

RESEARCH ARTICLE

## Herpetofaunal Diversity of Çanakkale Southwest Coastal Zones

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### Abstract

Along with the literature information obtained from previous studies, the determination of species in herpetofauna studies gives information about the herpetofauna of the research area. Researching the herpetofauna of regions is very important in terms of conservation of species, revealing biodiversity, identifying possible threats, and determining the preventive measures to be taken against these threats.

The study area is the southwestern coastal regions of Çanakkale, which is also the westernmost coast of Anatolia. This area consists of the localities of Ahmetçe, Sazlı, Kozlu, Behram, Bektaş, Koyunevi, Babakale, Gülpınar, Tuzla, Kösedere, and Tavaklı. Because it has the potential to be a coastline separated by the end of the Kaz Mountains, this study area has different habitats and has the potential to host species that exceed isolation of the Kaz Mountains.

In this study, the amphibian and reptile diversity of terrestrial and aquatic areas along the coast of Southwest Anatolia starting from the end of the Kaz Mountains, which is the habitat preferences of the species, and the effects of environmental and anthropogenic factors on the herpetofauna of the region were investigated. A total of 5 amphibian species and 16 reptile species have been identified in the southwestern coastal areas of Çanakkale, and the *Testudo graeca* species are vulnerable according to the IUCN categories.

**Keywords:** Amphibia, Reptilia, Biodiversity, Çanakkale, Turkey

## Introduction

Turkey, which serves as both a bridge and a barrier between the continents of Asia and Europe, contains a large number of living species because it has different topographic, geological, and climatic characteristics and different habitat types (Özcan, 2012). Turkey has a rich variety of species with European origin from Thrace, Asian origin from the Caucasus and eastern Anatolia, and African origin from Syria and Iraq (Demirsoy, 1996). Knowing the geographical distribution of species is extremely important in terms of conservation and management of biodiversity (Margules & Pressey, 2000).

Herpetological studies in Turkey mostly focus on the research of large regions and include the identification of

species (Werner, 1902; Venzmer, 1922; Bird, 1936; Bodenheimer, 1944; Başoğlu & Özeti, 1973, Başoğlu & Baran, 1977; Baran *et al.*, 2012). All these studies enable us to have information about the herpetofauna of the region (Başoğlu, 1947; Kosswig, 1951; Mertens, 1952a, 1952b, 1953; Göçmen *et al.*, 1996; Baran *et al.*, 1997; Kumlutaş *et al.*, 1999; Kete & Yılmaz, 2000; Kumlutaş *et al.*, 2000; Sindaco *et al.*, 2000; Erdoğan *et al.*, 2002; Göçmen *et al.*, 2003; Kumlutaş *et al.*, 2004; Ilgaz & Kumlutaş, 2005; Kır, 2005; Ayaz *et al.*, 2006; Uğurtaş *et al.*, 2007; Hür *et al.*, 2008; Budak & Göçmen, 2008; Ilgaz, 2009; Tosunoğlu *et al.*, 2009; Kumlutaş *et al.*, 2011; Baran *et al.*, 2012; Tosunoğlu *et al.*, 2017; Baycan, 2018).

Çanakkale is located in the southern part of the Marmara region, in northwestern Turkey. Çanakkale

province has a high amount of amphibia and reptile richness due to the fact that it has territories in both the Thrace and Anatolia regions, in different biotopes, and in different ecological areas (Başoğlu *et al.*, 1977; Baran, 1981; Kaya, 2005; Tosunoğlu *et al.*, 2009; Bulut, 2010; Uysal *et al.*, 2011; Baran *et al.*, 2012; Tosunoğlu *et al.*, 2012; Gül and Tosunoğlu, 2013; Tok and Çiçek, 2014; Tosunoğlu *et al.*, 2017; Tok *et al.*, 2018). The southwestern coastal regions of Çanakkale consist of the localities of Ahmetçe, Sazlı, Kozlu, Behram, Bektaş, Koyunevi, Babakale, Gülpınar, Tuzla, Kösedere and Tavaklı, which are the westernmost parts of Anatolia. These areas have the potential to host species that exceed the isolation of the Kaz Mountains.

