

Review Article

Review of the danionids of Iran (Family Danionidae)

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Abstract: The systematics, morphology, distribution, biology and economic importance of the danionids of Iran are described, the species are illustrated, and a bibliography on these fishes in Iran is provided. There are two native species in the genera *Barilius* and *Cabdio* found in southwestern and southeastern Iran, respectively.

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Introduction

The freshwater ichthyofauna of Iran comprises a diverse set of about 297 species in 109 genera, 30 families, 24 orders and 3 classes (Esmaeili et al., 2018). These form important elements of the aquatic ecosystem and a number of species are of commercial or other significance. The literature on these fishes is widely scattered, both in time and place. Summaries of the morphology and biology of these species were given in a website (www.briancoad.com) which is updated here for one family, while the relevant section of that website is now closed down. Other families will also be addressed in a similar fashion.

Family Danionidae Bleeker, 1863

The danionids, or danios, rasboras and allies, are found from Africa to Indonesia and comprise about 347 species (Catalog of Fishes, downloaded 15 October 2018). The danionids of Iran belong to the subfamily Chedrinae Bleeker, 1863, or troutbarbs, with two species. The family was formerly placed as a subfamily within the family Cyprinidae but is distinguished on the basis of osteological and molecular data (e.g., Tang et al., 2010; Stout et al., 2016; Betancur-R et al., 2017; Tan and Armbruster, 2018).

Genus *Barilius* Hamilton, 1822

The members of this genus are found from Pakistan to Thailand with one species in the Tigris-Euphrates and an adjacent basin. Their systematics is still poorly understood and there may be about 32 species. This genus is characterised by a compressed but slender and small body, having small to moderate sized scales, a decurved lateral line, running for example on the lower part of the caudal peduncle, lateral line complete, incomplete or absent, a short dorsal fin and a long anal fin, no fin spines, a moderate and terminal mouth, barbels absent or in one or two pairs, short gill rakers, pharyngeal teeth in three rows, and usually with dark bands or spots on the flank. These fishes are found mostly in mountain streams although some are lowland species.

Barilius mesopotamicus Berg, 1932

(Figs. 1-2)

Common names: Sebil mahi (= moustache or barbelled fish) [Sboura iraqia (from subura and shabil meaning shad after Mikaili and Shayegh (2011), in Arabic; Mesopotamian barilius, Mesopotamian minnow].

Systematics: The holotype, 44.0 mm total length and

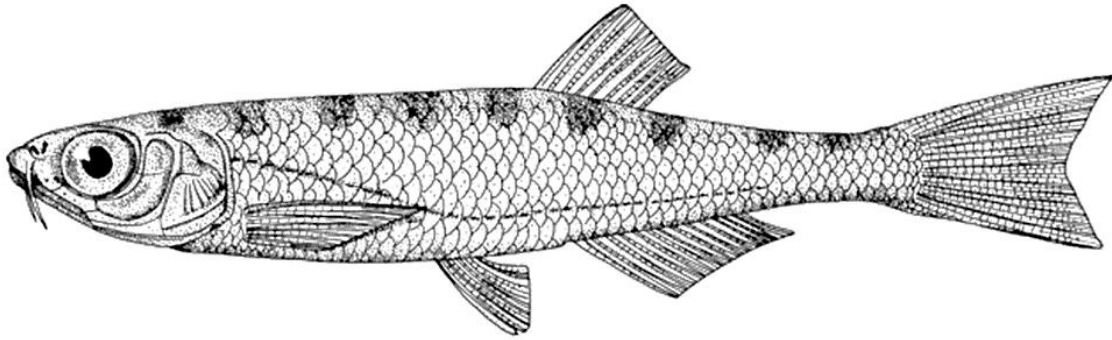


Figure 1. *Barilus mesopotamicus*, line drawing by S. Laurie-Bourque.



Figure 2. *Barilus mesopotamicus*, Khabour River, Syria, F. Krupp.

