www.trjfas.org
ISSN 1303-2712
Turkish Journal of Fisheries and Aquatic Sciences 12: 7-13 (2012) DOI: 10.4194/1303-2712-v12_1_02

Cobitis keyvani sp. nova—a New Species of Spined-loach from South of the Caspian Sea Basin (Teleostei: Cobitidae)

Hamed Mousavi-Sabet[1,*], Sedat V. Yerli[2], Saber Vatandoust[3], S. Cevher Özeren[4], Zeynab Moradkhani[5]

[1] Fisheries Department, Faculty of Natural Resources, University of Guilan, Sowmeh Sara, IRAN.
[2] Biology Department, Faculty of Science, Hacettepe University, Beytepe Campus, Ankara, TURKEY.
[3] Department of Fisheries, Babol Branch, Islamic Azad University, Mazandaran, IRAN.
[4] Biology Department, Faculty of Science, Ankara University, Ankara, TURKEY.
[5] Department of Fisheries, Science and Research Branch, Islamic Azad University, Tehran, IRAN.

* Corresponding Author: Tel.: +98.21 44129257; Fax: +98.214 4129257;
E-mail: Mousavi-Sabet@guilan.ac.ir; Mosavii.h@gmail.com

Received 11 March 2011
Accepted 28 July 2011

Abstract

Cobitis keyvani, is a new species of spined-loach which is described from Talar River, south of the Caspian Sea basin, north of Iran. This new species is distinguished from *Cobitis linea* by one *lamina circularis* at the base of second ray of the male pectoral fins and from *Cobitis taenia* and *Cobitis faridpaki* by combination of the following characters: dorsal fin with 2-3 unbranched and 6-7 branched soft rays; anal fin with 2-3 unbranched 5-7 branched soft rays; caudal fin with 13-16 branched rays; one brownish streak across eye from the tip of nose, no streak on cheek; a big black spot smaller than eye diameter near the dorsal corner of the caudal fin base; pigmentation of longitudinal zones; third zone is reduced, and the fourth zone composed of 14-20 roundish to oval blotches

Keywords: New spine loach, Talar River, *Lamina circularis*, Iran.

Introduction

Loaches of the genus *Cobitis* Linnaeus, 1759 are widespread from northern Africa, throughout Europe to eastern Siberia, southeast to Central Vietnam (Bohlen and Rab, 2001; Vasil'eva and Vasil'ev, 2006; Kottelat and Freyhof, 2007). These fishes represent one of the most widely distributed Palearctic primary freshwater fish group. They inhabit river systems of Eurasia from England and Iberian Peninsula as far as to the Far East, Japanese Archipelago, the Sakhalin Island, Korean Peninsula, and Laos and Vietnam and also occur in North Africa, in Morocco. As a result of intensive studies of these fishes many new species were described or recovered during last 15 years (Economidis and Nalbant, 1996; Vasil'eva, 1998; Erk'akan *et al*., 1998, 2008; Vasil'eva and Vasil'ev, 1998, 2006; Freyhof and Serov, 2000; Janko *et al*., 2003; Suzawa, 2006), and currently more than 50 species are accepted as valid taxa.

Although, native spined loach species are quite well investigated in some regions (i.e. west European countries), other areas remain poorly studied (i.e. southern coasts of the Caspian Sea). For Iran, 4 Cobitis species are recorded: *Cobitis taenia, C. linea, C. turcica and C. faridpaki*. There are no many taxonomic studies of the loaches of Iran (Esmaeili *et al*., 2010), and many authors still report the species as *Cobitis taenia* Linnaeus, 1758 from Iran and Azerbajdzhan (Kiabi *et al*., 1999; Abdoli, 2000; Abdoli and Naderi, 2009; Coad, 2011; Froese and Pauly, 2011) that current knowledge restrict to northern and eastern Europe (Vasil'eva, 1988). Another spined loach species included in the ichthyofauna of Iran is *Cobitis linea* (Heckel, 1847). This species was identified as a member of the subgenus *Bicanestrinia* Banarescu, 1962 characterized by the presence of two scales of Canestrini (at the base of both the first and the second pectoral fin rays) in males and is known from a few localities in Iran: the Kor River basin near Persepolis and springs of Kul River of the Hormozgan drainage near Darab (Bianco and Nalbant, 1980; Nalbant and Bianco, 1998; Coad, 2011). Nalbant and Bianco (1998) recorded another species for Iran *C. turcica* (Hankó, 1925), which described from central Anatolia at Eregli, Turkey. This species belongs to subgenus *Bicanestrinia* and is found in different Turkish rivers of Mediterranean slope (Erk'akan *et al*., 1999). Nalbant and Bianco (1998) included *C. turcica* in the fauna of Iran based on two specimens from the Kor River near Persepolis, but recent studies on the same

species have identified them as *C. linea* (Coad, 2011). Related spined loach species which is recently reported from southern Caspian Sea basin is *Cobitis faridpaki* (Mousavi-Sabet, Vasil'eva, Vatandoust and Vasil'ev, 2011). This species is a *Monocanestrinia* spined loach, and recorded from Siahroud River, northeast of Iran (Mousavi-Sabet *et al.*, 2011). This conclusion seems much more probable than sympatric occurrence of species with very similar morphology initially discovered in different basins.

