



Fish Fauna of Çoruh River and Two First Record for Turkey

Esra Bayçelebi^{1,*}, Davut Turan¹, Bella Japoshvili²

¹ Recep Tayyip Erdoğan University, Faculty of Fisheries and Aquatic Sciences, 53100, Rize, Turkey.

² Iliia State University, Institute of Zoology, 0162, Institute of Zoology, 0103, Tbilisi, Georgia.

* Corresponding Author: Tel.: +90.464 2233385 ; Fax: +90.464 2234118 ;
E-mail: doganeesra@gmail.com

Received 26 June 2015
Accepted 10 November 2015

Abstract

Fish fauna in the Çoruh River was studied. Samples were collected during September 2001 to May 2014 at 21 locations throughout the river drainage in Turkish territory. In total 510 specimens belonging to 5 families and 16 species were collected. Four species (*Phoxinus colchicus*, *Cyprinus carpio*, *Gobio* cf. *caucasicus*, and *Silurus glanis*) were recorded for the first time for this river and two species (*Phoxinus colchicus*, *Barbus rionica*) were new for Turkish ichthyofauna.

Keywords: Taxonomy, fish fauna, first record, inland water fish systematic, Çoruh River.

Çoruh Nehri'nin Balık Faunası ve Türkiye İçin İki Yeni Kayıt

Özet

Bu çalışma Çoruh Nehri'nin balık faunasını ortaya koymak amacıyla yapılmıştır. Örneklemeye Eylül 2001 ve Mayıs 2014 tarihleri arasında nehrin Türkiye sınırları içerisinde kalan kısmından yapılmıştır. 5 familyaya ait 16 tür tespit edilerek 510 tane örnek toplanmıştır. Dört tür (*Phoxinus colchicus*, *Cyprinus carpio*, *Gobio* cf. *caucasicus* ve *Silurus glanis*) bu nehir sistemi için ve iki tür ise (*Phoxinus colchicus*, *Barbus rionica*) Türkiye faunası için yeni kayıt olarak tespit edilmiştir.

Anahtar Kelimeler: Taksonomi, balık faunası, ilk kayıt, içsu balıkları sistematiği, Çoruh Nehri.

Introduction

Turkey has rich freshwater ichthyofauna, with numerous endemics. The first taxonomic study on freshwater fish was done by Abbot (1835) and reported as *Salmo trutta* from Trabzon and Erzurum provinces. In following years, Richardson (1856), Gunther (1874), Hanko (1925), Battalgil (1942, 1944), Berg (1949), Kosswig (1953, 1954), Tortonese (1954, 1955) Ladiges (1960a, 1960b, 1964), Bănărescu (1968, 1970), Aras (1974), Geldiay and Balık (1998) carried out remarkable taxonomic studies on freshwater fishes of Turkey. According to Kuru (2004), the freshwater ichthyofauna of Turkey includes 236 species belonging to 26 families. Recent studies have shown that this number is gradually increasing (Freyhof and Özuluğ, 2006; Turan *et al.*, 2006a, 2006b; Özuluğ and Freyhof, 2007; Küçük, 2007; Turan *et al.*, 2008; Küçük *et al.*, 2009; Turan *et al.*, 2009; Freyhof and Özuluğ, 2010a, 2010b; Turan *et al.*, 2011; Özuluğ and Freyhof, 2011; Turan *et al.*,

2013a, 2013b, Turan *et al.*, 2014a, 2014b; Küçük and Güçlü; 2014).

Çoruh River is located in north eastern Anatolia, the coasts of the Black Sea and is one of the world's fastest flowing rivers. Total length of the river is 431 km and its last part is (21 km long) flowing in Batumi (Georgia). The river is a located sequencing Erzurum, Bayburt and Artvin provinces. There are a few taxonomic studies on fish fauna of the river. In these studies, a total of 12 species and subspecies were recorded from the river (Berg, 1949; Tortonese, 1955, 1956; Aras, 1974; Kuru, 1975; Turan, 2003). Those records are given in Table 2. Recently, Turan *et al.*, (2006a, 2006b, 2010) revised both *Capoeta* and *Salmo* species in Çoruh River, and described two *Capoeta* (*C. banarescui* and *C. ekmekciae*) and two *Salmo* species (*S. coruhensis* and *S. rizeensis*). The aim of this study is to present the last situation of fish fauna of Çoruh River and the distribution areas.

Materials and Methods

Fish samples were collected from 21 locations in Çoruh River drainages during September 2001 to May 2014 (Figure 1). Fishes were caught by pulsed DC electrofishing equipment and covered net, killed by over anaesthetization, fixed and stored in formaldehyde. Material examined is deposited in: FFR, Recep Tayyip Erdoğan University, Zoology Museum of the Faculty of Fisheries. Counts and measurements follow Hubbs and Lagler (1947). The lateral-line scales were counted from the anterior most scale (the first one to touch the shoulder girdle) to the posterior most one (at the end of the hypural complex). The scales on caudal peduncle were indicated by '+'. Transversal scales were counted as scale rows above lateral line (between lateral line and dorsal-fin origin) and scales rows below lateral line (between lateral line and anal-fin origin) separately. The last two branched dorsal and anal-fin rays articulating on a single pterygiophore were counted as 1/2. In Gobiidae, we used Sq. Sq. was counted mid-lateral series from the first one to touch the shoulder girdle to the posterior most one on caudal peduncle.

Results and Discussion

Totally 510 specimens were collected belonging to sixteen species of 5 families (Salmonidae, Cyprinidae, Siluridae, Nemachelidae and Gobiidae). Two species (*Phoxinus colchicus*, *Barbus rionica*) were the first record for the Turkish fauna. The fish species collected from each sampling localities are shown in Table 1, and former and new records are

given in Table 2.

