

Original research

Some new records of *Pelodytes caucasicus* Boulenger, 1896, Caucasian Parsley Frog, and *Mertensiella caucasica* (Waga, 1876), Caucasian Salamander, from Northeastern Turkey

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Abstract: Here, we report some new localities for *Pelodytes caucasicus*, Caucasian Parsley Frog, from Giresun (Cımbırtlık, Dereli and Gelevera River) and *Mertensiella caucasica*, Caucasian Salamander, from Gümüşhane (Kocadal and Kalis River) provinces based on our fieldwork conducted in 2017. These new localities were filled in the gap in the both species' distribution range in the eastern Black Sea Region, Turkey. Besides, we updated their distribution maps for future conservation and management studies.

Keywords: Amphibia, Caucasian Parsley Frog, Caucasian Salamander, new record, distribution, northeastern Turkey.

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Introduction

Turkey is home to about 36 amphibian species (19 urodelans and 17 anurans) (Baran et al., 2012; Yaşar, 2018) and has rich herptile diversity. The Caucasus ecoregion is biologically the richest and diverse region and one of 36 biodiversity hotspots worldwide. It covers an area of 580,000 km², and includes six countries: Armenia, Azerbaijan, Georgia, Russia, Iran and northeast of Turkey. Seventeen species of amphibians inhabit in the region and four of them are endemic (Zazanashvili et al., 2012).

Pelodytes caucasicus Boulenger, 1896, distributes in mountainous areas of the eastern Black Sea region of Turkey, northern Georgia, Russian Federation and northwestern Azerbaijan up to 2300 m a.s.l (Kaya et al.,

2009a; Zazanashvili et al., 2012; Litvinchuk and Kidov, 2018). According to the IUCN Red List, it is listed as “NT – Near Threatened” and its population is decreasing due to habitat loss and pollution (including through pesticides, mineral fertilizers, and cattle), by predation from the introduced *Procyon lotor* (Kaya et al., 2009a).

Mertensiella caucasica (Waga, 1876), is distributed in the northeast of Turkey (Ordu, Giresun, Rize, Trabzon, Artvin, Ardahan, Bayburt, and Gümüşhane) (Başoğlu et al., 1994; Baran et al., 2012; Gül et al., 2017, 2018) and western Georgia (Kaya et al., 2009b) up to 2400 m a.s.l. (Tarkhnishvili and Gokhelasvili, 1999). Due to its fragmented population, it is categorized as “VU-Vulnerable” according to the IUCN Red List (Kaya et al., 2009b).

Caucasian Salamander and Caucasian Parsley Frog were known from several localities in the northeastern Turkey and their potential distribution was modeled (Gül et al., 2018; Litvinchuk and Kidov, 2018). Here we report some new localities for two Caucasian amphibians in the eastern Black Sea region.

Materials and Methods

During our fieldwork on conservation action plan of Caucasian Salamander in five provinces (Giresun, Trabzon, Gümüşhane, Rize, and Artvin) in the eastern Black Sea region between April and December on 2017, we found two new localities for Caucasian Parsley Frog on 16.06.2017 in Giresun: Cimbirtlık forests, Dereli, Giresun (Lat.: 40.587819°, Long.: 38.455281°, 1297 m a.s.l.) and on 26.06.2017 along the Gelevera River (Lat.: 40.691496°, Long.: 38.88075°, 1343 m a.s.l.). We visited all known localities of *M. caucasica*, searched the other suitable biotopes and found several new localities for *M. caucasica* in the eastern Black Sea region (Giresun, Trabzon, Gümüşhane, Rize ve Artvin). Two of them in Gümüşhane; Kalis River (Lat.: 40.349233°, Long.: 39.214676°, 1557 m a.s.l.) and Kocadal (Lat.: 40.32375°, Long.: 39.16471°, 1966 m a.s.l.) are the southernmost distribution of the species. We visualized new distribution maps for both species by using ArcGIS (10 trial version, Esri).

Results

During our fieldworks, tadpoles and adults of *P. caucasicus* were found in the vicinity of Gelevera River, Giresun province. Also, adult specimens were photographed in the Cimbirtlık Forests between Dereli and Kümbet, Giresun province (Fig. 1). With these new localities, the distribution of *P. caucasicus* was extended 90 km air distance to the west, from the western known locality (Hıdırnebi, Trabzon) (İğci, et al., 2013). Also, the authors stated that Prof. Dr. David Tarkhnishvili had photographed a juvenile individual from Turnalık, (Ordu province) (İğci et al., 2013). Thus, our records filled the gaps its distribution and strengthened presence possibility in the Ordu province. We prepared a detailed distribution map for Caucasian Parsley Frog, with both old and new records, to provide a basis for future conservation and management studies (Fig. 2).



Figure 1. The general view of adult male (a) and female (b) of *Pelodytes caucasicus* from Giresun province with its biotope from Gelevera stream (c) and Cimbirtlık, Dereli (d).

