with a dark-brown (somewhat blackish) dorso-lateral stripe passing to the eye; limbs are spotted with white and black; postero-lateral aspect of thigh is with a black streak; ventrum is greenish-white. Snout slightly acute; lower

eyelids with a semitransparent disc which is composed of 3-5 scales; nostril is between two large shields; four supra-oculars, the second and third are very large; supraciliary margin is composed of elongated scales separated from the supraoculars by small granules; interparietal much smaller than the fronto-parietal, in contact with small occipital; fifth or sixth labial is subocular; temporal scales, small, smooth or obtusely keeled; a small tympanic shield is available; collar is curved, quite free or just bound in the middle, its marginal scales are larger; 21-29 gular scales on a line between the submaxillary shields and the collar; dorsal scales are very small, granular, subimbricate, 40-50 across the middle of the back; ventral plates broader than long, in straight series, 8 or 10 across the middle of the belly, 28-34 between the collar and the femoral pores; a large preanal plate is present. The hind-limb reaches to the collar or the ear in male, to the axilla or a little further in female; digits keeled below, without lateral fringe; caudal scales longer than broad, keeled on the



Map 78 : Distribution of *Eremias scripta*

upper aspect, 20-26 round the thickest part of the tail; 9-14 femoral pores on each side. Standard length 55 mm.; tail length 90 mm.

Distribution : India : Rajasthan (Jaisalmer). Elsewhere : Pakistan, Iran, Southern Afghanistan (Map 47).

Habits and habitat : Insectivorous, burrowing, diurnal.

Status : Common.

273. *Eremias brevirostris* Blanford 1874
(Map 77)

1872. *Eremias watsonanus* Stoliczka, *P. Asiat. Soc. Beng.* : p. 125 (Kalabagh; *nec ante* p. 86).

1876. *Mesalina brevirostris* Blanford, *Ann. Mag. Nat. Hist.* (4) 14 : p. 32 (type loc. Kalabagh, Punjab, and Tumb Island, Persian Gulf).

1890. *Eremias brevirostris* Boulenger, *Fauna Brit. Ind.* : p. 177.

1901. *Eremias bernoullii* Schenkel, *Verh. Nat. Ges. Basel*, 13 : p. 187, fig. (type loc. Palmyra, Syria).

1935. *Eremias brevirostris*, Smith, *Fauna Brit. Ind.* 2 : p. 39.

The dorsal colouration is grey or greyish-brown, with numerous white and black spots, largest and most closely arranged upon the sides of the body; tail is with dark lateral spots; ventrum is whitish. This species is very similar to *Eremias guttulata watsonana* but differs in the following characters. Snout is short; nasals more swollen; disc of the lower eyelid is smaller, eyelids are more developed; second supraocular is usually separated from the prefrontal by one or more scales or by a single scale representing the first supraocular; interparietal is separated from the occipital, which is minute; subocular shield is sometimes separated from the labial margin by a small shield; ventral plates are in 10 or 12 longitudinal series, the 4 median rows are clearly broader than long. Standard length 55 mm., tail length 102 mm.

Distribution : From Syria to Pakistan (on the banks of Dasht River and Quetta district in Baluchistan, Las Bela, Pasni, and Kalabagh in the N.W. Punjab) (Map 77).

Habits and habitat : Terrestrial, sand-dwelling, diurnal, insectivorous, oviparous.

Status : Nowhere common but not endangered.

Family 8. ANGUIDAE Gray 1825

1825. *Angu(i)dae* Gray, *Ann. Phil.* 26 : p. 201 (in part).

1864. *Anguidae*, Cope, *Proc. Acad. Philad.* : p. 228.

1935. *Anguidae*, Smith, *Fauna Brit. Ind.* 2 : p. 391.

This family is represented by about 60 species placed under 8 genera from North, central and south America, the West Indies, Europe, the Himalays and Burma. This work includes only one species i.e. *Ophisaurus gracilis*. The lizards of this family are mainly the

terrestrial in their habits and feed mainly on small invertebrates. The body is elongated and covered with imbricate (overlapping) scales supported by osteoderms, as such the complete body is protected by the armour of bony plates. The skull is typically diapsid, with bony postorbital and post-fronto-squamosal arches. Temporal and postorbital arcades are present. The supratemporal fossa is roofed by dermal bones like postfrontal and osteoderms. The teeth are pleurodont (born on the sides of the jaws) and are always solid; they vary much in shape, from the large tubercular crowns (as in *Ophisaurus*) to the slightly curved and sharply pointed teeth of *Anguis*. The tongue is moderately elongate, deeply notched anteriorly, and is composed of two parts, namely, an anterior narrow portion which can be retracted into a thick posterior part. The anterior portion of tongue is dark in colour and covered with scale-like papillae; the thick basal portion of the tongue has got a transverse fold at its anterior end (where the anterior narrow part of the tongue is attached). When the tongue is fully extended all traces of transverse fold disappears. The head is covered above with symmetrical shields, an occipital or azygous posterior shield being always present, by means of this character Anguidae differ from the Scincidae. The limbs are reduced or in some cases lost; vestiges of pectoral and pelvic girdles remain in many species. In *Aphisaurus* limbs are reduced to tiny spikes; in *Anguis* the limbs are not present, but in *Gerrhonotus* these are well developed. The tail is long and fragile but is quickly but inadequately replaced. Femoral and preanal pores are not present. Anguid lizards are most abundant in Central America. Fossils of *Ophisaurus* have been recorded from the lower Miocene period of Germany.

