

Threatened fishes of the world: *Alburnoides petrubanarescui* Bogutskaya & Coad 2009 (Actinopterygii: Leuciscidae)

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ABSTRACT

Alburnoides petrubanarescui is endemic to the Urmia Lake basin, shared by Iran and Turkey. Previously, the species was found in several rivers in this basin, however, it is currently only found in the upper part of the Nazlu Chay River. The species' extent of occurrence (EOO), which was previously estimated to be 20,000 km², is now 300 km². Over the past three generations (10 years), the EOO of Urmia spiralin has decreased by 98%, however, the population of the Nazlu River is stable, and there is no strong evidence to suggest that the population will decline in the future. Drought and water abstraction cause the species' population to reduce. Dam building and river pollution reduce their range, making them vulnerable to extinction. Therefore, we classified the species as Vulnerable D2.

Keywords: Spiralin, Urmia Lake, IUCN Red List, Iran.

Article type: Short Communication.

INTRODUCTION

There are 10 valid species of the genus *Alburnoides* Jettles 1861 in Iran (Jouladeh-Roudbar *et al.* 2015, 2020; Kaya 2020). From these species, *Alburnoides petrubanarescui* Bogutskaya & Coad 2009 has been reported from the Urmia Lake basin (Jouladeh-Roudbar *et al.* 2015, 2020). For many years, the species was believed to be extinct. The type locality and its surrounds have been extensively sampled by numerous ichthyologists, but the species has not been discovered. However, it was just discovered in the Turkish part of the Nazlu River after a decade of searching (Kaya 2020). This study confirmed that this species is found in Iran and gave a short review of the IUCN Red List.

Common names

Khayate-ye Oromiyeh (Persian); Urmia Spiralin.

Conservation status

Not Evaluated (IUCN, 2022); Critically Endangered B2ab (i,ii,iii,iv,v) (Jouladeh-Roudbar *et al.* 2020).

Identification

Dorsal fin III, 7-8; Anal fin III, 8-10; Pectoral fin I, 12-15; Pelvic fin I, 6-7. Lateral line scales 43-50, scales above the lateral line 9-11, scales below the lateral line 4-6, predorsal scales 20-24, caudal peduncle scales 18-20. Gill rakers 6-8. Total vertebrae 39-42. Small eye; snout length about equal to eye diameter and markedly larger than interorbital distance; caudal fin forked with rounded lobes; ventral keel scaled between the pelvic fins origin to anus; head deep with the stout snout markedly rounded; mouth cleft, below the lower edge of the eye; 2.5-4.2 pharyngeal teeth; 13-14 predorsal vertebrae; 20-22, commonly 21, abdominal vertebrae; 19-20 caudal vertebrae;

abdominal vertebral region usually longer than caudal region; most frequent vertebral formulae 21+19 and 21+20. Standard length usually not longer than 75 mm. Largest known specimen measured 87 mm (Bogutskaya & Coad 2009).

MATERIALS AND METHODS

Sampling

The study was carried out in Nazlu River (37.6137, 44.7924), in West Azerbaijan Province, Iran. The river flows into the Urmia Lake. The samples were collected by Samus Electrofisher and were preserved in 4% formaldehyde.

RESULTS AND DISCUSSION

Distribution

Alburnoides petrubanarescui (Fig. 1) is endemic to the Urmia Lake basin, shared by Iran and Turkey. Formerly found in several rivers in this basin, but now only in the upper reaches of the Nazlu Chay River (Jouladeh-Roudbar *et al.* 2015, 2020; Kaya 2020).

Abundance

The *A. petrubanarescui* population size has not been conducted. Their population is limited and they are caught by chance in Nazlu Chay (Figs. 2 - 3).



Fig. 1. *Alburnoides petrubanarescui*, recorded from Nazlu Chay River, Urmia Lake basin, standard length 71 mm.

Habitat and ecology

The Urmia spirin prefers cold-water mountain streams at elevations ranging from 1,445 to 2,050 m. It prefers slow-moving streams and clear water over gravelly substrates. This omnivorous fish mainly feeds on small benthic invertebrates including Simuliidae, Plecoptera, Ephemeroptera, Chironimidae, Trichoptera and algae.

Reproduction

Males reproduce for the first time at 1 year. Females often 1 year later. Egg diameters generally range from 0.5 to 1.1 mm (mean 0.75 mm). In February and March, when the water temperature reaches 15 °C, mature fish spawn in the shallows over sand and gravel bottoms.

Threats

The most important reasons for the population decline of this species are drought and water abstraction. The shrinking geographical distribution caused by dam construction and water pollution also makes them more vulnerable to extinction (Zarkami *et al.* 2010; Rahbar *et al.* 2011; Khosravi *et al.* 2017; Hajiradkouchak *et al.* 2019; Yousefi *et al.* 2020, 2022).

