

Data on courting behaviour patterns in some canarian lizards.

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ABSTRACT: Several behaviour patterns that appear during courting of females by male lizards are described for two different Canarian subspecies: *Gallotia galloti eisentrauti* and *G. galloti palmae*. A report of copulation in *G. galloti caesaris* is also included. The importance of the courting behaviour as a character for studying behaviour evolution and taxonomic relationships is discussed in relation to another behavioural character previously cited by other authors.

Key words: Courting behaviour patterns, lizards, Canary Islands.

RESUMEN: Se describen pautas de comportamiento que aparecen durante el cortejo de las hembras por parte de los machos en dos subespecies de lagartos canarios: *Gallotia galloti eisentrauti* y *G. galloti palmae*. Se incluye también un caso de copulación en *G. galloti caesaris*. Se discute la importancia del comportamiento de cortejo, como carácter para estudiar la evolución de la conducta y las relaciones taxonómicas, en relación con otro carácter conductual usado por otros autores.

INTRODUCTION

The sexual behaviour of lizards has been a matter of interest for many years (PLANCY, 1877; ROLLINAT, 1900; NOBLE & BRADLEY, 1933; KRAMER, 1937) and its study evolved from general observations of the behaviour patterns involved in the mating of several species until hypothesis on sexual selection theories (NOBLE & BRADLEY, 1933) or the use of some of its behaviour pattern components as factors contributing to the evolution of behaviour and even to the segregation of species.

Therefore, many descriptions do in fact exist on the courting and mating behaviours of different lizard species. However, the literature is more abundant with relation to the several kinds of displays in iguanids (JENSSEN, 1971; STAMPS & BARLOW, 1973; CREW 1975; JENSSEN, 1975, 1979; JENSSEN & HOVER, 1976), including assertion, challenge and courtship displays.

Some reports on courting and mating behaviours have been published for lacertid lizards (NOBLE & BRADLEY, 1933; KRAMER, 1937; KITZLER, 1941; SMITH, 1954; WEBER, 1957; VERBEEK, 1972), usually including descriptions of the behaviour patterns involved in the whole sequence.

For Canarian lizards belonging to the genus Gallotia (BOULENGER, 1920; ARNOLD, 1973), some general data on mating behaviour have also been published (BISCHOFF, 1971, 1974) as well as the consideration of the biting pattern during copulation as a systematic character shared with other primitive lizard species (BOHME & BISCHOFF, 1976).

Although, for many other species, the description of courting and mating behaviours correspond to observations in their natural habitats, the published data for the Canarian lizards mainly proceed from terrarium observations (BISCHOFF, 1971, 1974; BOHME & BISCHOFF, 1976) excepting author's previous data (MOLINA-BORJA, 1981).

Some more detailed descriptions of the courting behaviour in two different Canarian lizards: Gallotia galloti eisentrauti (BISCHOFF, 1982) from the North of Tenerife and G. galloti palmae from the island of La Palma, are therefore included.

BEHAVIOUR PATTERN DESCRIPTIONS

The first observation of courting behaviour was in G. galloti galloti, already reported in a previous paper (MOLINA-BORJA, 1981), corresponding to the locality of Llano del Moro, a small town near La Laguna. In this case only the general sequence could be noted.

A second observation was made while the author was recording lizard spatial and temporal behaviour (MOLINA-BORJA, 1985); in this case the species was G. galloti in a natural population at El Rayo (Buenavista, Tenerife) where specimens referable both to G. galloti galloti and G. galloti eisentrauti (BISCHOFF, 1982) were present. The second subspecies, although cited as characteristic of the North of Tenerife by BISCHOFF (1982), appears to mix with the first one at Buenavista.

On this occasion, the observation was made in June of 1982 and the entire sequence was as follows: a male, with the external morphological characteristics of G. galloti eisentrauti, was seen walking in circles around a female which was in rest; while moving, the male had its throat inflated (dewlap) and performed vertical head movements (= head bobs, following the terminology of many investigators -CARPENTER & FERGUSON, 1977-) in a typical sequence: at least five successive head bobs, a short interval, and again the head bobs. Afterwards, both animals retired and no other details could be gathered.

A third observation was made in July of 1983 on G. galloti palmae, in a place near Puntallana town (Northeast of La Palma island). Here, a male could be seen with dewlap and walking around and near a female (Fig. 1). While moving and maintaining the dewlap, the male performed vertical head movements (head bobs) which consisted of three to five up and down movements. This sequence of head bobs was repeated during the displacement of the male around the female. Unfortunately, the lizards disappeared very soon and no other behaviour could be observed.

DISCUSSION

As can easily be deduced, the courting sequence looks very similar in both subspecies although a more detailed analysis is needed in order to discover possible differences.

