NORTH-WESTERN JOURNAL OF ZOOLOGY 17 (2): 232-275
Article No.: e201512

http://biozoojournals.ro/nwjz/index.html

The distribution and biogeography of amphibians and reptiles in Turkey

Çağdaş YAŞAR[1,2], Kerim ÇİÇEK[2], John MULDER[3] and Cemal Varol TOK[4]

1. Akdeniz Koruma Derneği, Mediterranean Conservation Society, Izmir, Turkey.
2. Section of Zoology, Department of Biology, Faculty of Science, Ege University, TR-35100, Bornova, Izmir, Turkey.
3. Natural History Museum Rotterdam, Department of Vertebrates, Westzeedijk 345, 3015AA, Rotterdam, the Netherlands.
4. Department of Biology, Çanakkale Onsekiz Mart University, Faculty of Arts and Sciences, Çanakkale, Turkey.
* Corresponding author, K. Çiçek, E-mail: kerim.cicek@hotmail.com or kerim.cicek@ege.edu.tr

Received: 19. June 2020 / Accepted: 30. December 2020 / Available online: 15. January 2021 / Printed: December 2021

Abstract. Knowledge on the spatial distribution of taxa is crucial for the decision-making processes in conservation and management of biodiversity that rely on precise distribution data. We present an annotated list for a total of 37 amphibian (20 caudatans and 17 anurans) and 141 reptile species (11 chelonians, 70 lizards, 3 amphisbaenians and 57 snakes) in Turkey, using both available scientific literature up to December 2020 and our own fieldwork data from 1987 to 2020. We provide a comprehensive listing of taxonomy, names, distribution and conservation status of Turkish amphibians and reptiles. The herpetofauna list will be particularly useful for establishing national conservation priorities as well as for placing Turkish fauna into phylogenetic and biogeographic contexts. We compiled information published in books, journals and various web sources and added our personal data. We projected the data in the WGS84 coordinate system and created an overlay grid with cells of 50x50 km^2. The database comprises more than 500 grid cells and 11,913 records. As a result, the distribution of Turkish amphibians and reptiles has been extensively mapped with geographical information systems and a database has been created. The obtained data will be useful in planning future studies on taxonomy, ecology and conservation of Turkish amphibians and reptiles.

Key words: biogeography, conservation, distribution, GIS, species richness, Turkish herpetofauna.

Introduction

Global biodiversity is being lost at an accelerated rate (Butchart et al. 2010) because of many threats, especially human-induced habitat loss and fragmentation. A precise knowledge of the distribution patterns of species and the identification of hotspot areas are extremely important for the conservation and management of biological diversity (Margules & Pressey 2000, Myers et al. 2000, Sillero et al. 2014).

Turkey is located at the intersection of three biodiversity hotspots: the Caucasus, the Irano-Anatolian, and Mediterranean hotspots (Mittermeier et al. 2005). Its unique tectonic history and location between the temperate and subtropical regions have caused a variety of climates, ecosystems, and habitats (Şekercioğlu et al. 2011). Due to its unique geographical features, a variety of climates, ecosystems, and habitats within a relatively limited area, Anatolia (Asian part of Turkey) is both a bridge and a barrier between Asia and Europe (Sindaco et al. 2000).

The first herpetological researches on Turkish herpetofauna began in the early 19th century and Anatolia particularly has been the focus of European researchers (e.g., Werner 1902, Bodenheimer 1944, Clark & Clark 1973). For this reason, most of the collected data is along main road routes (see Clark & Clark 1973). Bodenheimer (1944) reported 18 amphibians and 67 reptiles from Turkey. Then the number of amphibians raised from 18 (8 caudatans, 10 anurans) to 28 (14 caudatans, 14 anurans) from 1944 to 2012 (Bodenheimer 1944, Başoğlu et al. 1994, Baran & Atatür 1998, Baran et al. 2012). The number of reptiles increased from 69 (5 chelonians, 2 amphisbaenians, 32 lizards, 30 snakes) to 129 (11 chelonians, 1 amphisbaenians, 62 lizards, 55 snakes) in the same period (Bodenheimer 1944, Baran 1976, Başoğlu & Baran 1977, 1980, Sindaco et al. 2000, Baran & Atatür 1998, Baran et al. 2012).

The increasing number of species detected in Turkey during the last decades is not only due to intensive field research, but also to the increased application of genetic markers. A lot of amphibians and reptiles, which were considered as one species in the past, were split into several species recently. This led to an increase in the number of species in Turkey.

Distributional studies on European herpetofauna began with the establishment of the "Societas Europea Herpetologica" (SEH) in 1979 and the atlas by Gasc et al. published in 1997 by this society. The atlas studies of the European herpetofauna were rearranged by Sillero et al. (2014) using Geographic Information Systems (GIS). GIS-based computer programs are used in all disciplines related to biodiversity. In addition, chronological data collection, storage, management, mapping and analysis tools are available in GIS (Sillero et al. 2005). Many studies on Turkish herpetofauna (Baran 1976, Başoğlu & Baran 1977, 1980, Başoğlu et al. 1994, Baran et al. 2012) presented detailed maps of species. However, the distribution maps were prepared without using a coordinate-based database in these studies. The first attempt on GIS mapping was made by Sindaco et al. (2000).

Recent large-scale changes in species names that have long prevailed for Turkish amphibians and reptiles cause difficulties in consulting and interpreting older sources. Increased field inventories have led to the discovery of new taxa. Using better techniques (karyological, biochemical and bioacoustic methods and DNA-sequencing) and applying integrative species delimitation approaches, differences between sibling or cryptic species hidden by morphological similarities, can be revealed nowadays. Application of a biological (evolutionary/genetic/cladistic) versus morphological species concept and all the aforementioned new techniques has led to the description or resurrection of numerous new species and genera. Recent species lists not

only show more species, but sometimes also very different names for largely the same taxa.

The objective of the present study is to (1) prepare an up-to-date list of Turkish amphibians and reptiles, (2) create a GIS-based database and map the distribution of the species, (3) determine and analyze its spatial distribution patterns and (4) document recent taxonomic and systematic changes.

Material and Methods

Study Area

Turkey covers an area of about 783.562 km² (Latitudes= 36° to 42° N, Longitudes= 25° to 45° E). The majority of the territory of Turkey is situated in Asia (755,688 km²), while a small portion is in Europe (23,764 km²). The climate is temperate with average year temperature and precipitation 13.2°C and 622.8 mm respectively (Turkish Meteorology Station between 1970-2017). Turkey has wide range biomes which include the temperate broadleaf and mixed forests, temperate grasslands, savannas, and shrublands, and the Mediterranean forests, woodlands, and scrub (WWF 2020). Fourteen ecoregions are situated in Turkey (Figure 1, Olson et al. 2001).

Data processing and compilation

Distributional data about the herpetofauna of Turkey was collected and compiled from books, journal articles, field reports up to December 2020 (Supplementary material: Appendix 1 – available online), museum collections, websites, interviews with experts, the Global Biodiversity Information Facility (GBIF) and several field surveys in different provinces of Turkey from 1987 to 2020 performed by the authors. Locality information of data without coordinates was obtained by using Google Earth Pro vers. 7.1.5 (Google Inc.). In this case, locality names given by researchers, were translated to coordinates of the nearest settlement or based on explanation in the relevant studies. The distribution records that could not be georeferenced to an actual locality or toponym (e.g., occurrences assigned to mountain ranges, geographical provinces or hydrographic basins) or records with unspecified taxa within genera were not included in the geodatabase. Records were primarily created and stored in a MS Access 2007 database, and later imported in an ESRI file geodatabase using ArcGIS (vers. 10.7 ESRI). For the quality of the data, suspicious and erroneous records of the database have been checked several times. All records and layers were referenced to the WGS-84 coordinate system.

Mapping

As an atlas is usually the representation of the species' distributions by uniform units (Sillero et al. 2005), record points were transformed into a grid as recommended by Sillero et al. (2014). We compiled the occurrence records to the UTM grid system at a spatial resolution of 2,500 km² (50 x 50 km²) and subsequently created distribution maps of all species. After all these operations, the current distribution maps were visualized, using all 2,714 records of amphibians and 9,199 records of reptiles via ArcGIS (Figure 2, Supplementary material: Appendix 2 – available online). Obtained in this study were species richness [SR] (expressed as the total number of species

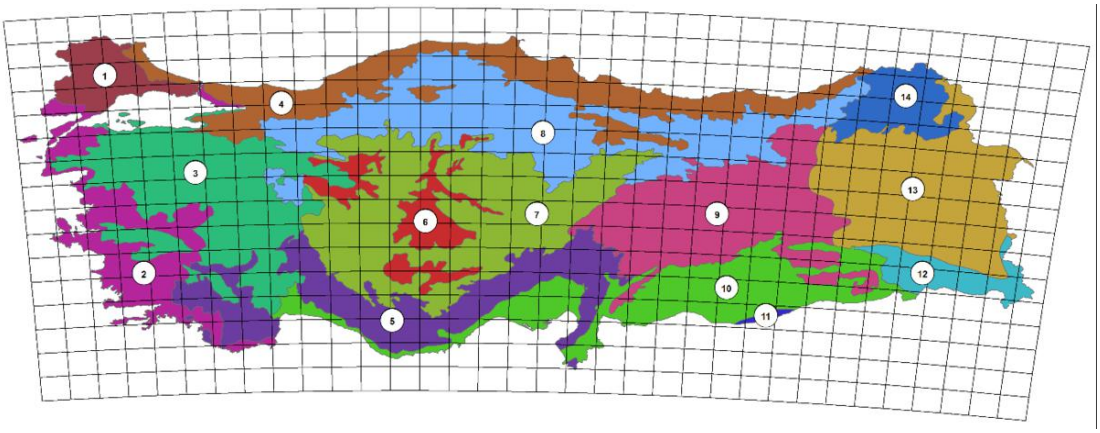

Figure 1. Map of grid codes and terrestrial ecoregions in Turkey. (1. Balkan Mixed Forests, 2. Aegean and Western Turkey Sclerophyllous and Mixed Forests, 3. Anatolian Conifer and Deciduous Mixed Forests, 4. Euxine-Colchic Broadleaf Forests, 5. Southern Anatolian Montane Conifer and Deciduous Forests, 6. Central Anatolian Steppe, 7. Central Anatolian Steppe and Woodlands, 8. Northern Anatolian Conifer and Deciduous Forests, 9. Eastern Anatolian Deciduous Forests, 10. Eastern Mediterranean Conifer-Sclerophyllous-Broadleaf Forests, 11. Middle East Steppe, 12. Zagros Mountains Forest Steppe, 13. Eastern Anatolian Montane Steppe, 14. Caucasus Mixed Forests).

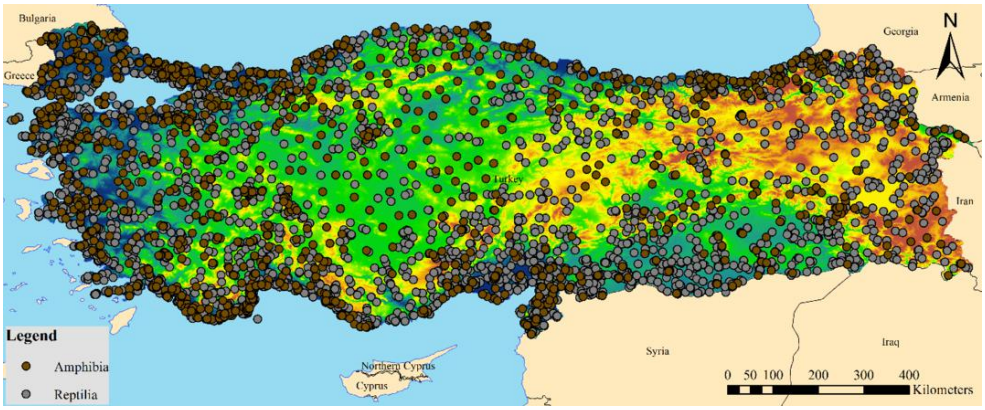

Figure 2. Total number of records for amphibians and reptiles in Turkey.

in a grid cell) and corrected weighted endemism [CWE]. In order to calculate the corrected weighted endemism, first the weighted endemism (WE) of species was calculated according to Laffan & Crisp (2003), which is the sum of the reciprocal of the total number of cells in which each species is found. A WE emphasizes areas that have a high proportion of animals with restricted ranges. The corrected weighted endemism [CWE] for a given cell is then received from dividing WE by SR with the SDMtoolbox (vers.2.4, Brown 2014). Ecoregional distribution and IUCN Red List status of species is evaluated to a better understanding of species diversity. The species are classified into chorotypes as proposed and used by Vigna Taglianti et al. (1999) and Sindaco et al. (2000, 2008).

Taxonomy

A referenced account is composed of changes that occurred in the herpetofauna species list of Turkey in the last four decades, because in this period the amount of species increased considerably and major taxonomic changes took place. Mutations consist of newly described species, new species for the country and taxonomic and systematic changes. Excellent initiatives like Speybroeck & Crochet (2007), Speybroek et al. (2010, 2020), and Baran et al. (2012) inspired us and a huge number of publications were consulted during the preparation of this paper. No taxonomic inferences were made and suggested names were used in case of sufficient convincing proof. Largely the view of the Amphibian species of the World (Frost 2020) and the Reptile Database (Uetz et al. 2020) are followed. In addition, because of the high number of species and rapid developments in taxonomy, no subspecies evaluation was conducted.

Results

Species list and number of taxa

The study revealed the presence of 178 amphibian and reptile species in Turkey, comprising of 37 amphibians (20 caudatans and 17 anurans) and 141 reptiles (11 turtles, 3 amphisbaenians, 70 lizards and 57 snakes) (Tables 1, 2, Figure 3).

The order Caudata is represented by only one family (Salamandridae) and contains 7 genera (Table 2) and 20 species (Figure 3). *Lyciasalamandra* is the largest genus in terms of species count. It is represented by 6 species. The other genera are *Lissotriton* (3 species), *Mertensiella* (1 species), *Neurergus* (3 species), *Ommatotriton* (3 species), *Salamandra* (1 species) and *Triturus* (3 species). Although there are old records of Uludağ (Bursa, Boettger 1888), İzmir (Boettger 1892) and Eskişehir (Eiselt 1958) referring to *Salamandra salamandra*, they have not been found again since then. Moreover, Yılmaz (1983) stated that he did not find this species in Thrace and Öz (1986) stated that he did not find this species in these three localities. Therefore, the distribution records of this species are showed in gray on the map but not added in the list of species.

Anurans (Anura) are represented by six families [Bombinatoridae (2 species), Pelobatidae (2 species), Pelodytidae (1 species), Hylidae (2 species), Bufonidae (4 species), Ranidae (6 species)] and 8 genera [*Bombina* (2 species), *Pelobates* (2 species), *Pelodytes* (1 species), *Hyla* (2 species), *Bufo* (2 species), *Bufotes* (2 species), *Pelophylax* (2 species), *Rana* (4 species)] (Table 1). Although there are historic records from the European side of Istanbul (Eiselt 1986), *Pelobates fuscus* has not been found recently. Therefore, the distribution records of this species are shown on the map, but not added in the species list.

Reptiles are represented by 2 orders [Chelonia and Squamata] and 4 suborders [Cryptodira, Sauria, Amphisbaenia and Serpentes].

Chelonians are represented by 6 families [Chelonidae (2 species), Dermochelyidae (1 species), Emydidae (1 species), Geoemydidae (2 species), Trionychidae (2 species), Testudinidae (2 species)] and 9 genera and 11 species [*Caretta* (1 species), *Chelonia* (1 species), *Dermochelys* (1 species), *Emys* (1 species), *Mauremys* (2 species), *Trionyx* (1 species), *Rafetus* (1 species), *Testudo* (2 species), *Trachemys* (1 species)] (Tables 1, 2). The North-American species *Trachemys scripta* was brought into the country as a pet and has formed wild populations.

The Worm Lizards (Amphisbaenia) are represented by 1 family [Amphisbaenidae (3 species) and 1 genus [*Blanus* (3 species)] (Table 2).

Lizards (Sauria) are represented by 9 families [Agamidae (4 species), Chamaeleonidae (1 species), Phyllodactylidae (1 species), Gekkonidae (7 species), Eublepharidae (1 species), Lacertidae (41 species), Scincidae (10 species), Varanidae (1 species) and Anguidae (2 species)]. There are 32 genera [*Paralaudakia* (1 species), *Stellagama* (1 species), *Phrynocephalus* (1 species), *Trapelus* (1 species), *Chamaeleo* (1 species), *Asaccus* (1 species), *Mediodactylus* (3 species), *Cyrtopodion* (1 species), *Hemidactylus* (1 species), *Stenodactylus* (1 species), *Eublepharis* (1 species), *Acanthodactylus* (4 species), *Anatololacerta* (5 species), *Apathya* (1 species), *Darevskia* (14 species), *Eremias* (3 species), *Iranolacerta* (1 species), *Lacerta* (6 species), *Mesalina* (1 species), *Ophisops* (1 species), *Parvilacerta* (1 species), *Phoenicolacerta* (2 species), *Podarcis* (3 species), *Timon* (1 species), *Ablepharus* (4 species), *Chalcides* (1 species), *Eumeces* (1 species), *Ophiomorus* (1 species), *Heremites* (3 species), *Varanus* (1 species), *Anguis* (1 species) and *Pseudopus* (1 species)], altogether 70 species (Tables 1, 2).

Snakes (Serpentes) are represented by 8 families [Leptotyphlopidae (1 species), Typhlopidae (2 species), Boidae (1 species), Natricidae (2 species), Colubridae (36 species), Lamprophiidae (1 species), Viperidae (13 species) and Elapidae (1 species)], 22 genera [*Myriopholis* (1 species), *Xerotyphlops* (1 species), *Letheobia* (1 species), *Eryx* (1 species), *Natrix* (2 species), *Coronella* (1 species), *Dolichophis* (3 species), *Eirenis* (14 species), *Elaphe* (3 species), *Hemorrhois* (2 species), *Malpolon* (1 species), *Platyceps* (4 species), *Muhtarophis* (1 species), *Rhynchocalamus* (2 species), *Spalerosophis* (1 species), *Telescopus* (2 species), *Zamenis* (3 species), *Macrovipera* (1 species), *Montivipera* (4 species), *Daboia* (1 species), *Vipera* (7 species) and *Walterinnesia* (1 species)] building 57 species (Tables 1, 2).

The Lacertidae family is the most numerous family with 41 species of lizards (Sauria). The family of snakes (Serpentes) containing the largest amount of species is Colubridae with 36 species.

Conservation status

In Amphibia, there are 2 species (5.41%) CR, 5 species (13.51%) EN, 4 species (10.81%) VU, 5 species (13.51%) NT (Table 3, 4, Figure 4). In Reptilia, there are 6 species (4.25%) with status CR, 7 species (4.96%) EN, 5 species (3.54%) VU and 6 species (4.25%) NT (Figure 4). In addition, 94

Table 1. The amphibian and reptile diversity of Turkey.

Class	Order	Suborder	Family	Genus	Total Number
Amphibia					7 familia, 15 genera, 37 species
	Caudata		Salamandridae	*Lissotriton, Lyciasalamandra, Mertensiella, Neurergus, Ommatotriton, Salamandra, Triturus*	7 genera, 20 species
	Anura		Bombinatoridae	*Bombina*	1 genus, 2 species
			Pelobatidae	*Pelobates*	1 genus, 2 species
			Pelodytidae	*Pelodytes*	1 genus, 1 species
			Hylidae	*Hyla*	1 genus, 2 species
			Bufonidae	*Bufo, Bufotes*	2 genera, 4 species
			Ranidae	*Pelophylax, Rana*	2 genera, 6 species
Reptilia					24 familia, 64 genera, 141 species
	Chelonia	Cryptodira	Chelonidae	*Caretta, Chelonia*	2 genera, 2 species
			Dermochelyidae	*Dermochelys*	1 genus, 1 species
			Emydidae	*Emys, Trachemys*	2 genus, 2 species
			Geoemydidae	*Mauremys*	1 genus, 2 species
			Trionychidae	*Trionyx, Rafetus*	2 genera, 2 species
			Testudinidae	*Testudo*	1 genus, 2 species
	Squamata	Amphisbaenia	Amphisbaenidae	*Blanus*	1 genus, 3 species
		Sauria	Agamidae	*Paralaudakia, Stellagama, Phrynocephalus, Trapelus*	4 genera, 4 species
			Chamaeleonidae	*Chamaeleo*	1 genus, 1 species
			Phyllodactylidae	*Asaccus*	1 genus, 1 species
			Gekkonidae	*Mediodactylus, Cyrtopodion, Hemidactylus, Stenodactylus*	4 genus, 7 species
			Eublepharidae	*Eublepharis*	1 genus, 1 species
			Lacertidae	*Acanthodactylus, Anatololacerta, Apathya, Darevskia, Eremias, Iranolacerta, Lacerta, Mesalina, Ophisops, Parvilacerta, Phoenicolacerta, Podarcis, Timon*	13 genera, 43 species
			Scincidae	*Ablepharus, Chalcides, Eumeces, Ophiomorus, Heremites*	5 genera, 10 species
			Varanidae	*Varanus*	1 genus, 1 species
			Anguidae	*Anguis, Pseudopodus*	2 genera, 2 species
		Serpentes	Leptothyplopidae	*Myriopholis*	1 genus, 1 species
			Typhlopidae	*Xerotyphlops, Letheobia*	2 genera, 2 species
			Boidae	*Eryx*	1 genus, 1 species
			Natricidae	*Natrix*	1 genus, 2 species
			Colubridae	*Coronella, Dolichophis, Eirenis, Elaphe, Hemorrhois, Platyceps, Muhtarophis, Rhynchocalamus, Spalerosophis, Telescopus, Zamenis*	11 genera, 36 species
			Lamprophiidae	*Malpolon*	1 genus, 1 species
			Viperidae	*Daboia, Macrovipera, Montivipera, Vipera*	4 genera, 13 species
			Elapidae	*Walterinnesia*	1 genus, 1 species

Table 2. The list of amphibians and reptiles in Turkey. IUCN: Global IUCN categories, TNG: total number of grids, DA: total distribution area. AFRO-I-MED: Afrotropico-Indo-Mediterranean, AFRO-MED: Afrotropico-Mediterranean, ANAT: Anatolian endemic, ARME: Armenian endemic, ARME-CAUC: Armeno-Caucasian endemic, ARME-E-ANAT: Armeno-E-Anatolian endemic, C-ASIA-EUR: Centralasiatic-European, C-ASIA-EUR-MED: Centralasiatic-Europeo-Medirerranean, C-ASIA-MED: Centralasiatic-Mediterranean, CAUC: Caucasian endemic, C-EUR : Centraleuropean, COS: Cosmopolitan, E-MED: E-Mediterranean, EUR: European, EUR-MED: Europeo-Mediterranean, HOL: Holarctic, I-MED: Indo-Mediterranean, KOLK: Kolkhidian endemic, KOLK-ARME: Kolkhido-Armenian endemic, KOLK-CAUC: Kolkhido-Caucasian endemic, KURD: Kurdish endemic, MED: Mediterranean, N-ANAT: N-Anatolian (= Pontic) endemic, NE-ANAT: NE-Anatolian endemic, N-MESOP: N-Mesopotamian endemic, NW-ANAT: NW-Anatolian endemic, PO-CAS: Ponto-Caucasian endemic, SAH-SAL-ARAB: Saharo-Sahelo-Arabian, SAH-TUR-SIN: Saharo-Turano-Sindian, S-ANAT: S-Anatolian (= Taurian) endemic, S-EUR: S-European, SIBER-EUR: Sibero-European, SW-ANAT: SW-Anatolian endemic, SW-ASIA: SW-Asiatic, TUR: Turanian, TUR-EUR: Turano-European, TUR-EUR-MED: Turano-Europeo-Mediterranean, TUR-MED: Turano-Mediterranean, W-ANAT: W-Anatolian endemic, W-IRAN: W-Iranian endemic.

Taxa	IUCN	TNG	DA	Ecoregion	Chorotype
AMPHIBIA (37)					
CAUDATA (20)					
Salamandridae (20)					
Lissotriton schmidtleri (Raxworthy, 1988)	NE	38	95000	1,2,3,4	EUR
Lissotriton kosswigi (Freytag, 1955)	NE	11	27500	2,4	EUR
Lissotriton lantzi (Wolterstorff, 1914)	NE	1	2500	14	CAUC
Lyciasalamandra antalyana (Başoğlu & Baran, 1976)	EN	2	5000	3	S-ANAT
Lyciasalamandra atifi (Başoğlu, 1967)	EN	5	12500	3,5	S-ANAT
Lyciasalamandra billae (Franzen & Klewen, 1987)	CR	3	7500	3,5	S-ANAT
Lyciasalamandra fazilae (Başoğlu & Atatür, 1974)	EN	3	7500	2,5	SW-ANAT
Lyciasalamandra flavimembris (Mutz & Steinfartz, 1995)	EN	3	7500	2	SW-ANAT
Lyciasalamandra luschani (Steindachner, 1891)	VU	5	12500	2,5	SW-ANAT
Mertensiella caucasica (Waga, 1876)	VU	13	32500	4,14	PO-CAS
Neurergus crocatus Cope, 1862	VU	3	7500	12	SW-ASIA
Neurergus strauchii (Steindachner, 1887)	VU	16	40000	9,10,12,13	ANAT
Neurergus barani (Öz, 1994)	NE	3	7500	9	ANAT
Ommatotriton nesterovi (Litvinchuk, Zuiderwijk, Borkin & Rosanov, 2005)	NE	27	67500	3,4,8	NW-ANAT
Ommatotriton ophryticus (Berthold, 1846)	NT	11	27500	4,8,14	TUR-EUR
Ommatotriton vittatus (Gray, 1835)	LC	14	35000	5,10,11	SW-ASIA
Salamandra infraimmaculata Martens, 1885	NT	15	37500	9,10,13	SW-ASIA
Triturus ivanbureschi Arntzen & Wielstra, 2013	NE	39	97500	1,2,3	E-MED
Triturus anatolicus Wielstra & Arntzen, 2016	NE	33	82500	3,4,8	N-ANAT
Triturus karelinii (Strauch, 1870)	LC	2	5000	14	EUR
ANURA (17)					
Bombinatoridae (2)					
Bombina bombina (Linnaeus, 1761)	LC	8	20000	1,4	C-EUR
Bombina variegata (Linnaeus, 1758)	LC	1	2500	2	S-EUR
Pelobatidae (2)					
Pelobates syriacus Boettger, 1889	LC	56	140000	1,2,3,4,5,6,7,8,10,13	TUR-EUR
Pelobates fuscus (Laurenti, 1768)	LC	1	2500	1	C-ASIA-EUR

Taxa	IUCN	TNG	DA	Ecoregion	Chorotype
Pelodytidae (1)					
Pelodytes caucasicus Boulenger, 1896	NT	14	35000	4,14	PO-CAS
Hylidae (2)					
Hyla orientalis Bedriaga, 1890	NE	108	270000	1,2,3,4,5,7,8,10,14	EUR-MED
Hyla savignyi Audouin, 1827	LC	43	107500	5,9,10,11,12,13,14	SW-ASIA
Bufonidae (4)					
Bufo bufo (Linnaeus, 1758)	LC	91	227500	1,2,3,4,5	EUR
Bufo verrucosissimus (Pallas, 1814)	NT	15	37500	5,10,14	KOLK-CAUC
Bufotes sitibundus (Pallas, 1771)	NE	157	392500	2,3,4,5,6,7,8,9,10,11,12,13,14	TUR-EUR-MED
Bufotes viridis (Laurenti, 1768)	LC	15	37500	1,2,4	TUR-EUR-MED
Ranidae (6)					
Pelophylax caralitanus (Arıkan, 1988)	NT	23	57500	5,6,10	SIBER-EUR
Pelophylax ridibundus (Pallas, 1771) group	LC	183	457500	1,2,3,4,5,6,7,8,9,10,13,14	TUR-EUR-MED
Rana dalmatina Fitzinger, 1838	LC	48	120000	1,2,3,4,8	S-EUR
Rana holtzi Werner, 1898	CR	2	5000	5	S-ANAT
Rana macrocnemis Boulenger, 1885	LC	31	77500	2,3,4,5,7,8,9,13,14	SW-ASIA
Rana tavasensis Baran & Atatür, 1986	EN	3	7500	2,5	W-ANAT
REPTILIA (141)					
CHELONIA (11)					
Chelonidae (2)					
Caretta caretta (Linnaeus, 1758)	VU	17	42500		COS
Chelonia mydas (Linnaeus, 1758)	EN	11	27500		COS
Dermochelyidae (1)					
Dermochelys coriacea (Vandelli, 1761)	VU	6	15000		COS
Emydidae (1)					
Emys orbicularis (Linnaeus, 1758)	NT	103	257500	1,2,3,4,5,6,7,8,10,13	TUR-EUR-MED
Geoemydidae (2)					
Mauremys caspica (Gmelin, 1774)	NE	47	117500	5,6,7,8,9,10,13,14	TUR-MED
Mauremys rivulata (Valenciennes, 1833)	LC	82	205000	1,2,3,4,5,10	TUR-MED
Trionychidae (2)					
Trionyx triunguis (Forskål, 1775)	VU	13	32500		AFRO-MED
Rafetus euphraticus (Daudin, 1802)	EN	14	35000	9,10	SW-ASIA
Testudinidae (2)					
Testudo graeca Linnaeus, 1758	VU	231	577500	1,2,3,4,5,6,7,8,9,10,12,13,14	TUR-MED
Testudo hermanni Gmelin, 1789	NT	16	40000	1,2,4	S-EUR
Aliens: Reptilia (1)					
Trachemys scripta (Thunberg in Schoepff, 1792)	LC				HOL
AMPHISBAENIA (3)					

Taxa	IUCN	TNG	DA	Ecoregion	Chorotype
Amphisbaenidae (3)					
Blanus strauchi (Bedriaga, 1884)	LC	25	62500	2,3,5,10	E-MED
Blanus aporus Werner, 1898	NE	7	17500	10	E-MED
Blanus alexandri Sindaco, Kornilios, Sacchi & Lymberakis, 2014	NE	22	55000	9,10,12	E-MED
SAURIA (70)					
Agamidae (4)					
Paralaudakia caucasia (Eichwald, 1831)	LC	15	37500	12,13,14	TUR
Stellagama stellio (Linnaeus, 1758)	LC	107	267500	2,3,4,5,6,7,8,9,10,11,12	E-MED
Phrynocephalus horvathi Méhely, 1894	CR	5	12500	13	SW-ASIA
Trapelus ruderatus (Olivier, 1804)	LC	43	107500	6,7,9,10,11,12	SW-ASIA
Chamaeleonidae (1)					
Chamaeleo chamaeleon (Linnaeus, 1758)	LC	40	100000	2,3,4,5,10	MED
Phyllodactylidae (1)					
Asaccus barani Torki, Ahmadzadeh, Ilgaz, Avcı & Kumlutaş, 2011	NE	3	7500	10	SW-ASIA
Gekkonidae (7)					
Mediodactylus kotschyi (Steindachner, 1870) s.l.	LC	69	172500	2,3,4,5,6,7,8,9,10,11,12,13,14	E-MED
Mediodactylus kotschyi (Steindachner, 1870) s.str.	LC	2	5000	2	E-MED
Mediodactylus heterocercus (Blanford, 1874)	LC	22	55000	9,10,11,12	SW-ASIA
Mediodactylus danilewskii (Strauch, 1887)	NE	22	55000	2,3,4,5,10	E-MED
Mediodactylus orientalis (Stepánek, 1937)	NE	29	72500	2,6,7,9,10	SW-ASIA
Cyrtopodion scabrum (Heyden, 1827)	LC	9	22500	10,11	SW-ASIA
Hemidactylus turcicus (Linnaeus, 1758)	LC	69	172500	1,2,3,4,5,10	MED
Stenodactylus grandiceps Haas, 1952	LC	2	5000	10	SW-ASIA
Eublepharidae (1)					
Eublepharis angramainyu Anderson & Leviton, 1966	DD	2	5000	10,11	SW-ASIA
Lacertidae (43)					
Acanthodactylus boskianus (Daudin, 1802)	NE	4	10000	10,12	SAH-SAL-ARAB
Acanthodactylus harranensis Baran, Kumlutaş, Lanza, Sindaco, Ilgaz, Avcı & Crucitti, 2005	CR	1	2500	11	KURD
Acanthodactylus schreiberi Boulenger, 1878	EN	1	2500	10	E-MED
Acanthodactylus ilgazi Kurnaz & Şahin, 2021	NE	1	2500	9	ANAT
Anatololacerta anatolica (Werner, 1900)	LC	18	45000	2,3	SW-ANAT
Anatololacerta danfordi (Günther, 1876)	LC	9	22500	5,10	S-ANAT
Anatololacerta finikensis (Eiselt & Schmidtler, 1986)	NE	11	27500	2,6,10	S-ANAT
Anatololacerta ibrahimi (Eiselt & Schmidtler, 1986)	NE	13	32500	5,7,10	S-ANAT
Anatololacerta pelasgiana (Mertens, 1959)	NE	11	27500	2,3,5	S-ANAT
Apathya cappadocica (Werner, 1902)	LC	69	172500	6,7,9,10,11,12,13	SW-ASIA
Darevskia adjarica (Darevsky & Eiselt, 1980)	NE	7	17500	8,14	NE-ANAT
Darevskia armeniaca (Méhely, 1909)	LC	4	10000	4,14	ARME

Taxa	IUCN	TNG	DA	Ecoregion	Chorotype
Darevskia bendimahiensis (Schmidtler, Eiselt & Darevsky, 1994)	EN	3	7500	13	ARME
Darevskia clarkorum (Darevsky & Vedmederja, 1977)	EN	13	32500	4,14	KOLK
Darevskia derjugini (Nikolsky, 1898)	NT	7	17500	4,14	KOLK-CAUC
Darevskia bithynica (Méhely, 1909)	NE	24	60000	3,4,8	N-ANAT
Darevskia rudis (Bedriaga, 1886)	LC	21	52500	4,14	PO-CAS
Darevskia parvula (Lantz & Cyrén, 1913)	LC	10	25000	4,14	KOLK-ARME
Darevskia praticola (Eversmann, 1834)	NT	4	10000	2,4	E-MED
Darevskia raddei (Boettger, 1892)	LC	14	35000	13,14	ARME
Darevskia sapphirina (Schmidtler, Eiselt & Darevsky, 1994)	LC	1	2500	13	ARME
Darevskia unisexualis (Darevsky, 1966)	NT	13	32500	8,13,14	ARME
Darevskia uzzelli (Darevsky & Danielyan, 1977)	EN	5	12500	13,14	ARME
Darevskia valentini (Boettger, 1892)	LC	48	120000	5,7,8,10,12,13,14	ARME-E-ANAT
Eremias pleskei Nikolsky, 1905	CR	3	7500	13	SW-ASIA
Eremias strauchi Kessler, 1878	LC	9	22500	13	SW-ASIA
Eremias suphani Başoğlu & Hellmich, 1968	LC	6	15000	13	SW-ASIA
Iranolacerta brandtii (De Filippi, 1863)	DD	3	7500	13	W-IRAN
Lacerta agilis Linnaeus, 1758	LC	10	25000	13,14	C-ASIA-EUR
Lacerta media Lantz & Cyrén, 1920	LC	69	172500	4,5,7,8,9,10,11,12,13,14	SW-ASIA
Lacerta pamphylica Schmidtler, 1975	LC	14	35000	5,10	SW-ANAT
Lacerta strigata Eichwald, 1831	LC	5	12500	13,14	SW-ASIA
Lacerta diplochondrodes Wettstein, 1952	NE	87	217500	1,2,3,4,5,6,8,10	E-MED
Lacerta viridis (Laurenti, 1768)	LC	60	150000	1,2,3,4,8	S-EUR
Mesalina microlepis (Angel, 1936)	NE	3	7500	10,11	SW-ASIA
Ophisops elegans Ménétries, 1832	LC	131	327500	1,2,3,4,5,6,7,8,9,10,11,12,13	E-MED
Parvilacerta parva (Boulenger, 1887)	LC	74	185000	1,3,4,5,6,7,8,9,1,13,14	ARME-E-ANAT
Phoenicolacerta cyanisparsa (Schmidtler & Bischoff, 1999)	LC	1	2500	10	E-MED
Phoenicolacerta laevis (Gray, 1838)	LC	24	60000	2,5,10	E-MED
Podarcis muralis (Laurenti, 1768)	LC	37	92500	1,2,3,4	SIBER-EUR
Podarcis siculus (Rafinesque-Schmaltz, 1810)	LC	14	35000	1,2,3,4	MED
Podarcis tauricus (Pallas, 1814)	LC	14	35000	1,2,4	E-MED
Timon kurdistanicus (Suchow, 1936)	LC	11	27500	9,10,12	N-MESOP
Scincidae (10)					
Ablepharus bivittatus (Ménétries, 1832)	LC	3	7500	13	SW-ASIA
Ablepharus budaki Göçmen, Kumlutaş & Tosunoğlu, 1996	LC	15	37500	2,5,10	E-MED
Ablepharus chernovi Darevsky, 1953	LC	47	117500	5,6,7,8,9,10,12,13,14	SW-ASIA
Ablepharus kitaibelii (Bibron & Bory St-Vincent, 1833)	LC	58	145000	1,2,3,4,5,6,7,8,10	E-MED
Chalcides ocellatus (Forskål, 1775)	LC	28	70000	2,5,10,12	I-MED
Eumeces schneiderii (Daudin, 1802)	LC	53	132500	2,5,6,7,8,9,10,11,12,13	SW-ASIA

