

Herpetofauna of the vicinity of Akşehir and Eber (Konya, Afyon), Turkey

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Abstract: In this research, 29 species of 11 amphibian and reptile families were detected in the endorheic basin of Akşehir and Eber. Of these species, 5 are anurans, 1 is a tortoise, 1 is a turtle, 9 are lizards, and 13 are snakes. In addition, the chorotype classification of the species recorded in the study area and their distributions depending on plants are also provided. It was established that specimens of subspecies *Ophisops elegans macrodactylus* and *O. e. centralanatolia* were sympatrically found in the vicinity of Ortaköy and Tuzlukçu. Moreover, in addition to the species determined in previous studies, *Platyceps najadum* and *Hemorrhois nummifer* were first detected in this region.

Key words: Akşehir, Eber, herpetofauna, amphibian, reptile, taxonomy, ecology, distribution, chorotype

1. Introduction

Turkey has a fauna that might be stated to be nearly as rich as the animal fauna of Europe since it features different topographical, geological, and climatic characteristics owing to its geographical location. As can also be understood from the manuscript by Baran (1986), who provided a list of the studies on the amphibian and reptile species constituting the Turkish herpetofauna carried out until recent years, either the species were addressed alone and their properties were introduced or different populations of the same species were compared in most of the studies on this subject. In recent years, the studies to determine the amphibian and reptile species inhabiting a specific region have increased in number (Baran, 1980, 1981, 1983, 1984, 1990; Çevik, 1982; Uğurtaş, 1989; Baran et al., 1992, 1994, 1997, 2001a, 2001b, 2004; Tok, 1995, 1999a, 1999b; Budak et al., 1998; Kumlutaş et al., 1998, 2000, 2001, 2004a, 2004c, 2011; Uğurtaş et al., 2000, 2007; Özdemir and Baran, 2002; Cihan et al., 2003; Ilgaz and Kumlutaş, 2005; Kete et al., 2005; Hür et al., 2008; Tosunoğlu et al., 2009, 2010; Afsar and Tok, 2011; Afsar et al., 2012; Özcan and Üzüm, 2014). In this way, detailed information was obtained about the distribution of species besides the clarification of their systematic positions. For such reasons, detailed studies on the herpetofauna of a specific region have gained importance. Today some regions are being taken under conservation so as to conserve the natural wealth. The Board of Conservation

of Cultural and Natural Assets in Konya affiliated with the Ministry of Culture declared Lakes Eber (22.06.1992) and Akşehir (01.07.1992) "1st Degree Natural Sites". Both lakes are candidate sites for Ramsar, and they are Important Bird Areas No. 33 according to the list of Turkish wetlands of international significance according to the criteria of the Ramsar Convention (Çınar Mühendislik ve Proje Hizmetleri Limited Şirketi, 2006). The zone concerned is located in an area where the Central Anatolia, Aegean, and Mediterranean regions of Turkey intersect. Therefore, its presence in a region at which the distributions of the species suitable for the Central Anatolian steppe climate and of the species influenced by the Mediterranean climate intersect increases its importance for herpetofauna. This zone is of greater significance to species *Ophisops elegans* Ménétries, 1832 and the *Pelophylax ridibundus* complex (Pallas, 1771), for those forms of these species that are accepted as subspecies highly converge in this zone or are sympatrically found at some points. This study was carried out to detect the amphibian and reptile species inhabiting the study area, to determine the distribution of these species, and to provide brief information on their ecological and biological features.

2. Materials and methods

A total of 362 specimens of 29 species were collected from 33 stations during expeditions carried out in 2006 and 2007. The specimens were preserved in the collection of

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the Section of Zoology, Department of Biology, Faculty of Science and Arts, Çanakkale Onsekiz Mart University. Furthermore, some specimens examined in a previous study (Afsar, 2006) were reviewed. The tortoise and turtle specimens were measured and counted as required in places where they were seen and then released into nature. Other specimens were fixed using traditional methodologies (Başoğlu and Özeti, 1973; Başoğlu and Baran, 1977, 1980). The systematic statuses of the examined materials were studied using current literature (Başoğlu and Özeti, 1973; Başoğlu and Baran, 1977, 1980; Baran and Atatür, 1998; Baran et al., 2013). The localities where the specimens were captured and seen in the vicinity of Akşehir and Eber are shown in the Figure.

The status of species determined according to some international agreements in which Turkey is included are demonstrated in Table 1.

The areas where the amphibian and reptile species were found and the habitat properties in the areas concerned were categorized into 7 groups:

A- Moist stony sections in sparsely vegetated regions or forestland, vineyards, and gardens.

B- Trees, small arboreal plants, pastures with a wet ground, and places near water.