However, some new characteristics, hitherto unknown in any Canarian lizard,

were obtained: 1) the circling movement of the male around the female in both subspecies and 2) the three to five head bobs which are repeated in sequence. These particularities were not cited in terrarium observations (BISCHOFF, 1971, 1974; BÖHME & BISCHOFF, 1976) of G. galloti galloti or for other lacertid species (VERBEEK, 1972).

Perhaps the absence of copulating patterns after that of courtship, in our observations, could be due to the late date of the reproductive seasonal time in which both of them were made (June and July, respectively). However, the copulation pattern has already been described (BISCHOFF, 1971,1974; BÖHME & BISCHOFF, 1976; MOLINA-BORJA, 1981) for some Canarian lizard species. A case of copulation in G. galloti caesaris is represented in Figs. 2 & 3 as obtained from two photographs kindly provided by C. SILVA.

The importance of the courting patterns, and in general of the several kinds of lizard displays, in order to understand their behavioural evolution, diversity within a species or to aid in the taxonomic positioning of related species, has mainly been expressed by CARPENTER (1962, 1964, 1966, 1967), CARPENTER et al. (1970), CARPENTER & FERGUSON (1977) and JENSSEN (1971,1975) for iguanid lizards.

BÖHME & BISCHOFF (1976) considered the importance of the biting pattern during copulation as a systematic character for Canarian and other lizards. However, in order to establish taxonomic relationships as well as behavioural evolution in these Canarian animals and, in general, in lacertid species, perhaps a more suitable characteristic would be the afore-mentioned courtship pattern in terms of its greater importance for a successful communication of the sexes during mating. Biting during copulation is common behaviour in different and separated lizard species or families and, thus, perhaps would not be so useful to obtain evolutive trends and closer taxonomic relationships.

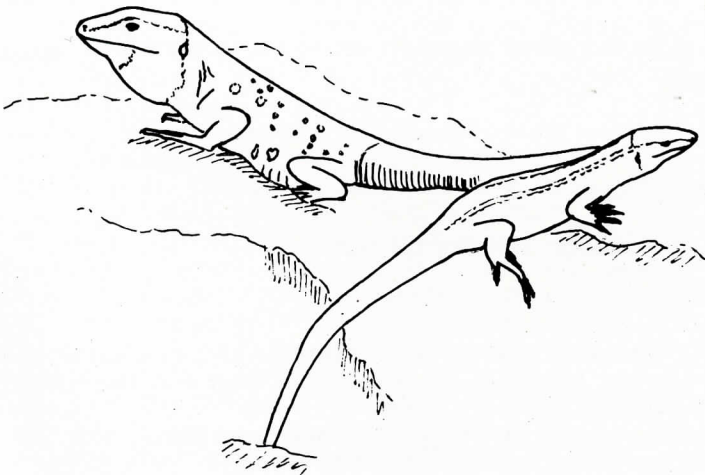
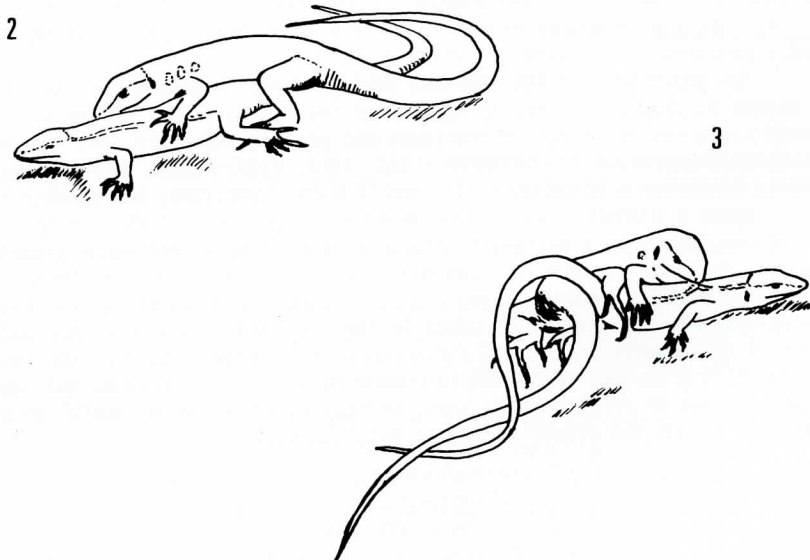


Fig. 1.- Male of Gallotia galloti palmae displaying one of the typical behaviour patterns of courtship to a female.

In this sense, something similar to the work carried out mainly by CARPENTER (1962,1964, 1966, 1967), CARPENTER et al. (1970), JENSSEN (1971, 1975, 1979), JENSSEN & HOVER (1976), JENSSEN & ROTHBLUM (1977), JENSSEN & GLADSON (1984) and HOVER & JENSSEN (1976) on the displays in iguanid lizards should be undertaken in the future for lacertid species.



Figs. 2 & 3.- First and second components of the mating sequence in Gallotia galloti caesaris.

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