35.4 mm standard length, is in the Zoological Institute, St. Petersburg (ZISP 23955) and is decoloured. The collection date was given by Berg (1949) as 16.IV.1914, as 3.IV.1914 in the ZISP catalogue and 5.IV.1914 in the jar. The first two dates are probably correct, one old style and one new style. The type locality is "Stromgebiete des Tigris, in (Saret) Seid-Hassan, an der persisch-türkischen Grenze, unter 33°20'n. Br., 46°20'ö. L. Seid-Hassan liegt am Flusse Gawi, welcher sich mit dem Kundschan (Gundschan)-tschai vereinigt; der letztere mündet in den Tigris". Seyyed Hasan (33°06'N, 46°11'E) lies on a tributary of the Kanjan Cham River near the Iranian town of Mehran on the Iran-Iraq border. The tributary is presumably the Gavi River.

Howes (1980) stated that this species has apomorph characters shared with species assigned to *Leucaspis* Heckel and Kner, 1857 but this seems unlikely on general morphological grounds. Coad (1982), Bianco and Banareescu (1982) and Liao et al. (2011) concurred, the latter also incorporating

molecular evidence. It resembles other *Barilius* in having barbels (none in *Leucaspis*), a lateral line low on the body (short and mid-body), broad suborbital bones, and flank bars (none), while *Leucaspis* is unique in females having a fold of skin in the shape of two, large, rounded papillae around the genital opening. Bianco and Banareescu (1982) stated that this species may be generically distinct from South Asian *Barilius* but do not diagnose a new genus. Bănărescu and Coad (1991) and Bănărescu (1992) stated that its position and biogeographical affinities are uncertain. Berg (1949) considered it closer to Indian species of the genus *Barilius* than to African ones.

Jouladeh Roudbar and Vatandoust (2015) and Jouladeh Roudbar et al. (2017) examined fish from the Seimarreh (= Simareh), Changoleh and Siahgave rivers for 29 morphometric and seven meristic characters, finding 10 and four of these respectively showing population differences. The Siahgave population could be separated from the other two. The populations were not genetically differentiated

using *cyt b* gene sequences and morphological differences were attributed to environmental factors. Keivany and Ghorbani-Ranjbari (2017) examined 460 fish morphometrically from the Bushehr, Diala, Jarrahi, Karkheh and Karun rivers and found no differences between populations although some differences in head size and shape, body depth and caudal peduncle length were observed. Ghorbani-Ranjbari et al. (2018) examined 99 fish from the Changooleh, Doyrej, Kangir and Meymeh rivers and found morphometrics did not fully differentiate populations although the Kangir River fish were shown as a separate group. Ghorbani-Ranjbari and Keivany (2018) examined 140 fish from six rivers in the Bushehr (= Persis) basin morphometrically and found significant differences between them with only two overlapping. Body shape, head size and body depth were the main separating characters.

Key characters: The only member of its genus in Iran, this species is easily identified by the pigment pattern, low lateral line, broad suborbital bones and the barbels.

Morphology: The lower jaw bears a small symphyseal knob. The mouth is slightly subterminal, oblique and elongate with the mouth corner under the anterior half of the eye. A well-developed barbel has its origin just anterior to the level of the nostril above the upper lip and lies in a groove between the upper lip and the beginning of the suborbital bone series. This barbel can be absent or minute in some fish (females from Habbaniyah, Iraq) (Coad and Krupp, 1983). In addition to these maxillary barbels, a second pair of barbels has their origin slightly above the posterior edge of the mouth in eight out of 259 fish examined. They are usually rudimentary but may reach 10.7% of head length. Barbels are difficult to see in smaller fish without magnification. Dorsal fin unbranched rays 2-3, usually 3, branched rays 7-9, usually 8, anal fin unbranched rays 2-3, usually 3, branched rays 10-14, pectoral fin branched rays 11-15, and pelvic fin branched rays 6-8, usually 7. Lateral line scales 42-58. The lateral line is incomplete or complete, rarely terminating at the pectoral fin level. Lateral line decurved and parallel

to the ventral body profile from the pelvic fin origin to the caudal peduncle, being 2-3 scales above this profile. On the caudal peduncle, the lateral line is below the mid-line while scales on the caudal fin posterior to the hypural plate are perforated in the mid-line. Pectoral and pelvic axillary scales present. Scales are regularly arranged over the whole body but are not strongly imbricate, particularly on the belly and back anterior to the dorsal fin. Anterior flank scales are oval with subcentral anterior focus and a moderate number of circuli. Radii are found principally on the posterior and lateral fields. Anterior field radii are usually absent although 1-2 radii may occasionally be found. Scale radii based on five anterior flank scales from five fish (40.7-50.7 mm standard length) number 5-11 primary radii, 0-13 secondary radii and 5-23 total radii. Total gill rakers 7-14. Gill rakers are short and rounded, reaching to or part way to the raker below when appressed. Total vertebrae 38-41. Pharyngeal teeth usually 4,5-5,4, often 4,5-5,3, or more rarely in three rows 1,3,5-5,3,1 or 1,4,5-5,4,1. Teeth are hooked at the tip, slender and have a concave grinding surface below the tip. The gut is a simple s-shape.