C- Abundantly vegetated pools, lakes, and slowly flowing waters.

D- Dry, stony, and sandy land, and places between vineyards and gardens.

E- Under stone and in rock cracks, houses, and ruins.

F- Rocky areas and stone walls that are not far from water and are in forestland and groves.

G- Moist and densely vegetated stony sections in the forest, banks of brooks, places between fields and gardens, and places between the roots of plants such as shrubs and blackberries.

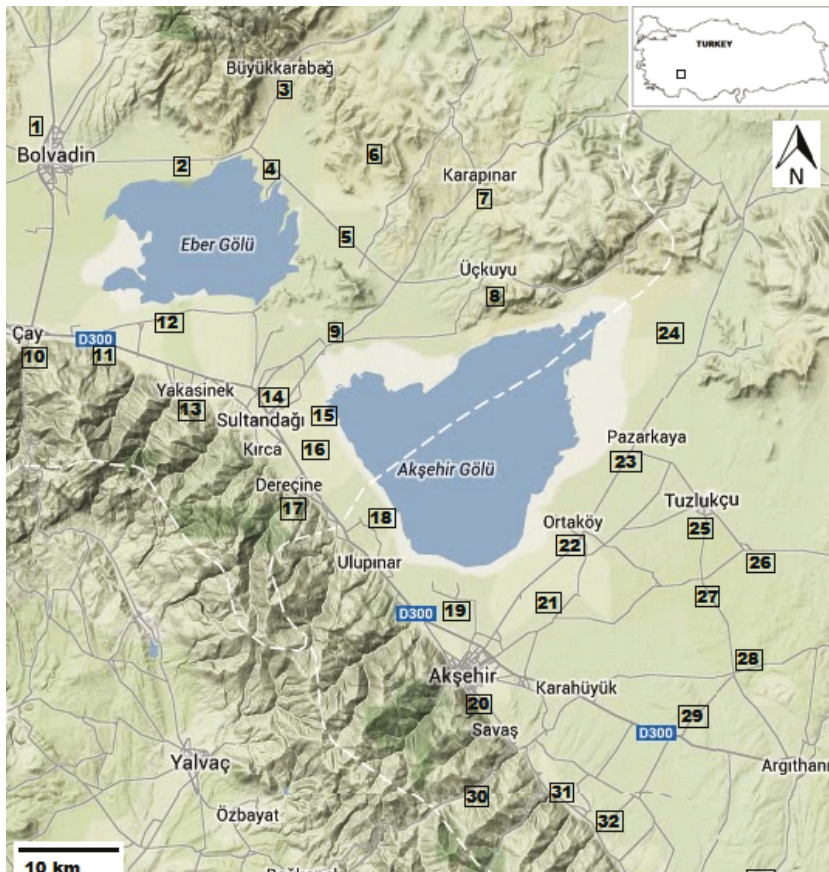


Figure 1. The localities where the specimens were captured and seen in the basin of Akşehir and Eber (1- Bolvadin, 2- Derekarabağ, 3- Büyükkarabağ, 4- Ortakarabağ, 5- Yenikarabağ, 6- Çukurcak, 7- Karapınar, 8- Üçkuyu, 9- Taşköprü, 10- Çay, 11- Pınarkaya, 12- Eber Kasabası, 13- Yakasinek, 14- Yeşilçiftlik, 15- Sultandağı, 16- Kırca, 17- Dereçine, 18- Gölçayır, 19- Atakent, 20- Akşehir, 21- Karabulut, 22- Ortaköy, 23- Pazarkaya, 24- Mevlütlü, 25- Tuzlukçu, 26- Çöğürlü, 27- Erdoğan, 28- Gözpinarı, 29- Reis, 30- Cankurtaran, 31- Çakırlar, 32- Yaylabelen, 33- Kemer).

Table 1. The localities where the specimens were captured from the vicinity of Akşehir and Eber, the Bern values, the IUCN criteria, and the European Union Habitat values. The international agreements provided in the table and their abbreviations are as follows: the IUCN (International Union for the Conservation of Nature and Natural Resources) criteria (VU: Vulnerable; NT: Near Threatened; and LC: Least Concern), whether they are included in the European Union Directive on Habitats and Species (in this directive, the species included in Appendix IV are marked with '+', whereas those not included in it are marked with '-'), and the criteria of the Bern Convention (Appendix II: Strictly Protected Fauna Species; Appendix III: Protected Fauna Species).

