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Short Communication

A note on *Clupisoma garua* (Hamilton, 1822), a freshwater catfish of Indian subcontinent (Teleostei: Siluriformes)

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Abstract: *Clupisoma garua* is a freshwater catfish species which is widely distributed in different countries of Indian subcontinent. It is a popular table fish as having good taste and very less intramuscular bones. It is also a popular game fish in India and recently has also made its entry in ornamental fish markets of India. Though *C. garua* has been documented as vulnerable in India and critically endangered in Bangladesh; due to its abundance and wide spread nature it has been assessed as Least Concern under IUCN Red List of Threatened Species. The present report has been prepared to sum up the available information on different aspects of *C. garua* along with noting down some possible measures that should be taken into consideration for its conservation.

Keywords: Conservation, Diversity, Overfishing, Threats.

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Species introduction: *Clupisoma garua* is a freshwater catfish species of family Schilbeidae (order Siluriformes). Members of Schilbeidae which are known as butter catfish are native to Africa and Asia comprising about 60 valid species (Eschmeyer & Fong 2016). *Clupisoma garua* is a popular table fish as having high fat and moderate protein content (Jafri et al. 1964) and well flavored flesh without intramuscular bones (Khan 1934). It is also renowned as a game fish in India (Chondar 1999) and recently has also been documented to be exported from India as ornamental fish to other countries (Gupta & Banerjee 2014).

Common name: *Clupisoma garua* is commonly known as bacha/ garua-bacha/ garua-bachcha.

Vernacular name: *Clupisoma garua* is vernacularly known as garua/ bachua/ bachwa in India (Talwar & Jhingran 1991; Chondar 1999), vacha/ puttosi/ garua in Bangladesh (Talwar & Jhingran 1991; Chondar 1999) and dhon-ga-nu in Pakistan (Chondar 1999).

Morphological characters: Day (1878), Talwar & Jhingran (1991) and Chondar (1999) earlier have well-documented the morphological characters of *C. garua*. Here is the summary of those documented information. This fish species is with an elongated and compressed body. The body is without any scale. The abdominal profile between pelvic and vent is keeled. The head is moderate in size, oval and blunt; snout is rounded. The occipital process about four times as long as it is wide at its base, and does not quite reach the basal bone. Eyes are with broad, circular adipose lid and are situated partly on the lower surface of the head. The mouth is sub-terminal. Teeth are in villiform bands on jaws; vomero-palatine teeth generally are in a semilunar band, often broken into four patches. Barbels are four pairs in

Fig.1. Fresh specimen of *Clupisoma garua*.

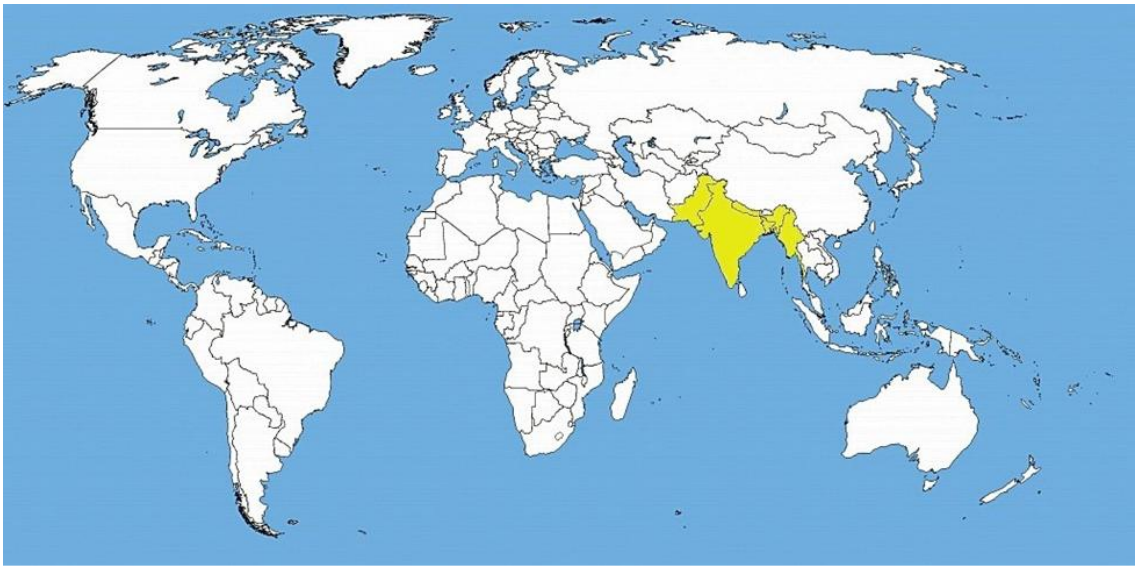

Fig.2. The map representing the global distribution of *Clupisoma garua*.

number; nasal barbels do not reach the eye, maxillary barbels extend to the base of pelvic fins and both mandibular pairs extend to pectoral fins. Dorsal fin spine is slender, rugose anteriorly and feebly serrated posteriorly; adipose dorsal fin is absent in adults. Pectoral fin is with strong serrated spine; does not extend to pelvic fin. Anal fin is long. Caudal fin is deeply forked. Body color is silvery grey on the back and lighter on the sides and abdomen; fins are tinted grey in color (Fig. 1).

Distribution: This fish species is widely distributed in India, Bangladesh, Pakistan, Nepal and Myanmar (Hamilton-Buchanan 1822; Day 1878; Misra 1959; Bhuiyan 1964; Jayaram 1981; Talwar & Jhingran 1991) (Fig. 2).