Family: Salmonidae

Salmo rizeensis Turan, Kottelat & Engin, 2010 (Figure 2)

Type Locality: Çoruh River

Material Examined: FFR 03001, 15, 90–220 mm SL; Turkey: Erzurum Province, Ovit Mountain: Ovit Stream; 29 September 2006; –FFR 03012, 12, 112–223 mm SL; Turkey: Erzurum Province, Madenköprübaşı Village: Büyükdere Stream; 25 October 2006; –FFR 03017, 7, 88–237 mm SL; Turkey: Artvin Province, Yusufeli County, Tekkale Village: Dörtkilise Stream; 15 September 2006; –FFR 03013, 12, 75–167 mm SL; Turkey: Artvin Province, Cankurtaran Mountain: Çifteköprü Stream; 17 October 2006; –FFR 03015, 2, 113–228 mm SL; Turkey: Bayburt Province, Kop Mountain: Kop Stream; 28 August 2006.

Meristic characters: D: III-IV 9-11½, P: I 12-14, V: I 8, A: III 8½, Lateral-line: 114-119, L. trans.: 27-29/19-21

Distribution: *Salmo rizeensis* is known from the head waters and upper reaches of the streams and rivers entering the Black Sea along its south-eastern and southern coasts in Turkey, between Sakarya drainage in the west and Çoruh drainage in the east (Turan et al., 2010).

Salmo coruhensis Turan, Kottelat and Engin, 2010 (Figure 3)

Type Locality: Çoruh River

Material Examined: FFR 03025, 13, 80–550 mm SL; Turkey: Erzurum Province, İspir County, Kırık Village: Çayırbaşı Stream; 15 July 2006; –FFR 03026, 6, 160–290 mm SL; Turkey: Erzurum, Büyük

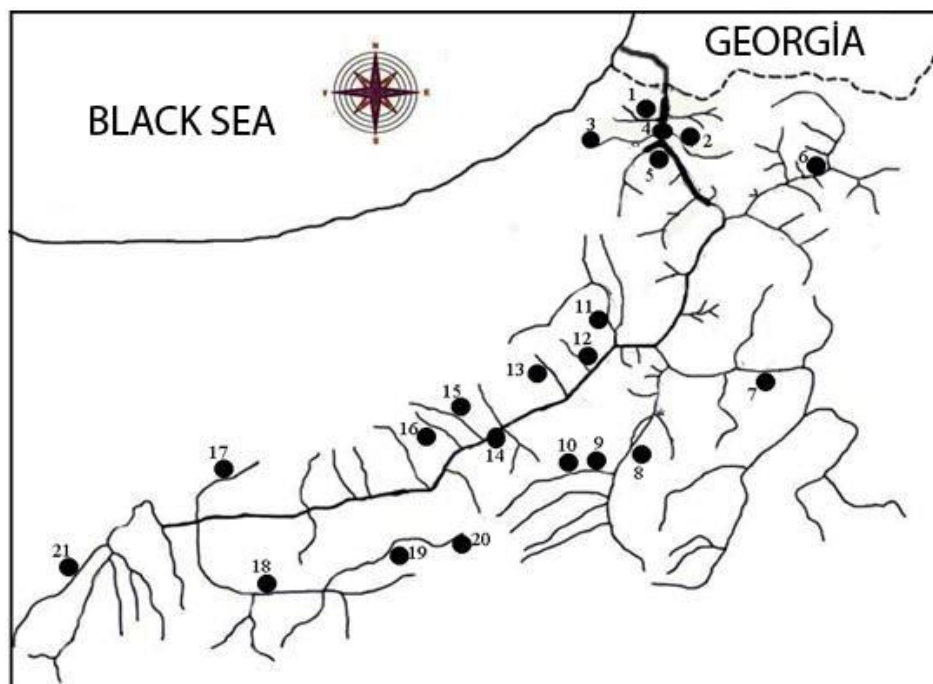


Figure 1. The drainage of Çoruh River, Turkey. Numbers refer to the sampled localities (see Table 1.)

Table 1. List of sampling locations, their geographic specification and fish recorded

