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E-ISSN: 2458-7893, <http://www.actabiologicturcica.com>*Original research***On the Herpetofauna of the Central Anatolian Province of Kırıkkale (Turkey)
(Amphibia; Reptilia)****Bahadır AKMAN¹ , Mücahit ÇAKMAK^{2,*} , Mehmet Zülfü YILDIZ³ **¹Hunting and Wildlife Program, Department of Forestry, Vocational School of Technical Sciences, Iğdır University, Iğdır, Turkey²laboratory Animal Application and Research Center, Abant İzzet Baysal University, Bolu, Turkey³zoology Section, Department of Biology, Faculty of Arts and Sciences, Adıyaman University, Adıyaman, Turkey*Corresponding author e-mail: cakmakmcht@gmail.com

Abstract: The aim of this study is to investigate the amphibian and reptile species of Kırıkkale province (central Anatolia, Turkey). For this purpose, 30 days of field studies were carried out between March 2016 and June 2017 at the study area. A total of 24 herptile species (four anurans, three chelonians, seven lizard and ten snake species) were determined in Kırıkkale Province. Among the determined species, *Emys orbicularis* (Linnaeus, 1758) and *Malpolon insignitus* (Geoffroy De St-Hilaire, 1809) were recorded for the first time from Kırıkkale province.

Keywords: Herpetofauna, biodiversity, distribution, chorology, Kırıkkale

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Introduction

Topographical, geological and climatic characteristics of Anatolia provide rich faunal and floral diversity to Turkey (Cihan and Tok, 2014; Ambarlı et al., 2016). which has abundant herpetofaunal biodiversity as well as other animal classes (IUCN, 2019). According to the published data 132 reptile and 33 amphibian species were reported from Turkey so far, and therefore has a rich potential almost as much as the whole European continent (Baran and Atatür, 1998; Sindaco et al., 2000; Sarıkaya et al., 2017; Göçmen et al., 2018; IUCN, 2019).

Although regional herpetofauna studies have increased recently in Turkey, it is clear that more studies are required to reveal the true herpetofauna of Anatolia (Baran et al., 2004; Tok and Çiçek, 2014; Yıldız and İğci, 2015; Çakmak et al., 2017; Erişmiş, 2017; Kumlutaş et al., 2017; Sarıkaya et al., 2017; Akman et al., 2018; Avcı et al., 2018; Şahin and Afsar, 2018; Göçmen et al., 2018; Yıldız et al., 2018). Therefore, it is aimed to determine an updated herpetofaunal inventory of Kırıkkale province in

this study to contribute to the studies which aimed to reveal the herptile diversity of Turkey.

Kırıkkale is an important geographical location as it is a junction point of Central Anatolia, Black Sea and Eastern Anatolia. However, the studies on amphibian and reptile species from Kırıkkale province are very limited (İlhan and Tosunoğlu, 2015). Various researchers reported amphibians and reptiles that they were encountered in the border of Kırıkkale province during their general survey in Turkey without any detailed location information (Eiselt and Spitzenberger, 1967; Baran and Atatür, 1986; Fritz and Freytag, 1993; Mulder 1995; Sindaco et al., 2000; Gözütok and Albayrak, 2009; Toyran and Albayrak, 2009; Bülbül and Kutrup, 2011; Çiçek et al., 2011; İnci et al., 2013; Özdemir et al., 2014). Besides published data, an oral presentation was delivered about the amphibians and reptilians of Kırıkkale province at the twelfth national ecology and Environment symposium Muğla University (Turkey) (İlhan and Tosunoğlu, 2015). They recorded 4 amphibian and 14 reptilian species from Kırıkkale

province but did not give any locality information, collection or observation dates. So here we present the results of an intensive field study that was carried out at the study area and report 24 herptile species which of two are recorded for the first time from Kırkkale province. Also, herpetological inventory of Kırkkale province is updated with their distributions. Additionally, protection status and chorotype of the species were determined.

Materials and Methods

Field studies were carried out by operating at least two point in each of 30 grid units that 1/25000 scaled, covering the whole of the Kırkkale province and field survey was completed 30 days between March 2016 and June 2017. Various habitat types such as wetlands, forests, steppes, mountains were selected to show comprehensive results

about provincial herpetofauna. Before the field trips, all literature about herpetofauna of Kırkkale province was searched and published localities were checked.

