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# Identification Notes of *Johnius* Fishes from Bay of Bengal Coast, Andhra Pradesh, India

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***Authors' contributions***

*This work was carried out in collaboration among all authors. Authors TBR, BK, and GVP conceptualized and designed the study and performed field sampling and analysed and wrote the draft of the manuscript. Author DRK curated the manuscript and managed the analyses of the study. All authors read and approved the final manuscript.*

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## ABSTRACT

Fishes are commercially valuable vertebrates, easily accessible protein sources for all human populations despite of their financial status. Andhra Pradesh has one of the longest coastal lines in the country, and largely partaking in the production of marine products and influencing the state as well as the country's exporting capacity. *Johnius* of family Sciaenidae is one of the highly preferred

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consumable fish species. Our recent studies revealed five species of *Johnius* occurrence in coastal of waters of Andhra Pradesh and discussed here as identification notes. We observed high sales of small fish species of *Johnius* at local vendors in all landing centres and sized fishes exporting through the different agencies was also noted and more accurate studies suggested to know the statistical data of *Johnius* fish species because of commercial importance.

*Keywords: Johnius fishes; fishery resources; species.*

## 1. INTRODUCTION

The croaker family, Sciaenidae, includes ray-finned fishes of the genus *Johnius.* They are accustomed to making knocking, croaking, and purring noises (Lin et al. 2007). Usually measuring less than 30 cm, *Johnius* are comparatively small Sciaenids in general are found in Indo-West Pacific waters (Chao et al. 2019). “Between 12 and 20 pairs of dendritic appendages line the sides of their distinctive hammer-shaped swim bladder” (Kunio 2022). The first lateral appendage reaches the dorsal corner of the gill opening. They have large paired sagittal otoliths that are triangular. Usually found sub-terminally to inferiorly, these fishes have a tiny mouth. The majority of species lack a barbel on their chin, however a few have a short one (Chao et al. 2019). The biggest species, include as *J. dussumieri and J. dorsalis.* In the recent past several workers working on fish and fishery resources of Andhra Pradesh coastal waters (Sujatha, 1995*;* Chatla and Padmavathi, 2021). Present identification notes based on collected specimens from Visakhapatnam, Kakinada, Machilipatnam, and Veta Palem landing centers of the Andhra Pradesh coast during our study period.

## 2. METHODOLOGY

The present work results of several fish investigatory surveys conducted in Visakhapatnam, Kakinada, Machilipatnam, and Veta Palem landing centers of the Andhra Pradesh coastal waters during the period of 2020-2022. Collected specimens were preserved in 10% formalin and labelled with all necessary details and transformed to the laboratory for further studies. Fish identification carried out with the help of Talwar and Jhingran (1991), Nelson (2006).

## 3. RESULTS AND DISCUSSION

*Johnius glaucus (Day, 1876)*
*Genus: Johnius*
*Species: glaucus*

**Fig. 1. *Johnius glaucus***

**Description**: Body elongated, greyish green along the back. Silvery below. The greatest width of the head equals half its length. Snout rounded, slightly overhanging the jaws. The upper jaw overlaps the lower jaw. Pre-opercle with distinct and widely separated denticulation most developed at the angle. Opercle with 2 spines. Snout with three pores across its base and five along its free border. A diffused bluish blotch on the opercle. Teeth are villiform in both jaws with an outer enlarged row of somewhat conical ones in the pre-maxillaries. Dorsal spines moderately strong. Pectoral falciform, as long as the head excluding the snout. Ventral reach half -way to the anal, the second anal spine is strong. The caudal is rounded slightly wedge-shaped.

**Common name:** Pale spot fin croaker
**Habit and habitat:** Marine and brackish water, demersal.
**Economic importance**: Commercial
**Distribution: Western** –Indian Oceans. North west coast of India.

*Johnius borneensis (Bleeker, 1851)*
*Synonyms:*
*Sciaena vogleri (Bleeker, 1853)*
*Otolithus vogleri (Bleeker, 1853)*
*Genus: Johnius*
*Species: borneensis*

**Fig. 2. *Johnius borneensis***

**Description:** Body elongated and perch-like. The dorsal profile is more convex than the abdomen. Body silvery in colour. Snout rounded but not swollen or projecting, mouth large, oblique, upper jaw extending backward below posterior half of eye. No barbells on chin. Teeth in narrow bands well differentiated into large and small in both jaws but non-canine-like. Preopercle distinctly but finely serrated. The shoulder scale serrated. Dorsal spines of moderate in strength. The second to the fifth sub-equal in length. The pectoral as long as the head is behind the first fourth of the eye. Ventral reach half way to the anal. 2nd anal spine weak and long. The caudal wedge shaped.

**Common name:** Sharp nose hammer croaker
**Habit and habitat:** Marine, Brackish water, bentho-pelagic and freshwater.
**Economic importance:** Commercial
**Distribution:** Indo–West Pacific.