Species	Number of specimens and their sex	Localities	IUCN value	Bern value	EU Habitat value
AMPHIBIA					
<i>Bufo bufo</i>	5 (5 ♀♀)	17	LC	Appendix III	-
<i>Pseudepidalea viridis</i>	41 (21 ♂♂, 20 ♀♀)	2, 3, (9), 11, 12, 17, 18, 26, 32	LC	Appendix II	+
<i>Hyla orientalis</i> (formally <i>H. arborea</i>)	23 (23 ♂♂)	12, 17	LC	Appendix II	+
<i>Pelophylax ridibundus</i> complex	12 (7 ♂♂, 5 ♀♀)	3, (9), 12, 18, (21), (24), (28)	LC	Appendix III	-
<i>Rana macrocnemis</i>	23 (7 ♂♂, 16 ♀♀)	17, 32	LC	Appendix III	-
REPTILIA					
<i>Testudo graeca</i>	16 (11 ♂♂, 5 ♀♀)	6, 11, 13, 17, 20, 22, 23, 31, 32	VU	Appendix II	+
<i>Emys orbicularis</i>	11 (4 ♂♂, 7 ♀♀)	17, 18	NT	Appendix II	+
<i>Cyrtopodion kotschy</i>	11 (5 ♂♂, 6 ♀♀)	26, (14)	LC	Appendix II	+
<i>Hemidactylus turcicus</i>	2 (2 ♀♀)	10	LC	Appendix III	-
<i>Anatololacerta danfordi</i>	9 (3 ♂♂, 4 ♀♀, 2 juv.)	17, 32	LC	Appendix III	+
<i>Lacerta trilineata</i>	14 (3 ♂♂, 5 ♀♀, 6 juv.)	12, (15), 17, 18, (19), 30, 31, 32	LC	Appendix II	+
<i>Ophisops elegans macrodactylus</i>	43 (21♂♂,19♀♀, 3 juv.)	1, 3, 4, (5), 6, 11, 13, 22, 32	LC	Appendix II	+
<i>Ophisops elegans centralanatolia</i>	51 (23♂♂,23♀♀,5 juv.)	7, 25, 26, (27), 28	LC	Appendix II	+
<i>Ophisops elegans subspecies</i>	11 (1♂♂, 9 ♀♀, 1 juv.)	Between 22 and 25	LC	Appendix II	+
<i>Ablepharus kitaibelii</i>	8 (2 ♂♂, 3 ♀♀, 3 juv.)	13, 17	LC	Appendix II	+
<i>Trachylepis aurata</i>	3 (2 ♂♂, 1 ♀)	17	LC	Appendix III	-
<i>Trachylepis vittata</i>	10 (4 ♂♂, 5 ♀♀, 1 juv.)	2, 3, 7, 31, 32	LC	Appendix III	-
<i>Parvilacerta parva</i>	20 (8 ♂♂, 12 ♀♀)	4, 32	LC	Appendix II	-
<i>Dolichophis caspius</i>	1 (1 ♀♀)	14, (26), (29)	LC	Appendix III	+
<i>Platyceps najadum</i>	3 (1 ♂, 1 ♀, 1 juv.)	16, 17, 18	LC	Appendix II	+
<i>Hemorrhois nummifer</i>	2 (2 ♀♀)	17, 31	LC	Appendix III	+
<i>Dolichophis schmidti</i>	1 (1 subadult)	33	LC	Appendix III	-
<i>Eirenis modestus</i>	12 (3 ♂♂, 6 ♀♀, 3 juv.)	3, 17, 18	LC	Appendix III	+
<i>Elaphe sauromates</i>	1 (1 subadult)	3	LC	Appendix II	-
<i>Zamenis hohenackeri</i>	1 (1 juv.)	17	LC	Appendix III	-
<i>Malpolon insignitus</i>	1 (1 subadult)	8	LC	Appendix III	-
<i>Natrix natrix</i>	16 (1 ♂, 4 ♀♀, 11 juv.)	2, (3), (9), 12, 18, 26	LC	Appendix III	-
<i>Natrix tessellata</i>	4 (1 ♂, 2 ♀♀, 1 juv.)	(9), 12, 18	LC	Appendix II	+
<i>Telescopus fallax</i>	2 (2 juv.)	10, 17	LC	Appendix II	+
<i>Typhlops vermicularis</i>	1 (1 ♂♂+♀♀)	16	LC	Appendix III	-
<i>Montivipera xanthina</i>	4 (4 ♀♀)	17	LC	Appendix II	+
TOTAL	362 (151 ♂♂, 165 ♀♀, 3 subadults, 43 juv.)				

In addition, the vegetation in the areas where the specimens were found was divided into 2 groups, i.e. plants in steppe and xerophytic areas (X) and aquatic and moisture-

loving plants (Y). An evaluation of the habitats and their vegetation is shown in Table 2.

Table 2. An evaluation of the areas where the species were found and their vegetation.