A total of 108 different localities whose altitudes were varied amongst 582-1521 m a.s.l. were surveyed within this project (Fig. 1). The coordinates of the observed herptile species' localities were recorded via GPS device (Garmin Montana 650) as latitude and longitude in decimal degrees format and referenced to the World Geodetic System of 1984 (WGS84). They were deposited in The Noah's Ark Biodiversity Database (The Republic of Turkey, Ministry of Agriculture and Forestry, General Directorate of Nature Conservation and National Parks). The list of observation localities, dates, and altitudes are given in appendix.

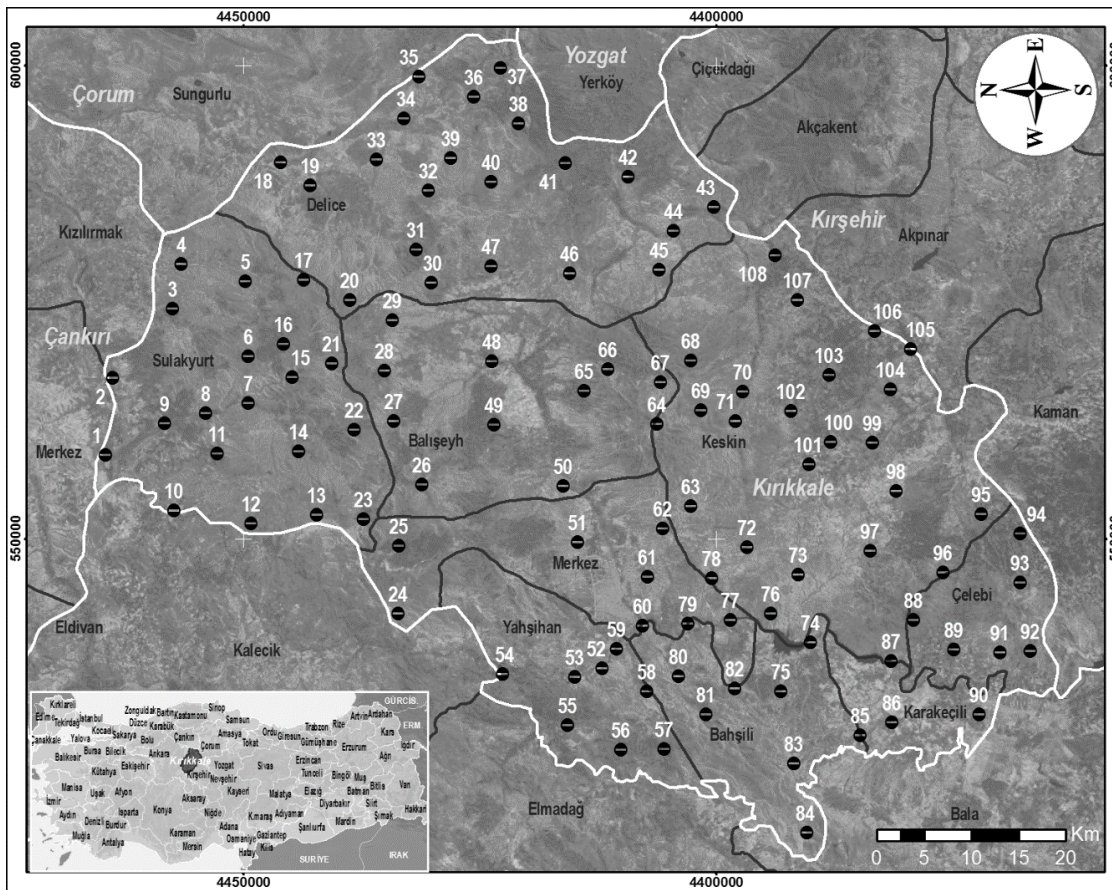


Figure 1. The map showing the localities where the field trips were conducted during 2016-2017 in Kırkkale province (locality names are given in Appendix).

Amphibians and reptiles were examined and identified by visual encounter surveys (VES) (Crump and Scott, 1994). Also, some of the specimens were subjected to detailed examination for species identification. Photographs of the specimens and their habitat were taken using digital camera (Nikon D80, Nikon D90) with lenses

(90 mm Macro, 70-300 mm and 18-105 mm). After the detailed examination and photographing, the specimens were released natural habitats that they were collected.