The spined loaches collected in Mazandaran region of Northern Iran in 2009 showed the presence of a single Canestrini in pectoral fin of males and were characterized by the set of morphological characters and colour pattern distinguishing them from all known valid species. Consequently, they are described as a new species from Iran in this study.

Materials and Methods

Fish were collected by electrofishing from the southern Caspian Sea basin, the Keselian Stream (36°11’74.09 "N, 53°00’92.01"E), Talar River, Mazandaran region, north of Iran (Figure 1). All specimens were fixed and preserved in 4% formaldehyde solution. Measurements were made in the laboratory by using digital calipers with a precision of 0.1 mm. In addition to morphological characters used in descriptions of loach species, twenty nine morphometric characters were measured (Banarescu *et al.*, 1972; Vasil'eva, 1988; Vasil'eva and Vasil'ev, 1998; Kottelat and Freyhof, 2007; Erk'akan *et al.* 2008) and seven meristic characters were considered: total length (TL), standard length (SL), lateral length of head, head depth, body depth, predorsal fin distance, postdorsal fin distance, preventral fin distance, postventral fin distance, preanal fin distance, dorsal fin length, dorsal fin height, anal fin length, anal fin height, ventral fin length, pectoral fin length, pectoral and ventral fins distance, ventral and anal fins distance, caudal peduncle length, caudal peduncle height, Caudal fin length, head width, snout length, postorbital length, interorbital length, longitidunal eye diameter, first barbel length, second barbel length, third barbel length; the numbers of rays in dorsal, anal, pectoral, ventral, and caudal fins, gill rackers and total vertebras. Notations (L1–L5) describing lines and speckles on the dorsolateral side of the trunk followed those designated by Takeda and Fujie (1945) (Figure 2). L1 and L2 collectively, L3, L4, and L5 correspond to zones Z1, Z2, Z3, and Z4 designated by Gambetta (1934), respectively. Specimens are preserved in GUIC: the collection of the Ichthyology Museum, Department of Fisheries, Faculty of Natural Resources, the University of Guilan, Guilan province, Iran.

Results and Discussion

***Cobitis keyvani* sp. nov.**

Holotype: GUIC CC1389MA., female: 62.9 mm SL; from the Keselian stream, Talar River, southeast of the Caspian Sea basin, Mazandaran province, north of Iran, 36°11’74.09 "N, 53°00’92.01"E; altitude 473 m; during the summer period; 6 August 2009; collected by H. MOUSAVI-SABET and S. VATANDOUST.

Paratypes: GUIC CC1389M, 8 ex. (3 males & 5 females), 37.4 - 80.3 mm SL, Bearing same locality and date as holotype. GUIC CC1390M, 6 ex. (2 males & 4 females), 44.4 – 67.4 SL mm, locality as for holotype, 2 September 2009; GUIC CC1391, 5 ex. (2 males & 3 females), 48.3 and 68.9 mm SL, locality as for holotype, 5 October 2009. The holotype and all the paratype specimens are deposited at the Ichthyology Museum, Department of Fisheries, University of Guilan (GUIC).

Comparative material: *Cobitis faridpaki* (Mousavi-Sabet, Vasil'eva, Vatandoust and Vasil'ev, 2011): GUIC CC1403M to GUIC CC1405, 25 ex. (12 males & 13 females), 48.5 - 67.4 mm SL; Siahroud River, southern Caspian Sea basin, Mazandaran province, north of Iran (36°26'85.05" N, 52°56'70.08" E), 83m alt. The *C. faridpaki* specimens are deposited at the Ichthyological Museum, Department of Fisheries, Natural Resources Faculty, University of Guilan, Rasht, Iran (GUIC).

Cobitis linea (Heckel, 1847): ZM-CBSU 4132 to ZM-CBSU 4146A, , 15 ex. (3 males & 12 females), 37.6 - 50.3 mm SL; Ghadamgah Spring- stream system, Kor River basin, Fars, Iran (30°15'23.00" N; 52°25'36.42" E), 1660m alt. The *C. linea* specimens are deposited at the Zoological Museum, Collection of Biology Department, Shiraz University, Iran (ZM-CBSU).

Cobitis taenia: According to Jelen *et al.* (2008), 186 specimens (133 females & 53 males), Klawoj Lake (Sajna, Guber and Lyna River drainages; Baltic Sea basin), located in northern Poland (52°50’N; 20°55’E).

