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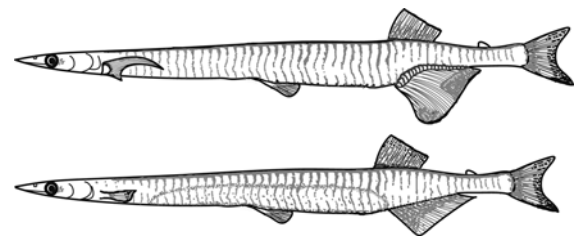
Threatened fishes of the world: *Hemisalanx prognathus* (Regan 1908) (Salangidae)

Jie Zhang, Fuwen Wei, Ming Li & Muqi Xu
CAS Key Lab of Animal Ecology and Conservation Biology, The Chinese Academy of Science, 25 Beisihuan Xilu, Haidan, 100080, Beijing, China(e-mail: weifw@ioz.ac.cn)



Common names: Qianhejian Yinyu (Chinese), Mianyu (Chinese), Cherry icefish (English). **Conservation status**: This species is not on any of the following list: IUCN Red List, Chinese Red List. However, according to IUCN (2001) Version 3.1 categories of threatened species, *H. prognathus* should be considered as critically endangered (CR) as it fits in paragraph A of the criteria: 'An observed, estimated, inferred or suspected population size reduction of ≥ 90% over the last 10 years or three generations'. **Identification**: D 12–15, A 24–31, P 7–9, GR 9–13, V 68–73, usually 69–70, anal scales in maturated male 15–25 (Chen & Huang 1956, Cheng & Zheng 1987, Dou & Chen 1994). Body is transparent or translucent while alive, cylindrical and scaleless. Head is deeply depressed. Lower jaw is not projecting beyond upper jaw, but ended in presymphyseal fleshy appendage. Tongue is toothless. Body length (TL) is from 105 mm to 154 mm. Body weight is usually less than 6 g per individual. Drawings by Jie Zhang (top, male; bottom, female). **Distribution**: *H. prognathus is* an endemic species to the northwestern Pacific, it occurs in estuaries and coastal waters off west Korean Peninsula, through and pass north coast of Chinese mainland and far up to Oujiang estuary in China. *H. prognathus* and its alinges *Neosalanx anderssoni* share overlapped range in northwestern Pacific, but unlike the continuous distribution of *N. anderssoni, H. prognathus* has apparently a patchy distribution in the estuaries of Yalujiang River, Yellow River, Xiaoqinghe River, Yangtze River and Oujiang River. **Abundance**: It had been the most dominant commercial fishing target in the estuaries throughout much of its habitats from 1950s to 1970s. Yalujiang River, which runs along the border between China and North Korea, is one of the main habitats of H. *prognathus*. In 1950s, the landing of *H. prognathus* combined with *Salanx ariakesis*, another species of Salangids, was about 500 t/year. It was tremendously decreased to about 20 t/year in mid 1970s, and became exhausted by the end of 1970s (Zhang 1999). During 1959–1963, the average catch of *H. prognathus* in Yangtze estuary was 796.6 t/year, and that of the next 10 years was 474 t/year. The catch significantly declined to 24.3 t in 1987 and to l t in 1991 (Zhang 1992). The annual catch of four Salangids in the Yellow River estuary, which includes that of *H. prognathus*, also decreased since 1987 with the lowest being less than 1 t in 1990 (Dou & Chen 1994). The fishery operation of *H. prognathus* was completely collapsed in both Yangtze and Yellow River estuaries thereafter. According to our investigation conducted from 2003 to April, 2005 as well as the information from local fishery management offices, both adults and juveniles are now rarely found in their habitats in China. **Habitat and ecology**: *H. prognathus is* annual fish, which inhabits in the coast saline water and starts to migrate to the estuary for spawning around March depending on latitude. It undertakes anadromous migration as far as about 250 km from the Yangtze River mouth and 15 km from Yalujiang River. *H. prognathus* is a carnivore, adults mainly feed on larvae fishes, mysid shrimps and large-sized cladocerans. **Reproduction**: It spawns during March to the end of April, with an intensive period from the end of March to the mid of April in Yangtze estuary. When water temperature reaches 8°C, spawning commonly takes place in shallow, near-shore water of 6–8 m deep over sandy or hard muddy substrate and with a slow current of about 0.3 m per second. Females usually produce 3000 –10,000 pelagic or free-floating eggs. Eggs are adhesive with 17–19 detached egg membrane filaments. The fertilized eggs attach to flowing algae or grass by their filaments, and commonly will hatch in about 6–13 days under natural conditions. Parents die after spawning. The larvae and juveniles descend to sea during April to May, growing in the water of salinities ranging from 0.12 to 12‰. *H. prognathus* is susceptible to change in its environment, and the spawning ground and spawning period may have some alterations (Zhang 1992). **Threats**: The most serious threats are hydrological constructions. There are two huge dams on the mainstream of Yangtze River, the Gezhouba Dam and the Three Gorges Dam, of which the latter is the biggest dam in the world. Additionally, more than 7000 drainage sluices were constructed in the Yangtze valley in the past 30 years. More than 10 dams and the biggest water diversion project will be constructed in the near future. The hydrological constructions decrease the current velocity and raise the salinity in the estuary, leading to the direct destroying of spawning conditions for anadromous fishes including *H. prognathus*. The problem becomes the most critical during the interval of flood seasons, of which involves the spawning period of *H. prognathus*. Pollution is another threat since polluted run-off from urban, agricultural lands, and industrial waste discharges have been released into spawning grounds in Yangtze and Yalujiang River and destroyed the spawning grounds there.

The catch of eel juveniles also exacerbated the depression of *H. prognathus* population. Eel farming is very popular in China and Japan, however, its artificial propagation is impossible till now. Eel juveniles can be harvested only by netting with fyke of 1 mm mesh at estuaries from November to the next May. The location and timing of this catch overlap with the spawning season and nursery ground of *H. prognathus*, respectively. **Conservation action**: No specific action has been taken to conserve this species. An annual fishing ban from April to June has been operated in Yangtze estuary since 2003. **Conservation recommendation**: There has been no survey conducted on *H. prognathus* in Yangtze River as well as other habitats for the last 20 years, when the environmental conditions have been changed dramatically. In order to restore the spawning and nursery habitats, studies of the population size, biology and ecological requirement of *H. prognathus* are needed. Any commercial catching in the spawning or nursery ground of *H. prognathus* should be stopped. Water discharge from dams should be scientifically considered, as it will moderate the lack of water and benefit to the heavily impressed estuaries resource.

Chen, P.X. & H.N. Huang. 1956. Morphological and ecological information on *Hemisalanx prognathus* distributed in the estuary of Yangtze River. Acta Hydrobiol. Sin. 1956(3): 93–98 (in Chinese).

Cheng Q.T. & B.S. Zheng. 1987. Systematic Synopsis of Chinese Fishes. Sciences Press Beijing, China, 1458, (in Chinese).

Dou, S.Z. & D.G. Chen. 1994. Taxonomy, biology and abundance of icefishes, or noodlefishes (Salangidae), in the Yellow River estuary of the Bohai Sea, China. J. Fish Biol. 45: 737–748.

Zhang, G.X. 1992. The recent resource change of *Hemisalanx prognathus* in the estuary of Yangtze River. Oceanol. Limnol. Sin. 23(5): 518–525 (in Chinese).

Zhang, S.D. 1999. The yields of salangids in the estuary of Yalujiang River. Fishery Econom. Res. China 1999 (3): 32 (in Chinese).