This study determined the presence of amphibian and reptile species along the coast of Southwest Anatolia, these species' habitat preferences, and their distribution limits, which are likely to pass through the isolation of the Kaz Mountains. During field studies, potential threat factors were identified for the amphibian and reptile species distributed in the region. In addition, in previous studies sea turtle nests have been identified in Babakale (Başkale *et al.*, 2018), therefore the shores of southwestern Çanakkale were investigated if there are sea turtle nests.

## Material and Methods

In this study, amphibian and reptile species were identified in the southwestern coastal regions of Çanakkale (Ahmetçe, Sazlı, Kozlu, Behram, Bektaş, Koyunevi, Babakale, Gülpınar, Tuzla, Kösedere, Tavaklı) and in the surrounding terrestrial areas and wetlands (Fig. 1).

During the field studies, the location, time, vegetation, and physical characteristics of the land were taken into account in determining the location of the animals. Field studies were conducted in August 2019-May 2020 with a



**Figure 1.** Map of the study area (Red areas include the research area)

team of 3 people. Direct observation took place between the hours of 08:00-11:30 in the morning and 15:30-19:00, and species and habitats that the species live in were recorded by photographs (Fig. 2).



**Figure 2.** Field studies

In the field studies carried out, amphibian species were collected by scoop and hand from aquatic areas, puddles, under stones, and from cool and moist areas such as tree trunks. Concerning reptile species, turtle species were caught by scoops or eel-buck, and tortoises were caught by hand. Lizards were caught by hand without holding the tail while snake species were caught with hand or with a snake stick.

The coordinates and altitudes of the localities that species were identified were recorded in the study by using the Garmin Vista Global Positioning system tool. The observed and captured samples were photographed first with a Canon brand digital camera, and the identification of the captured species was made using various books (Baran & Atatür, 1998; Baran *et al.*, 2012; Başoğlu & Baran, 1977, 1980; Özeti & Yılmaz, 1994, Tosunoğlu *et al.*, 2017).