SPECIES	AREAS WHERE THEY WERE FOUND							VEGETATION	
	A	B	C	D	E	F	G	X	Y
AMPHIBIA									
<i>Bufo bufo</i> (Linnaeus, 1758)	+	+						+	+
<i>Pseudepidalea viridis</i> (Laurenti, 1768)	+	+						+	+
<i>Hyla orientalis</i> (formally <i>H. arborea</i>) (Linnaeus, 1758)		+							+
<i>Pelophylax ridibundus</i> complex (Pallas, 1771)			+						+
<i>Rana macrocnemis</i> Boulenger, 1885		+	+						+
REPTILIA									
<i>Testudo graeca</i> Linnaeus, 1758				+			+	+	
<i>Emys orbicularis</i> (Linnaeus, 1758)			+						+
<i>Cyrtopodion kotschy</i> (Steindachner, 1870)					+			+	
<i>Hemidactylus turcicus</i> (Linnaeus, 1758)					+			+	
<i>Anatololacerta danfordi</i> (Günther, 1876)						+	+	+	
<i>Lacerta trilineata</i> Bedriaga, 1886						+	+	+	
<i>Ophisops elegans macrodactylus</i> Berthold, 1842				+		+		+	
<i>Ophisops elegans centralanatolia</i> Bodenheimer, 1944				+		+		+	
<i>Ophisops elegans subspecies</i>				+		+		+	
<i>Ablepharus kitaibelii</i> (Bibron-Bory, 1833)							+	+	
<i>Trachylepis aurata</i> (Linnaeus, 1758)	+			+				+	
<i>Trachylepis vittata</i> (Olivier, 1804)	+			+				+	
<i>Parvilacerta parva</i> (Boulenger, 1887)				+		+		+	
<i>Dolichophis caspius</i> (Gmelin, 1789)	+			+	+		+	+	
<i>Platyceps najadum</i> (Eichwalt 1831)	+			+	+		+	+	
<i>Hemorrhois nummifer</i> (Reuss, 1834)	+			+	+		+	+	
<i>Dolichophis schmidti</i> (Nikolsky, 1909)	+			+	+		+	+	
<i>Eirenis modestus</i> (Martin, 1838)	+			+	+			+	
<i>Elaphe sauromates</i> (Pallas, 1814)				+	+			+	
<i>Zamenis hohenackeri</i> (Strauch, 1873)				+	+			+	
<i>Malpolon insignitus</i> (Geoffroy De St-hilaire, 1827)				+	+			+	
<i>Natrix natrix</i> (Linnaeus, 1758)	+	+	+						+
<i>Natrix tessellata</i> (Laurenti, 1768)	+	+	+						+
<i>Telescopus fallax</i> (Fleischmann, 1831)				+	+			+	
<i>Typhlops vermicularis</i> (Merrem, 1820)	+							+	
<i>Montivipera xanthina</i> (Gray, 1849)				+	+			+	

3. Results

Of the 29 species detected in the study area, *Testudo graeca* Linnaeus, 1758 is in the 'Vulnerable (V)' category and *Emys orbicularis* (Linnaeus, 1758) is in the 'Near Threatened (NT)' category according to the IUCN criteria, whereas the others are in the 'Least Concern (LC)' category. On the other hand, when evaluated according to the BERN criteria, all the species were taken under protection. Of them, 14 species were strictly protected (according to Appendix II) and 16 were included in the European Union Directive on Habitats and Species (in Appendix IV).

In the study area, the amphibian specimens were encountered in sparsely vegetated regions or forestland, moist stony sections, vineyards, gardens, areas covered with small arboreal plants, pastures with a wet ground, places nearby water, and habitats with abundantly vegetated pools, lakes, and slowly flowing waters. Of toads, *Pseudepidalea viridis* (Laurenti, 1768) and *Bufo bufo* (Linnaeus, 1758) were encountered in places with dense plants of steppe and xerophytic areas, whereas the specimens belonging to the other amphibian species were encountered in regions with dense aquatic and moisture-loving plants.

The male *Platyceps najadum* (Eichwald, 1831) specimen from Dereçine (Afyon) was caught on 19.05.2007 at an elevation of about 1336 m, around 1030 hours when the temperature was 26 °C. The female specimen from Kırca (Afyon) was caught on 20.05.2007 at an elevation of about 1067 m, at 1700 hours when the temperature was 25 °C,

and the day after the juvenile specimen from Gölçayır (Konya) at 960 m at a temperature of 23 °C in an area populated by small bushy vegetation. The 3 specimens had, on each side of the head, 2 preocular and postocular, 1 loreal, 8 supralabial, 10 sublabial, and 19 dorsal scales. The number of ventral scales was found to be 211 in males, 216 in females, and 218 in juveniles. The number of subcaudals was 121 in males, 119 in females, and 120 in juveniles. Body measurement and indices for specimens are given in Table 3. The species, known as *Coluber najadum* until recently, was renamed *Platyceps najadum* by Schätti and Utiger (2001). Our specimens are in agreement with the definitions provided by Baran and Atatür (1998), Schätti et al. (2001), and Kumlutaş et al. (2004b). According to the study conducted by Afsar and Tok (2011), there is no record of this species from the Sultan Mountains. The species from Dereçine (Afyon), Kırca (Afyon), and Gölçayır (Konya) shows that this area is inhabited by this species.

