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THREATENED FISHES OF THE WORLD: *Mastacembelus armatus* (Lacépède, 1800) (Synbranchiformes: Mastacembelidae)

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ABSTRACT

Spiny eel *Mastacembelus armatus* is one of the economically important species both as food and for aquarium trades in Asian countries but the natural population is decreasing due to over-exploitation and for various ecological imbalances including the changes in its natural habitats. This paper suggests steps for the sustainable conservation of the remnant isolated population of *M. armatus* in the natural water-bodies of Asian countries.

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COMMON NAME

Baim, spiny eel in Bangladesh (Rahman, 1989), tire-track spiny eel in India (Talwar and Jhingran, 1991), marbled spiny eel in Sri Lanka (Pethiyagoda, 1991) and chusi bam in Nepal (Shrestha,1994).

CONSERVATION STATUS

Endangered in Bangladesh (IUCN Bangladesh, 2000), lower risk in Western Ghats (CAMP, 1998); Vulnerable in Telangana (CAMP, 1998) and in Tamil Nadu of India (Balasundaram, et al., 2001), least concern in Pakistan (IUCN, 2011). Globally categorized as least concern (IUCN, 2014).

IMPORTANCE

This spiny eel is a popular food fish in West Bengal, India (Rayamajhi et al., 2010) and also in Bangladesh. It plays an important role in ecology by eating large amounts of algae, mud and sands (Mookerjee et al., 1946).

IDENTIFICATION

Body is relatively slender (Fig. 1) and several spines are found in dorsal region. Mouth is small and extended to below posterior nostril. Dorsal and anal fin broadly joined to the caudal fin. Body color is deep brownish with zig-zag lines. A row of black spots is found in both sides of the dorsal fin. Fin formula: D. 37-38/ 78-84; P_1. 25-26; A. 3/ 77-85 (Rahman, 1989).

Fig 1. *Mastacembelus armatus*. Photo was taken by the author (Md. Yeamin Hossain) of a specimen from the Ganges River (known as Padma in Bangladesh) on 22 February 2015.

DISTRIBUTION

M. armatus is found in Asian countries including Bangladesh (Rahman, 1989), India (Talwar and Jhingran, 1991), Nepal (Shrestha, 1994), Pakistan (Mirza and Alam, 2002) and Sri Lanka (Pethiyagoda, 1991).

ABUNDANCE

This species was previously available in natural waters including rivers, beels, ponds and inundated fields throughout Bangladesh (Rahman, 1989) but now the populations are seriously decreasing (IUCN Bangladesh, 2000).

HABITAT AND ECOLOGY

M. armatus is usually found in streams and rivers with sand, pebble or boulder substrate. It seldom leaves the bottom except when disturbed. Also it occurs in still waters, both in coastal marshes and dry-zone tanks. Sometimes this fish stays partially buried in fine substrate (Roberts, 1993). Adults of *M. armatus* live in highland streams to lowland wetlands (Vidthayanon, 2002). It is predatory in habit. The young fish feeds on crustaceans and insects larvae, while the adults devour small fish and tadpoles (Bhuiyan, 1964).

REPRODUCTION

Spawning season varied from April to June (Ali et al., 2013) and June to September (Serajuddin and Pathak, 2012). Fecundity of this species ranged from 2235 to 19493 (Ali et al., 2013), and 927-7409 (Serajuddin and Pathak, 2012).

THREATS

Spiny eel is caught by the local fishers indiscriminately (Rayamajhi et al., 2010). Overfishing, habitat loss and various ecological changes in its natural habits are the major causes of its wild population declines (Hossain et al., 2012a). Indiscriminant killing of fry and fingerlings, use of illegal fishing gear, pollution and siltation are also key causes for the declining of this species (Hossen et al., 2015; Hossain et al., 2015a).

CONSERVATION ACTION

Studies on the biology and ecology of this species have been performed (Lim et al., 1999; Narejo et al., 2003; Serajuddin and Pathak, 2012).

CONSERVATION RECOMMENDATIONS

Population surveys and studies on reproductive biology are urgently needed (Hossain and Ohtomi, 2008; Hossain et al., 2015b). Establishment of suitable sanctuaries in selected areas of rivers, streams, canals, reservoirs, lakes and swampland is recommended (Hossain, 2014; Hossain et al., 2009a; 2015c). Identification of causal factors to the decline of the species and necessary measurement should be taken to conserve the species in preferred habitats (Hossain et al., 2008; 2009b). Fishing practices during the spawning season (June to September) should be banned (Hossain et al., 2015d; Hossain and Alam, 2015). Fishing when fishes attain gonadal maturity should be stopped (Hossain et al., 2012b). The conservation status of *M. armatus* should be improved through effective habitat development and by increasing public awareness.

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Sažetak

UGROŽENE VRSTE RIBA U SVIJETU: *Mastacembelus armatus* (Lacepede, 1800) (Synbranchiformes: Mastacembelidae)

Mastacembelus armatus jedna je od gospodarsko važnijih vrsta, kao hrana i kao akvarijska vrsta u azijskim zemljama. Prirodni prirast se smanjuje zbog eksploatacije i različitih ekoloških neuravnoteženosti, uključujući promjene prirodnog staništa. Predlažu se koraci za održivo očuvanje ostatka izolirane populacije *M. armatus* u prirodnim vodenim staništima u azijskim zemljama.

Ključne riječi: *Mastacembelus armatus,* ugrožena vrsta, hrana, Azija

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