Meristic values for Iranian specimens are: dorsal fin branched rays 7(2), 8(32) or 9(2), anal fin branched rays 10(2), 11(19), 12(13) 13(1) or 14(1), pectoral fin branched rays 11(1), 12(8), 13(23), 14(2) or 15(1), pelvic fin branched rays 6(1), 7(33) or 8(2), scales in lateral series 42(1), 43(3), 44(3), 45(2), 46(6), 47(6), 48(1), 49(3), 50(4), 51(4), 52(2) or 54(1), total gill rakers 7(4), 8(6), 9(6), 10(7), 11(6), 12(1), 13(1) or 14(1), pharyngeal teeth 4,5-5,4(8), 4,5-5,3(3) or 1,3,5-5,3,1(1), and total vertebrae 39(8), 40(20) or 41(5).

Sexual dimorphism: Unknown.

Colour: Overall colour is brilliant silver with a golden-yellow glimmer, with the back darker and having a thin median stripe. Scales are highly deciduous and leave a silvery smear on the hand. The upper flanks have 6-11 roundish dark, grey-green spots, not always clearly apparent in live fish. In preserved fish the spots are brown. A median dorsal stripe is variably developed. Barbels can be pale.

Fins are lightly pigmented, most melanophores being on the rays rather than the membranes. The anal and paired fins are almost entirely hyaline. The caudal fin may show one or two irregular bars running parallel to the posterior margin. The peritoneum is light to silvery but bears scattered melanophores which give a greyish tinge in preserved fish. Some fish from Iraq (Habbaniyah stream) lacked, or had weakly expressed, flank spots. **Size:** Reaches 69.8 mm total length (Esmaili et al., 2014).

Distribution: This species is found in the Tigris-Euphrates basin, including its Iranian part, and the adjacent Persis basin. Found in the Tigris River basin in the Ab-e Shur, A'la, Arvand, Bala, Bushehr, Changoleh, Chikhab, Dez, Diala, Doveyrich, Doyrej, Gavi, Jarrahi, Kahnak, Kangir, Karkheh, Karun, Meymeh, Qeski, Shur, Siahgave, Simareh and Zard rivers; and in the Persis basin in the Ahram, Dalaki, Darolmizan, Helleh, Karzin, Kheyrahad, Mond, Shapur, Shirin and Zohreh rivers (Berg, 1932; 1949; Bianco and Banarescu, 1982; Abdoli, 2000; Pazira et al., 2013; Esmaili et al., 2015; Jouladeh Roudbar and Vatandoust, 2015; Jouladeh Roudbar et al., 2017; Keivany and Ghorbani-Ranjbari, 2017; Keivany and Zamani-Faradonbe, 2017a, b; Ghorbani-Ranjbari et al., 2018; Ghorbani-Ranjbari and Keivany, 2018).

Zoogeography: Found in the Tigris-Euphrates basin of Turkey, Syria, Iraq and Iran. It does not appear to be common in Turkey, at least in the upper reaches of this basin there, nor in upper reaches of Iranian rivers. The distribution in the Persis basin of Iran is outside the modern Tigris-Euphrates basin. It is presumably a relict of the late Pleistocene when the Tigris-Euphrates flowed down a drained Persian Gulf receiving tributaries now isolated by the post-Pleistocene rise in sea level (Coad and Krupp, 1983). Kosswig (1951, 1952, 1955a, 1955b) noted the similarity at the generic level between Indian and African fishes, e.g., the cyprinoids *Barilius*, *Garra* and *Labeo*, indicating that these fishes arrived in Africa from India after the desiccation of the Syrian-Iranian Sea in the Pliocene.