The 2 female specimens found of *Hemorrhoids nummifer* (Reuss, 1834) were killed by the villagers. Because of wounds and bruises on their bodies, some body measurements ratios and pholidosis characteristics could be measured. For the female specimen from Çakırlar (Konya), each side of the head had 3 preocular, 2 postocular, 1 loreal, 9 supralabial, 10 sublabial, 23 dorsal, and 96 subcaudal scales. The female specimen from Dereçine (Afyon) had 23 dorsal scales and 101 subcaudals. The head width of a female specimen from Çakırlar (Konya) was measured as

Table 3. Some body measurements and their indexes of *Platyceps najadum* specimens. Measurements are given as millimeters. HW: Head width, HL: head length, SVL: snout-vent length, TL: total length, Tail L: tail length, WR: width of rostral, HR: height of rostral, LF: length of frontal, WF: width of frontal.

Characters	88/2007-♂	91/2007-♀	92/2007- juvenile
HW	7.83	7.66	4.62
HL	16.82	15.35	9.86
SVL	695	625	264
TL	910	890	375
Tail L	315	265	111
(HW / HL) × 100	46.55	49.90	46.71
(Tail L / TL) × 100	34.62	29.78	29.60
WR	3.71	3.45	2.28
HR	2.25	2.20	1.32
LF	5.87	5.55	4.12
WF	4.05	3.70	2.60

13.06 mm, head length as 28.00 mm, height of rostral as 5.62 mm, width of rostral as 7.67 mm, length of frontal as 9.02 mm, width of frontal as 7.88 mm, and tail length as 280 mm. The species was called *Coluber nummifer* until recently but was renamed *Hemorrhois nummifer* by Schätti and Utiger (2001). Data related to our specimens agree with descriptions provided for the species *H. nummifer* by Baran (1976), Başoğlu and Baran (1980), and Kumlutaş et al. (2004b). According to the study conducted by Afsar and Tok (2011), there is no record of this species from the Sultan Mountains. The species from Çakırlar (Konya) and Dereçine (Afyon) shows that this area is inhabited by this species.

On the other hand, reptile specimens were encountered in all habitats under investigation. The specimens of species *Emys orbicularis*, *Natrix natrix* (Linnaeus, 1758), and *Natrix tessellata* (Laurenti, 1768) were encountered in moist habitats where aquatic and moisture-loving plants were also available, while all the other reptile specimens were encountered in the habitats with plants of xerophytic areas. The properties of the habitats where the species were found and their predominant vegetation are shown in Table 2.

The species detected in the vicinity of Akşehir and Eber can be grouped into 10 chorotype categories (Vigna Taglianti et al., 1999; Sindaco et al., 2000; Venchi and Sindaco, 2006; Fet and Popov, 2007) (Table 4). Accordingly, the Turano-European-Mediterranean (17.24%), Turano-

Mediterranean (17.24%), E Mediterranean (17.24%), and SW Asiatic (17.24%) categories are represented by 5 species; the Mediterranean (10.34%) category is represented by 3 species; the Endemic (6.90%) category is represented by 2 species; and the European (3.45%), Europeo-Mediterranean (3.45%), Central Asiatic-European-Mediterranean (3.45%), and Central Asiatic-European (3.45%) are represented by only 1 species each.

4. Discussion

In this research, 29 species of 11 amphibian and reptile families were detected in the vicinity of Akşehir and Eber. Of these species, 5 are anurans, 1 is a tortoise, 1 is a turtle, 9 are lizards, and 13 are snakes. The lizards population here had the highest abundance (N = 182, 50.28%), followed by anurans (N = 104, 28.72%), snakes (N = 49, 13.54%), tortoises (N = 16, 4.42%), and turtles (N = 11, 3.04%).

It was established that the specimens of *Ophisops elegans macrodactylus* Berthold, 1842 and *O. e. centralanatolia* Bodenheimer, 1944 and the specimens of these 2 subspecies that were thought to form interim populations were sympatrically found in the vicinity of Ortaköy and Tuzlukçu. In order to clarify this case, it must be studied in more detail. Moreover, in addition to the species detected in previous studies (Afsar and Tok, 2011), it was determined that species *Platyceps najadum* and *Hemorrhois nummifer* were also found in this region for the first time.

