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## THREATENED FISHES OF THE WORLD: *Anabas testudineus* (Bloch, 1792) (Perciformes: Anabantidae)

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### ABSTRACT

Climbing perch *Anabas testudineus* is commercially important fish in Asian countries, mostly in Bangladesh, China, India, Malaysia, Pakistan, Sri Lanka and Thailand. Also, it is used as valuable food fish in different countries of the world. Nevertheless, its natural populations are seriously declining due to heavy harvest, habitat destruction and other ecological changes to its habitat. This paper recommends actions for the conservation of the long-lasting isolated populations of *A. testudineus* in Asian countries.

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### COMMON NAME

*A. testudineus* (Fig. 1) is commonly known as Koi in Bangladesh (Rahman et al., 2012), Trey kranh in Cambodia (Davidson, 1975), Kabai, Kavaian in India (Daniels, 2002), Climbing perch in Sri Lanka, Pla mor in Thailand (Froese and Pauly, 2014) and Climbing perch in USA (Robins et al., 1991).

### CONSERVATION STATUS

Vulnerable in lower Brahmaputra basin of Assam (CAMP, 1998) and in Western Ghats, India (Shaji and Easa, 1998); threatened in Indian waters (Dehadrai et al., 1992); declared endangered by NBFGR, ICAR, India in 1998 (Bhattacharyya



**Fig 1.** *Anabas testudineus*. Photo was taken by the author (Md. Yeamin Hossain) of a specimen from the Ganges River (known as Padma in Bangladesh) on 3 February 2015.

and Homechaudhuri, 2009); and data deficient (IUCN, 2014).

## IMPORTANCE

This fish is an important food fish and has a high market value. In addition, this species is considered as a valuable item of diet for sick and convalescents (Saha et al., 2009). Climbing perch is rich in iron and copper which is essential for haemoglobin synthesis (Sarma et al., 2010) and also contains an easily digestible poly-unsaturated fats and essential amino acids (Kohinoor et al., 1991). It provides 19.50% of protein and 2.27% of lipid (Ahmed et al., 2012). This is a very hardy fish and plays a significant role in fisheries and aquaculture practices (Froese and Pauly, 2014).

## IDENTIFICATION

Body is laterally compressed. Mouth is anterior and lower jaw slightly longer. Body color is dark to pale greenish. Pectoral and caudal fins are rounded. Dorsal, pelvic and anal fin rays are modified to spine. Scales are ctenoid, lateral line interrupted (Talwar and Jhingran, 1991; Yadav, 1997). Fin formula: D. XVII-XVIII/8-9; P<sub>1</sub>. 15-17; P<sub>2</sub>. 1/5; A. X-XI/ 9-10 (Rahman, 2005) and D. 27 (XVI-XVII/10-11); P<sub>1</sub>. 15-16 (3-4/12); P<sub>2</sub>. 6 (1/5); A. 20 (IX-X/10-11); C. 18-20 (2-4/16-18) (Hossain, M. Y., Unpublished data).

## DISTRIBUTION

The species is widely distributed in Bangladesh, Cambodia, India, Indonesia, Myanmar, Malaysia, Nepal, Pakistan, Philippines, Sri Lanka, Singapore, Thailand and Vietnam (Talwar and Jhingran, 1991; Froese and Pauly, 2014).

## ABUNDANCE

Formerly *A. testudineus* was abundant in rivers, streams, marshes, ponds, lakes, canals and estuaries (Talwar and Jhingran, 1991; Menon, 1999). However, natural populations of *A. testudineus* are seriously declining in their natural habitat (Khatune-Jannat et al., 2012; Rahman et al., 2012).

## HABITAT AND ECOLOGY

Mainly inhabits fresh- and brackish-water including rivers, streams, swamps, ponds, lakes, canals, ditches, floodplains, *haora*, *baors* and estuaries (Talwar and Jhingran, 1991; Riede, 2004). It mostly feeds on diatoms, green algae, blue green algae, cladocerans (Nargis and Hossain, 1987), shrimps, prawns, debris, insects (Froese and Pauly, 2014).

## REPRODUCTION

Spawning season varies from April to July (Rahman, 2005).

Size at first sexual maturity is 12.25±1.20 cm in total length (40.20±5.32 g. in body weight) for female *A. testudineus* (Patowary and Dutta, 2012). Fecundity ranges from 5324-68640 (Ramaseshaiah, 1985) and 3841-42564 (Chanchal et al., 1979).

## THREATS

Indiscriminate harvesting of fry and fingerlings, habitat modification, reduced water flow, growing human interventions on wetlands are the main threats to this species (Hossain and Ohtomi, 2008; Rahman et al., 2012; Kalita and Deka, 2013; Hossain et al., 2009a; 2015a).

## CONSERVATION ACTION

Numerous studies on morphology, length-weight relationships, ecology, threats, aquaculture practice have been conducted (Herre, 1924; Satrawaha and Pilasamorn, 2009; Khatune-Jannat et al., 2012; Rahman et al., 2012).

## CONSERVATION RECOMMENDATIONS

In order to know the condition of the wild stocks, population surveys are urgently needed (Hossain, 2014; Hossen et al., 2015a). Suitable sanctuaries should be established in selected areas of rivers, streams, canals and reservoirs (Hossain et al., 2009b; 2015b; Hossain and Alam, 2015). Fishing in spawning season (April to July) should be closed (Hossain et al., 2015c; d). Reckless fishing and use of illegal fishing gears must be banned (Hossain et al., 2012). Further studies on reproductive biology, life-history traits, providing sound ecology and restoration are highly recommended to provide sustainable conservation of *A. testudineus* in their habitat.

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## Sažetak

### UGROŽENE VRSTE RIBA U SVIJETU: *Anabas testudineus* (Bloch, 1792) (Perciformes: Anabantidae)

Grgeč penjač, *Anabas testudineus*, je komercijalno važna vrsta ribe u azijskim zemljama, uglavnom u Bangladešu, Kini, Indiji, Maleziji, Pakistanu, Šri Lanki i Tajlandu. Također, koristi se kao vrijedna hrana u različitim zemljama svijeta. Ipak, prirodne populacije ozbiljno opadaju zbog pretjeranog

izlova, uništavanja staništa i drugih ekoloških promjena. U članku se preporučuju akcije za očuvanje dugotrajnih izoliranih populacija *A. testudineus* u azijskim zemljama.

**Ključne riječi:** *Anabas testudineus*, grgeč penjač, osjetljiva vrsta, ugrožena vrsta, Azija

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