Taxa	IUCN	TNG	DA	Ecoregion	Chorotype
Ophiomorus kardesi Kornilios, Kumlutaş, Lymberakis & Ilgaz, 2018	NE	6	15000	2,5	S-ANAT
Heremites auratus (Linnaeus, 1758)	LC	68	170000	2,3,5,6,7,9,10,11,12,13	SW-ASIA
Heremites vittatus (Olivier, 1804)	LC	58	145000	3,5,7,8,9,10,11,12,	MED
Heremites septemtaeniatus (Reuss, 1834)	LC	1	2500	11	SAH-TUR-SIN
Varanidae (1)					
Varanus griseus (Daudin, 1803)	NE	3	7500	10	SAH-TUR-SIN
Anguidae (2)					
Anguis colchica (Nordmann, 1840)	NE	45	112500	1,2,3,4,8,14	EUR
Pseudopus apodus (Pallas, 1775)	LC	75	187500	1,2,3,4,5,8,13	TUR-MED
SERPENTES (57)					
Leptotyphlopidae (1)					
Myriopholis macrorhyncha (Jan, 1860)	NE	24	60000	10,11	SAH-SAL-ARAB
Typhlopidae (2)					
Xerotyphlops vermicularis (Merrem, 1820)	LC	93	232500	1,2,3,4,5,6,7,8,9,10,11,13,14	TUR-MED
Letheobia episcopa (Franzen & Wallach, 2002)	DD	3	7500	10	KURD
Boidae (1)					
Eryx jaculus (Linnaeus, 1758)	LC	71	177500	1,2,3,4,5,6,7,9,10,13	MED
Natricidae (2)					
Natrix natrix (Linnaeus, 1758)	LC	157	392500	1,2,3,4,5,6,7,8,9,10,13,14	C-ASIA-EUR-MED
Natrix tessellata (Laurenti, 1768)	LC	130	325000	1,2,3,4,5,6,7,8,9,10,11,12,13,14	C-ASIA-EUR
Colubridae (36)					
Coronella austriaca Laurenti, 1768	LC	53	132500	1,2,3,4,8,14	EUR
Dolichophis caspius (Gmelin, 1789)	LC	84	210000	1,2,3,4,5,6,7,8,14	TUR-MED
Dolichophis jugularis (Linnaeus, 1758)	LC	63	157500	2,3,5,8,9,10,11,13	SW-ASIA
Dolichophis schmidti (Nikolsky, 1909)	LC	39	97500	3,6,7,8,9,10,11,13,14	SW-ASIA
Eirenis aurolineatus (Venzmer, 1919)	LC	7	17500	5,10	S-ANAT
Eirenis barani Schmidtler, 1988	LC	10	25000	5,10	S-ANAT
Eirenis collaris (Ménétries, 1832)	LC	3	7500	13	SW-ASIA
Eirenis coronella (Schlegel, 1837)	LC	8	20000	10,11	SW-ASIA
Eirenis decemlineatus (Duméril, Bibron & Duméril, 1854)	LC	17	42500	5,9,10,12	E-MED
Eirenis eiselti Schmidtler & Schmidtler 1978	LC	34	85000	9,10,11,12,13	KURD
Eirenis thospitis Schmidtler & Lanza, 1990	DD	2	5000	13	ARME
Eirenis hakkariensis Schmidtler & Eiselt, 1991	DD	3	7500	12,13	KURD
Eirenis levantinus Schmidtler, 1993	LC	11	27500	5,10	E-MED
Eirenis lineomaculatus Schmidt, 1939	LC	9	22500	5,9,10	E-MED
Eirenis modestus (Martin, 1838)	LC	58	145000	2,3,4,5,6,7,8,9,10,13,14	SW-ASIA
Eirenis punctatolineatus (Boettger, 1892)	LC	18	45000	9,10,12,13,14	ARME
Eirenis occidentalis Rajabizadeh, Nagy, Adriaens, Avcı, Masroor, Schmidtler, Nazarov, Esmaeili & Christiaens, 2015	NE	11	27500	10,12	KURD

Taxa	IUCN	TNG	DA	Ecoregion	Chorotype
Eirenis rothii Jan, 1863	LC	8	20000	5,10	E-MED
Elaphe dione (Pallas, 1773)	LC	1	2500	13	C-ASIA-MED
Elaphe sauromates (Pallas, 1811)	LC	50	125000	1,2,3,4,5,6,7,8,9,10,13	TUR-MED
Elaphe urartica Jablonski, Kukushkin, Avcı, Bunyatova, Ilgaz, Tuniyev & Jandzik, 2019	NE	6	15000	13	TUR-EUR
Hemorrhois nummifer (Reuss, 1834)	LC	43	107500	2,3,5,7,9,10,13	TUR-MED
Hemorrhois ravergieri (Ménétries, 1832)	LC	30	75000	5,8,9,10,12,13,14	C-ASIA-EUR
Platyceps collaris (Müller, 1878)	LC	29	72500	2,3,4,5,7,9,10,	E-MED
Platyceps najadum (Eichwald, 1831)	LC	84	210000	1,2,3,4,5,6,7,9,10,13,14	TUR-MED
Platyceps rhodorachis (Jan, 1863)	NE	1	2500	12	AFRO-I-MED
Platyceps ventromaculatus (Gray, 1834)	NE	6	15000	10,11	AFRO-I-MED
Muhtarophis barani Olgun, Avcı, Ilgaz, Üzüm & Yılmaz 2007	DD	3	7500	5,10	S-ANAT
Rhynchocalamus melanocephalus (Jan, 1862)	LC	3	7500	5,10	SW-ASIA
Rhynchocalamus satunini (Nikolsky, 1899)	NE	7	17500	5,10,12	SW-ASIA
Spalerosophis diadema (Schlegel, 1837)	NE	5	12500	10,11	AFRO-I-MED
Telescopus fallax Fleischmann, 1831	LC	61	152500	2,3,4,5,6,9,10,11,13,14	TUR-MED
Telescopus nigriceps (Ahl, 1924)	LC	5	12500	10,11	SW-ASIA
Zamenis hohenackeri (Strauch, 1873)	LC	49	122500	2,5,8,10,12,13,14	SW-ASIA
Zamenis longissimus (Laurenti, 1768)	LC	27	67500	4,8,13,14	S-EUR
Zamenis situla (Linnaeus, 1758)	LC	19	47500	2,3,4,5,10	E-MED
Lamprophiidae (1)					
Malpolon insignitus (Geoffroy Saint-Hilaire, 1827)s	LC	56	140000	1,2,3,4,5,6,9,10,11,13,14	MED
Viperidae (13)					
Daboia palaestinae (Werner, 1938)	LC	1	2500	10	E-MED
Macrovipera lebetinus (Linnaeus, 1758)	NE	42	105000	5,8,9,10,11,13,14	TUR-MED
Montivipera raddei (Boettger, 1890)	NT	7	17500	12,13,14	SW-ASIA
Montivipera wagneri (Nilson & Andrén, 1984)	CR	13	32500	13,14	ARME
Montivipera bulgardaghica (Nilson & Andrén, 1985)	LC	18	45000	5, 7,9,10	ANAT
Montivipera xanthina (Gray, 1849)	LC	72	180000	2,3,4,5,6,7,8,10	E-MED
Vipera ammodytes (Linnaeus, 1758)	LC	29	72500	2,3,4,8,14	E-MED
Vipera anatolica Eiselt & Baran, 1970	CR	2	5000	5	S-ANAT
Vipera berus (Linnaeus, 1758)	LC	21	52500	4,8,14	EUR
Vipera darevskii Vedmederja, Orlov & Tuniyev, 1986	CR	4	10000	9,14	ARME-CAUC
Vipera renardi (Chirstoph, 1861)	VU	10	25000	8,13,14	SIBER-EUR
Vipera sakoi Tuniyev, Avcı, Tuniyev, Ilgaz, Olgun, Petrova, Bodrov, Geniez & Teynié, 2018	NE	1	2500	9	ANAT
Vipera kaznakovi Nikolsky, 1909	EN	4	10000	4,14	CAUC
Elapidae (1)					
Walterinnesia morgani (Mocquard, 1905)	NE	4	10000	10	SW-ASIA

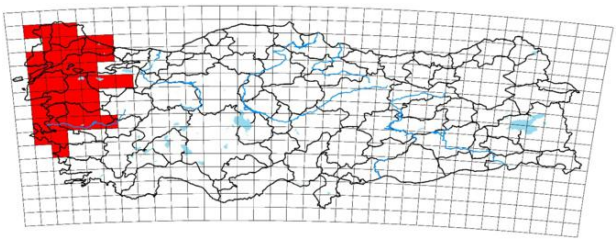

Figure 3.1. *Lissotriton schmidtleri* (Raxworthy, 1988)

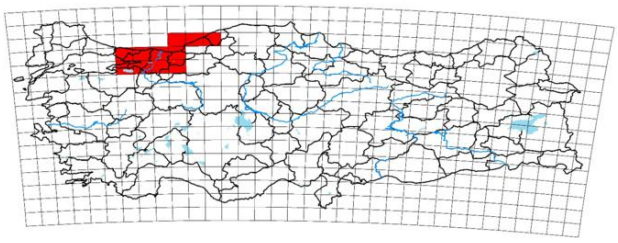

Figure 3.2. *Lissotriton kosswigi* (Freytag, 1955)

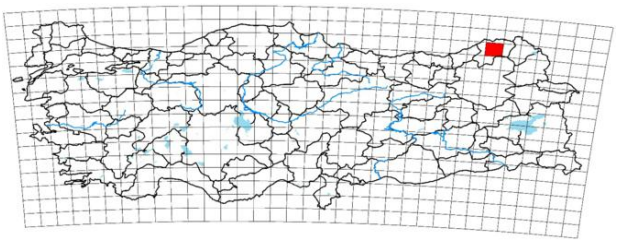

Figure 3.3. *Lissotriton lantzi* (Wolterstorff, 1914)

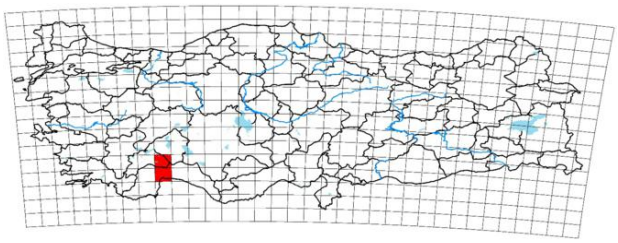

Figure 3.4. *Lyciasalamandra antalyana* (Başoğlu & Baran, 1976)

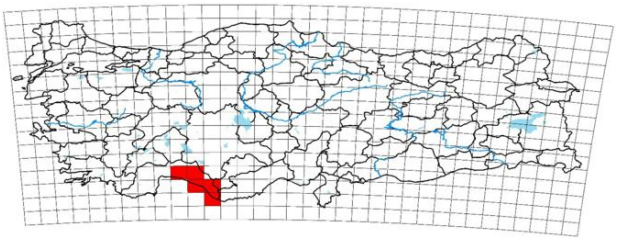

Figure 3.5. *Lyciasalamandra atifi* (Başoğlu, 1967)

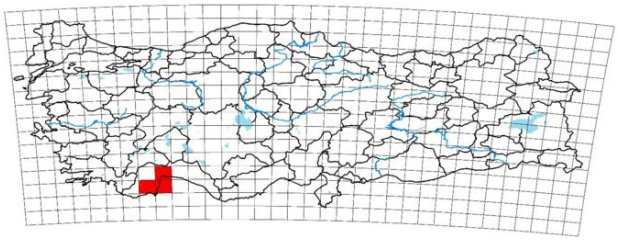

Figure 3.6. *Lyciasalamandra billae* (Franzen & Klewen, 1987)

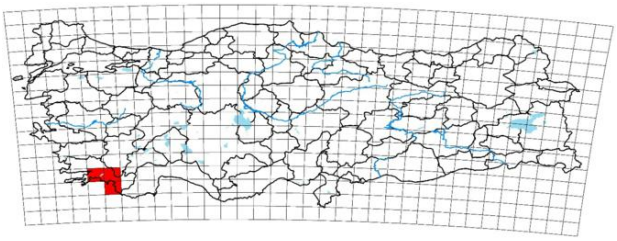

Figure 3.7. *Lyciasalamandra fazilae* (Başoğlu & Atatür, 1974)

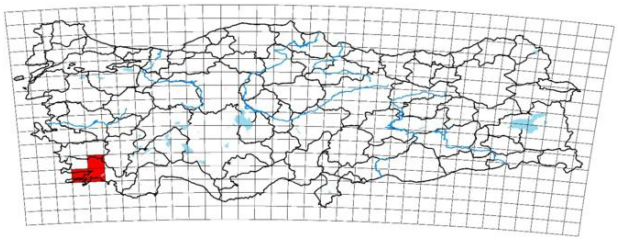

Figure 3.8. *Lyciasalamandra flavimembris* (Mutz & Steinfartz, 1995)

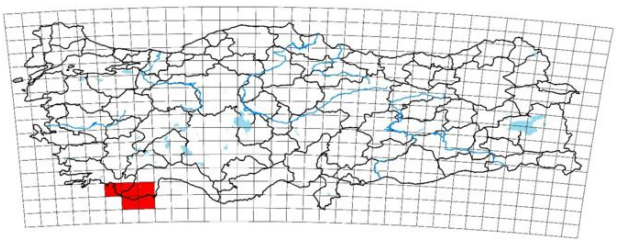

Figure 3.9. *Lyciasalamandra luschani* (Steindachner, 1891)

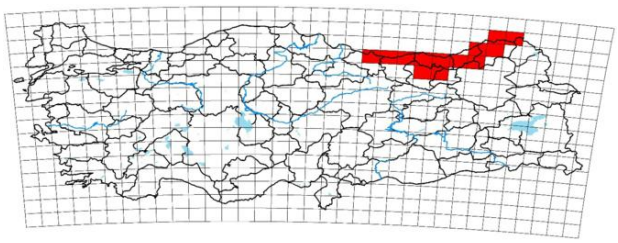

Figure 3.10. *Mertensiella caucasica* (Waga, 1876)

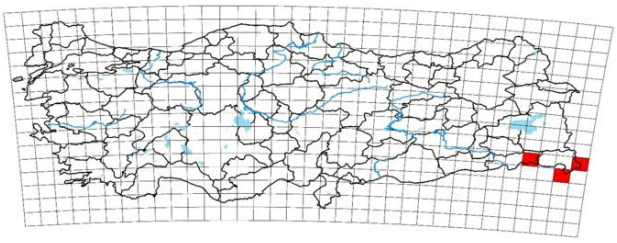

Figure 3.11. *Neurergus crocatus* Cope, 1862

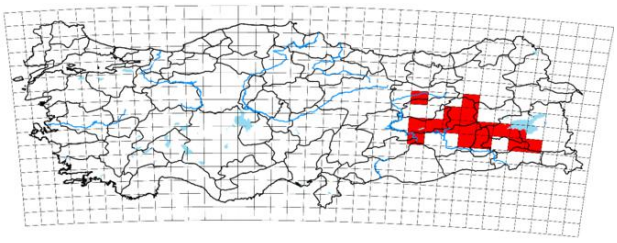

Figure 3.12. *Neurergus strauchii* (Steindachner, 1887)

Figure 3. Distribution map of amphibians and reptiles in Turkey (page 1 of 15).

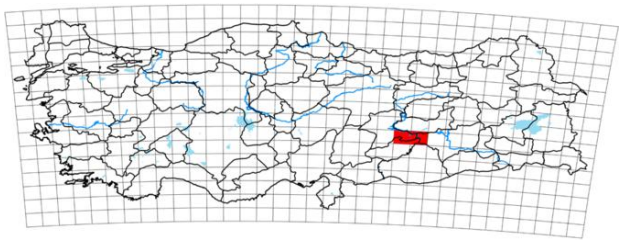

Figure 3.13. *Neurergus barani* (Öz, 1994)

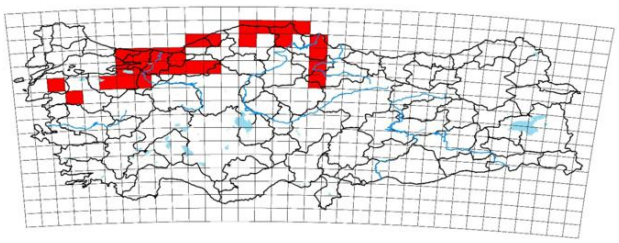

Figure 3.14. *Ommatotriton nesterovi* (Litvinchuk, Zuiderwijk, Borkin & Rosanov, 2005)

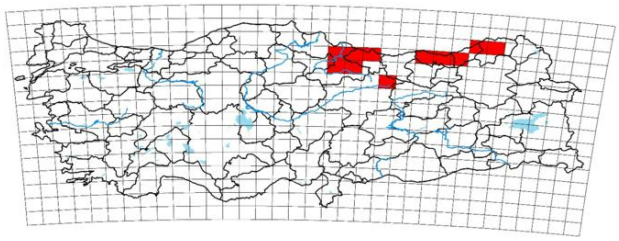

Figure 3.15. *Ommatotriton ophryticus* (Berthold, 1846)

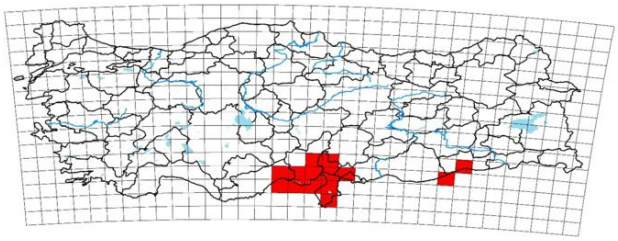

Figure 3.16. *Ommatotriton vittatus* (Gray, 1835)

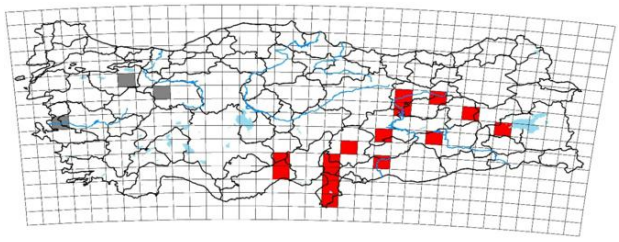

Figure 3.17. *Salamandra salamandra* Linnaeus, 1758 (gray) and *S. infraimmaculata* Martens, 1885 (red)

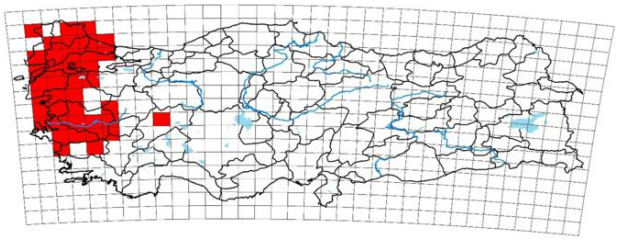

Figure 3.18. *Triturus ivanbureschi* Arntzen & Wielstra, 2013

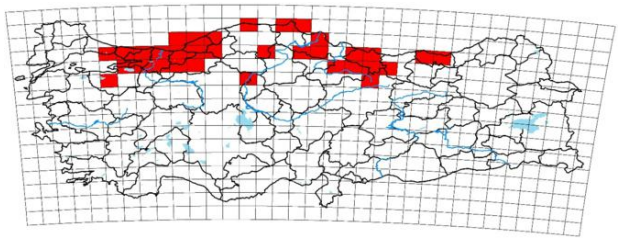

Figure 3.19. *Triturus anatolicus* Wielstra & Arntzen, 2016

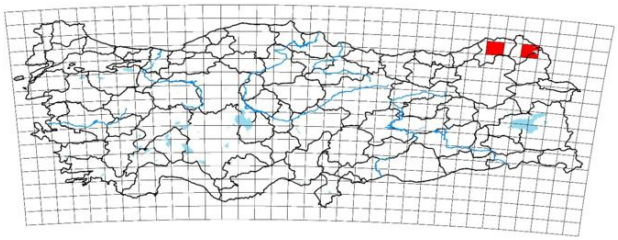

Figure 3.20. *Triturus karelinii* (Strauch, 1870)

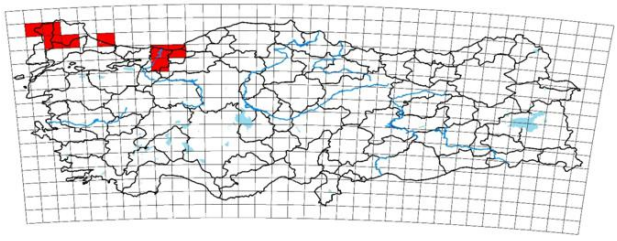

Figure 3.21. *Bombina bombina* (Linnaeus, 1761)

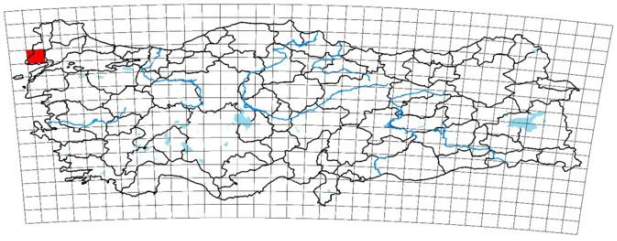

Figure 3.22. *Bombina variegata* (Linnaeus, 1758)

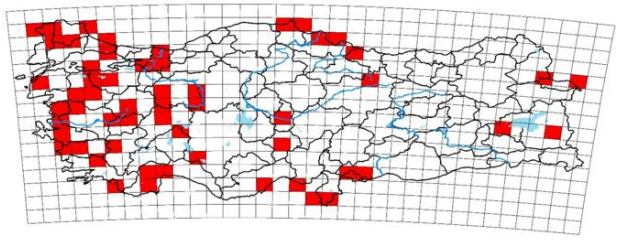

Figure 3.23. *Pelobates syriacus* Boettger, 1889

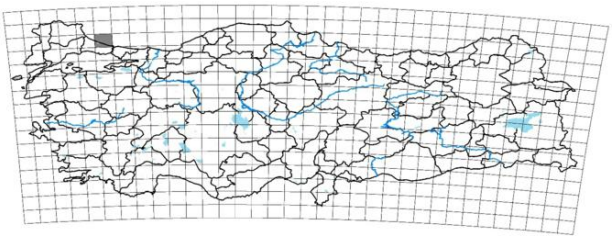

Figure 3.24. *Pelobates fuscus* (Laurenti, 1768)

Figure 3. Distribution map of amphibians and reptiles in Turkey (page 2 of 15).

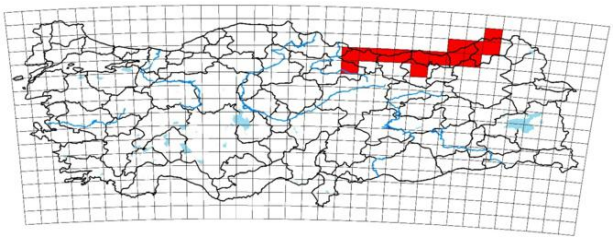

Figure 3.25. *Pelodytes caucasicus* Boulenger, 1896

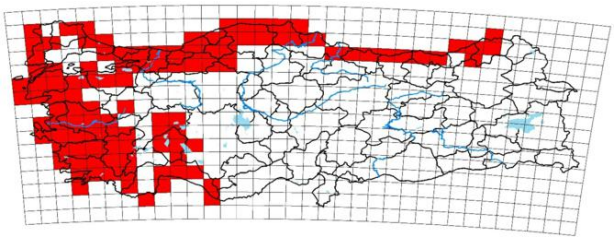

Figure 3.26. *Hyla orientalis* Bedriaga, 1890

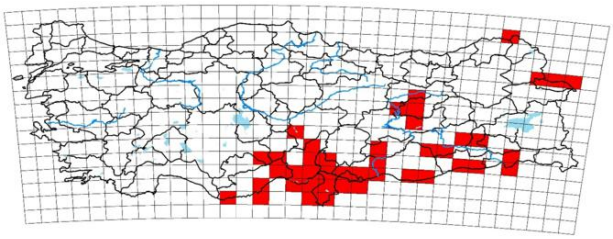

Figure 3.27. *Hyla savignyi* Audouin, 1827

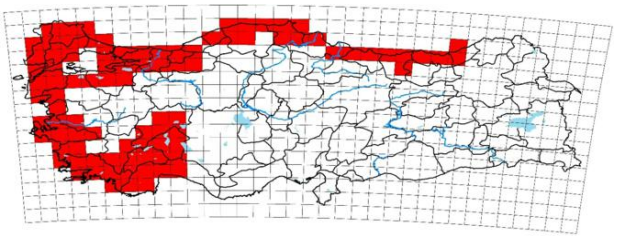

Figure 3.28. *Bufo bufo* (Linnaeus, 1758)

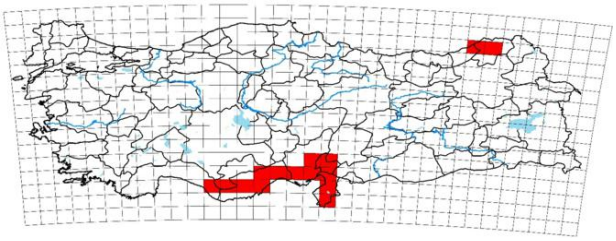

Figure 3.29. *Bufo verrucosissimus* (Pallas, 1814)

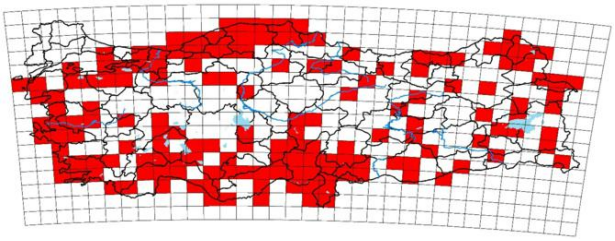

Figure 3.30. *Bufotes sitibundus* (Pallas, 1771)

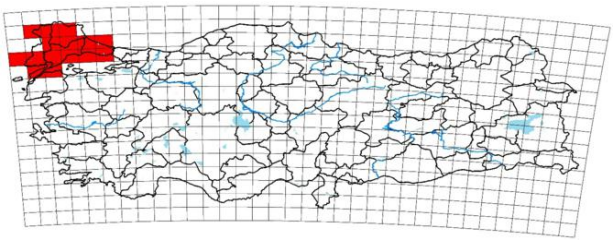

Figure 3.31. *Bufotes viridis* (Laurenti, 1768)

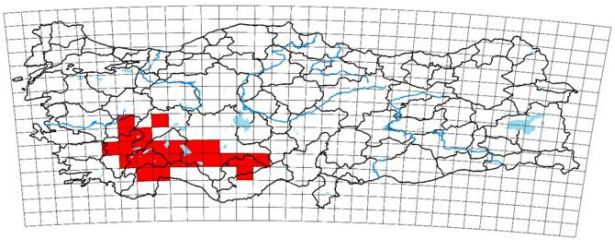

Figure 3.32. *Pelophylax caralitanus* (Arıkan, 1988)

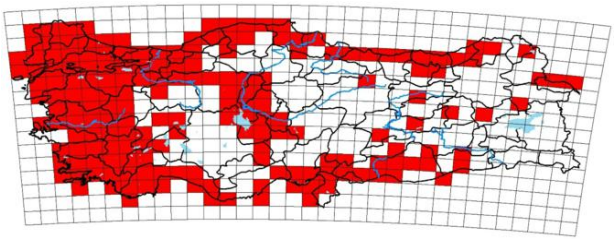

Figure 3.33. *Pelophylax ridibundus* (Pallas, 1771) group

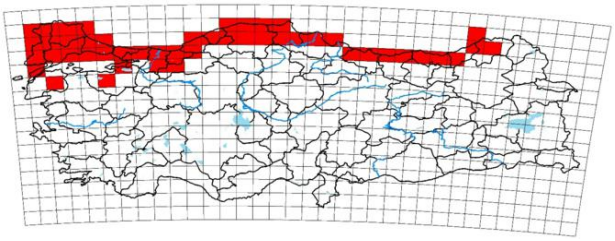

Figure 3.34. *Rana dalmatina* Fitzinger, 1838

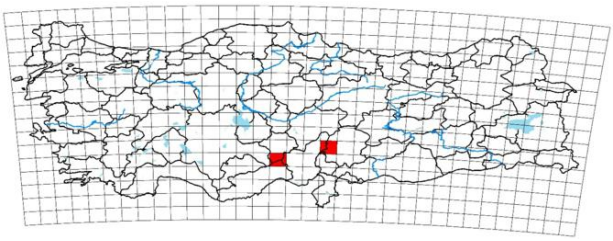

Figure 3.35. *Rana holtzi* Werner, 1898

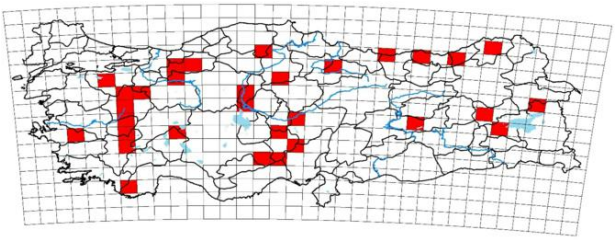

Figure 3.36. *Rana macrocnemis* Boulenger, 1885

Figure 3. Distribution map of amphibians and reptiles in Turkey (page 3 of 15).

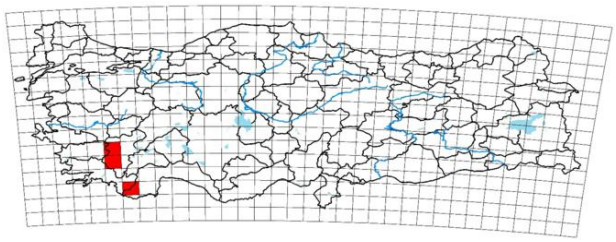

Figure 3.37. *Rana tavasensis* Baran & Atatür, 1986

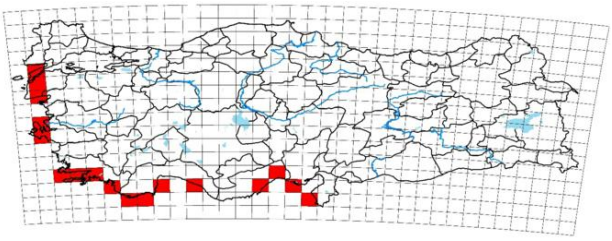

Figure 3.38. *Caretta caretta* (Linnaeus, 1758)

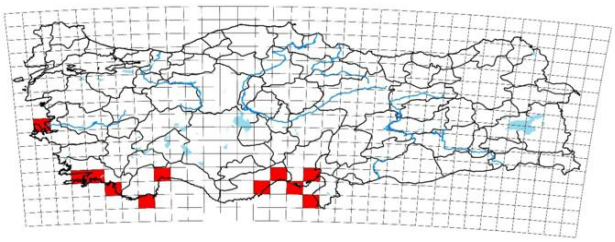

Figure 3.39. *Chelonia mydas* (Linnaeus, 1758)

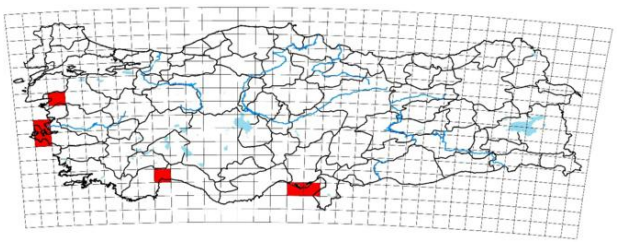

Figure 3.40. *Dermochelys coriacea* (Vandelli, 1761)

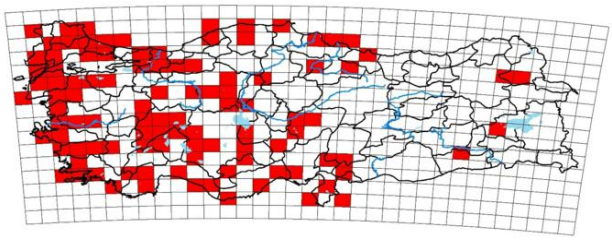

Figure 3.41. *Emys orbicularis* (Linnaeus, 1758)

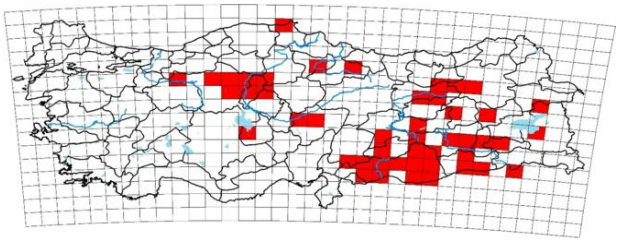

Figure 3.42. *Mauremys caspica* (Gmelin, 1774)

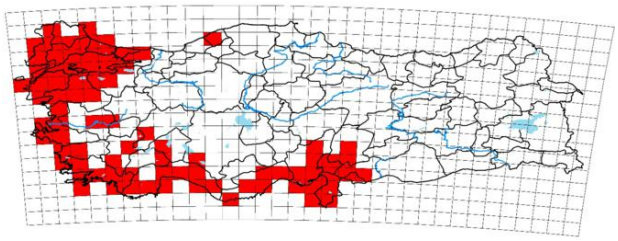

Figure 3.43. *Mauremys rivulata* (Valenciennes, 1833)

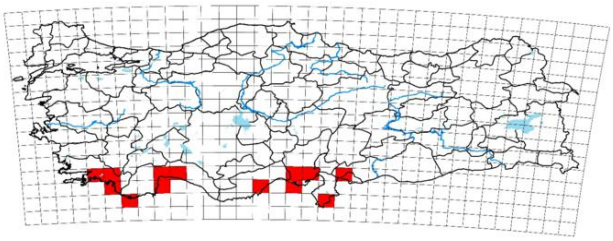

Figure 3.44. *Trionyx triunguis* (Forskål, 1775)

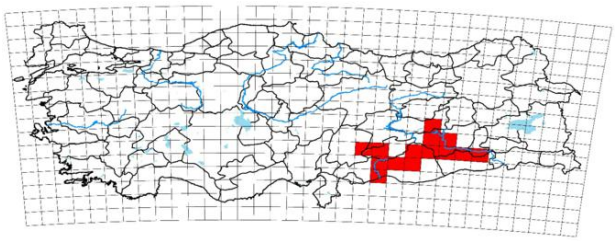

Figure 3.45. *Rafetus euphraticus* (Daudin, 1802)

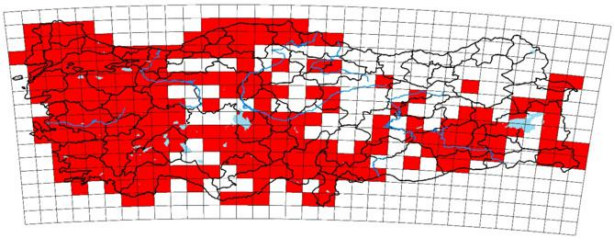

Figure 3.46. *Testudo graeca* Linnaeus, 1758

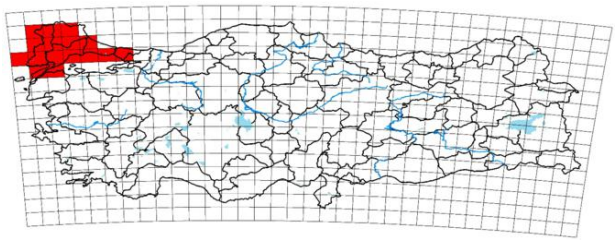

Figure 3.47. *Testudo hermanni* Gmelin, 1789

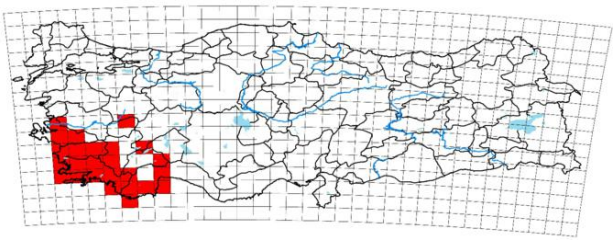

Figure 3.48. *Blanus strauchi* (Bedriaga, 1884)

Figure 3. Distribution map of amphibians and reptiles in Turkey (page 4 of 15).