Proposed IUCN Red List category

The species was considered extinct for a long time. Despite extensive sampling by many colleagues of the type locality and its surroundings, the species has not been found. However, after a decade it was recently found in the Nazlu River. According to previous data, the extent of occurrence (EOO) of the species was 20,000 km² and now

is 300 km². There has been a 98% decline in the EOO of Urmia spiralin over the past three generations (10 years), however, the Nazlu River population with an EOO of about 300 km² is stable and there is no strong argument for population decline in the near future. Therefore, due to declining habitat quality and levels of exploitation, the species is classified as Vulnerable D2.

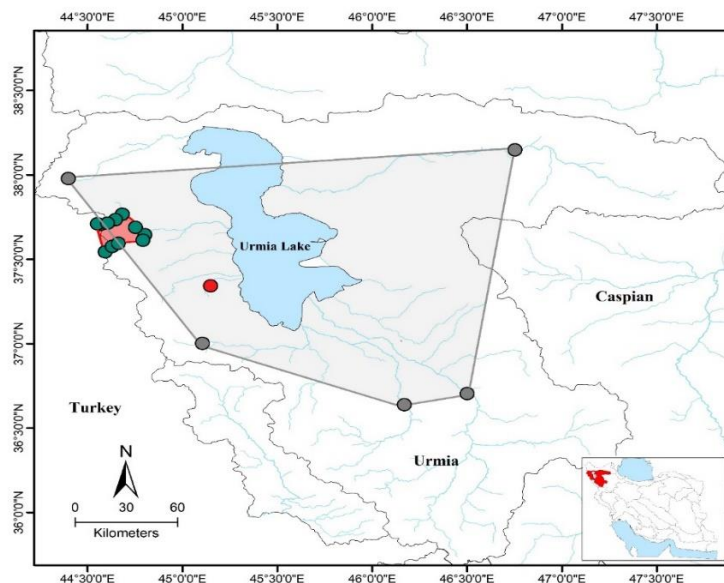


Fig. 2. Distribution map of *A. petrubanarescui* in the Urmia Lake basin; red circle: type locality, yellow circle: previous records, green circle: new records; grey zone: previous EOO, red zone: current EOO.

Conservation recommendations

Water resource in the Nazlu Chay River drainage is not a protected area. Nevertheless, the government constructed a semi-protected area around Marmisho Lake, which is thought to have helped protect the species. Local authorities should enforce related regulations prohibiting harmful fishing practices in other parts of Nazlu Chay where Urmia spiralin has been recorded. Stock surveys of this fish are also urgently needed.

CONCLUSION

Coordination of social, economic, and political actions in the Urmia Lake basin will be necessary for *A. petrubanarescui* recovery. Conservationists may be required to participate. Programs for education and knowledge are crucial, thus the publication of the Urmia spiralin monography could be noteworthy.

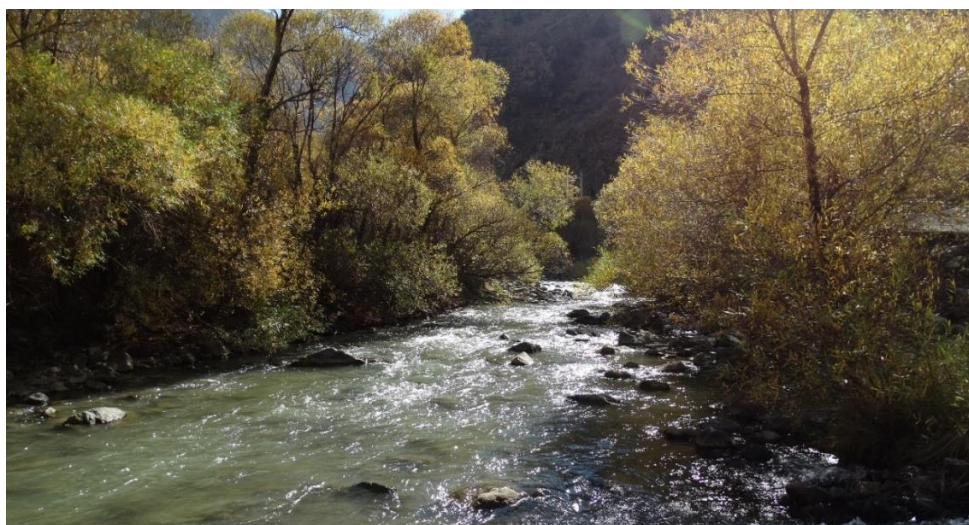


Fig. 3. Nazlu Chay, Urmia Lake basin; the natural habitats of *A. petrubanarescui*.

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