

Lutjanus johnii (Bloch, 1792)

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IDENTIFICATION

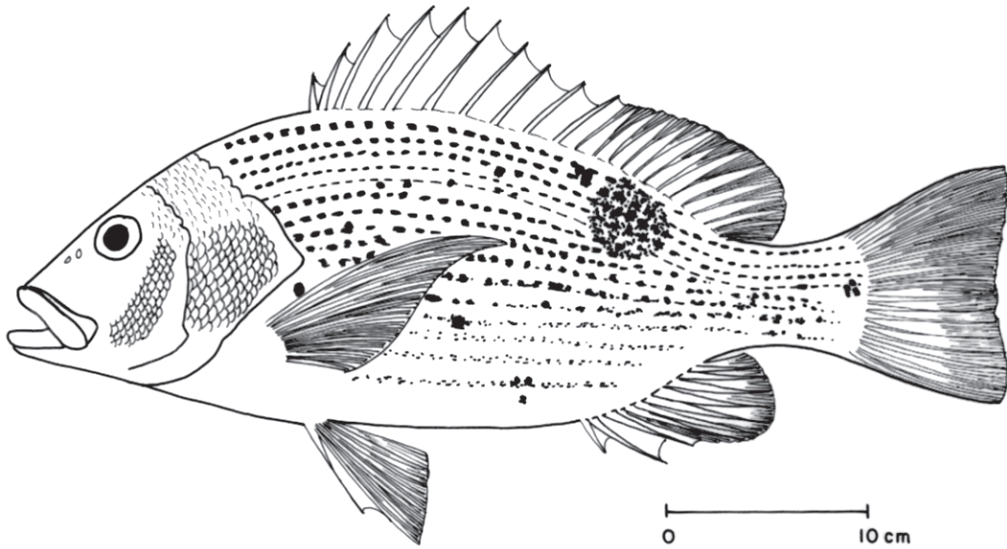
Order	: Perciformes
Family	: Lutjanidae
Common/FAO Name (English)	: John's Snapper



Local names: Tamb, Gurka tamb (**Gujarati**); Chawari tamb, Tambusa (**Marathi**); Tambus (**Konkani**); Tamboos, Chembali (**Kannada**); Murumeen, Pahari, Chempalli, Chembolay (**Malayalam**); Cheppili, Karuvalai, Karva, Nethiprion, Paruthivala meen, Paruthikanni, Patani-keeli, Tokkal, Vekkattai (**Tamil**); Kaliviyya, Rangu, Rangoo, Thundava (**Telugu**); Dhala-chandi Chenganni (**Oriya**)

MORPHOLOGICAL DESCRIPTION

This fish is characterized by a large black blotch situated below the anterior dorsal-fin rays, on the upper part of the body. The head is steeply sloped and the pre-orbital width is equal to or larger than the eye diameter. Pre-opercular notch and knob are poorly developed. Scale rows on back parallel to the lateral line. The scales have a dark spot in the centre which gives the overall appearance of horizontal lines on the fish. The dorsal fin has 10 spines and 13-14 rays, anal fin has 3 spines and 8 rays. The species is yellow-orangish dorsally with a bronze to silvery colour ventrally.



PROFILE

GEOGRAPHICAL DISTRIBUTION

Lutjanus johnii is widely distributed in the Indo-west Pacific, extending from east Africa to Fiji, north to the Ryukyu Islands and south to Australia. This species, a large Lutjanid, dominates the near-shore community of reef fishes from the Kimberley region (~124° E) in north-western Australia, across northern Australia, and down the Queensland coast to at least 23° S. In India, this species is reported from both east and west coasts.

HABITAT AND BIOLOGY

John's snappers are normal inhabitants of coral reefs, rocks, deep sea, estuarine and sometimes in lower reaches of freshwater streams. Adults are found in coral reef areas and juveniles in mangrove estuaries. Off South Africa, it displays a preference for slightly silty and turbid regions in the vicinity of shallow offshore banks. It is caught mainly at night on coral banks off Mafia Island (Tanzania) in 9 to 12 m depths and off Zanzibar in about 75 m. Off east Africa, spawning occurs during spring and summer with a peak activity in October. Estimated maximum age is 50 to 60 years. The tendency of John's snapper to congregate in large schools in relatively shallow water around snags and pinnacles, coupled with advances in sonar and GPS technologies, have raised concerns for the potential for overfishing of this species.

