

A SHORT REVIEW ON NEW ENDEMIC *CHANNA AURANTIMACULATA* (TELEOSTEI: CHANNIDAE) OF BRAHMAPUTRA RIVER, ASSAM

Ashish Sahu

Department of Fisheries Resource Management, Faculty of Fisheries
Kerala University of Fisheries and Ocean Studies
Panangad, Cochin, Kerala, India

Short Communication

Received: 23.04.2022

Accepted: 30.04.2022

Published: 12.05.2022

ABSTRACT

Channa aurantimaculata (Musikasinthorn, 2000), a new endemic murrel of the Brahmaputra basin, Assam, has significant economic importance in India as a food due to its exquisite taste and ornamental value. This species is commonly called Golden Cobra Snakehead or Orange Snakehead, which has brown marking along its back and sides characterized by blue veins on the top of its head and the rest of the body is golden in colour and blotched with blue. Fishermen and local people should be made aware to conserve this species. Spatial conservative management could be applied to maintain genetic diversity and to improve breeding technology.

Keywords: Orange-spotted snakehead, IUCN, Conservation, Biology, feeding habit.

INTRODUCTION

The snakeheads (Actinopterygii: Perciformes: Channidae) comprise more than 40 valid species in two genera; *Channa*, and *Parachanna* (Li et al., 2006; Serrao et al., 2014). The ray-finned fish- channais native to tropical Africa, parts of the Middle East, and Asia (Berra, 2001), and *Parachanna* in tropical Africa (Li et al., 2006). They are commonly known as "snakeheads" because of the possession of large cycloid scales on the head and ctenoid on the body, which is evocative of snakes; elongated cylindrical body; a large mouth with well-developed teeth on the jaws; vomer and palatines; and chiefly characterized by having long dorsal and anal fin bases with soft rays; rounded caudal fin; and curved lateral line (Musikasinthorn, 1998; Vishwanath & Geetakumari, 2009). They can survive out of water for short periods because of special adaption accessory respiratory organs (ARO), (modified epibranchial) situated in the suprabranchial cavity in the head.

The fairly large species, *C. aurantimaculata*, is an endemic murrel of the upper Brahmaputra river basin (Biswas, 2007), which is found in the forest streams, ponds, and swamps adjacent to the rainforest of northern Assam. The species is remarkably striking, with a vibrant pattern of purple and orange adorning the length of its body and it can be regarded as a potential aquarium fish. The fish was discovered in 2000 in Dibrugarh, Assam, and measures up to 40cm in length. The fish is also known as the 'orange-spotted snakehead', as its head looks like that of a snake. It is carnivorous and predatory, enjoying a diet of smaller fish and invertebrates. This species is listed in the data deficient category. However, due to its high market value, the species is captured indiscriminately, jeopardizing its very existence throughout its distributional range.

Etymology

The specific name, *C. aurantimaculata*, refers to the orange blotches (aurantium=orange, maculatus=blotch) on the sides of the body in the new species.