Table 4. The chorotype classification of the amphibian and reptile species in the vicinity of Akşehir and Eber.

Chorotype	Amphibia	Reptilia	Percentage	Species
European	1		3.45%	<i>Bufo bufo</i>
Turano-European-Mediterranean	2	3	17.24%	<i>Pelophylax ridibundus</i> complex, <i>Pseudepidalea viridis</i> , <i>Emys orbicularis</i> , <i>Hemorrhois nummifer</i> , <i>Elaphe sauromates</i>
Europeo-Mediterranean	1		3.45%	<i>Hyla orientalis</i> (formally <i>H. arborea</i>)
Endemic		2	6.90%	<i>Anatololacerta danfordi</i> , <i>Parvilacerta parva</i>
Turano-Mediterranean		5	17.24%	<i>Testudo graeca</i> , <i>Typhlops vermicularis</i> , <i>Dolichophis caspius</i> , <i>Platyceps najadum</i> , <i>Telescopus fallax</i>
Mediterranean		3	10.34%	<i>Hemidactylus turcicus</i> , <i>Trachylepis vittata</i> , <i>Malpolon insignitus</i>
E Mediterranean		5	17.24%	<i>Cyrtopodion kotschyi</i> , <i>Lacerta trilineata</i> , <i>Ophisops elegans</i> , <i>Ablepharus kitaibelii</i> , <i>Montivipera xanthina</i>
SW Asiatic	1	4	17.24%	<i>Rana macrocnemis</i> , <i>Trachylepis aurata</i> , <i>Dolichophis schmidtii</i> , <i>Eirenis modestus</i> , <i>Zamenis hohenackeri</i>
Central Asiatic-European-Mediterranean		1	3.45%	<i>Natrix natrix</i>
Central Asiatic-European		1	3.45%	<i>Natrix tessellata</i>
Total species	5	24	100%	

In the vicinity of Akşehir and Eber, the greatest diversity of species was detected in the locality of Dereçine. This may be accounted for by factors such as the diversity of natural habitats around this locality and the availability of active brooks and water resources flowing into Lake Akşehir in both summer and winter.

The factors that threaten the amphibian and reptile species in the vicinity of Akşehir and Eber include concretion, aridity, reduction in the available water resources, destruction of the habitats belonging to these living things, environmental pollution, the agricultural pesticides used in agricultural land, and, most important of all, the negative behavior of local people towards these animals and indifference. Therefore, local authorities must ensure that the local people be informed of the conservation of the biological assets that they possess.

Herpetofauna studies covering a specific region have gained importance in studies on revealing the Turkish

herpetofauna. Moreover, some regions are taken under conservation so as to protect their natural wealth. To date, no study on the herpetofauna of the vicinity of Akşehir and Eber – an important wetland – was encountered in the literature. The herpetological information obtained in the present study will constitute basic data for possible future studies to protect the species.

