

FIVE NEW RECORDS FOR THE FISH FAUNA OF DURUSU LAKE BASIN (İSTANBUL)

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Abstract: Five freshwater fishes, *Carassius gibelio* (Bloch, 1782), *Gobio bulgaricus* Drensky, 1926, *Leucaspis delineatus* (Heckel, 1843) *Phoxinus strandjae* Drensky, 1926 and *Rutilus rutilus* (Linnaeus, 1758) were recorded for the first time for Istranca Stream which is emptying to Lake Durusu in İstanbul. With the result of present study, the number of the fish species living in the basin has increased to 33.

Keywords: Istranca stream, Fish fauna, Cyprinidae

Öz: **Durusu Gölü Havzası (İstanbul) Balık Faunası İçin Beş Yeni Kayıt**

Beş tatlısu balığı, *Carassius gibelio* (Bloch, 1782), *Gobio bulgaricus* Drensky, 1926, *Leucaspis delineatus* (Heckel, 1843) *Phoxinus strandjae* Drensky, 1926 ve *Rutilus rutilus* (Linnaeus, 1758) İstanbul'da bulunan ve Durusu Gölü'ne akan Istranca Deresi'nden ilk kez bildirilmektedir. Bu çalışma sonucu ile, havzada yaşayan balık türü sayısı 33'e yükselmiştir.

Anahtar Kelimeler: Istranca deresi, Balık faunası, Cyprinidae.

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Introduction

Turkey has a substantial biodiversity in respect to its geographical location. While totally 236 freshwater fish species inhabit in the inland waters of Turkey (Kuru, 2004), this number is increasing with some new studies (Freyhof and Özuluğ, 2006; Turan et al., 2006a; Turan et al., 2006b; Özuluğ and Freyhof, 2007a; Özuluğ and Freyhof, 2007b; Özuluğ and Freyhof, 2008; Turan et al., 2008a; Turan et al., 2008b; Turan et al., 2008c; Freyhof and Özuluğ, 2009a; Freyhof and Özuluğ, 2009b; Küçük et al., 2009; Turan et al., 2009a; Turan et al., 2009b; Schöter et al., 2009; Freyhof and Özuluğ, 2010; Turan et al., 2011; Özuluğ and Freyhof, 2011; Turan et al., 2012a; Turan et al., 2012b; Turan et al., 2013).

Lake Durusu is located on the northwestern of Istanbul near the coasts of the Black Sea and is 70 km away from the city center. The lake was a lagoon until 1883 and the connection with the Black Sea was supplied by a canal named Darboğaz. The lagoon was blocked by a regulator constructed for drinking water resource. Because of Lake Durusu is rich in terms of streams and all of the surface waters and streams flow to the lake, it became freshwater lake in due time (Baylan and Karadeniz 2006; Özuluğ, 2008). One of the main water supply of the lake is Istranca stream which has 443 km² basin (Figure 1).

Devedjian (1926), Battalgil (1941), Kosswig and Battalgil (1943), Ladiges (1960), Balık (1985), Geldiay and Balık (1996) had mentioned

totally 20 freshwater fish species present in the lake. But the most detailed research about the fish species of the Lake Durusu Basin and the Istranca Stream was studied by Özuluğ (2008) and a total of 27 fish species belonging to 10 families were identified. According to Turan et al., (2013), this number has increased to 28 with occurrence of *Alburnoides tzenevi* Chichkoff, 1933 in Lake Durusu.

There is no detailed study about the fishes of Istranca Stream that is the most important stream feeding the Lake Durusu. The aim of the study is to present the fish fauna of the Istranca Stream with new records.

Materials and Methods

The present study was carried out in Istranca Stream between March 2012 and June 2013. The fish specimens were collected by electroshocker. For morphological examination, some specimens from every species were preserved in 5% formaldehyde solution and stored as museum material in Istanbul University Science Faculty Hydrobiology Museum-IUSHM. The other specimens were studied to determine their biological characteristics. During the analysis of the fish, the taxonomic order suggested by Nelson (2006) was used, and the names of species were attributed following Eschmeyer (2013).