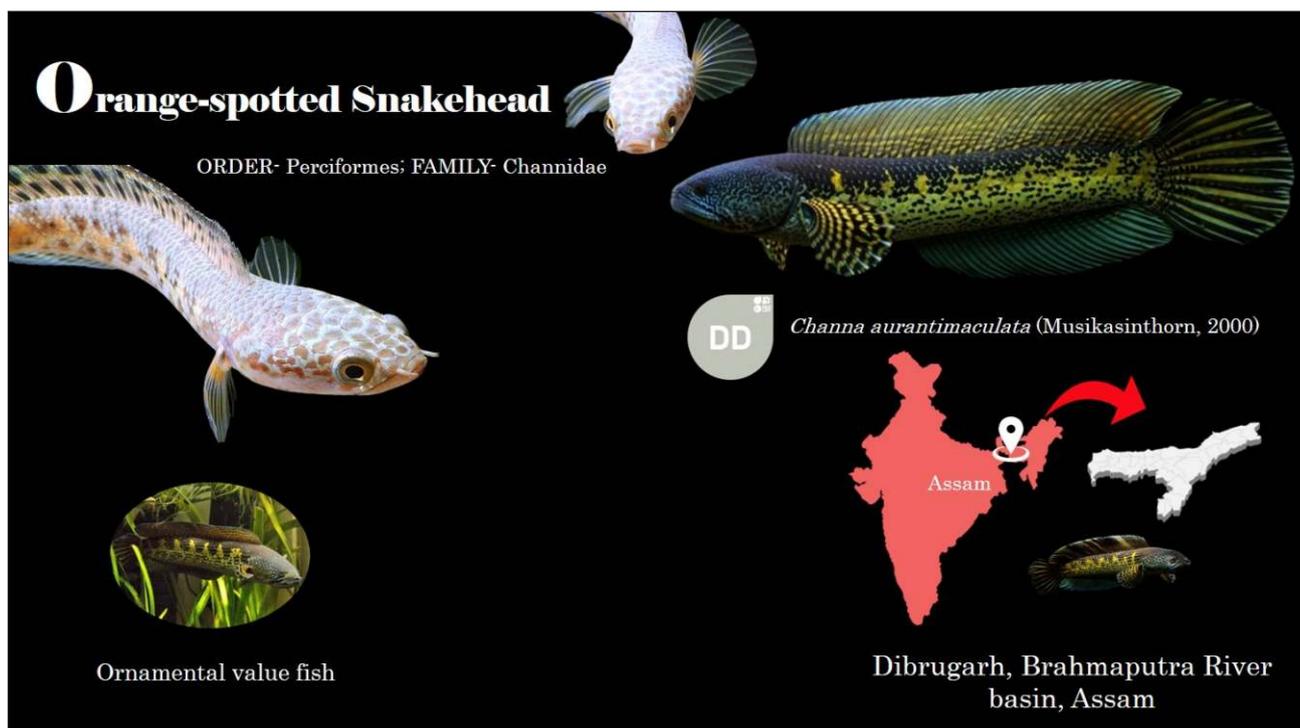


Fig. 2: *Channa aurantimaculata* (Illustration by Ashish Sahu)

Short description

The body is elongated and relatively slender, with a cross-section that is almost circular in the anterior portion and somewhat compressed in the posterior. Total dorsal soft rays: 45–47; Anal soft rays: 28–30; Lateral line scales:

51–54; Cheek scales: 8–12; Total vertebrae: 50–52; two large scales on each side of the lower jaw under surface; upper half of the body darkish brown to black with 7–8 large orange (white in alcohol-preserved specimens) irregular blotches; and 5 broad bright black bands.

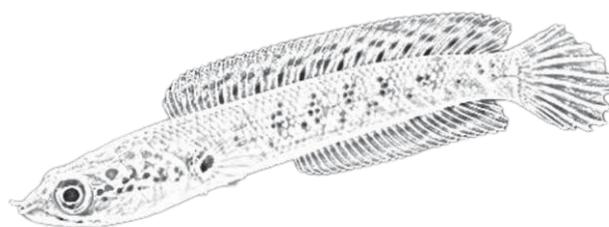
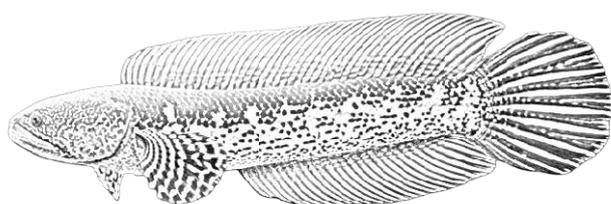


Fig. 2: *Channa aurantimaculata* (Illustration by Ashish Sahu).

Geographical distribution

It is endemic in the Brahmaputra River basin in Dibrugarh, Assam.

Reproductive biology

Reproductive biology of female: There are five different maturity stages, based on their morphological structure, space occupied in the abdominal cavity by gonads and diameter of unspawned eggs.

Habitat and ecology

Generally, they inhabit deep, clear lakes and rivers with rocky or sandy substrate, stagnant water, forest, hill streams, and swamps with submerged aquatic vegetation (Talwar and Jhingran, 1991) adjacent to the Brahmaputra river in subtropical rainforest conditions (Musikasinthorn, 2000). This species grows to 40 cm. It is a mouthbrooder like most of the smaller snakeheads. It is probably carnivorous like other members of this genus.

Stage I (Immature): Ovaries are translucent, ribbon-like, and pale yellowish. Ova are not distinct to naked eyes.

Stage II (Maturing): Ovaries are more yellowish and thicker; ova was visible to naked eyes; under the microscope, ova is spherical, and covered 1/2 of the abdominal cavity.

Stage III (Mature): Ovaries are dark yellowish enlarged lobes with prominent ovules and blood vessels occupy $\frac{3}{4}$ of the body cavity, much broader than stages I and II.

Stage IV (Ripe): Ovaries are deep yellowish with maximum size; occupied the entire body cavity. Under the microscope, ova are spherical in shape and opaque due to the presence of a huge amount of yolk. At this stage, ova are of full size and started liberating through oviducts by putting light pressure on the abdomen.

Stage V (Spent): Ovaries flaccid, almost thread-like in appearance resembling matured Stage I ovary; reduced in size and volume, and became pale yellowish.

Reproductive biology of male: Similarly five matured stages are recognized in males based on the progression of the development of testis.

Stage I (Immature): Testis small; very fine thread-like and pale whitish in appearance.

Stage II (Maturing): Testis are pale whitish; 'V'-shaped in structure; slightly increased in volume and weight and occupied about $\frac{1}{4}$ of the abdominal cavity.