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References

- Afsar M (2006). Sulatan Dağlarının Herpetofaunası. PhD, Celal Bayar University, Manisa, Turkey (in Turkish).
- Afsar M, Ayaz D, Afsar B, Tok CV (2012). Camili Biyosfer Rezerv Alanı'nın (Borçka, Artvin, Türkiye) Herpetofaunası. *Anadolu Univ J Sci Technol* 2: 41–49 (in Turkish).
- Afsar M, Tok, CV (2011). The herpetofauna of the Sultan Mountains (Afyon-Konya-Isparta), Turkey. *Turk J Zool* 35: 491–501.
- Baran İ (1976). Türkiye Yılanlarının Taksonomik Revizyonu ve Coğrafi Dağılımları. Ankara, Turkey: TÜBİTAK Yayınları, No. 309 (in Turkish).
- Baran İ (1980). Doğu ve Güneydoğu Anadolu'nun Kaplumbağa ve Kertenkele Faunası. *Ege Üniversitesi Fen Fakültesi Dergisi* 4: 203–219 (in Turkish).
- Baran İ (1981). Kuzey Ege Denizi, Marmara Denizi ve Kara Denizdeki Adalarımızın Herpetofaunasının Taksonomik ve Ekolojik Araştırılması. *Doğa Bil Der* 5: 155–162 (in Turkish).
- Baran İ (1983). Güneybatı Anadolu'da Finike ve Kaş civarının herpetolojisi. *Doğa Bil Der* 7: 59–66 (in Turkish).
- Baran İ (1984). İzmir-Bodrum Arasındaki Adalarımızın Herpetofaunasının Taksonomik Araştırılması. *Doğa Bil Der* 8: 43–52 (in Turkish).
- Baran İ (1986). Bibliographie der Amphibien und Reptilien der Türkei. In: Kasperek M, editor. *Zoologische Bibliographie der Türkei*. Heidelberg, Germany: Kasperek, pp. 79–118 (in German).
- Baran İ (1990). Marmaris-İskenderun Arasındaki Adalarımızın Herpetofaunasının Taksonomik Araştırılması. *Doğa Bil Der* 14: 113–126 (in Turkish).
- Baran İ, Atatür, MK (1998). Türkiye Herpetofaunası (Kurbaga ve Sürüngenler). Ankara, Turkey: Çevre Bakanlığı (in Turkish).
- Baran İ, Ilgaz Ç, Avcı A, Kumlutaş Y, Olgun K (2013). Türkiye Amfibi ve Sürüngenleri. Ankara, Turkey: TÜBİTAK Popüler Bilim Kitapları 207 (in Turkish).
- Baran İ, Kumlutaş Y, Ilgaz Ç, Kaska Y (2001a). On the amphibians and reptiles of İzmit-Bolu Region: results of field surveys. *Anadolu Univ J Sci Technol* 2: 57–62.
- Baran İ, Kumlutaş Y, Kaska Y, Türkozan O (1994). Research on the Amphibia, Reptilia and Mammalia species of the Köyceğiz-Dalyan Special Protected Area. *Turk J Zool* 18: 203–219.
- Baran İ, Kumlutaş Y, Olgun K, Ilgaz Ç, Kaska Y (2001b). The herpetofauna of the vicinity of Silifke. *Turk J Zool* 25: 245–249.
- Baran İ, Kumlutaş Y, Tok CV, Olgun K, Ilgaz Ç, Kaska Y, Türkozan O, İret F (2004). On two herpetological collections made in East Anatolia (Turkey). *Herpetozoa* 16: 99–114.
- Baran İ, Tosunoğlu M, Kaya U, Kumlutaş Y (1997). Çamlıhemşin (Rize) Civarının Herpetofaunası Hakkında. *Turk J Zool* 21: 409–416 (in Turkish).
- Baran İ, Yılmaz İ, Kete R, Kumlutaş Y, Durmuş S (1992). Batı Orta Karadeniz Bölgesinin Herpetofaunası. *Doğa Türk Zool Der* 16: 275–288 (in Turkish).
- Başoğlu M, Baran İ (1977). Türkiye Sürüngenleri Kısım I. Kaplumbağa ve Kertenkeleler. İzmir, Turkey: Ege Üniversitesi Fen Fakültesi Kitaplar Serisi No. 76 (in Turkish).
- Başoğlu M, Baran İ (1980). Türkiye Sürüngenleri Kısım II. Yılanlar. İzmir, Turkey: Ege Üniversitesi Fen Fakültesi Kitaplar Serisi No. 81 (in Turkish).
- Başoğlu M, Özeti N (1973). Türkiye Amfibileri. İzmir, Turkey: Ege Üniversitesi Fen Fakültesi Kitaplar Serisi No. 151 (in Turkish).
- Budak A, Tok CV, Mermer A (1998). A Report on Reptiles Collected from Kumluca-Kalkan (Antalya), Turkey. *Turk J Zool* 22: 185–189.