Genus 65. *Ophisaurus* Daudin 1803

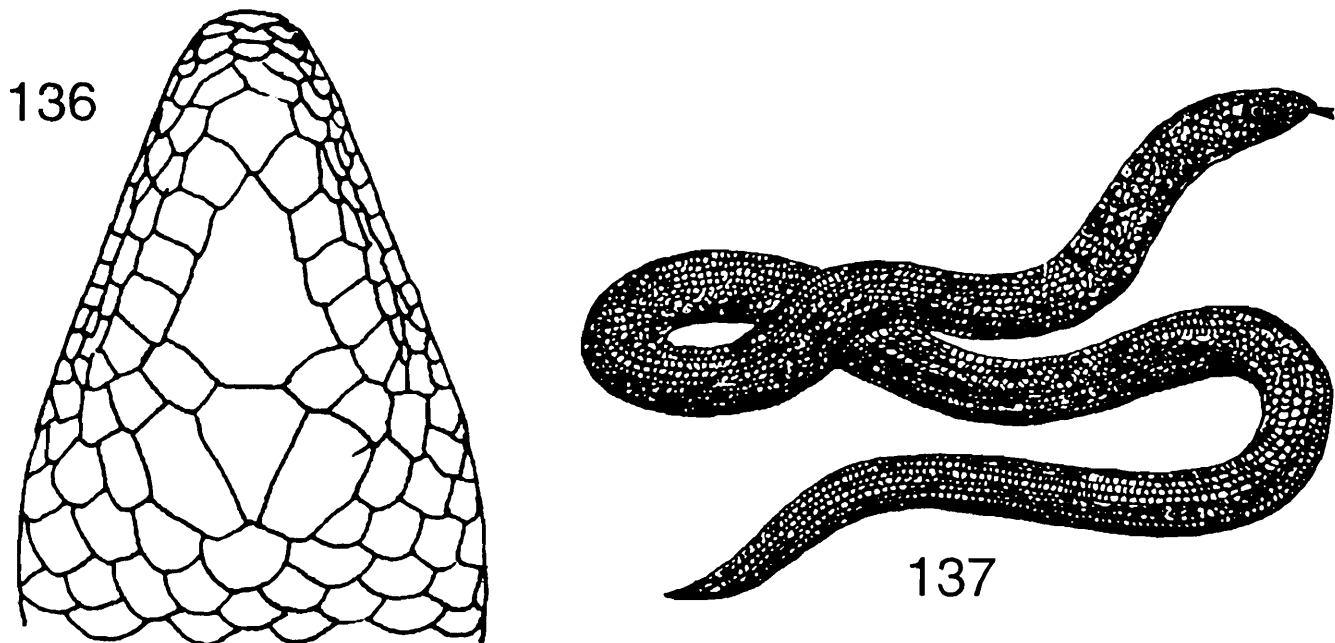
- 1803. *Ophisaurus* Daudin, *Hist. Nat. Rept.* 7 : p. 346 (type *ventralis*)
- 1811. *Bibes* Opperl, *Ordn. Rept.* : p. 43 (type *pallasii*).
- 1813. *Proctopus* Fischer, *Mem. Soc. Imp. Sci. Mosc.* 4 : p. 241 (type *pallasii*).
- 1820. *Pseudopus* Merrem, *Tent. Syst. Amphib.* : pp. 13 & 78 (type *apus*)
- 1820. *Hyalinus* Merrem, *Tent. Syst. Amphib.* : pp. 14 & 79 (type *ventralis*)
- 1853. *Dopasia* Gray, *Ann. Mag. Nat. Hist.* (2) 12 : p. 389 (type *Pseudopus gracilis* Gray).
- 1853. *Ophiseps* Blyth. *J. Asiat. Soc. Beng.* 22 : p. 655 (type *tessellatus*)
- 1873. *Hyalosaurus* Gunther, *Ann. Mag. Nat. Hist.* (4) 11 : p. 351 (type *koellikeri*)
- 1935. *Ophisaurus*, Smith, *Fauna Brit. Ind.* 2 : p. 392.

This genus includes about 6 species distributed in S.E. Europe to S.W. Asia; N. Africa; Indochina as far south as lat. 23°, S. China; N. America. Two species are from Indo-Chines Sub-Region and one from India. The main generic characters are : Limbs are not present externally, or reduced; generally hind-limbs are represented by rudiments; a lateral fold is present; scales are squarish-rhomboidal, forming straight longitudinal and transverse series. Pterygoid bones are with teeth; palatine and vomerine teeth may be present or absent.

274. *Ophisaurus gracilis* (Gray 1845)

(Figs. 8, 136 & 137, Map 47)

1845. *Pseudopus gracilis* Gray, *Cat. Liz. Brit. Mus.* : p. 56 (type loc. Khasi Hills).
 1853. *Dopasia gracilis* Gray, *Ann. Mag. Nat. Hist.* (2) 12 : p. 389.
 1853. *Ophiseps tessellatus* Blyth, *J. Asiat. Soc. Beng.* 22 : p. 655 (type loc. Rangoon, Burma).
 1885. *Ophisaurus gracilis*, Boulenger, *Cat. Liz. Brit. Mus.* 2 : p. 283, pl. 15, fig. 1.
 1935. *Ophisaurus gracilis*, Smith, *Fauna Brit. Ind.* 2 : p. 393.



Figs. 136-137 : 136. *Ophisaurus gracilis* : Head; 137. *Ophisaurus gracilis* : Entire view.

The dorsum is from light to dark-brown, with a darker, somewhat bluish-black band on the lateral aspect and irregular, transverse series of blue, black-edged spots; in many individual are having a vertebral series of brick red spots. Ventrums is yellowish. The body is snake like, devoid of limbs. Prefrontal is narrow, five supraoculars; interparietal broader than the parietals, broader than occipital; ear-opening is almost circular, about as large as the nostril; dorsal scales keeled, the median row very broadly, in 14-17 longitudinal and 88-94 transverse series on the length of the lateral fold; ventral scales smooth, in 10 longitudinal series; no vestiges of limbs externally; tail about twice as long as the head and body, the upper scales more strongly keeled than the lower. Standard length 180 mm.; tail length 360 mm.

Distribution : India : Arunachal Pradesh, Assam, Simla (Khasi Hills), Bengal (Darjeeling district). Elsewhere : Burma (upper part), Southern China (Map 47).

Habits and habitat : Terrestrial lizard, mainly insectivorous, nocturnal, most docile and sluggish. Breeds from July to September, lays 4-7 eggs (18×12 mm.) egg tooth is present.

Status : Vulnerable on account of habitat loss.

Family 9. VARANIDAE Gray 1827

1827. *Varanidae* Gray, *Phil. Mag.* 2 : p. 54.

1838. *Monitoridae* Gray, *Ann. Mag. Nat. Hist.* 1 : p. 392.

1935. *Varanidae*, Smith, *Fauna Brit. Ind.* 2 : p. 397.

This family includes about 30 species belonging to a single genus *Varanus*, distributed in the warmer parts of the old world, including Australia and excluding Madagascar. The lizards of this family are carnivorous and strong predators on various animals and their eggs. The family includes the largest lizard species, Komodo dragon, available from the Komodo island east of Java. This varanoid lizard attains a length of 3-5 metres and is a strong carnivore, highly predaceous and devours various animals alive or dead and also their eggs. The body of the monitor lizard is strong, with well developed limbs and is covered with small scales generally devoid of the osteoderms. The head is quite long and the tail is very long not fragile and laterally compressed. The temporal arcade is complete; postorbital arch is incomplete; supratemporal fossa is not roofed over; premaxillary bone is single, and narrow; nasal shields are narrow and united; infraorbital fossa is bounded by the pterygoid, palatine and epipterygoid bones; the maxillary bone do not participate in forming the boundary of the infraorbital fossa. An epipterygoid bone is always present. Teeth are large, pointed, dilated at the base, pleurodont (fixed to the inner side of the jaws, palate is devoid of teeth, clavicle is slender, not dilated; interclavicle is anchor-shaped. Tongue is smooth, very long and slender, bifid, retractile in to a sheath at the base, as found in snakes. Eyes are moderately large, pupil is round, eyelids are well developed. Head is covered with small juxtaposed scales; back with rounded or oval scales, surrounded by rings of granules, except in the juveniles (in which they are not developed); ventral scales are quadrangular, arranged in transverse series. Preanal pores are present, a single pair opens just in front of the vent. The position of these pores varies from species to species and according to Anderson (1895) they become functionally active at times, exuding a yellowish-red secretion. Apical pits are present on most of the scales, in front of the vent and upon the thighs they are larger and their structure appears to be different from that in other parts of the body. The earliest fossil records of this family are from Eocene and later period. Fossils of Siwalik Hills have been described by Lydekker.

