

THREATENED FISHES OF THE WORLD: *Paracobitis rhadinaeus* (REGAN, 1906) (NEMACHEILIDAE)

Hamed Mousavi-Sabet^{*1}, Ahmad Gharaei², Mostafa Ghaffari²

¹ Department of Fisheries Sciences, Faculty of Natural Resources, University of Guilan, Sowmeh Sara, P.O. Box 1144, Guilan, Iran

² Department of Fisheries, Hamoun International Wetland Research Institute, University of Zabol, Zabol, Iran

* Corresponding Author, E-mail: mousavi-sabet@guilan.ac.ir

ARTICLE INFO

Received: 15 February 2013
Received in revised form: 12 April 2013
Accepted: 22 May 2013
Available online: 27 May 2013

Keywords:

Paracobitis rhadinaeus
Nemacheilidae
Sistan Basin
Conservation

ABSTRACT

Paracobitis rhadinaeus is an endemic Nemacheiline loach in the Sistan basin, southeast Iran. The population is declining probably due to habitat loss or degradation, damming, drought and poaching. Urgent habitat protection with bans on further regulation of the Hamoun wetland and related reservoirs is suggested. Captive breeding of the fish should be initiated. Fishing activities should be forbidden or limited. A detailed study of current population status, biology and ecology of *P. rhadinaeus* is required.

COMMON NAMES

Mar-Mahi (Persian), meaning Snake-fish; this may refer to this species which has an elongate body. Sistan's Loach (English) (Fig 1).

CONSERVATION STATUS

IUCN Red List: not evaluated; Iran: unknown (Coad, 2013). Not protected in Iran nor Afghanistan.

IDENTIFICATION

DIII 7-8^{1/2}, AII 5^{1/2}, VI 6-7^{1/2}, PI 8-9^{1/2}, C 19-22; the snout is longer than the postorbital distance; body depth is 7-10 times its body length; head length 5.0-5.5 times its body length; the mouth cleft extends to

below the nostrils; lower lip interrupted medially; outer rostral barbel is as long as maxillary barbel reaching back to or beyond nostrils; dorsal fin origin nearer tip of snout than caudal fin base; caudal fin slightly emarginated; caudal peduncle 2.0-2.75 as long as deep, 5.0-5.3 in length of fish; scales are highly deciduous and not always present on old preserved material; the dorsal fin rounded; there is a well-developed post-dorsal fin crest and a slight ventral crest on the caudal peduncle; the pelvic fin origin lies just in front of the mid-point of the dorsal fin base; there is an adipose tissue flap at the pelvic fin base; the anterior nostril is a tube followed immediately by a horizontal slit; the bony upper jaw has a slight protuberance and the lower jaw is curved and not indented; size attains 288 mm TL (Coad, 2013).

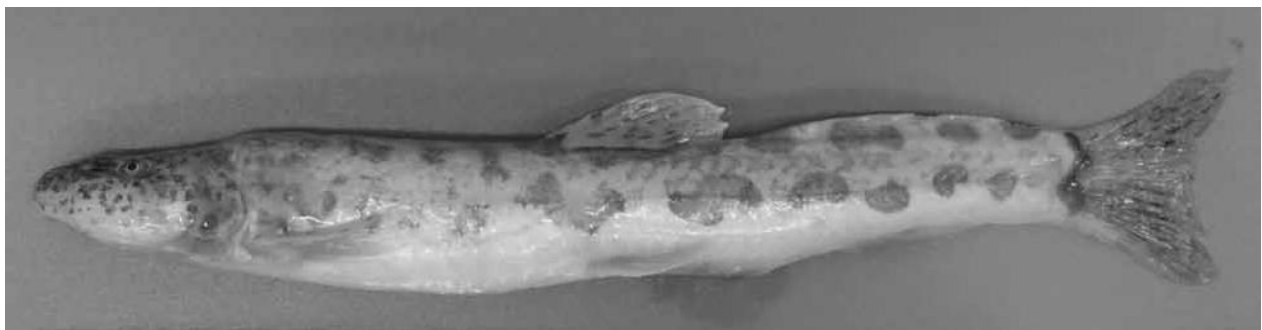


Fig. 1. *Paracobitis rhadinaeus*, 166 mm TL (photo by Sahel Pakzad-Touchaei, Jun 2012).

