

Amphibians of the Borçka-Karagöl Nature Park (Artvin / Turkey) and Vicinity

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ABSTRACT: Amphibian species and their distribution of the Borçka-Karagöl natural park and its environs was determined between 2003-2006 and 2015-2017 by field studies. A total of seven amphibian species were found in the Karagöl Nature Park and its vicinity, including five species of anurans [*Rana macrocnemis*, *Pelophylax ridibundus*, *Hyla orientalis*, *Pelodytes caucasicus* and *Bufo verrucosissimus*] and two newts [*Mertensiella caucasica* and *Ommatotriton ophryticus*]. It has been determined that species of *Rana macrocnemis*, *Pelophylax ridibundus*, *Hyla orientalis*, *Pelodytes caucasicus*, *Bufo verrucosissimus*, *Mertensiella caucasica* and *Ommatotriton ophryticus* inhabits at 1465 meters altitude in Karögöl as syntopically. Between 1465-1750 m, *Rana macrocnemis*, *Pelophylax ridibundus*, *Hyla orientalis*, *Pelodytes caucasicus*, *Bufo verrucosissimus* and *Ommatotriton ophryticus* syntopically inhabits and between 1750 and 2200 m, *Rana macrocnemis* and *Mertensiella caucasica* species live together. At Karagöl, *Pelophylax ridibundus* is dominate species while *Rana macrocnemis* is dominate species in the forest and subalpine region.

Keywords: Amphibia, Artvin, Karagöl, *Mertensiella caucasica*, *Pelodytes caucasicus*, *Rana macrocnemis*,

Borçka-Karagöl Tabiat Parkı (Artvin / Türkiye) ve Çevresinin Kurbağaları

ÖZET: Borçka-Karagöl Tabiat Parkı ve çevresinde yayılış gösteren kurbağa türleri ve dağılışları, 2003-2006 yılları ile 2015-2017 yıllarında yapılan arazi çalışmalarıyla belirlenmiştir. Karagöl Tabiat Parkı ve çevresinde 5 kuyruksuz [*Rana macrocnemis*, *Pelophylax ridibundus*, *Hyla orientalis*, *Pelodytes caucasicus* ve *Bufo verrucosissimus*] ve iki kuyruklu kurbağa [*Mertensiella caucasica* ve *Ommatotriton ophryticus*] türü olmak üzere toplam yedi amfibi türünün yaşadığı tespit edilmiştir. Karögöl'de, 1465 metre yükseklikte *Rana macrocnemis*, *Pelophylax ridibundus*, *Hyla orientalis*, *Pelodytes caucasicus*, *Bufo verrucosissimus*, *Mertensiella caucasica* ve *Ommatotriton ophryticus* türlerinin sintopik olarak yaşadığı belirlenmiştir. 1465-1750 m arasında söz konusu türlerden *Rana macrocnemis*, *Pelophylax ridibundus*, *Hyla orientalis*, *Pelodytes caucasicus*, *Bufo verrucosissimus* ve *Ommatotriton ophryticus* birlikte yaşamaktadır. 1750 – 2200 m arasında ise *Rana macrocnemis* ve *Mertensiella caucasica* türleri birlikte yaşamaktadır. Karagöl'de *Pelophylax ridibundus* baskın tür olarak göze çarpmaktayken, Orman içi ve subalpin bölgede *Rana macrocnemis* baskın tür olarak gözlenmiştir.

Anahtar Kelimeler: Amfibi, Artvin, Karagöl, *Mertensiella caucasica*, *Pelodytes caucasicus*, *Rana macrocnemis*,

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INTRODUCTION

The Caucasus is unique for most of amphibians due to the extreme climatic humidity and also allows the survival of endemic amphibian species (Baran et al., 1997, Tarkhnishvili and Gokhelashvili 1999). The Caucasian amphibian fauna penetrates into the Northeast Anatolia mainly along the colchic valley at the Black Sea coast. This area harbors one of the most special amphibian fauna within the western Palearctic region. Accordingly, this region has a large number of protected areas with different conservation objectives for sustainability of this unique biological diversity. Studies on protected areas in the northeastern Anatolia are within the scope of flora elements and some flag fauna species belonging to the birds or mammals (Gündoğdu 2002, 2011, Ünal and Küçük, 2004, Gündoğdu et al., 2005, Oğurlu et al., 2005, Eminağaoğlu et al., 2007, Beşkardeş et al., 2007). In addition to this, there are few works dedicated to ecology of amphibians in this special areas of the Northeastern Anatolia (Baran et al., 1997, Eksilmez et al., 2017, Çiçek et al. 2011).