Diagnosis: First branched soft ray of pectoral fin broad; males with a single lamina Canestrini at the base of the second pectoral fin ray; lamina Canestrini axe-shaped, interorbital width 25.1% of head length; Four lateral pigmentation zones well developed and reaching beyond the dorsal base and also one reduced zone; L1 zone narrower than L2; L3 with 20-28 obvious dark speckles; L2 and L4 zones with irregular spots; L4 zone with few small spots and reduced in the postdorsal part of the body; L5 zone wider than L1 and L3, with 14-20 roundish to oval blotches; Colour pattern (Figure 4A) with large dark and obvious spots along the mid-flank and shape of suborbital spine (Figure 4 B&C).

Description: Fin rays formula: D II-III/ 6-7, A II-III/ 5 (rarely 7), V I/ 5-7, P I/ 6-8, Cn 14-16 (rarely

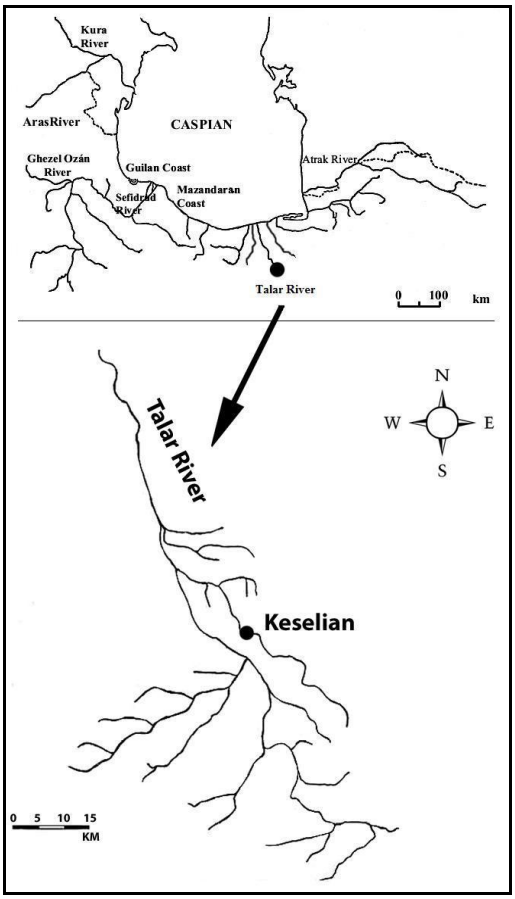

Figure 1. Map of south Caspian Sea basin showing some of the most important rivers system, the study area, Talar River and the Keselian Stream.

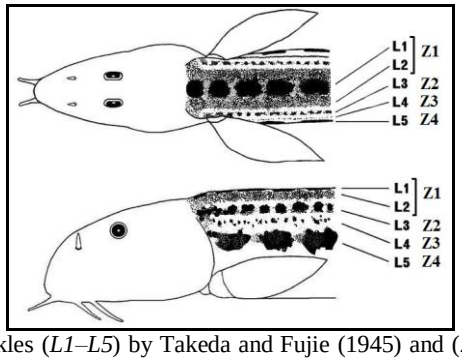

Figure 2. Notations of lines and speckles (*L1–L5*) by Takeda and Fujie (1945) and (*Z1-Z4*) by Gambetta (1934) applied to typical dorsolateral pattern of anterior trunk of *Cobitis keyvani* sp. nov. (modified from Suzawa, 2006).

13). General appearance and morphometric data of holotype and paratypes are given in Figure 3 and Table 1, respectively. Body moderately elongated and stout. Body depth 1.8-2.0 (1.9 times in the standart length. Head is relatively short and stout. Head depth is 1.5-1.7 (1.6) times in the head length. Postorbital and snout length is almost equal (0.9). Eyes are relatively small and longtidunal eye diameter is 0.8 times in the interorbital width. Suborbital spine is bicuspid (Fig. 4C). Mouth arched with three pairs of long barbels. Both lips furrowed and both lips and barbels cover with papillae. Scales are semi-rounded with a relatively big eccentric focal zone (Figure 4E).

Dorsal fin with 2-3 simple and 6(10) or 7(10) branched rays; anal fin with 2-3 simple and 5(17) or 7(3) branched rays. The edge of the dorsal and anal fins are rounded. Predorsal and postdorsal distance is almost equal (0.94-1.1; mean:1.0). Dorsal fin base is located in front of the ventral fin base and preventral is 1.2-1.4 (1.3) times in the predorsal. Pectoral fin branched rays 6(2), 7(12) and 8(6); pelvic fin branched rays 5(2), 6(13) or 7(5). Caudal fin truncated with 13(1), 14(12), 15(1) and 16(6) branched rays. Height of the caudal peduncle is 3.8-4.9 (4.4) times in the caudal peduncle length. Total vertebrae 39(1) or 40(19); gill racker 9(1) or 10(19).