Station	River	Locations	Fish Species	Coordinates
1	Muratlı Dam Lake	Artvin Borçka	<i>Ponticola constructor</i> <i>Chondrostoma colchicum</i> <i>Ponticola constructor</i>	41° 26.731' N 41° 40.892' E
2	Aralık	Artvin Borçka	<i>Phoxinus colchicus</i> <i>Alburnoides fasciatus</i> <i>Alburnus derjugini</i> <i>Gobio cf. caucasicus</i> <i>Barbus rionica</i>	41° 24.241' N 41° 41.749' E
3	Çifteköprü	Artvin Cankurtaran	<i>Salmo rizeensis</i> <i>Alburnoides fasciatus</i>	41° 22.874' N 41° 35.766' E
4	Çoruh	Artvin Borçka	<i>Barbus rionica</i> <i>Capoeta sieboldii</i> <i>Capoeta ekmekciae</i> <i>Salmo rizeensis</i>	41° 21.911' N 41° 40.431' E
5	Borçka Dam Lake	Artvin Borçka	<i>Cyprinus carpio</i> <i>Capoeta sieboldii</i>	41° 20.068' N 41° 42.065' E
6	Bulanık	Artvin Şavşat	<i>Capoeta banarescui</i>	41° 12.191' N 42° 1.021' E
7	Oltu	Erzurum Oltu	<i>Barbus rionica</i> <i>Capoeta ekmekciae</i> <i>Oxynoemacheilus sp.</i>	41° 8.396' N 42° 1.160' E
8	Tortum	Erzurum Tortum	<i>Barbus rionica</i> <i>Capoeta banarescui</i> <i>Capoeta ekmekciae</i>	40° 31.464' N 41° 33.469' E
9	Uzun	Erzurum Uzunkavak	<i>Barbus rionica</i> <i>Capoeta banarescui</i> <i>Oxynoemacheilus sp.</i>	40° 30.815' N 41° 31.662' E
10	Pehlivanlı	Erzurum Pehlivanlı	<i>Salmo coruhensis</i>	40° 31.059' N 41° 28.682' E
11	Barhal	Artvin Yusufeli	<i>Salmo coruhensis</i>	40° 58.465' N 41° 25.104' E
12	Dörtkilise	Artvin Yusufeli Tekkale	<i>Salmo coruhensis</i> <i>Salmo rizeensis</i>	40° 47.259' N 41° 29.678' E
13	Güngörmez	Artvin Çevreli	<i>Salmo coruhensis</i>	40° 46.396' N 41° 20.773' E
14	Çoruh	Erzurum İspir	<i>Chondrostoma colchicum</i> <i>Squalius orientalis</i> <i>Alburnus derjugini</i> <i>Barbus rionica</i> <i>Capoeta banarescui</i> <i>Capoeta ekmekciae</i>	40° 31.656' N 41° 2.273' E
15	Ovit Stream	Erzurum Ovit Mountain	<i>Salmo rizeensis</i>	40° 35.729' N 40° 51.109' E
16	Büyük Stream	Erzurum Madenköprübaşı	<i>Salmo coruhensis</i> <i>Salmo rizeensis</i>	40° 43.403' N 40° 42.653' E
17	Ölçer Stream	Bayburt Ölçer	<i>Salmo coruhensis</i>	40° 30.887' N 40° 33.656' E
18	Kurtboğazı Stream	Bayburt Kurtboğazı	<i>Salmo coruhensis</i>	40° 11.298' N 40° 30.201' E
19	Çayırbaşı Stream	Erzurum İspir Kırık	<i>Salmo coruhensis</i>	40° 19.399' N 40° 50.901' E
20	Yağlı Stream	Erzurum İspir	<i>Squalius orientalis</i>	40° 21.859' N 41° 48.28' E
21	Kop Stream	Bayburt Kop Mountain	<i>Salmo coruhensis</i>	40° 20.310' N 40° 28.389' E

Village: Büyük Stream; 25 August 2006; –FFR 03024, 13, 115–330 mm SL; Turkey: Artvin Province, Yusufeli County Tekkale Village: Dörtkilise Stream; 10 September 2006; –FFR 03043, 5, 130–229 mm SL; Turkey: Artvin Province, Yusufeli County, Sarıgöl Village: Barhal Stream; 26 December 2008; –FFR 03031, 6, 190–265 mm SL; Turkey: Bayburt Province, Ölçer Village: Ölçer

Stream; 24 November 2007; –FFR 03033, 16, 110–210 mm SL; Turkey: Bayburt Province, Kurtboğazı Village: Kurtboğazı Stream; 29 August 2006; –FFR 03037, 10, 90–380 mm SL; Turkey: Erzurum Province, Pehlivanlı Village: Pehlivanlı Stream; 07 September 2006; –FFR 03100, 8, 121–200 mm SL; Turkey: Artvin Province, Çevreli Village: Göngörmez Stream; 23 August 2006.

Table 2. Former and new fish records from Çoruh River

Berg (1949)	Tortonese (1955); Aras (1974)	Kuru (1975)	Turan (2003)	This study
-	<i>S. t. labrax</i>	<i>S. t. labrax</i>	<i>S. t. labrax</i>	<i>S. coruhensis</i>
-	<i>S. t. labrax</i>	<i>S. t. labrax</i>	-	<i>S. rizeensis</i>
<i>C. colchicum</i>	-	<i>C. colchicum</i>	<i>C. colchicum</i>	<i>C. colchicum</i>
-	-	-	-	<i>P. colchicus</i>
-	-	<i>A. b. fasciatus</i>	<i>A. bipunctatus</i>	<i>A. fasciatus</i>
-	-	<i>L. cephalus</i>	<i>L. cephalus</i>	<i>S. orientalis</i>
<i>C. c. derjugini</i>	-	<i>C. c. derjugini</i>	<i>C. chalcoides</i>	<i>A. derjugini</i>
-	-	-	-	<i>G cf. caucasicus</i>
-	-	-	-	<i>C. carpio</i>
<i>B. t. var. artvinica</i>	-	<i>B. p. escherichi</i>	<i>B. p. escherichi</i>	<i>B. rionica</i>
<i>C. tinca</i>	-	<i>C. tinca</i>	<i>C. tinca</i>	<i>C. banarescui</i>
<i>C. c. sieboldii</i>	-	<i>C. c. sieboldii</i>	<i>C. c. sieboldii</i>	<i>C. sieboldii</i>
-	-	-	<i>C. c. capoeta</i>	<i>C. ekmeckiae</i>
-	-	-	-	<i>S. glanis</i>
-	-	<i>N. a. bureschi</i>	<i>N. angorae</i>	<i>Oxnoemacheilus</i> sp.
-	-	-	<i>N. fluviatilis</i>	<i>P. constructor</i>

**Figure 2.** *Salmo rizeensis*, 200 mm SL; FFR 03017, Artvin, Yusufeli, Dörtkilise Stream.**Figure 3.** *Salmo coruhensis*, 300 mm SL; FFR 03025, Erzurum, İspir, Kırık Stream.

Meristic characters: D: III 9-10½, P: I 11-14, V: I 8, A: III-IV 8½, Lateral-line: 110-117, L. trans.: 25-28/18-21.

Distribution: *Salmo coruhensis* is known from streams flowing to the south- eastern Black Sea coast in Turkey, from the Yeşilırmak drainage in the west and the Çoruh River drainage in the east (Turan et. al., 2010).