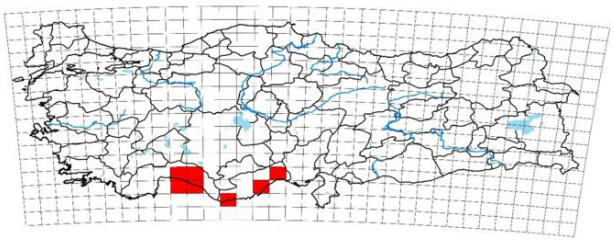

Figure 3.49. *Blanus aporus* Werner, 1898

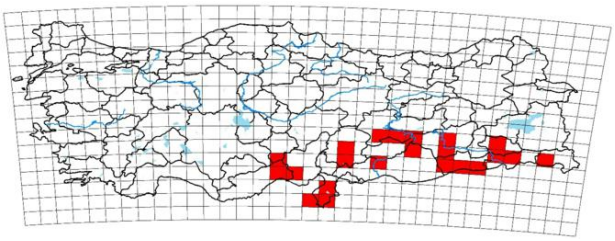

Figure 3.50. *Blanus alexandri* Sindaco, Kornilios, Sacchi & Lymberakis, 2014

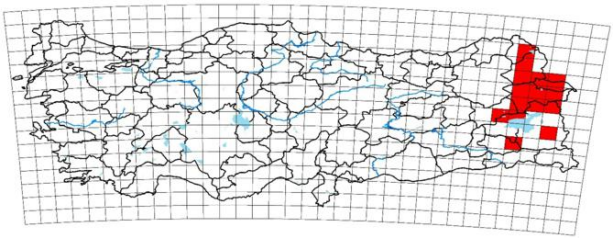

Figure 3.51. *Paralaudakia caucasia* (Eichwald, 1831)

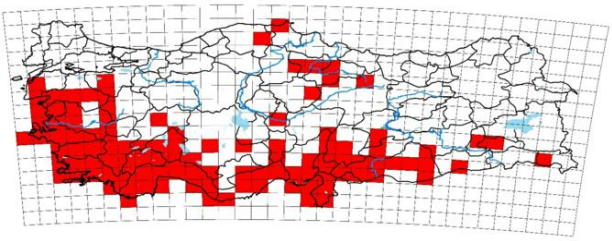

Figure 3.52. *Stellagama stellio* (Linnaeus, 1758)

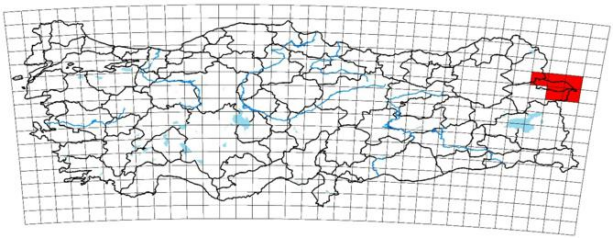

Figure 3.53. *Phrynocephalus horvathi* Méhely, 1894

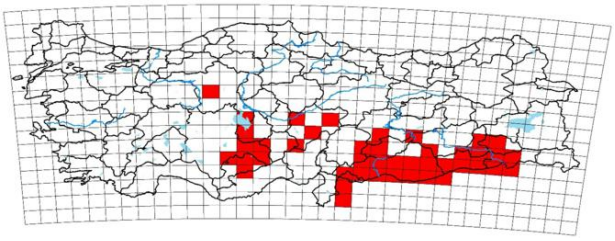

Figure 3.54. *Trapelus ruderatus* (Olivier, 1804)

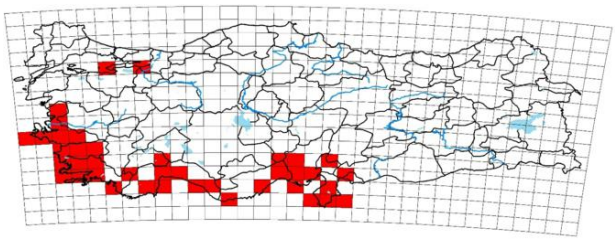

Figure 3.55. *Chamaeleo chamaeleon* (Linnaeus, 1758)

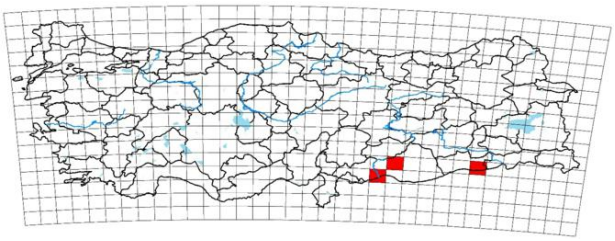

Figure 3.56. *Asaccus barani* Torki, Ahmadzadeh, Ilgaz, Avcı & Kumlutaş, 2011

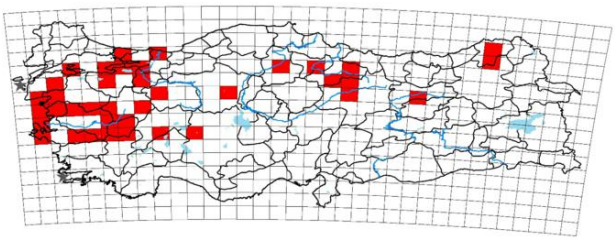

Figure 3.57. *Mediodactylus kotschyi* (Steindachner, 1870) s.str. (stars) and *M. kotschyi* (Steindachner, 1870) s.l. (red square)

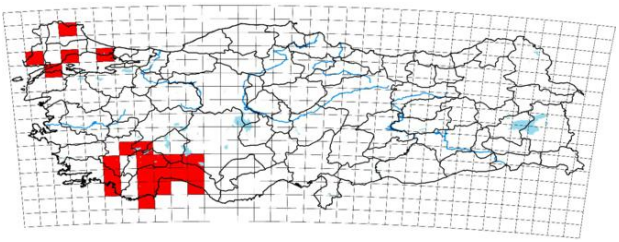

Figure 3.58. *Mediodactylus danilewskii* (Strauch, 1887)

Figure 3. Distribution map of amphibians and reptiles in Turkey (page 5 of 15).

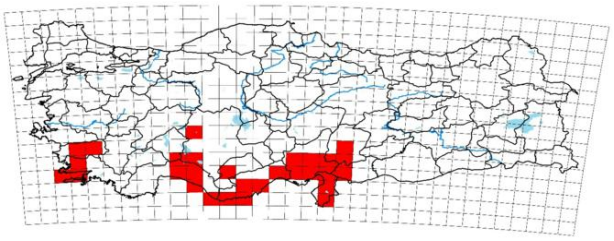

Figure 3.59. *Mediodactylus orientalis* (Stepánek, 1937)

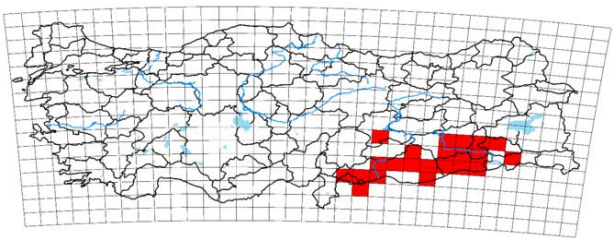

Figure 3.60. *Mediodactylus heterocercus* (Blanford, 1874)

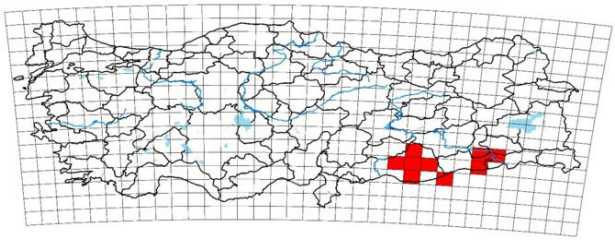

Figure 3.61. *Cyrtopodion scabrum* (Heyden, 1827)

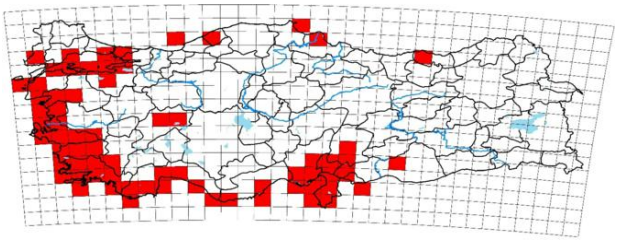

Figure 3.62. *Hemidactylus turcicus* (Linnaeus, 1758)

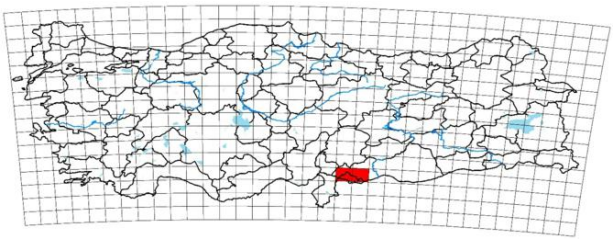

Figure 3.63. *Stenodactylus grandiceps* Haas, 1952

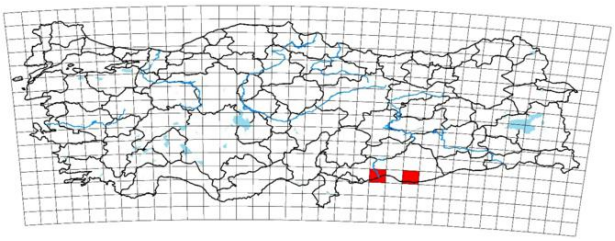

Figure 3.64. *Eublepharis angramainyu* Anderson & Leviton, 1966

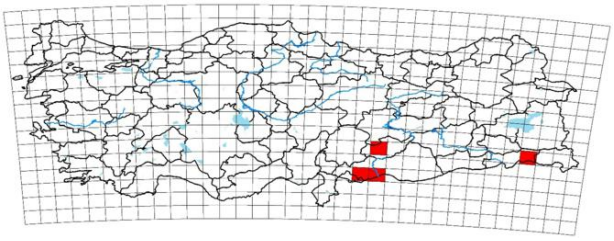

Figure 3.65. *Acanthodactylus boskianus* (Daudin, 1802)

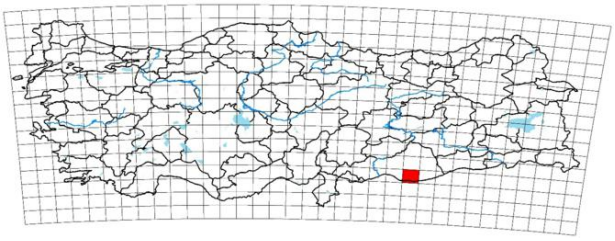

Figure 3.66. *Acanthodactylus harranensis* Baran, Kumlutaş, Lanza, Sindaco, Ilgaz, Avcı & Crucitti, 2005

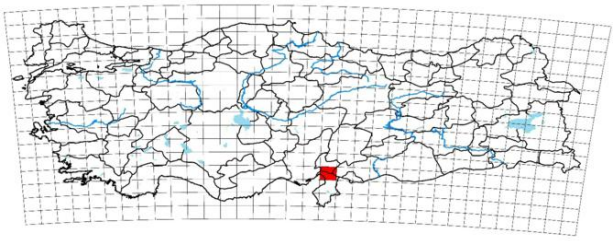

Figure 3.67. *Acanthodactylus schreiberi* Boulenger, 1878

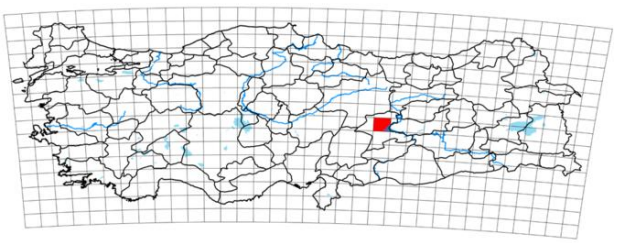

Figure 3.68. *Acanthodactylus ilgazi* Kurnaz & Şahin, 2021

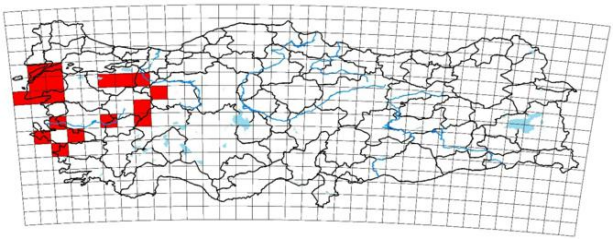

Figure 3.69. *Anatololacerta anatolica* (Werner, 1900)

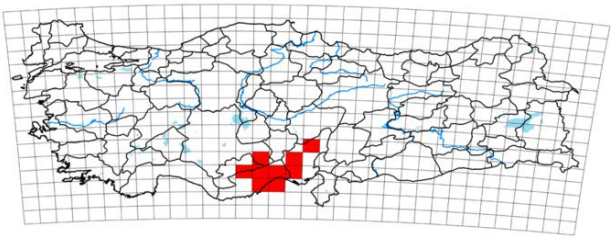

Figure 3.70. *Anatololacerta danfordi* (Günther, 1876)

Figure 3. Distribution map of amphibians and reptiles in Turkey (page 6 of 15).

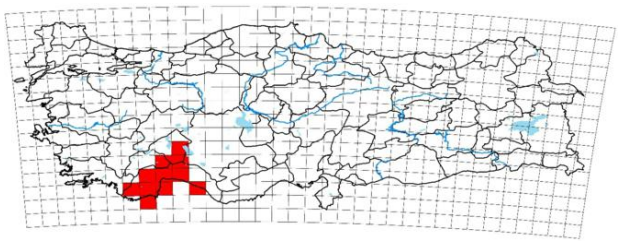

Figure 3.71. *Anatololacerta finikensis* (Eiselt & Schmidtler, 1986)

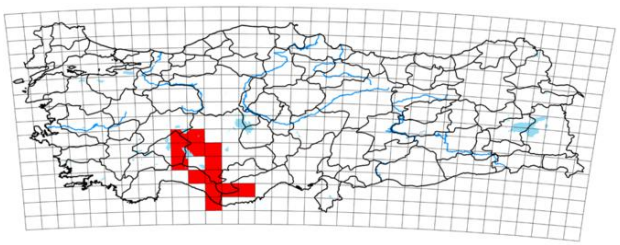

Figure 3.72. *Anatololacerta ibrahimi* (Eiselt & Schmidtler, 1986)

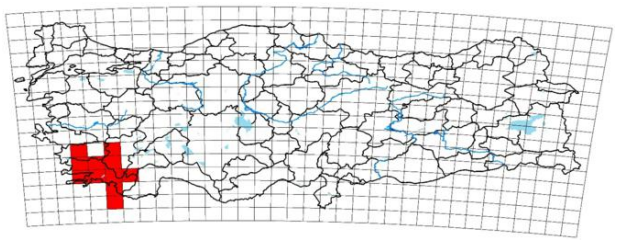

Figure 3.73. *Anatololacerta pelasgiana* (Mertens, 1959)

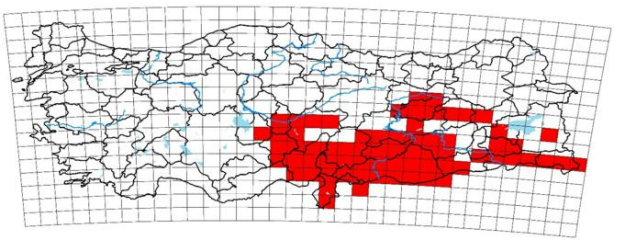

Figure 3.74. *Apathya cappadocica* (Werner, 1902)

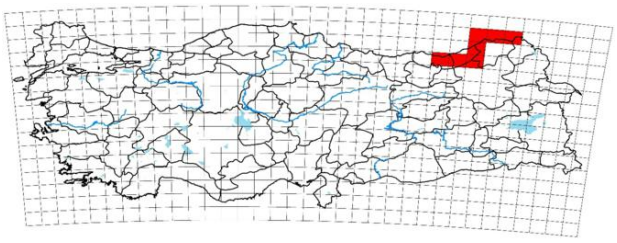

Figure 3.75. *Darevskia adjarica* (Darevsky & Eiselt, 1980)

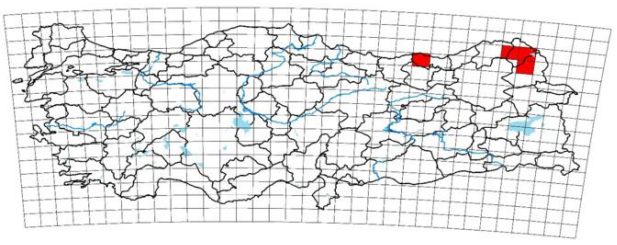

Figure 3.76. *Darevskia armeniaca* (Méhely, 1909)

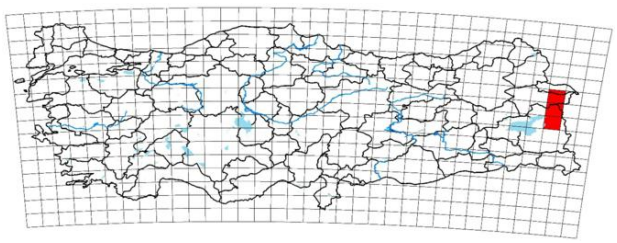

Figure 3.77. *Darevskia bendimahiensis* (Schmidtler, Eiselt & Darevsky, 1994)

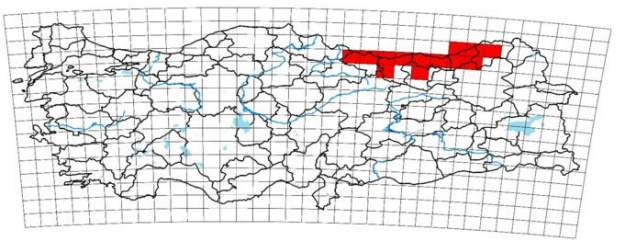

Figure 3.78. *Darevskia clarkorum* (Darevsky & Vedmederja, 1977)

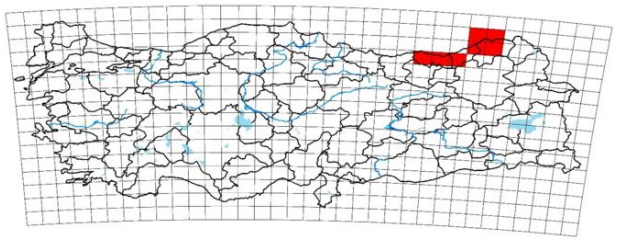

Figure 3.79. *Darevskia derjugini* (Nikolsky, 1898)

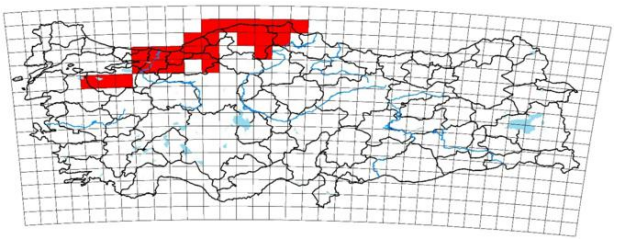

Figure 3.80. *Darevskia bithynica* (Méhely, 1909)

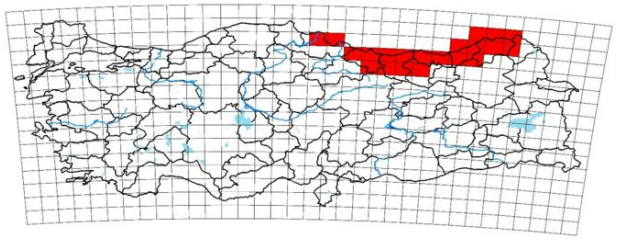

Figure 3.81. *Darevskia rudis* (Bedriaga, 1886)

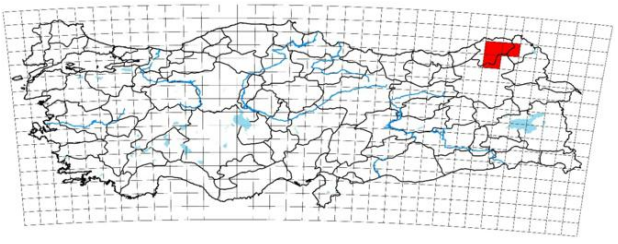

Figure 3.82. *Darevskia parvula* (Lantz & Cyrén, 1913)

Figure 3. Distribution map of amphibians and reptiles in Turkey (page 7 of 15).

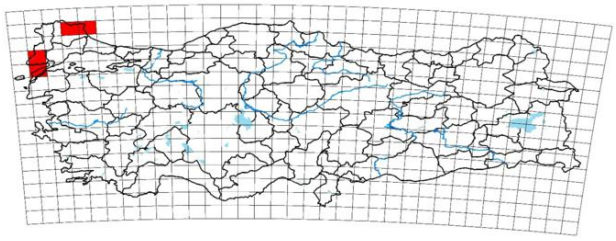

Figure 3.83. *Darevskia praticola* (Eversmann, 1834)

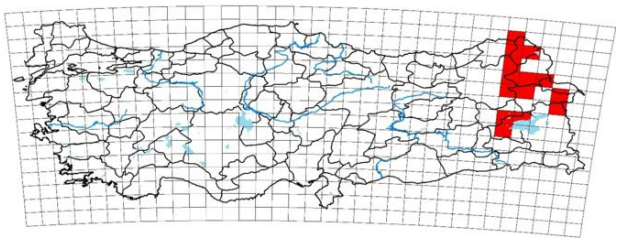

Figure 3.84. *Darevskia raddei* (Boettger, 1892)

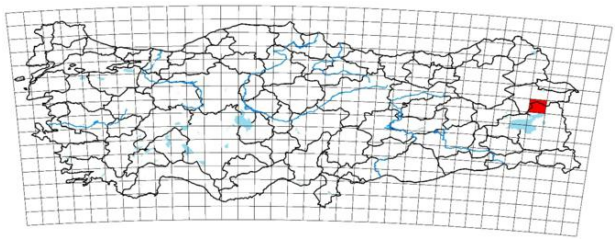

Figure 3.85. *Darevskia sapphirina* (Schmidtler, Eiselt & Darevsky, 1994)

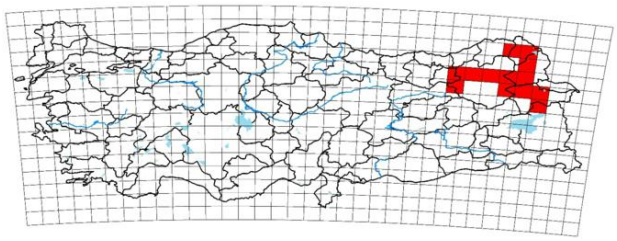

Figure 3.86. *Darevskia unisexualis* (Darevsky, 1966)

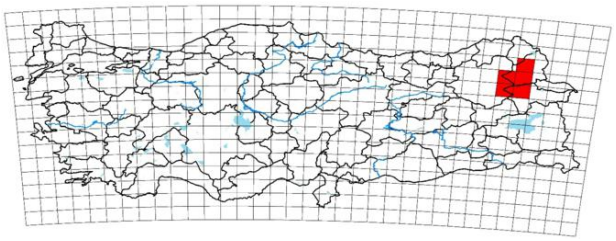

Figure 3.87. *Darevskia uzzelli* (Darevsky & Danielyan, 1977)

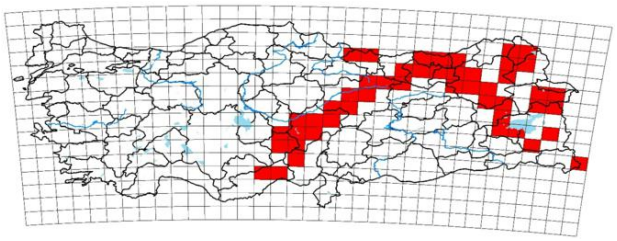

Figure 3.88. *Darevskia valentini* (Boettger, 1892)

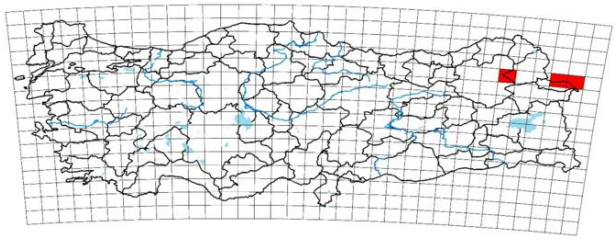

Figure 3.89. *Eremias pleskei* Nikolsky, 1905

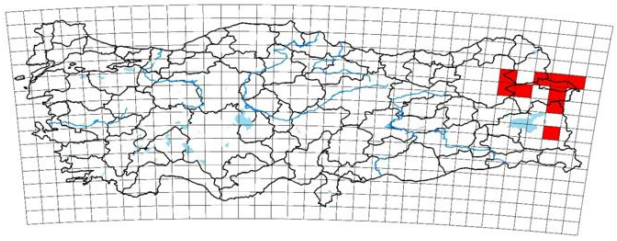

Figure 3.90. *Eremias strauchi* Kessler, 1878

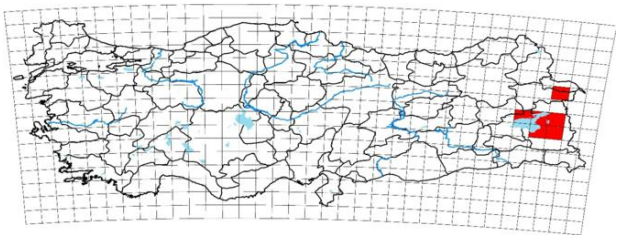

Figure 3.91. *Eremias suphani* Başoğlu & Hellmich, 1968

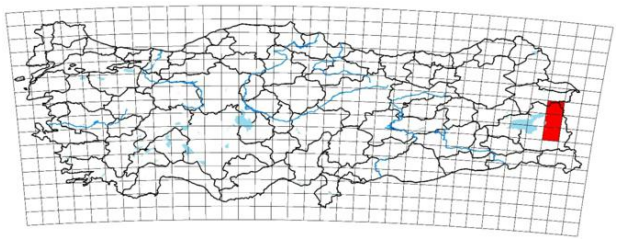

Figure 3.92. *Iranolacerta brandtii* (De Filippi, 1863)

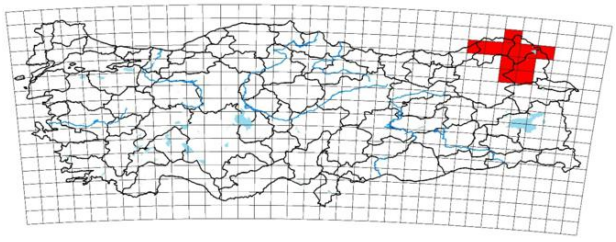

Figure 3.93. *Lacerta agilis* Linnaeus, 1758

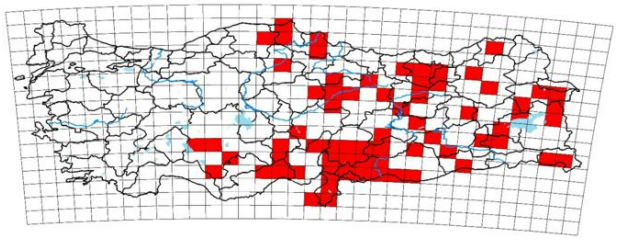

Figure 3.94. *Lacerta media* Lantz & Cyrén, 1920

Figure 3. Distribution map of amphibians and reptiles in Turkey (page 8 of 15).

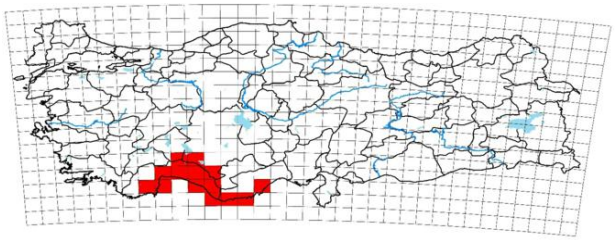

Figure 3.95. *Lacerta pamphylica* Schmidtler, 1975

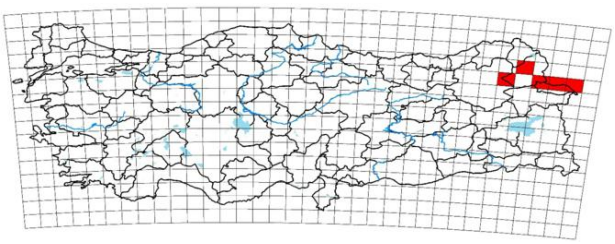

Figure 3.96. *Lacerta strigata* Eichwald, 1831

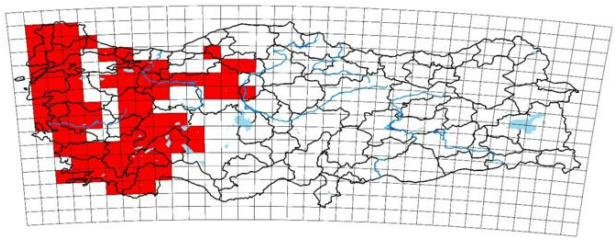

Figure 3.97. *Lacerta diplochondrodes* Wettstein, 1952

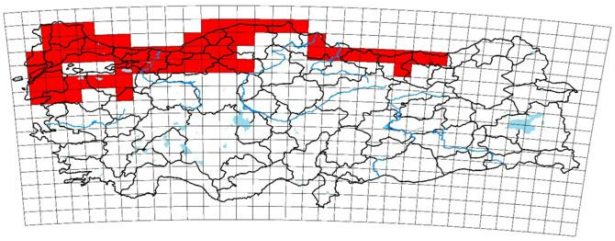

Figure 3.98. *Lacerta viridis* (Laurenti, 1768)

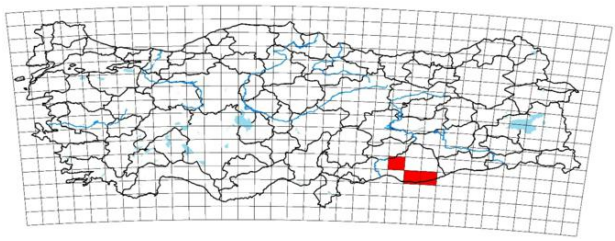

Figure 3.99. *Mesalina microlepis* (Angel, 1936)

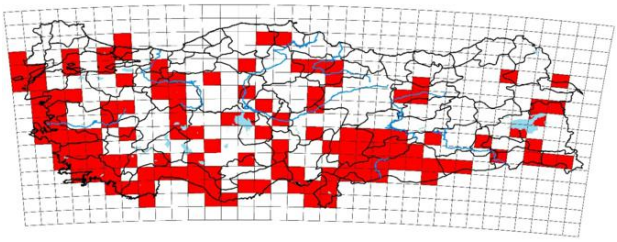

Figure 3.100. *Ophisops elegans* Ménétries, 1832

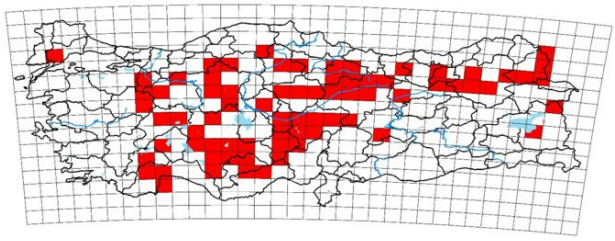

Figure 3.101. *Parvilacerta parva* (Boulenger, 1887)

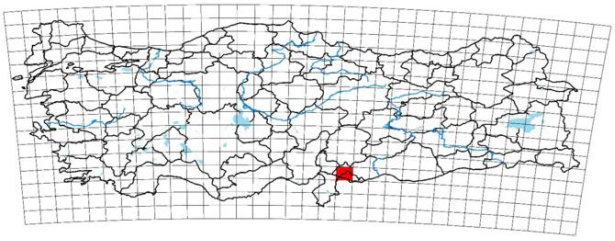

Figure 3.102. *Phoenicolacerta cyanisparsa* (Schmidtler & Bischoff, 1999)

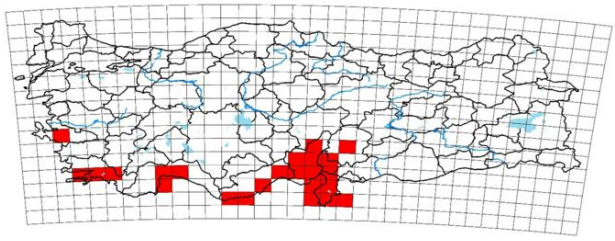

Figure 3.103. *Phoenicolacerta laevis* (Gray, 1838)

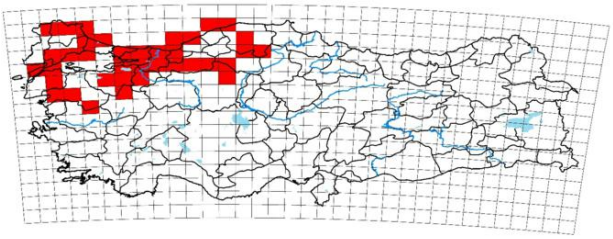

Figure 3.104. *Podarcis muralis* (Laurenti, 1768)

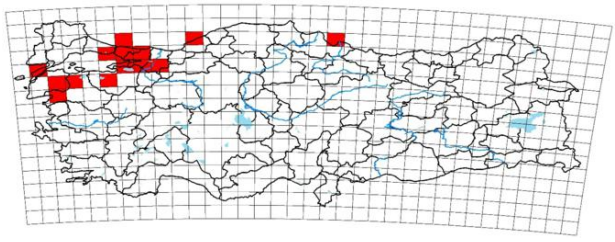

Figure 3.105. *Podarcis siculus* (Rafinesque-Schmaltz, 1810)

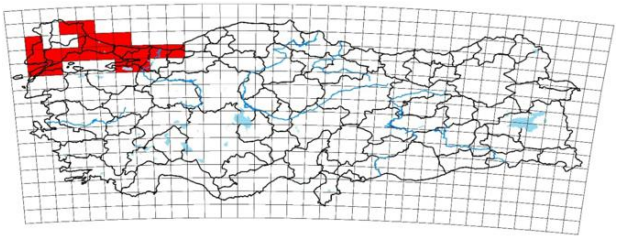

Figure 3.106. *Podarcis tauricus* (Pallas, 1814)

Figure 3. Distribution map of amphibians and reptiles in Turkey (page 9 of 15).