Colour Pattern: Back is light brown in alive specimens. The flanks are brown with a series of 17-24 dark brown blotches or spots. The belly and lower head are yellowish white. There is a distinctive dark spot at the upper base of the caudal fin, often of a crescent shape, although this spot may be absent occasionally. Dorsal and caudal fins have 3-4 rows of brown spots. The pectoral, pelvic and anal fins are whitish without dark pigment. The head is mottled with brown dots and there is usually a band from the eye to the snout tip. Males and females specimens have similar colour pattern.

Sexual dimorphism: Females longer than males; Pectoral fins and the barbels are longer in males than in females. One *lamina circularis* (Canestrini's scale) is well developed at the base of second ray of the male pectoral fin (Figure 4D). Length of pectoral fin in males fits 16.31 percent of SL, while in females length of pectoral fin fits 13.48 percent of SL (Figure 5).

Remarks: *Cobitis keyvani*, was previously identified as *Cobitis taenia*. Kottelat (1997) mentioned that *C. taenia* restricted the type locality to Lake Mälaren (west of Stockholm) which was the only locality clearly mentioned by Linnaeus (1754) and Artedi (1738) (Freyhof *et al*., 2000). Also *Cobitis keyvani* is distinguished from *Cobitis taenia* by the combination of: dorsal fin with 2-3 unbranched and 6-

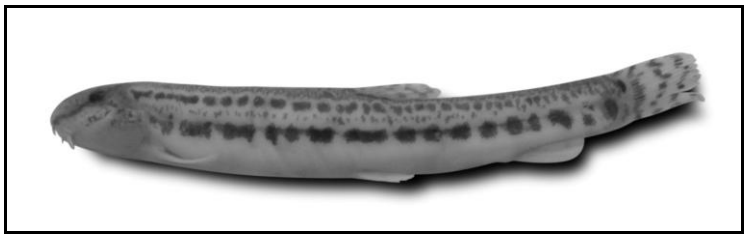

Figure 3. *Cobitis keyvani* sp. nov., lateral view, holotype -GUIC CC1389FA, female, 62.9 mm SL.

Table 1. Morphometric characters of *Cobitis keyvani* sp. nov

Character	Holotype	Paratypes			
		Males (7)		Females (13)	
		Mean ± SD	Range	Mean ± SD	Range
Total Length TL (mm)	71.1	56.83 ± 6.62	45.0 – 65.2	70.21 ± 9.22	58.1 – 90.2
Standard Length SL (mm)	62.9	48.88 ± 6.53	37.4 – 56.7	61.35 ± 8.85	50.1 – 80.3
Standard Length %					
Total length	113.04	115.43 ± 1.17	114.2 – 117.6	114.35 ± 1.22	113.0 – 115.4
Head length	19.25	19.91 ± 0.82	19.2 – 21.4	20.08 ± 0.88	18.5 – 21.8
Head depth	12.78	13.07 ± 0.35	12.7 – 13.8	12.92 ± 0.57	11.9 – 13.8
Body depth	14.83	15.43 ± 0.64	15.0 – 16.1	14.91 ± 0.89	13.6 – 16.4
Predorsal distance	52.59	54.67 ± 0.78	52.6 – 55.4	51.53 ± 1.17	49.8 – 53.3
Postdorsal distance	38.63	37.94 ± 0.89	37.1 – 39.3	39.08 ± 0.82	37.9 – 40.5
Preventral distance	54.86	55.21 ± 0.88	53.7 – 56.2	55.54 ± 1.03	54.2 – 57.3
Postventral distance	34.57	35.85 ± 0.91	33.8 – 36.2	34.17 ± 0.84	33.3 – 36.1
Preanal distance	81.62	81.74 ± 0.93	80.4 – 82.5	81.23 ± 0.87	79.9 – 82.4
Dorsal fin length	8.19	11.10 ± 0.38	10.6 – 11.5	9.54 ± 0.98	8.2 – 11.4
Dorsal fin height	15.21	18.09 ± 0.95	17.0 – 19.2	15.28 ± 1.06	15.2 – 17.4
Anal fin length	7.79	7.99 ± 0.51	7.3 – 8.6	7.51 ± 0.88	7.3 – 8.5
Anal fin height	12.40	12.68 ± 0.62	12.0 – 13.8	11.37 ± 0.96	9.8 – 12.6
Ventral fin length	11.29	12.60 ± 0.47	12.1 – 13.6	11.16 ± 0.88	9.0 – 12.2
Pectoral fin length	12.79	16.31 ± 0.43	15.4 – 16.8	13.48 ± 0.94	12.2 – 14.1
Pectoventral distance	34.52	37.09 ± 0.86	35.5 – 38.3	35.05 ± 1.46	32.8 – 38.4
Ventral-anal distance	23.89	23.42 ± 0.79	21.4 – 26.5	22.40 ± 1.16	20.5 – 24.1
Caudal peduncle length	13.51	13.72 ± 0.85	12.6 – 15.1	14.23 ± 0.77	12.7 – 16.1
Caudal peduncle height	9.55	9.10 ± 0.41	8.7 – 9.7	9.02 ± 0.60	8.1 – 10.2
Caudal fin length	13.04	15.56 ± 0.45	14.8 – 16.2	13.84 ± 0.61	13.0 – 15.0
Head Length %					
Head depth	66.39	64.75 ± 1.57	62.0 – 66.3	65.88 ± 1.05	64.0 – 67.1
Body depth	77.04	76.22 ± 1.91	73.9 – 78.1	75.41 ± 2.06	72.5 – 77.6
Head width	52.85	48.96 ± 1.35	46.8 – 51.1	52.19 ± 1.51	50.0 – 54.5
Snout length	41.70	42.67 ± 1.29	39.6 – 43.7	40.45 ± 1.79	38.6 – 42.2
Postorbital length	44.94	43.03 ± 2.46	40.2 – 45.7	43.92 ± 0.68	43.1 – 45.6
Interorbital length	24.19	23.52 ± 1.41	21.6 – 25.9	25.98 ± 1.19	24.1 – 27.8
Eye diameter	18.99	18.94 ± 1.24	18.0 – 21.5	19.43 ± 1.91	17.2 – 22.3
First barbell length	11.06	11.84 ± 0.61	11.2 – 12.9	10.25 ± 1.15	8.2 – 12.0
Second barbell length	15.88	17.34 ± 0.65	16.2 – 18.4	15.56 ± 1.62	13.7 – 18.0
Third barbell length	22.35	24.92 ± 1.10	23.4 – 26.7	21.25 ± 1.46	18.8 – 24.8