DISTRIBUTION

This endemic species is restricted to the Sistan basin of Iran and presumably Afghanistan. The species was distributed in the Hamoun wetland (Sistan basin in southeast Iran), but ever since dam construction on the River Hirmand (the water supply of the wetland) in Afghanistan one decade ago, the wetland dried. After the wetland dried, the fish has remained in related reservoirs to the wetland. Bănărescu and Nalbant (1966) place this species in the Rivers Atrak and Sefid of the Caspian Sea basin, the River Abkhar of central Iran, probably most of Iran, the Helmand drainage and the River Tedzhen, evidently confusing it with *P. malapterura* and *P. iranica*. Abdoli (2000) lists as questionably from the Bejestan, Kerman-Na'in and Dasht-e Lut basins, from the middle and lower Rivers Halil and Bampur of the Hamun-e Jaz Murian basin, from the Simish and the river to its north in the River Mashkid basin.

ABUNDANCE

Sporadic; locally abundant.

HABITAT AND ECOLOGY

Annandale and Hora (1920) note that the fish was healthy buried some inches in mud when cyprinids died in foul water above (the Hamoun wetland was turbid when the River Hirmand overflowed). Stomach contents include cyprinid fish remains and mayfly larvae (Annandale, 1921). Reproduction is unknown (Coad, 2013).

THREATS

It is endangered by primary anthropogenic which lowers the quality of its limited habitats, dams (about 10 concrete dams on the River Hirmand in Afghanistan), natural drought in recent decades, also anthropogenic drought which was caused by damming and unintended poaching (Iranian people don't eat the fish - so it is not economically or nutritionally important - but the population is damaged as incidental catch or bycatch in Cyprinid fishing in reservoirs).

CONSERVATION ACTION

Not protected in Iran nor Afghanistan.

CONSERVATION RECOMMENDATIONS

Urgent habitat protection with bans on further regulation of the wetland and related reservoirs is suggested. A detailed study of current population status, biology (especially reproduction) and ecology of *P. rhadinaeus* is required in order to design a captive breeding protocol and stock management of the fish. Water rights of the wetland and related reservoirs should be respected (but are ignored by damming) to prevent drought. Education of local fishermen should be initiated. Fishing programs should be forbidden or at least should be limited in the habitat of *P. rhadinaeus*. Also fishing equipment and methods should be edited according to minimum bycatch.

REMARKS

Bănărescu and Nalbant (1995) as well as Nalbant and Bianco (1998) place this species in *Paracobitis*. The Catalog of Fishes (Eschmeyer, 2013) spells the trivial name as *Nemacheilus macmahoni* or *Nemacheilus rhadinaeus*. *Nemacheilus macmahoni* Chaudhuri, 1909 described from the "affluents (= delta, an error for effluents) of the Helmand" is a synonym according to Bănărescu and Nalbant (1966) who refute the opinions of Nikol'skii (1947) and Berg (1949) who consider *macmahoni* to be identical to *P. malapterura*. Earlier Bănărescu and Nalbant (1964) placed fish from the Sistan and Caspian Sea basin of Iran as *Nemacheilus malapterurus macmahoni*. *P. malapterura* has both lips strongly furrowed, pelvic fin origin under the dorsal fin origin rather than behind, better developed scales which are also present on mid-flank, and a colour pattern of numerous oblique bands.

P. rhadinaeus is distinguished from *macmahoni* by Annandale and Hora (1920) in having an extremely short posterior diverticulum and minute vesicle in the swimbladder, by the absence of scales, a more elongate body, smaller, narrower and less flattened head, and by differences in body profile.

A syntype of *Nemacheilus rhadinaeus* (ZSI F1240/1) is in the Zoological Survey of India, Calcutta, under the name *Adiposia rhadinaea* and the holotype of *Nemacheilus macmahoni* (ZSI F1222/1) is also there under the name *Adiposia macmahoni* (Menon and Yazdani, 1968). Two syntypes listed as *Nemacheilus rhadinaeus* from "Sistan" are in the Natural History Museum, London (BM (NH) 1905.11.29:28-29, 2, 137.8-209.1 mm standard length) (Coad, 2013).