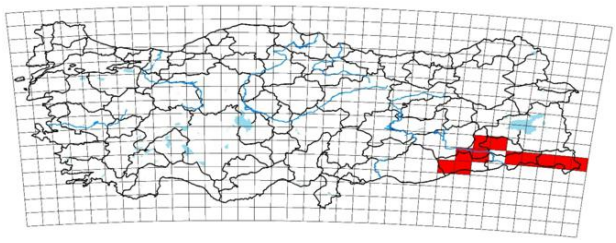

Figure 3.107. *Timon kurdistanicus* (Suchow, 1936)

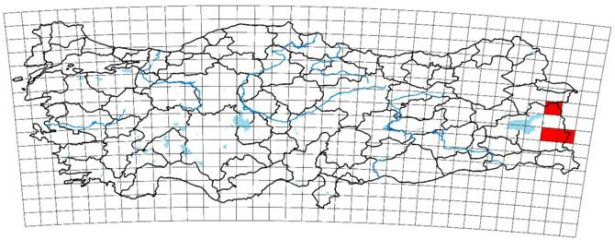

Figure 3.108. *Ablepharus bivittatus* (Ménétries, 1832)

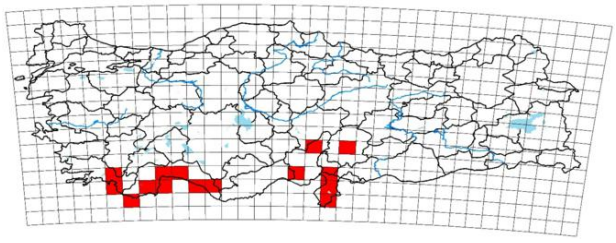

Figure 3.109. *Ablepharus budaki* Göçmen, Kumlutaş & Tosunoğlu, 1996

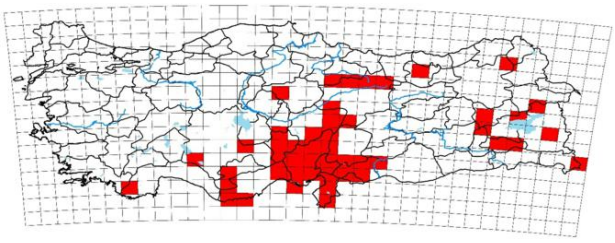

Figure 3.110. *Ablepharus chernovi* Darevsky, 1953

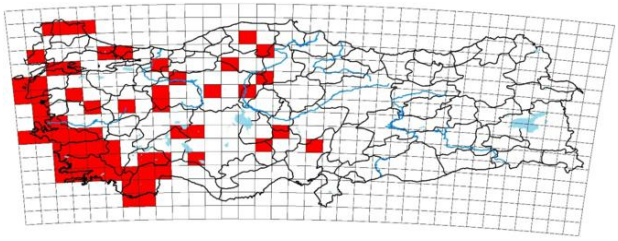

Figure 3.111. *Ablepharus kitaibelii* (Bibron & Bory St-Vincent, 1833)

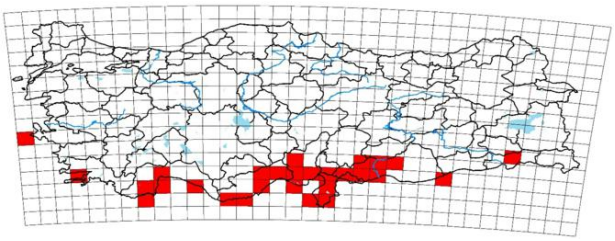

Figure 3.112. *Chalcides ocellatus* (Forskål, 1775)

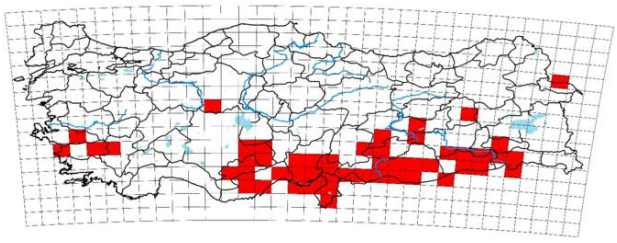

Figure 3.113. *Eumeces schneiderii* (Daudin, 1802)

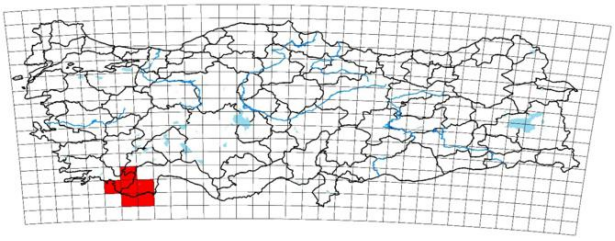

Figure 3.114. *Ophiomorus kardesi* Kornilios, Kumlutaş, Lymberakis & Ilgaz, 2018

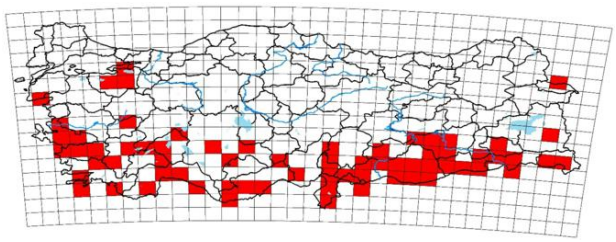

Figure 3.115. *Heremites auratus* (Linnaeus, 1758)

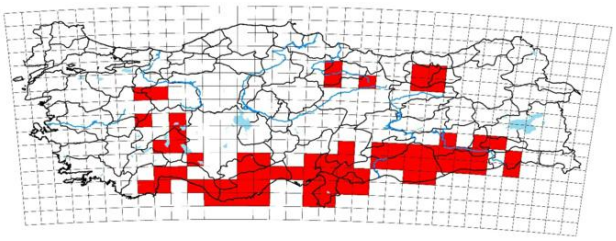

Figure 3.116. *Heremites vittatus* (Olivier, 1804)

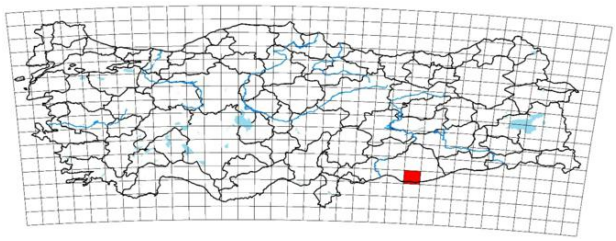

Figure 3.117. *Heremites septemtaeniatus* (Reuss, 1834)

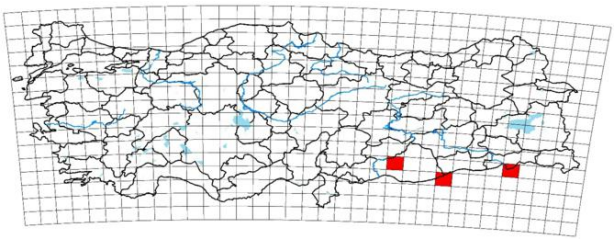

Figure 3.118. *Varanus griseus* (Daudin, 1803)

Figure 3. Distribution map of amphibians and reptiles in Turkey (page 10 of 15).

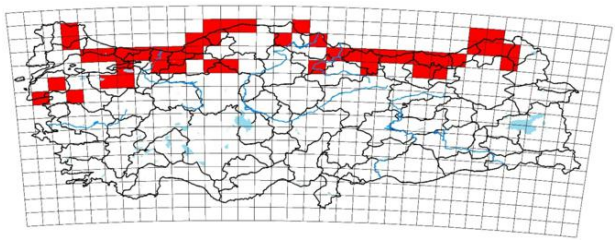

Figure 3.119. *Anguis colchica* (Nordmann, 1840)

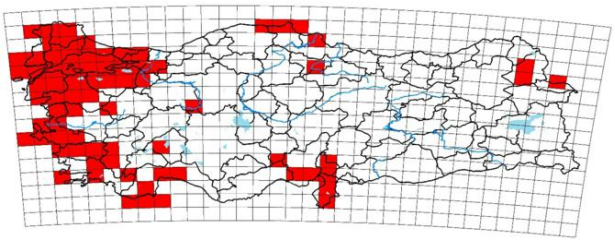

Figure 3.120. *Pseudopus apodus* (Pallas, 1775)

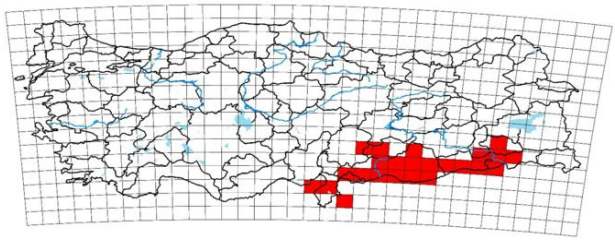

Figure 3.121. *Myriopholis macrorhyncha* (Jan, 1860)

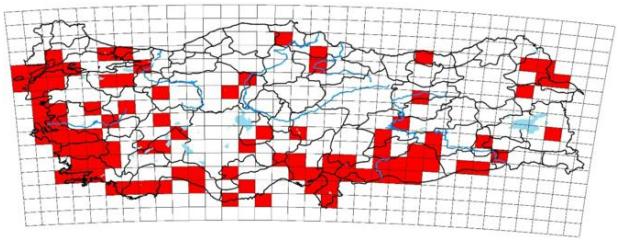

Figure 3.122. *Xerotyphlops vermicularis* (Merrem, 1820)

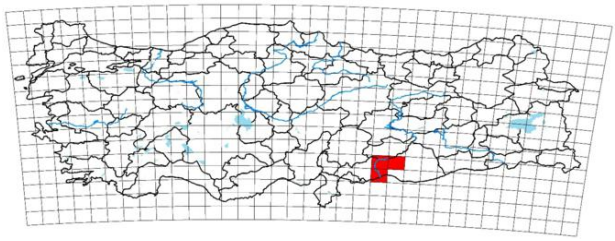

Figure 3.123. *Letheobia episcopa* (Franzen & Wallach, 2002)

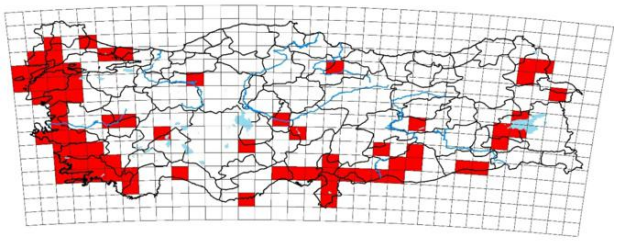

Figure 3.124. *Eryx jaculus* (Linnaeus, 1758)

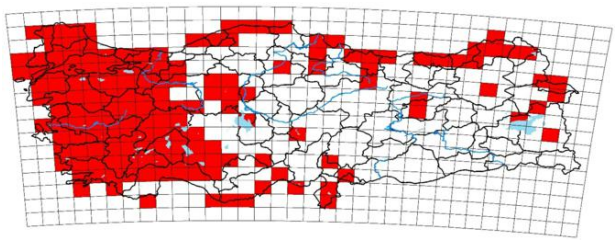

Figure 3.125. *Natrix natrix* (Linnaeus, 1758)

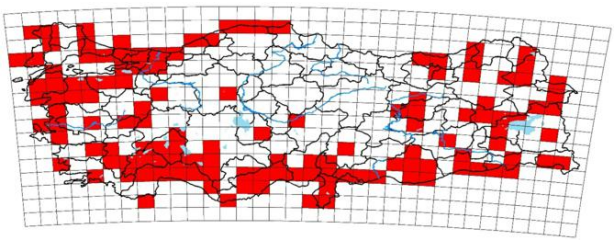

Figure 3.126. *Natrix tessellata* (Laurenti, 1768)

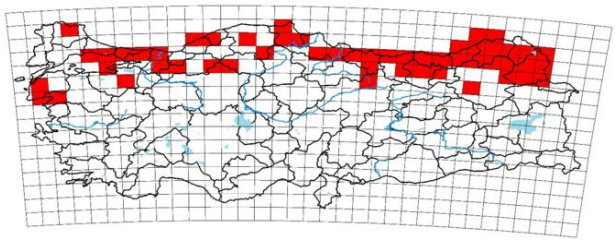

Figure 3.127. *Coronella austriaca* Laurenti, 1768

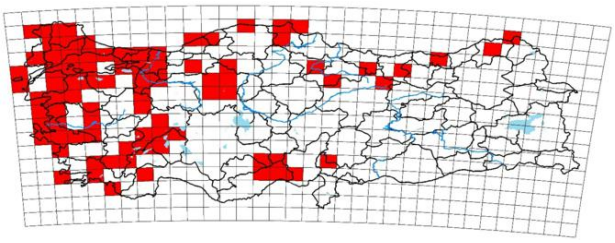

Figure 3.128. *Dolichophis caspius* (Gmelin, 1789)

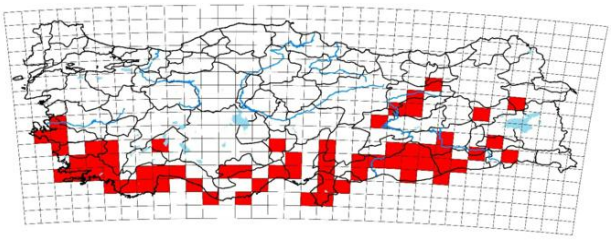

Figure 3.129. *Dolichophis jugularis* (Linnaeus, 1758)

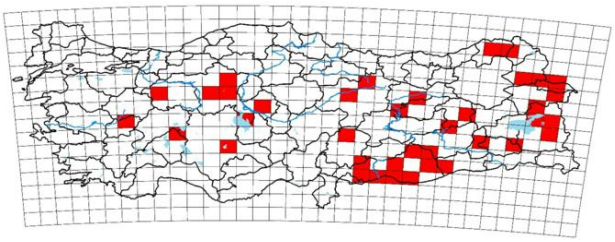

Figure 3.130. *Dolichophis schmidti* (Nikolsky, 1909)

Figure 3. Distribution map of amphibians and reptiles in Turkey (page 11 of 15).

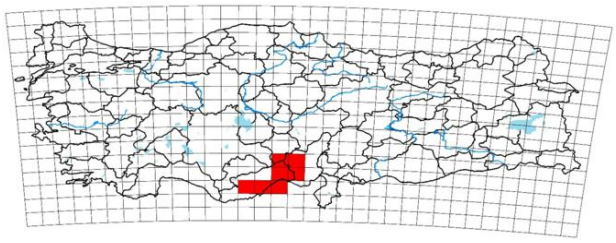

Figure 3.131. *Eirenis aurolineatus* (Venzmer, 1919)

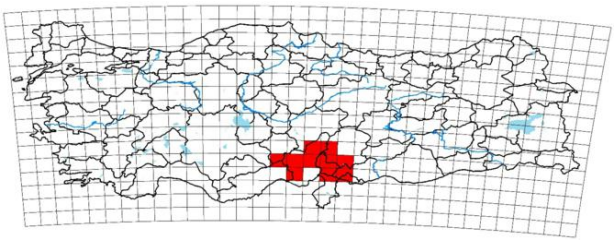

Figure 3.132. *Eirenis barani* Schmidtler, 1988

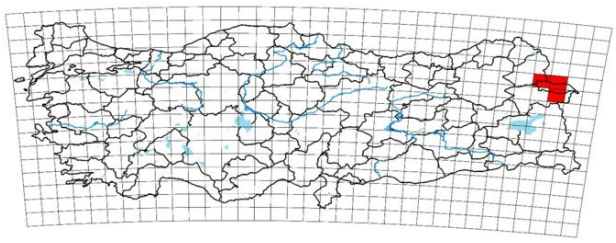

Figure 3.133. *Eirenis collaris* (Ménétries, 1832)

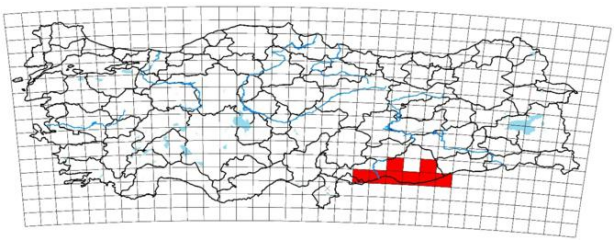

Figure 3.134. *Eirenis coronella* (Schlegel, 1837)

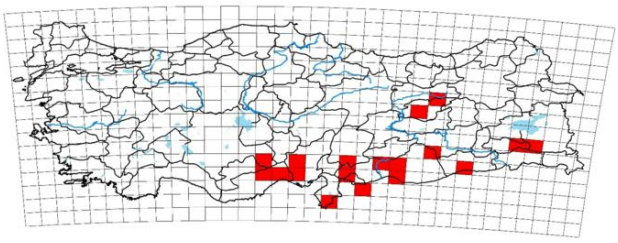

Figure 3.135. *Eirenis decemlineatus* (Duméril, Bibron & Duméril, 1854)

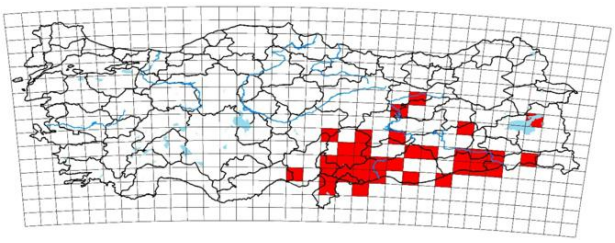

Figure 3.136. *Eirenis eiselti* Schmidtler & Schmidtler 1978

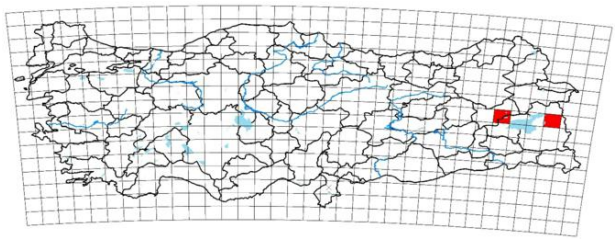

Figure 3.137. *Eirenis thospitis* Schmidtler & Lanza, 1990

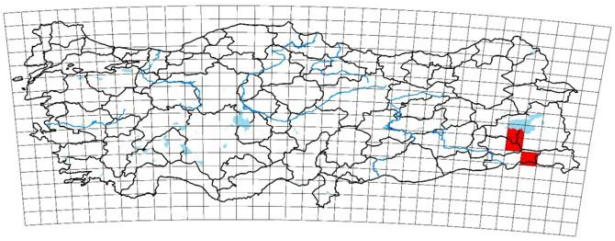

Figure 3.138. *Eirenis hakkariensis* Schmidtler & Eiselt, 1991

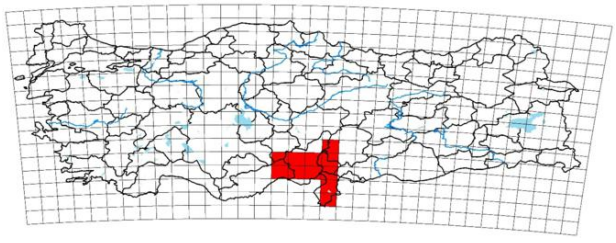

Figure 3.139. *Eirenis levantinus* Schmidtler, 1993

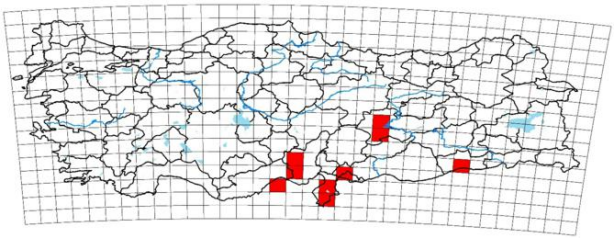

Figure 3.140. *Eirenis lineomaculatus* Schmidt, 1939

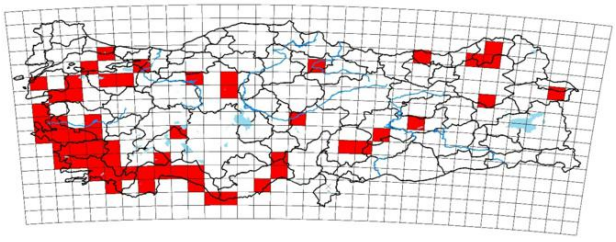

Figure 3.141. *Eirenis modestus* (Martin, 1838)

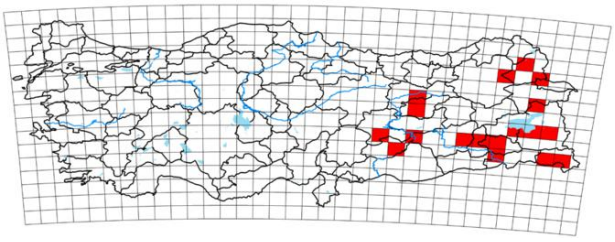

Figure 3.142. *Eirenis punctatolineatus* (Boettger, 1892)

Figure 3. Distribution map of amphibians and reptiles in Turkey (page 12 of 15).

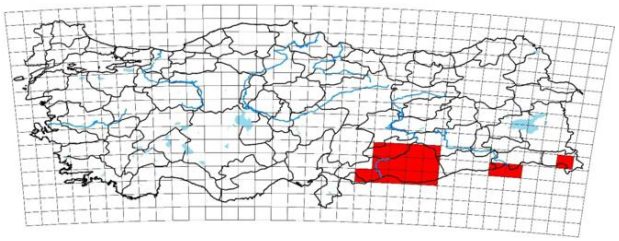

Figure 3.143. *Eirenis occidentalis* Rajabizadeh, Nagy, Adriaens, Avcı, Masroor, Schmidtler, Nazarov, Esmaeili & Christiaens, 2015

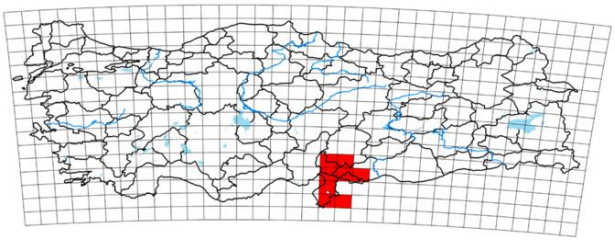

Figure 3.144. *Eirenis rothii* Jan, 1863

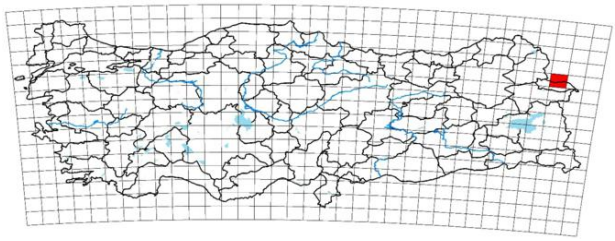

Figure 3.145. *Elaphe dione* (Pallas, 1773)

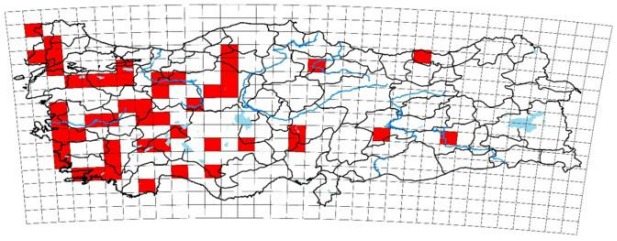

Figure 3.146. *Elaphe sauromates* (Pallas, 1811)

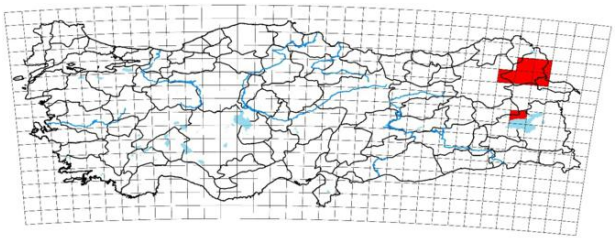

Figure 3.147. *Elaphe urartica* Jablonski, Kukushkin, Avcı, Bunyatova, Ilgaz, Tuniyev & Jandzik, 2019

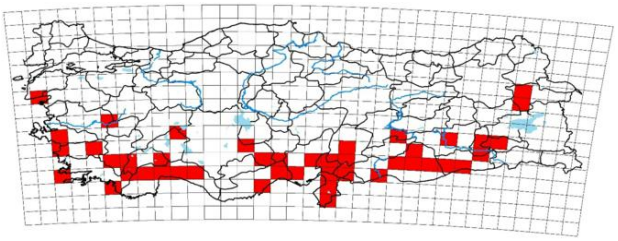

Figure 3.148. *Hemorrhois nummifer* (Reuss, 1834)

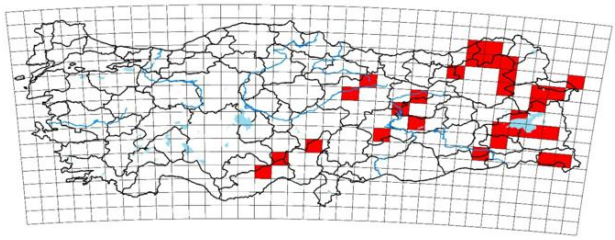

Figure 3.149. *Hemorrhois ravergieri* (Ménétries, 1832)

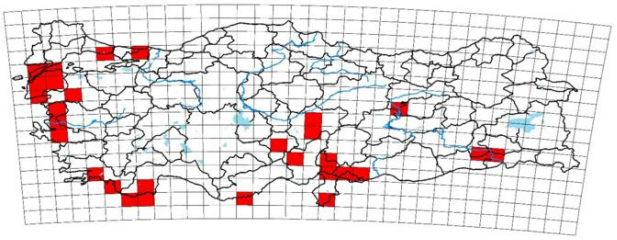

Figure 3.150. *Platyceps collaris* (Müller, 1878)

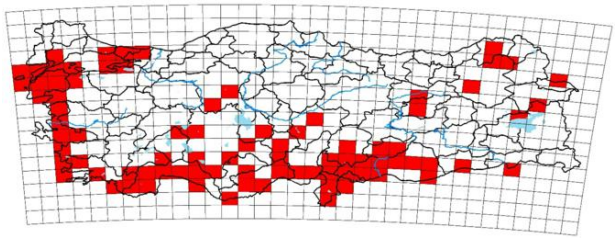

Figure 3.151. *Platyceps najadum* (Eichwald, 1831)

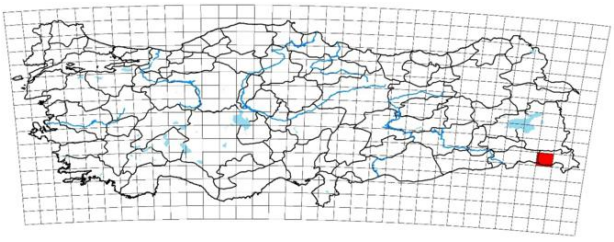

Figure 3.152. *Platyceps rhodorachis* (Jan, 1863)

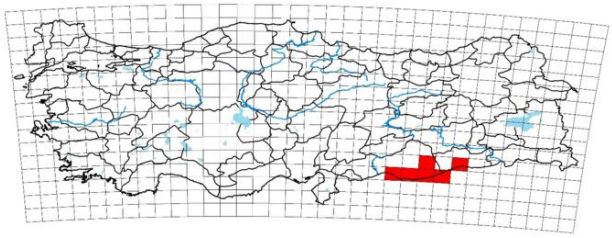

Figure 3.153. *Platyceps ventromaculatus* (Gray, 1834)

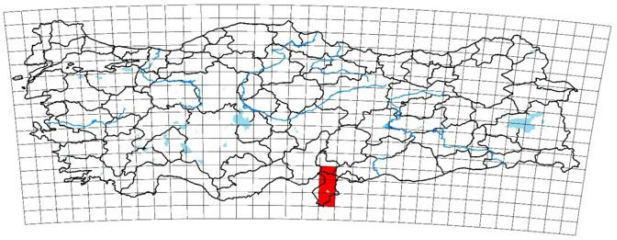

Figure 3.154. *Muhtarophis barani* Olgun, Avcı, Ilgaz, Üzüm & Yılmaz 2007

Figure 3. Distribution map of amphibians and reptiles in Turkey (page 13 of 15).

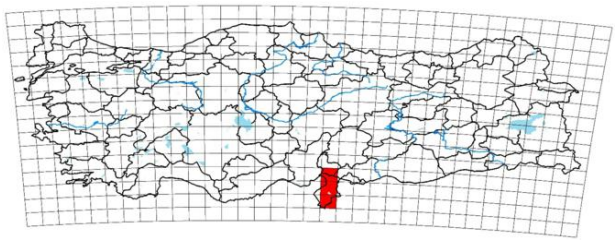

Figure 3.155. *Rhynchocalamus melanocephalus* (Jan, 1862)

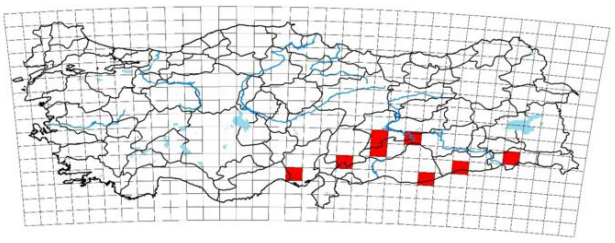

Figure 3.156. *Rhynchocalamus satunini* (Nikolsky, 1899)

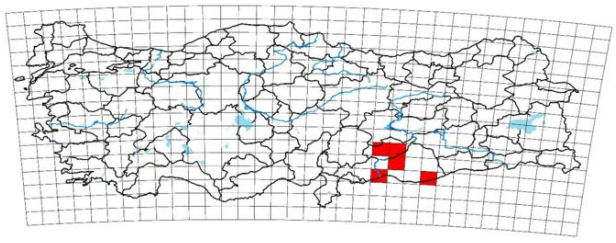

Figure 3.157. *Spalerosophis diadema* (Schlegel, 1837)

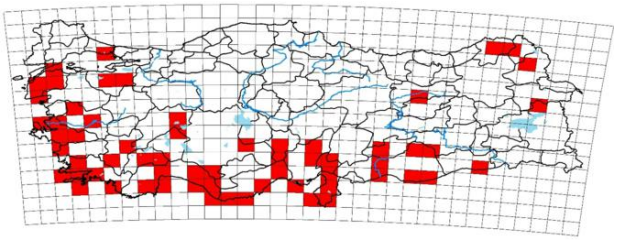

Figure 3.158. *Telescopus fallax* Fleischmann, 1831

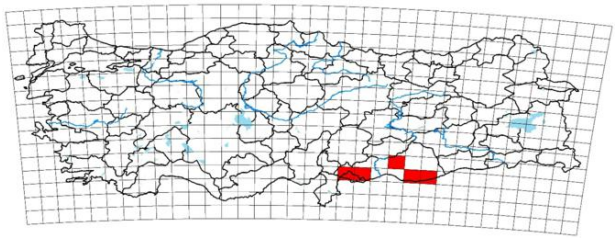

Figure 3.159. *Telescopus nigriceps* (Ahl, 1924)

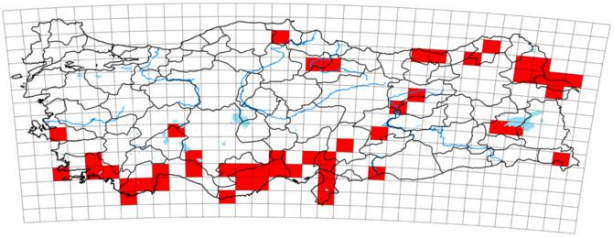

Figure 3.160. *Zamenis hohenackeri* (Strauch, 1873)

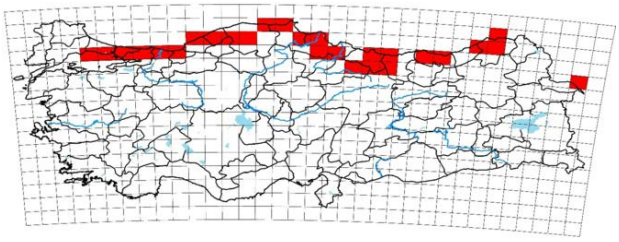

Figure 3.161. *Zamenis longissimus* (Laurenti, 1768)

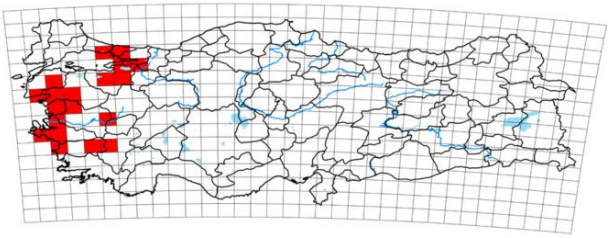

Figure 3.162. *Zamenis situla* (Linnaeus, 1758)

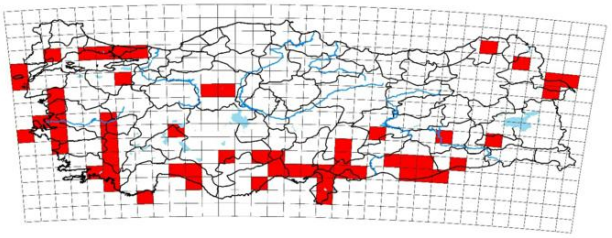

Figure 3.163. *Malpolon insignitus* (Geoffroy Saint-Hilaire, 1827)

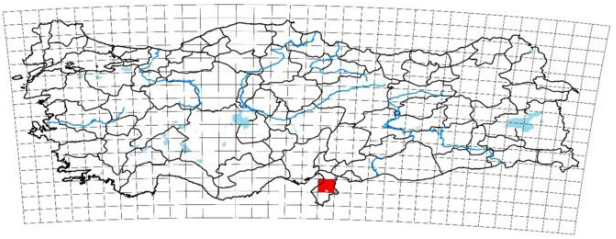

Figure 3.164. *Daboia palaestinae* (Werner, 1938)

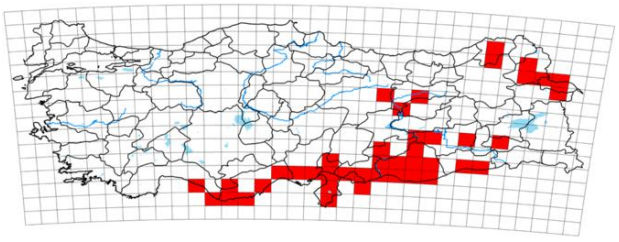

Figure 3.165. *Macrovipera lebetinus* (Linnaeus, 1758)

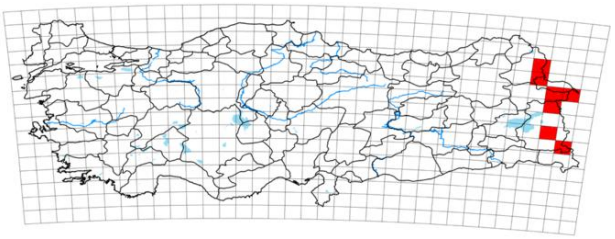

Figure 3.166. *Montivipera raddei* (Boettger, 1890)

Figure 3. Distribution map of amphibians and reptiles in Turkey (page 14 of 15).

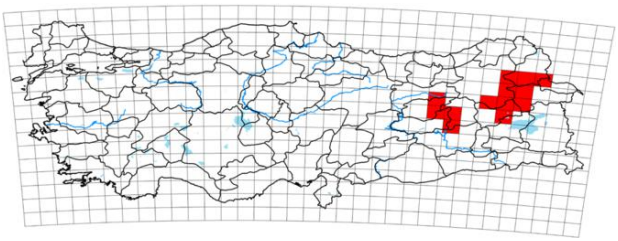

Figure 3.167. *Montivipera wagneri* (Nilson & Andrén, 1984)

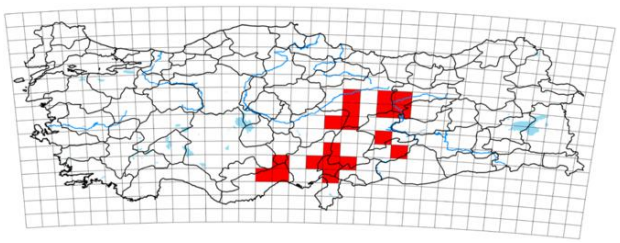

Figure 3.168. *Montivipera bulgardaghica* (Nilson & Andrén, 1985)

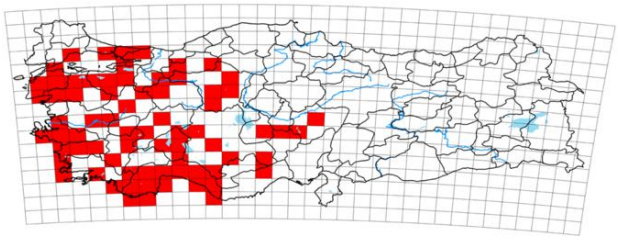

Figure 3.169. *Montivipera xanthina* (Gray, 1849)

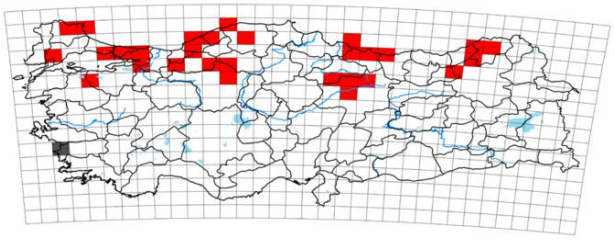

Figure 3.170. *Vipera ammodytes* (Linnaeus, 1758)

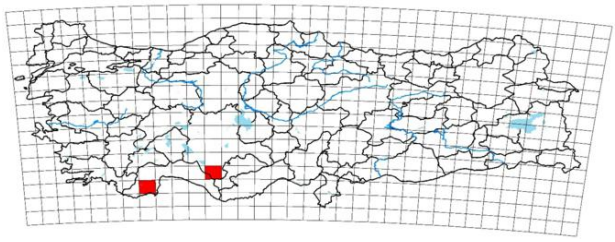

Figure 3.171. *Vipera anatolica* Eiselt & Baran, 1970

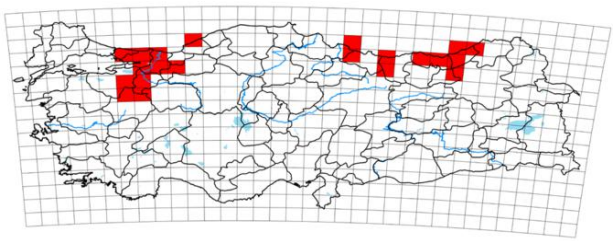

Figure 3.172. *Vipera berus* (Linnaeus, 1758)

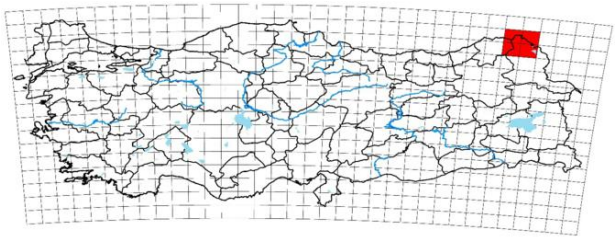

Figure 3.173. *Vipera darevskii* Vedmederja, Orlov & Tuniyev, 1986

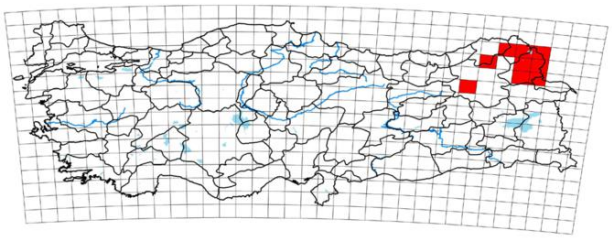

Figure 3.174. *Vipera renardi* (Chirstoph, 1861)

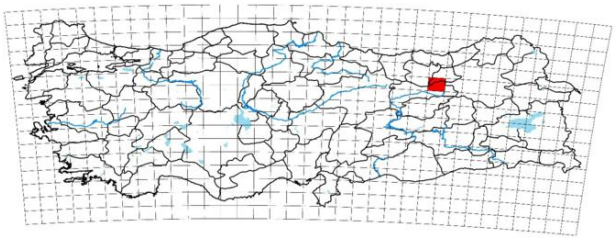

Figure 3.175. *Vipera sakoi* Tuniyev, Avcı, Tuniyev, Ilgaz, Olgun, Petrova, Bodrov, Geniez & Teynié, 2018

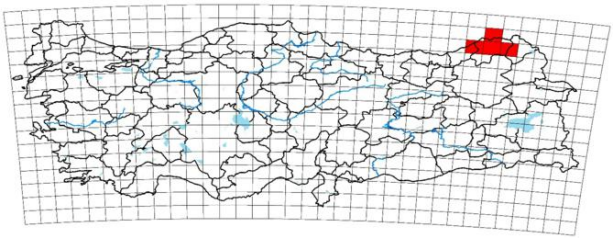

Figure 3.176. *Vipera kaznakovi* Nikolsky, 1909

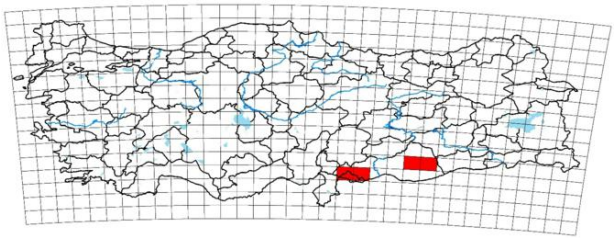

Figure 3.177. *Walterinnesia morgani* (Mocquard, 1905)

Figure 3. Distribution map of amphibians and reptiles in Turkey (page 15 of 15).