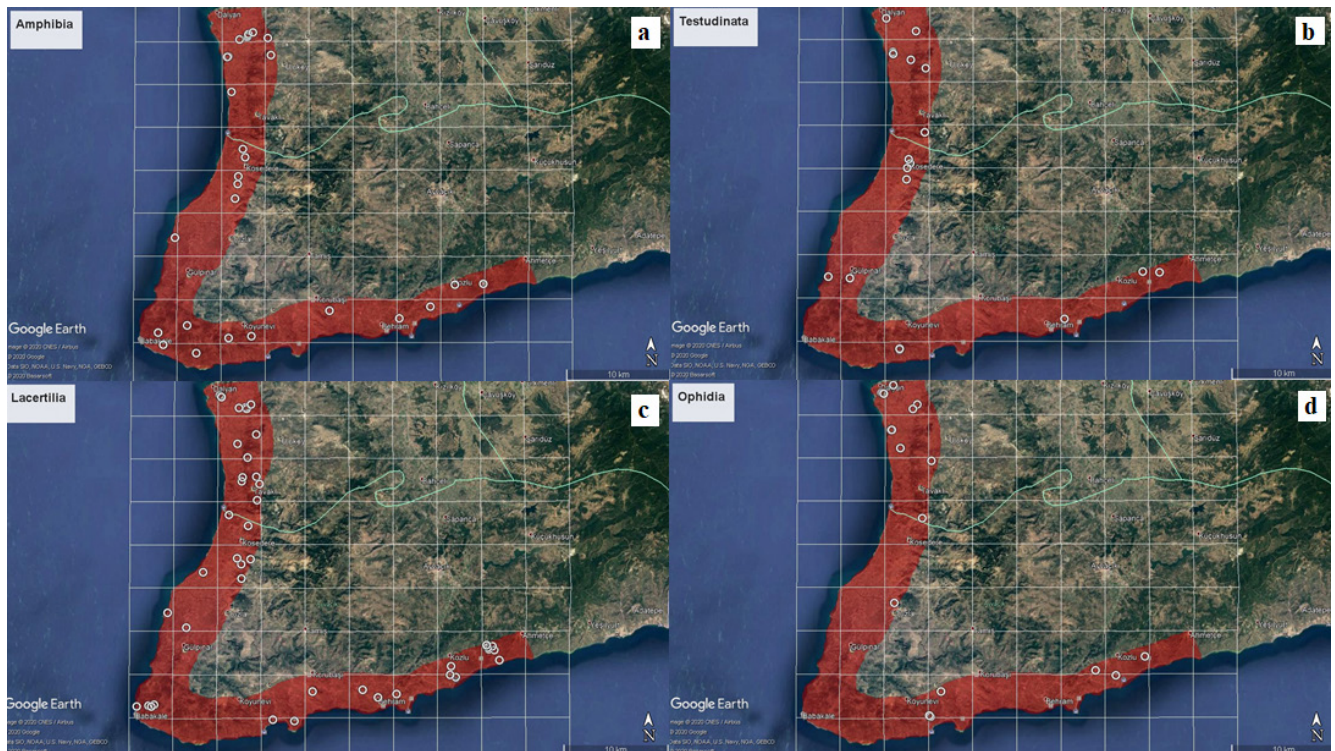
## Results

Out of a total of 9 amphibian species and 36 reptile species distributed in the province of Çanakkale, 5 amphibian species (1 urodelan and 4 anurans), and 16 reptile species (3 turtles, 7 lizards and, 6 snakes) were found (Table 1). When the species identified in the study were examined according to IUCN criteria (2020-1), 18 species were found to be in the categories of 'Least Concern' (LC), 1 species 'Data Deficient' (DD), 1 species 'Vulnerable' (VU), and 1 species 'Near Threatened' (NT).

**Table 1.** Amphibian and reptile species detected in southwestern coastal regions of Çanakkale province.

Order	Family	Species of Çanakkale Province	Species Detected in Southwest Coastal Regions	IUCN Categories	Corotype	Habitat Types
Urodela	Salamandridae	<i>Lissotriton vulgaris</i>	+	LC	Mediterranean	W
		<i>Ommatotriton ophryticus</i>	-	NT	Turano-Mediterranean	P, W
		<i>Triturus ivanbureschi</i>	-	LC	E- Mediterranean	P, W
Anura	Ranidae	<i>Pelophylax ridibundus</i>	+	LC	Turano-European-Mediterranean	W
		<i>Rana dalmatina</i>	-	LC	Euro-Siberian	F, W
	Bufonidae	<i>Bufo bufo</i>	+	LC	European	A, M
		<i>Bufo variabilis</i>	+	DD	Turano-European-Mediterranean	B, A, P
	Hylidae	<i>Hyla orientalis</i>	+	LC	European-Mediterranean	B, P
	Pelobatidae	<i>Pelobates syriacus</i>	-	LC	Turano-Mediterranean	A
Chelonia	Chelonidae	<i>Caretta caretta</i>	-	VU	Cosmopolitan	S
		<i>Chelonia mydas</i>	-	EN	Cosmopolitan	S
	Emydidae	<i>Emys orbicularis</i>	+	NT	Turano-European-Mediterranean	W
		<i>Trachemys scripta</i>	-	DD	Invasive	W
	Geoemydidae	<i>Mauremys rivulata</i>	+	DD	Turano-Mediterranean	W
	Testudinidae	<i>Testudo graeca</i>	+	VU	Turano-Mediterranean	F, B, A, P
		<i>Testudo hermanni</i>	-	NT	European	F, B, A, P
	Lacertilia	Agamidae	<i>Stellagama stellio</i>	+	LC	E- Mediterranean
Anguidae		<i>Anguis fragilis</i>	-	DD	European	A
		<i>Pseudopus apodus</i>	+	DD	Turano-Mediterranean	F, A, P
Gekkonidae		<i>Mediodactylus kotschy</i>	+	LC	E- Mediterranean	F, A, P, R
		<i>Hemidactylus turcicus</i>	+	LC	Mediterranean	F, A, P, R
Lacertidae		<i>Anatololacerta anatolica</i>	-	LC	SW-Anatolian Endemic	R, F, B
		<i>Lacerta trilineata</i>	+	LC	E- Mediterranean	F, A, P, B
		<i>Lacerta viridis</i>	-	LC	E-European	F, A, P, B
		<i>Ophisops elegans</i>	+	DD	E- Mediterranean	B, A, P
		<i>Podarcis tauricus</i>	-	LC	E- Mediterranean	R, F, B, A
		<i>Podarcis muralis</i>	-	LC	S-European	R, F, B, A
		<i>Podarcis siculus</i>	-	LC	Mediterranean	R, F, B, A
Scincidae		<i>Ablepharus kitaibelii</i>	-	LC	E- Mediterranean	F, A, P
	<i>Heremites auratus</i>	+	LC	SW-Asiatic	F, A, P	

