

## Range extension and translocation for *Rhodeus amarus* (Bloch, 1782) (Actinopterygii: Cyprinidae) in northwestern Iran

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**Abstract:** Based on the new fish collection, the distribution range of the European bitterling, *Rhodeus amarus* (Bloch, 1782), is extended to a new basin (Urmia) in northwestern Iran.

**Key words:** *Rhodeus amarus*, range extension, translocation, Urmia basin, Iran

The bitterlings (genus *Rhodeus* Agassiz, 1832) comprise about 18 species in Europe, Asia Minor, the Caspian Sea basin, China, Japan, and Korea, with 1 species in Iran (Coad, 2010). They are small fishes with deep, compressed bodies, an incomplete lateral line (about 10 pored scales or less), large- to moderate-sized scales, females with an ovipositor, males larger than females (unusual in cyprinid fishes), brightly colored and tuberculate when spawning, pharyngeal teeth in 1 row and not or only slightly serrated, mouth small, oblique and subterminal, no barbels, dorsal fin short to moderately long and spineless, an anal fin of similar length, gill rakers short, intestine long and spirally coiled, and peritoneum black (Coad, 2010).

*Rhodeus amarus* (Bloch, 1782), the European bitterling (= mahi-e-makhraj looleei, meaning "tube-like vent fish"), is the only bitterling native to Iran. There is also the possibility that *Rhodeus ocellatus* (Kner, 1866) could be found in the Tedzhen (=

Hari) River basin or the Caspian Sea basin from populations introduced to Turkmenistan (Coad, 2010). *R. amarus* is reported from western Europe, north of the Pyrenees and Alps, to the Caspian Sea basin. In Iran, it has been recorded from Astara to the Gorgan River, including the Anzali Talab (Anzali wetland) on the Caspian coast (Derzhavin, 1934; Holčík and Oláh, 1992; Abbasi et al., 1999; Kiabi et al., 1999; Abdoli, 2000). It probably occurs in the Araks River of Armenia (Pipoyan, 1996), which is shared with Iran in its lower reaches.

We report here on a significant range extension and a presence in a drainage basin remote from previous records for this species. The present record is about 300 km southwest of previous records in the Caspian Sea basin. The capture locality is the Zarrinehrood (= Zarrineh River), at 36°12'03.3"N, 46°25'38.3"E and an altitude of 1436 m, in northwestern Iran, Divan Dareh-Saqez Road, on 27 September 2007 (Figures 1

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and 2). The Zarrinehrood drains to Lake Orumiyeh (= Urmia), an endorheic basin. Some morphometric (in mm) and meristic characters (followed according to Hubbs and Lagler, 1958) of the 5 collected specimens are given in the Table. We also collected

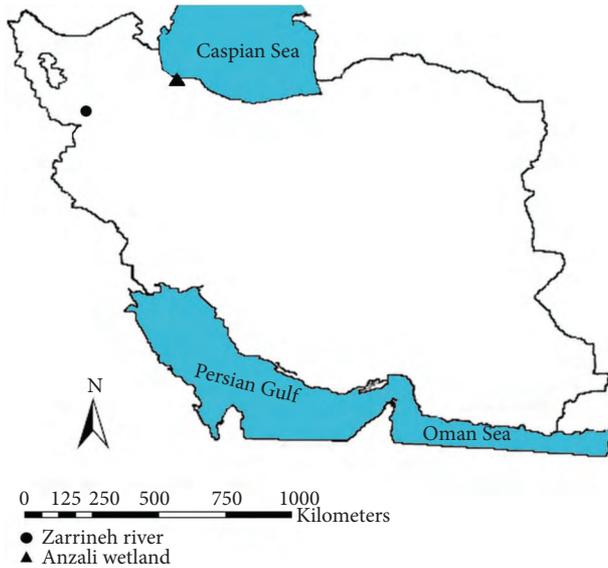


Figure 1. Nearest Caspian Sea locality (Anzali Talab) and introduction site for *Rhodeus amarus*.