Table 3. Summary of conservation status for amphibians and reptiles in Turkey

	Critically Endangered (CR)	Endangered (EN)	Vulnerable (VU)	Near Threatened (NT)	Least Concern (LC)	Data Deficient (DD)	Not Evaluated (NE)
Caudata	1 (2.70%)	4 (10.81%)	4 (10.81%)	2 (5.40%)	2 (5.40%)	0	7 (18.91%)
Anura	1 (2.70%)	1 (2.70%)	0	3 (8.10%)	9 (24.32%)	0	3 (8.10%)
Amphibia	2 (5.41%)	5 (13.51%)	4 (10.81%)	5 (13.51%)	11 (29.72%)	0	10 (27.02%)
Chelonia	0	2 (1.41%)	4 (2.87)	2 (1.41%)	2 (1.41%)	0	1 (0.70%)
Sauria	3 (2.12%)	4 (2.83)	0	3 (2.12%)	43 (30.49%)	2 (1.41%)	15 (10.63%)
Amphisbaenia	0	0	0	0	1 (0.70%)	0	2 (1.41%)
Serpentes	3 (2.12%)	1 (0.70%)	1 (0.70%)	1 (0.70%)	37 (26.24%)	4 (2.83)	10 (7.09%)
Reptilia	6 (4.25%)	7 (4.96%)	5 (3.54%)	6 (4.25%)	83 (58.86%)	6 (4.25%)	27 (19.14%)
Overall	8 (4.49%)	12 (6.74%)	9 (5.05%)	11 (6.17%)	94 (52.80%)	6 (3.37%)	37 (20.78%)

Table 4. The species richness of amphibians and reptiles in ecoregions of Turkey.

Ecoregion no	Caudata	Anura	Amphibia	Chelonia	Sauria	Amphisbaenia	Serpentes	Reptilia	Overall
1	2 (5.40%)	8 (21.62%)	10 (27.02%)	4 (2.84%)	11 (7.80%)	0	10 (7.09%)	25 (17.73%)	35 (19.66%)
2	6 (16.21%)	10 (27.02%)	16 (43.24%)	4 (2.84%)	26 (18.44%)	1 (0.71%)	18 (12.77%)	49 (34.75%)	65 (36.52%)
3	7 (18.91%)	7 (18.91%)	14 (37.83%)	3 (2.13%)	19 (13.48%)	1 (0.71%)	18 (12.77%)	41 (29.08%)	55 (30.90%)
4	6 (16.21%)	10 (27.02%)	16 (43.24%)	4 (2.84%)	24 (17.02%)	0	18 (12.77%)	46 (32.62%)	62 (34.83%)
5	5 (13.51%)	11 (29.72%)	16 (43.24%)	4 (2.84%)	24 (17.02%)	1 (0.71%)	29 (20.57%)	58 (41.13%)	73 (41.01%)
6	0	4 (10.81%)	4 (10.81%)	3 (2.13%)	13 (9.22%)	0	11 (7.80%)	27 (19.15%)	31 (17.41%)
7	0	5 (13.51%)	5 (13.51%)	3 (2.13%)	15 (10.64%)	0	13 (9.22%)	31 (21.99%)	36 (20.22%)
8	1 (2.70%)	6 (16.21%)	7 (18.91%)	3 (2.13%)	14 (9.93%)	0	17 (12.06%)	34 (24.11%)	41 (23.03%)
9	3 (8.10%)	4 (10.81%)	7 (18.91%)	3 (2.13%)	14 (9.93%)	1 (0.71%)	22 (15.60%)	41 (29.08%)	48 (26.97%)
10	3 (8.10%)	9 (24.32%)	12 (32.43%)	4 (2.84%)	28 (19.86%)	3 (2.13%)	32 (22.70%)	67 (47.52%)	79 (44.38%)
11	1 (2.70%)	2 (5.40%)	4 (10.81%)	0	15 (10.64%)	0	13 (9.22%)	28 (19.86%)	32 (17.98%)
12	2 (5.40%)	2 (5.40%)	4 (10.81%)	1 (0.71%)	15 (10.64%)	1 (0.71%)	10 (7.09%)	27 (19.15%)	31 (17.42%)
13	2 (5.40%)	4 (10.81%)	6 (16.21%)	2 (1.42%)	22 (15.60%)	0	25 (17.73%)	49 (34.75%)	55 (30.90%)
14	4 (10.81%)	7 (18.91%)	11 (29.72%)	2 (1.42%)	18 (12.77%)	0	21 (14.89%)	41 (29.08%)	52 (29.21%)

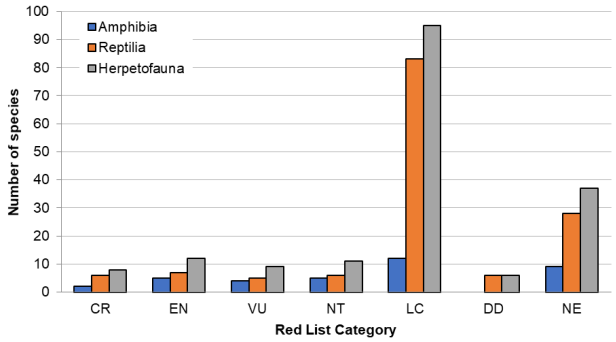

Figure 4. The conservation status of amphibians and reptiles in Turkey.

amphibian and reptile species (52.80%) were LC, 6 species (3.37%) DD and 37 species (20.78%) were of the category NE (Tables 3, 4, Figure 4).

According to the evaluations of the IUCN Red List; 11 of the caudatans [*L. antalyana*, *L. atifi*, *L. billae*, *L. fazilae*, *L. flavimembris*, *L. luschani*, *M. caucasica*, *N. strauchii*, *N. crocatus*, *O. ophryticus*, *S. infraimmaculata*], 5 of the anurans [*P. caucasicus*, *B. verrucosissimus*, *P. caralitanus*, *R. holtzi*, *R. tavasensis*], 8 of the turtles [*C. caretta*, *C. mydas*, *D. coriacea*, *E. orbicularis*, *T. triunguis*, *R. euphraticus*, *T. graeca*, *T. hermanni*], 10 of the lizards [*P. horvathi*, *A. harranensis*, *A. schreiberi*, *D. bendimahiensis*, *D. clarkorum*, *D. derjugini*, *D. praticola*, *D. unisexualis*, *D. uzzelli*, *E. pleskei*] and 6 of the snakes [*M. raddei*, *M. wagneri*, *V. anatolica*, *V. darevskii*, *V. renardi*, *V. kaznakovi*] are threatened on a global scale (Table 3).

Biogeographical analysis

The current distribution of all species in km² (as number of squares times the surface of a square) is specified in the species list (Table 2). In terms of species richness, the richest regions of amphibian species are Thrace (European part of Turkey) and western, southwestern and northern Anatolia (Asian part of Turkey), while the poorest regions are central, southeastern and eastern Anatolia. The regions with the highest richness in reptile species has been identified as Thrace, western, southeastern (East Mediterranean Turkey) and northeastern Anatolia and the poorest regions are central, eastern and central-northern (central Black sea region of Turkey) Anatolia (Table 4, Figure 5). Species found in just a single grid cell are three amphibians [*L. lantzi, B. variegata, P. fuscus*], six lizards [*A. harranensis, A. schreiberi, A. ilgazi, D. sapphirina, P. cyanisparsa, H. septemtaeniatus*] and three snakes [*D. palaestinae, E. dione, V. sakoi*]. The most commonly recorded species *T. graeca* is found in 231 grids.

Aegean and Western Turkey sclerophyllous and mixed forests [ecoregion no: 2] (16 species, 43.24%), Euxine-Colchic deciduous forests [4] (16 species, 43.24%), Southern Anatolian montane conifer and deciduous forests [5] (16 species, 43.24%), and Anatolian conifer and deciduous mixed forests [3] (14 species, 37.83%) have the richest ecoregions for amphibians in Turkey. Ecoregion Eastern Mediterranean conifer-sclerophyllous-broadleaf forests [10] (67 species, 47.5%), Southern Anatolian montane conifer and deciduous forests [5] (58 species, 41.13%), Aegean and Western Turkey sclerophyllous and mixed forests [no: 2] (49 species, 34.75%), Eastern Anatolian montane steppe [no: 13] (49 species, 34.75%), and Euxine-Colchic deciduous forests [4] (46 species, 32.62%) have the richest ecoregions for reptiles in Turkey (Table 4).

The highest species richness (hotspots) of Turkish amphibians are found in Turkish Thrace, southwestern, northwestern (Marmara) and northern (Black Sea) Anatolia (Figure 5A). For the most of Turkey, only 1-4 species per grid cell were recorded. Central, eastern, and southeastern Anatolia are poor regions due to the fact that it has a drier climate than other regions. Reptile richness (hotspots) is higher in western, southern and northeastern Anatolia. For the main part of Anatolia, 1-10 species per grid cell were recorded (Figure 5B). The distribution patterns of species richness are different in amphibians and reptiles (Figure 6C). Species richness of amphibians is the highest in northern and western Turkey, while the western, southern and northeastern Turkey has the highest richness in reptiles.

The analysis of corrected weighted endemism (CWE) highlighted the importance of northeastern, eastern, southeastern Anatolia as centres of endemism for Turkish herpetofauna (Figure 6A-C). For amphibians, the highest CWE values were found in southwestern, eastern, and northeastern Anatolia (Figure 6A). Besides, some grid cells on Turkish Thrace and southern, and central Anatolia stand out with high local endemism values according to the CWE. The highest CWE values of reptiles were found in northeastern, eastern and southeastern Anatolia. In addition, there are some grid cells in central and southern Anatolia that stand out with high local endemism values (Figure 6B).

The herpetofaunal species observed in Turkey were arranged into 40 chorotypes (amphibians in 19, reptiles in 36) (Tables 2, 5, Figure 7). The predominant chorotypes are SW-Asiatic (36 species, 20.45%), E-Mediterranean (25 species, 14.2%), S-Anatolian endemic (12 species, 6.81%) and Turano-Mediterranean (11 species, 6.25%) elements. SW-Asiatic (5 species, 13.5%), European (4 species, 10.8%), Turano-Europeo-Mediterranean (4 species, 10.8%) and S-Anatolian (4 species, 10.8%) elements account for 45.9% of the amphibians. SW-Asiatic (30 species, 21.28%), E-Mediterranean (24 species, 17.02%), and Turano-Mediterranean (11 species, 7.80%) elements constitute 46.10% of reptiles.

Additions to the Turkish fauna taxonomic and systematic changes

Caudata: Salamandridae

Newts of the genus *Triturus*, as such known since a century ago (Rafinesque 1820), were recently found to represent a non-monophyletic group (Weisrock et al. 2006, Steinfarz et al. 2007). García–París et al. (2004) and Litvinchuk et al. (2005) proposed several new genera.

Nowadays the former genus *Triturus* has been split up and, within the region under study, represented by the genera *Triturus* s. str., *Lissotriton* and *Ommatotriton*. Since then, the genus name *Triturus* has been used only for the *cristatus* and *marmoratus* groups. In Turkey, the crested newts are represented firstly by *T. karelinii*. This taxon, though originally described as a full species (*Triton karelinii* Strauch 1870), had been treated as a subspecies of *cristatus* since 1928 (Mertens & Müller 1928), but was given species rank by Bucci-Innocenti et al. (1983). Wielstra et al. (2013)

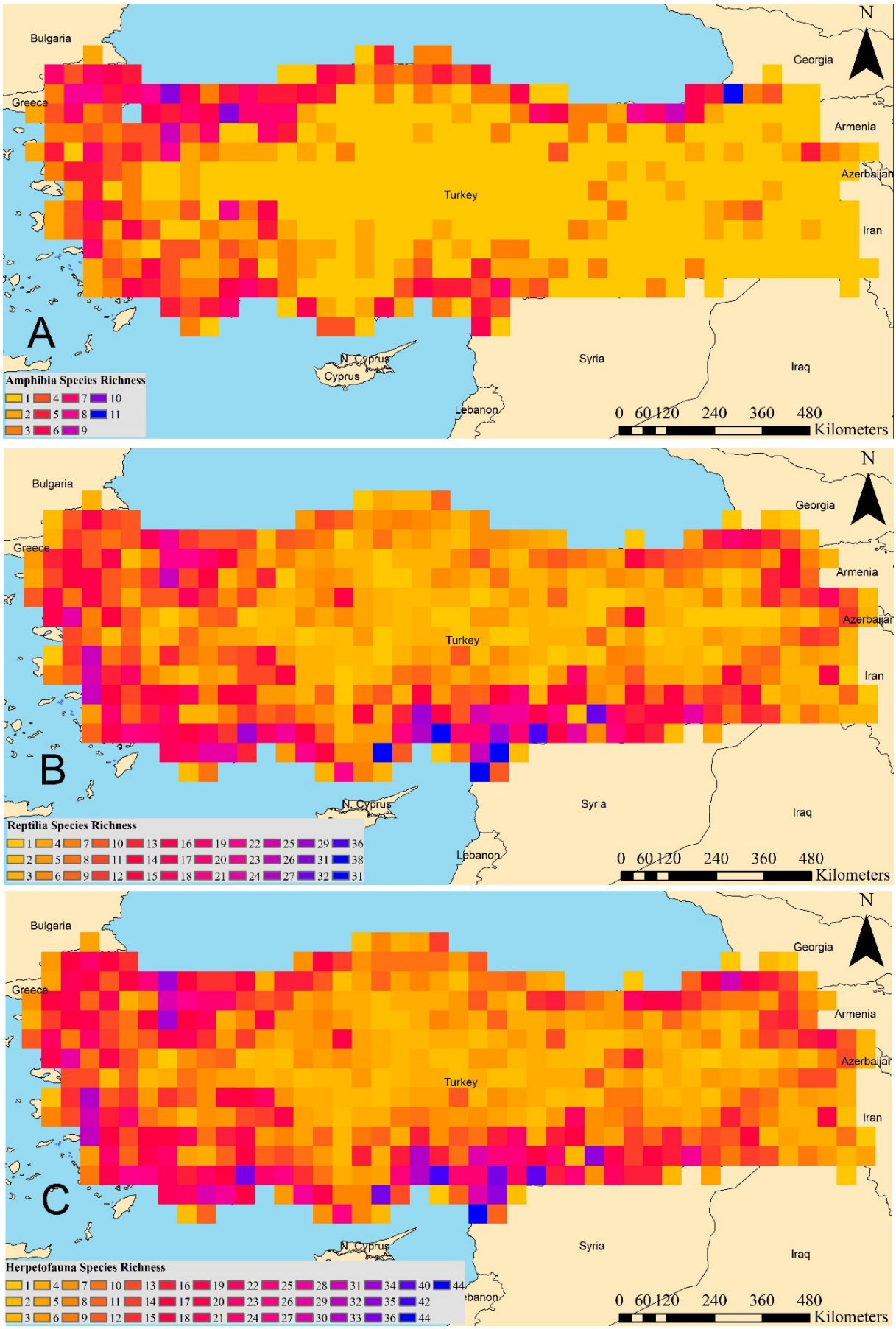

Figure 5. The species richness of amphibians and reptiles in Turkey. (A: Amphibians B: Reptiles C: Herpetofauna).

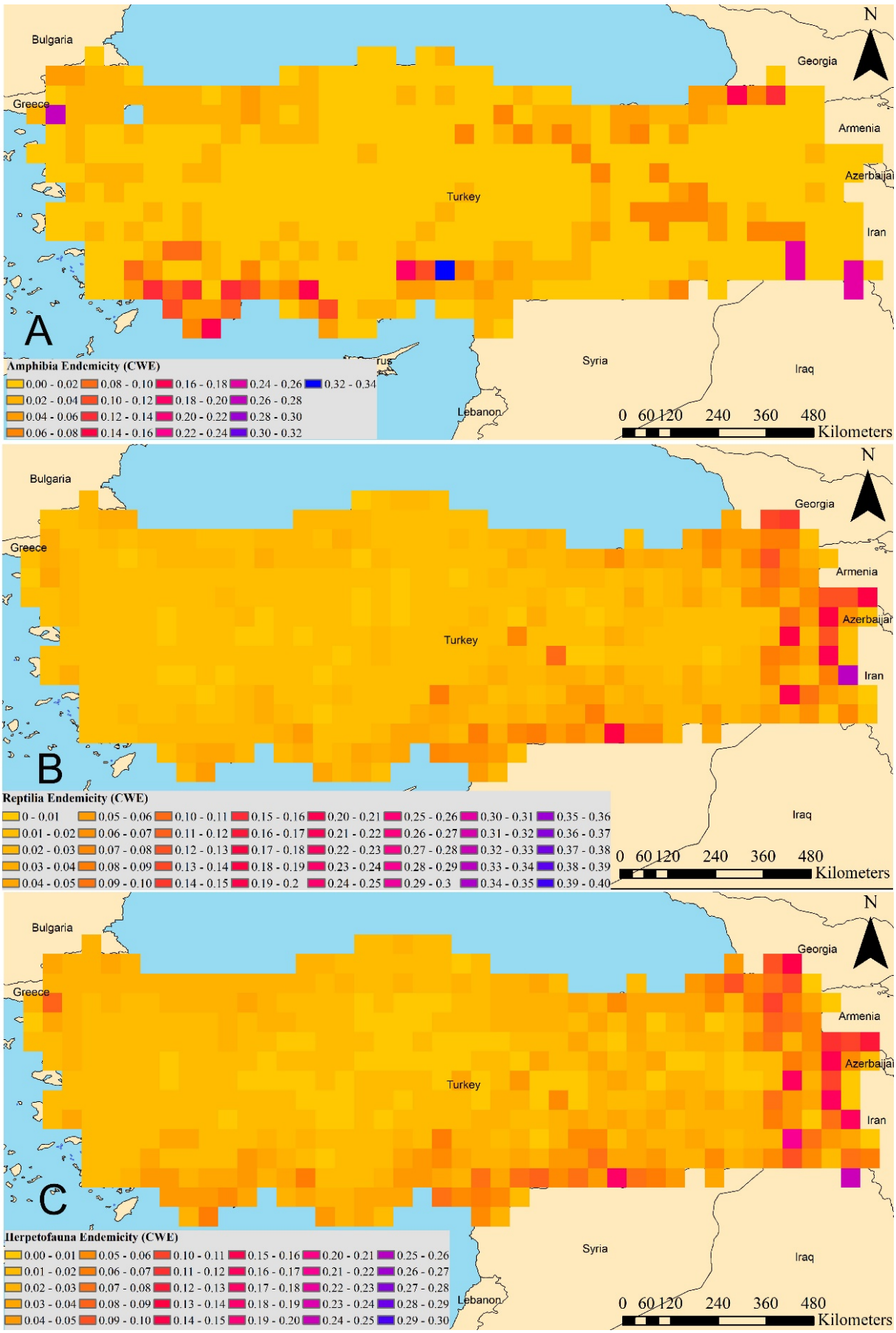

Figure 6. The corrected weighted endemism (CWE) of amphibians and reptiles in Turkey. (A: Amphibians B: Reptiles C: Herpetofauna).

Table 5. Chorotypes of amphibians and reptiles in Turkey.

Chorotypes	Caudata	Anura	Amphibia	Chelonia	Sauria	Amphisbaenia	Serpentes	Reptilia	Overall
AFRO-I-MED	0	0	0	0	0	0	3 (2.13%)	3 (2.13%)	3 (1.69%)
AFRO-MED	0	0	0	1 (0.71%)	0	0	0	1 (0.71%)	1 (0.56%)
ANAT	2 (5.40%)	0	2 (5.40%)	0	1 (0.71%)	0	2 (1.42%)	3 (2.13%)	5 (2.81%)
ARME	0	0	0	0	6 (4.26%)	0	3 (2.13%)	9 (6.38%)	9 (5.06%)
ARME-CAUC	0	0	0	0	0	0	1 (0.71%)	1 (0.71%)	1 (0.56%)
ARME-E-ANAT	0	0	0	0	2 (1.42%)	0	0	2 (1.42%)	2 (1.12%)
C-ASIA-EUR	0	1 (2.70%)	1 (2.70%)	0	1 (0.71%)	0	2 (1.42%)	3 (2.13%)	4 (2.25%)
C-ASIA-EUR-MED	0	0	0	0	0	0	1 (0.71%)	1 (0.71%)	1 (0.56%)
C-ASIA-MED	0	0	0	0	0	0	1 (0.71%)	1 (0.71%)	1 (0.56%)
CAUC	1 (2.70%)	0	1 (2.70%)	0	0	0	1 (0.71%)	1 (0.71%)	2 (1.12%)
C-EUR	0	1 (2.70%)	1 (2.70%)	0	0	0	0	0	1 (0.56%)
COS	0	0	0	3 (2.13%)	0	0	0	3 (2.13%)	3 (1.69%)
E-MED	1 (2.70%)	0	1 (2.70%)	0	12 (8.51%)	3(2.13%)	9 (6.38%)	24 (17.02%)	25 (14.04%)
EUR	3 (8.10%)	1 (2.70%)	4 (10.81%)	0	1 (0.71%)	0	2 (1.42%)	3 (2.13%)	7 (3.93%)
EUR-MED	0	1 (2.70%)	1 (2.70%)	0	0	0	0	0	1 (0.56%)
HOL	0	0	0	1 (0.71%)	0	0	0	1 (0.71%)	1 (0.56%)
I-MED	0	0	0	0	1 (0.71%)	0	0	1 (0.71%)	1 (0.56%)
KOLK	0	0	0	0	1 (0.71%)	0	0	1 (0.71%)	1 (0.56%)
KOLK-ARME	0	0	0	0	1 (0.71%)	0	0	1 (0.71%)	1 (0.56%)
KOLK-CAUC	0	1 (2.70%)	1 (2.70%)	0	1 (0.71%)	0	0	1 (0.71%)	2 (1.12%)
KURD	0	0	0	0	1 (0.71%)	0	4 (2.84%)	5 (3.55%)	5 (2.81%)
MED	0	0	0	0	4 (2.84%)	0	2 (1.42%)	6 (4.26%)	6 (3.37%)
N-ANAT	1 (2.70%)	0	1 (2.70%)	0	1 (0.71%)	0	0	1 (0.71%)	2 (1.12%)
NE-ANAT	0	0	0	0	1 (0.71%)	0	0	1 (0.71%)	1 (0.56%)
N-MESOP	0	0	0	0	1 (0.71%)	0	0	1 (0.71%)	1 (0.56%)
NW-ANAT	1 (2.70%)	0	1 (2.70%)	0	0	0	0	0	1 (0.56%)
PO-CAS	1 (2.70%)	1 (2.70%)	2 (5.40%)	0	1 (0.71%)	0	0	1 (0.71%)	3 (1.69%)
SAH-SAL-ARAB	0	0	0	0	1 (0.71%)	0	1 (0.71%)	2 (1.42%)	2 (1.12%)
SAH-TUR-SIN	0	0	0	0	2 (1.42%)	0	0	2 (1.42%)	2 (1.12%)
S-ANAT	3 (8.10%)	1 (2.70%)	4 (10.81%)	0	5 (3.55%)	0	4 (2.84%)	9 (6.38%)	13 (7.30%)
S-EUR	0	2 (5.40%)	2 (5.40%)	1 (0.71%)	1 (0.71%)	0	1 (0.71%)	3 (2.13%)	5 (2.81%)
SIBER-EUR	0	1 (2.70%)	1 (2.70%)	0	1 (0.71%)	0	1 (0.71%)	2 (1.42%)	3 (1.69%)
SW-ANAT	3 (8.10%)	0	3 (8.10%)	0	2 (1.42%)	0	0	2 (1.42%)	5 (2.81%)
SW-ASIA	3 (8.10%)	2 (5.40%)	5 (13.51%)	1 (0.71%)	18 (12.77%)	0	11 (7.80%)	30 (21.28%)	36 (20.22%)
TUR	0	0	0	0	1 (0.71%)	0	0	1 (0.71%)	1 (0.56%)
TUR-EUR	1 (2.70%)	1 (2.70%)	2 (5.40%)	0	0	0	1 (0.71%)	1 (0.71%)	3 (1.69%)
TUR-EUR-MED	0	4 (10.81%)	4 (10.81%)	1 (0.71%)	0	0	0	1 (0.71%)	5 (2.81%)
TUR-MED	0	0	0	3	0	1 (0.71%)	7 (4.96%)	11 (7.80%)	11 (6.18%)
W-ANAT	0	1 (2.70%)	1 (2.70%)	0	0	0	0	0	1 (0.56%)
W-IRAN	0	0	0	0	0	1 (0.71%)	0	1 (0.71%)	1 (0.56%)

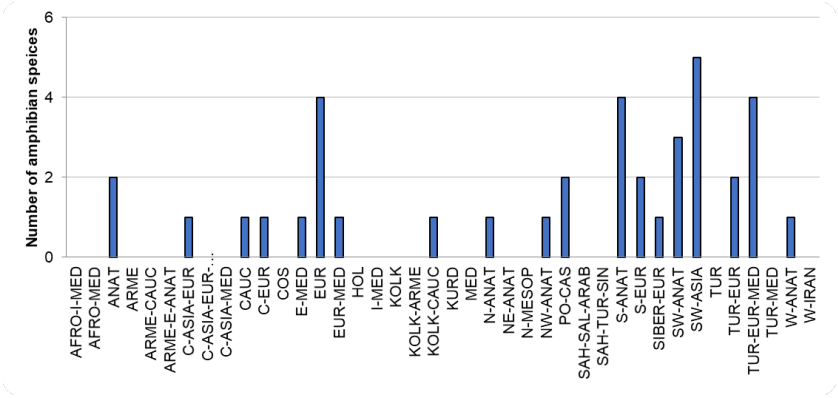

Figure 7a. Distribution of chorotypes of amphibians in Turkey.

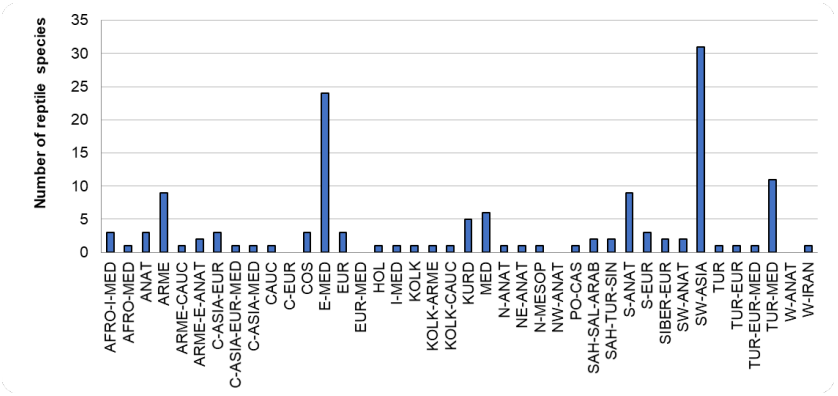

Figure 7b. Distribution of chorotypes of reptiles in Turkey.

separated *T. ivanbureschi* from the former and nowadays is the name for the Balkan populations, including Thrace and part of Northwest Anatolia. Subsequently, Wielstra & Arntzen (2016) found that *T. ivanbureschi* comprises two cryptic species and the North Anatolian population was given the name *T. anatolicus*.

The smaller-bodied species were given the name *Lissotriton* (and other genera not represented in Turkey). In Turkey three species occur*: L. kosswigi, L. schmidtleri and L. lantzi*. Dubois & Raffaëlli (2009) suggested, on the basis of the data of Babik et al. (2005), to elevate the subspecies *L. vulgaris kosswigi* and *lantzi* to species on their own. Raxworthy (1988) described the subspecies *Triturus vulgaris schmidtleri*, but two years later changed its name in *schmidtlerorum*, because this subspecies was named after two people (father and son): J. J. Schmidtler and J. F. Schmidtler and therefore the original subspecific name would be grammatically incorrect (Raxworthy 1990). As indicated by Dubois & Raffaëlli (2009) and referring to Dubois (2007), only the original genitive is valid. A separate subspecific status for this taxon has been refused by Olgun et al. (1999) on morphological research and also Dubois & Raffaëlli (2009) had their doubts. New research on genomic DNA by Pabijan et al. (2017) revealed its specific status. Speybroeck et al. (2020) though feel the need for more information on contact zones and consider *schmidtleri* and *lantzi* as subspecies of *L. vulgaris* for the time being.

Newts of the genus *Ommatotriton*, banded newts, are represented by three taxa. The genus name was proposed by Litvinchuk et al. (2005) splitting it off from *Triturus*. Originally *T. vittatus* was the only species, but now this name is restricted to the population of southern Anatolia and the Levant. Litvinchuk et al. (2005) split off the North-Anatolian and Caucasian *O. ophryticus* from *O. vittatus*. Litvinchuk et al. (2005) described the subspecies *O. o. nesterovi* for the western part of it. Its rank was raised to full species by Bülbül & Kutrup (2013) and recognized as full species "for convenience" by van Riemsdijk et al. (2017) and is excepted by the Taxonomic Commitee of the Societas Europaea Herpetologica (Speybroeck et al. 2020).

Species of the genus *Lyciasalamandra* were previously placed in the genus *Mertensiella,* nowadays only represented in Turkey by *M. caucasica*. The genus name *Lyciasalamandra*, given by Veith & Steinfartz (2004) has been called an unnecessarily long and unpalatable nomen by Dubois & Raffaëlli (2009) for which a better name 'would aptly have been coined'. Based on mitochondrial DNA, this genus has been proposed to fit under *Salamandra*, e.g. Weisrock et al (2001), but there is a lot of consensus in using the name of *Lyciasalamandra*. Six distinct species are currently identified: *S. anatalyana*, *S. atifi*, *S. billae*, *S. fazilae*, *S. flavimembris* and *S. luschani*. The last has been the traditional species name and the other five were subspecies elevated to full species by Veith & Steinfartz (2004), after Weisrock et al. (2001) already indicated that these six taxa probably represent distinct phylogenetic species.

Dubois & Raffaëlli (2009) elevated the subspecies *Salamandra salamandra inframmaculata* to species level.

Within Turkey the genus *Neurergus* has been traditionally represented by two species: *N. crocatus* and *N. strauchii*. The subspecies *N. strauchii barani*, separated by the Euphrates river from *N. s. strauchii* for an estimated 3 million years and showing deep divergence, has been given species status by Rancilhac et al. (2019).

Anura: Bombinatoridae

Bombina variegata has been added to the Turkish fauna list very recently (Bülbül et al. 2016).

Anura: Hylidae

Hyla arborea var. *orientalis* Bedriaga, 1890 with Terra typica Tulcea, Romania and Kharkov, Ukraine has long been seen as a synonym for *Hyla arborea arborea*, but has been elevated to species level. *Hyla orientalis* is now in use for populations around the Black Sea, including all Turkish tree frogs except *H. savignyi* (Stöck et al. 2008). The same authors split *H. savignyi*, but all Turkish populations maintain their species name.

Anura: Bufonidae

The classical genus *Bufo* Laurenti, 1768 has been split up and *Bufo* s. str. is represented only by the *Bufo bufo* species group in Turkey. *B. verrucosissimus* was assigned full species level by Orlova & Tuniyev (1989). Litvinchuk et al. (2008) assumed all Anatolian common toad populations to belong to *B. verrucosissimus*. According to Recuero et al. (2012) only the Anatolian population near Georgia is assigned to this species and most of Anatolia is inhabited by *B. bufo* s. str. We follow this last view.

Originally within *Bufo* s. l., the green toads were known as *B. viridis* group. The taxonomic history is confusing, although the study of Dufresnes et al. (2019a) gives good information. Hybridization and polyploidy played a role in speciation of some taxa. First issue is the relation to *B. calamita,* for which the monotypic genus *Epidalea* was erected by Frost et al. (2006). Traditionally seen as belonging to the same *B. viridis* group, they were split upon research of Graybeal (1997). Other researchers (Harris 2001) could not corroborate her conclusions and the split have been questioned by Speybroeck & Crochet (2007). For the *viridis* group (without *calamita*) Frost et al. (2006) chose the new genus name *Pseudepidalea*. Dubois & Bour (2010) regarded *Bufotes* Rafinesque, 1815, as the oldest available generic name for this group. They used it as a subgenus name, but shortly after it came into use as a replacement for Frost et al.'s *Pseudepidalea*. The old name *variabilis* (Pallas 1769), from which Stöck et al. (2001) commented 'junior subjective synonym of *Bufo viridis*' and 'doubtful name in regard to different Asian green toad taxa', came into use for some European as well as Anatolian green toads. The controversy regarding the identity of *B. variabilis* and the Anatolian green toads seems to be resolved by Dufresnes et al. (2019a) and they concluded that Anatolian green toads belong to *Bufotes sitibundus*. Thrace is inhabited by *B. viridis*.

Anura: Pelobatidae

Some research supports species status for the eastern clade of *Pelobates syriacus* (ssp. *transcaucasicus*), but the final conclusion must await further data (Veith et al. 2006).

Dufresnes et al. (2019b) elevated *Pelobates syriacus balcanicus* to full species. The species has been found up to the Greek-Turkish border river Evros and could occur in Turkish Thrace too. The species has not been adopted by us in the species list pending further research, especially molecular analyses.

Anura: Ranidae

The polyphyletic group of true frogs *Rana* Linnaeus, 1758 strongly needed a revision. The name *Pelophylax* was created by Fitzinger (1843) to discriminate between the Old World green (water) frogs and the brown frogs, but was ignored until Fei et al. (1991) would have reintroduced it in their 'Key to Chinese Amphibia' (Chinese text could not be checked). Dubois (1992) split *Rana* s.l. into 33 groups tentatively given rank of subgenera. For Turkey the subgenera *Rana* (s. str.) and *Pelophylax* are of interest.

The Marsh frog *Pelophylax ridibundus* once was thought to have a widespread distribution in Eurasia and to inhabit the whole of Turkish territory. Along the Aegaean coast and in West Anatolia (exact border not known) it is substituted by the sister species Levant frog *P. bedriagae*, described and shortly known as *Rana levantina* (Schneider & Sinch 1992). Dubois (1992) used *P. bedriagae* (from *R. esculenta* var. *bedriagae)* for this taxon. The species might have a considerably larger distribution and probably contains several taxa that deserve species status. One of them is described by Arıkan (1988) as *Rana ridibunda caralitana,* now *P. caralitanus,* an endemic of the area around the Lakes Beyşehir, Ereğli and Suğla. The situation is still very complex and Akın et al. (2010) recognised 7 evolutionary lineages. Because of the fact that the situation is not clear at the moment, we represent the species *caralitanus* and plot all other lineages provisionally under *Pelophylax ridibundus*-group.

From the brown frogs *Rana macrocnemis* has a wide distribution in Anatolia. For a long time there was confusion in whether *R. camerani* was a separate (sub)species. There is considerable agreement in the acceptance of a polymorphic species without taxonomic status for the morph *camerani*. *Rana tavasensis*, a rare brown frog species from Southwest Anatolia, was described by Baran & Atatür (1986) as a subspecies of *R. macrocnemis*, but given species rank by Veith et al. (2003). They concluded in the same paper that *Rana holtzi* should be considered a subspecies of *R. macrocnemis*. Using morphological features and electrophoresis Çevik et al. (2006) stated it a distinct species, which we provisionally follow here.

Reptilia

Chelonia: Emydidae

Originally described as *Testudo scripta* by Thunberg in Schoepf in 1792, the species has been placed under *Emys*, *Chrysemys*, *Pseudemys* and has been known under *Trachemys scripta* since Schwartz & Henderson (1991). Hatchling sliders of this species, mainly from the subspecies *elegans* were exported as pets from its native range in North-America all over the world. Subsequently some of those animals ended up in the wild. In areas with suitable conditions they will reproduce and can pose a threat for native turtle species. Reproduction in Turkey has been documented (Çiçek & Ayaz 2015).