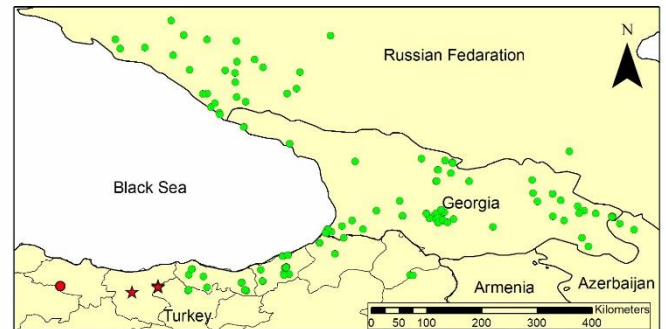


Figure 2. Distribution of Caucasian Parsley Frog, *Pelodytes caucasicus*. Red Star: new localities, Red circle: Personal record of Prof. Dr. D. Tarkhnishvili; Green circles: known localities (Steiner, 1968; Golubev, 1980; Tarkhnishvili, 1996; Franzen, 1999; Tarkhnishvili and Gokhelasvili, 1999; Tarkhnishvili et al., 2002; Tosunoğlu and Taşkavak, 2004; Afsar et al., 2012; Afsar et al., 2018; İğci et al., 2013; Gül, 2014; Veith et al., 2016).

In our fieldwork on conservation action plan of Caucasian salamander in the five provinces (Giresun, Trabzon, Gümüşhane, Rize, and Artvin), we visited all known localities, searched the other suitable biotopes. The most important localities were Kalis River (Lat.: 40.349233°, Long.: 39.214676°, 1557 m a.s.l.) and Kocadal River basins (Lat.: 40.32375°, Long.: 39.16471°, 1966 m a.s.l.) in the province of Gümüşhane (Fig. 3). These localities were the southernmost border its

distribution. All known and new localities were showed in the Fig. 4.



Figure 3. The general view of adult male (a) and female (b) of *Mertensiella caucasica* from Gümüşhane province with its biotope from Kocadal stream (c) and Kalis stream (d).

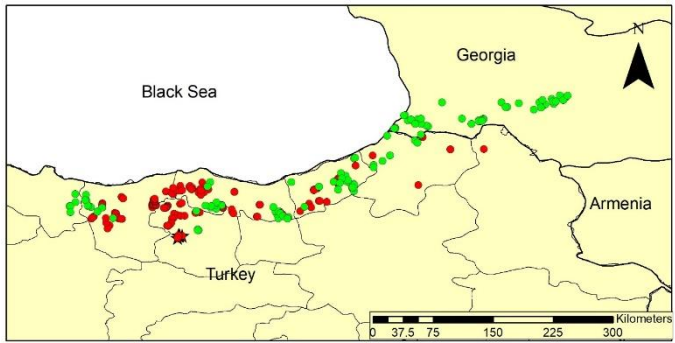


Figure 4. Distribution of Caucasian Salamander, *Mertensiella caucasica*. Red Star: new localities, Red circle: new localities. Green circles: known localities (Atatür and Budak, 1982; Yılmaz, 1987; Franzen, 1985, 1999; Tarkhishvili and Serbinova, 1993; Tarkhishvili, 1996; Başoğlu et al., 1994; Afsar et al., 2012; Afsar et al., 2018; Tarkhishvili et al., 2009, Gül, 2014; Gül et al. 2016).

Discussion

Pelodytes caucasicus inhabits mountainous part of Caucasus and generally associated with broad-leaved, and mixed coniferous-deciduous (Terentjev and Chernov, 1949; Başoğlu et al., 1994; Tarkhishvili and Gokhelasvili 1999, AmphibiaWeb 2018). Its presence in the Hıdırnebi Yayla, Trabzon was recently reported by İğci et al. (2013). With our study, the distribution of the specimen was extended to 90 km air distance to the west. Also, İğci et al. (2013) stated that Prof. Dr. D. Tarkhishvili had observed juvenile individuals in Ordu province. The presence of species in Ordu province has strengthened with our records.

Litvinchuk and Kidov (2018) modeled the potential distribution of *P. caucasicus* by using the known localities and our records from Giresun province, suit to the possible areas which has been given in that study. During the fieldwork, we observed habitat loss and fragmentation due to urbanization, infrastructure activities, forestry activities, and intensive ecotourism. We suggest the conservation and management plans are immediately needed for sustainability of the species. Thus, the plans could help to shape its real distribution.

The Caucasian Salamander lives some various habitats, including in the beech, coniferous, and mixed forests, in the subalpine belt and in alpine meadows (AmphibiaWeb, 2018). The species lives along small mountain streams with an uneven flow, usually with stony beds and shelters formed by stones or/and fallen logs. But it avoids anthropologically altered landscapes (Tarkhishvili and Kaya, 2009). Its distribution depends on rainfall, temperature, and slope (Tarkhishvili et al., 2009).

Up to now, the occurrences of the Caucasian Salamander were reported from the several localities in the eastern Black Sea region. During the fieldworks, we focused on possible areas and we found several new localities. The most important ones were province of Gümüşhane. The localities in Kocadal (Torul, Gümüşhane) and Kalis River (Gümüşhane) are its southernmost border of the species. Recently, Gül et al. (2017) recorded two new localities from Demirkapı village and Soğuksu in the Gümüşhane province. They also indicate that the constructions of road and dam are main threat in the region. We observed the species mainly threatened from habitat loss and degradation according to the insensible ecotourism activities, construction, and urbanization activities and pollution (Tok et al., 2018).

Summary, Caucasian Salamander and Caucasian Parsley Frog are two amphibians living in the eastern Black Sea Region and endemic to Caucasus. Our results filled the gaps of their distribution and extended its distribution area. We hope our results could be useful for future management/conservation plans for sustainability both endangered and endemic amphibians.

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