The observed species were grouped into chorotypes categories according to Vigna Taglianti et al. (1999). The habitats, where amphibians and reptiles were collected,

were categorized into 8 groups according to the following EUNIS habitat types (EUNIS 2018): C1 – Surface standing waters; C2 – Surface running waters; E1 – Dry grasslands; G1 – Broadleaved deciduous woodland; H3 – Inland cliffs, rock pavements and outcrops; I1 – Arable land and market gardens; J1 – Buildings of cities, towns and villages; and J3 – Extractive industrial sites. Additionally, the conservation status of the amphibians and reptiles was pointed out according to the International Union for Conservation of Nature (IUCN), The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and The Convention on the Conservation of European Wildlife and Natural Habitats (BERN Convention).

Results

Although 22 herptile species records were found by literature search, only 17 of them were observed during

present study; four frogs [Families: Bufonidae (2) and Ranidae (2)], three turtles [Families: Emydidae (1), Geomydidae (1) and Testudinidae (1)], seven lizards [Families: Agamidae (1), Geckonidae (1), Scincidae (2) and Lacertidae (3)] and ten snakes [Families: Colubridae (8) Typhlopidae (1) and Viperidae (1)]. Despite the intensive field survey, we could not be able to encounter (*Bufo bufo*, *Stellagama stellio*, *Mediodactylus kotschyi*, *Lacerta trilineata*, *Dolichophis jugularis*, *Platyceps najadum*, and *Montivipera xanthina*) that were reported from the study area with previous studies. Species list with their observed locality numbers, conservation status, and related published references are given in Table 1. There is no endemic species distributed in Kırıkkale province. According to the published data, *Emys orbicularis* (Linnaeus, 1758) and *Malpolon insignitus* (Geoffroy De St-Hilaire, 1809) are new records for Kırıkkale province (Fig. 2).



Figure 2. Selected amphibians and reptiles captured in Kırıkkale: A – *Rana macrocnemis*, B – *Bufo variabilis*, C – *Ablepharus kitaibellii*, D – *Malpolon insignitus*, E – *Xerotylops vermicularis*, F – *Natrix tessellata* (Photographs were taken by B. AKMAN and M. ÇAKMAK).

Table 1. Amphibia and Reptile species of Kırıkkale Province.