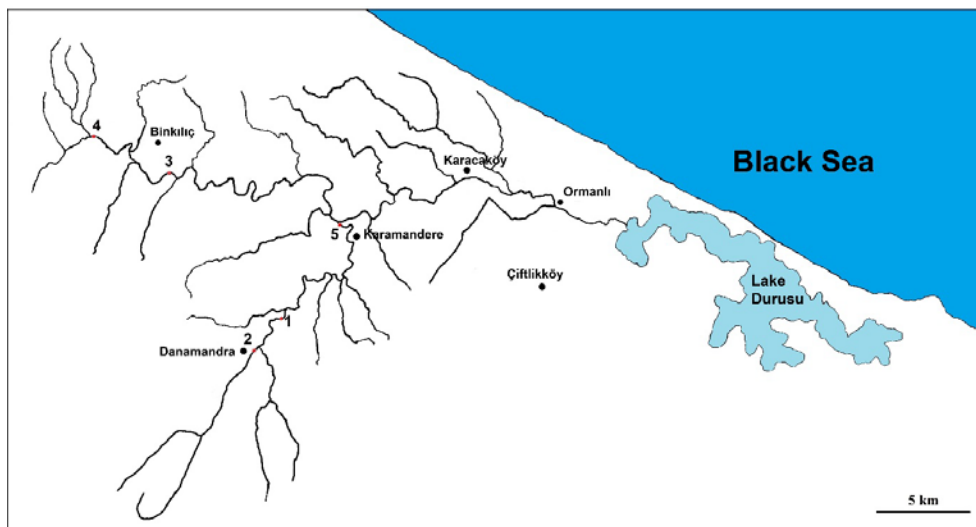


Figure 1. Istranca Stream and sampling stations.

Results and Discussion

During the surveys, totally 19 fish species were captured from the Istranca Stream. These specimens are *Alburnoides tzanevi* (Bloch, 1782), *Alburnus istanbulensis* Battalgiç, 1941, *Barbus cyclolepis* Heckel, 1837, *Carassius gibelio* (Bloch, 1782), *Gobio bulgaricus* Drensky, 1926, *Leucaspis delineatus* (Heckel, 1843), *Petroleuciscus borysthenicus* (Kessler, 1859), *Phoxinus strandjae* Drensky, 1926, *Rhodeus amarus* (Bloch, 1782), *Rutilus frisii* (Nordmann, 1840), *Rutilus rutilus* (Linnaeus, 1758), *Squalius cephalus* (Linnaeus, 1758), *Vimba vimba* (Linnaeus, 1758), *Cobitis pontica* Vasil'eva & Vasil'eva 2006, *Esox lucius* Linnaeus, 1758, *Knipowitschia caucasica* (Berg, 1916), *Neogobius cf. eurycephalus* (Kessler, 1874), *Neogobius gymnotrachelus* (Kessler, 1857), *Neogobius melanostomus* (Pallas, 1814), *Proterorhinus semilunaris* (Heckel, 1839), respectively. Five fish species, *C. gibelio* (Bloch, 1782), *G. bulgaricus* Drensky, 1926, *L. delineatus* (Heckel, 1843) *P. strandjae* Drensky, 1926 and *R. rutilus* (Linnaeus, 1758) were recorded for the first time for Durusu Lake Basin.

The species, *C. gibelio* (Figure 2), *G. bulgaricus* (Figure 3), *L. delineatus* (Figure 4), *P. strandjae* (Figure 5) and *R. rutilus* (Figure 6) were captured from 5 different stations in Istranca Stream. The station coordinates and individual numbers for each species were given in Table 1.

Carassius gibelio (Bloch, 1782)

Material examined: 1 specimen, total length 7.8 cm, Station 2- 41°18'50.94"N 28°14'56.15"E, 6 April 2012; 2 specimens, total length 6.0-7.6 cm, Station 1 - 41°19'47.10"N; 28°15'47.59"E, 6 April 2012; 1 specimen, total length 9.4 cm, Station 3 - 41°23'56.44"N; 28°11'37.18"E, 15 June 2012; 1 specimen, total length 13.1 cm, Station 3 - 41°23'56.44"N; 28°11'37.18"E, 20 June 2013.

Gobio bulgaricus Drensky, 1926

Material examined: 4 specimens, total length 8.7-9.7 cm, Station 4 - 41°25'3.00"N; 28°8'18.42"E, 4 April 2012; 7 specimens, total length 5.5-7.2 cm, Station 2 - 41°18'50.94"N; 28°14'56.15"E, 16 May 2012,

Leucaspis delineatus (Heckel, 1843)

Material examined: 9 specimens, total length 2.4-3.3 cm, Station 5 - 41°22'45.12"N; 28°17'45.96"E, 12 March 2012; 10 specimens, total length 2.7-3.9 m, Station 5 - 41°22'45.12"N; 28°17'45.96"E, 17 January 2013; 3 specimens, total length 3.2-4.5 cm, Station 5 - 41°22'45.12"N; 28°17'45.96"E, 19 February 2013.