Family: Cyprinidae

***Chondrostoma colchicum* Derjugin, 1899 (Figure 4)**

Type Locality: Rioni and Çoruh rivers

Material Examined: FFR 02009, 10, 73–254 mm SL; Turkey: Artvin Province, Borçka County: Aralık Stream; 23 October 2008; –FFR 02010, 17, 63–285 mm SL; Turkey: Erzurum Province, İspir County: Çoruh River; 15 April 2014;

Meristic characters: D: III 8½, P: I 15-17, V: I

8, A: III-IV 9-10½, Lateral-line: 59-64, L. trans.: 9-11/5-6.

Distribution: *Chondrostoma colchicum* is known from Western part of South Caucasus from Tuapse to the Çoruh River (Berg, 1949).

***Phoxinus colchicus* Berg, 1910 (Figure 5)**

Type Locality: Bakhvis-tskhali River (In Ozurget District)

Material Examined: FFR 00303, 5, 50-64 mm SL; Turkey: Artvin Province, Borçka County: Aralık Stream, Çoruh River drainage; 26 June 2006.

Meristic characters: D: III 8½, P: I 14-15, V: I 8, A: III 8½

Distribution: *Phoxinus colchicus* is known in western Transcaucasia from Gelendzhik to Batumi (in

Georgia) (Berg, 1949) and Çoruh River.

Remarks: Type locality of *Phoxinus colchicus* is Bakhvis-tskhali River (In Ozurget District, in Georgia), which is about 60 km north western Çoruh River. We have not any opportunity to examine any specimens from type locality. Therefore we could not discuss the taxonomic position of species and we tentatively accepted the species as *Phoxinus colchicus*.

***Alburnoides fasciatus* (Nordmann, 1840) (Figure 6)**

Type Locality: Rivers of West Transcaucasia

Material Examined: FFR 01003, 30, 62-73 mm SL; Turkey: Artvin Province, Borçka County: Aralık Stream; 15 July 2011; -FFR 01012, 22, 90-



Figure 4. *Chondrostoma colchicum*, 160 mm SL; FFR 02010 Erzurum, İspir, Çoruh River.



Figure 5. *Phoxinus colchicus*, 64 mm SL; FFR 02303 Artvin, Borçka, Çoruh River.



Figure 6. *Alburnoides fasciatus*, 75 mm SL; FFR 121003, Artvin, Borçka, Aralık Stream.

101 mm SL; Turkey: Artvin Province: Çoruh River; 07 July 2004; –FFR 1120, 13, 72–90 mm SL; Turkey: Artvin Province, Borçka County: Aralık Stream; 08 May 2014.

Meristic characters: D: III 8-9½, P: I 14-15, V: I 7, A: III 13-15½, Lateral-line: 46-50, L. trans.: 10-11/5-6.

Distribution: *Alburnoides fasciatus* is restricted to region from western south Caucasus to Yeşilirmak.

***Squalius orientalis* Heckel, 1847 (Figure 7)**

Type Locality: Abkhazia

Material Examined: FFR 00532, 4, 169–227 mm SL; Turkey: Erzurum Province, İspir County: Çoruh River; 10 June 2006; –FFR 00534, 4, 149–182 mm SL; Turkey: Erzurum Province, İspir County: Çoruh River; 19 July 2007; –FFR 00572, 4, 94–141 mm SL; Turkey: Erzurum Province, İspir County: Yağlı Stream; 08 July 2006; –FFR 00691, 5, 118–250 mm SL; Turkey: Erzurum Province: Çoruh River; 07 August 2012.

Meristic characters: D: III-IV 8-9½, P: I 14-16, V: I 8, A: III 8-9½, Lateral-line: 44-47, L. trans.: 7-8/4-5.

Distribution: *Squalius orientalis* is known to occur in western South Caucasus from Abkhazia to Çoruh River.

Remarks: Type locality of *Squalius orientalis* is Abkhazia. Berg (1949) described the specimens from Abkhazia as “body depth commonly greater than head length (its depth 23.0- 27.3% SL mean 25.1); (7) 8½

branched dorsal fin rays”. However in the specimens from Çoruh River, the body depth commonly smaller than the head length (its depth 21.3- 25.2% SL mean 22.9); 8-9 mode 8½ branched dorsal fin rays. The Çoruh specimens must be compared with the Abkhazia specimens to determine its taxonomic position.

***Alburnus derjugini* Berg, 1923 (Figure 8)**

Type Locality: Çoruh River

Material Examined: FFR 00824, 50, 67–133 mm SL; Turkey: Artvin Province, Borçka County: Aralık; 15 July 2011; –FFR 00935, 18, 138–178 mm SL; Turkey: Erzurum Province, İspir County: Çoruh River; 14 August 2012; –FFR 04603, 3, 93–194 mm SL; Turkey: Erzurum Province, İspir County: Çoruh River; 15 April 2014.

Meristic characters: D: III 8½, P: I 16-19, V: I 9, A: III 13-15½, Lateral-line: 65-71, L. trans.: 11-14/5-6.

Distribution: *Alburnus derjugini* is known from Çoruh River.

***Gobio cf. caucasicus* Kamensky, 1901 (Figure 9)**

Material Examined: FFR 01907, 11, 46–76 mm SL; Turkey: Artvin Province, Borçka County: Aralık Stream; 20 July 2007; –FFR 05934, 22, 80–100 mm SL; Turkey: Artvin Province, Borçka County: Aralık Stream; 08 May 2014.

Meristic characters: D: III 7-8½, P: 13-16, V: 8, A: III 6½, Lateral-line: 39-41, L. trans.: 6/4-6.