Barilius, it should be noted, appears to prefer, in Asia and the Tigris-Euphrates basin, large lowland rivers and its dispersal across Iran is difficult to envisage by headwater capture (other genera can be found in small streams at higher altitudes as well as lowland rivers). However, Berg (1940) suggested that fish dispersal across this region was facilitated by the coastal rivers of Iranian and Pakistani Baluchestan being part of a single river system in the Pliocene, since submerged by subsidence. The presence of the spiny eel *Mastacembelus* and *Barilius* in western Iranian basins is attributed to headwater capture and/or colonisation from the Tigris-Euphrates basin when Persian Gulf rivers were tributary to an expanded Tigris-Euphrates basin during lowered sea levels in glacial times. This distribution of these genera is not, therefore, a remnant of the dispersal across Iran from Asia.

Habitat: It is present in both running and still water, from small streams only 1.0 m wide and irrigation ditches to major rivers more than 200 m across. Current is slow to fast but generally an obvious flow is apparent. However, one specimen was collected in a fish pond near Ahvaz (ZSM 25701). The collection localities in Iran are all at low altitudes and no fish were taken in high Zagros Mountain streams and rivers. Collections were made over mud and pebble substrates in shallow streams or at river margins. The species may also occur at the surface in mid-river but no collections confirm this supposition. Capture temperatures were 12-24°C and conductivity 0.45-10.5 mS. Salinity in drying pools of 20 cm depth in Syria where this species was caught in March had $Cl^{-1} = 390$ mg/l and a salinity of 1.5‰ (Fig. 3) (Coad and Krupp, 1983).

Age and growth: Esmaili et al. (2014) gave a *b* value for 13 fish from the Tigris River basin, 4.26-6.98 cm total length, as 3.22. Keivany and Zamani-Faradonbe (2017a) gave a *b* value of 3.33 for 21 Zohreh River fish (3.01-5.45 cm total length). Keivany and Zamani-Faradonbe (2017b) examined 94 fish, 24.3-57.2 mm total length, from the Jarrahi River and found a *b* value of 3.61.

Food: Gut contents include winged insects



Figure 3. Habitat of *Barilius mesopotamicus*, Khuzestan, A'la River at Pol-e Tighen (31°23'30"N, 49°53'E), 20 September 1995, B.W. Coad.

(Coleoptera, Heteroptera, Thysanoptera and Diptera) and spiders, suggestive of surface feeding (Coad and Krupp, 1983). Abdoli (2000) also reported Hymenoptera, Brachycera and Culicidae.

Reproduction: Most fish were collected in January when eggs were small but developing suggestive of spring spawning. Al-Rudainy (2008) gave an absolute fecundity of about 200 eggs for Iraq.

Parasites and predators: None reported from Iran.

Economic importance: None.

Experimental studies: None.

Conservation: This fish is found in suitable habitats of large rivers and in small ditches and does not appear to be in need of conservation. Vulnerable in Turkey (Fricke et al., 2007). Listed as of Least Concern by the IUCN (2015, <https://newredlist.iucnredlist.org/>, downloaded 15 October 2018).

Sources: Type material: *Barilius mesopotamicus* (ZISP 23955).

Iranian material: CMNFI, 1979-0120, 3, 19.3-50.7 mm standard length, Bushehr, Dalaki River near Konar Takhteh (29°28'N, 51°21'E); - CMNFI 1979-0357, 1, 27.6 mm standard length, Khuzestan, ditch in Karkheh River drainage (31°34'N, 48°12'E); - CMNFI 1979-0363, 11, 21.4-30.2 mm standard

length, Khuzestan, Karkheh River (31°52'N, 48°20'E); - CMNFI 1979-0365, 7, 20.0-34.4 mm standard length, Khuzestan, stream in Doveyrich River drainage (32°25'N, 47°36'30"E); - CMNFI 1979-0367, 1, 34.2 mm standard length, Khuzestan, Meymeh River 11 km north of Dehloran (32°44'30"N, 47°09'30"E); - CMNFI 1979-0368, 29, 21.6-41.9 mm standard length, Khuzestan, Karkheh River (32°24'30"N, 48°09'E); - CMNFI 1979-0372, 2, 30.7-33.1 mm standard length, Khuzestan, Dez River near Chogha Zanbil (ca. 32°02'N, ca. 48°30'E); - CMNFI 1979-0377, 3, 28.0-39.4 mm standard length, Khuzestan, Karkheh River (ca. 32°57'N, ca. 47°50'E); - CMNFI 1979-0378, 7, 31.9-42.4 mm standard length, Khuzestan, stream tributary to Karkheh River (ca. 32°48'N, ca. 48°04'E); - CMNFI 1979-0379, 21, 23.8-45.6 mm standard length, Khuzestan, Dez River (32°12'N, 48°27'E); - CMNFI 1979-0380, 10, 25.3-41.0 mm standard length, Khuzestan, stream tributary to Dez River (ca. 32°10'N, ca. 48°35'E); - CMNFI 1979-0381, 7, 24.3-31.2 mm standard length, Khuzestan, stream west of Shushtar (ca. 32°10'N, ca. 48°35'E); - CMNFI 1979-0382, 4, 25.9-30.8 mm standard length, Khuzestan, Karun River at Shushtar (32°03'N, 48°51'E); -

