



New Records of Kızılırmak Toothcarp, *Aphanius marassantensis* from Central Yeşilirmak River Basin (Turkey).

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Abstract

New records of *Aphanius marassantensis* were given for Yeşilirmak River Basin in this note. The species was originally described from Kızılırmak River Basin and was accordingly named as Kızılırmak toothcarp. Its occurrence in Yeşilirmak has once been mentioned for the delta area but not verified. In this study, a population of *A. marassantensis* was reported from the inner central part of the Yeşilirmak River Basin.

Keywords: Distribution range, endemic fish, Çorum, fish fauna, species diversity.

Introduction

Anatolia and the Iranian plateau have the highest species diversity of the genus *Aphanius* (Cyprinodontidae) in the world, which indicates that these areas are the speciation centre for the genus (Wildekamp *et al.*, 1999; Esmaili *et al.*, 2014). In fact, *Aphanius* is currently represented by at least 14 extant species in Anatolia, 12 of which are endemic (Geiger *et al.*, 2014; Pflieger *et al.*, 2014). Most of the studies conducted in the area have been focused on the biogeography and evolutionary history of the species (Sözer, 1942; Kosswig, 1953; Hrbek *et al.*, 2002; Hrbek and Meyer, 2003), however, the distribution of many species is unclear.

The history of the species of *Aphanius* that distributed in Kızılırmak River Basin has been very complicated. Boulenger (1890) first described *A. danfordii* from Elbistan county, but seemingly also from Sultan Marshes (Develi depression, Central Anatolia) (Wildekamp *et al.*, 1999). The species distributed in Kızılırmak River Basin had been identified as *A. chantrei* by Sözer (1942), until it was accepted as a synonym of *A. danfordii* by Wildekamp *et al.* (1999). Finally, Pflieger *et al.* (2014) separated the population of Kızılırmak from those in Sultan Marshes (Soysallı village) and described it as a new species: *Aphanius marassantensis*, Kızılırmak Toothcarp.

The distribution of *A. marassantensis* was demonstrated particularly from Hirfanlı Reservoir,

one of the biggest dam lakes in Turkey, and from the Bafra district (the delta of the Kızılırmak river) (Yoğurtçuoğlu and Ekmekçi, 2013; Pflieger *et al.*, 2014). Hrbek *et al.* (2002) recorded *A. danfordii* from the lower Yeşilirmak without exact location information. Pflieger *et al.*, (2014) later disputably assumed that this species might actually be *A. marassantensis*. In this study we have proved and documented the occurrence of *A. marassantensis* in the central Yeşilirmak River Basin.

Material and Methods

Sampling was carried out in two different locations in Central Yeşilirmak River Basin in Çorum, approximately 200 km southwest of the Yeşilirmak River Delta (Figure 1) on 16 April 2016. First location was situated in Çorum Brook (40° 22'N - 35° 13'E and 40° 23'N - 35° 15'E) in the reach of Çekerek Stream, one of the main tributaries of Yeşilirmak (Figure 2a). The second sampling location was a very small and isolated marsh close to Mecitözü Brook near a dry river bed (40° 26'N - 35° 16'E), 10 km north of the Çorum Brook (Figure 2b). Fish were captured using a cylindrical hand net (420 mm diameter and 4 mm mesh size), counted and released. A total of 5 scoops was towed at for each station. 10 specimens from each location were transported to the laboratory to be examined for their diagnostic characteristics such as number of branched rays in anal, dorsal, pectoral and caudal fins, number of

scales in lateral series and number of vertical bars in males. Population density was expressed as CPUE, i.e. total number of fish captured per one draw of net (Ruiz-Navarro *et al.*, 2011).

Results

In this study we found at least one population of *A. marassantensis* from Central Yeşilirmak River Basin, approximately 200 km southwest of the Yeşilirmak River Delta.

Family: *Cyprinodontidae*

Aphanius marassantensis Pflaiderer, Geigerand Herder, 2014 (Figure 3)

Type Locality: Kızılırmak River – Hirfanlı Dam Lake

Material Examined

HFFBEL 164161, 10, 25.6-33.5 mm SL;

Turkey: Çorum Province, Mecitözü County, north of İbek Village, Çorum River, 40° 22'N - 35° 13'E. – HFFBEL 164162, 10, 24.3-31.7 mm SL; Turkey: Çorum Province, Mecitözü County, Mecitözücreek, near Sırçalı village 40° 23'N - 35° 15'E. – HFFBEL 3581, 10, 25.2-43.2 mm SL; Turkey: Ankara Province, Şereflikoçhisar County, Geçitli Village, Hirfanlı Reservoir, 39° 11'N - 33° 34'E (HFFBEL, Hacettepe Univ. Freshwater Fish Biology and Ecology Laboratory).

Meristic Characters

Dorsal fin with 9-10 branched rays, anal fin with 8-10 branched rays, pectoral fin with 14-16 rays, caudal fin with 8+8 branched rays, 27-28 scales along lateral series. Males have 9-12 dark brown vertical bars.