Ophidia	Boidae	<i>Eryx jaculus</i>	+	LC	Mediterranean	F
	Colubridae	<i>Coronella austriaca</i>	-	DD	European	F, R
		<i>Dolichophis caspius</i>	+	DD	Turano-Mediterranean	B, P, A
		<i>Dolichophis jugularis</i>	-	LC	SW-Asiatic	B, P, A
		<i>Eirenis modestus</i>	+	LC	SW-Asiatic	F, A, P, B
		<i>Elaphe sauromates</i>	-	DD	Turano-Mediterranean	A, B, P
		<i>Hemorrhois nummifer</i>	-	LC	Turano-Mediterranean	A, B, P
		<i>Malpolon insignitus</i>	-	LC	Mediterranean	F, A, P, B
		<i>Platyceps collaris</i>	-	LC	E- Mediterranean	B
		<i>Platyceps najadum</i>	-	LC	Turano-Mediterranean	F, A, P, B
		<i>Telescopus fallax</i>	-	LC	Turano-Mediterranean	F, B
		<i>Zamenis situla</i>	-	LC	Turano-Mediterranean	F, B, P, R
	Natricidae	<i>Natrix natrix</i>	+	LC	Central Asiatic-European-Mediterranean	W
		<i>Natrix tessellata</i>	+	LC	Central Asiatic-European	W
Typhlopidae	<i>Xerotyphlops vermicularis</i>	-	LC	Turano-Mediterranean	F, B, P	
Viperidae	<i>Montivipera xanthina</i>	+	LC	E- Mediterranean	R	



**Figure 3.** Species identified in the study area (a- Amphibia species, b- Testudinata species, c-Lacertilia species, d-Ophidia species).

**Habitat Types:** R: Rocky and Stony area, F: Forest, B: Bushes, P: Pasture, A: Agricultural land, W: Wetlands, S: Sea.

Amphibia species are usually found in wetlands, puddles, moist bush bottoms, farmland, and pastures;



**Figure 4.** Potential threat factors in the study area (a- Quarry, b-Environmental Pollution, c- Drying of wetlands, d-Livestock grazing, e- Agricultural fields).



**Figure 5.** Road deaths of some amphibians and reptiles (a-*Dolichophis caspius*, b-*Pseudopus apodus*, c- *Lacerta trilineata*, d-*Eryx jaculus*, e-*Testudo graeca*, f-*Bufotes variabilis*).

Testudinata species are found in wetlands, forest, pasture and agricultural land; Lacertilia species have been identified in forests, rocky and stony areas, bushes, and farmland, and Ophidia species have generally been identified in wetlands, bushes, rocky areas, farmland, and pastures. Species identified in the study area have been mapped in detail (Fig. 3).

During field studies, it has been found that amphibian and reptile species in the region have been negatively affected by livestock grazing, environmental pollution, drying of wetlands, quarry activities, and increased agricultural areas (Fig. 4).

In addition, due to intensive tourism and agriculture activity in our study area, road deaths of Amphibia and Reptilia species were frequently encountered (Fig. 5).

## Discussion

During conveyed field studies in August 2019-May 2020, a total of 21 species, including 5 amphibia species and 16 reptile species, were found in the the southwestern coastal regions of Çanakkale. As a result of observations during the field studies, potential threat factors were identified for amphibian and reptile species that are distributed in the region.

In recent studies, distribution of the species of *Dolichophis jugularis* and *Stellagama stellio* have been found in Çanakkale by overcoming the isolation barrier of the Kaz Mountains (Tosunoğlu *et al.*, 2017). *Stellagama stellio* found in the Babakale locality within the boundaries of our study site were found at the extreme point of the coast, and thanks to this project, they were found at the extreme point of the southwest coast of Çanakkale. In the study conducted by Başkale *et al.* (2018), it was reported that there was 1 nest belonging to sea turtles on the Çanakkale-Babakale beach. However, no traces of nests or sea turtles were found on the coasts during the field studies.