Chelonia: Geoemydidae

Mauremys rivulata was elevated from subspecific status in *M. caspica* by Fritz & Wischuf (1997).

Chelonia: Trionychidae

From the two soft-shell turtles originally known as *Trionyx* one species (*T. triungius*) is still known under that name and the other (*T. euphraticus*) has been reassigned to the genus *Rafetus* Gray, 1864. Ernst & Barbour (1989) were the first to reintroduce Gray's name *Rafetus euphraticus*.

Chelonia: Testudinidae

The polyphyletic genus *Testudo* s.l. has undergone many splittings, but the European species stayed in *Testudo* s. str., until de Lapparent de Broin et al. (2006) introduced *Eurotestudo* for the *hermanni* group. Fritz & Bininda-Emonds (2007) proposed a continued usage of the generic name *Testudo* for all western Palaearctic tortoise species, considering it a monophyletic group after extensively investigating mitochondrial and nuclear DNA data. They also proved *Eurotestudo* to be an objective junior synonym of two other available names: *Chersine* Merrem, 1820 and *Medaestia* Wussow, 1916. Bour (2004) and Perälä (2004) advocated giving the three subspecies of *hermanni* species status: *hermanni*, *boettgeri* and *hercegovinensis*, which would render the Turkish population to be *T. boettgeri*. We provisionally follow the vision of Parham et al. (2006) and Fritz et al. (2007) in considering them to be one species. For the eastern distribution of *Testudo graeca* the subspecies *ibera* has sometimes been given species rank following Bour (1989). Next to that, several doubtful subspecies occurring in Turkey have been treated as full species, e.g. *anamurensis*, *antakyensis*, *perses*, *terrestris* (Perälä 1996, 2002a, b, Bonin et al. 2006). We refrain from this, thus using *T. graeca*, following Parham et al. (2006), Fritz et al. (2007), and Türkozan et al. (2010).

Amphisbaenia: Amphisbaenidae

The subspecies *aporus* of the worm lizard *Blanus strauchi* has been given species status by Sindaco et al. (2014). In the same publication a new species has been described: *B. alexandri*, increasing the number of species in Turkey to three.

Sauria: Agamidae

The names of the larger agamids changed considerably. The West-Asian species have been in the collective genus *Agama* for a long time. Some authors used *stellio* for a part of them, following the unpublished thesis of Moody (1980), although this name was made unavailable by Stejneger (1936). Baig (1992) reintroduced the old name *Laudakia* Gray, 1845, of which a part was divided in other genera by Baig et al. (2012). Since then, the hardun is known as *Stellagama stellio* and the Caucasian agama as *Paralaudakia caucasia.* The subdivision of *Laudakia* into several separate genera has been questioned though (Melville et al. 2009).

Moody (1982) reintroduced the name *Trapelus ruderatus* Anderson, 1872 for *Agama ruderata*. Rastegar-Pouyani (2000) detected that the type specimen in fact belonged to *Trapelus persicus* (Blanford, 1881) and that those animals earned to be called *T. ruderatus* (Olivier, 1804). As a result, the population formerly known as *T. ruderatus* should be called *T. lessonae*. Unfortunately, Rastegar-Pouyani overlooked the fact that *Agama ruderata* had been described on multiple specimens from different species. Ananjeva et al. (2013) resolved this confusing situation by designating a neotype for *T. ruderatus.* They choose the holotype of *T. lessonae* for it, thus repairing the old situation and resurrecting the name *Trapelus ruderatus* for at least the Turkish animals.

The taxonomic status of the toad-headed agama occurring near the Armenian border is not clear yet. Described as *Phrynocephalus helioscopus* var. *Horváthi* by Méhely (1894), it has sometimes been placed under *P. persicus*. The Reptile Database (Uetz et al. 2020) treats it as a subspecies of the latter (*P. p. horvathi*). On the basis of molecular data Melnikov et al. (2008) propose *P. persicus* De Filippi, 1863 and *Phynocephalus helioscopus horváthi* Méhely, 1894 as different species. The IUCN provisionally follows Melnikov et al. (2008) in considering *Phrynocephalus horvathi* to be distinct at species level, pending additional taxonomic studies (Ananjeva & Agasyan 2009).

Sauria: Eublepharidae

It was only 2001 that *Eublepharis angramainyu* Anderson & Leviton, 1966 was found in Turkey for the first time (Göçmen et al. 2002).

Sauria: Phyllodactylidae

Asaccus elisae has been mentioned as occurring in Turkey since Böhme (1973). Torki et al. (2011) described a new species, *Asaccus barani* on the basis of specimens from Harran. Yıldız et al. (2019) re-evaluated specimens from the other locations and concluded that there were no sound differences, thus the species present in Turkey was *A. barani*.

Sauria: Gekkonidae

Thin-toed geckos of the genus *Mediodactylus* were originally assigned to *Gymnodactylus.* Later, they were placed under *Cyrtodactylus* fide Underwood (1954) and *Tenuidactylus* fide Shcherbak & Golubev (1986: accessed through English translation 1996). In Turkey, two species were recognised: *M. kotschyi* and *M. heterocercus.* Kotsakiozi et al. (2018) extensively researched the DNA of specimens from almost all over *M. kotschyi*'s range, estimated the phylogenetic relationships and recognised five species within the species complex. Two of the new species occur in Turkey: *M. daniliewskii* and *M. orientalis*. *M. kotschyi* s. str. could probably be encountered on some Turkish islands of the Aegian Sea. For several eastern Anatolian populations, no research is available, and they are provisionally mapped under *M. kotschyi* s.l.

The rough bent-toed gecko has also been assigned several scientific names. Originally described as *Stenodactylus scaber* (Heyden, 1827), it was later consecutively placed in the genera *Gymnodactylus*, *Cyrtodactylus* and *Tenuidactylus* respectively. After Khan (1993) raised Shcherbak & Golubev's subgenera to full genera, thereby resurrecting *Cyrtopodion* Fitzinger 1843, it has been known as *Cyrtopodion scabrum.* The specific epithet, as an adjective, has been adapted to the neuter gender of the new genus. See e.g. Crother (2000). The species *Cyrtodactylus basoglui* described for Turkey by Baran & Gruber (1982) is a junior synonym of *Cyrtopodion scabrum* (Werner et al. 2010).

Sauria: Lacertidae

The species thought of as an endemic to Cyprus *Acanthodactylus schreiberi* was found in Turkey in 1997 (Franzen 1998). Relatively new to the Turkish herpetofauna is *Acanthodactylus harranensis* (Baran et al. 2005). It was described from Harran and thought of as endemic to Turkey, but John Mulder found the species in Syria just on the other side of the border near Harran in 1995 (Mulder 2021). From the province of Malatya a new species, *Acanthodactylus ilgazi*, apparently belonging to the *tristrami* species-group was discovered in 2020 and described in 2021 (Kurnaz & Şahin 2021).

The collective genus *Lacerta* has been split up to several genera. For Turkey the following genera are recognised: *Anatolalacerta*, *Apathya*, *Darevskia*, *Iranolacerta*, *Lacerta* s. str., *Parvilacerta*, *Phoenicolacerta* and *Timon* following e.g Mayer &

Bischoff (1996) on morphology and biochemistry, Arribas (1997) on morphology, osteology, karyology and electrophoresis and Arnold et al. (2007) using mtDNA and morphology.

The *danfordi* species complex was originally described as *Zootoca danfordi* and shortly the name *Podarcis danfordi* was used but has been known for a long time just under *Lacerta*. Sindaco et al. (2000) used the generic name *Archaeolacerta*. The taxa *anatolica* and *oertzeni* were described as species, but soon ended as subspecies of *Lacerta danfordi*. Also, *pelasgiana* was long treated as subspecies of either *oertzeni* or *danfordi*. Mayer & Lutz (1989) still concluded on the basis of albumin that the differences between *Lacerta danfordi*, *L. oertzeni* and *L. anatolica* were 'too small to confirm their taxonomic revalorisation'. Together with the creation of the genus *Anatolalacerta*, the former subspecies *anatolica* and *oertzeni* were given full species status (Arnold et al. 2007). Until recently, four species were recognised: *A. anatolica*, *budaki*, *danfordi* and *pelasgiana*, endemic to western and southern Anatolia and some neighbouring Aegean islands. Bellati et al. (2014) unraveled the phylogenetic relationships and the genetic diversity of this species complex. The name *Lacerta anatolica* Werner, 1900 was resurrected and combined to *Anatolalacerta anatolica*. The former subspecies *budaki* and *pelasgiana* got species status, next to *A. danfordi*. Eiselt & Schmidtler (1986) more or less used this taxonomic arrangement, but considerable shifts occurred in (sub) specific assignment of populations. Very recently a fifth cryptic lineage was differentiated by Karakasi et al. (2021). It was given the name *Anatolalacerta ibrahimi*. A further change in names was needed as specimens of the type-locality of *A. budaki* are assigned genetically to *A. pelasgiana*. By raising the former subspecies *A. b. finikensis* to species level the population meant by *A. budaki* is given the name *A. finikensis*. (Karakasi et al. 2021).

Arnold et al. (2007) resurrected the old name *Apathya cappadocica* Méhely, 1909 for the lizard formerly known as *Lacerta cappadocica*.

The '*Lacerta saxicola* group' is represented by a manifold of species in Turkey. Arribas (1997) presented a doctoral thesis in the late 1990s in which he, among other things, introduced the genus *Darevskia* for the '*L. saxicola* group'. The genus name has been accepted by many authors and the Reptile Database uses it. There has been discussion though about the official publication date and validity (Busack et al. 2016). The year 1997 has been connected with the thesis, but it was only in 1999 that a peer reviewed publication was published. In the meantime, Harris et al. (1998) published and proposed the genus *Caucasilacerta* for the same taxa. This name has been considered a nomen nudum by several authors, including Arribas (2016). Assigning 1999 as the publication date, this could render the name *Darevskia* Arribas, 1999 a junior invalid synonym of *Caucasilacerta* Harris, Arnold & Thomas, 1998. Publications on microfiche were valid according to the version of the Code prevailing at the time but not according to the current version. A case was submitted to the ICZN to validate the publication on microfiche (Arribas et al. 2018a). If a case is accepted for consideration, Art 82.1 of the Code protects the widespread used nomen, until the Commission reaches a verdict. Apart from this taxonomic dispute, two new species were described by Schmidtler et al. (1994): *D. sapphirina* and *D. bendimahiensis*. The subspecies *D. parvula adjarica* has been given species status by Arribas et al. (2018b). The full species status has been supported by research of Kurnaz et al. (2019). The species *Lacerta bithynica* Méhely, 1909 has been resurrected and is now known as *D. bithynica*. Species mentioned for Turkey before (Baran & Atatür 1998, Sindaco et al. 2000), but not in this list are *D. dryada*, *D. mixta* and *D. nairensis*. According to Gabelaia et al. (2015) *D. mixta* is a Georgian endemic species and the Turkish specimen from Giresun is probably misidentified. Schmidtler et al. (2002) concluded that *D. dryada* is a synonym of *D clarkorum*. About the status of *nairensis* there has been different views. Fu et al. (2000) considered it conspecific with *D. raddei*, while for instance Omelchenko et al. (2016) hinted towards the possibility to assign them to different species. Pending further research, we treat *nairensis* as a ssp. of *D. raddei*.

Arnold et al. (2007) described the new genus *Iranolacerta*, which created the new combination of *Iranolacerta brandtii* for the former *Lacerta brandtii*. The species was recently found within Turkey (Avcı et al. 2015a, Yıldız & İğci 2015).

After the split, the bigger green lizards remained in the genus *Lacerta* s.str. On the basis of mitochondrial DNA Kornilios et al. (2019) resurrected *Lacerta diplochondrodes* Wettstein, 1952 from its subspecific status *Lacerta trilineata diplochondrodes*.

The subgenus name *Parvilacerta*, was proposed, but not formally described, by Harris et al. (1998). The separate status of the genus *Parvilacerta* was confirmed by Arnold et al. (2007) and formally described by them.

Within the *Lacerta laevis* complex Schmidtler & Bischoff (1999) described a new species: *L. cyanisparsa*. The new genus *Phoenicolacerta* was described by Arnold et al. (2007) for the former *Lacerta laevis* and akin taxa.

Mayer & Bischoff (1996) resurrected the old name *Timon* Tschudi, 1836 for the *princeps* and *lepidus* groups within the former genus *Lacerta*. The subspecies *T. princeps kurdistanica* was given full species status by Ahmadzadeh et al. (2012) on the basis of nuclear and mitochondrial DNA sequences and corrected to its gender: *T. kurdistanicus*. Hoser (2015) described a new genus for the *princeps* group: *Duboislacerta*, a decision that we do not follow.

Kumlutaş et al. (2002) found *Mesalina brevirostris* as new for the Turkish herpetofauna, near the Syrian border. Šmíd et al. (2016) elevated the species status of *M. b. microlepis* (Angel 1936) based on genetic analysis for the species occurring in the Levant, including Turkey. Geniez (2013) used the name *M. microlepis* already. He considered the taxon as a species on its own on the base of genetic research of Kapli et al. (2008) and morphology.

Sauria: Scincidae

Göçmen et al. (1996) described the subspecies *Ablepharus kitaibelii budaki*, that was elevated to species rank by Schmidtler (1997) and described the subspecies *anatolicus*. Based on mtDNA and nuDNA genes Skourtanioti et al. (2016) indicated a possible cryptic species within the *Ablepharus kitaibelii* species complex from Kastelorizo and southwest Turkey and proposed the availability of the name *A. anatolicus*. Very recently Bozkurt & Olgun (2020) elevated *A. budaki anatolicus* to species level. We did not insert this new taxon in the current list, awaiting further research.

Bozkurt & Olgun (2020) concluded that *A. bivittatus* showed highly different genetic and morphological characteristics compared to its congeners and shares morphological characteristics with the genus *Asymblepharus*. For that reason, they placed *A. bivittatus* in the genus *Asymblepharus*. We did not apply this change in the current list yet, pending further research.

Kornilios et al. (2018) described a new species on the basis of DNA-research: *Ophiomorus kardesi.* This replaces the former name *O. punctatissimus* for the Turkish population.

The collective genus *Mabuya* has been split and Mausfeld et al. (2002) placed the Turkish species under the resurrected name *Euprepis* Wagler 1830. According to Bauer (2003) the name *Euprepis* is a synonym of *Mabuya* s.str. The name *Trachylepis* Fitzinger, 1843 is the oldest name attributable to the Afro-Malagasy clade. Moravec et al. (2006) tentatively associated the skinks known formerly as *Mabuya aurata* with this generic name *Trachylepis* and elevated *T. a. septemtaeniata* to species rank. To reflect monophyly Karin et al. (2016) placed the Middle-Eastern species into the resurrected name *Heremites* Gray 1845.

Sauria: Anguidae

The Turkish slow worms have been treated as *Anguis fragilis* for a long period, with the subspecific name nominate subspecies and *colchica* (or *colchicus*) (Başoğlu & Baran 1977). Mitochondrial and nuclear DNA led to the conclusion that *colchica* deserves full species status (Gvoždík et al. 2010) considering northeastern Anatolia populations. As this species also includes Baltic populations, the name *Anguis incerta* Krynicki, 1837 would prevail over *Otophis eryx* var. *colchica* Nordmann, 1840. Gvoždík et al. (2010) argued the question and proposed to treat *A. incerta* as nomen oblitum and, promoting nomenclatural stability, to consider the younger though prevailingly used name *A. colchica* valid as nomen protectum.

The European glass lizard was described as *Lacerta apoda* by Pallas in 1775, but Merrem (1820) forwarded *Pseudopus serpentinus* as a nomen substitutum. In the following years, it has been placed under several genera: *Bipes*, *Chalcida*, *Chamaesaura*, *Seps*, *Sheltopusik, Proctopus* and *Anguis*. Boulenger (1885) placed it under *Ophisaurus* Daudin, 1803 with species epithet *apus*. Mertens & Müller (1928) used the combination *Ophisaurus apodus*, under which name it has been known for a long time since then. *Ophisaurus* s.l. obviously was not a monophyletic group (Macey 1999). Since then the name *Pseudopus apodus* is used, e.g. Roitberg et al. (2002) and Jandzik et al. (2017).

Serpentes: Leptotyphlopidae

The long-nosed wormsnake has been assigned to the genus *Leptotyphlops* Fitzinger 1843 and beared the name *Leptotyphlops macrorhynchus* for a long time. Adalsteinsson et al. (2009) created the new genus *Myriopholis* and translocated this species under it. The name is now *M. macrorhyncha,* with the gender changed to accommodate the female gender.

Serpentes: Typhlopidae

The Eurasian blindsnake beared the name *Typhlops vermicularis* Merrem, 1820 since its description. Hedges et al. (2014) described a new genus *Xerotyphlops* and placed *vermicularis* in it. Kornilios (2017) treats it as a species complex, which could hide several distinct species.

Franzen (2000) found a typhlopid specimen, which he attributed to the genus *Rhinotyphlops*, a species and genus new for Turkey. Franzen & Wallach (2002) described the species as new and named it *Rhinotyphlops episcopus*. Hedges et al. (2014) put it under *Letheobia* Cope 1869, a genus name revalidated by Broadley & Wallach (2007a). Cope indicated the feminine gender of it by changing *Onychocephalus caecus* Duméril, 1856 into *L. caeca*. Also Broadley & Wallach (2007a,b) and Hedges et al. (2014) used the genus as feminine, thus the correct name should be *L. episcopa*.

Serpentes: Natricidae

In 1987 Orlov & Tuniyev described a new species *Natrix megalocephala* from the region east of the Black Sea (accessed through the English translation in 1992). The species status has been questioned and denied by several authors. On the basis of allozyme, mitochondrial and morphological data Kindler & Fritz (2014) concluded that the species status is not valid and should be considered conspecific with *N. natrix*.

Serpentes: Colubridae

Within Turkey, the family Colubridae has traditionally contained the genera *Coluber*, *Eirenis*, *Elaphe, Spalerosophis, Rhynchocalamus* and *Pseudocyclophis*.

Inger & Clark (1943), on the basis of morphology, divided the large genus *Coluber* s.l. in five genera (*Coluber* s. str. Linnaeus, *Masticophis* Baird and Girard, *Zamenis* Wagler, *Platyceps* Blyth and *Haemorrhois* Boie). These new names were denied by most authors, though Welch (1983) discussed them. For the Old World species he agreed with *Hemorrhois*. *Haemorrhois* Boie, 1827 is a later homonym and should be *Hemorrhois* Boie 1826. Welch also argued that *Zamenis* has to be seen as a synonym for *Elaphe* with type species *E. longissima* and that *Platyceps* is not available due to the earlier name *Eremiophis* Fitzinger 1843. A renewed interest in the *Coluber* taxonomy started with the work of Schätti and others (Schätti 1986, 1988, Schätti & McCarthy 2001, Nagy et al. 2004, etc.), first based on morphology, later on DNA research.

Both species *Coluber nummifer* and *C. ravergieri* were assigned to the genus *Hemorrhois* by Schätti (1988).

Within the collective and paraphyletic genus *Coluber* s.l. distinctiveness of the *C. caspis-jugularis-schmidtii* group was recognised by Schätti (1988) and he proposed, together with some more species (among which *viridiflavus* and *gemonensis*), the new genus name *Hierophis*. Nagy et al. (2004) proved this genus to be paraphyletic and proposed the use of the available name *Dolichophis* Gistel 1868 for the *jugularis* group.

Schätti & McCarthy (2001) discussed the possible sister group status of the genus *Platyceps* Blyth, 1860 (already in use for Saharo-Sindian species) to the *C.* (s.l.) *najadum* group, but preferred to await further morphological and molecular studies and refrained from referring these species to *Platyceps* or to describe a new genus for them. After further studies, the slender whip snake species were included in *Platyceps*, e.g. Nagy et al. (2004) and Schätti & Monsch (2004). The collared dwarf racer, known as *Coluber najadum rubriceps* since Mertens (1940), was elevated to full species by Baran (1976). It has been renamed to *Platyceps collaris* by Schätti et al. (2001) revalidating *Zamenis dahlii* var. *collaris* Müller, 1878. There has been a lot of confusion about species affiliation of

Middle-Eastern specimens to *P. karelini*, *P. rhodorachis* and *P. ventromaculatus*. The single find of *Platyceps ventromaculatus* (Baran, 1982) has been confirmed by Yıldız (2011) from four new specimens from a larger distribution near the Syrian border. Schätti et al. (2012) discussed the *karelini-rhodorachis-ventromaculatus* complex. For a part of *P. ventromaculatus*, concerning also the Turkish distribution, a separate species was revalidated using the oldest available name *Coluber chesneii* Martin, 1838 on the basis of hemipenis features and molecular data, which now is *P. chesneii*. *P. rhodorachis* (Jan, 1863) has recently been added to the Anatolian fauna by Yılmaz et al. (2020) in eastern Anatolia.

Starting from the former large genus *Coluber* s.l. the new *Coluber* s.str. is now restricted to the North American eastern racer *C. constrictor.*

Pseudocyclophis persicus, a name given by Boettger (1888), has been treated as member of the genus *Eirenis* for decades, but Dotsenko (1985) resurrected the old name on the basis of its dentition. The name *Pseudocyclophis* was used by many authors since then. The species was subject to molecular studies and was placed within the genus *Eirenis* under the subgenus *Pseudocyclophis* by Nagy et al. (2003). After comprehensive study of *E. persicus,* including morphology, ecological niche modelling and genetics, Rajabizadeh et al. (2016) renamed the animals living in Turkey into *Eirenis occidentalis*.

Four new species have been added to the genus *Eirenis* in the last decades: *Eirenis barani* by Schmidtler (1988), *Eirenis thospitis* by Schmidtler & Lanza (1990), *Eirenis hakkariensis* by Schmidtler & Eiselt (1991) and *Eirenis levantinus* by Schmidtler (1993).

Since the work of Mertens & Müller (1928) *Elaphe* s.l. contained a large amount of both Old and New World species. Lenk et al. (2001a) and Utiger et al. (2002), after initial work of Helfenberger (2001), finally came with a new phylogeny for this polyphyletic group. For Turkey this led to the recognition of the genera *Elaphe* s.str. and *Zamenis*.

The genus *Elaphe* s.str. has been restricted to the original type species *E. parreysii*, which has been identified as *sauromates* (ICZN 1957), and related species. Traditionally *Elaphe quatuorlineata* has been the species recognised for Turkey. For almost a century *sauromates* has been seen as a subspecies of *E. quatuorlineata* (Werner 1899). With the elevation of the local subspecies *sauromates* to full species level (Lenk et al. 2001a) it became *E. sauromates*. After analysing the genetic structure of *E. sauromates* Jablonski et al. (2019) detected a cryptic species and named it *E. urartica*. As this new species lives in East Anatolia, both *sauromates* and *urarctica* are members of the Turkish fauna. Garzoni & Geniez (2004) added a new *Elaphe* species to the Turkish fauna: *E. dione*, with findings near the Armenian border. The former *Elaphe situla*, *E. longissima* and *E. hohenackeri* have been allocated to the genus *Zamenis* fide Utiger et al. (2002).

The genus *Rhynchocolamus* in Turkey has been represented by *R. melanocephalus* (ssp. *satunini*) for a long time. The species *Rhynchocalamus satunini* namely, originally described as *Contia satunini* Nikolsky, 1899, has long been treated as a subspecies of *R. melanocephalus*, though Reed & Marx (1959) already considered them to be different species and Eiselt (1970) used the separate species names. Šmíd et al. (2015) finally elevated *satunini* to full species on the basis of morphology and mitochondrial and nuclear DNA. Next to *R. m. satunini* Franzen & Bischoff (1995) reported the first find of *R. m. melanocephalus* for Turkey and with this find added the 'real' *R. melanocephalus* to the Turkish fauna. A new species in the genus, *R. barani* was described by Olgun et al. (2007). For this species a separate genus, *Muhtarophis*, was erected by Avcı et al. (2015b).

Telescopus nigriceps has been added to the Anatolian fauna by Göçmen et al. (2007).

Serpentes: Lamprophiidae

The eastern Montpellier snake has been known as the subspecies *Malpolon monspessulanus insignitus* since Mertens & Müller (1928). Because of differences in dorsal colour pattern, skull structure and genetic divergence Carranza et al. (2006) recommended that it should be treated as a separate species.

Serpentes: Viperidae

All Turkish vipers have been arranged under the collective genus *Vipera* for a long time. Several attempts were made to divide this large genus. Reuss (1927) created the new genera *Acridophaga* for *ursinii* and *Macrovipera* for *lebetina* and *xanthina* and accepted *Pelias* Merrem, 1820 for *berus* (that originally included *ursinii*), while *ammodytes* stayed in *Vipera*. Except by Reuss himself these names were seldom used and after the work of Mertens & Müller (1940) most authors used *Vipera* for all solenoglyph species in Europe, Anatolia and the Caucasus, and Reuss' names were synonymised.

The larger species were separated from the rest by Obst (1983). He revalidated *Daboia* Gray, 1842 (type species *russelii*), including e.g. *lebetina*, *xanthina, raddei* and *palaestinae*. Later research indicated that this was a polyphyletic assemblage. It was by Herrmann et al. (1992) that the genus *Macrovipera* has been resurrected for *lebetina* and related species. Frétey (2019) indicated the correct use of the original epithet as in *Coluber Lebetinus* Linnaeus 1758, rendering the combination *Macrovipera lebetinus*. Capitalised epithets in the 18th century namely were viewed by their authors as nouns and according to the International Code of Zoological Nomenclature cannot be changed to accommodate gender. On the basis of genetic research Lenk et al. (2001b) restricted *Macrovipera* to *lebetina* (and *schweizeri*) and the former African representatives were placed in the genus *Daboia* with the species *palaestinae* and *russelii.* Only very recently *Daboia palaestinae* was added to the Turkish herpetofauna (Göçmen et al. 2018) on the base of only one specimen. The addition of the species to the Turkish fauna should be seen as pending further finds, because accidental translocation cannot be ruled out yet.

For the distinct group of mountain vipers Nilson et al. (1999) described a new subgenus *Montivipera*, including the Turkish taxa *xanthina*, *wagneri*, *albizona*, *bulgardaghica* and *raddei*. The subgenus was elevated to genus level by Joger (2005), already suggested by Garrigues et al. (2005). The species *Montivipera wagneri* and *M. albizona* have been found and described by Nilson & Andrén (1984) and Nilson et al. (1990) respectively. Nilson & Andrén (1984) described *Vipera* (now *Montivipera*) *bulgardaghica* on three old museum specimens. They had been among the types of *V. bornmuelleri* Werner, 1898. Schätti et al. (1991) rediscovered specimens of this taxon, but lumped *bornmuelleri*, *albizona* and

bulgardaghica under *xanthina*. Stümpel et al. (2016) recognised all described taxa within the *xanthina* complex, based on extensive nuclear and mitochondrial research, but placed *M. albizona* as a subspecies under *M. bulgardaghica*. Genetic research by Stümpel & Joger (2009) already showed that haplotypes of *bulgardaghica* were nested within *albizona* and rendered the validity of *M. albizona* uncertain.

Nose-horned vipers east of the Bosporus have been assigned full species status by some authors (Obst 1983, Nilson et al. 1999), but in research by Ursenbacher et al. (2007) the taxon groups well within the south-eastern clade of *ammodytes*.

Pelias Merrem, 1820 has been used a lot (see e.g. Wallach et al. 2014), especially as a subgenus, but lately has been used mainly by Russian and Turkish authors for shield-headed vipers like those from the *berus-kaznakovi-ursinii* group(s), e.g. Tuniyev et al. (2012) and Tuniyev et al. (2018).

Nilson et al. (1999) proposed to revalidate Reuss' *Acridophaga* as a subgenus for the *ursinii* complex, with uncertain affinities of the *kaznakovi* group. Others denied this and placed the *ursinii* group within the subgenus *Pelias*, e.g. Zinenko et al. (2016a). The taxonomy of this group still is not clear. Hybridization has been mentioned to play a role in speciation (Orlov & Tuniyev 1990, Zinenko et al. 2016b). From this *Pelias-Acridophaga* group, three taxa are long-known for Turkey: *Vipera kaznakovi*, *V. eriwanensis* and *V. anatolica*. The last two have been treated within *V. ursinii* for a long time. In the last decades several species were added to them. *Vipera barani* was described by Böhme & Joger (1983). Its species status had been doubted. Joger et al. (2007) indicated a subspecific status under *V. berus*. Also Freitas et al. (2020) declares it to be of doubtful validity as species and propose to consider it a subspecies of *V. berus*. A further 'species' has been described as *Vipera pontica* Billing et al. (1990). This has been put in synonymy with *V. barani* by some authors, creating confusion (e.g. Baran & Atatür 1998, Baran et al. 2001). Genetic research by Zinenko et al. (2013) made clear that '*V. pontica*' is a hybrid between *V. kaznakovi* and *V. ammodytes*, possibly the result of an erroneous mating of sympatric populations. We do not list it as a Turkish species.

V. darevskii, originally described from Armenia, was subsequently found in Turkey as well. Tuniyev et al. (2012) created a new species for the population near Posof, *V. olguni* (as *Pelias olguni*). This decision seems ill-substantiated. Tuniyev et al. (2018) in a further research of this complex commented 'In the light of the results obtained, *P. olguni* seems to be a subspecies of *P. darevskii*,' but yet they continued using *V. olguni* in the following part of the publication and key to identification. We decided not to list this population as a full species, but as a population within *V. darevskii,* a view supported by low genetic divergence (Freitas et al. 2020). In the same publication (Tuniyev et al. 2018) yet another population of this complex has been given species status: *Vipera sakoi* (as *Pelias sakoi*) from an isolated locality, far west of other populations. While molecular analysis on cytb did not provide significant differences, the authors still considered the viper a separate species on the basis of cluster and discriminant analyses of morphological features and ecology. The species seems to be rather ill-supported by convincing proof. Pending further research (see also Freitas et al. 2020) it is provisionally listed by us.

The species status of *V. eriwanensis* is given as doubtful by Freitas et al. (2020) and should be considered to be *V. renardii*.

Serpentes: Elapidae

Walterinnesia aegyptia was added recently to the Turkish fauna by Uğurtaş et al. (2001). Nilson & Rastegar-Pouyani (2007) re-established the name *W. morgani* (Mocquard, 1905) for the eastern populations, including Turkey.

Discussion

The herpetofauna of the Near East is very rich and diverse, due to the high habitat diversity and historical zoogeographic factors (Sindaco et al. 2000, 2008). The first basic contribution to the Turkish herpetofauna was presented by F.S. Bodenheimer (1944). His book contained 85 amphibian and reptile species from Turkey. The number of species increased enormously over the past 76 years and has doubled now. New species continue to be described at the very moment. Two new species have been described in 2018 (*O. kardesi* Kornilios et al. 2018, *V. sakoi* Tuniyev et al. 2018), one in 2019 (*E. urartica* Jablonski et al. 2019), and two in 2021 (Karakasi et al. 2021, Kurnaz & Şahin 2021). Taxonomy and phylogeography of many species complexes are still in need of further research and this probably will result in an even higher number of species.

GIS-based atlas studies in Europe began in 1997. Sillero et al. (2014) reported that the study conducted within the scope of the NA2RE project (http://na2re.ismai.pt/) will be useful in decision-making mechanisms, conservation studies and activities. Examples of nation-wide projects are Arntzen (2006), in which the current distribution of amphibians and reptiles in the Iberian Peninsula were mapped and modeled by using an ecological niche model and Cogălniceanu et al. (2013a,b) that established a national database for the determination of the distribution of the amphibians and reptiles of Romania. Recently, the diversity and distribution of the herpetofauna of Albania were also mapped with GIS-based tools (Mizsei et al. 2017, Szabolcs et al. 2017). Our study presents a database containing the largest amount of herpetofauna records from Turkey to date. By integrating our findings into the European atlas database, it will be possible to make better inferences and meta-analyzes on a large scale in terms of conservation strategies, biogeography, and taxonomical implications.

The maps presented in this study show the known distribution of the species, but many records were collected randomly without following any particular method. The mapping of amphibians and reptiles with GIS was only started with recently. Tok & Çiçek (2014) carried out a systematic study to determine the amphibians and reptiles of the province of Çanakkale and mapped them with the help of GIS. Recently, the herpetofauna of Gediz Delta was mapped in detail and is intended for use in the field and management plans (Arslan et al. 2018). Also, the coordination of TUBITAK and Nature Protection and National Parks General Directorate began the Noah's Ark Biodiversity Database project

(http://www.nuhungemisi.gov.tr) with the aim of conservation and sustainable biodiversity in 2006 and is a work in progress. The data generated in this study will contribute to this project. Until now in almost every province of Turkey biodiversity inventories have been carried out and the data has been transferred to the Noah's Ark Biodiversity Database. The results obtained in this study will provide the opportunity to be evaluated together with literature-based distributions. The availability of the historical and current distribution of species therefore constitutes an important component in conservation-based research (Sillero et al. 2014).

While species diversity increases from south to north and from east to west direction for amphibians, the reptile diversity increases towards the east, southeast, and north of Turkey. We used different sources of information to build a database on Turkish herpetofauna. However, a systematic survey most possibly will change the pattern of richness and endemism maps. The number of records is low in central and eastern Turkey, which is likely to affect species richness and endemism patterns. Herpetofaunal biodiversity hotspots were found where sampling effort was higher in either easily accessible regions or destinations known for rare species. For example, the number of records in central Anatolia is low, due to containing mainly common species. Similar results were reported for Albania (Mizsei et al. 2017, Szabolcs et al. 2017) and Romania (Cogălniceanu et al. 2013a,b). Future studies should focus on those regions to detect the possibility of the presence of rare species or confirmation of common species abundance. According to our results, NE, E, and SE Anatolia were not studied in detail up to now due to different causes and these parts deserve the attention of herpetologists in the future. Herpetologist should focus on these regions to elucidate the actual distribution of species or detect new species known from neighboring countries.

Amphibian endemism is at its highest values in southern, eastern, and northeastern Anatolia. The major of endemic species are Lycian salamanders for southern Anatolia and genus *Neurergus* for eastern Anatolia. For reptiles the highest values of endemism are reached in southeastern and eastern Anatolia. The narrow-distributed or rare species of rock and eremial lizards and mountain vipers especially contribute to endemism in Anatolia. Overall, northeastern, eastern, southern Anatolia are centers of endemism for Turkish herpetofauna.

Among 178 herpetofauna species of Turkey, 30% (11 species) of amphibians and 13% (18 species) of reptiles are included in threatened categories the IUCN Red List. Unfortunately, 24% of the herpetofauna is not listed or in data deficient categories. On the other hand, the status of amphibians and reptiles of Turkey has not been studied in detail and we urgently need a national red list for establishing national conservation priorities.

Aegean and Western Turkey sclerophyllous and mixed forests, Euxine-Colchic deciduous forests, Southern Anatolian montane conifer and deciduous forests, and Anatolian conifer and deciduous mixed forests ecoregions contain half of the amphibian species in Turkey. Likewise, almost half of the reptile species inhabit Eastern Mediterranean conifer-sclerophyllous-broadleaf forests, Southern Anatolian montane conifer and deciduous forests, Aegean and Western Turkey sclerophyllous and mixed forests, Eastern Anatolian montane steppe, and Euxine-Colchic deciduous forests.

For the herpetofauna of Turkey 40 chorotypes are recognized. SW-Asiatic, E-Mediterranean, S-Anatolian endemic, and Turano-Mediterranean elements together contain about 50% of all species.

Herpetofauna across the globe faces threats from both known and unknown sources (Blaustein & Wake 1990, Alford & Richards 1999, Houlahan et al. 2000, Gibbons et al. 2000, Böhm et al. 2013). Amphibians and reptiles are the most threatened vertebrates (Stuart et al. 2008, Hof et al. 2011). Habitat loss and disintegration, environmental pollution, diseases, land-use change, alien species, UV-B radiation, potential impacts of climate change and synergies between them are important threats that suppress both groups (Alford & Richards 1999, Gibbons et al. 2000, Cox & Temple 2009). Sustainable management plans, which will be used effectively to prevent the extinction of amphibians and reptiles, need to be implemented quickly by both public and private organizations worldwide.