Genus 66. *Varanus* Merrem 1820

1818. *Monitor* (not of Blainville, 1816) Lichenstein, *Zool. Mus. Univ. Berlin*, ed, 2 : p. 66 (type *niloticus*)

1820. *Varanus* Merrem, *Tent. Syst. Amphib.* : p. 58 (type *Lacerta varia* Shaw).

1826. *Psammosaurus* Fitzinger, *Neue Class, Rept.* : pp. 21, 51 (type *griseus*).
1827. *Dracaena* (not of Daudin, 1802) Gray, *Phil. Mag.* 2 : p. 55 (type *Lacerta dracaena* Linnaeus).
1830. *Polydaedalus* Wagler, *Nat. Syst. Amphib.* : p. 164 (type *niloticus*).
1830. *Hydrosaurus* Wagler, *Nat. Syst. Amphib.* : p. 164 (type *varius*)
1838. *Enpagusia* Gray, *Ann. Mag. Nat. Hist.* 1 : p. 393 (type *flavescens*).
1838. *Odatria* Gray, *Ann. Mag. Nat. Hist.* 1 : p. 394 (type *punctatus* = *indicus*)
1843. *Psammoscopus* Fitzinger, *Syst. Rept.* : p. 20 (type *picquotii*).
1843. *Pantherosaurus* Fitzinger, *Syst. Rept.* : p. 19 (type *gouldi*).
1843. *Cylindrurus* Fitzinger, *Syst. Rept.* : p. 19 (type *punctata*).
1843. *Agalmatosaurus* Fitzinger, *Syst. Rept.* : p. 19 (type *timoriensis*).
1843. *Euprepiosaurus* Fitzinger, *Syst. Rept.* : p. 19 (type *chlorostigma* = *indicus*).
1843. *Rhinoptyon* Fitzinger, *Syst. Rept.* : p. 20 (type *ocellatus*).
1843. *Pachysaurus* Fitzinger, *Syst. Rept.* : p. 20 (type *albogularis*)
1845. *Regenia* Gray, *Cat. Liz. Brit. Mus.* : p. 8 (type *albogularis*).
1935. *Varanus*, Smith, *Fauna Brit. Ind.* 2 : p. 398.

This genus includes 30 species which are confined to the warmer parts of the Africa, southern Asia, Indonesia and Australia. These lizards are carnivorous and can devour any kind of animal food (living or dead). It is said that *Varanus bengalensis* and *Varanus salvator* enter into the fields and eat melons, cucumbers and ears of paddy. They cause considerable damage to the nursery plants by devouring the tender roots of plants at the time of acute hunger. In ordinary circumstances their main food comprises birds and their eggs, small mammals, reptiles including the small snakes, fish, crustaceans and insects (especially the beetles and their grubs). Sometimes these lizards have been observed eating carrions, on one side they can be destructive to poultry and their eggs but in the same way these lizards are the strong predators on the harmful rodent pests of agriculture. Most of the species (except *Varanus griseus*) are good climbers and swimmers. When angry they make loud hissing calls and lash their tail vigorously. They deposit their oval and soft-shelled eggs in the holes on ground, muddy walls and ant-hills.

Key to the species of genus *Varanus*

1. Nostril is like an oblique slit which is nearer to the end of snout; abdominal scales smooth, in 110-125 transverse rows; tail is round or slightly compressed posteriorly.
..... *V. griseus*
2. Nostril is like an oblique slit which is nearer to the orbit than to the end of the snout, not twice as near to the end of snout; nuchal scales not larger than those on the crown of the head; supraoculars not enlarged; abdominal scales smooth, in 90-110 transverse rows; tail is compressed, with a low double-toothed dorsal crest. *V. bengalensis*

3. Other characters are same as available in *V. bengalensis* except that median supraoculars are transversely enlarged.
4. Nostril is like an oblique slit which is nearer to the end of the snout than to the orbit; nuchal scales larger than those on the crown of the head; snout convex; abdominal scales smooth, in 65-75 transverse rows; tail is compressed with a low double-toothed dorsal crest. *V. flavescens*
5. Nostril round or oval which is nearer to the end of the snout than to the orbit; nuchal scales smaller than those on the crown of the head; snout depressed; abdominal scales are feebly keeled; in 80-95 transverse rows..... *V. salvator*

275. *Varanus griseus koniecznyi* Mertens 1954
(Fig. 138, Map 79)

1803. *Tupinambis griseus* Daudin, *Hist. Nat. Rept.* 8 : p. 352 (type loc. Egypt.)
 1820. *Varanus scincus* Merrem, *Tent. Syst. Amphib.* : p. 59 (type loc. Egypt.)
 1827. *Tupinambis arenarius* Is. Geoffr. St. Hil., in *Savigny's Egypte* 1(1) : p. 123, pl. 3, fig. (type loc. Egypt.).

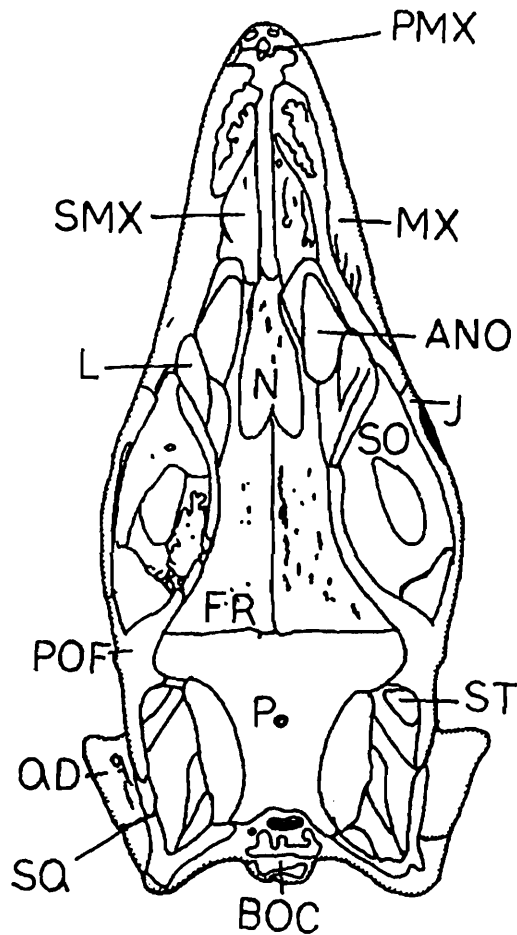


Fig. 138 : *Varanus griseus* : Dorsal view of skull.