Habitat preferences of the identified species have been determined as pastures, agricultural land, forests, wetlands, bushes, and rocky and stony areas. These species were evaluated based on the IUCN (2020-1) criteria, and *Testudo graeca* species in ‘Vulnerable’ (VU) and *Emys orbicularis* species in ‘Near Threatened’ (NT) categories were found. Populations belonging to all of the detected species during field studies were distributed throughout the study area. Some road deaths of different species were encountered during the field studies. In previous studies (Akdeniz *et al.*, 2012), it has been

determined that sea turtles use the coasts of the Çanakkale to feed and overwinter. Başkale *et al.* (2018) have identified nests of sea turtles in Babakale (Başkale *et al.*, 2018), but as a result of our field studies along the coast, it has been determined that there are no nests for sea turtles. This is the first herpetofauna study of the Southwest coasts of Çanakkale. In Çanakkale province, a total of 9 amphibia species and 37 reptile species have been identified (Tosunoğlu *et al.*, 2017), and 5 amphibia species and 16 reptile species were found in the study area. According to these data, the study area has a considerable amount of biodiversity richness.

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## References

- Akdeniz, B., Özdilek, Ş. Y., Okur, E. & Gürsoy, S. (2012). Çanakkale kıyılarının deniz kaplumbağalarının (*Caretta caretta* ve *Chelonia mydas*) yaşama alanı olarak değerlendirilmesi. *Anadolu Doğa Bilimleri Dergisi*, 3(1), 37–45.
- Ayaz, D., Tok, C. V., Mermer, A., Tosunoğlu, M., Afsar, M., & Çiçek K. (2006). A New Locality for *Rana ridibunda caralinata* Arıkan, 1988 (Anura, Ranidae) in the Central Anatolia. *Ege Üniversitesi Su Ürünleri Dergisi*, 23(12), 181–183.
- Baran, İ. & Atatür, M. K. (1998). *Türkiye Herpetofaunası (Kurbağa ve Sürüngenler)*. T. C. Çevre Bakanlığı, Ankara. 1-214.
- Baran, İ. (1981). Kuzey Ege Denizi, Marmara Denizi ve Karadeniz'deki adalarımızın Herpetofaunasının taksonomik ve ekolojik araştırılması. *Doğa Bilim Dergisi, Temel Bilim*, Ankara, 5, 155–162.
- Baran, İ., Ilgaz, Ç., Avcı, A., Kumlutaş, Y. & Olgun, K. (2012). *Türkiye Amfibi ve Sürüngenleri*. Tübitak Popüler Bilim Kitapları. 1-204.
- Baran, İ., Tosunoğlu, M., Kaya, U. & Kumlutaş Y. (1997). Çamlıhemşin Rize Civarının Herpetofaunası Hakkında. *Doğa Türk Zooloji Dergisi*, 21(4), 409–416.
- Başkale, E., Sözbilen, D., Katılmış, Y., & Azmaz, M. (2018). The sporadic nesting sites of Loggerhead and Green Turtles on Western Anatolian Coasts. 38. Annual Symposium on Sea Turtle Biology and Conservation Presentation Abstracts. P096. 18-23 February 2018.
- Başoğlu, M. & Baran, İ. (1977). *Türkiye Sürüngenleri. Kısım I Kaplumbağa ve Kertenkeleler*. Ege Üniversitesi Fen Fakültesi Kitaplar Serisi, Bornova-İzmir. No: 76. 1-272.
- Başoğlu, M. & Baran, İ. (1980). *Türkiye Sürüngenleri, Kısım II Yılanlar*. Ege Üniversitesi Fen Fakültesi Kitaplar Serisi, Bornova-İzmir. No: 80. 1-218.
- Başoğlu, M. & Özeti, N. (1973). *Türkiye Amfibileri*. Ege Üniversitesi Fen Fakültesi Kitapları Serisi, No: 50. İzmir.
- Başoğlu, M. (1947). On some varieties of *Vipera berus* from the extreme North-eastern Anatolia. *Revue de la Faculte des Sciences de L'Universite d'Istanbul, Sciences Naturelles*, İstanbul, Seri B, Cilt XII.
- Baycan, B. (2018). Çanakkale Onsekiz Mart Üniversitesi Zooloji Müzesi Amphibia ve Reptilia Örneklerinin Sistematik ve Faunistik Yönden İncelenmesi. Çanakkale Onsekiz Mart Üniversitesi, Fen Bilimleri Enstitüsü. Çanakkale. (Master Thesis)
- Bird, C.G. (1936). The distribution of the reptiles and amphibians in Asiatic Turkey, with notes on a collection from the vilayets of Adana, Gaziantep and Malatya. *Annals and Magazine of Natural History*, 18(10), 257–281.
- Bodenheimer, F. S. (1944). Introduction into the knowledge of Amphibia and Reptilia of Turkey. *Revue de la Faculté des Sciences de l'Université d'Istanbul*, B. 9, 1–78.
- Budak, A. & Göçmen, B. (2008). *Herpetoloji (Ders Kitabı)* (İkinci baskı). İzmir: Ege Üniversitesi Yayınları. Fen Fakültesi Yayın No. 194.
- Bulut, A. (2010). Gökçeada' daki Amfibi ve Sürüngenlerin Ekoloji ve Biyolojileri. Çanakkale Onsekiz Mart Üniversitesi. Çanakkale. (Master Thesis).
- Demirsoy, A. (1996). *Genel ve Türkiye Zoocoğrafyası "Hayvan Coğrafyası"*, Ankara: Metaksan A.Ş.
- Erdoğan, A. Öz., Sert, H. & Tunç R. (2002). Antalya Yamansız Gölü ve Çevresinin Avifaunası ve Herpetofaunası. *Ekoloji*, 10(43), 33–39.