Figure 2. *Rhodeus amarus* from the Zarrinehrood, Urmia basin.

specimens of goldfish *Carassius gibelio* (Bloch, 1782); *Pseudorasbora parva* (Temminck and Schlegel, 1846); *Alburnus atropatenae* Berg, 1925; and *Gambusia holbrooki* Girard, 1859 from the same locality. Silver carp, *Hypophthalmichthys molitrix* (Valenciennes, 1844); bighead carp, *Hypophthalmichthys nobilis* (Richardson, 1844); and common carp, *Cyprinus carpio* Linnaeus, 1758 are other commercially exotic species recorded from this river (Coad and Abdoli, 1993; Coad, 1996; Abdoli, 2000). It seems that *R. amarus* was incidentally introduced along with commercially important cyprinids from the Caspian Sea basin to fish farms in northwestern Iran (Urmia basin) and escaped into the wild. As we also collected

Table. Some morphometric (in mm) and meristic characters for 5 specimens of *Rhodeus amarus* from the Zarrinehrood, northwestern Iran.

<i>Rhodeus amarus</i>						
Fish number	D 193	D 199	D 201	D 203	D 205	Mean
Total length	48.25	36.2	40.85	45.75	45.2	43.25
Fork length	44.25	32.75	38.2	41.15	41.2	39.51
Standard length	39	29.4	33.7	37.5	36.9	35.3
Head length	9.9	8.4	8.85	9.75	10.05	9.39
Head depth	8.55	6.65	7.65	8.4	8.85	8.02
Head width	9.75	4	4.5	4.85	4.85	5.59
Maximum body depth	13.05	9.75	11.1	12.75	12.75	11.88
Minimum body depth	4.45	3.15	3.7	3.9	4.2	3.88
Lateral line scales	35	33	35	35	34	34.4
Dorsal fin rays	III,9	III,9	III,9	III,9	III,9	III,9
Pectoral fin rays	12	13	12	13	12	12.4
Pelvic fin rays	8	8	8	8	8	8
Anal fin rays	III,9	III,9	III,9	III,9	III,9	III,9
Gill rakers	13	13	13	13	13	13
Weight (g)	1.223	0.613	0.955	1.457	1.285	1.11

*R. amarus* in June 2009 from the same locality, it appears that this species has been established in the Urmia Lake basin.

In recent years, the fish fauna of the Urmia basin have been changed. The introduction and translocation of exotic species for aquaculture, control of malaria, research, and accidental introduction are the main reasons for these ichthyofaunal changes. The introduction of exotic fishes may affect populations of native fishes through predation, competition, habit changes, genetic changes, and introduction of parasites and diseases.

### Comparative material from Caspian Sea basin of Iran

CMNFI (Canadian Museum of Nature Fish Collection, Ottawa, Canada) 1970-0510, 21, 34.5-47.5 mm standard length, Gilan, Golshan River (37°26'N, 49°40'E); CMNFI 1970-0512, 25, 26.6-43.9 mm standard length, Gilan, Shalman River (37°08'N, 50°15'E); CMNFI 1970-0514, 2, 36.6-38.3 mm standard length, Gilan, Shafa River estuary (37°35'N, 49°09'E); CMNFI 1970-0520, 7, 28.9-45.0 mm

standard length, Gilan, Astara River (ca. 38°25'N, ca. 48°52'E); CMNFI 1970-0526, 4, 30.7-43.2 mm standard length, Gilan, Safid River below Astaneh Bridge (37°19'N, 49°57'30"E); CMNFI 1970-0579, 8, 32.6-49.0 mm standard length, Gilan, Old Safid River estuary (37°23'N, 50°11'E); CMNFI 1970-0580, 5, 35.8-53.8 mm standard length, Mazandaran, river near Iz Deh (36°36'N, 52°07'E); CMNFI 1979-0265, 9, 16.1-47.4 mm standard length, Gilan, Anzali Mordab at Abkenar (37°28'N, 49°20'E); CMNFI 1979-0472, 6, 37.7-47.7 mm standard length, Mazandaran, stream west of Mahmudabad (36°37'N, 52°12'E); CMNFI 1980-0117, 3, 42.2-47.8 mm standard length, Gilan, Golshan River (37°26'N, 49°40'E); CMNFI 1980-0127, 9, 32.6-43.0 mm standard length, Gilan, Caspian Sea near Hasan Kiadeh (37°24'N, 49°58'E).

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