1831. *Psammosaurus scincus* Eichwald, *Zool. Spec.* 3 : p. 190 (type loc. Egypt.)
 1834. *Varanus terrestris* Schinz, *Nat. Abild. Rept.* : p. 94, pl. 32, fig. 2.
 1869. *Varanus ornatus* (not of Daudin) Carlleyle, *J. Asiat. Soc. Beng.* 38 : p. 192 (type loc. Sikandra, near Agra).
 1885. *Varanus griseus*, Boulenger, *Cat. Liz. Brit. Mus.* 2 : p. 306.
 1899. *Psammosaurus arabicus* Tornier, in Hempr. & Ehrenb., *Symbol. Phys. Col. pl.* (type loc. Nubia).
 1935. *Varanus griseus*, Smith, *Fauna Brit. Ind.* 2 : p. 400.
 1954. *Varanus griseus koniecznyi* Mertens, *Aquar. Terrar. Zeitschr.* 7 : p. 355 (type loc. Korangi near Karachi, Pakistan).
 1966. *Varanus griseus koniecznyi*, Minton, *Bull. Amer. Mus. nat. Hist.* 134 : p. 113.

The Indian Desert Monitor is sandy, brownish yellow or occasionally greenish yellow in colour, heavily speckled with dark grey or greyish brown. It measures about 52 cm in the head and body length and about 80 cm in the length of tail. The body is sometimes cross-banded with brown, especially on the tail; the young is spotted with yellow. The snout is depressed at the end. The nostrils are oblique slits, lying much nearer to the eyes than the end of the muzzle. The digits are moderately elongated. The tail is rounded and whip-like. The scales on the crown are usually larger than the nuchal scales. The dorsal scales are obtusely keeled, and the lateral caudal scales are indistinctly keeled.

Distribution : It occurs in the drier parts of Madhya Pradesh, Maharashtra, Rajasthan and Punjab in India. Extralimitally, it extends to Pakistan, Afghanistan, Iran and north Africa (Map 79).

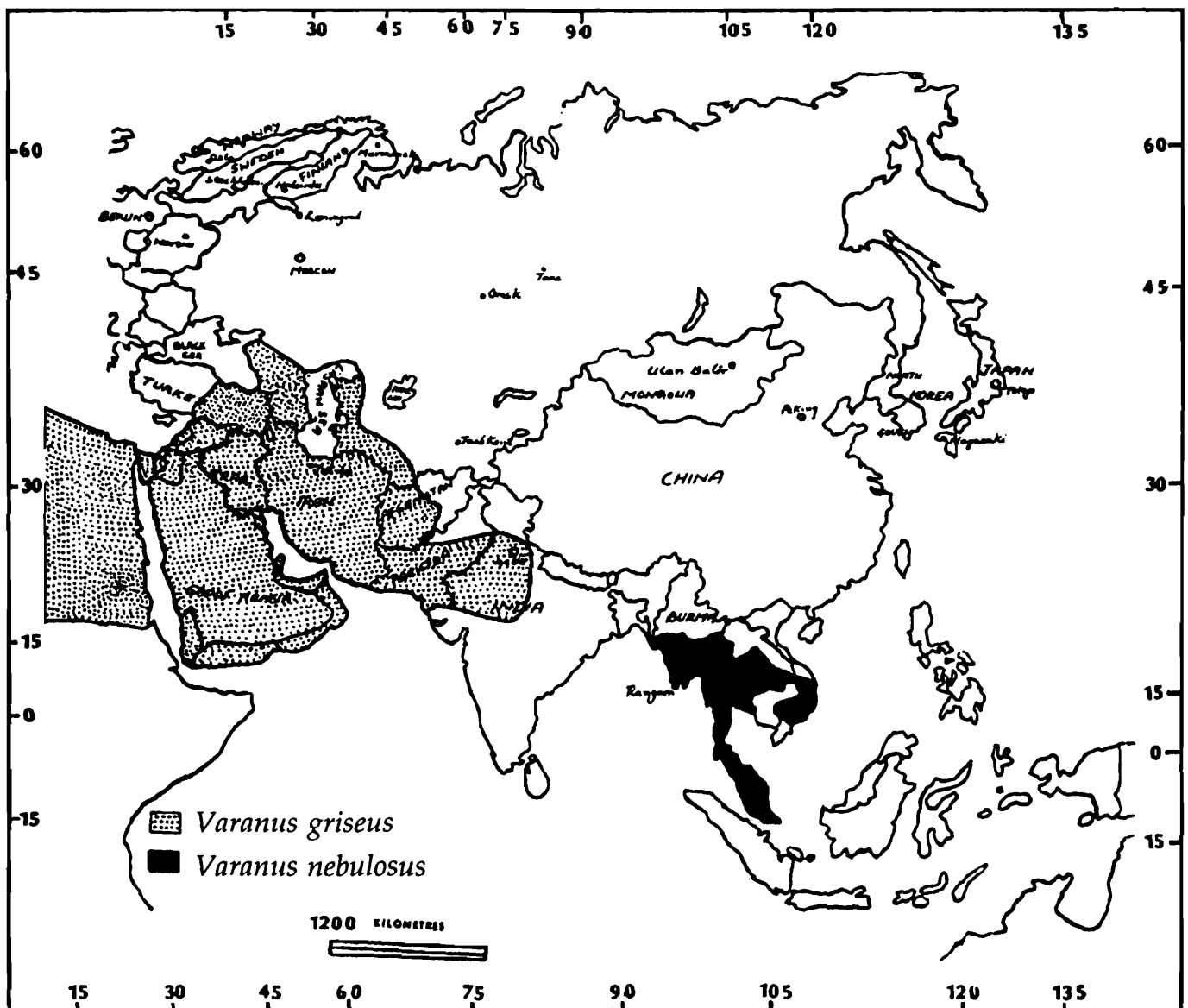
Habits and habitat : This monitor lives in burrows in undulating sandy grounds, with sparse vegetation. It can attain great speed in its movement, if required. During quick movements, however, the body remains raised above the ground. Its food mainly consists of locusts, grasshoppers and crickets; it also takes small vertebrates. The number of eggs in a clutch varies from 15 to 20, and they are kept buried in the sand till hatching.

Status : Like other monitors, it is hunted extensively for its valuable skin. Its population has, therefore, become exceedingly low.