7 branched soft rays; anal fin with 2-3 unbranched 5-7 branched soft rays; caudal fin with 13-16 branched rays; one brownish streak across eye from the tip of nose, no streak on cheek and a black spot smaller than eye diameter near the dorsal corner of the caudal fin base; four lateral pigmentation zones well developed and reaching beyond the dorsal base and also one reduced zone; L1 zone narrower than L2; L3 with 20-28 obvious dark speckles; L2 and L4 zones with irregular spots; L4 zone with few small spots; L4 is reduced; L5 zone wider than L1 and L3, with 14-20 roundish to oval blotches; on post dorsal body, L2 zone reduced. In addition body length is up to 95mm and 70mm SL for females and males respectively in *Cobitis taenia* (Kottelat & Feryhof, 2007) whereas it is measured maximum 80.3mm and 56.7mm SL for females and males respectively in *Cobitis keyvani*, and some other morphometric and meristic characters (Tables 2 & 3)

Cobitis keyvani is distinguished from *Cobitis faridpaki* by elongated body; snout shape; low body and head depths. In addition *Cobitis faridpaki* differs by well developed laterocaudal process of suborbital spine, the presence of lateral process of suborbital spine, and the occurrence of specimens with 6 branched pectoral-fin rays; Gambetta's zones of pigmentation nearly complete, the fourth zone composed of 25-30 merged small spots, smaller than eye diameter, since in *C. keyvani* third zone is reduced, and the fourth zone composed of 14-20 roundish to oval blotches (Mousavi-Sabet, *et al*., 2011).

C. keyvani differs from *Cobitis linea* clearly by the presence of one *lamina circularis* at the base of second ray of the male pectoral fin. *Cobitis linea* has two scales of Canestrini, with short and keeled on ventral caudal peduncle (Bianco and Nalbant, 1980) whereas *C. keyvani* has only one scale of Canestrini and without any keel on the caudal peduncle. In addition, they are distinguished by the shapes of scales, suborbital spine shape and color pattern of zones L1-L5. *C. linea* is found in different basin, from Pulwar River and the upper Kul River drainage of the Hormozgan basin in south of Iran (Bianco and Nalbant 1980).

C. satunini described from the Kintrish River of the eastern Black Sea basin and represented the only valid species of genus *Cobitis* in Caucasus posses several features common with *C. keyvani*. This species also has a single black spot in upper part of a caudal fin base and subdorsal scales with small eccentric focal zone (Vasil'eva, 2000). However, *C.*

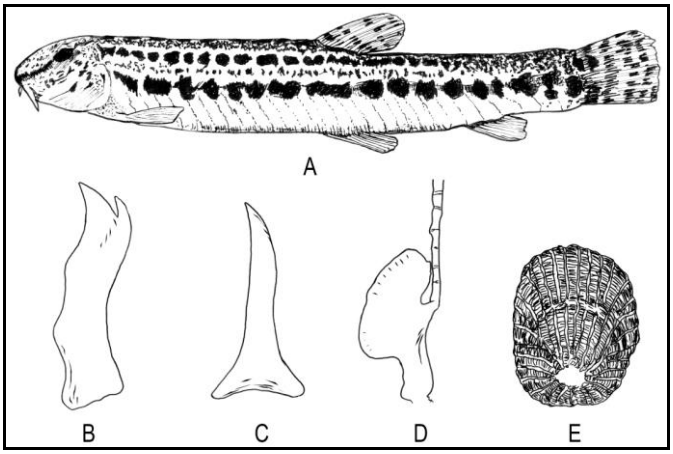

Figure 4. *Cobitis keyvani* sp. nov., A) typical distribution of spots and speckles, B) and C) suborbital spine in two positions, D) lamina circularis, E) subdorsal scale.