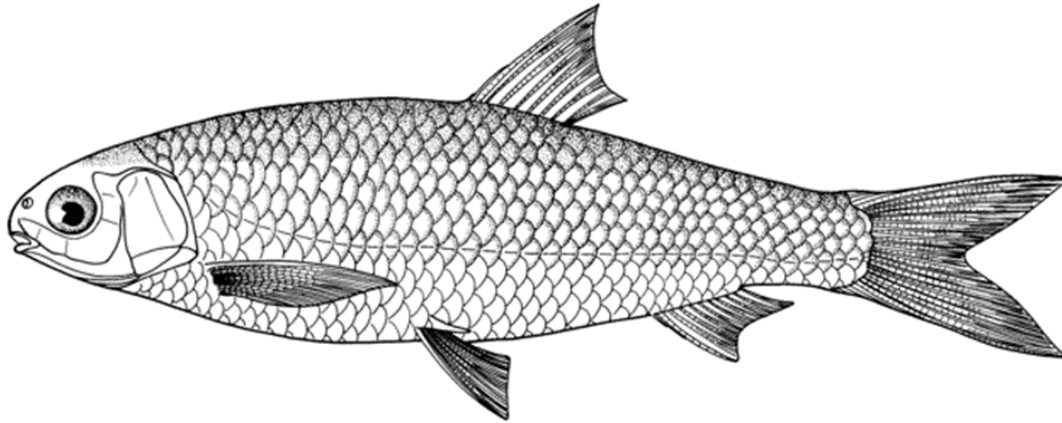


Figure 4. *Cabdio morar*, line drawing by S. Laurie-Bourque.

CMNFI 1979-0383, 8, 28.6-34.8 mm standard length, Khuzestan, stream in Ab-e Shur drainage (31°59'30"N, 49°06'E); - CMNFI 1979-0384, 3, 26.8-40.8mm standard length, Khuzestan, river in Ab-e Shur drainage (32°00'N, 49°07'E); - CMNFI 1979-0392, 3, 35.0-39.3 mm standard length, Khuzestan, Zard River (ca. 31°32'N, ca. 49°48'E); - CMNFI 1979-0396, 35, 25.1-48.8 mm standard length, Khuzestan, Kheyrabad River 20 km from Behbahan (30°32'N, 50°23'30"E); - CMNFI 1995-0009A, 1, 35.2 mm standard length, Khuzestan, A'la River at Pol-e Tighen (31°23'30"N, 49°53'E); - CMNFI 2008-0165, not kept, Khuzestan, Dez River near Shush (32°14'40"N, 48°20'07"E); - CMNFI 2008-0171, not kept, Khuzestan, A'la River at Pol-e Tighen (31°23'20"N, 49°52'44"E); - ZSM 25701, 1, 36.5 mm standard length, Khuzestan, fishpond near Ahvaz (no other locality data); - ISSB uncatalogued, 1, 48.7 mm standard length, Bushehr, Helleh River (ca. 29°20'N, ca. 51°15'E) (Coad and Krupp, 1983).

Comparative material: BM(NH) 1974.2.22:1256-1267, 11, 33.7-46.2 mm standard length, Iraq, stream between Lake Habanniyah and Euphrates River (ca. 33°22'N, 43°34'E); - BM(NH) 1968.12.13:217-220, 4, 18.5-47.4 mm standard length, Syria, Euphrates River at Mayadine (35°01'N, 40°27'E); - BM(NH) 1968.12.13:221-236, 16, 30.8-42.4 mm standard length, Syria, Tigris River at Ain Diwar (37°17'N, 42°11'E); - SMF 16442, 5, 28.2-35.9 mm standard length, Syria, Nahr Balikh at Jisr Shanine (36°03'N, 39°06'E); - SMF 16443, 63, 17.0-34.9 mm standard

length, Syria, Nahr Balikh at Jisr Shanine (36°03'N, 39°06'E); - ISSB uncatalogued, 4, 32.8-34.4 mm standard length, Turkey, Batman Suyu (ca. 37°55'N, ca. 40°15'E).