276. *Varanus griseus caspius* (Eichwald 1831)

1831. *Psammosaurus caspius* Eichwald, *Zool. Spec.* 3 : p. 190 (type loc. Dardsha Peninsula, east coast of Caspian Sea).
 1935. *Varanus griseus*, Smith, *Fauna Brit. Ind.* 2 : p. 400.
 1954. *Varanus griseus caspius* Mertens, *Aquar. Terrar. Zeitschr.*, 7 : p. 355.
 1966. *Varanus griseus caspius*, Minton, *Bull. Amer. Mus. nat. Hist.* 134 : p. 114.

This subspecies is quite similar in habitus and scalation to *Varanus griseus koniecznyi* but differs in the following characters : The dorsal colouration is light sandy on body, orange to reddish on tail; 6-7 narrow cross bands of black colour on trunk, devoid of any



Map 79 : Distribution of *Varanus griseus* and *Varanus nebulosus*

border and light spots; dorsal aspect of head is reddish and with prominent black streaks on eye and ear region; anterior part of tail is with bands; in juveniles colouration is more prominent, dorsal black bands alternate with thin orange or reddish interspaces, tail is with 15-17 bands; tail is much longer comparatively; slightly compressed laterally in the middle and with an indistinct dorsal crest of scales; scale rows at middle of the body are 143. Size is larger comparatively.

Distribution : Transcaspia to southern Khazakistan; Iran; Afghanistan; Northern Baluchistan in Pakistan.

Habits and habitat : Secretive and most shy; burrowing lizard; other abodes are suitable crevices in rocks; most active during early morning; on provocation these lizards become most aggressive, inflate their throat, hiss loudly, strike hardly with their tails and sometimes inflict severe bites. The food comprises rats, mice, toads, frogs, fish, flesh of any kind and

eggs of birds and other reptiles. The live prey is crushed in the jaws; these are quite agile lizards and fast runners. The breeding season extends from May to September, hatchlings are seen in middle of August to September.

Status : Most endangered as it is killed in large number throughout its range for its skin and oil made from its visceral fat (which is used for making medicine for certain eye ailments).

277. *Varanus bengalensis* (Linnaeus 1758)

(Figs. 9, 139 & 140, Plate 13, Map 80)

1758. *Lacerta monitor* Linnaeus, *Syst. Nat.* ed. 10 : p. 201 (type loc. India).
 1768. *Stellio thalassinus* Laurenti, *Syst. Amphib.* p. 57 (based on Seba's Illustration 1 : pl. 110, figs. 4 & 5, habitat "India Orientali").
 1802. *Tupinambis bengalensis* Daudin, *Hist. Nat. Rept.* 3 : p. 67 (type loc. Bengal).
 1802. *Tupinambis cepedianus* Daudin, *Hist. Nat. Rept.* 3 : p. 43, pl. 29 (type loc. not known).
 1820. *Varanus punctatus* Merrem, *Tent. Syst. Amphib.* : p. 59
 1827. *Monitor elegans* (not of Daudin) Gray, *Zool. Journ* 3 : p. 225 (based on Hardwicke's drawings, nos. 53-59, Vol. 2).
 1831. *Monitor heraldicus* Gray, in *Griffith's Anim. King.* 9 : p. 27 (type loc. Bengal).
 1838. *Monitor dracaena* Gray, *Ann. Mag. Nat. Hist.* 1 : p. 393 (type loc. India).
 1844 (1829-44). *Monitor gemmatus* Guerin, *Icon. Regne Anim. King.* 1 : pls. Reptile pl. 3. (type loc. not known).
 1842. *Varanus bibronii* Blyth, *J. Asiat. Soc. Beng.* 11 : p. 869 (type loc. not known).
 1845. *Varanus lunatus* Gray, *Cat. Liz. Brit. Mus.* : p. 10 (type loc. India).
 1885. *Varanus bengalensis*, Boulenger, *Cat. Liz. Brit. Mus.* 2 : p. 310.
 1935. *Varanus monitor*, Smith, *Fauna Brit. Ind.* 2 : p. 402.
 1966. *Varanus bengalensis*, Minton, *Bull. Amer. Mus. nat. Hist.* 134 : p. 112.

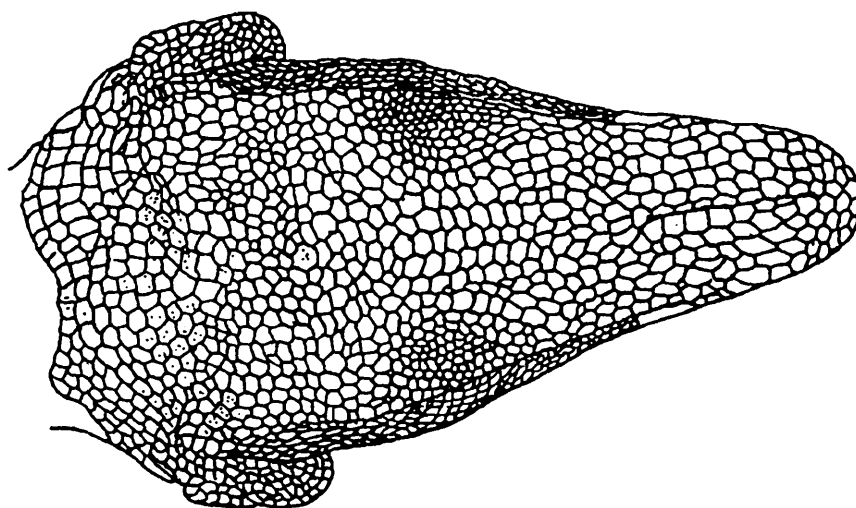


Fig. 139 : *Varanus bengalensis* : Dorsal view of head.

