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THREATENED FISHES OF THE WORLD: *Heteropneustes fossilis* (Bloch, 1794) (Siluriformes: Heteropneustidae)

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ABSTRACT

The threatened stinging catfish *Heteropneustes fossilis* is a nutritionally valuable food in Asian countries but its natural populations have declined due to over-exploitation, habitat loss and pollution, thus deserving high conservation importance for the remaining isolated, wild populations of *H. fossilis* in Asian countries.

The results would be useful for the protection of the presence of endemic species and sustainable fisheries in the lake.

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COMMON NAME

Stinging catfish and shingi in Bangladesh (Rahman, 1989); Singee and Bitchu in India (Nath and Dey, 1989; Daniels, 2002); Hunga in Sri Lanka (Pethiyagoda, 1991); Lahoord, Nullie and Lohar in Pakistan (Misra, 1976).

CONSERVATION STATUS

Least concern in Bangladesh according to IUCN (2014), Vulnerable in India and Sri Lanka according to Dahanukar et al. (2004) and IUCN Sri Lanka (2000), respectively.

IMPORTANCE

Stinging catfish *H. fossilis* is commercially and aquaculturally a significant species in many Asian countries. It is

extensively fished because of its invigorating quality that includes taste and its nutritional and medicinal values (Jha and Rayamajhi, 2010). Its muscle contains high amounts of protein, iron (226 mg/100g) and calcium (Saha and Guha, 1939; Alok et al., 1993). Being a lean fish (fat content only 2.57 ± 0.24%), it is conducive to people on low-fat diets (Rahman et al., 1982).

IDENTIFICATION

H. fossilis is elongated and highly compressed (Fig. 1) with maxillary barbels extending to the end of pectoral fins and mandibular pairs extended up to the base of pelvis. Caudal fin is rounded and distinctly separated. Fin formula: D. 6-7; P1. 1/6-7; P2. 6; A. 62-70 (Rahman, 1989). Male has thinner ventral line which is absent in female.



Fig 1. *Heteropneustes fossilis* sample and photo were taken by the senior author (Md. Yeamin Hossain) from the Ganges River (known as Padma in Bangladesh) on 3 February 2015.

DISTRIBUTION

H. fossilis is distributed throughout south and southeast Asian countries including Bangladesh, India, Laos, Myanmar, Nepal, Pakistan, Sri Lanka and Thailand (Talwar and Jhingran, 1991). It is also found in Iran and Iraq (Coad, 1996; FAO, 1997).

ABUNDANCE

This fish was previously abundant in open (rivers and streams) and closed water ecosystems like ponds, floodplains, canals, *beel* and *haors* (Hussain and Mazid, 2001) but has now been reduced dramatically (Rahman et al., 2012).

HABITAT AND ECOLOGY

Stinging catfish inhabits freshwater and also (though rarely) brackish waters. This is mainly a fish of ponds, ditches, *beels*, swamps and marshes but is sometimes also found in muddy rivers (Jha and Rayamajhi, 2010). It is omnivorous during its life cycle (Breder and Rosen, 1966). The fry are planktivorous; juveniles feed on crustacea, plant, miscellaneous matter and insects; adults feed on insects, detritus and plant matter (Pal et al., 1996).

REPRODUCTION

Size at sexual maturity of male and female *H. fossilis* was estimated as 5.50 cm total length (TL) (age ~ 1 year) and 12.00 cm TL (age ~ 1 year), respectively (Talwar and Jhingran, 1991). Spawning season extends from July to August (Joy and Tharakan, 1999). Fecundity ranged from 1375 to 46737 (Bhatt et al., 1977).

THREATS

Population have declined due to reckless fishing, habitat destruction and conversion, injudicious application of pesticides on agricultural fields, release of industrial effluents, disease and effects of climate change (Dahanukar et al., 2004; Jha and Rayamajhi, 2010).

CONSERVATION ACTION

Several studies on the ecology and biology of *H. fossilis* have been conducted in Bangladesh (e.g., Pal et al., 1996; Kohinoor et al., 2012). In addition, induced breeding of this species has been done in Bangladesh (Rahman et al., 2013) and India (Alok et al., 1993; Joy and Tharakan, 1999).

CONSERVATION RECOMMENDATIONS

Studies on the reproduction and population biology are urgently needed (Hossain, 2014; Hossain and Alam, 2015). Legal and institutional reforms are necessary to engage local communities in *in situ* conservation and for engaging the ornamental fish industry in global conservation (Pethiyagoda, 2006). Establishment of suitable sanctuaries in selected rivers, streams, floodplains and swamplands has been suggested (Hossain et al., 2008; 2009; 2015a). Fishing for immature fish during the spawning season and indiscriminate use of pesticides on the agricultural fields should be strictly banned (Hossain et al., 2015b). *H. fossilis* would also benefit from effective habitat preservation and increased public motivations.

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Sažetak

UGROŽENE VRSTE RIBA U SVIJETU: *Heteropneustes fossilis* (Bloch, 1794) (Siluriformes: Heteropneustidae)

Ugroženi bodljasti som, *Heteropneustes fossilis*, je nutritivno vrijedna namirnica u azijskim zemljama, ali njegove prirodne populacije opadaju zbog pretjeranog iskorištavanja, gubitka staništa i zagađenja zbog kojih zaslužuje visoku važnost za zaštitu preostalih izoliranih, divljih populacija *H. fossilis* u azijskim zemljama.

Ključne riječi: *Heteropneustes fossilis*, bodljasti som, osjetljiva vrsta, Azija

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