Genus *Cabdio* Hamilton, 1822

This Oriental genus has only three species, one of which enters southeastern Iran. *Aspidoparia* Heckel, 1847 is a synonym (Tang et al. 2010). Mirza (2000) proposed that the members of the genus *Aspidoparia* be placed in a new subfamily, Aspidoparinae.

It is characterised by an elongate and almost cylindrical body with a rounded abdomen, the head has a broad ring of suborbital bones, the mouth is small and inferior, the roof of the mouth has a papillose nodule, the lower jaw has a sharp, crescentic bony edge, there are no barbels, pharyngeal teeth are in 2-3 rows, the dorsal fin is short, anal fins are short to moderate, scales are moderate in size, the lateral line is decurved and runs on the lower half of the caudal peduncle, and the gut is long and coiled.

***Cabdio morar* (Hamilton, 1822)**

(Fig. 4)

Common names: Zanboor-mahi (= bee or wasp fish, presumably a mis-reading of the name in Pakistan) [Common chilwa or waspi in Pakistan; morar, morari].

Systematics: No relevant synonyms. This species was originally described from the Yamuna and Tista

rivers, India. No types are known (Eschmeyer et al., 1996).

There are some minor differences in characters with literature reports, particularly in pharyngeal tooth count, but sample sizes do not permit an adequate comparison for this wide-ranging species. Jalili et al. (2015) found osteological differences between Mashkid and Sarbaz River fish although Zamani Faradonbeh et al. (2015) found no meristic differences but some morphometric ones, attributed to phenotypic plasticity in different river conditions. **Key characters:** The suborbital ring of bones is large and distinctive, being almost as deep as the eye, and this feature is unique in southeastern Iranian cyprinids.

Morphology: The snout is short and rounded and overlaps the upper lip. The mouth is small, ventral and transverse. The lower jaw is straight with a slightly horny cutting edge and no lip. The dorsal fin origin is over or slightly behind the pelvic fin origin. The dorsal fin margin is straight to somewhat emarginate and the anal fin is emarginate.

Dorsal fin unbranched rays 2-3 (the first unbranched ray is very small, usually 3 rays are present but not discernible) and branched rays 6-8, anal fin unbranched rays 2 and branched rays 8-10, pectoral fin branched rays 9-16, usually 12 or more, and pelvic fin branched rays 7-8. Lateral line scales 36-45. Scales have few anterior and more numerous but not many posterior radii. There is a pelvic axillary scale and several elongate and overlapping scales in the pectoral axil. Gill rakers are very short, not touching the adjacent one when appressed, difficult to count at the fleshy ends of each arch, and numbering about 17-25. Pharyngeal teeth 2,4,5-5,4,2 in the literature but the main row count of 4 teeth observed here differs. The main row teeth have large, oval to oblong flattened crowns. The gut is a very elongate s-shape with a small anterior loop. Total vertebrae 36-37. The chromosome number is $2n=48-50$ (Klinkhardt et al., 1995; Arai, 2011).

Meristic values for Iranian specimens are: dorsal fin branched rays 6(1) or 7(18), anal fin branched rays 8(4) or 9(15), pectoral fin branched rays 9(1),

12(5), 13(11) or 14(2), pelvic fin branched rays 7(19), lateral line scales 36(1), 37(4), 38(1), 39(5), 40(4), 41(2), 42(1) or 45(1), scales above the lateral line 7(10) or 8(9), scales below the lateral line to the anal fin 3(1), 4(12) or 5(6), scales between the lateral line and the pelvic fin 4(13), 5(5) or 6(1), predorsal scales 17(1), 18(3), 19(2), 20(2), 21(3), 22(3), 23(2) or 24(2), caudal peduncle scales 15(1), 16(5), 17(6), 18(5), 19(1), total gill rakers 17(1), 18(2), 19(2), 21(2), 22(4), 23(2) or 25(1), pharyngeal teeth 2,4,4-4,4,2(5), 2,4,4-4,4,1(1) or 2,3,4-4,4,2(1), and total vertebrae 36(3) or 37(9).