Figure 5. Sexual dimorphism based on the pectoral fin length (above – female 62.9 mm SL, below – male 55.6 mm SL).

satunini is characterized by the set of features clear separating it from *C. keyvani*. The number of branched caudal-fin rays in *C. satunini* varies from 12 to 14. Other differences in meristic characters and colour pattern are not so prominent and may be related with interpopulation variability of characters.

There are some reports on existence of spined loach (*Cobitis taenia* Linnaeus, 1758) in the Caspian Sea basin of Iran that it is found from Astara to Gorgan Bay including the Anzali wetland and the Aras River (Saadati, 1977; Roshan Tabari, 1997; Kiabi *et al.*, 1999; Abdoli, 2000) but it needs more investigation to confirm.

Distribution: To date, *C. keyvani* has only been recorded from the tributary of the Talar River called as Keselian stream and the Talar River. Talar River is located in Mazandaran province, north of Iran. But it should be expected to occur in other rivers of this basin, because the basin is too wide (about 256000 sq km).

Ecology: Like other loaches, *Cobitis keyvani* is found in clear and calm streams with sandy or slightly rocky bottom. It lives on the bottom of the river. This species was observed from 23m to 473m high in altitude. This species lead nocturnal life, during the day remains buried in sand, mud or dense weed growths, being active at night.

Etymology: The species name "Keyvani" is in honor of Prof. Dr. Amin Keyvan (1930-2007), the greatest Iranian ichthyologist researcher, who dedicated his life to the Iranian fishes.

Locale names: Mahi roftegar (= dustman, cleaner or sweeper fish, presumably from the bottom-dwelling habit); Loch or Louch (presumably from the English name) and Gel khorak (= mud skipper) in Khuzestan province (south of Iran); Sag mahi (= dog fish), Sagmahi-ye sangi (= stone loach or stone dogfish) (Coad, 2011), Sagmahi-ye juibari or

Table 2. Comparison of relative value (Mean ± SD) of morphometric characters of *Cobitis keyvani* sp. nov, *Cobitis taenia* (according to Jelen *et al.*, 2008), *Cobitis linea* and *Cobitis faridpaki* (according to Mousavi-Sabet *et al.*, 2011)

Character	*C. keyvani*	*C. taenia*	*C. linea*	*C. faridpaki*
TL (mm)	65.53 ± 8.31	81.26 ± 8.09	49.90 ± 4.89	62.79 ± 7.77
SL (mm)	56.98 ± 8.04	71.20 ± 7.70	42.21 ± 4.04	54.50 ± 6.86
Standard Length %				
Total length	114.73 ± 1.20	114.18 ± 1.06	115.17 ± 2.08	115.06 ± 1.67
Head length	20.02 ± 0.86	18.16 ± 0.75	20.41 ± 1.69	20.96 ± 0.96
Head depth	12.97 ± 0.49	10.02 ± 2.48	12.17 ± 0.85	12.95 ± 0.88
Predorsal distance	52.62 ± 1.03	49.70 ± 1.34	54.71 ± 2.26	52.58 ± 1.76
Postdorsal distance	38.68 ± 0.84	41.20 ± 1.41	40.04 ± 2.82	38.44 ± 0.91
Body depth	15.09 ± 0.80	13.93 ± 0.97	14.49 ± 0.98	16.06 ± 1.33
Preanal distance	81.41 ± 0.89	73.03 ± 2.02	79..97 ± 2.50	79.45 ± 1.27
Caudal peduncle height	9.05 ± 0.53	8.68 ± 0.62	8.88 ± 0.54	10.04 ± 0.91
Caudal peduncle length	14.05 ± 0.80	16.17 ± 1.39	15.67 ± 2.00	15.25 ± 2.01
Caudal fin length	14.44 ± 0.55	14.18 ± 0.92	15.17 ± 2.08	14.26 ± 0.92
Dorsal fin length	10.09 ± 0.77	9.10 ± 0.82	7.26 ± 1.05	11.05 ± 0.97
Dorsal fin height	16.26 ± 1.02	13.47 ± 0.89	16.33 ± 1.39	17.21 ± 1.85
Anal fin length	7.68 ± 0.75	6.68 ± 0.59	6.67 ± 1.18	7.53 ± 1.04
Anal fin height	11.83 ± 0.84	9.68 ± 0.75	12.57 ± 1.36	12.16 ± 1.53
Pectoral fin length	14.47 ± 0.76	12.84 ± 0.92	14.37 ± 1.92	14.09 ± 1.47
Ventral fin length	11.66 ± 0.74	10.63 ± 0.74	11.03 ± 1.32	12.09 ± 0.90
Pectoventral distance	35.76 ± 1.25	30.83 ± 1.53	36.57 ± 2.18	36.08 ± 1.09
Ventral-anal distance	22.76 ± 1.03	25.49 ± 2.78	25.08 ± 2.04	21.51 ± 1.89
Head Length %				
Snout length	41.23 ± 1.61	34.04 ± 1.83	40.73 ± 3.53	41.76 ± 1.47
Eye diameter	19.26 ± 1.67	15.51 ± 1.09	21.80 ± 2.27	20.58 ± 2.38
Postorbital length	43.61 ± 1.30	50.59 ± 2.18	49.13 ± 3.89	45.29 ± 3.16
Head depth	65.48 ± 1.23	54.88 ± 2.48	59.79 ± 3.14	61.47 ± 2.53
Interorbital length	25.12 ± 1.27	11.47 ± 1.27	23.60 ± 3.07	24.31 ± 1.39
First barbel length	10.81 ± 0.96	11.23 ± 1.28	11.24 ± 0.88	9.14 ± 1.56