Stage III (Mature): Testis are enlarged, and brush like structures; blood vessels were prominent; covered nearly $\frac{1}{2}$ of the abdominal cavity.

Stage IV (Ripe): Testis more prominent and soft; blood vessels increased and milt ran with slight pressure on the abdomen.

Stage V (Spent): Testis shrank, reduced in size and weight and pale white.

Threats: Limited information available; the only confirmed exploitation is for the aquarium trade.

Disease: First time, Kavitha et al. (2014) reported the occurrence of ulcer disease in ornamental fish, *C. aurantimaculata*. The predominant presence of *Aeromonashydrophila* in naturally infected *C. aurantimaculata* insisted its principal role in ulcer disease in the ornamental.

Use and Trade: There are no threats, but they are known to be used as aquarium fish and likely captured in small numbers by local fishers for subsistence use.

Conservation actions: *C. aurantimaculata* has a localised population only known from northeastern, Assam and it is assessed as Data Deficient (IUCN, 2017). Further information is required on the species, habitat, ecology and distribution.

IUCN status: Data Deficient (DD); **CITES:** Not Evaluated (NE); **CMS:** Not Evaluated (NE)

REFERENCE

1. **Adamson, E. A., Hurwood, D. A., & Mather, P. B.** (2010). A reappraisal of the evolution of Asian snakehead fishes (Pisces, Channidae) using molecular data from multiple genes and fossil calibration. *Molecular Phylogenetics and Evolution*, 56(2), 707-717.
2. **Berra, T.M.** (2001) Freshwater fish distribution. Academic Press, San Diego, 604 pp.
3. **Britz, R.** (2003). Suborder Anabantoidei: Labyrinth fishes. *Grzimek's animal life encyclopedia*, 5, 427-36.
4. **Britz, R.** (2013). Channaandrao, a new species of dwarf snakehead from West Bengal, India (Teleostei: Channidae). *Zootaxa*, 3731(2), 287-294.
5. **Gogoi, N., Hazarika, L. P., & Biswas, S. P.** (2016). Studies on the reproductive biology and captive breeding of, an endemic fish from Assam. *Journal of Environmental Biology*.
6. **Hansani Ekanayake, Naalin Perera, Kanishka D. Ukuwela, Chaminda N. Walpita, Suranga P. Kodithuwakku & Sandun J. Perera** (2021): Cryptic species diversity and molecular diagnosis of *Channa orientalis*; an endemic freshwater fish of Sri Lanka, Mitochondrial DNA Part A, DOI: 10.1080/24701394.2021.187604.
7. **Hazarika, L. P., Bakalial, B., Baruah, D., & Biswas, S. P.** (2014). Successful breeding of an endemic murrel, *Channa aurantimaculata* Musikasinthorn, 2000 with a habitat manipulation practice. *Annals of Biological Research*, 5(7), 10-15.
8. **IUCN.** 2010. IUCN Red List of Threatened Species (2010). Available at: <http://www.iucnredlist.org>. (Accessed: 27 October 2010).
9. **Kavitha K, Haniffa MA*, Abdul Kader Mydeen KP, Jayasheela P** (2014) Emerging dreadful ulcer disease in threatened murrel, *Channa aurantimaculata*. *J Res Anim Sci* 2(1):087-093.
10. **Li, X., Musikasinthorn, P. and Kumazawa, Y.** 2006. Molecular phylogenetic analyses of snakeheads (Perciformes: Channidae) using mitochondrial DNA sequences. *Ichthyological Research*, 53: 148-159.
11. **M'clelland, J.** (1845). Description of four species of fishes from the rivers at the foot of the Boutan mountains (Ophicephalus amphibus, Barbusspinulosus, B. clavatus, Ctenops nobilis). *Journ. Nat. Hist. Calcutta*, 5, 274-282.
12. **Musikasinthorn, P.** 2000. *Channa aurantimaculata*, a new channid fish from Assam (Brahmaputra River

- Basin, India), with designation of a neotype for *C. amphibeus* (McClelland, 1845). *Ichthyological Research*. 47: 27-37.
13. **Shantabala Devi Gurumayum, Lakpa Tamang.** *Channa pomanensis*, a new species of snakehead (Teleostei: Channidae) from Arunachal Pradesh, northeastern India. *Species*, 2016, 17(57), 175-186.
 14. **Talwar, P. K., & Jhingran, A. G.** (1991). *Inland fishes of India and adjacent countries* (Vol. 2). CRC Press.
 15. **Vishwanath, W., & Geetakumari, K.** (2009). Diagnosis and interrelationships of fishes of the genus *Channa Scopoli* (Teleostei: Channidae) of northeastern India. *Journal of Threatened Taxa*, 1(2), 97-105.