Habitat: *Clupisoma garua* mainly inhabits large rivers and reservoirs; though has also been reported from stagnant impoundments. It is a bottom and marginal dweller (Chondar 1999). In Hooghly River, it has been reported to inhabit both the freshwater zone as well as the estuarine region (Gopalakrishnan 1971).

Maximum length: Talwar & Jhingran (1999) have reported maximum length of 100 cm for *C. garua.* Specimens with maximum length of 91.4 cm (Day 1878) and 60.9 cm (Hamilton-Buchanan 1822; Job et al. 1955; Misra 1959) have been reported by other researchers in their studies.

Feeding habit: Most of earlier researchers have reported adults of *C. garua* as an insectivore and piscivore (Khan 1934; Hora 1937; Karamchandani 1957; Tandon et al. 1977) while small size groups have been documented as omnivore (Tandon et al. 1977). Agarwal & Tyagi (1969) have reported garua as an omnivorous fish. Its bottom and marginal feeding habit has been documented by Hora (1937),

Tandon et al. (1977), Talwar & Jhingran (1991) and Chondar (1999).

Reproductive biology: Male and female of *C. garua* can be easily identified with the secondary sexual character developed during the breeding season. The pectoral fin spine is relatively longer and thicker in male than in female, becomes more prominent on sexual maturation. Early maturation of male in respect to female has been reported for this fish species; it used to attain maturity at the end of first year (Chondar 1999). *Clupisoma garua* used to breed in the shallower parts of the main stream; Khan (1972) has reported that it breeds in flooded rivers and adjoining areas. In the Gangetic Brahmaputra system, breeding occurs between May and August in the monsoon flood under direct lacustrine influence (Chondar 1999).

Conservation status: There have been controversial debates about the conservation status of this catfish. *C. garua* has been documented as vulnerable in India (CAMP 1998) and critically endangered in Bangladesh (IUCN Bangladesh 2000). However, it has been assessed as Least Concern under IUCN Red List of Threatened Species (2016) due to its abundance and wide spread nature.

Threats: Due to popularity of *C. garua* as a table fish, it has been exploited in large amount and thus overfishing has been suggested as a major cause of local population decline of this fish species (Patra et al. 2005; Mishra et al. 2009). Ng (2010) has reported that as so far not much information is available on its biology, the impact of potential threats especially which are anthropogenic in nature has remained unknown. The current threats to aquatic biodiversity in all of its known distribution have also not been adequately identified (Ng 2010).

Conservation measures: So far not much initiative has been taken to promote the conservation of *C. garua* except little research to study the feeding habits and reproductive biology of this fish species.

Recommendations for conservation: Population restoration in nature is the first and foremost option to conserve any fish species and for this purpose, proper information on present distribution status of the concerned fish species is really needed. Thus in respect to conserve the natural populations of *C. garua*, a detail survey is essential to gather the information where in nature still the populations of this fish species are available. The existing populations must be provided proper protection and that can be done by the following measures: (i) complete banning of fishing practice during the breeding season to protect the brood fish; (ii) size specific capture must be suggested to protect the juveniles and to support the stock; (iii) the factors causing habitat loss and change in habitat ecology must be identified and proper steps to be taken to solve these problems. So far captive breeding of this fish species has not been tried anywhere in the world; hence this must be attempted in the coming days.

As per the available literatures, it is quite clear that so far no such attempts have been made to develop aquaculture practice for this fish species and thus the total supply to the domestic markets depends on wild capture. Unscrupulous collection will lead to declination of the population and also hamper the conservation approaches. Thus to maintain the supply as well as to reduce the pressure on wild stock captive breeding and culture of this fish species must be tried. Success in captive breeding depends on the availability of proper knowledge on feeding and breeding biology of the particular fish species. So far, though few works have been done on feeding biology of this fish species, information on its reproductive biology is really very much scarce. Thus further studies are needed to explore some proper information on this particular aspect. Apart from these measures, awareness program must be arranged to inform the general people about the problem and then using their support, conservation campaigns can be promoted through education and extension programs.

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یافته علمی کوتاه

یادداشتی بر *Clupisoma garua* (Hamilton, 1822)، گربه‌ماهی آب شیرین شبه قاره هند (ماهیان استخوانی عالی: گربه‌ماهی شکلان)

ساندیپان گوپتا*، سمیر بانرجت

واحد تحقیقات آبزی‌پروری، بخش جانورشناسی، دانشگاه کلکته، هند.

چکیده: *Clupisoma garua* یک گونه گربه ماهی آب‌شیرین است که پراکنش وسیعی در کشورهای شبه قاره هند دارد. این گربه ماهی به دلیل داشتن مزه خوب و تعداد کم استخوان ها (تیغ های) بین عضلانی از نظر غذایی مورد علاقه عموم مردم است. این ماهی همچنین در صید ورزشی در هند مورد استفاده قرار گرفته و اخیراً به بازارهای ماهیان زینتی هند راه یافته است. گرچه *C. garua* در گذشته در لیست ماهیان آسیب‌پذیر هند و در خطر انقراض بنگلادش قرار گرفته است، به دلیل فراوانی و پراکنش وسیع، هم اکنون از طرف اتحادیه بین‌المللی حفاظت از طبیعت در دسته ماهیان "کمترین نگرانی" قرار داده شده است. پژوهش حاضر، به منظور ارائه چکیده اطلاعات موجود در مورد جنبه های مختلف ماهی *C. garua* و ارائه شماری از اقدام‌هایی که به منظور حفاظت آن باید مورد توجه قرار گیرد، تهیه شده است.

کلمات‌کلیدی: حفاظت، تنوع، صید بی رویه، تهدیدها.