Table 3. Comparison of meristic characters value (Mean ± SD) of *Cobitis keyvani* sp. nov, *Cobitis taenia* (according to Jelen *et al.*, 2008), *Cobitis linea* and *Cobitis faridpaki* (according to Mousavi-Sabet *et al.*, 2011)

Character*	*C. keyvani*	*C. taenia*	*C. linea*	*C. faridpaki*
Db	6.50 ± 0.51	6.97 ± 0.40	5.87 ± 0.35	6.93 ± 0.39
Ab	5.30 ± 0.73	5.21 ± 0.51	5.13 ± 0.35	6.52 ± 0.51
Pb	7.20 ± 0.62	6.17 ± 0.68	7.80 ± 0.56	7.57 ± 0.48
Vb	6.15 ± 0.59	5.44 ± 0.53	5.93 ± 0.26	6.40 ± 0.51
Cb	14.60 ± 0.99	13.90 ± 0.38	15.60 ± 0.63	14.08 ± 0.81

* Number of branched rays in dorsal (Db), Anal (Ab), Pectoral (Pb), Ventral (Vb), and Caudal (Cb) fins.

Sagmahi-e-jooibari (stream dogfish or stream loach), Mar mahi (= snake fish).

Acknowledgements

The authors are grateful to Hamid Ghasemnejad for his help in fish collection and Mohsen Azizi for fish drawing. Also, we would like to express our sincere thanks to Prof. Dr. Hamid Reza Esmaeili for collecting the *C. linea* specimens, , and to Dr. Jorg Freyhof for his helpful comments.

References

Abdoli, A. 2000. The Inland Water Fishes of Iran. Iranian Museum of Nature and Wildlife. Tehran. 378 pp. [In Persian]

Abdoli, A. and Naderi, M. 2009. The Biodiversity of Fishes of the Southern Basin of the Caspian Sea. Abzian Scientific Publication. Tehran. 238 pp. [In Persian]

Banarescu, P., Nalbant, T.T. and Chelmu, S. 1972. Revision and geographical variation of *Sabanejewia aurata* in Romania and the origin of *S. bulgarica* and *S. romanica* (Pisces, Cobitidae). Annotationes Zoologicae et Botanicae Bratislava, 75: 49.

Bianco, P. G. and Nalbant, T. 1980. Re-description of *Cobitis linea*, with some remarks on the subgenus *Bicanestrinia* (Cypriniformes: Cobitidae). Copeia, 1980(4): 903-906.

Bohlen, J. and Ra´b, P. 2001. Species and hybrid richness in spined loaches of the genus *Cobitis* L. (Teleostei: Cobitidae), with a checklist of European forms and suggestions for their conservation. Journal of Fish Biology, 59 (Suppl. A): 79–85.

Coad, B.W. 2011. Freshwater Fishes of Iran. Available at http://*www.briancoad.com* (accessed on 12 April 2011).

Economidis, P. S. and Nalbant, T. T. 1996. A study of the loaches of the genera Cobitis and Sabanejewia (Pisces, Cobitidae) of Greece, with description of six new taxa. Trav. Mus. Nat. Hist. nat. Grigore Antipa, 36: 295-347.

Erk'akan, F., Atalay-Ekmekçi, F. G. and Nalbant, T. T. 1998. Four new species and one new subspecies of the genus *Cobitis* (Pisces: Ostariophysi: Cobitidae) from Turkey. Tr. J. Zool., 22: 9-15.