Sažetak

UGROŽENE RIBE SVIJETA: *Paracobitis rhadinaeus* (REGAN, 1906) (NEMACHEILIDAE)

Paracobitis rhadinaeus je endemski vijun iz Sistanskog slijeva na jugoistoku Irana. Populacija je u opadanju najvjerojatnije zbog gubitka i narušavanja staništa, podizanja brana, isušivanja i potapanja zemljišta. Predlaže se hitna zaštita staništa sa zabranom daljnje regulacije slijeva Hamun i njegovih akumulacijskih jezera. Potrebno je potaknuti kontrolirani mrijest ove vrste te zabraniti ili ograničiti ribolov. Nužna je detaljna studija sadašnjeg stanja populacije, biologije i ekologije vrste *P. rhadinaeus*.

Ključne riječi: *Paracobitis rhadinaeus*, Nemacheilidae, Sistanski slijev, očuvanje

REFERENCES

- Abdoli, A. (2000): The Inland Water Fishes of Iran. Iranian Museum of Nature and Wildlife, Tehran, pp. 378. [In Persian]
- Annandale, N. (1921): The aquatic fauna of Seistan. A summary. Records of the Indian Museum, 18, 235-253.
- Annandale, N., Hora, S. L. (1920): The fish of Seistan. Records of the Indian Museum, 18, 151-203, pls. XV-XVII (includes:- Appendix. Note on the fisheries of the delta of the Helmand and on the use of shaped rafts of bulrushes in India and Seistan, by N. Annandale).
- Bănărescu, P. M., Nalbant, T. T. (1966): The 3rd Danish Expedition to Central Asia. Zoological Results 34. Cobitidae (Pisces) from Afghanistan and Iran. Videnskabelige Meddelelser fra Dansk naturhistorisk Forening, 129, 149-186, pl. XIX-XXI.
- Bănărescu, P. M., Nalbant, T. T. (1995): A generical classification of Nemacheilinae with description of two new genera (Teleostei: Cypriniformes: Cobitidae). Travaux du Muséum d'Histoire Naturelle Grigore Antipa, București, 35, 429-496.
- Bănărescu, P. M., Nalbant, T. T. (1964): Süßwasserfische der Türkei. 2. Teil Cobitidae. Mitteilungen aus dem hamburgischen Zoologischen Museum und Institut, 61, 159-201.
- Berg, L. S. (1949): Presnovodnye ryby Irana i sopredel'nykh stran [Freshwater fishes of Iran and adjacent countries]. Trudy Zoologicheskogo Instituta Akademii Nauk SSSR, 8, 783-858.
- Coad, B. W. (2013): Freshwater Fishes of Iran (Available at <http://www.briancoad.com>) (accessed on 6 January 2013).
- Eschmeyer, W. N. (ed). (2013): Catalog of Fishes. California Academy of Sciences (Available at <http://research.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>) (Electronic version accessed on 1 April 2013).
- Menon, A. G. K., Yazdani, G. M. (1968): Catalogue of type-specimens in the Zoological Survey of India. Part 2.-Fishes. Records of the Zoological Survey of India, 61, 1 & 2, 1-190.
- Nalbant, T. T., Bianco, P. G. (1998): The loaches of Iran and adjacent regions with description of six new species (Cobitoidea). Italian Journal of Zoology, 65 (Supplement), 109-123. (Proceedings of the Ninth Congress of European Ichthyologists (CEI-9) "Fish Biodiversity" organized in Naples at the University Federico II and held in Trieste - Italy, 24-30 August 1997).
- Nikol'skii, G. V. (1947): Gol'tsy besstochnykh vo doemov Turkmenii [The loaches of the inland waters of Turkmenia]. Byulleten' Moskovskogo Obshchestva Ispytatelei Prirody, Otdel Biologii, 52, 3, 29-34.