



First record of golden trevally *Gnathanodon speciosus* (Carangidae: Caranginae) from Sundarbans, India

Priyankar Chakraborty^{1*}, Subhrendu Sekhar Mishra², Suresh Chandra Saren², Anwesha Sengupta² and Kranti Yardi¹

¹Institute of Environment Education and Research, Bharati Vidyapeeth (Deemed to be University), Pune - 411043, Maharashtra, India; Email: priyankar.jour@gmail.com

²Marine Fish Section, Zoological Survey of India, Kolkata - 700016, West Bengal, India

Abstract

The golden trevally, *Gnathanodon speciosus* (Forsskål 1775), is recorded for the first time from the Indian Sundarbans, based on two specimens (118.7-133.4 mm standard length; SL). This species is identified by its papillose lips and distinctive golden-yellow colouration with alternating black bands. The inclusion of this species adds to the known ichthyofaunal diversity of the Indian Sundarbans.

Keywords: Brackish, Carangids, Garal River, Mangrove-Associated, Range Expansion

Introduction

The seas around India's coastline host approximately 2,400 fish species, with its adjoining estuaries and mangrove-associated waters supporting over 650 fish species. Among these, 66 are carangid species, 29 of which inhabit mangrove-fringed waterways (Gopi and Mishra, 2015; Mishra *et al.*, 2019). Mishra (2013) documented 47 species of Carangidae from the east coast of India. In their review of carangid fishes from coastal West Bengal, Ray *et al.* (2021) listed 41 species, 12 of which also inhabit the waterways of the Indian Sundarbans (Mishra and Gopi, 2017).

During an ichthyofaunal survey conducted in the Sundarbans in 2018, two juvenile carangid specimens were collected from the Garal River. These specimens were identified as *Gnathanodon speciosus* representing the first documented record of this species in the mangrove estuaries of the Indian Sundarbans, West Bengal, India. The identification was confirmed through voucher specimens.

Materials and Methods

On 24 April 2018, two carangids were captured using a bag net from the brackish waters of the Garal River in

Gosaba, Sundarbans, Dakshin (South) 24 Parganas, West Bengal, India. Curatorial procedures followed by Mishra *et al.* (2018). Fin ray counts and morphometric analyses followed Gushiken (1983) and Lin and Shao (1999). All morphometric measurements were made to the nearest 0.1 mm using digital vernier callipers. The voucher specimens examined were deposited in the National Zoological Collection of the Zoological Survey of India (ZSI), Kolkata.

Results and Discussion

Order Carangiformes Jordan 1923

Family Carangidae Rafinesque 1815

Subfamily Caranginae Rafinesque 1815

Genus *Gnathanodon* Bleeker 1850

Gnathanodon speciosus (Forsskål 1775)

Common name: Golden trevally (Figures 1, 2)

1775. *Scomber speciosus* Forsskål (in Niebuhr), *Descr. Anim.*, p. 54, pl. xii (type locality: Jeddah, Saudi Arabia, Red Sea).

2003. *Gnathanodon speciosus* Allen and Adrim, *Zool. Stud.*, 42(1): 38 (Indonesia).



Figure 1. Preserved specimens of *G. speciosus* (ZSI F 12909/2, 118.7-133.4 mm SL, Sundarbans, West Bengal, India).
Photograph by Anwesha Sengupta.

Materials examined: ZSI F 12909/2, 2 ex., 118.7-133.4 mm SL, 22°09'07.0"N, 88°53'55.0"E, off Garal River, Satjelia Island, Gosaba, Sundarbans, Dakshin 24 Parganas, West Bengal, India, bag net fishing, 24-iv-2018, coll. P. Chakraborty.

Meristic characters: Dorsal-fin rays VII-I/19-21; pectoral-fin rays 22; pelvic-fin rays I/5; anal-fin rays II-I/16-17; scutes 21-22; curved lateral line scales 62-69; gill rakers on lower limb of first-gill arch 19-20.

Description: Body deep, compressed; dorsal profile moderately convex anteriorly; poorly developed adipose eyelids; lips papillose; upper jaw strongly protractible, maxilla reaching to below front edge of eye; minute teeth on lower jaw; breast wholly scaly; caudal peduncle moderately compressed; caudal fin deeply forked.

Proportions as % of SL: body depth 45.8-48.8; head length 32.6-36.4; curved lateral line length 35.3-40.2; straight lateral line length 41.0-45.5. Soft dorsal-fin base length 52.2-55.1; soft anal-fin base length 37.5-41.3; soft dorsal-fin lobe height 18.6-23.2; soft anal-fin lobe height 16.8-20.1; pectoral-fin length 28.7-30.0; snout to origin of spinous dorsal-fin 37.9-40.8; maximum scute length 1.8-2.1. Proportions as % of head length: eye diameter 19.2-24.4; snout length 33.2-34.2; postorbital length 45.8-47.6; upper-jaw length 41.9-43.1.

Colouration: When fresh, body bright yellow with 10-11 alternating broad and narrow dark bands across sides. All



Figure 2. Fresh specimen of *G. speciosus* (ZSI F 12909/2, 133.4 mm SL, Sundarbans, West Bengal, India).
Photograph by Asim Gayen.

fins yellow, caudal-fin lobes black. After fixation, body silvery above and below, breast area with golden tinge. Pectoral fins partially yellow, pelvic fins white. Dorsal, anal, and caudal fins dusky, 10-11 alternating broad and narrow dark stripes along sides.