Erk'akan, F., Atalay-Ekmekçi, F. G. and Nalbant, T. T. 1999. A review of the genus *Cobitis* in Turkey (Pisces: Ostariophysi: Cobitidae). Hydrobiologa. 403: 13-26.

Erk'akan, F., Ozeren, S.C. and Nalbant, T.T. 2008. *Cobitis evreni* sp. Nova-A New Spined loach Species (Cobitidae) from the Southern Turkey. Journal of Fisheries International, 3(4): 112-114.

Esmaeili, H.R., Coad, B.W., Gholamifard, A., and Teimori, A. 2010. Annotated checklist of the freshwater fishes of Iran. Zoosystematica Rossica, 19 (2): 361–386.

Freyhof, J. and Serov, D. V. 2000. *Cobitis laoensis* from Vietnam with notes on the southern distribution limits of Indochinese Cobitis (Teleostei: Cobitidae). Folia Zool., 49 (Suppl. 1): 205-214.

Freyhof, J., Rab, P., and Bohlen, J., 2000. The valid names of some European species of the genus *Cobitis* (Teleostei: Cobitidae). Folia Zoologica, 49 (Suppl. 1): 3-7.

Froese, R. and Pauly, D. (ed.), FishBase (World Wide Web electronic publication. www.fishbase.org, version (02/2011)).

Gambetta, L. 1934. Sulla variabilita del cobite fluviale (*Cobitis taenia* L.) e sul rapporto numerico dei sessi. Boll Mus Zool Anat Comp R Univ Torino, 44: 297–324.

Janko, K., Kotlik, P. and Ra´b, P. 2003. Evolutionary history of asexual hybrid loaches (*Cobitis*: Teleostie) inferred from phylogenetic analysis of mitochondrial DNA variation. Journal of Evolutionary Biology, 16: 1280–1287.

Jelen, I., Boron, A., Szlachciak, J. and Juchno, D. 2008. Morphology of the karyologically identified spined loach *Cobitis taenia* (Teleostei, Cobitidae) from a diploid population. Folia Zool., 57(1–2): 131–138.

Kiabi, B.H., Abdoli, A. and Naderi, M. 1999. Status of the fish fauna in the South Caspian Basin of Iran. Zoology in the Middle East, 18: 57-65.

Kottelat, M. 1997. European freshwater fishes. An heuristic checklist of the freshwater fishes of Europe (exclusive of former USSR), with an introduction for non-systematists and comments on nomenclature and conservation. Biologia, Bratislava, 52 (Supplement 5): 1-271.

Kottelat, M. and Freyhof, J. 2007. Handbook of European Freshwater Fishes. Kottelat, Cornol, Switzerland and Freyhof, Berlin, Germany. xiii + 646 pp.

Mousavi-Sabet, H., Vasil'eva, E.D., Vatandoust, S. and Vasil'ev, V.P. 2011. *Cobitis faridpaki* sp. nova—a New Spined Loach Species (Cobitidae) from the Southern Caspian Sea Basin (Iran). Journal of Ichthyology, 51(10): 925–931.

Nalbant, T.T. and Bianco, P.G. 1998. The loaches of Iran and adjacent regions with description of six new species (Cobitoidea). Ital. J. Zool. 65(Suppl.): 109-123.

Roshan Tabari, M. 1997. Hydrological and hydrobiological study in the Siah-rud River. Iranian Fisheries Scientific Journal, 6(2): 27- 42. [In Farsi]

Saadati, M.A.G. 1977. Taxonomy and distribution of the freshwater fishes of Iran. M.Sc. Thesis, Colorado State University, Fort Collins. xiii + 212 pp.

Suzawa, Y. 2006. A new loach, *Cobitis shikokuensis* (Teleostei: Cobitidae), from Shikoku Island, Japan. Ichthyological Research, 53: 315–322.

Takeda, R. and Fujie, K. 1945. Distribution of some color pattern types *Cobitis taenia* (in Japanese). Zoology Magazine, 56: 1–5.

Vasil'eva, E.D. 1988. Redescription and morpho-ecological characteristic and distribution of *Cobitis granoei* (Teleostei, Cobitidae). Zoolog. J. 67(7): 1025-1036 [in Russian].

Vasil'eva, E.D. and Vasil'ev, V.P. 1998. Sibling species in genus *Cobitis* (Cobitidae), *Cobitis rossomeridionalis* sp. nova. Journal of Ichthyology, 38(8): 580-590.

Vasil'eva, E.D. 2000. Sibling species in the genus Cobitis (Cobitidae, Pisces). Folia Zool., 49 (Suppl. 1): 23-30.

Vasil'eva, E.D. and Vasil'ev, V.P. 2006. *Cobitis pontica* sp. nova-a new spined loach species (Cobitidae) from the Bulgarian Waters. Journal of Ichthyology, 46 (Suppl. 1): S15-S20.