- Göçmen, B., Tok, C.V., Kaya, U. & Tosunoğlu, M. (1996). Kuzey Kıbrıs Herpetofaunası Hakkında Bir Ön Çalışma. *Turkish Journal of Zoology*, 20, Ek Sayı 161-176.
- Göçmen, B., Tosunoğlu, M., & Taşkavak, E. (2003). A taxonomic comparison of the Hardun, *Laudakia stellio* (Reptilia, Agamidae), populations of southern Turkey (Hatay) and Cyprus. *Zoology in the Middle East*, 28, 25-32.
- Gül, Ç., & Tosunoğlu, M. (2013). New Herpetofaunal Locality Records on the Bozcaada (Tenedos) and Ecological Observations. Second Scientific Conference on Ecology. (November 1st 2013), Plovdiv Bulgaria.
- Hür, H., Uğurtaş, İ. H., & İşbilir, A. (2008). The amphibian and reptile species of Kazdağı National Park. *Turkish Journal of Zoology*, 32, 359-362.
- Ilgaz, Ç., & Kumlutaş, Y. (2005). The Amphibian and Reptile Species of İğneada (Kırklareli) and its Vicinity. *Pakistan Journal of Biological Sciences*, 8(4), 558-560.
- Ilgaz, Ç. (2009). Comparative morphology of *Darevskia parvula* (Lantz-Cyren, 1936) (Sauria: Lacertidae) subspecies in Northeastern Anatolia, Turkey. *North-Western Journal of Zoology*, 5(2), 263-280.
- IUCN. (2020). The IUCN Red List of Threatened Species. Version 2020-1. <<https://www.iucnredlist.org>>
- Kaya, S. (2005). Çanakkale İli ve Civarının Herpetofaunası. Çanakkale Onsekiz Mart Üniversitesi, Fen Bilimleri Enstitüsü, Çanakkale. pp. 104. (Master Thesis)
- Kete, R. & Yılmaz, İ. (2000). İzmir Bölgesinde yaşayan *Bufo viridis* (Anura, Amphibia) in üreme ve gelişme biyolojisi üzerine bir inceleme. *Ekoloji*, 10(37), 38.
- Kır, İ. (2005). Karataş Gölü (Burdur) ve çevresinin balık, amfibi ve sürüngen faunası. *Ekoloji*, 14(56), 23-25.
- Kosswig, C. (1951). Herpetologisches aus der Türkei. *Mitt. Mus. Kulturgeschichte und Naturwiss. Arbeitskreis*, Magdeburg, 3, 16-23
- Kumlutaş, Y., Durmuş, S. H. & Ilgaz Ç. (2011). Kaş-Kekova Özel Çevre Koruma Bölgesinin Herpetofaunası. *Anadolu Doğa Bilimleri Dergisi*, 2(1), 28-33.
- Kumlutaş, Y., Durmuş, S. H. & Ilgaz, Ç. (2000). Yamanlar Dağı ve Karagöl civarındaki kurbağa ve sürüngenlerin taksonomisi ve ekolojisi. *Ekoloji*, 10(37), 12-16.
- Kumlutaş, Y., Öz, M., Durmuş, H., Tunç, M. R., Özdemir, A., & Düşen, S. (2004). On Some Lizard Species of the Western Taurus Range. *Turkish Journal of Zoology*, 28, 225-236.
- Kumlutaş, Y., Tosunoğlu, M. & Göçmen B., (1999). Karadeniz Bölgesi *Rana ridibunda* (Anura: Ranidae) Popülasyonları Üzerinde Morfolojik Araştırma. *Turkish Journal of Zoology*, 23 Ek Sayı 3, 801-806.