Family	Species	BERN	IUCN	CITES	Chorotypes	EUNIS	Record Localities (in this survey)	References /Literatur
Ranidae	<i>Pelophylax ridibundus</i> (Pallas, 1771)	III	LC	-	Turano-Europeo-Mediterranean	C1; C2; E1; H3; I1; J1; J3	1, 2, 5, 6, 7, 8, 10, 13, 14, 15, 16, 17, 18, 23, 24, 25, 26, 27, 28, 29, 34, 35, 36, 41, 42, 43, 44, 45, 50, 51, 53, 54, 58, 59, 62, 63, 64, 65, 69, 72, 73, 74, 76, 78, 80, 81, 85, 86, 87, 89, 91, 92, 93, 94, 95, 97, 99, 101, 102, 104, 105, 106, 107, 108	Bülbul & Kutrup, 2011; İnci et al., 2013; İlhan & Tosunuğlu, 2015;
	<i>Rana macrocnemis</i> Boulenger, 1885	III	LC	-	SW-Asiatic	C2; E1; H3; I1	51, 63, 67, 69, 73, 97, 102	Baran & Atatür, 1986; Çiçek et al., 2011; İlhan & Tosunuğlu, 2015;
Bufonidae	<i>Bufoles variabilis</i> (Pallas, 1769)	III	DD	-	Turano-Europeo-Mediterranean	E1; G1; H3; I1; J1	1, 7, 10, 13, 16, 23, 28, 34, 35, 36, 38, 41, 42, 45, 46, 50, 54, 55, 58, 65, 74, 75, 87, 92, 107	Özdemir et al., 2014; İnci et al., 2013; Mulder 1995; İlhan & Tosunuğlu, 2015;
	<i>Bufo bufo</i> (Linnaeus, 1758)	III	LC	-	European	-		İlhan & Tosunuğlu, 2015;
Testudinidae	<i>Testudo graeca</i> Linnaeus, 1758	II	VU	II	Turano-Mediterranean	E1; G1; H3; I1; J1	4, 10, 13, 16, 22, 23, 24, 26, 31, 32, 34, 50, 51, 54, 55, 57, 61, 62, 65, 66, 69, 73, 74, 75, 76, 77, 78, 79, 80, 87, 88, 91, 92, 93, 98, 102, 107	İnci et al., 2013; Mulder 1995; Sindaco et al., 2000; Eiselt & Spitzenberger, 1967; İlhan & Tosunuğlu, 2015;
Geoemydidae	<i>Mauremys caspica</i> (Gmelin, 1774)	II	NE	-	Turano-Mediterranean	C1; C2; E1; H3; I1	1, 5, 7, 10, 18, 34, 41, 43, 44, 54, 55, 69, 86, 94, 95, 97, 99, 102, 107, 108	Fritz & Freytag, 1993; İnci et al., 2013; Sindaco et al., 2000; İlhan & Tosunuğlu, 2015;
Emydidae	<i>Emys orbicularis</i> (Linnaeus, 1758)	II	NT	-	Centralasiatic-European	C1; C2; E1; I1	1, 26, 29, 86	This Study
Agamidae	<i>Stellagama stellio</i> (Linnaeus, 1758)	II	LC	-	E-Mediterranean	-		İlhan & Tosunuğlu, 2015;
Geckonidae	<i>Mediodactylus kotschyi</i> (Steindachner, 1870)	II	LC	-	E-Mediterranean	-		İlhan & Tosunuğlu, 2015;
Scincidae	<i>Ablepharus kitaibelii</i> Bibron & Bory St-Vincent, 1833	II	LC	-	E. Mediterranean	E1; G1; H3; I1	6, 17, 31, 46, 55, 62, 64, 66, 67	İlhan & Tosunuğlu, 2015;
	<i>Heremites auratus</i> (Linnaeus, 1758)	III	LC	-	SW-Asiatic	E1; G1; H3; I1; J1	12, 25, 38, 50, 51, 54, 55, 74, 87, 88, 96,	Mulder 1995; Sindaco et al., 2000; İlhan & Tosunuğlu, 2015;
Lacertidae	<i>Lacerta media</i> Lantz & Cyrén, 1920	III	LC	-	SW-Asiatic	E1; G1; H3; I1	4, 5, 6, 8, 15, 16, 21, 22, 26, 28, 31, 38, 39, 43, 64, 73, 75, 76, 80, 83, 84, 88, 93, 97, 101, 108	İnci et al., 2013; Sindaco et al., 2000; Toyran & Albayrak, 2009; İlhan & Tosunuğlu, 2015;