Phoxinus strandjae Drensky, 1926

Material examined: 11 specimens, total length 4.3-7.1 cm, Station 2 - 41°18'50.94"N; 28°14'56.15"E, 5 May 2012.

Rutilus rutilus (Linnaeus, 1758)

Material examined: 1 specimen, total length 13.0 cm, Station 5 - 41°23'56.44"N; 28°11'37.18"E, 18 April 2013.

Table 1. Individual numbers of each species for the stations.

Station No	Coordinates	<i>P. strandjae</i>	<i>G. bulgaricus</i>	<i>L. delineatus</i>	<i>C. gibelio</i>	<i>R. rutilus</i>
1	41°19' 47.10"N 28°15' 47.59"E				2	
2	41°18' 50.94"N 28°14' 56.15"E	11	7		1	
3	41°23' 56.44"N 28°11' 37.18"E				2	
4	41°25' 3.00"N 28°8' 18.42"E		4			
5	41°22' 45.12"N 28°17' 45.96"E			22		1



Figure 2. *C. gibelio*, 13.1 cm TL; Turkey, Istranca Stream.



Figure 3. *G. bulgaricus*, 9.4 cm TL; Turkey, Istranca Stream.



Figure 4. *L. delineatus*, 4.2 cm TL; Turkey, Istranca Stream.



Figure 5. *P. strandjae*, 5.7 cm TL; Turkey, Istranca Stream.



Figure 6. *R. rutilus*, 13.0 cm TL; Turkey, Istranca Stream.

C. gibelio described as an invasive fish species for Turkish inland waters (Özuluğ et al., 2004) was recorded for the first time from Gala Lake in Turkey (Baran and Ongan, 1988) and introduced the other drainage systems in Thrace shortly (Özuluğ et al., 2004; Özuluğ, 1999), however it has not reported from Lake Durusu by Özuluğ (2008). Only 5 individuals of *C. gibelio* were captured during the research in Istranca Stream. There is no data about the situation of the species in Lake Durusu but it can be easily adapted and become one important fish species for the lake because of its successful spawning strategy and high ability at colonization for new environments. Due to this reason, the monitoring study should be carried out for Lake Durusu as soon as possible.

P. strandjae was firstly described from Istranca range in Bulgaria by Drensky at 1926, but he did not state on which slope the species had been obtained. At 1951, he stated that the specimens had been collected from the Veleka and Rezve drainages, draining from Istranca to Black Sea in Bulgaria and Turkey (Kottelat, 2007). The species was only known from these two drainage systems and with this study the distribution area of the species has widen.

Two *Gobio* species, *G. kovatschevi* and *G. bulgaricus* were identified from Thrace region (Kottelat and Freyhof, 2007; Turan et al. 2012a). The natural distribution area of the *G. kovatschevi* is only known from the River Provadiskaya in Bulgaria and the other *Gobio* species *G. bulgaricus* is known from Bulgaria, Greece, Macedonia and Turkey (Kottelat and Freyhof, 2007). Turan et al. (2012a) has identified *Gobio* specimens lived in Istranca Stream (D. Turan has confirmed that, this stream is not in the Durusu basin and draining to the Black Sea at Kırklareli (pers. comm.)) as *G. kovatschevi* and, in Meriç and Ergene rivers as *G. bulgaricus*.

L. delienatus is a small cyprinid species diagnosed with incomplete lateral line with about 2-12 pored scales (Berg, 1949). It can be easily confused by little chubs at first sight with body form and having large silvery scales. *L. delineatus* is native to Thrace and Anatolian coast of Sea of Marmara in Turkey (Kottelat and Freyhof, 2007, Gaygusuz et al. 2013), however it has recorded from Kura and Aras drainages (Kuru, 1980), too.

R. rutilus widely distributed in Europe, the Black Sea and Azov Sea basin occurs Büyükçekmece, Apolyont, Manyas and Sapanca lakes, Seyhan Dam Lake and streams in Samsun city (Geldiay and Balık, 1996; Ergüden et al., 2008). The monitoring study should be carried out for the population structure of this species in Lake Durusu because of it prefers lentic systems mostly.

Conclusion

In conclusion, the Lake Durusu Basin is rich as a regard to fish fauna. Until today, although some reports have been given on the fauna of the Lake Durusu, new fish species still appear from the streams feeding the lake. It could be said that detailed field survey is very important for the systematic faunal studies.

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