- Margules, R. C., & Pressey, L. R. (2000). Systematic conservation planning. *Nature*, 405, 243-253.
- Mertens, R. (1952a). Amphibien and Reptilien aus Türkei. *Revue de la Faculte des Sciences de L'Universite d'Istanbul, Serie B, Sciences Naturelles*, İstanbul, 17(1), 41-75.
- Mertens, R. (1952b). Nachtrag zu Amphibien und Reptilien aus der Türkei. *Revue de la Faculte des Sciences de L'Universite d'Istanbul, Seri B*, 17, 353-355.
- Mertens, R. (1953). Weiteres zur Kenntnis der Herpetofauna der asiatischen Türkei. *Revue de la Faculte des Sciences de L'Universite d'Istanbul, Seri B*, 18, 373-375.
- Özcan, S. (2012). Madran Dağı (Ayдын)'nın Herpetofaunası. Adnan Menderes Üniversitesi. Türkiye. pp. 152. (Master Thesis).
- Özeti, N. & Yılmaz, İ. (1994). *Türkiye Amfibileri*. Ege Üniversitesi Fen Fakültesi Kitaplar Serisi No: 151, İzmir.
- Sindaco, R., Venchi, A., Carpaneto, G. & Bologna M. (2000). The Reptiles of Anatolia a Checklist and Zoogeographical Analysis. *Biogeographia*, vol. XXI., 441-553, Roma.
- Tok, C. V., & Çiçek, K. (2014). Amphibians and reptiles in the Province of Çanakkale. *Herpetozoa*, 27(1/2): 65-76.
- Tok, C. V., Günay, U. K., Yakın, B. Y. & Kaplan, Ç. (2018). Araplar Boğazı (Karamenderes Vadisi, Çanakkale) ve Civarının Herpetofauna ve Avifaunası. *Doğanın Sesi*, (2), 3-17.
- Tosunoğlu, M. & Uysal, İ. (2012). Kavak Deltası (Saroç Körfezi)'nin Herpetofaunal zenginliđi. *Anadolu Doğa Bilimleri Dergisi*, 3(2), 52-58.
- Tosunoğlu, M., Gül, Ç., & Uysal, İ. (2009). The Herpetofauna of Tenedos (Bozcaada, Turkey). *Herpetozoa*, 22(1/2). 75-78.
- Tosunoğlu, M., Gül, Ç. & Uysal, İ. (2017). *Çanakkale Amfibi ve Sürüngenleri*. Orman ve Su İşleri Bakanlığı, 1-71.
- Uğurtaş, İ. H., Kaya, R. S., & Akkaya A. (2007). The Herpetofauna of the Islands in Uluabat Lake (Bursa). *Ekoloji*, 17(65), 7-10.
- Uysal, İ. (2011). Kavak Deltası (Saroç Körfezi, Gelibolu-Türkiye)'nin Herpetofaunası ve Mevcut Türlerin Habitat Seçimleri. Çanakkale Onsekiz Mart Üniversitesi Fen Bilimleri Enstitüsü. Çanakkale. pp. 86. (Master Thesis)
- Venzmer, G. (1922). Neues Verzeichnis der Amphibien und Reptilien von Kleinasien. *Zoologische Jahrbücher Abteilung für Systematik*. 46, 43-60.
- Werner, F. (1902). Die Reptilien und Amphibienfauna von Kleinasien. Sitzungsberichte der Mathematisch und Naturwissenschaftlich Klasse der Kaiserliche. *Academie der Wissenschaften in Wien*, 101, 101057-1121.