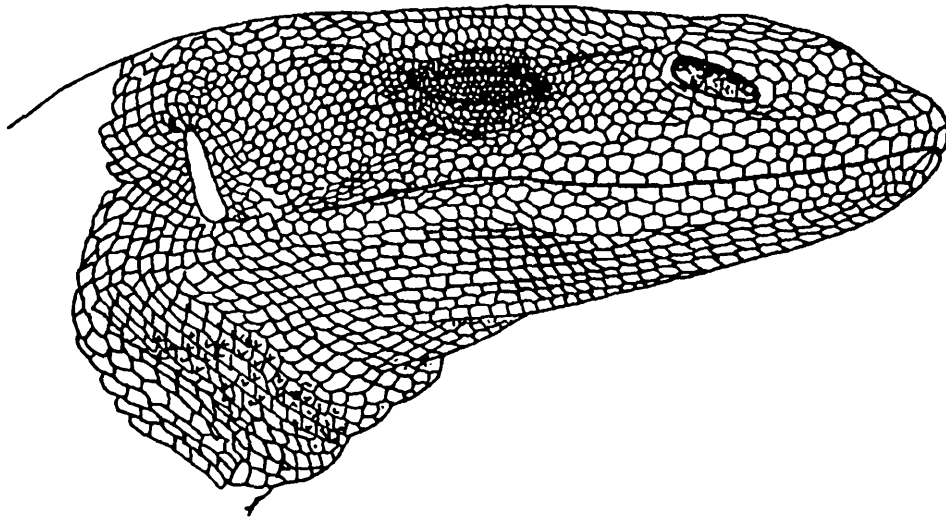


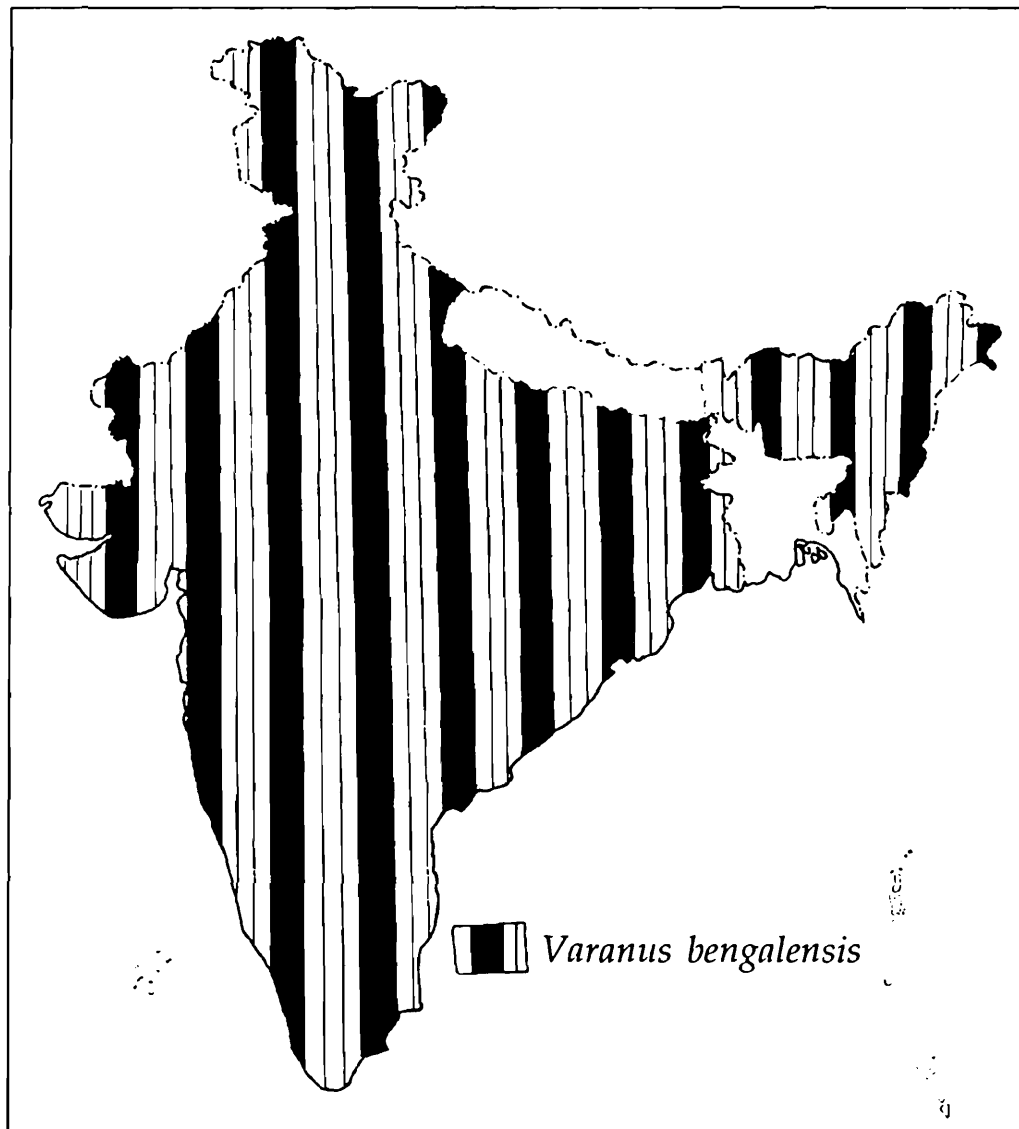
Fig. 140 : *Varanus bengalensis* : Lateral view of head.



Plate 13 : *Varanus bengalensis* (Linnaeus)

Dorsal colouration of juveniles is dark olive, with transversely arranged dull spots or ocelli, some individuals with alternate darker spots or cross bars and in rare case only dark bars are available; dorsal aspect of the head is with faint spots; a prominent dark streak is present on the temporal region; ventrum is whitish, with thin dark transverse bars, which are sometimes broken into minute spots, arranged in most regular transverse series. Grown up adults are brownish or olive dorsally, generally speckled with black; throat is with numerous black spots; ventrum is yellowish, in most cases with black dots or spots, belly may be uniformly yellow. The head is long and narrow, neck is long, snout is pointed, convex at the tip; its length from 2 to 2 1/2 times its height; distance from

nostril to eye is 55-75% of distance from nostril to tip of the snout; canthus rostralis is distinctly prominent; nostril is an oblique slit, slightly nearer to the orbit than to the tip of the snout; lateral fold on neck is well developed; lateral fold on body is feeble, ear-opening is like an oblique slit, its length is almost twice the width; teeth are acute and slightly compressed. Scales on the crown of head are larger than the scales present on the nuchal region and fore part of the dorsum; which are rounded and devoid of the keels; posterior scales of the dorsum may or may not be keeled; scales of neck, back and belly are sub-equal, supraocular scales are small, almost equal; abdominal scales are smooth, in 90-110 transverse rows; scales at middle of body are in 132-176 rows. Limbs are long and strong, digits are elongate. Tail is strongly compressed laterally, with a low double-toothed crest of scales above except at its base and tip; lateral caudal scales are keeled, slightly smaller than the subcaudal scales. Femoral pores are not present. Standard length 280-750 mm., tail length 475-1000 mm.



Map 80 : Distribution of *Varanus bengalensis*.

Distribution : Whole of India; Burma; Sri Lanka; Pakistan (Waziristan and most of other parts); Nepal and Uzbekistan (Map 80).