	<i>Lacerta trilineata</i> Bedriaga, 1886	II	LC	-	E-Mediterranean	-		Mulder 1995; İlhan & Tosunuğlu, 2015;
	<i>Ophisops elegans</i> Ménétries, 1832	II	LC	-	E. Mediterranean	E1; G1; H3; II; J1	2, 4, 6, 7, 12, 13, 15, 18, 19, 22, 23, 24, 25, 26, 31, 34, 36, 37, 38, 40, 42, 43, 44, 45, 46, 47, 50, 51, 54, 57, 58, 61, 62, 63, 64, 65, 66, 67, 69, 73, 74, 76, 78, 80, 81, 82, 83, 85, 87, 88, 90, 91, 92, 93, 96, 97, 98, 100, 101, 102, 104, 105, 106, 107, 108	Mulder 1995; Sindaco et al., 2000; İlhan & Tosunuğlu, 2015;
	<i>Dolichophis jugularis</i> (Linnaeus, 1758)	II	LC	-	SW-Asiatic	-		İlhan & Tosunuğlu, 2015;
	<i>Dolichophis caspius</i> (Gmelin, 1789)	III	LC	-	Turano-Mediterranean	E1; G1; H3; II	1, 3, 10, 13, 14, 16, 26, 34, 36, 37, 38, 39, 55, 66, 72, 75, 78, 88, 101, 102, 107	Gözütok & Albayrak, 2009; Sindaco et al., 2000; Toyran & Albayrak, 2009;
	<i>Eirenis modestus</i> (Martin, 1838)	III	LC	-	SW-Asiatic	E1	80	Sindaco et al., 2000;
	<i>Elaphe sauromates</i> (Pallas, 1811)	II	LC	-	Turano-European-Mediterranean	E1; H3; II	13, 16, 63, 101, 102, 107	Sindaco et al., 2000;
Colubridae	<i>Malpolon insignitus</i> (Geoffroy Saint-Hilaire, 1827)	III	LC	-	Mediterranean	E1; H3	80, 85	This Study
	<i>Natrix tessellata</i> (Laurenti, 1768)	II	LC	-	Centralasiatic	C2; E1; II	42, 78, 89, 107	İlhan & Tosunuğlu, 2015;
	<i>Natrix natrix</i> (Linnaeus, 1758)	III	LC	-	Centralasiatic-European-Mediterranean	C2; E1; II	1, 2, 7, 10, 16, 18, 34, 73, 88	Gözütok & Albayrak, 2009; İnci et al., 2013; Sindaco et al., 2000; İlhan & Tosunuğlu, 2015;
	<i>Platyceps najadum</i> (Eichwald, 1831)	III	LC	-	Turano-Mediterranean	-		İlhan & Tosunuğlu, 2015;
Typhlopidae	<i>Xerotyphlops vermicularis</i> (Merrem, 1820)	III	LC	-	Turano-Mediterranean	E1; G1; H3	37, 38, 58, 61, 92	İlhan & Tosunuğlu, 2015;
Viperidae	<i>Montivipera xanthina</i> (Gray, 1849)	II	LC	-	E-Mediterranean	-		İlhan & Tosunuğlu, 2015;

The species of amphibians and reptiles in Kırkkale province were grouped into 8 chorotype categories (Fig. 3, Table 1). E-Mediterranean (25%) is the dominant category which is represented by 6 species. SW-Asiatic and Turano-Mediterranean chorotype (21%) are represented by 5 species each, Turano-European-Mediterranean chorotype (13%) is represented by 3 species, and Centralasiatic, Centralasiatic-European, Centralasiatic-European-Mediterranean, European and Mediterranean chorotype (4%) is by 1 species.

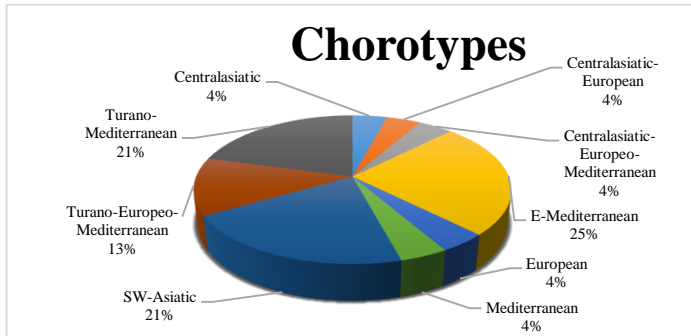


Figure 3. Chorotypes of the amphibians and reptiles found in Kırkkale Province

The habitats of amphibians and reptiles observed in this study are categorized into 8 groups according to the EUNIS level two habitat types (EUNIS 2018) (Fig. 4). E1 – Dry grasslands habitat type was preferred by all species. This is followed by I1 – Arable land and market gardens (14 species); H3 – Inland cliffs, rock pavements and outcrops (13 species); G1 – Broadleaved deciduous woodland (8 species); C2 – Surface running waters (6 species); J1 – Buildings of cities, towns and villages (5 species); C1 – Surface standing waters (3 species); and J3 – Extractive industrial sites (1 species), respectively. *Pelophylax ridibundus* was observed in 7 of the 8 considered EUNIS habitat types, *Bufoles variabilis*, *Mauremys caspica*, *Ophisops elegans*, *Testudo graeca* and *Heremites auratus* were in five habitat types (Table 1).

One species (*Emys orbicularis*) near threatened (NT) category, one species (*Testudo graeca*) vulnerable (VU), 20 species Least Concern (LC), one species Data Deficient (DD), and one species is listed in Not Evaluated (NE) by IUCN (Table 1). 12 of the species (%50) are under protection according to the BERN convention appendix III and rest of them are appendix II (www.coe.int/en/web/conventions/full-list/-/conventions/treaty/104). However, only one species (*T. graeca*) is under protection according to the CITES appendix II (www.cites.org).