*Johnius trachycephalus* (Bleeker, 1851);
Synonyms:
*Corvina trachycephalus* (Bleeker, 1851);
*Otolithoides siamensis* (Fowler, 1934)
Genus*: Johnius*
Species: *trachycephalus*

**Fig. 3. Johnius trachycephalus**

**Description:** Body elongated fusiform, golden in colour. With longer head and broad in size. The snout is blunt. Eyes large. Lower region of the head spotted with black dots. Dorsal fin edged with black. The pectoral fin is also black in colour. The lateral line is curved. Caudal peduncle is long. Caudal fin smooth and leaf-like. The pelvic fin outer rays are filamentous. No barbels on chin. Scale rows above lateral line 12, below lateral line 17. Gill rackers 12.

**Common name:** Leaf tail croaker.
**Habit and habitat:** Marine, freshwater, brackish water and bentho-pelagic.
**Economic importance:** Commercial
**Distribution:** Indo–Pacific; India, Thailand, Sumatra and Borneo.

*Johnius dussumieri (Cuvier, 1830)*
*Synonyms:*
*Sciana dussumieri (Cuvier, 1830); Sciana sina (Cuvier, 1830)*
*Genus: Johnius*
*Species: dussumieri*

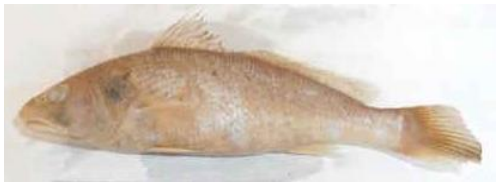

**Fig. 4. *Johnius dussumieri***

**Description:** Body elongated and perch-like. The height of the head equals in its length excluding snout. Snout rather inflated, scarcely overhanging the jaws. Pre-opercle rounded. Some distinct spinate teeth at its angle. Five pores under the symphysis of marbel. Snout with three pores across its base. Teeth villiform. Dorsal fin spines weak. The third and fourth spine longest. Pectoral as long as the head without snout. The ventral reaches nearly half way to the anal. Caudal wedge-shaped.
**Common name:** Sin croaker**.**

**Habit and habitat:** Marine, brackish**.**
**Economic importance:** Commercial
**Distribution:** Indian Ocean from; Pakistan to the Andaman Islands**.**

*Johnius carutta* (Bloch, 1793)
Synonyms: *Sciaena carutta* (Bloch, 1793);
*Johnius carutta* (Bloch, 1793)
Genus: *Johnius*
Species: *carutta*

**Fig. 5. *Johnius carutta***

**Description:** Body elongated, purplish brown. The greatest width of the head equals 2/3 of its length; its height equals its length excluding the snout. Snout inflated overhanging the upper jaw, which slightly overlaps the lower. The maxilla reaches below the middle of the eye. Pre-opercle crenulated, opercle with two weak spines. A row of pores across the snout. A central pore beneath the symphysis of the mandible having two more on either side of it. Teeth villiform in both jaws. Some teeth on the outer row and in the anterior portion of the pre-maxillaries are enlarged. Somewhat conical. Dorsal spines weak. 2nd and 3rd the longest, with the pectoral as long as the head, excluding the snout. 2nd anal spine weak. Lateral line curved.

**Common name:** Karut croaker.
**Habit and habitat:** Marine, freshwater, brackish water.
**Economic importance:** Minor commercial
**Distribution:** Indian Ocean, from Pakistan to the west coast of Mala Peninsula

## 4. DISCUSSION

*"Johnius* is an amphidromous fish species belonging to family Sciaenidae, order Perciformes, popularly known as Jew fish, croakers or drums. In addition to India, croakers are widely distributed in Indo-West Pacific region with reports of occurrence from Australia, Bangladesh, Indonesia, Malaysia, Myanmar, Nepal and Singapore" (Froese and Pauly, 2017). "Even these are reported to be a demersal species, fishermen in riverine stretches believe it to be pelago-demersal because of pelagic and bottom habitat niche" (Anon, 2016). "Feeding habit is predominantly carnivorous. *J. coitor* has been listed as a least concern species" (Anon, 2016; Froese and Pauly, 2017). "Economically croakers fetch a moderate price of INR 300–400/kg (USD 4.5–6.0/kg)" Sarkar et al. (2018). "Moreover, coitors are highly fecund and air-bladders of these fishes are used to prepare is in glass which is a commercially important fish by-product" (Olapade and Tarawallie, 2014).

"Very few studies on morphometrics *Johnius* species have been reported from Bangladesh" (Azadi et al., 1999) and India. Barman (1992) also stated "the existence of this species for the first time from North East India" (Kibria et al., 2011). However, *Johnius* species reproductive biology information its relation to climatic factors is meagre. Most studies have been reported from marine waters with solely marine inhabiting stocks, as reviewed by Rao et al. (1992). "Secondly, the studies did not include any perspectives of climatological influence on breeding and likely impact of changing climate; the purpose of these earlier studies was to provide information on aspects of reproductive biology only" (Kumar et al., 2013).

## 5. CONCLUSIONS

Very few reports of *Johnius* species occurrence, populations, stocks are available from especially from Bay of Bengal and the present identification notes of *Johnius* fishes would be helpful for future fish biologist's investigations and give some basic knowledge to access the available fish species characters of genus *johnius* in coastal waters of Andhra Pradesh.

## DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declares that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

## ETHICAL APPROVAL

The fish species studied in the present study are not protected under The Wildlife Protection Act, 1972 (Last amended in 2013), Government of India, All the guidelines on animal use and care were followed accordingly.

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## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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