Habits and habitat : This diurnal monitor lizard is of the burrowing habits and prefers to live in varied habitats and abodes like burrows, nullahs, around cliffs in the crevices of rocks, under stones and boulders, in dense vegetation bordering marshes, ponds, canals and tanks, along sea coasts on the banks of tidal creeks, among dunes, in hollow of trees, crevices of abandoned buildings, crevices on the walls of bridges and such other suitable places where it feels safe and food is available nearby. It usually appears two hours after sunrise and remains active almost throughout the day. At many places this considerably large monitor was observed in burrows or other shelters in the company of toads, crabs, scorpions, spiders, centipedes, various insects and isopods (crustaceans). The lizards are fast runners and most agile; they are good swimmers, the tail is used for propulsion and the legs pressed against the body; many live in deep wells in the crevices of the walls. Their tail is a strong weapon for defence, which is lashed on any intruder or enemy, they also use their claws for this purpose and sometimes bite savagely. They live in temporary hibernation from November to early March and are seen in large numbers during and after the rainy season. These monitors have been seen up to the altitude of 900 metres in hilly areas and generally avoid the wind-blown sandy areas of desert. This large monitor feeds mainly on beetles, ants, grasshoppers, termites, small mammals, snakes, lizards, and vegetable matter. The main breeding season is from late June to early September. About 14-29 large oval eggs (16-45 mm long and 15-33 mm wide) were found in the oviduct of large gravid females during July and early August. The eggs are with a soft, pliable shell and are generally laid in the first week of August in holes and heaps of mud. After egg laying the female closes up the hole with leaves and rubbish and departs.

Status : Endangered, as they are killed in large numbers for their skin and flesh. The flesh of this lizard is considered as delicacy and consumed by many people, throughout its range. Their eggs are also eaten in large numbers at various places.

278. *Varanus nebulosus* (Gray 1831)

(Fig. 141, Map 79)

1831. *Monitor nebulosus* Gray, in *Griffith's Anim. King.* 9 : Suppl., p. 27 (type loc. Java).

1839. *Monitor nebulatus* Schlegel, *Abbild. neu. Amphib.* : p. 75.

1864. *Varanus nebulosus*, Gunther, *Rept. Brit. Ind.* : p. 66, pl. 9, fig.

1935. *Varanus nebulosus*, Smith, *Fauna Brit. Ind.* 2 : p. 403.

Dorsal colouration is dark olive or brownish, with tiny yellow dots or spots all over; transversely arranged blackish bands or sculptures on the chin and throat; belly marbled with dark brown and yellow; nape and upper part of the head is usually yellow. Juveniles are with a dark streak on the temporal region; generally with yellow spots on the dorsum,

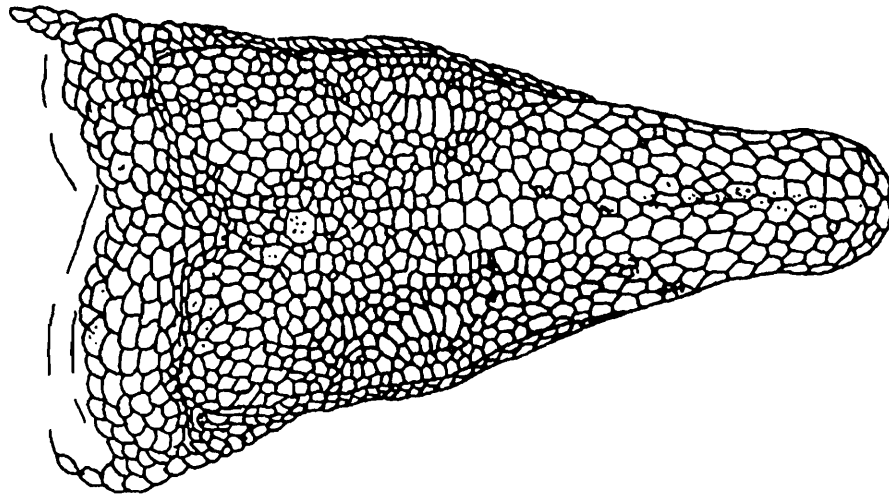


Fig. 141 : *Varanus nebulosus* : Dorsal view of head.

arranged in transverse series. In general appearance the whole body is clouded with light to dark yellow. Teeth are acute, slightly compressed, in aged individuals the posterior teeth become rounded and blunt; snout is convex, its length is almost 1 1/2 times of the height; canthus rostralis is prominently distinct; nostril is like an oblique slit, which is slightly nearer to the orbit than to the end of the snout; scales on the crown of head are larger than the scales present on the nuchal region, which are smooth or may be feebly keeled; dorsal scales on the back are strongly keeled; median supraocular shields are transversely enlarged; abdomen is with 70-90 transverse rows of smooth or feebly keeled scales. Limbs are stout, digits are elongate. Tail is strongly compressed, with a low double-toothed crest above; lateral caudal scales are keeled; almost as large as the subcaudal scales. Standard length 550-600 mm., tail length 800-850 mm.

Distribution : Burma (Southern part); Thailand; Vietnam and Malaysia (Map 79).

Habits and habitat : Diurnal, burrowing; docile, but hisses loudly and lash out with their tails on rough handling, never make an attempt to bite; recorded up to an altitude of 1000 metres; other habits are almost similar to *Varanus bengalensis*.

Status : Endangered on account of their skin and flesh.

279. *Varanus flavescens* (Gray 1827)

(Fig. 142)

1827. *Monitor flavescens* Gray, *Zool. Journ.* 3 : p. 226.

1830. *Varanus russelii* Heyden, in *Ruppell's Atlas Reise nord. Afr.* : p. 23 (type loc. Bengal)

1836. *Varanus picquotii* Dumeril & Bibron, *Erp. Gen.* 3 : p. 485 and Atlas, pl. 35, fig. Scales (type loc. Bengal).

1839. *Monitor exanthematicus* Var. B, *Schlegel, Abbild. neuer Amphib.* p. 71.

1935. *Varanus flavescens*, Smith, *Fauna Brit. Ind.* 2, p. 404.

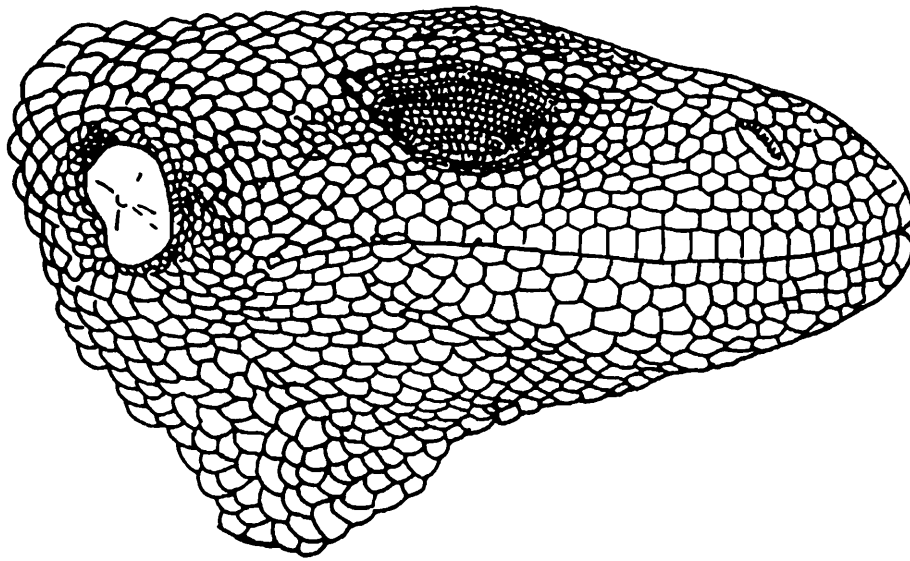


Fig. 142 : *Varanus flavescens* : Lateral view of head.