Sexual dimorphism: Unknown.

Colour: Back light brown to brown-green with the flanks very silvery to silvery-yellow and the belly lighter. There is a golden stripe along the flank. Fins are a distinct dark yellow. The caudal fin may be yellow to orange and paired fins a very light orange-yellow. Preserved fish have immaculate fins except for the caudal fin which has some melanophores lining the rays, a broad stripe along the midline of the back, and fine melanophores on the back and upper flank. Some fish have small, dark dots on the back and upper flank. The peritoneum is black.

Size: Attains 20.0 cm (Malhotra and Munshi, 1985).

Distribution: This species is reported from the Makran and Mashkid River basins in Pakistan (Mirza, 1992) and eastwards to Thailand. The Iranian distribution encompasses the Hamun-e Mashkid (= Mashkel) basin in the Mashkid River, and the Makran basin westwards from the Pakistan border to the Straits of Hormuz. In the Makran, it is found in the Bahu Kalat, Gabrik, Jaghin, Mazaei, Rask Gando, Sarbaz and Validad rivers (Kiabi and Abdoli, 2000; Malekzahi et al., 2014; Zamani Faradonbeh et al., 2015).

Zoogeography: The species and genus reaches its westernmost limit of distribution in southeastern Iran. Barriers to further dispersal are unknown but it may be limited by temperature, habitat availability and poor recent connections between streams in the Makran and the southern deserts of Iran.

Habitat: This species favours streams and rivers with slow current. It is also recorded from lakes but not in

Iran. Mashkid River fish were caught in pools isolated by the drying river. Capture temperatures in December 1977 were 15-21°C. In Pakistan, it prefers comparatively high water temperatures and avoids waters with greater water depths, high stream orders and sandy beds (Rafique, 2007).

Age and growth: A female, 9.8 cm total length, from Iran had mature eggs (Berg, 1949). Esmaeili et al. (2014) gave a *b* value for 55 fish from the Makran, 6.08-12.0 cm total length, as 3.31.

Food: This minnow is a carni-omnivore and a voracious feeder (Bhattacharjee and Dasgupta, 1988). Iranian specimens contained no discernible food items in their guts.

Reproduction: Spawning occurs from February to April in India (Malhotra and Munshi, 1985). Iranian specimens caught in December were not mature suggesting a later spawning season.

Parasites and predators: Jalali et al. (2000) described two new species of monogeneans, *Dactylogyrus yousefpouri* and *D. mobedii*, from this species in the Bahu Kalat River of Baluchestan. Malekzahi et al. (2014) recorded *Lernaea* sp. from fish in the Mashkel River basin.

Economic importance: Not of any economic importance in Iran but it is eaten in India.

Experimental studies: None.

Conservation: Although known from only a few localities in southeastern Iran, this species may not be threatened other than by water abstraction and pollution. Listed as of Least Concern by the IUCN (2015, <https://newredlist.iucnredlist.org>, downloaded 15 October 2018).

Sources: Iranian material: CMNFI 1979-0316, 1, 22.1 mm standard length, Baluchestan, stream in Sarbaz River drainage (26°48'N, 61°02'E); - CMNFI 1979-0322, 7, 42.3-86.3 mm standard length, Baluchestan, Bahu Kalat River (ca. 25°45'N, ca. 61°26'E); - CMNFI 1979-0333, 7, 17.7-69.5 mm standard length, Baluchestan, Mashkid River west of Kuhak (ca. 27°05'N, ca. 63°12'E); - CMNFI 1979-0334, 10, 22.8-62.0 mm standard length, Baluchestan, Mashkid River 5 km east of Esfandak (27°04'N, 62°54'E); - OSU 8123, 5, 45.7-50.6 mm

standard length, Baluchestan, Sarbaz River (no other locality data).

Comparative material: CMNFI 2008-0048A, 2, 43.9-67.8 mm standard length, Afghanistan, probably Kabul River basin (no other locality data); - CMNFI 2010-0002, 1, 89.8 mm standard length, Afghanistan, Daruntah Lake, Kabul River drainage (34°30'N, 70°22'E); - BC 55-61, 2, 67.0-68.2 mm standard length, Afghanistan, India, Barakar River near Tillya Dam (no other locality data).

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