Karagöl nature park is located on the north-western side of the Karçal Mountains (3415 m) in the Borçka (Artvin) district of the Northeastern Anatolia region near the Turkey-Georgia border (Figure 1). Thus, this area was being influenced from the Caucasus ecological region features.

This study aims to describe amphibian species and their distribution at Borçka-Karagöl natural park by field studies conducted between 2003-2006 and 2015-2017. In addition, information on the conservation status of the species has been provided.

MATERIALS AND METHODS

All data were collected in the years 2003-2006 and 2015-2017, inside the territory of protected areas of Karagöl Nature park (Figure 1). Amphibians were searched particularly the breeding season between March and September and especially fieldwork was carried out day and night. Stations were set up at different altitudes and visited regularly. They were captured by hand or dip net and the side of capture and the habitat at each capture side was recorded. Coordinates and altitude values were recorded using GPS.

RESULT AND DISCUSSION

At the end of this study seven amphibian species were recorded in the Karagöl Nature Park and its vicinity, including five species of anurans [*Rana macrocnemis*, *Pelophylax ridibundus*, *Hyla orientalis*, *Pelodytes caucasicus* and *Bufo verrucosissimus*] and two newts [*Mertensiella caucasica* and *Ommatotriton ophryticus*].



Figure 1. Location of Karagöl Nature Park on the map.

Mertensiella caucasica (Waga, 1876) – Caucasian Salamander

Type Locality: Western Georgia

General Characteristics: Adult and juvenile specimens was observed near small stream just near Karagöl (1465 m) at night. The other population were encountered during the day in the subalpine slopes

(2200 m) near the stream (Figure 2). This species share the breeding area with *R. macrocnemis* in the high subalpine slopes. Active specimens are found in study from April to August.

Conservation status: This species was included in the IUCN under the category vulnerable (VU). However, it has been reported that the population has decreased (IUCN,2017).



Figure 2. *Mertensiella caucasica* (Photo: M. Afsar)

Ommatotriton ophryticus (Berthold, 1846) – Northern Banded Newt

Type Locality: Tiflis, Georgia

General Characteristics: This species lives in lakes, temporary pools and rivers between 1465-1750

m and shares its breeding area with *Rana macrocnemis*, *Pelophylax ridibundus*, *Hyla orientalis*, *Pelodytes caucasicus* and *Bufo verrucosissimus* in the study area. Active specimens are found in the water from the beginning of April to the end of August (Figure 3).

Conservation status: IUCN- near threatened (NT).



Figure 3. *Ommatotriton ophryticus* (Photo: M. Afsar)

Pelophylax ridibundus (Pallas, 1771) – Eurasian Marsh Frog

Type Locality: Northwestern Kazakstan

General Characteristics: According to our observation this species is a dominant species in Karagöl lake (Figure 4). This species was also encountered in temporary ponds between 1450-1750 meters. This

species not preferred to inhabit dense shaded forests. This frog reaches 1750 m above the sea levels in Karagöl national park and shares its breeding area with *Rana macrocnemis*, *Hyla orientalis*, *Pelodytes caucasicus*, *Bufo verrucosissimus* and *Ommatotriton ophryticus* in the study area. Active specimens are found in the water from the beginning of March to the end of September.

Conservation status: IUCN- Least concern (LC).



Figure 4. *Pelophylax ridibundus* (Photo: M. Afsar)

Rana macrocnemis Boulenger, 1885 – Brusa frog

Type Locality: Bursa

General Characteristics: This species was encountered in lakes, temporary pools and rivers between 1400-2200 m meters. According to our observation, this species is a dominant species except of the Karagöl lake. This frog reaches subalpine meadow

in Karagöl national park and shares its breeding area with *Pelophylax ridibundus*, *Hyla orientalis*, *Pelodytes caucasicus*, *Bufo verrucosissimus*, *Mertensiella caucasica* and *Ommatotriton ophryticus*. Active specimens are found in the water from the beginning of March to the end of October (Figure 5).

Conservation status: IUCN- Least concern (LC), (IUCN, 2017).