The ecosystems of Anatolia have dramatically changed during the approximately ten-thousand years of human activities and moreover, the pressure of major threats on its biodiversity has increased since 1950 (Şekercioğlu et al., 2011). One of the major precautions is focusing on scientific research exploring a better understanding of biodiversity and creating associated conservation strategies. Potential causes of herpetofauna decline in Turkey are mainly human-induced and consist of habitat loss and destruction (e.g. urbanization, construction of roads and dams, intensive agricultural activities), pollution (e.g. agrochemicals, factory waste), over-harvesting (especially the export of amphibians, killing by cats, and dogs), direct persecution, illegal collecting, introduction of alien species (e.g. *Trachemys scripta*, exotic fish and invertebrates) and climate change (reviewed from IUCN Red List). Habitat loss and degradation is one of the greatest threats to amphibian and reptile populations and occurs from a variety of sources like the expansion of urban areas, land conversion for agriculture, the transformation of dry plains into irrigated agricultural fields, forests into tea and hazelnut plantations, reservoirs behind hydroelectric dams, quarrying. Central Anatolia is covered by semi-natural steppes and steppe forests. Unfortunately, steppe and steppe-forest vegetation has been almost halved due to diverse destructive activities (Ambarlı et al. 2016). The reduction and destruction of steppes areas likely have influenced especially reptile diversity in Anatolian landscapes. The pressure of major threats to the Turkish herpetofauna vary with the region. The species living in western and southern Turkey are mainly suffering from urbanization and agriculture activities. The species living in central and eastern Turkey are facing with overgrazing and agricultural area expansion in general. The species in northern Turkey suffer from urbanization and agriculture activities.

The ecological studies of the Turkish herpetofauna started in the 1980s and accelerated after the 2000s. Up to today, the ecology of some species have been studied with respect to population size/status. Long-term studies were

carried out on the ecology and population trend of some frogs and salamanders, however most other studies lasted one year or less. The conservation studies/actions on Turkish amphibians and reptiles are still not at the desired level and few scientists have been focused on conservation studies.

In summary, our study presents an assessment of the current taxonomic status of amphibians and reptiles of Turkey and its distribution patterns on a large scale. However, the mapping of species is a dynamic process and finer-scale data will be obtained in the future. This study will also provide an important contribution for new studies on amphibians and reptiles, in the decision-making process of the public, in the creation of their conservation efforts and activities.

Acknowledgement. Part of the manuscript is based on the MSc thesis of Ç. Yaşar, supervised by K. Çiçek. We would like to thank Mario Schweiger for providing literature sources via his websites (https://www.vipersgarden.at/). We thank Márton Szabolcs, Oğuz Türkozan, Mehmet Zülfü Yıldız, Konrad Mebert, and an anonymous reviewer for their constructive contributions to improve our manuscript. The manuscript is supplemented during the publication process due to some recent taxonomic changes and the herpetofauna list is updated.

References

Adalsteinsson, S.A., Branch, W.R., Trapé, S., Vitt, L.J., Hedges, S.B. (2009): Molecular phylogeny, classification, and biogeography of snakes of the Family Leptotyphlopidae (Reptilia, Squamata). Zootaxa 2244: 1-50.

Ahmadzadeh, F., Carretero, M.A., Harris, D.J., Perera, A., Böhme, W. (2012): A molecular phylogeny of eastern group of ocellated lizard genus *Timon* (Sauria: Lacertidae) based on mitochondrial and nuclear DNA sequences. Amphibia-Reptilia 33: 1-10.

Akın, Ç., Bilgin, C., B., Beerli, P. Westaway, R., Ohst, T., Litvinchuk, S.N., Uzzell, T., Bilgin, M., Hotz, H., Guex, G.-D., Plötner, J. (2010): Phylogeographic patterns of genetic diversity in eastern Mediterranean water frogs have been determined by geological processes and climate change in the Late Cenozoic. Journal of Biogeography 37(11): 2111–2124.

Alford, R.A. Richards, S.J. (1999): Global amphibian declines: A problem in applied ecology. Annual Review of Ecology, Evolution, and Systematics 30: 133-165.

Ambarlı, D., Zeydanlı, U. S., Balkız, Ö., Aslan, S., Karaçetin, E., Sözen, M., Ilgaz, Ç., Ergen Gürsoy, A., Lise, Y., Demirbaş Çağlayan, S., Welch, H.J., Welch, G., Turak, A.S., Bilgin, C.C., Özkil, A., Vural, M. (2016): An overview of biodiversity and conservation status of steppes of the Anatolian Biogeographical Region. Biodiversity and Conservation 25(12): 2491-2519.

Ananjeva, N. B., Agasyan, A. L. (2009): *Phrynocephalus horvathi*. The IUCN Red List of Threatened Species 2009: e.T164759A5923724. <https://www.iucnredlist.org/species/164759/5923724, accessed at: 2020.06.03.>

Ananjeva, N. B., David, P., Barabanov, A., Dubois, A. (2013): On the Type Specimens of *Trapelus ruderatus* (Olivier, 1804) and Some Nomenclatural Problems on *Trapelus* Cuvier, 1816 (Agamidae, Sauria). Russian Journal of Herpetology 20 (3): 197-202.

Arıkan, H. (1988): On a new form *Rana ridibunda* (Anura: Ranidae) from Turkey. İstanbul University, Faculty of Science 53: 81-87.

Arnold, E.N., Arribas, O., Carranza, S. (2007): Systematics of the Palaearctic and Oriental lizard tribe Lacertini (Squamata: Lacertidae: Lacertinae), with descriptions of eight new genera. Zootaxa 1430: 1-86.

Arntzen, J. (2006): From descriptive to predictive distribution models: a working example with Iberian amphibians and reptiles. Frontiers in Zoology 3: 8.

Arribas, O. (2016): Why *Caucasilacerta* Harris, Arnold et Thomas, 1998 is a nomen nudum? Russian Journal of Herpetology 23 (4): 305-306.

Arribas, Ó. J. (1997): Morfología, filogenia y biogeografía de las lagartijas de alta montaña de los Pirineos. Doctoral dissertation. Universitat Autònoma de Barcelona, Barcelona. [In microfiche, Spanish]

Arribas, O., Ananjeva, N.B., Carranza, S. Doronin, I.V., Orlov, N.L. (2018a): Case 3711-*Iberolacerta* Arribas and *Darevskia* Arribas (Chordata, Squamata, Lacertidae): proposals to deem these names available either from Arribas (1997) or from Arribas (1999). Bulletin of Zoological Nomenclature 75: 122-129.

Arribas, O., Ilgaz, Ç., Kumlutaş, Y. (2018b): Reevaluation of the intraspecific variability in *Darevskia parvula* (Lantz and Cyren, 1913): an integrated approach using morphology, osteology and genetics (Squamata: Lacertidae). Zootaxa 4472 (1): 071-099.

Arslan, D., Olivier, A., Yaşar, Ç., İsmail, B.İ., Döndüren, Ö., Ernoul, L., Beck, N., Çiçek, K. (2018): Distribution and current status of herpetofauna in the Gediz Delta (Western Anatolia, Turkey). Herpetology Notes 11: 1-15.

Avcı, A., Ilgaz, Ç., Bozkurt, E., Üzüm, N., Olgun, K. (2015a): A new record of *Iranolacerta brandtii* (De Filippi, 1863) (Sauria: Lacertidae) in eastern Anatolia, Turkey. Russian Journal of Herpetology 22 (1): 68-74.

Avcı, A., Ilgaz, Ç., Rajabizadeh, M., Yılmaz, C., Üzüm, N., Adriaens, D., Kumlutaş, Y., Olgun, K. (2015b): Molecular Phylogeny and Micro CT-Scanning Revealed Extreme Cryptic Biodiversity in Kukri Snake, *Muhtarophis* gen. nov., a New Genus for *Rhynchocalamus barani* (Serpentes: Colubridae). Russian Journal of Herpetology 22 (3): 159-174.

Babik, W., Branicki, W., Crnobrnja-Isailović, J., Cogălniceanu, D., Sas, I., Olgun, K., Poyarkov, N.A., García-París, M., Arntzen, J.W. (2005): Phylogeography of two European newt species discordance between mtDNA and morphology. Molecular Ecology 14: 2475-2491.

Baig, K.J. (1992): Systematic studies of the Stellio-group of *Agama* (Sauria: Agamidae). Ph.D. Thesis. University of Islamabad.

Baig, K.J., Wagner, P., Ananjeva, N.B., Böhme, W. (2012): A morphology-based taxonomic revision of *Laudakia* Gray, 1845 (Squamata: Agamidae). Vertebrate Zoology 62 (2): 213-260.

Baran, İ. (1976): The taxonomic revision of Turkish snakes and their geographical distribution. TÜBİTAK Series 9: 1-177.

Baran, İ. (1982): Zur taxonomie der schlangen in Südost und Ost Anatolien. Spixiana 5: 51-59. [In German].

Baran, I., Atatür, M. (1998): Turkish Herpetofauna (Amphibians and Reptiles). Ankara, Turkey: Turkey Ministry of Environment.

Baran, İ., Gruber. U. (1982): Taxonomische Untersuchungen an Türkischen Gekkoniden. Spixiana 5 (2): 109-138. [In German].

Baran, İ., Joger U., Kutrup, B., Türkozan, O. (2001): On new specimens of *Vipera barani* Böhme and Joger, 1983, from northeastern Anatolia, and implications for the validity of *Vipera pontica* Billing, Nilson and Sattler, 1990 (Reptilia, Viperidae). Zoology in the Middle East 23: 47.

Baran, İ., Kumlutaş, Y., Lanza, B., Sindaco, R., Ilgaz, Ç., Avci, A., Crucitti, P. (2005): *Acanthodactylus harranensis*, a new species of lizard from southeastern Turkey (Reptilia: Sauria: Lacertidae). Bollettino Museo Regionale di Scienze Naturali Torino 23 323-341.

Baran, İ., Ilgaz, Ç., Avcı, A., Kumlutaş, Y., Olgun, K. (2012): Türkiye Amfibi ve Sürüngenleri. Ankara, Turkey: TÜBİTAK Popüler Bilim Kitapları, 204. [In Turkish].

Baran, İ., M. Atatür, İ. (1986): A taxonomical survey of the mountain frogs of Anatolia. Amphibia-Reptilia 7: 115-133.

Başoğlu, M., Baran İ. 1977. The Reptiles of Turkey. Part I: The Turtles and Lizards. İzmir, Turkey: Ege University Faculty of Science Series 76: 272. [In Turkish].

Başoğlu, M., Baran İ. 1980. The Reptiles of Turkey. Part II: Snakes. İzmir, Turkey: Ege University Faculty of Science Series 218. [In Turkish].

Başoğlu, M., Özeti, N., Yılmaz, İ. (1994): Türkiye amfibileri. İzmir, Turkey: Ege University Faculty Science Series 151: 221. [In Turkish].

Bauer, A. (2003): On the identity of *Lacerta punctata* Linnaeus 1758, the type species of the genus *Euprepis* Wagler 1830, and the generic assignment of Afro-Malagasy skinks. African Journal of Herpetology 52: 1-7.

Bellati, A., Carranza, S. Garcia-Porta, J., Fasola, M., Sindaco, R. (2014): Cryptic diversity within the *Anatololacerta* species complex (Squamata: Lacertidae) in the Anatolian Peninsula: Evidence from a multi-locus approach. Molecular Phylogenetics and Evolution 82: 219-233.

Billing, H., Nilson, G. Sattler, U. (1990): *Vipera pontica* sp. n., a new viper species in the *kaznakovi* group (Reptilia, Viperidae) from northeastern Turkey and adjacent Transcaucasia. Zoologica Scripta 19 (2): 227-231.

Blaustein, A. R., Wake, D. B. (1990): Declining amphibian populations: a global phenomenon? Trends in Ecology and Evolution 5: 203–204.

Bodenheimer, F.S. (1944): Introduction into the knowledge of the Amphibia and Reptilia of Turkey. İstanbul, Turkey: İstanbul Üniversitesi Fen Fakültesi Mecmuası B 9 (1): 1-78.

Boettger, O. (1888): Über die Reptilien und Batrachier Transcaspiens. Zoologischer Anzeiger 11: 259-263. [In German].

Boettger, O. (1892): Katalog der Batrachier-Sammlung im Museum der Senckenbergischen Naturforschenden Gesellshaft in Frankfurt am Main. Druck von Gebrüder Knauer, Frankfurt. [In German].

Böhm, M., Collen, B., Baillie, J.E.M., Bowles, P., Chanson, J., Cox, N., Hammerson, G., Hoffmann, M., Livingstone, S.R., Ram, M., Rhodin, A.G.J., Stuart, S.N., Van Dijk, P.P., Young, B.E., Afuang, L.E., Aghasyan, A., García,

A., Aguilar. C., Ajtic, R., Akarsu, F., Alencar, L.R.V., Allison, A., Ananjeva, N., Anderson, S., Andrén, C., Ariano-Sánchez, D., Arredondo, J.C., Auliya, M., Austin, C.C., Avcı, A., Baker, P.J., Barreto-Lima, A.F., Barrio-Amorós, C.L., Basu, D., Bates, M.F., Batistella, A., Bauer, A., Bennett, D., Böhme, W., Broadley, D., Brown, R., Burgess, J., Captain, A., Carreira, S., Castañeda, M.D.R., Castro, F., Catenazzi, A., Cedeño-Vázquez, J.R., Chapple, D.G., Cheylan, M., Cisneros-Heredia, D.F., Cogalniceanu, D., Cogger, H., Corti, C., Costa, G.C., Couper, P.J., Courtney, T., Crnobrnja-Isailovic, J., Crochet, P.A., Crother, B., Cruz, F., Daltry, J. C., Daniels, R.J.R., Das, I., De Silva, A., Diesmos, A.C., Dirksen, L., Doan, T. M., Dodd, C.K., Doody, J.S., Dorcas, M.E., Duarte de Barros Filho, J., Egan, V.T., Mouden, E.H., Embert, D., Espinoza, R.E., Fallabrino, A., Feng, X., Feng, Z.J., Fitzgerald, L., Flores-Villela, O., França, F.G.R., Frost, D., Gadsden, H., Gamble, T., Ganesh, S.R., Garcia, M.A., García-Pérez, J.E., Gatus, J., Gaulke, M., Geniez, P., Georges, A., Gerlach, J., Goldberg, S., Gonzalez, J.C.T., Gower, D.J., Grant, T., Greenbaum, E., Grieco, C., Guo, P., Hamilton, A.M., Hare, K., Hedges, S.B., Heideman, N., Hilton-Taylor, C., Hitchmough, R., Hollingsworth, B., Hutchinson, M., Ineich, I., Iverson, J., Jaksic, F.M., Jenkins, R., Joger, U., Jose, R., Kaska, Y., Kaya, U., Keogh, J. S., Köhler, G., Kuchling, G., Kumlutaş, Y., Kwet. A., La Marca, E., Lamar, W., Lane, A., Lardner, B., Latta, C., Latta, G., Lau, M., Lavin, P., Lawson, D., Le Breton, M., Lehr, E., Limpus, D., Lipczynski, N., Lobo, A. S., López-Luna, M.A., Luiselli, L., Lukoschek, V., Lundberg, M., Lymberakis, P., Macey, R., Magnusson, W.E., Mahler, D.L., Malhotra, A., Mariaux, J., Maritz, B., Marques, O.A.V., Márquez , R., Martins, M., Masterson, G., Mateo, J.A., Mathew, R., Mathews, N., Mayer, G., McCranie, J.R., Measey, G.J., Mendoza-Quijano, F., Menegon, M., Métrailler, S., Milton, D. A., Montgomery, C., Morato, S.A.A., Mott, T., Muñoz-Alonso, A., Murphy, J., Nguyen, T.Q., Nilson, G., Nogueira, C., Núñez, H., Orlov, N., Ota, H., Ottenwalder, J., Papenfuss, T., Pasachnik, S., Passos, P., Pauwels, O.S.G., Pérez-Buitrago, N., Pérez-Mellado, V., Pianka, E. R., Pleguezuelos, J., Pollock, C., Ponce-Campos, P., Powell, R., Pupin, F., Quintero Díaz, G. E., Radder, R., Ramer, J., Rasmussen, A.R., Raxworthy, C., Reynolds, R., Richman, N., Rico, E.L., Riservato, E., Rivas, G., da Rocha, P.L.B., Rödel, M.O., Rodríguez Schettino, L., Roosenburg, W.M., Ross, J.P., Sadek, R., Sanders, K., Santos-Barrera, G., Schleich, H.H., Schmidt, B.R., Schmitz, A., Sharifi, M., Shea, G., Shi, H.T., Shine, R., Sindaco, R., Slimani, T., Somaweera, R., Spawls, S., Stafford, P., Stuebing, R., Sweet, S., Sy, E., Temple, H.J., Tognelli, M.F., Tolley, K., Tolson, P.J., Tuniyev, B., Tuniyev, S., Üzüm, N., van Buurt, G., Van Sluys, M., Velasco, A., Vences, M., Veselý, M., Vinke, S., Vinke, T., Vogel, G., Vogrin, M., Vogt, C.R., Wearn, R.O., Werner, L.Y., Whiting, J.M., Wiewandt, T., Wilkinson, J., Wilson, B., Wren, S., Zamin, T., Zhou, K., Zug, G. (2013): The conservation status of the world's reptiles. Biological Conservation 157: 372-385.

Böhme, W. (1973): Erstnachweis zweier Eidechsengattungen für die Türkei. Bonner zoologische Beiträge 24: 394-398. [In German].

Böhme, W., Joger, U. (1983): Eine neue Art des *Vipera berus*-Komplexes aus der Türkei. Amphibia-Reptilia 4(2): 265-271. [In German].

Bonin, F., Devaux, B., Dupré, A. (2006): Turtles of the World. Johns Hopkins University Press, Baltimore, USA.

Boulenger, G. A. (1885): Catalogue of the lizards in the British Museum (Natural History). (Vol. 2). Order of the Trustees, London.

Bour, R. (1989): Caractères diagnostiques offerts par le crâne des tortues terrestres du genre *Testudo*. Mésogée 48: 13-19. [In French].

Bour, R. (2004): *Testudo boettgeri* Mojsisovics, 1889. Manouria 22: 9-10. [In German].

Bozkurt, E., Olgun, K. (2020): Taxonomic investigation of the genus *Ablepharus* (Sauria; Scincidae) with molecular and morphological methods in Anatolian populations. Turkish Journal of Zoology 44: 134-145.

Broadley, D.G., Wallach, V. (2007a): A review of the revalidated genus *Letheobia* of East Africa, with descriptions of three new species. Zootaxa 2255: 1-100.

Broadley, D.G., Wallach, V. (2007b): A review of East and Central African species of *Letheobia* Cope, revived from the synonymy of *Rhinotyphlops* Fitzinger, with descriptions of five new species (Serpentes: Typhlopidae). Zootaxa 1515: 31–68.

Brown, J.L. (2014): SDMtoolbox: a python- based GIS toolkit for landscape genetic, biogeographic and species distribution model analyses. Methods in Ecology and Evolution 5 (7): 694-700.

Bucci-Innocenti, S., Ragghianti, M., G. Manchino, G. (1983): Investigations of karyology and hybrids in *Triturus boscai* and *T. vittatus*, with a reinterpretation of the species group within Triturus (Caudata: Salamandridae). Copeia 1983: 662-672.

Bülbül, U., Kurnaz, M., Eroğlu, A. İ., Szymura, J. M., Koc, H., Kutrup, B. (2016): First record of *Bombina variegata* (L., 1758) (Anura: Bombinatoridae) from Turkey. Turkish Journal of Zoology 40(4): 630-636.

Bülbül, U., Kutrup B. (2013): Morphological and genetic variations of *Ommatotriton* in Turkey. Animal Biology 63: 297-312.

Busack, S.D., Salvador A., Bauer, A.M., Kaiser H. (2016): *Darevskia* and *Iberolacerta* (Reptilia, Lacertidae): Arribas, 1997 or 1999? The correct dating of two nomenclatural acts affecting Palearctic lizards, and validation of the name *Caucasilacerta* Harris, Arnold and Thomas, (1998). Bionomina 10: 61-73.

Butchart, S. H. M., Walpole, M., Collen, B., Van Strien, A., Scharlemann, J. P. W., Almond, R.E.A., Baillie, J. E. M., Bomhard, B., Brown, C., Bruno, J., Carpenter, K.E., Carr, G.M., Chanson, J., Chenery, A. M., Csirke, J., Davidson, N. C., Dentener, F., Foster, M., Galli, A., Galloway, J.N., Genovesi, P., Gregory, R.D., Hockings, M., Kapos, V., Lamarque, J-F., Leverington, F., Loh, J., Mcgeoch, M.A., Mcrae, L., Minasyan, A., Hernã¡Ndez Morcillo, M., Oldfield, T. E. E., Pauly, D., Quader, S., Revenga, C., Sauer, J.R., Skolnik, B., Spear, D., Stanwell-Smith, D., Stuart, S. N., Symes, A., Tierney, M., Tyrrell, T.D., Vié, J-C., Watson, R. (2010): Global biodiversity: indicators of recent declines. Science 328(5982): 1164-1168.

Carranza, S., Arnold, E.N., Pleguezuelos, J.M. (2006): Phylogeny, biogeography, and evolution of two Mediterranean snakes, *Malpolon monspessulanus* and *Hemorrhois hippocrepis* (Squamata, Colubridae), using mtDNA sequences. Molecular Phylogenetics and Evolution 450 (2): 532-546.

Çevik, E., Arıkan, H., Kaya, U., Atatür, M. K., (2006). Comparative morphological and serological studies of three Anatolian Mountain frogs, *Rana macrocnemis*, *R. camerani* and *R. holtzi* (Anura, Ranidae). Amphibia-Reptilia 27: 63-71.

Çiçek, K., Ayaz, D. (2015): Does the red-eared slider (*Trachemys scripta elegans*) breed in Turkey? Hyla 1: 4-10.

Clark, R.J., Clark, E.D. (1973): Report on a collection of amphibians and reptiles from Turkey. Occasional papers of the California Academy of Sciences 104, 1 – 62.

Cogălniceanu, D., Rozylowicz, L., Székely, P., Samoilă, C., Stănescu, F., Tudor, M., Székely, D., Iosif, R. (2013a): Diversity and distribution of reptiles in Romania. ZooKeys 341: 49–76.

Cogălniceanu, D., Székely, P., Samoilă, C., Iosif, R., Tudor, M., Plăiaşu, R., Stănescu, F., Rozylowicz, L. (2013b): Diversity and distribution of amphibians in Romania. ZooKeys 296: 35–57.

Cox, N.A., Temple, H.J. (2009): European Red List of Reptiles. Office for Official Publications of the European Communities, Cambridge Publishers, Luxembourg.

Crother, B.I. (2000): Scientific and standard English names of amphibians and reptiles of North America North Mexico, with comments regarding confidence in our understanding. Society for the Study of Amphibians and Reptiles, Herpetological Circular 43: 104.

de Lapparent de Broin, F., Bour, R., Parham, J.F., Perälä, J. (2006): *Eurotestudo*, a new genus for the species *Testudo hermanni* Gmelin, 1789 (Chelonii, Testudinidae). Comptes Rendus Palevol 5: 803-811. [In French].

Dotsenko, I.B. (1985): Revizija roda *Eirenis* (Reptilia Colubridae). Soovščenie 1. Vosstanovlene roda *Pseudocyclophis* Boettger, 1888. Vestnik Zoologii 41-44. [In Russian].

Dubois, A. (1992): Notes sur la classification des Ranidae (Amphibiens Anoures). Bulletin mensuel de la Société linnéenne de Lyon 61 (10): 305-352. [In French]

Dubois, A. (2007): Genitives of species and subspecies nomina derived from personal names should not be emended. Zootaxa 1550: 49-68.

Dubois, A., Bour, R. (2010): The nomenclatural status of the nomina of amphibians and reptiles created by Garsault (1764), with a parsimonious solution to an old nomenclatural problem regarding the genus *Bufo* (Amphibia, Anura), comments on the taxonomy of this genus, and comments on some nomina created by Laurenti (1768). Zootaxa 2447: 1-52.

Dubois, A., Raffaëlli, J. (2009): A new ergotaxonomy of the family Salamandridae Goldfuss, 1820 (Amphibia, Urodela). Alytes, 26: 1-85.

Dufresnes, C., Mazepa, G.O., Jablonski, D., Oliveira, R.C., Wenseleers, T., Shabanov, D.A., Auer, M., Ernst, R., Koch, C., Ramírez-Chaves, H.E., Mulder, K.P., Simonovo, E., Tiutenko, A., Kryvokhyzhar, D., Wennekes, P.L., Zinenko, O.I., Korshunov, A.V., Al-Johany, A.M., Peregontsev, E.A., Masroor, R., Betto-Colliard, C., Denoël, M., Borkin, L.J., Skorinov, D.V., Pasynkova, R.A., Mazanaeva, L.F., Rosanov, J.M., Dubey, S., Litvinchuk, S.N. (2019a): Fifteen shades of green: The evolution of *Bufotes* toads revisited. Molecular Phylogenetics and Evolution 141: 1-25.

Dufresnes, C., Strachinis, I., Tzoras, E., Litvinchuk, S.N., Denoël, M. (2019b): Call a spade a spade: taxonomy and distribution of *Pelobates*, with description of a new Balkan endemic. ZooKeys 859: 131–158.

Eiselt, J. (1958): Der Feuersalamander *Salamandra salamandra* (L.): Beiträge zu Einer Taxonomischen Synthese. Der Feuersalamander *Salamandra salamandra* (L.): Beiträge zu Einer Taxonomischen Synthese 10:77-154. [In German].

Eiselt, J. (1970): Ergebnisse zoologischer Sammelreise in der Türkei: Bemerkenswerte Funde von Reptilien. Annalen des Naturhistorischen Museums in Wien, 74: 343-355. [In German].

Eiselt, J. (1986): Krötenfrösche (*Pelobates* gen., Amphibia salientia) in Türkisch-Thrakien und Griechenland. Annalen des Naturhistorischen Museums in Wien. Serie B für Botanik und Zoologie 51-59. [In German].

Eiselt, J., Schmidtler, J.F. (1986): Der *Lacerta danfordi*-complex (Reptilia: Lacertidae). Spixiana 9: 289-328. [In German].

Ernst, C.H., Barbour, R.W. (1989): Turtles of the World. Smithsonian Institution Press, Washington, USA.

Fei, L., Ye, C., Huang, Y. (1991): Key to Chinese Amphibia. Chongqing Branch Science and Technology Literature Press, Chongquing, China.

Fitzinger, L. (1843): Systema Reptilium, Fasciculus Primus, Amblyglossae. Braumüller et Seidel, Vindobonae, Austria. [In German].

Franzen, M. (1998): Erstnachweis von *Acanthodactylus schreiberi schreiberi* Boulenger, 1879 für die Türkei (Squamata: Sauria: Lacertidae). Herpetozoa 11 (1/2): 27-36. [In German].

Franzen, M. (2000): Erstnachweis der Gattung *Rhinotyphlops* Fitzinger, 1843 für die Türkei. Salamandra 36: 103-112. [In German].

Franzen, M., Bischoff, W. (1995): Erstnachweis von *Rhynchocalamus melanocephalus melanocephalus* für die Türkei. Salamandra 31 (2): 107-122. [In German].

Franzen, M., Wallach, V. (2002): A new *Rhinotyphlops* from southeastern Turkey (Serpentes: Typhlopidae). Journal of Herpetology 36 (2): 176-184.

Freitas, I., Ursenbacher, S., Mebert, K., Zinenko, O., Schweiger, S., Wüster, W., Brito, J.C., Crnobrnja-Isailović, J., Halpern, B., Fahd, S., Santos, X., Pleguezuelos, J.M., Joger, U., Orlov, N., Mizsei, E., Lourdais, O., Zuffi, M.A.L., Strugariu, A., Zamfirescu, S.R., Martínez-Solano, I., Velo-Antón, G., Kaliontzopoulou, A., Martínez-Freiría, F. (2020): Evaluating taxonomic inflation: towards evidence-based species delimitation in Eurasian vipers (Serpentes: Viperinae). Amphibia-Reptilia 1(aop): 1-27.

Frétey, T. (2019): Capitalised epithets in the works of Linnaeus (1758–1767): findings and consequences in herpetology. Bionomina 16 (1): 22-45.

Fritz, U., Bininda-Emonds, O.R.P. (2007): When genes meet nomenclature: Tortoise phylogeny and the shifting generic concepts of *Testudo* and *Geochelone*. Zoology 110: 298-307.

Fritz, U., Hundsdörfer, A.K., Široký, P., Auer, M., Kami, H., Lehmann, J., Mazanaeva, L.F., Türkozan, O., Wink. (2007): Phenotypic plasticity leads to incongruence between morphology–based taxonomy and genetic differentiation in western Palearctic tortoises (*Testudo graeca* complex, Testudines, Testudinidae). Amphibia-Reptilia 28: 97-121.

Fritz, U., Wischuf, T. (1997): Zur Systematik west-asiatisch-südosteuropäischer Bachschildkröten (Gattung *Mauremys*) (Reptilia: Testudines: Bataguridae). Zoologische Abhandlungen 49 (13): 223-260. [In German].

Frost, D.R. (2020): Amphibian Species of the World 6.0. <https://amphibiansoftheworld.amnh.org/, accessed at: 2020.09.02.>

Frost, D.R., Grant, T., Faivovich, Bain, R.H., Haas, A., Haddad, C.F.B., De Sá, R.O., Channing, A., Wilkinson, M., Donnellan, S.C., Raxworthy, C.J., Campbell, J.A., Blotto, B.L., Moler, P., Drewes, R.C., Nussbaum, R.A., Lynch, J.D., Gree, D.M., Wheeler, W.C. (2006): The amphibian tree of life. Bulletin of the American Museum of Natural History 297: 1-370.

Fu, J., Murphy, R.W., Darevsky, I.S. (2000): Divergence of the cytochrome b gene in the *Lacerta raddei* complex and its parthenogenetic daughter species: evidence for recent multiple origins. Copeia 2: 432-440.

Gabelaia, M., Tarkhnishvili, D., Murtskhvaladze, M. (2015): Phylogeography and morphological variation in a narrowly distributed Caucasian rock lizard, *Darevskia mixta.* Amphibia-Reptilia 36(1): 45-54.

García–París, M., Montori, A., Herrero, P. (2004): Amphibia: Lissamphibia, Fauna Ibérica. Museo Nacional de Ciencias Naturales 24: 639.

Garrigues, T., Dauga, C., Ferquel, E., Choumet, V., Failloux, A.B. (2005): Molecular phylogeny of *Vipera* Laurenti, 1768 and the related genera *Macrovipera* (Reuss, 1927) and *Daboia* (Gray, 1842), with comments about neurotoxic *Vipera aspis aspis* populations. Molecular Phylogenetics and Evolution 35: 35–47.

Garzoni. J., Geniez, P. (2004): *Elaphe dione* (Pallas, 1773), a snake taxon new to the Turkish herpetofauna. Herpetozoa 16 (3/4): 174-175.

Gasc, J.P., Cabela, A., Crnobrnja-Isailovic, J., Dolmen, D., Grossenbacher, K., Haffner, P., Lescure, J., Martens, H., Martinez-Rica, J.P., Maurin, H., Oliveira, M.E., Sofianidou, T.S., Veith, M., Zuiderwijk, A. (1997): Atlas of Amphibians and Reptiles in Europe. Museum National d'Histoire Naturelle, Paris.

Geniez, P. (2013): Comparaison entre les herpétofaunes de deux pays aux extrémités de la Méditerranée: Jordanie et Maroc. Bulletien Society Herpétology France 145-146: 49-60. [In French].

Gibbons, J., Scott, D.E., Ryan, T.J., Buhlmann, K.A., Tuberville, T.D., Metts, B.S., Greene, J. L., Mills, T., Leiden, Y., Poppy, S., Wiine, C. (2000): The Global Decline of Reptiles, Déjà Vu Amphibians. BioScience 50: 653–666.

Göçmen, B., Karış, M., Özmen, E., Oğuz, M.A. (2018): First record of the Palestine Viper *Vipera palaestinae* (Serpentes: Viperidae) from Anatolia. South-Western Journal of Horticulture, Biology and Environment 9 (2): 87-90.

Göçmen, B., Kumlutaş, Y., Tosunoğlu, M. (1996): A new subspecies *Ablepharus kitaibelii* (Bibron and Borry, 1833) *budaki* n. ssp. (Sauria: Scincidae) from the Turkish Republic of Northern Cyprus. Turkish Journal of Zoology 20: 397-405.

Göçmen, B., Nilson, G., Yıldız, M.Z., Yalçınkaya, H.D., Akman, B. (2007): On the Occurrence of the Black Cat Snake, *Telescopus nigriceps* (Ahl, 1924) (Serpentes: Colubridae) from the Southeastern Anatolia, Turkey with some taxonomical comments. North-Western Journal of Zoology 3 (2): 81-95.

Göçmen, B., Tosunoğlu, M., Ayaz, D. (2002): First record of the Leopard Gecko *Eublepharis angramainyu* (Reptilia: Sauria: Eublepharidae) from Anatolia. Herpetological Journal 12 (2): 79-80.

Graybeal, A. (1997): Phylogenetic relationships of bufonid frogs and tests of alternate macroevolutionary hypotheses characterizing their radiation. Zoological Journal of the Linnean Society 119: 297-338.

Gvoždík, V., Jandzik, D., Lymberakis, P., Jablonski, D., Moravec, J. (2010): Slow worm, *Anguis fragilis* (Reptilia: Anguidae) as a species complex: Genetic structure reveals deep divergences. Molecular Phylogenetics and Evolution 55 (2): 460-472.

Harris, D.J. (2001): Reevaluation of 16S ribosomal RNA variation in *Bufo* (Anura: Amphibia). Molecular Phylogenetics and Evolution 19: 326–329.

Harris, D.J., Arnold, E.N., Thomas, R.H. (1998): Relationships of lacertid lizards (Reptilia: Lacertidae) estimated from mitochondrial DNA sequences and morphology, Proceedings of the Royal Society B 265: 1939-1948.

Hedges, S.B., Marion, A.B., Lipp, K.M., Marin, J. Vidal, N. (2014): A taxonomic framework for typhlopid snakes from the Caribbean and other regions (Reptilia, Squamata). Caribbean Herpetology 49: 1-61.

Helfenberger, N. (2001): Phylogenetic Relationships of Old World Ratsnakes Based on Visceral Organ Topography, Osteology, and Allozyme Variation. Russian Journal of Herpetology 1-62.

Herrmann, H.W., Joger, U., Nilson, G. (1992): Phylogeny and systematics of viperine snakes Ill: resurrection of the genus *Macrovipera* (Reuss, 1927) as suggested by biochemical evidence. Amphibia-Reptilia 13: 375-392.

Heyden, C.H.G. 1827. Reptilien. In Rüppell, E. Atlas zu der Reise im nördlichen Afrika. L. Zoologie 1-24. [In German].

Hof, C., Araújo, M.B., Jetz, W., Rahbek, C. (2011): Additive threats from pathogens, climate and landuse change for global amphibian diversity. Nature 480: 516–519.

Hoser, R. (2015): Two new genera of Lacertid lizards (Reptilia: Squamata: Sauria: Lacertidae) from the Middle-east. Australasian Journal of Herpetology 30:11-17.

Houlahan, J.E., Findlay, C.S., Schmidt, B.R., Meyer, A.H., Kuzmin, S.L. (2000): Quantitative evidence for global amphibian population declines. Nature 404 (6779): 752.

ICZN Opinion 490. (1957): Action under the plenary powers to preserve for use in its accustomed sense the generic name "*Elaphe*" Fitzinger, 1833 (Class Reptilia). Opinions Declarations of the International Commission on Zoological Nomenclature 17 (12): 181-196.

Inger, R.F., Clark, P.J. (1943): Partition of the genus *Coluber*. Copeia 1943 (3): 141-145.

Jablonski, D., Kukushkin, O.V., Avcı, A., Bunyatova, S., Kumlutaş, Y., Ilgaz, Ç., Polyakova, E., Shiryaev, K., Tuniyev, B., Jandzik, D. (2019): The biogeography of *Elaphe sauromates* (Pallas, 1814), with a description of a new rat snake species. PeerJ 7: 69-44.

Jandzik, D., Jablonski, D., Moravec, J., Gvoždík, V. (2017): Pleistocene extinctions and recent expansions in an anguid lizard of the genus *Pseudopus*. Zoologica Scripta 47: 21–32.

Joger, U. (2005): *Montivipera* Nilson, Tuniyev, Andrén, Orlov, Joger and Herrmann, 1999, pp.61-62. In: Joger, U., Stümpel, N. (eds.) Handbuch der Reptilien und Amphibien Europas, Schlangen (Serpentes) III, Aula-Verlag 3. [In German]

Joger, U., Fritz, U., Guicking, D., Kalyabina-Hauf, S., Nagy, Z.T., Wink, M. (2007): Phylogeography of western Palaearctic reptiles - Spatial and temporal speciation patterns. Zoologischer Anzeiger 246: 293-313.

Kapli P., Lymberakis P., Poulakakis N., Mantziou G., Parmakelis A., Mylonas M. (2008): Molecular phylogeny of three *Mesalina* (Reptilia: Lacertidae) species (*M. guttulata*, *M. brevirostris* and *M. bahaeldini*) from North Africa and the Middle East: another case of paraphyly? Molecular Phylogenetics and Evolution 49: 102-110.

Karakasi, D., Ilgaz,Ç., Kumlutaş, Y., Candan, K., Güçlü, Ö., Kankılıç, T., Beşer, N., Sindaco, R., Lymberakis, P. Poulakis, N. (2021): More evidence of cryptic diversity in *Anatololacerta* species complex Arnold, Arribas and Carranza, 2007 (Squamata: Lacertidae) and re-evaluation of its current taxonomy. Amphibia-Reptilia 2021.