Figure 7. *Squalius orientalis*, 200 mm SL; FFR 00691 Erzurum, İspir, Çoruh River.



Figure 8. *Alburnus derjugini*, 161 mm SL; FFR 0935, Erzurum, İspir, Çoruh River.

Distribution: *Gobio* cf. *caucasicus* is known from Çoruh River.

Remarks: *Gobio caucasicus* (*G. gobio lepidolaemus* natio *caucasicus*) was described on a syntype series from Podkumok (a tributary of Kuma River) and Sulak rivers (Caspian Sea basin), and Rioni River basin (Black Sea basin) by Kamensky (1901). Kottelat and Freyhof (2007) reported its Caspian population (Podkumok and Sulak rivers) as *G. holurus* and Black Sea population (northern Caucasus, Russia and from Rioni River basin) as *G. caucasicus*. We agree with Kottelat and Freyhof (2007) on a syntype series of *G. gobio lepidolaemus* nation *caucasicus* belonging two species. Çoruh River geographically close to the Rioni River (distance between Rioni and Çoruh rivers are about 70 km). We

examined a few materials from Rioni and compared them with Çoruh material. In order to determine the exact position in terms of taxonomy positions *Gobio* in Çoruh, we need more specimens from Rioni River for comparison.

***Cyprinus carpio* Linnaeus, 1758 (Figure 10)**

Type Locality: Europa

Material Examined: FFR 2741, 10, 170–305 mm SL; Artvin Province, Borçka County: Borçka Dam Lake; 07 August 2012.

Meristic characters: D: III-IV 19-10½, P: I 11-12, V: I 8, A: III 7-8½, Lateral-line: 37, L. trans.: 6/5-6.

Distribution: *Cyprinus carpio* is known from Black, Caspian and Aral Sea basins. Introduced throughout the world (Kottelat and Freyhof, 2007).



Figure 9. *Gobio* cf. *caucasicus*, 160 mm SL; FFR 01908, Artvin, Borçka, Çoruh River.



Figure 10. *Cyprinus carpio*, 134 mm SL; FFR 02640, Artvin, Borçka, Çoruh River.



Figure 11. *Barbus rionica*, 220 mm SL; FFR 00232, Erzurum, İspir, Çoruh River.

Barbus rionica* Kamesky, 1899 (Figure 11)*Type Locality:** Rioni River

Material Examined: FFR 00120, 3, 63–97 mm SL; Turkey: Artvin Province, Borçka County: Çoruh River; 19 September 2004; –FFR 00124, 7, 101–186 mm SL; Turkey: Erzurum Province, Oltu County: Oltu Stream; 15 September 2008; –FFR 00162, 5, 93–100 mm SL; Turkey: Artvin Province, Borçka County: Aralık Stream; 15 July 2011; –FFR 00182, 7, 149–223 mm SL; Turkey: Erzurum Province, Tortum County: Tortum Stream; 10 July 2007; –FFR 00232, 20, 91–242 mm SL; Turkey: Erzurum Province, İspir County: Çoruh River; 20 September 2012; –FFR 00137, 5, 66–121 mm SL; Turkey: Erzurum Province, Uzundere Village; Uzundere Stream; 20 July 2007.

Meristic characters: D: III-IV 8½, P: I 16-17, V: I 8, A: III 5½, Lateral-line: 51-56, L. trans.: 12-14/7-8.

Distribution: *Barbus rionica* is known from Rioni to Çoruh rivers.

Remarks: Kamesky (1899) described *Barbus tauricus* var. *rionica* from Rioni River and *Barbus tauricus* var. *artvinica* from Çoruh River respectively. We examined 6 *Barbus* specimens from Rioni and 47 specimens from Çoruh. The Rioni materials share with the Çoruh materials same diagnostic characters: such as lateral line 49-60 (Rioni), 51-56 scales (Çoruh); lower lip with well developed lateral and median lobes; without black blotches in specimens

larger than 100 mm SL; snout long and pointed in males; last simple dorsal fin rays slightly ossified; barbels short and not reaching posterior margin of eye. The comparison demonstrates that two population belong to same species. According to principle of modern zoological nomenclature, valid name must be *Barbus rionica*. It is distinguished from *B. escherichi* by well developed median and lateral lobes (vs. developed but not much developed in *B. rionica*); the absence of black blotches (vs. presence); a longer and pointed snout in males (vs. short and blunt in males).

Capoeta banarescui* Turan, Kottelat, Ekmekçi and İmamoğlu, 2006 (Figure 12)*Type Locality:** Çoruh River

Material Examined: FFR 01601, 3, 167–190 mm SL; Turkey: Erzurum Province, İspir County; Çoruh River; 05 July 2007; –FFR 01658, 3, 186–240 mm SL; Turkey: Erzurum Province, Tortum County; Tortum Stream; 10 July 2007; –FFR 01833, 14 127–230 mm SL; Turkey: Erzurum Province, İspir County; Çoruh River; 20 September 2012; –FFR 00711, 9 163–231 mm SL; Turkey: Artvin Province, Şavşat County; Bulanık Stream; 19 June 2004; –FFR 01625, 5, 116–256 mm SL; Turkey: Erzurum Province, Uzundere Village; Uzundere Stream; 20 July 2007.

Meristic characters: D: III-IV 8-9½, P: 15-19, V: I 9-10, A: III 5½, Lateral-line: 65-77, L. trans.: 12-14/8-10.



Figure 12. *Capoeta banarescui*, 231 mm SL; FFR 01833 Erzurum, İspir, Çoruh River.



Figure 13. *Capoeta sieboldii*, 210 mm SL; FFR 01822, Artvin, Borçka, Çoruh River.

Distribution: *Capoeta banarescui* is known from Çoruh River.