The population density was estimated to be 33.1

Table 1. *Aphanius* species in Anatolia with their Red List category according to IUCN (IUCN, 2015)

Species	Known Distribution Range in Turkey	IUCN Status
<i>Aphanius asquamatus</i>	Hazar Lake (Elazığ)	LC
<i>Aphanius villwocki</i>	Upper Sakarya Basin	LC
<i>Aphanius anatoliae</i>	Central Anatolia and Tuz Lake Basin	NT
<i>Aphanius sureyanus</i>	Burdur Lake (Burdur)	EN
<i>Aphanius danfordii</i>	Sultan Marshes – Develi (Kayseri)	CR
<i>Aphanius transgrediens</i>	Acıgöl Springs (Denizli – Afyon)	CR
<i>Aphanius splendens</i>	Gölcük Crater Lake (Isparta)	EX
<i>Aphanius fontinalis</i>	Salda and Yarışlı Lakes (Burdur)	NE
<i>Aphanius iconii</i>	Eğirdir and Kovada Lakes (Isparta)	NE
<i>Aphanius meandricus</i>	Upland Greater Meander River Basin	NE
<i>Aphanius meridionalis</i>	Inner Southwest Anatolia	NE
<i>Aphanius saldae</i>	Salda Lake (Burdur)	NE
<i>Aphanius marassantensis</i>	Kızılırmak Basin	NE
<i>Aphanius mento</i> *	Mediterranean Coasts	LC
<i>Aphanius fasciatus</i> *	Lagoons in the Mediterranean and Aegean Coasts	LC

(*) Non-endemic species; LC (Least Concern); NT (Near Threatened); EN (Endangered); CR (Critically Endangered); NE (Not Evaluated); EX (Extinct)

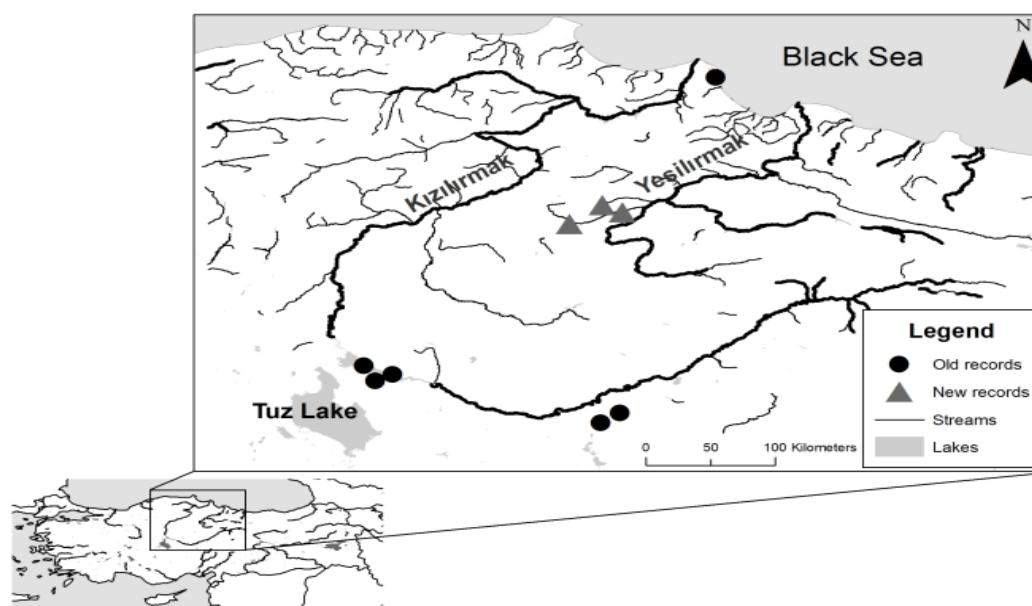


Figure 1. Distribution of *A. marassantensis* with new records.



Figure 2. Sampling areas. Çorum Stream (a) and isolated marsh near Mecitözü (b).



Figure 3. *A. marassantensis*. Male (left) and Female (right), photos by BaranYoğurtçuoğlu.

± 3.4 (mean \pm SD) individuals at the first location in Çorum Brook. Whereas at the second location in the small and isolated marsh close to Mecitözü Brook the estimated density was much lower, 3.5 ± 1.8 individuals.

Discussion

Translocation of native fish is mainly carried out for the purpose of aquaculture, biological control, recreation or sport fishing etc. Although one exceptional record concluding with the possibility of introduction by man, was given for *Aphanius cf. mento* (Balma *et al.*, 1995), none of these purposes seems realistic for *A. marassantensis* to be translocated consciously. *A. marassantensis* is a small-sized fish having maximum 5-6 cm total length (Yoğurtçuoğlu and Ekmekçi, 2015). Long distance dispersal as well as spawning or wintering migration is not known for this genus. Furthermore, the uncertain record of *A. marassantensis* in the Yeşilirmak River Delta provides strong support to the idea that the species is native to the Yeşilirmak River Basin as well. More detailed field studies in Yeşilirmak Basin may reveal the distribution range of *A. marassantensis*.

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