Dorsal colouration in juveniles is dark brown, with yellowish spots transversely arranged, sometimes these unite and form distinct transverse bars; temporal region is with a dark streak, which gradually merges with the dark brown colour of the head; dark brown cross bars are present on the lips and throat; belly is with or without the dark brown cross bars; ventrum is usually yellowish. In adult individuals as the age increases this colour pattern faints out and the whole body takes a dark brown or reddish brown hue, with distinct pattern of alternating transverse bars of reddish brown and dirty yellow. Teeth are acute, slightly compressed; snout is short, convex, its length is less than 2 times of its height; canthus rostralis is quite distinct; nostril is like an oblique slit, which is a little nearer to the tip of the snout than to the orbit; scales on the crown of the head are smaller than the scales available on the nuchal region, which are strongly keeled; dorsal scales are strongly keeled; median supraocular shields are slightly enlarged transversely; abdomen is with 65-75 transverse rows of smooth scales. Limbs are strong, digits are short; tail is strongly compressed, with a low double-toothed crest above; subcaudal scales are not much larger than the lateral caudal scales. Standard length 365 mm., tail length 465 mm.

Distribution : India (North India from Punjab to West Bengal and Assam; more common in Bihar); Pakistan (Salt range, Punjab; Sind).

Habits and habitat : Diurnal species, inhabiting burrows in groves and on the muddy walls (embankments) of pools and canals; it is a very good swimmer and preys on crabs, shrimps, aquatic insects and their larvae, which comprises its main food.

Status : Vulnerable on account of habitat loss, being hunted for skin and flesh.

280. *Varanus salvator* (Laurenti 1768)

(Fig. 143)

1768. *Stellio salvator* Laurenti, *Syn. Rept.* (based on Seba's Illustration 2, pl. 88, fig. 21).
 1820. *Tupinambis bivittatus* Kuhl, *Beitr. Zool.* (1) : p. 125 (based on Seba's Illustr. 2, pl. 30, fig. 2).
 1847. *Varanus Salvator*, Cantor, *Cat. Rept. Malay Pen.* : p. 29.
 1864. *Hydrosaurus salvator*, Gunther, *Rept. Brit. Ind.* : p. 67, pl. 9, fig. E.
 1864. *Varanus vittatus* Lesson, in *Belang, Voy Ind. Or., Rept.* : p. 307 (type loc. mouth of the Ganges).
 1935. *Varanus salvator*, Smith, *Fauna Brit. Ind.* 2 : p. 406.

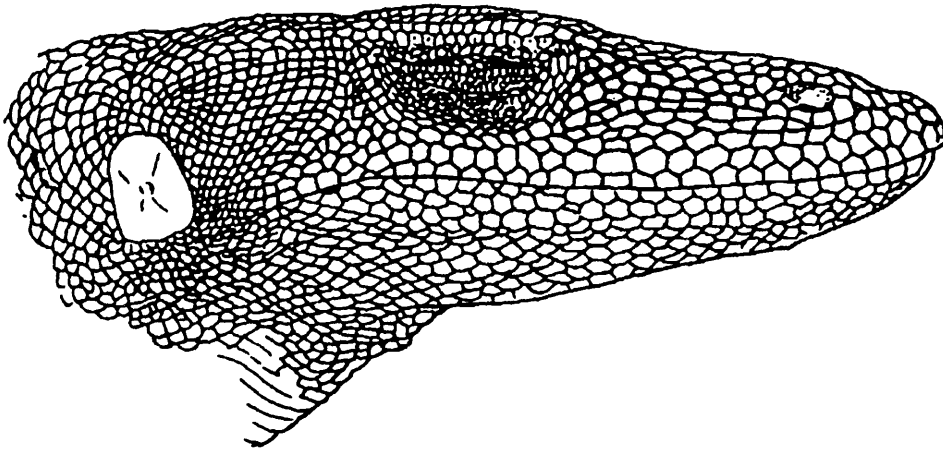


Fig. 143 : *Varanus salvator* : Lateral view of head.

Dorsal colouration of the juveniles is blackish, with small yellow spots and quite large and rounded spots or ocelli arranged in transverse series. Snout is brownish with blackish tinge, with black transverse bars, which are most prominent on the lips and under side of the chin; temporal region is with a black streak with a yellow lower margin, which emerges from the eye region and extends on to the sides of neck; ventrum is yellowish, generally with narrow, black, vertical, V-shaped marks which extend on to the sides of the belly; dorsal aspect of the limbs is blackish, with small white spots; tail is alternately banded with black and white. On the advancement of the age all these markings become less distinct and body assumes a dark olive hue, with faint yellowish spots on the dorsum. Teeth are acute, strongly compressed; snout is depressed at the tip, its length is at least 3 times of its height; canthus rostralis is obtuse; nostril is round or oval; its distance from the orbit is 2 times of its distance from the tip of the snout; scales on the crown of the head are larger than the scales available in the nuchal region; median supraocular shields are transversely enlarged; dorsal scales are prominently keeled; abdomen is with 80-95 transverse rows of feebly keeled scales. Limbs are strong, digits are elongate; tail is strongly

compressed, with a low double toothed crest above; subcaudal scales much larger than the lateral caudal scales. Standard length 1000 mm., tail length 1500 mm.

Distribution : Sri Lanka; Burma, Vietnam, Philippines, India (Andaman and Nicobar Islands; Eastern part of Bengal; Eastern Himalayas up to 6000 ft.; Sundarbans); Southern China; East Indian Archipelago; North Australia, Bangladesh; Thailand; Cambodia; Cochin China.

Habits and habitat : Diurnal; more aquatic in habits in comparison to other monitors, inhabiting rivers, canals, large ponds, sea coast and estuaries; it can climb the trees in search of food. The food habits are quite similar to the other allied species. The breeding season extends from May to late August or early September; the eggs are laid by the approach of the rainy season in June and are deposited in holes on the banks of rivers, in trees beside the water bodies, about 15-30 eggs (70x40 mm.) are laid at a time.

Status : Vulnerable. Killed for its skin and eggs which are said to taste like turtle eggs. The flesh of this monitor is not consumed.

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