Figure 5. *Rana macrocnemis* (Photo: M. Afsar)

Pelodytes caucasicus Boulenger, 1896 - *Caucasian Parsley Frog*

Type Locality: Georgia

General Characteristics: This species was encountered in lakes and temporary pools between

1400-1750 meters. Active specimens are found in the water from the beginning of May to the end of September (Figure 6).

Conservation status: IUCN-near threatened (NT), (IUCN, 2017).



Figure 6. *Pelodytes caucasicus* (Photo: M. Afsar)

Hyla orientalis (Bedriaga, 1890) – Ağaç Kurbağası

Type Locality: Ukraina and Romania

This species was encountered in lakes and temporary pools between 1400-1750 meters. This frog shares its breeding area with *Rana macrocnemis*, *Pelophylax ridibundus*, *Pelodytes caucasicus*

Bufo verrucosissimus, *Mertensiella caucasica* and *Ommatotriton ophryticus*. Active specimens are found in the water from the beginning of April to the end of September (Figure 7).

Conservation status: IUCN- Least concern (LC), (IUCN, 2017).



Figure 7. *Hyla orientalis* (Photo: M. Afsar)

Bufo verrucosissimus (Pallas, 1814) – Kara Kurbağası

Type Locality: Sweden

Recuero et al., 2012 reported that *Bufo verrucosissimus* lived in the Caucasus. This

species was observed in temporary ponds, creeks and lakes between the altitudes of 1400-1750 m. This species shares its breeding area with *Rana macrocnemis*, *Pelophylax ridibundus*, *Hyla orientalis*, *Pelodytes caucasicus*, *Mertensiella caucasica* and *Ommatotriton ophryticus*. A female

Bufo verrucosissimus was observed when doing amplexus with a male of *Pelophylax ridibundus* in Karagöl (Figure 8). Specimens belong to this species

active in Karagöl from the end of March to the end of October. Conservation status: IUCN-near threatened (NT), (IUCN, 2017).



Figure 8. *Bufo verrucosissimus* (Photo M. Afsar)

CONCLUSION

Borçka-Karagöl Nature Park located near the Turkey-Georgia border. Accordingly, this area and its vicinity was being influenced from the Caucasus ecological region features. This region is characterized by moist, temperate Black Sea climate in all seasons (Kopar and Sever 2008) and also has Zoogeographical importance (Demirsoy, 1999). The distribution range of the amphibian species in this study correspond to those given on previous studies (Başoğlu and Özeti 1974, Baran and Atatür 1998, Baran et al 2012). Among the amphibian species inhabiting the Nature park and its environs, *Mertensiella caucasica* is a local endemic and found only in the West Lesser Caucasus of Georgia and Northeastern Turkey. According to Tarkhnishvili and Gokhelashvili (1999) within its range, *Mertensiella caucasica* is found at elevations between 50-2000 m above the sea level. In our study the Caucasian Salamander were also observed at 2200 meters at Büyük yayla site. *Bufo variabilis* (Pallas, 1769) was not detected in the study area. Tarkhnishvili and Gokhelashvili (1999) stated that *Bufo variabilis* is rarely seen in humid wooded areas of the Caucasus, but can be found in lowland areas. This species accord with Ordu-Giresun region by Kumlutaş et al. (1998) and Murgul (Artvin) by Kutrup (2001).

Based on our observations in the study area, the main threats to amphibian populations are; wastes

of hotels, picnickers and campers, noise pollution caused by the use of the zone as a festival area, voices due to passing through the Nature Park in the highway sections, contraction of the lake area due to siltation. It was reported by local peoples that artificial introduction of carp in the Karagöl. The high density of fish population at the amphibians breeding site can cause the decline of the amphibian species. It has also been determined that some amphibian species falling in the deep concrete pool used for irrigation purposes in the growing of seedlings in the region. Some amphibians have also been found to have been killed because they cannot go out. Despite abovementioned anthropogenic pressure Karagöl Nature Park offering a home range for viable most of the amphibian species.

In the Rapid Assessment and Prioritization of Protected Areas Management (Anonim 2017) report Karagöl naturel park undergo anthropogenic pressure through recreation, dam, hydroelectric plant, transport networks. It has been identified as one of the areas with the highest pressure and threats within the natural parks. These situation may cause deterioration of other suitable biotopes identified in the wildlife park for amphibian populations. Taking the necessary precautions, we believe that the management of the area in terms of conservation usage balance will remove the factors that threaten other fauna and flora elements as well as amphibian populations

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