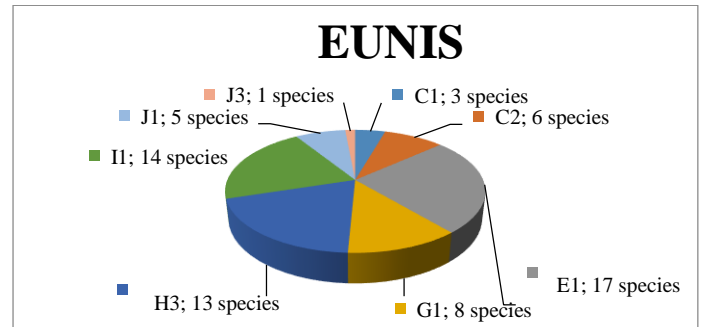


Figure 4. Habitat preferences of amphibians and reptiles found in Kırkkale Province

Discussion

Twenty-two herptile species were recorded from Kırkkale province with various research studies. The study of Eiselt and Spitzenberger (1967), was the first one that reported an herptile species from the study area with the record of *Testudo graeca*. Subsequently *Rana macrocnemis* (Baran and Atatür, 1986, Çiçek et al. 2011) *Mauremys caspica* (Fritz and Freytag, 1993) *Bufoles variabilis*, *Testudo graeca*, *Heremites auratus*, *Ophisops elegans* and *Lacerta trilineata* (Mulder, 1995), *Dolichophis caspius* (Gözütok and Albayrak, 2009; Toyran and Albayrak, 2009), and *Pelophylax ridibundus* (Bülbul and Kutrup, 2011) were recorded from Kırkkale province.

Mulder (1995) reported *Lacerta trilineata*, which we could not encounter it at the study area, from Karaağıl (Behirek dag), Kırkkale province. Some green lizard specimens were collected from Sarıkızlı (Locality 6) and Sarıkayalar (Locality 83-85) in this study and they have examined in detail. Ventral scales of Sarıkayalar and Sarıkızlı specimens were counted six which is characteristics for *Lacerta media*. Therefore, it is concluded that *L. trilineata* and *L. media* are found sympatrically under the studied area.

İlhan and Tosunoğlu (2015) presented that *Bufo bufo*, *Stellagama stellio*, *Mediodactylus kotschy*, *Lacerta trilineata*, *Dolichophis jugularis*, *Platyceps najadum*, and *Montivipera xanthina* distributed on the studied area. The distribution range of these species except *Dolichophis jugularis* are near the research area. Therefore, it is an expected result to be observed in these species in Kırkkale province. But, *D. jugularis* did not reported north of central Anatolia up to now (Zinner 1972; Sindaco et al. 2000). It is difficult to identify juvenile individuals of the species belonging to *Dolichophis* genus and they didn't give any information about size or gender of their specimens. For this reason, *D. jugularis* record needs confirmation.

According to the occurrence frequency, *P. ridibundus* was the most common amphibian species in Kırıkkale province based on observed locality numbers. However, *B. variabilis* also occur in many areas. *O. elegans* was the most found species which was followed by *T. greaca*.

It was determined that 4 amphibian and 20 reptile species correspond to 12.12% of Turkey amphibian fauna and 15.15% of the reptile fauna, respectively. With many studies in recent years, amphibian and reptile fauna have been reported from the provinces of Turkey as follows; 55 herptiles from Adana (Sarıkaya et al. 2017) 24 from Karabük (Kumlutaş et al. 2017), 23 from Tunceli (Avcı et al. 2018), 23 from Bartın (Çakmak et al. 2017), 35 from Ağrı (Yıldız et al. 2018), 36 from Bitlis (Akman et al. 2018) and 25 from Kütahya (Erişmiş, 2017). In addition, 15 reptile species were reported from Amasya (Şahin and Afsar, 2018).

In this study, a total of 24 amphibian and reptile species were determined when the results of the field study and the literature records were combined. *Emys orbicularis* (Linnaeus, 1758) and *Malpolon insignitus* (Geoffroy De St-Hilaire, 1809) are the new records for Kırıkkale province.