***Capoeta sieboldii* (Steindachner, 1864) (Figure 13)**

Type Locality: Amasya

Material Examined: FFR 00700, 10, 66–177 mm SL; Turkey: Artvin Province, Borçka County; Çoruh River; 14 May 2006.

Meristic characters: D: III-IV 8½, P: I 15-16, V: I 8-9, A: III 5½, Lateral-line: 53-59, L. trans.: 9-11/7-10.

Distribution: *Capoeta sieboldii* is known from western South Caucasus to Sakarya River (Turan et al., 2006a).

***Capoeta ekmekciae* Turan, Kottelat, Ekmekçi and İmamoğlu, 2006 (Figure 14)**

Type Locality: Çoruh River

Material Examined: FFR 01620, 1, 129 mm

SL; Turkey: Artvin Province, Borçka County; Aralık Stream; 15 July 2011; –FFR 01621, 22, 72–207 mm SL; Turkey: Artvin Province, Borçka County; Çoruh River; 23 December 2008; –FFR 01624, 6, 120–208 mm SL; Turkey: Erzurum Province, İspir County; Çoruh River; 30 July 2007; –FFR 01625, 4, 215–529 mm SL; Turkey: Erzurum Province, Uzundere County; Tortum Stream; 20 July 2007; –FFR 01666, 5, 104–250 mm SL; Turkey: Erzurum Province, Oltu County; Oltu Stream; 19 August 2006.

Meristic characters: D: III-IV 8-9½, P: 16-20, V: I 11, A: III 5½, Lateral-line: 57-60, L. trans.: 9-10/7-9.

Distribution: *Capoeta ekmekciae* is known from Çoruh River.

Family: Siluridae

***Silurus glanis* (Linnaeus, 1758) (Figure 15)**

Type Locality: Europa



Figure 14. *Capoeta ekmekciae*, 210 mm SL; FFR 01621, Erzurum, İspir, Çoruh River.



Figure 15. *Silurus glanis*, 500 mm SL; FFR 02600 Artvin, Borçka, Çoruh River.



Figure 16. *Oxynoemacheilus* sp., 44 mm SL; FFR 01435, Erzurum, Oltu, Oltu Stream.



Figure 17. *Ponticola constructor*, 89 mm SL; FFR 02613, Artvin, Borçka, Aralık Stram

Material Examined: FFR 02600, 15, 166–300 mm SL; Turkey: Artvin Province, Borçka County: Borçka Dam Lake; 13 July 2010.

Meristic characters: D: I 3-4½, P: I 14-15, V: I 10-11, A: I 84-88½.

Distribution: *Silurus glanis* is known from Europe and Asia, except in the Tigris and Euphrates rivers.

Family: Nemacheilidae

Oxynoemacheilus sp. (Figure 16)

Material Examined: FFR 01365, 6, 21–42 mm SL; Turkey: Erzurum Province, Oltu County; Oltu Stream; 08 July 2006; – FFR 01384, 1, 70 mm SL; Turkey: Erzurum Province, Oltu County; Oltu Stream; 15 August 2008; – FFR 01533, 10, 40–70 mm SL; Turkey: Erzurum Province, Uzundere Village; Uzundere Stream; 20 July 2007; – FFR 01435, 6, 34–44 mm SL; Turkey: Erzurum Province, Oltu County; Oltu Stream; 20 September 2012.

Meristic characters: D: II- III 8-9½, P: I 11-13, V: II 6-7, A: II 6½

Distribution: *Oxynoemacheilus* sp. is known from Çoruh River.

Remarks: We did not identify the species due to insufficient material of *Oxynoemacheilus kosswigi* (type locality: Sivas Province: Yıldız Stream, Kızılırmak drainage) and *Oxynoemacheilus angorae* (type locality: Tabakane-Su and Tschibuk- Tschai, both in the vicinity of Ankara, Sakarya River drainages).

Family: Gobiidae

Ponticola constructor (Nordmann, 1840) (Figure 17)

Type Locality: Abkhazia and Guria

Material Examined: FFR 02604, 6, 43–95 mm SL; Turkey: Artvin Province, Borçka County: Muratlı Dam Lake; 10 June 2006; FFR –02613, 8, 63–90 mm SL; Turkey: Artvin Province, Borçka County: Aralık Stream; 20 September 2012.

Meristic characters: D₁: VI-VII, D₂: I 18½, P: 17-18, A: I 12-13½, Sq.: 57-68

Distribution: *Ponticola constructor* is known from distribution from the river and streams of western South Caucasus (Berg, 1949).

Comparative Material

Phoxinus strandjae: FFR 02306, 11, 43-55 mm

SL, Türkiye: Kırklareli: Yeresu Stream, Black Sea Basin Leg. Davut Turan and Semih Engin, 10 July 2007.

Phoxinus colchicus: FSJF 861, 12, 27-70 mm SL, Rusia: Shake: Stream Bzych upriver of Bzogu Village, Leg. Alexander M. Naseka and Jörg Freyhof, 14 July 2007.

Phoxinus colchicus: FSJF 886, 16, 36-50 mm SL, Rusia: Ashe: Lower River Ashe, at Ashe Village, Leg. Alexander M. Naseka and Jörg Freyhof, 13 July 2001.

Gobio caucasicus: FFR 05924, 15, 35–83 mm SL; Georgia: Tbilisi: Rioni River, Black Sea Basin, Bella Japoshvili, 30 September 2012.

Barbus escherichii: FFR 02524, 7, 100-140 mm SB, Türkiye: Ankara: Porsuk Stream, Sakarya River Basin, Leg. Davut Turan and Recep Buyurucu 07 July 2007.

Acknowledgments

We are pleased to thank Jörg Freyhof for loan of comparative material and Cüneyt Kaya (Rize) for his helps in field works.