Distribution: *Gnathanodon speciosus* is widely distributed from the Indo-Pacific to the eastern Pacific, occurring from the Persian/Arabian Gulf to southern Japan and Australia, and further to Tonga, Hawaii, the Austral Islands, and along the coast from Mexico to Ecuador (Smith-Vaniz, 2022). In India, it occurs along the entire coastline, from Gujarat to West Bengal, and extends to the Andaman and Nicobar Islands (Ranjan, 2017). The specimens for this study were collected from the mangrove-associated waters of the Sundarbans in West Bengal.

Remarks: The genus *Gnathanodon* Bleeker 1850, is monotypic. It is distinguished from other genera within the Carangidae family by weak teeth present only in the lower jaw of juveniles and absent in adults, poorly developed adipose eyelids, and fleshy lips (Smith-Vaniz, 1999). The collected specimens can be distinguished from other carangid species in the Sundarbans by the following features: two dorsal fins; a deep, compressed body; a somewhat rounded head; non-filamentous dorsal- and anal-fin rays; poorly developed adipose eyelids; and 10-11 alternating black bands along the sides (Figure 2).

Talwar *et al.* (1992) first reported *G. speciosus* from coastal West Bengal, a finding later confirmed by Ray *et al.* (2021). Beyond these coastal records, this study documents the first occurrence of *G. speciosus* in the

mangrove-associated waters of the Indian Sundarbans, contributing to the ichthyofaunal diversity of the region. *The species* has also been reported from other mangrove-associated habitats in Odisha, Maharashtra, Goa, and the Andaman & Nicobar Islands (Mishra *et al.*, 2019). We hypothesise that wind, wave action, and possibly rising water temperatures may explain its inland range expansion within the Sundarbans, potentially moving in from coastal West Bengal. With this record, the total number of carangid species reported from the Sundarbans rises to 13.

Acknowledgements

The authors express their gratitude to Dr Dhriti Banerjee, Director, ZSI, Kolkata, and Dr Laishram Kosygin Singh, Scientist D, Fish Division, ZSI, Kolkata, for granting permission and providing the necessary working facilities. The second and fifth authors extend their thanks to Dr Erach Bharucha, Director of the Institute of Environment Education and Research, Bharati Vidyapeeth (Deemed to be University), Pune, India, for his support. The authors also thank the anonymous reviewers for their valuable feedback, which improved the quality of this manuscript.

References

- Gopi, K.C. and Mishra, S.S. 2015. Diversity of marine fish of India. In: K. Venkataraman and C. Sivaperuman (eds.), *Marine Faunal Diversity in India: Taxonomy, Ecology and Conservation* (pp. 171-193). Academic Press, Elsevier Inc., USA.
- Gushiken, S. 1983. Revision of the carangid fishes of Japan. *Galaxea*, **2**: 135-264.
- Lin, P.L. and Shao, K.T. 1999. A review of the carangid fishes (Family Carangidae) from Taiwan with descriptions of four new records. *Zoological Studies*, **38**(1): 33-68.
- Mishra, S.S. 2013. Coastal marine fish fauna of the east coast of India. In: K. Venkataraman, C. Sivaperuman and C. Raghunathan (eds.), *Ecology and Conservation of Tropical Marine Faunal Communities* (pp. 245-260). Springer-Verlag, Berlin, Heidelberg.
- Mishra, S.S. and Gopi, K.C. 2017. Fish diversity of Indian Sundarbans. In: K. Chandra, J.R.B. Alfred, B. Mitra and B.R. Chowdhury (eds.), *Fauna of Sundarban Biosphere Reserve* (pp. 107-127). Zoological Survey of India, Kolkata.
- Mishra, S.S., Chakraborty, P., Saren, S.C. and Sengupta, A. 2018. First record of *Lagocephalus guentheri* Miranda Riberio 1915 (Tetraodontiformes: Tetraodontidae) from the West Coast of India. *Records of Zoological Survey of India*, **118**(1): 91-96. <https://doi.org/10.26515/rzsi/v118/i1/2018/122386>
- Mishra, S.S., Gopi, K.C., Kosygin, L. and Rajan, P.T. 2019. Ichthyofauna-Fishes. In: K. Chandra, K.C. Gopi, S.S. Mishra and C. Raghunathan (eds.), *Faunal Diversity of Mangrove Ecosystem in India* (pp. 539-586). Zoological Survey of India, Kolkata.
- Ranjan, R. 2017. *Gnathanodon speciosus* (Forsskål, 1775). In: *Prioritized species for mariculture in India*. ICAR-Central Marine Fisheries Research Institute, Kochi: 43-48.
- Ray, D., Mishra, S.S., Mohapatra, A., and Ghorai, N. 2021. Notes on Carangids (Carangiformes: Carangidae) from West Bengal Coast with new records. *Records of the Zoological Survey of India*, **121**(4): 511520. <https://doi.org/10.26515/rzsi/v121/i4/2021/154542>.
- Smith-Vaniz, W.F. 1999. Carangidae. In: K.E. Carpenter and V.H. Niem (eds.), *The living marine resources of the western central Pacific* (pp. 2659-2756). FAO species identification guide for fishery purposes 4. FAO, Rome.
- Smith-Vaniz, W.F. 2022. Family Carangidae, Trevallies. In: P.C. Heemstra, E. Heemstra, D.A. Ebert, W. Holleman and J.E. Randall (eds.), *Coastal fishes of the western Indian Ocean, Vol 4* (pp. 28-67). South African Institute for Aquatic Biodiversity, South Africa.
- Talwar, P.K., Mukherjee, P., Saha, D., Paul, S.N. and Kar, S. 1992. Marine and estuarine fishes. In: *Fauna of West Bengal, State Fauna Series*, **3**(2): 243-342. (Published by the Director, Zoological Survey of India, Kolkata).