Habitat destruction is one of the most important factors that threatens herptile species which depends on various parameters like agriculture, pollution etc. Therefore, it is very important to inform the local people to prevent the habitat destruction and give awareness to them about conservation of wild animals. Some studies like presentation should be done to gain common sense for local people, especially about vulnerable species like *Emys orbicularis* which is more susceptible to habitat loss.

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Appendix

- 1:** Yeşilli (Sulakyurt, 578 m, 20.03.2016); **2:** Kıyihalilinceli (Sulakyurt, 570 m, 20.03.2016); **3:** Ayvatlı (Sulakyurt, 782 m, 23.06.2016); **4:** Danacı (Sulakyurt, 736 m, 17.03.2016); **5:** Esenpınar (Sulakyurt, 946 m, 17.03.2016); **6:** Sarıkızlı (Sulakyurt, 1026 m, 17.03.2016); **7:** Sulakyurt (Sulakyurt, 781 m, 20.03.2016); **8:** Yeşilyazı (Sulakyurt, 712 m, 23.06.2016); **9:** Sarımbey (Sulakyurt, 647 m, 20.03.2016); **10:** Çayoba (Sulakyurt, 596 m, 23.06.2016); **11:** Akkuyu (Sulakyurt, 927 m, 24.06.2016); **12:** Koruköy (Sulakyurt, 864 m, 24.06.2016); **13:** Ortaköy (Sulakyurt, 893 m, 27.09.2016); **14:** Merkez (Sulakyurt, 859 m, 18.03.2016); **15:** Ağaylı (Sulakyurt, 868 m, 17.03.2016); **16:** Sarıkızlı (Sulakyurt, 1064 m, 17.03.2016); **17:** Alışeyhli (Sulakyurt, 1205 m, 17.03.2016); **18:** Karaköseli (Delice, 595 m, 17.03.2016); **19:** Şahçalı (Delice, 705 m, 26.09.2016); **20:** Koçubaba (Delice, 1279 m, 25.06.2016); **21:** Kalekişla (Sulakyurt, 1028 m, 25.06.2016); **22:** Çevrimli (Sulakyurt, 1036 m, 25.06.2016); **23:** Kazmaca (Merkez, 982 m, 24.06.2016); **24:** Kazmaca (Merkez, 1099 m, 24.06.2016); **25:** Kazmaca (Merkez, 1067 m, 24.06.2016); **26:** Hıdırsih (Balıseyh, 1020 m, 25.06.2016); **27:** Kösedurak (Balıseyh, 1048 m, 20.03.2016); **28:** Selamlı (Balıseyh, 1156 m, 25.06.2016); **29:** Yukarıkarakışık (Balıseyh, 1142 m, 25.06.2016); **30:** Elmalı (Delice, 1156 m, 25.06.2016); **31:** Büyükafşar (Delice, 1121 m, 25.06.2016); **32:** Doğanören (Delice, 914 m, 26.06.2016); **33:** Kurtoğlu (Delice, 672 m, 17.03.2016); **34:** Evliyalı (Delice, 614 m, 17.03.2016); **35:** Akboğaz (Delice, 690 m, 26.06.2016); **36:** Sarıyaka (Delice, 728 m, 20.05.2016); **37:** Sarıyaka (Delice, 1004 m, 20.05.2016); **38:** Baraklı (Delice, 862 m, 20.05.2016); **39:** Alçılı (Delice, 722 m, 26.06.2016); **40:** Merkez (Delice, 823 m, 18.03.2016); **41:** Çerikli (Delice, 651 m, 20.05.2016); **42:** Tatlıcak (Delice, 668 m, 20.05.2016); **43:** Ocakbaşı (Delice, 722 m, 20.04.2016); **44:** Halitli (Delice, 700 m, 22.05.2016); **45:** Halitli (Delice, 842 m, 22.05.2016); **46:** Herekli (Delice, 803 m, 22.05.2016); **47:** Büyükyazı (Delice, 983 m, 22.05.2016); **48:** Yenili (Balıseyh, 920 m, 21.05.2016); **49:** Merkez (Balıseyh, 969 m, 18.03.2016); **50:** Akçakavak (Balıseyh, 888 m, 21.05.2016); **51:** Ulaş (Merkez, 836 m, 19.05.2016); **52:** Merkez (Yahşihan, 680 m, 18.03.2016); **53:** Merkez (Yahşihan, 670 m, 18.03.2016); **54:** Irmak (Yahşihan, 667 m, 19.03.2016); **55:** Kılıçlar (Yahşihan, 727 m, 19.03.2016); **56:** Hisarköy (Yahşihan, 808 m, 19.03.2016); **57:** Bedesten (Yahşihan, 1149 m, 18.05.2016); **58:** Bedesten (Yahşihan, 889 m, 18.05.2016); **59:** Merkez (Yahşihan, 678 m, 18.03.2016); **60:** Merkez (Bahşili, 684 m, 18.03.2016); **61:** Ahili (Merkez, 857 m, 23.04.2016); **62:** Ahili (Merkez, 933 m, 23.04.2016); **63:** Dağevi (Keskin, 1027 m, 19.05.2016); **64:** Gazibeyli (Keskin, 1566 m, 16.03.2016); **65:** Kilevli (Balıseyh, 1007 m, 16.03.2016); **66:** Kenanobası (Balıseyh, 1167 m, 16.03.2016); **67:** Mehmetbeyobası (Balıseyh, 1235 m, 21.05.2016); **68:** Eroğlu (Keskin, 1162 m, 21.05.2016); **69:** Kavlak (Keskin, 1202 m,