References

- Abbot, KE. 1835. Letter Accompanying a Collection from Trebizond and Erzeroun. Proceedings of The Zoological Society of London, 3: 89-92.
- Aras, S. 1974. Çoruh ve Aras Havzası Balıkları Üzerinde Biyo-Ekolojik Araştırmalar. Ph.d. thesis. Erzurum: Atatürk Üniversitesi. Fen Bilimleri Enstitüsü [in Turkish].
- Bănărescu, P.M. 1968. Süßwasserfische der Türkei. Ergänzende Angaben zu Teil 2: Cobitidae. Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut, Pl. 3(65): 353-356.
- Bănărescu, P.M. 1970. Principii și problem de zoogeografie: Academic Republicii Socialiste, Romania, 220 pp.
- Battalgil, F. 1942. Türkiye tatlı su balıkları hakkında. Contribution à la connaissance des poissons des eaux douces de la Turquie. Revue de la Faculté des Sciences de l'Université d'Istanbul, Série B: Sciences Naturelles, 7(4): 287-306.
- Battalgil, F. 1944. Türkiyenin Tatlı Su Balıkları. Les poissons des eaux douces de la Turquie. Institut de Collection de l'Institut de Zoologie l'Université d'Istanbul. İstanbul Üniversitesi Fen Fakültesi

- Mecmuası, 170–185.
- Berg, L.S. 1910. Fishes collected by K. A. Satunin in Golü basin. *Izvestija Kavkazskago Otdela Imperatorskago Russkago Geograficeskago Obscestva*, 20(2): 127–128 [In Russian].
- Berg, L.S. 1923. *Freshwater fishes of Russia*. Second edition, Moscow, i-xxx + 1-535 pp.
- Berg, L.S. 1949. *Freshwater Fishes of the U.S.S.R. and Adjacent Countries*: Academy of Sciences of the U.S.S.R. Zoological Institute, I-II-III, 341 pp.
- Derjugin, K.M. 1899. Materials for the ichthyological fauna of southwestern Transcaucasia. *Ezhegodnik. Zoologicheskogo Muzeya Akademii Nauk SSSR.*, Pl. 91899: 148-171.
- Freyhof, J. and Özuluğ, M. 2006. *Pseudophoxinus ninae*, a new species from Central Anatolia, Turkey (Teleostei: Cyprinidae). *Ichthyological Exploration of Freshwaters*, 17 (3): 255-259.
- Freyhof, J. and Özuluğ, M. 2010a. *Pseudophoxinus fahrettini*, a new species of spring minnow from Central Anatolia (Teleostei: Cyprinidae). *Ichthyological Exploration of Freshwaters*, 20(4): 325-332.
- Freyhof, J. and Özuluğ, M. 2010b. *Pseudophoxinus hittitorum*, a new species of spring minnow from Central Anatolia (Teleostei: Cyprinidae). *Ichthyological Exploration of Freshwaters*, 21(3): 239-245.
- Geldiay, R. and Balık, S. 1998. Türkiye Tatlısu Balıkları [Freshwater fishes of Turkey]: Ege Üniversitesi Su Ürünleri Fakültesi Yayınları, İzmir, 519 pp [in Turkish].
- Günther, A. 1874. A Contribution to the Fauna of the River Tigris. *Annals and Magazine of Natural History*, 14: 34-36.
- Hankó, B. 1925. Fische aus Klein-Asien. *Annales: Historico-Naturales Musei Nationalis, Hungarici*, 21: 137-158 [Evidently not published until 1925].
- Hubbs, C.L. and Lagler, K.F. 1947. *Fishes of the Great Lakes region*. Cranbrook Institute of Science Bulletin, 26: 1–186.
- Kamensky, S.N. 1899. Die Cypriniden der Kaukasusländer und ihrer angrenzenden Meere. Tiflis, i-vii + 1-157 [In Russian, German summary].
- Kamensky, S.N. 1901. Die Cypriniden der Kaukasusländer und ihrer angrenzenden Meere:2. Lieferung. Tiflis, i-ii + i-ii + 1-192 [In Russian, German summary].
- Kosswig, C. 1953. Manyas Gölü ve Balıkları (Apoliyont Gölü hakkında bazı notlar) Balık ve Balıkçılık. İstanbul Üniversitesi Fen Fakültesi Hidrobiyoloji Araştırma Enstitütüsü Yayınlarından, 8(1): 20.
- Kosswig, C. 1954. Türkiye Tatlısu Balıklarının Zoocoğrafyası. İstanbul Üniversitesi Fen Fakültesi Hidrobiyoloji Araştırma Enstitütüsü Yayınlarından, 8 (1): 20.
- Kottelat, M. and Freyhof, J. 2007. *Handbook of European Freshwater Fishes*: Kottelat, Cornol and Freyhof, Berlin, xiv + 646 pp.
- Kuru, M. 1975. Dicle-Fırat, Kura-Aras, Van Gölü Karadeniz Havzası Tatlısularında Yaşayan Balıkların (Pisces) Sistematik ve Zoocoğrafik Yönden İncelenmesi. Phd thesis. Erzurum: Atatürk Üniversitesi Fen Bilimleri Enstitüsü [in Turkish].
- Kuru, M. 2004. Türkiye İç Su Balıklarının Son Sistematik Durumu. Gazi Üniversitesi. Gazi Eğitim Fakültesi Dergisi, 24: 31-21.
- Küçük, F. 2007. *Pseudophoxinus alii* (Teleostei: Cyprinidae), a new fish species from the Antalya Region, Turkey. *Turkish Journal of Zoology*, 31: 1-8.
- Küçük, F., Turan, D., Şahin, C. and Gülle, İ. 2009. *Capoeta mauricii* n. sp., a new species of cyprinid fish from Lake Beyşehir, Turkey (Osteichthyes: Cyprinidae). *Zoology in the Middle East*, 47: 71-82.
- Küçük, F., and Güçlü, S.S. 2014. A new *Pseudophoxinus* (Teleostei, Cyprinidae) species from Asi River Drainage (Turkey). *ZooKeys*, 411: 57-66. doi: 10.3897/zookeys.411.6833
- Ladiges, W. 1960a. Sübwasserfische der Türkei 1. Teil: Cyprinidae. *Mitteilungenausdem Hamburgischen Zoologischen Museum und Institut*, 58: 105-150.
- Ladiges, W. 1960b. Sübwasserfische der Türkei 4. Teil: Die Gattung Chondrostoma Cyprinidae in der Türkei. *Mitteilungenausdem Hamburgischen Zoologischen Museum und Institut*, 63: 101-109.
- Ladiges, W. 1964. Sübwasserfische der Türkei 3. Teil: restliche Gruppen: *Mitteilungenausdem Hamburgischen Zoologischen Museum und Institut*, Hamburg, 250 pp.
- Linnaeus, C. 1758. *Systemanaturae per regnatrionaturae, secundumclasses, ordines, genera, species, cum characteribus, differentiis, synonymis, locis*. Tomus I. Editiodecima, reformata.): Holmiae, 1: i-ii + 1-824.
- Nordmann, A. 1840. Observations sur la faune pontique. *In: Voyage dans la Russie méridionale et la Crimée, par la Hon- grie, la Valachie et la Moldavie. Exécuté en 1837, par Mr. Anatole de Démidoff*, III355-635.
- Özuluğ, M. and Freyhof, J. 2007. Rediagnosis of four species of *Alburnus* from Turkey and description of two new species (Teleostei: Cyprinidae). *Ichthyological Exploration of Freshwaters*, 18(3): 233-246.
- Özuluğ, M. and Freyhof, J. 2011. Revision of the genus *Squalius* in western and central Anatolia, with description of four new species (Teleostei: Cyprinidae). *Ichthyological Exploration of Freshwaters*, 22 (2): 107-148.
- Richardson, J. 1856. *Ichthyology*. In: *The Encyclopaedia Britannica, or Dictionary of Arts, Sciences, and General Literature*, 8th Edition Edinburgh, 12: 204-331.
- Tortonese, E. 1954. *The Trouts of Asiatic Turkey*. Publications Institute Hydrobiology University of Istanbul, 1: 1-25.
- Turan, D. 2003. Rize ve Artvin Yöresindeki Tatlısu Balıklarının Sistematik ve Ekolojik Yönden İncelenmesi. Phd. thesis. İzmir: Ege Üniversitesi Fen Bilimleri Enstitüsü [in Turkish].
- Turan, D., Kottelat, M., Kirankaya, S.G. and Engin, S. 2006a. *Capoeta ekmekciae*, a new species of cyprinid fish from northeastern Anatolia (Teleostei: Cyprinidae). *Ichthyological Exploration of Freshwaters*, 17 (2): 147-156.
- Turan, D., Kottelat, M., Ekmekçi, F.G. and Imamoğlu, H.O. 2006b. A review of *Capoeta tinca*, with descriptions of two new species from Turkey (Teleostei: Cyprinidae). *Revue Suisse de Zoologie*, 113(2): 421-436.
- Turan, D., Ekmekçi, F.G., İlhan, A. and Engin, S. 2008. *Luciobarbus kottelati*, a new species of barbel (Teleostei: Cyprinidae) from the Büyük Menderes River, Turkey, with rediagnose of *L. lydianus*. *Zootaxa*, 1824: 35-44.