- Çevik E (1982). Trakya kaplumbağa ve kertenkelelerinin taksonomik araştırılması. PhD, Ege University, İzmir, Turkey (in Turkish).
- Cihan D, Tok CV, Tosunoğlu M, Afsar M, Ayaz D (2003). Mardin (Türkiye) Civarından Toplanan Amfibiler ve Reptiller Hakkında. *Anadolu Üniversitesi Bilim ve Teknoloji Dergisi* 4: 283–286 (in Turkish).
- Çınar Mühendislik ve Proje Hizmetleri Limited **Şirketi** (2006). Akşehir-Eber Gölleri Sulak Alan Yönetim Planı Alt Projesi 1. Gelişme Raporu. Afyon, Turkey: Çınar Mühendislik ve Proje Hizmetleri Limited **Şirketi** (in Turkish).
- Fet V, Popov A (2007). *Biogeography and Ecology of Bulgaria*. Amsterdam, the Netherlands: Springer.
- Hür H, Uğurtaş İH, İşbilir A (2008). The amphibian and reptile species of Kazdağı National Park. *Turk J Zool* 32: 359–362.
- Ilgaz Ç, Kumlutaş Y (2005). The amphibian and reptile species of Iğneada (Kırklareli) and its vicinity. *Pakistan Journal of Biological Sciences* 8: 558–560.
- Kete R, Yılmaz İ, Karakulak S, Yıldırım A (2005). Bafa Gölü Çevresi Herpetofaunasının Çeşitliliği. *Anadolu Üniversitesi Bilim ve Teknoloji Dergisi* 6: 87–96 (in Turkish).
- Kumlutaş Y, Durmuş SH, Ilgaz Ç (2000). Yamanlar Dağı ve Karagöl Civarındaki Kurbağa ve Sürüngenlerin Taksonomisi ve Ekolojisi. *Ekoloji ve Çevre Dergisi* 10: 12–16 (in Turkish).
- Kumlutaş Y, Durmuş SH, Ilgaz Ç (2011). Kaş-Kekova Özel Çevre Koruma Bölgesi' nin Herpetofaunası. *Anadolu Doğa Bilimleri Dergisi* 2: 28–34 (in Turkish).
- Kumlutaş Y, Ilgaz Ç, Durmuş SH (2001). Herpetofauna of Spil Mountain (Manisa) and its vicinity: results of field surveys. *Anadolu Univ J Sci Technol* 2: 63–66.
- Kumlutaş Y, Öz M, Durmuş H, Tunç MR, Özdemir A, Düşen S (2004a). On some lizard species of the Western Taurus Range. *Turk J Zool* 28: 225–236.
- Kumlutaş Y, Öz M, Tunç R, Kaksa Y, Özdemir A, Düşen S (2004b). On snake species of the western Taurus Range, Turkey. *Nat Croat* 13: 19–33.
- Kumlutaş Y, Özdemir A, Ilgaz Ç, Tosunoğlu M (2004c). The amphibian and reptile species of Bozdağ (Ödemiş). *Turk J Zool* 28: 317–319.
- Kumlutaş Y, Tok CV, Türkozan O (1998). The herpetofauna of the Ordu-Giresun Region. *Turk J Zool* 22: 199–201.
- Özcan S, Üzüm N (2014). The herpetofauna of Madran Mountain (Aydın, Turkey). *Turk J Zool* 38: 108–113.
- Özdemir A, Baran İ (2002). Research on the herpetofauna of Murat Mountain (Kütahya-Uşak). *Turk J Zool* 26: 189–195.
- 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: 11–30 (in German).
- Schätti B, Utiger U (2001). Hemerophis, a new genus for *Zamenis socotrae* Günther, and contribution to the phylogeny of Old World racers, whip snakes, and related genera. *Revue Suisse de Zoologie* 108: 919–948.
- Sindaco R, Venchi A, Carpaneto G, Bologna M (2000). The reptiles of Anatolia. A checklist and zoogeographical analysis. *Biogeographia* 21: 441–554.
- Tok CV (1995). Reşadiye (Datça) Yarımadası'nın Herpetofaunası. *Turk J Zool* 19: 119–121 (in Turkish).
- Tok CV (1999a). Reşadiye (Datça) Yarımadası'nın Kertenkeleleri Hakkında (Gekkonidae, Agamidae, Chamaeleonidae, Lacertidae, Scincidae, Amphisbaenidae). *Turk J Zool* 23: 157–175 (in Turkish).
- Tok CV (1999b). Reşadiye (Datça) Yarımadası'nın Anura Türleri Hakkında Morfolojik Bir Araştırma (Anura: Bufonidae, Hylidae, Ranidae). *Turk J Zool* 23: 565–581 (in Turkish).
- Tosunoğlu M, Gül Ç, Dinçaslan YE (2010). The herpetofauna of the east Turkish province of Iğdır. *Herpetozoa* 23: 92–94.
- Tosunoğlu M, Gül Ç, Uysal İ (2009). The herpetofauna of Tenedos (Bozcaada, Turkey). *Herpetozoa* 22: 75–78.
- Uğurtaş İH (1989). Bursa-Uludağ Bölgesinin Herpetofaunası. *Doğa Türk Zooloji Dergisi* 13: 241–248 (in Turkish).
- Uğurtaş İH, Kaya RS, Akkaya A (2007). The herpetofauna of the islands in Ulubat Lake (Bursa). *Ekoloji* 17: 7–10.
- Uğurtaş İH, Yıldırımhan SH, Öz M (2000). Herpetofauna of the eastern region of the Amanos Mountain (Nur). *Turk J Zool* 24: 257–261.
- Venchi A, Sindaco R, (2006). Annotated checklist of the reptiles of the Mediterranean countries, with keys to species identification, Part 2 - Snakes (Reptilia, Serpentes). *Annali del Museo Civico di Storia Naturale* 98: 259–364.
- Vigna Taglianti A, Audisia P, Biondi M, Bologna MA, Carpaneto GM., De Biase A, Fattorini S, Piattella E, Sindaco R, Venchi A et al. (1999). A proposal for a chorotype classification of the Near East fauna, in the framework of the Western Palearctic region. *Biogeographia* 20: 31–59.