21.05.2016); **70:** Ceritmüminli (Keskin, 1005 m, 16.03.2016); **71:** Ceritmüminli (Keskin, 1034 m, 16.03.2016); **72:** Kurşunkaya (Keskin, 1018 m, 23.04.2016); **73:** Eskialibudak (Keskin, 908 m, 23.04.2016); **74:** Karaahmetli (Bahşili, 764 m, 18.03.2016); **75:** Karaahmetli (Bahşili, 980 m, 18.03.2016); **76:** Esatmüminli (Keskin, 916 m, 23.04.2016); **77:** Hacılar (Merkez, 693 m, 18.03.2016); **78:** Hasandede (Bahşili, 862 m, 16.03.2016); **79:** Bahçeli (Bahşili, 687 m, 18.03.2016); **80:** Bahçeli (Bahşili, 884 m, 18.03.2016); **81:** Çamlıca (Bahşili, 1055 m, 18.05.2016); **82:** Küreboğazı (Bahşili, 1075 m, 18.05.2016); **83:** Sarıkayalar (Bahşili, 1169 m, 21.04.2016); **84:** Sarıkayalar (Bahşili, 1220 m, 21.04.2016); **85:** Sarıkayalar (Bahşili, 942 m, 21.04.2016); **86:** Karakeçili (Karakeçili, 952 m, 21.08.2016); **87:** Köprüköy (Keskin, 748 m, 18.03.2016); **88:** Tilkili (Çelebi, 1121 m, 27.06.2016); **89:** Karabucak (Çelebi, 809 m, 22.04.2016); **90:** Akkoşan (Karakeçili, 847 m, 18.03.2016); **91:** Alçıyenyapan (Çelebi, 898 m, 22.04.2016); **92:** Halildedede (Çelebi, 957 m, 22.04.2016); **93:** Merkez (Çelebi, 1212 m, 18.03.2016); **94:** Çiftevi (Çelebi, 970 m, 18.03.2016); **95:** Aşağıseyh (Keskin, 934 m, 20.08.2016); **96:** Müsellim (Keskin, 1223 m, 22.04.2016); **97:** Ceritkale (Keskin, 971 m, 18.03.2016); **98:** Gülkonak (Keskin, 1158 m, 20.08.2016); **99:** Yenyapan (Keskin, 921 m, 18.03.2016); **100:** Üçkuyu (Keskin, 1046 m, 16.03.2016); **101:** Baraklı (Keskin, 1075 m, 20.05.2016); **102:** Kavurgalı (Keskin, 1075 m, 20.04.2016); **103:** Beşler (Keskin, 928 m, 20.04.2016); **104:** Kasımağa (Keskin, 1001 m, 20.04.2016); **105:** Efendiköy (Keskin, 822 m, 20.04.2016); **106:** Ceritobası (Keskin, 842 m, 20.04.2016); **107:** Hacıömersolaklısı (Keskin, 867 m, 20.04.2016); **108:** Çamurbatmaz (Keskin, 755 m, 20.04.2016).