- Turan, D., Yılmaz, B.T. and Kaya, C. 2009. *Squalius kottelati*, a new cyprinid species (Teleostei: Cyprinidae) from Orontes River Turkey. *Zootaxa*, 2270: 53-62.
- Turan, D., Kottelat, M. and Engin, S. 2010. Two new species of trouts, resident and migratory, sympatric in streams of northern Anatolia (Salmoniformes: Salmonidae). *Ichthyological Exploration of Freshwaters*, 20(4): 333-364.
- Turan, D., Kottelat, M. and Bektaş, Y. 2011. *Salmo tigridis*, a new species of trout from the Tigris River, Turkey (Teleostei: Salmonidae). *Zootaxa*, 2993: 23-33.
- Turan, D., Kottelat, M. and Doğan, E. 2013a. Two new species of *Squalius*, *S. adanaensis* and *S. seyhanensis* (Teleostei: Cyprinidae), from the Seyhan River in Turkey. *Zootaxa*, 3637: 308-324. doi.org/10.11646/zootaxa.3637.34
- Turan, D., Ekmekçi, F.G., Kaya, C. and Güçlü, S.S. 2013b. *Alburnoides manyasensis* (Actinopterygii, Cyprinidae), a new species of cyprinid fish from Manyas Lake basin, Turkey. *ZooKeys*, 276: 85-102. doi: 10.3897/zookeys.276.4107
- Turan, D., Kaya, C., Ekmekçi, F.G, Doğan, E, 2014a. Three new species of *Alburnoides* (Teleostei: Cyprinidae) from the Euphrates River, Eastern Anatolia, Turkey. *Zootaxa*, 3754 (2): 101-116. doi.org/10.11646/zootaxa.3754.2.1
- Turan, D, Doğan, E., Kaya, C. and Kanyılmaz, M. 2014b. *Salmo kottelati*, a new species of trout from Alakır Stream, draining to the Mediterranean in southern Anatolia, Turkey (Teleostei, Salmonidae). *ZooKeys*, 462: 135-151. doi: 10.3897/zookeys.462.8177