Karin, B.R., Metallinou, M., Weinell, J.L., Jackman, T.R., Bauer, A.M. (2016): Resolving the higher-order phylogenetic relationships of the circumtropical *Mabuya* group (Squamata: Scincidae): An out-of-Asia diversification. Molecular Phylogenetics and Evolution 102: 220–232.

Khan, M.S. (1993): A New Angular-Toed Gecko from Pakistan, With Remarks on the Taxonomy and A Key to the Species Belonging to Genus *Cyrtodactylus* (Reptilia: Geckkonidae). Pakistan Journal of Zoology 25 (1): 67-73.

Kindler, C., Fritz, U. (2014): Neue genetische Erkenntnisse zur Taxonomie und Phylogeographie der Ringelnatter (*Natrix natrix*) sowie der Großkopfringelnatter (*N. megalocephala*). Zeitschrift für Feldherpetologie 21: 1-14. [In German].

Kornilios, P. (2017): Polytomies, signal and noise: revisiting the mitochondrial phylogeny and phylogeography of the Eurasian blindsnake species complex (Typhlopidae, Squamata). Zoologica Scripta 46 (6): 665–674.

Kornilios, P., Kumlutaş, Y., Lymberakis P., Ilgaz, Ç. (2018): Cryptic diversity and molecular systematics of the Aegean *Ophiomorus* skinks (Reptilia: Squamata), with the description of a new species. Journal of Zoological Systematics and Evolutionary Research 56: 364–381.

Kornilios, P., Thanou, E., Lymberakis, P., Ilgaz, Ç., Kumlutaş, Y., Leaché, A. (2019): A phylogenomic resolution for the taxonomy of Aegean green lizards. Zoologica Scripta 49: 14– 27.

Kotsakiozi, P., Jablonski, D., Ilgaz, Ç., Kumlutaş, Y., Avcı, A., Meiri, S., Itescu, Y, Kukushkin, O., Gvoždík, V., Scillitani, G., Roussos, S.A., Jandzik, D., Kasapidis, P., Lymberakis, P., Poulakakis, N. (2018): Multilocus phylogeny and coalescent species delimitation in Kotschy's gecko, *Mediodactylus kotschyi*: Hidden diversity and cryptic species. Molecular Phylogenetics and Evolution 125: 177-187.

Kumlutaş Y., Baran İ., Taşkavak E., Ilgaz Ç., Avcı A. (2002): Occurrence of *Mesalina brevirostris* (Reptilia: Sauria: Lacertidae), the Blanford's short-nosed desert lizard in Turkey. Israel Journal of Zoology 48: 256-257.

Kurnaz, M., Kutrup, B., Hosseinian Yousefkhani, S.S., Koc¸ H., Bülbül, U., Eroğlu, A.İ. (2019): Phylogeography of the red-bellied lizard, *Darevskia parvula* in Turkey. Mitochondrial DNA Part A 30 (3): 556-566.

Kurnaz, M., Şahin,M.K. (2021): Contribution to the taxonomic knowledge of Acanthodactylus (Squamata, Lacertidae): Description of a new lacertid lizard species from Eastern Anatolia, Turkey. Journal of Wildlife and Biodiversity 5(x): xxx-xxx.

Laffan, S.W., Crisp, M.D. (2003): Assessing endemism at multiple spatial scales, with an example from the Australian vascular flora. Journal of Biogeography 30: 511-520.

Lenk, P., Joger, U., Wink, M. (2001a): Phylogenetic relationships among European ratsnakes of the genus *Elaphe* Fitzinger based on mitochondrial DNA sequence comparisons. Amphibia-Reptilia 22: 329-339.

Lenk, P., Kalyabina, S., Wink, M., Joger, U. (2001b): Evolutionary Relationships among true Vipers (Reptilia: Viperidae) Inferred from Mitochondrial DNA Sequences. Molecular Phylogenetics and Evolution 19 (1): 94-104.

Litvinchuk, S., Borkin, L., Skorinov, D.V., Rosanov, J.M. (2008): A new species of common toads from the Talysh mountains, south-eastern Caucasus: genome size, allozyme, and morphological evidences. Russian Journal of Herpetology 15: 19-43.

Litvinchuk, S.N., Zuiderwijk, A., Borkin, L.J., Rosanov, J.M. (2005): Taxonomic status of *Triturus vittatus* (Amphibia: Salamandridae) in western Turkey: trunk vertebrae count, genome size and allozyme data. Amphibia-Reptilia 26: 305-323.

Macey, J.R. (1999): Molecular phylogenetics, tRNA evolution, and historical biogeography in anguid lizards and related taxonomic families. Molecular Phylogenetics and Evolution 12 (3): 250-272.

Margules, C.R., Pressey, R.L. (2000): Systematic conservation planning, Nature 405 (6783): 243.

Mausfeld, P., Schmitz, A., Böhme, W., Misof, B., Vrcibradic, D., da Rocha, C.F.D. (2002): Phylogenetic affinities of *Mabuya atlantica* Schmidt, 1945, endemic to the Atlantic Ocean archipelago of Fernando de Noronha (Brazil): necessity of partitioning the genus *Mabuya* Fitzinger, 1826 (Scincidae: Lygosominae). Zoologischer Anzeiger 241: 281-293.

Mayer, W., Bischoff, W. (1996): Beiträge zur taxonomischen Revision der Gattung *Lacerta* (Reptilia: Lacertidae) Teil 1: *Zootoca*, *Omanosaura*, *Timon* und *Teira* als eigenstandige Gattungen. Salamandra 32 (3): 163-170. [In German].

Mayer, W., Lutz, D. (1989): Chemosystematische untersuchungen zur phylogenese der sammelgattung *Lacerta* (Reptilia: Sauria: Lacertidae). Journal of Zoological Systematics and Evolutionary Research 27(4): 338-349. [In German].

Méhely, L. 1894. Beiträge zur Herpetologie Transkaukasiens und Armeniens. Zoologischer Anzeiger 17: 78-80, 81-86. [In German].

Melnikov D.A., Ananjeva N.B., Agasyan A.L., Rajabizadeh M. (2008): History of study and taxonomical status of Persian toad-headed agama *Phrynocephalus persicus* De Filippi, 1863 and Horvath's sun-watcher toad-headed agama *Phrynocephalus helioscopus horváthi* Méhely, 1894. pp. 286 – 297. In: Voprosy Gerpetologii: materials of the Third herpetological conference of A. M. Nikolsky Herpetological Society. Saint-Petersburg. [In Russian].

Melville, J., Hale, J., Mantziou, G., Ananjeva, N.B., Milto, K., Clemann, N. (2009): Historical biogeography, phylogenetic relationships and intraspecific diversity of agamid lizards in the Central Asian deserts of Kazakhstan and Uzbekistan. Molecular Phylogenetics and Evolution 53 (1): 99-112.

Merrem, B. (1820): Tentamen systematis amphibiorum. Johann Christian Krieger, Marburg. [In German].

Mertens, R. (1940): Bemerkungen über einige Schlangen aus Iran. Senckenbergiana 22 (1-6): 244-259. [In German].

Mertens, R., Müller, L. (1928): Liste der Amphibien und Reptilien Europas. Abhandlungen der Senckenbergischen Naturforschenden Gesellschaft 41: 1-62. [In German].

Mertens, R., Müller, L. (1940): Die Amphibien und Reptilien Europas (Zweite Liste, nach dem Stand vom 1. Januar 1940). Abhandlungen der Senckenbergischen Naturforschenden Gesellschaft, Frankfurt am Main 451: 1–56. [In German]

Mittermeier, R. A., Gil, P. R., Hoffman, M., Pilgrim, J., Brooks, T., Mittermeier, C. G., Lamoreux, J., da Foncesca G.A.B. (2005): Hotspots revisited: Earth's biologically richest and most endangered terrestrial ecoregions. Conservation International, Washington, DC.

Mizsei, E., Jablonski, D., Végvári, Z., Lengyel, S., Szabolcs, M. (2017): Distribution and diversity of reptiles in Albania: a novel database from a Mediterranean hotspot. Amphibia-Reptilia 38(2): 157-173.

Moody M. S. (1982): Phylogenetic origins and relationships of terrestrial genera *Agama*, *Phrynocephalus*, and *Uromastyx* within the family Agamidae (Reptilia: Sauria). Vertebrata Hungarica, Musei historico-naturalis hungarici 1-252.

Moody, S.M. (1980): Phylogenetic and historical biogeographical relationship of the genera in the family Agamidae (Reptilia: Lacertilia). Ph.D. Thesis, University of Michigan.

Moravec, J., Franzen, M., Böhme, W. (2006): Notes on the taxonomy, nomenclature and distribution of the *Trachylepis* (formerly *Mabuya*) *aurata* (Linnaeus, 1758) complex. pp. 89-93. In: Vences, M., Köhler, J., Ziegler, T., Böhme, W. (eds.) Herpetologia Bonnensis II. Proc 13th Congress of the Societas Europaea, Bonn, Germany.

Mulder,J. (2021): Note on the Endemic Status of Harran Fringe-fingered Lizard, *Acanthodactylus harranensis* Baran, Kumlutaş, Lanza, Sindaco, Ilgaz, Avcı, & Crucitti, 2005. Commagene Journal of Biology 5(1): xxx-xxx.

Myers, N., Mittermeier, R.A., Mittermeier, C.G., Da Fonseca, G.A., Kent, J. (2000): Biodiversity hotspots for conservation priorities. Nature 403: 853-858.

Nagy, Z.T., Lawson, R., Joger, U., Wink, M. (2004): Molecular systematics of racers, whipsnakes and relatives (Reptilia: Colubridae) using mitochandrial and nuclear markers. Journal of Zoological Systematics and Evolutionary Research 42: 223-233.

Nagy, Z.T., Schmidtler, J.F., Joger, U., Wink, M. (2003): Systematik der Zwergnattern (Reptilia: Colubridae: *Eirenis*) und verwandter Gruppen anhand von DNA-Sequenzen und morphologischen Daten. Salamandra 39: 149-168. [In German].

Nilson, G., Andrén, C. (1984): Systematics of the *Vipera xanthina* Complex (Reptilia: Viperidae). III. Taxonomic Status of the Bulgar Dagh Viper in South Turkey. Journal of Herpetology 19 (2): 276-283.

Nilson, G., Flärdh, B., Andrén, C. (1990): *Vipera albizona*, a new mountain viper from central Turkey, with comments on isolating effects of the Anatolian" Diagonal". Amphibia-Reptilia 11(3): 285-294.

Nilson, G., Rastegar-Pouyani. N. (2007): *Walterinnesia aegyptia* Lataste, 1887 (Ophidia: Elapidae) and the status of *Naja morgani* Mocquard 1905. Russian Journal of Herpetology 14 (1): 7-14.

Nilson, G., Tuniyev, B., Andrén, C., Orlov, N., Joger, U., Herrmann, H.W. (1999): Taxonomic position of the *Vipera xanthina* complex. Kaupia 8: 99-102.

Obst, F.J. (1983): Zur Kenntnis der Schlangengattung *Vipera* (Reptilia, Serpentes, Viperidae). Zoologische Abhandlungen Museum für Tierkunde Dresden, 38 (13): 229–235. [In German].

Olgun, K., Avcı, A., Ilgaz, Ç., Üzüm, N., Yılmaz, C. (2007): A new species of *Rhynchocalamus* (Reptilia: Serpentes: Colubridae) from Turkey. Zootaxa 1399: 57–68.

Olgun, K., Baran, İ., Tok, C.V. (1999): The taxonomic status of *Triturus vulgaris* (Linnaeus, 1758) populations in western Anatolia, Turkey. Turkish Journal of Zoology 23: 133-140.

Olson, D.M., Dinerstein, E., Wikramanayake, E.D., Burgess, N.D., Powell, G.V.N., Underwood, E.C., D'Amico, J.A., Itoua, I., Strand, H.E., Morrison, J.C., Loucks, C.J., Allnutt, T.F., Ricketts, T.H., Kura, Y., Lamoreux, J.F., Wettengel, W.W., Hedao, P., Kassem, K.R. (2001): Terrestrial ecoregions of the world: a new map of life on Earth. Bioscience 51 (11): 933-938.

Omelchenko, A. V., Girnyk, A. E., Osipov, F. A., Vergun, A. A., Petrosyan, V. G., Danielyan, F. D., Arakelyan, M.S., Ryskov, A.P. (2016): Genetic differentiation among natural populations of the lizard complex *Darevskia raddei* as inferred from genome microsatellite marking. Russian Journal of Genetics 52(2): 231-235.

Orlov, N., Tuniyev, B. (1990): Three Species in the *Vipera kaznakovi* Complex (Eurosiberian Group) in the Caucasus: Their Present Distribution, Possible Genesis, and Phylogeny. Asian Herpetology Research 3: 1-36.

Orlov, N.L., Tuniyev, B.S. (1992): A new species of grass snake, *Natrix megalocephala*, from the Caucasus (Ophidia: Colubridae) [translation of the original Russian paper of 1987]. Asian Herpetology Research 4: 42-54.

Orlova, V.F., Tuniev, B.S. (1989): On the taxonomy of the Caucasian common toads belonging to the group *Bufo bufo verrucosissimus* (Pallas) (Amphibia, Anura, Bufonidae). Byulleten' Moskovkogo Obshcestva Ispytatelei Prirody (Biologicbeskii) 94 (3): 13-24. [In Russian].

Öz, M. (1986): Anadoludaki *Salamandra salamandra* (Urodela: Salamandridae)' nın taksonomi biyoloji ve dağılışı üzerine araştırmalar. Ph.D. Thesis, Ege University, Graduate School of Natural and Applied Science İzmir. [In Turkish]

Pabijan, M., Zieliński, P., Dudek, K., Stuglik, M., Babik, W. (2017): Isolation and gene flow in a speciation continuum in newts. Molecular Phylogenetics and Evolution 116: 1-12.

Parham, J. F., Türkozan, O., Stuart, B. L., Arakelyan, M., Shafei, S., Macey, J. R., Papenfuss, T. J. (2006): Genetic evidence for premature taxonomic inflation in Middle Eastern tortoises. Proceedings of the California Academy of Sciences 57: 955-964.

Perälä, J. (1996): Turtles of southern Turkey. Morphological and ecological differences (*Testudo ibera* Pallas 1841 and *Testudo ibera anamurensis*

Weissinger 1987) and the description of a new turtle species. Herpetokongressi I, Helsinki, Appendix: 14-26. [In Finnish].
Perälä, J. (2002a): The genus *Testudo* (Testudines: Testudinidae): phylogenetic inferences. Chelonii 3: 32-39.
Perälä, J. (2002b): Morphological variation among Middle Eastern *Testudo graeca* L., 1758 (sensu lato), with a focus on taxonomy. Chelonii 3: 78-108.
Perälä, J. (2004): *Testudo hercegovinensis* Werner, 1899. Manouria 7: 19-20. [In German]
Rafinesque, C. S. (1820): III Class. Erpetia - The reptiles. Annals of Nature, or, Annual Synopsis of New Genera and Species of Animals, Plants, etc. Discovered in North America. Lexington, Kentucky 1: 4–6.
Rajabizadeh, M., Nagy, Z.T., Adriaens, D., Avcı, A., Masroor, R., Schmidtler, Nazarov, R., Esmaeili, H.R., Christiaens, J. (2016): Alpine–Himalayan orogeny drove correlated morphological, molecular, and ecological diversification in the Persian dwarf snake (Squamata: Serpentes: *Eirenis persicus*). Zoological Journal of the Linnean Society 176 (4): 878-913.
Rancilhac, L., Goudarzi, F, Gehara, M, Hemami, M.R., Elmer, K.R., Vences, M., Steinfartz, S. (2019): Phylogeny and species delimitation of near Eastern *Neurergus* newts (Salamandridae) based on genome-wide RADseq data analysis. Molecular Phylogenetics and Evolution 133: 189-197.
Rastegar-Pouyani, N. (2000): Taxonomic status of *Trapelus ruderatus* (Olivier) and *T. persicus* (Blanford), and validity of *T. lessonae* (De Filippi). Amphibia-Reptilia 21: 91-102.
Raxworthy, C.J. (1988): A description and study of a new dwarf sub-species of smooth newt, *Triturus vulgaris*, from western Anatolia, Turkey. Journal of Zoology 215: 753–763.
Raxworthy, C.J. (1990): A review of the smooth newt (*Triturus vulgaris*) subspecies, including an identification key. Herpetological Journal 1 (11): 481-492.
Recuero, E.,D. Canestrelli, D., Vörös, J., Szabó, K., Poyarkov, N.A., Arntzen, J.W., Crnobrnja-Isailovic, J., Kidov, A.A., Cogălniceanu, D., Caputo, F.P., Nascetti, G., Martínez-Solano, I. (2012): Multilocus species tree analyses resolve the radiation of the widespread *Bufo bufo* species group (Anura, Bufonidae). Molecular Phylogenetics and Evolution 62: 71-86.
Reed, C.A., Marx, H. (1959): A herpetological collection from Northeastern Iraq. Transactions of the Kansas Academy of Science 62 (1): 91-122.
Reuss, T. (1927): Sechs europaïsche Giftschlangengattungen. Zoologischer Anzeiger 73: 124-129. [In German].
Roitberg, E.S., Mazanaeva, L.F., Ilyina, E.V., Orlova, V.F. (2002): Die Echsen Dagestans (Nordkaukasus, Russland): Artenliste und aktuelle Verbreitungsdaten (Reptilia: Sauria: Gekkonidae, Agamidae, Anguidae, Scincidae et Lacertidae). Zoologische Abhandlungen Museum für Tierkunde Dresden 22: 95-116. [In German].
Schätti B., Monsch, P. (2004): Systematics and phylogenetic relationships of Whip snakes (*Hierophis* Fitzinger) and *Zamenis andreana* Werner 1917 (Reptilia: Squamata: Colubrinae). Revue suisse de Zoologie 111 (2): 239-256.
Schätti, B. (1986): Morphological evidence for a partition of the snake genus *Coluber*. pp. 235-238. In: Rocek, Z. (eds.) Studies in Herpetology (Proceedings of the European Herpetological Meeting, 1985), Prague, Charles University: XXVIII, 754.
Schätti, B. (1988): Systematik und Evolution der Schlangengattung *Hierophis* Fitzinger, 1843. Ph.D. Thesis, University of Zürich. [In German].
Schätti, B., Baran, İ., Maunoir, P. (2001): Taxonomie, Morphologie und Verbreitung der Masken-Schlanknatter *Coluber* (s. l.) *collaris* (Müller, 1878). Revue suisse de Zoologie 108 (1): 11-30. [In German].
Schätti, B., Baran, İ., Sigg, H. (1991): Rediscovery of the Bolkar viper: morphological variation and systematic implications on the "*Vipera xanthina* complex". Amphibia-Reptilia 12 (3): 305-327.
Schätti, B., Kucharzewski, C., Masroor, R., Rastegar Pouyani, E. (2012): *Platyceps karelini* (Brandt, 1838) from Iran to Pakistan and revalidation of *Coluber chesneii* Martin, 1838 (Reptilia: Squamata: Colubrinae). Revue suisse de Zoologie 119 (4): 441-483.
Schätti, B., McCarthy, C. (2001): *Coluber* (sensu lato) *schmidtleri* n. sp. from the southern Zagros Mountains in Iran. Herpetozoa 14 (1/2): 81-89.
Schmidtler, J. F. (1993): Zur Systematik und Phylogenie des *Eirenis-modestus*-Komplexes in Süd-Anatolien (Serpentes, Colubridae). Spixiana 16(1): 79-96. [In German].
Schmidtler, J. F., Eiselt, J. (1991): Zur Systematik und Verbreitung ostanatolischer Zwergnattern; mit Beschreibung von *Eirenis hakkariensis* n. sp. Salamandra 27(4): 225-237. [In German].
Schmidtler, J.F. (1997): Die *Ablepharus kitaibelii* - Gruppe in Südanatolien und benachbarten Gebieten (Squamata: Sauria: Scincidae). Herpetozoa 10 (1/2): 35-62. [In German].
Schmidtler, J.F. (1988): *Eirenis barani* n.sp. aus dem mediterranen Süden der Türkei (Serpentes: Colubridae). Salamandra 24 (4): 203-214. [In German].
Schmidtler, J.F., Bischoff, W. (1999): Revision des levantinischen *Lacerta laevis/kulzeri*-Komplexes: 1. Die Felseneidechse *Lacerta cyanisparsa* sp. Salamandra 35 (3): 129-146. [In German].
Schmidtler, J.F., Eiselt, J., Darevsky, I.S. (1994): Untersuchungen an Felseidechsen (*Lacerta-saxicola*-Gruppe) in der östlichen Türkei: 3. Zweineue Parthenogenetische Arten. Salamandra 30 (1): 55-74. [In German].
Schmidtler, J.F., Heckes, U., Bischoff, W., Franzen, M. (2002): Höhenabhängige Merkmalsvariation bei Felseidechsen des *Darevskia clarkorum* (Darevsky & Vedmederja, 1977)/*D. dryada* (Darevsky & Tuniyev, 1997)-Komplexes: Ein Fall von klimaparalleler Pholidosevariation? Zoologische Abhandlungen aus dem staatlichen Museum für Tierkunde in Dresden 23(8): 141-156. [In German].
Schmidtler, J.F., Lanza, B. (1990): A new dwarf-snake (*Eirenis*) from Lake Van in Eastern Turkey. Amphibia-Reptilia 11: 363-371.
Schneider, H., Sinsch, U. (1992): Mating call variation in lake frogs referred to as *Rana ridibunda* Pallas, 1771. Taxonomic implications. Journal of Zoological Systematics and Evolutionary Research 30: 297-315.
Schwartz, A., Henderson, R.W. (1991): Amphibians and Reptiles of the West Indies. University of Florida Press, Gainesville.
Şekercioğlu, Ç., Anderson, S., Akçay, E., Bilgin, R., Can, Ö.E., Semiz, G., Tavşanoğlu, Ç., Yokeş, M.B., Soyumert, A., İpekdal, K., Sağlam, İ.K., Yücel, M., Dalfes, H.N. (2011): Turkey's globally important biodiversity in crisis. Biological Conservation 144:2752–2769.
Shcherbak, N.N., Golubev, M.L. (1996): Gecko fauna of the USSR and contiguous regions. Society for the Study of Amphibians and Reptiles 233.
Sillero, N., Campos, J., Bonardi, A., Corti, C., Creemers, R., Crochet, P.A., Kuzmin, S. (2014): Updated distribution and biogeography of amphibians and reptiles of Europe, Amphibia-Reptilia 35 (1): 1-31.
Sillero, N., Celaya, L., Artin-Alfageme, S. (2005): Using Geographical Information System (GIS) to make an atlas: a proposal to collect, store, map and analyse chorological data for herpetofauna. Revista española de herpetología 19: 87-101.
Sindaco, R., Jeremčenko, V. K., Venchi, A., Grieco, C. (2008): The reptiles of the Western Palearctic: Annotated checklist and distributional atlas of the turtles, crocodiles, amphisbaenians and lizards of Europe, North Africa, Middle East and Central Asia. Edizioni Belvedere, Latina.
Sindaco, R., Kornilios, P., Sacchi, R., Lymberakis, P. (2014): Taxonomic reassessment of *Blanus strauchi* (Bedriaga, 1884) (Squamata: Amphisbaenia: Blanidae), with the description of a new species from south-east Anatolia (Turkey). Zootaxa 3795 (3): 311-326.
Sindaco, R., Venchi, A., Carpaneto, G.M., Bologna, M.A. (2000): The Reptiles of Anatolia: a checklist and zoogeographical analysis. Biogeographia 21: 441-554.
Skourtanioti, E., Kapli, P., Ilgaz, Ç., Kumlutaş, Y., Avcı, A., Ahmadzadeh, F., Isailović, Crnobrnja – Isailović, C., Gherghel, I., Lymberakis, P., Poulakakis, N. (2016): A reinvestigation of phylogeny and divergence times of the *Ablepharus kitaibelii* species complex (Sauria, Scincidae) based on mtDNA and nuDNA genes. Molecular Phylogenetics and Evolution 103: 199-214.
Šmíd, J., Martínez, G., Gebhart, J., Aznar, J., Gállego, J., Göçmen, B., de Pous, P., Tamar, K., Carranza, S. (2015): Phylogeny of the genus *Rhynchocalamus* (Reptilia; Colubridae) with a first record from the Sultanate of Oman. Zootaxa 4033 (3): 380-392.
Šmíd, J., Moravec, J., Gvoždík, V., Štundl, J., Frynta, D., Lymberakis, P., Kapli, P., Wilms, T., Schmitz, A. Shobrak, M., Yousefkhani, S.H., Rastegar-Pouyani, E., Castilla, A.M., Els, J., Mayer, W. (2016): Cutting the Gordian Knot: Phylogenetic and ecological diversification of the *Mesalina brevirostris* species complex (Squamata, Lacertidae). Zoologica Scripta 46: 649–664.
Speybroeck, J., Beukema, W., Crochet, P.A. (2010): A tentative species list of the European herpetofauna (Amphibia and Reptilia), Zootaxa 2492: 1– 27.
Speybroeck, J., Beukema, W., Dufresnes, C., Fritz, U., Jablonski, D., Lymberakis, P., Martínez-Solano, I., Razzetti, E., Vamberger, M., Vences, M., Vörös, J., Crochet, P.A. (2020): Species list of the European herpetofauna – update by the Taxonomic Committee of the Societas Europaea Herpetologica. Amphibia-Reptilia 41(2): 1-51.
Speybroeck, J., Crochet, P.A. (2007): Species list of the European herpetofauna – a tentative update. Podarcis 8 (1/2): 8-34.
Steinfarz, S., Vicario, S., Arntzen, J.W., Caccone, A. (2007): A Bayesian approach on molecules and behaviour: reconsidering phylogenetic and evolutionary patterns of the Salamandridae with emphasis on *Triturus* newts. Journal of Experimental Zoology 308 B: 139-162.
Stejneger, L. (1936): Types of the amphibian and reptilian genera proposed by Laurenti in 1768. Copeia 1936: 133-141.
Stöck, M., Dubey, S., Klütsch, C., Litvinchuk, S.N., Scheidt, U., Perrin, N. (2008): Mitochondrial and nuclear phylogeny of circum-Mediterranean tree frogs from the *Hyla arborea* group. Molecular Phylogenetics and Evolution 49: 1019-1024.
Stöck, M., Günther, R., Böhme, W. (2001): Progress towards a taxonomic revision of the Asian *Bufo viridis* group: Current status of nominal taxa and unsolved problems (Amphibia: Anura: Bufonidae). Zoologische Abhandlungen Museum für Tierkunde Dresden 51: 253–319.
Stuart, S.N., Hoffmann, M., Chanson, J.S., Cox, N.A., Berridge, R.J., Ramani, P., Young, B. E. (2008): Threatened Amphibians of the World. Lynx Edicions/IUCN/Conservation International, Barcelona.

Stümpel, N., Joger, U. (2009): Recent advances in phylogeny and taxonomy of Near and Middle Eastern Vipers - an update. Zookeys 31: 179-191.

Stümpel, N., Rajabizadeh, M., Avcı, A., Wüster, W., Joger, U. (2016): Phylogeny and diversification of mountain vipers (*Montivipera*, Nilson et al., 2001) triggered by multiple Plio–Pleistocene refugia and high-mountain topography in the Near and Middle East. Molecular Phylogenetics and Evolution 101: 336-351.

Szabolcs, M., Mizsei, E., Jablonski, D., Vági, B., Mester, B., Végvári, Z., Lengyel, S. (2017): Distribution and diversity of amphibians in Albania: new data and foundations of a comprehensive database. Amphibia-Reptilia 38(4): 435-448.

Tok, C.V., Çiçek, K. (2014): Amphibians and reptiles in the province of Çanakkale (Marmara Region, Turkey). Herpetozoa 27: 65-76.

Torki, F., Ahmadzadeh, F., Ilgaz, Ç., Avcı, A., Kumlutaş, Y. (2011): Description of four new *Asaccus* Dixon and Anderson, 1973 (Reptilia: Phyllodactylidae) from Iran and Turkey. Amphibia-Reptilia 32: 185-202.

Tuniyev, B.S., Avcı, A., Ilgaz, Ç., Olgun, K., Petrova, T.V., Bodrov, S. Yu Geniez, P., Teynié, A. (2018): On taxonomic status of shield-head vipers from Lesser Caucasus and East Anatolia, Proceedings of the Zoological Institute RAS 322 (1): 3-44.

Tuniyev, S.B., Avcı, A., Tuniyev, B.S., Agasian, L., Agasian, L.A. (2012): Description of a new species of shield-head vipers—*Pelias olguni* sp. nov. from basin of upper flow of the Kura river in Turkey. Russian Journal of Herpetology 19 (4): 314–332.

Türkozan, O., Kiremit, F., Parham, J., Olgun, K. Taşkavak, E., (2010). A quantitative reassessment of morphology-based taxonomic schemes for Turkish tortoises (*Testudo graeca*). Amphibia-Reptilia 31(1): 69-83.

Uetz, P., Freed, P. & Hošek, J. (eds.) (2020) The Reptile Databas <http://www.reptile-database.org, accessed at: 2020.06.19.>

Uğurtaş, İ.H., Papenfuss, T.J., Orlov, L.N. (2001): New record of *Walterinnesia aegyptia* Lataste, 1887 (Ophidia: Elapidae: Bungarinae) in Turkey. Russian Journal of Herpetology 8 (3): 239-245.

Underwood, G. (1954): On the classification and evolution of geckos. Proceedings of the Zoological Society of London 124: 469-492.

Ursenbacher, S., Schweiger, S., Tomović, L., Crnobrnja-Isailović, J., Fumagalli, L., Mayer, W. (2007): Molecular phylogeography of the nose-horned viper (*Vipera ammodytes*, Linnaeus (1758)): Evidence for high genetic diversity and multiple refugia in the Balkan peninsula Molecular Phylogenetics and Evolution 46: 1116-1128.

Utiger, U., Helfenberger, N., Schätti, B., Schmidt, C, Ruf, M., Ziswiler, V. (2002): Molecular systematics and phylogeny of Old and New World ratsnakes, *Elaphe* Auct., and related genera (Reptilia, Squamata, Colubridae). Russian Journal of Herpetology 9 (2): 105-124.

van Riemsdijk, I., Arntzen, J.W., Bogaerts, S., Franzen, M., Litvinchuk, S.N., Olgun, K., Wielstra, B. (2017): The Near East as a cradle of biodiversity: a phylogeography of banded newts (genus *Ommatotriton*) reveals extensive inter- and intraspecific genetic differentiation. Molecular Phylogenetics and Evolution 114: 73-81.

Veith, M., Fromhage, L., Kosuch, J., Vences, M. (2006): Historical biogeography of Western Palaearctic pelobatid and pelodytid frogs: a molecular phylogenetic perspective. Contributions to Zoology 75 (3/4): 109-120.

Veith, M., Kosuch, J., Vences, M. (2003): Climatic oscillations triggered post-Messinian speciation of Western Palearctic brown frogs (Amphibia, Anura, Ranidae). Molecular Phylogenetics and Evolution 26: 310-327.

Veith, M., Steinfartz, S. (2004): When non-monophyly results in taxonomic consequences – the case of *Mertensiella* within the Salamandridae (Amphibia: Urodela). Salamandra 40 (1): 67-80.

Vigna Taglianti, A., Audisio, P.A., Biondi, M., Bologna, M.A., Carpaneto, G.M., de Biase, A., Fattorini, S., Piattella, E., Sindaco, R., Venchi, A., Zapparoi, M. (1999): A proposal for a chorotype classification of the Near East fauna, in the framework of the Western Palearctic region. Biogeographia 20: 31-59.

Wallach, V., Williams, K.L., Boundy, J. (2014): Snakes of the World: A Catalogue of Living and Extinct Species. CRC Press (Taylor & Francis Group), Boca Raton Florida.

Weisrock, D.W., Papenfuss, T.J., Macey, R., Litvinchuk, S.N., Polymeni, R., Uğurtaş, İ.H., Zhao, E., Jowkar, H., Larson, A. (2006): A molecular assessment of phylogenetic relationships and lineage accumulation rates within the family Salamandridae (Amphibia, Caudata), Molecular Phylogenetics and Evolution 41: 368-383.

Weisrock, D.W., Robert Macey, J., Uğurtaş, İ.H., Larson, A., Papenfuss, T.J. (2001): Molecular Phylogenetics and Historical Biogeography among Salamandrids of the "True" salamander clade: rapid branching of numerous highly divergent lineages in *Mertensiella luschani* associated with the rise of Anatolia. Molecular Phylogenetics and Evolution 18 (3): 434-448.

Welch, K R.G. (1983): Opmerkingen over de systematiek van de soorten van het genus *Coluber* van de Oude Wereld. Litteratura Serpentium 3 (4): 117-123. [In German].

Werner, F. (1899): Beiträge zur Herpetologie der pacifischen Inselwelt und von Kleinasien. II. Über einige Reptilien und Batrachier aus Kleinasien. Zoologischer Anzeiger 22: 375-378. [In German].

Werner, F. (1902): Die Reptilien- und Amphibienfauna von Kleinasien. Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften in Wien, Mathematisch-Naturwissenschaftliche 111: 1057-1125. [In German].

Werner, Y., Mousa Disi, A.M., Tok, C.V., Ugurtas, İ.H., Sevinç, M., Baha El Din, S., Nilson, G. (2010): *Cyrtopodion scabrum*. The IUCN Red List of Threatened Species 2010: T164748A5922551. <https://www.iucnredlist.org/species/164748/5922551, accessed at: 2020.06.19.>

Wielstra, B., Arntzen, J.W. (2016): Description of a new species of crested newt, previously subsumed in *Triturus ivanbureschi* (Amphibia: Caudata: Salamandridae. Zootaxa 4109 (1): 73.

Wielstra, B., Litvinchuk, S.N., Naumov, B., Tzankov, N., Arntzen, J.W. (2013): A revised taxonomy of crested newts in the *Triturus karelinii* group (Amphibia: Caudata: Salamandridae), with the description of a new species. Zootaxa 3682 (3): 441-53

WWF (2020): World Wide Fund For Nature, Ecoregions <https://www.worldwildlife.org/ecoregions/pa0420, accessed at: 2020.05.04>

Yıldız, M. Z., İğci, N. (2015): On the occurrence of the Persian Lizard, *Iranolacerta brandtii* (De Filippi, 1863) (Squamata: Sauria: Lacertidae) in Eastern Anatolia, Turkey. Biharean Biologist 9(1): 66-71.

Yıldız, M.Z. (2011): Distribution and morphology of *Platyceps ventromaculatus* (Gray, 1834) (Serpentes: Colubridae) in south-eastern Anatolia, Turkey. North-Western Journal of Zoology 7 (2): 290-295.

Yıldız, M.Z., Çakmak, Ş., Üçeş, F., Iğci, N., Akman, B. (2019): Morphology, distribution and taxonomy of *Asaccus* (Reptilia: Sauria: Gekkonidae) specimens from Şanlıurfa Province. Acta Biologica Turcica 32 (1): 20-25.

Yılmaz, İ. (1983) Morphological and taxonomic research on Thracian Tailed Frogs (Urodela: Salamandridae). TÜBİTAK, 7: 119-130.

Yılmaz, C., Ilgaz, Ç., Üzüm, N., Avcı, A. (2020): Firs record of Jans's Cliff Racer, *Platyceps rhodorachis* (Jan, 1863) (Serpentes: Colubridae) in Turkey. Zoology in the Middle East 1-3.

Zinenko, O., Avcı, A., Spitzenberger, F., Tupikov, A., Shiryaev, K., Bozkurt, E., Ilgaz, Ç., Stümpel, N. (2016a): Rediscovered and critically endangered: *Vipera anatolica* Eiselt and Baran, 1970, of the western Taurus Mountains (Turkey), with remarks on its ecology (Squamata: Serpentes: Viperidae). Herpetozoa 28 (3/4): 141-148.

Zinenko, O., Sovic, M., Joger, U., Gibbs, H.L. (2016b): Hybrid origin of European Vipers (*Vipera magnifica* and *Vipera orlovi*) from the Caucasus determined using genomic scale DNA markers. BMC Evolutionary Biology 16 (76): 1-13.

Zinenko, O., Stümpel, N., Mazanaeva, L.F., Shiryaev, K., Nilson, G., Orlov, N.L., Tuniyev, B. S., Ananjeva, N.B., Murphy, R., Joger, U. (2013): The puzzling phylogeny of the *Vipera kaznakovi*-complex. pp.197. In: 17th European Congress of Herpetology, (SEH), 20-27 August 2013, Veszprém, Hungary.

+ Supplementary material available exclusive online:

Appendix 1: The distribution and biogeography of amphibians and reptiles in Turkey

Appendix 2: Map of grid codes in Turkey