BREEDING IN CAPTIVE CONDITIONS

Research on breeding and seed production of John's snappers started in Singapore during 1970s. Adults or sub-adults were collected from wild and reared in cages (6-7 kg/m³) and in tanks (1 kg/m³) for broodstock development. Fishes spawned naturally and if not, were induced to spawn with the help of hCG. The fecundity on an average was 0.92 million eggs per female. The fertilization rate was high in spontaneous spawning (67 %) than that of artificial spawning (44-48 %). Fertilized egg was transparent, spherical and non-adhesive. Fertilized egg was usually buoyant with a single oil globule. The egg diameter ranged from 770 to 850 µm with a mean of 800 µm. The diameter of oil globule was about 20 % of the egg diameter, with a range of 150 to 170 µm and a mean of 160 µm. The incubation time was highly temperature dependent, being 14.5-15.0 h at 29.0-29.5 °C and 17.0-17.5 h at 27.5-28.0 °C.

LARVAL REARING

Studies on the larval rearing of John's snapper have been carried out at various places with different protocols. Generally, larval rearing of John's snapper was carried out in green water system, where larvae were fed with different live feeds such as rotifers, copepod nauplii, copepod adult, *Artemia* nauplii and microencapsulated diet in various stages of its development. On day 0 (the day when larvae hatched out), tanks were filled with sea water and inoculated with *Isochrysis* sp. and *Rhodomonas* sp. at density of 5-10 x 10⁵ cells/ml. Adult *Acartia* sp. were stocked on the same day in the same tank at density of 30 to 60 nos./l. Larvae were stocked into the tank at density of 1-2 nos./l on day 2. Copepods are essential first feed for *L. johnii* larvae, which can feed on rotifers only after 3 to 4 days of eating copepods. Plankton bloom was monitored daily and extra microalgae or zooplankton was added, whenever necessary. The rotifers were added on day 3 to the larval rearing tank. Water exchange was started from day 10, with 10 % daily exchange, increasing to 100 % by day 30. *Artemia* nauplii were added in tank at 0.5 nos./l from day 12 to day 30. Weaning of larvae on artificial feed started from 25th day and lasted for 3 to 7 days. Fishes were transferred to nursery tanks after metamorphosis, which was completed in 35-40 days.

NURSERY REARING

Two production systems were used for nursery rearing of hatchery produced fry in Singapore; indoor and outdoor. The indoor system used tanks of different sizes while the outdoor system used hapas in ponds as well as in cages or directly in the pond itself.

GROW-OUT

Cage aquaculture of John's snapper is reported from many Asian countries like China, Pakistan, Malaysia, Hong Kong, Indonesia, Philippines and India. John's snapper is mostly cultured in Singapore.

They grew from 90 g to 600-800 g in 6-8 months when fed with trash fish. The species has also been grown in cages in Pakistan both as monoculture and along with *Pomadasys kakaan* where it has been found suitable for cage culture.

FOOD AND FEEDING

John's snapper is carnivorous, feeding mainly on fishes and crustaceans. In culture systems, it can be grown on trash fish and artificial pellets.

GROWTH RATE

The fish attains a size of 600-800 g from 90 g in 6-8 months culture duration, when fed with trash fish.

DISEASES AND CONTROL MEASURES

A nematode species, *Cucullanus vishakhapatnamensis* has been reported from the intestine of *L. johnii* caught at Vishakhapatnam, east coast of India. The metazoan fish parasite *Anisakis* sp. was reported from the stomach wall of *L. johnii* from Indonesia. A nematode, *Procamallanus* sp. and an annelid species *Zeylanicobdella arugamensis* was also reported from *L. johnii*. Hemorrhagic septicemia caused by *Pseudomonas alcaligenes* has been reported from India.

PRODUCTION, MARKET AND TRADE

PRODUCTION

In south-east Asia, *L. johnii* is important in both capture fisheries and sea cage mariculture. John's snapper forms a minor fishery in India. It is occasionally caught in trawls, with hand lines, bottom long lines, traps or bottom set gill nets. Their size in wild catches ranges from 30 to 50 cm, with maximum published weight of 10.5 kg. These fishes have wide market acceptance for their excellent eating characteristics and generally command high market prices. Global production of this species was 20 t and 26 t in 2006 and 2007 respectively.

MARKET AND TRADE

Lutjanus johnii commands premium price when sold live in seafood restaurants in the Asia-Pacific region. Most fish are sold fresh on ice, usually gilled and gutted, filleted. The retail price of John's snapper is ₹ 250/kg in domestic Indian market.

CHALLENGES TO MARICULTURE

Hatchery technology for seed production is yet to be achieved in India. Once this is achieved, the technology has to be standardised and scaled up for adoption.

FUTURE PROSPECTS

The species has a very good domestic demand and, in future, with availability of adequate number of hatchery produced seeds, it has the potential to be a top candidate species for cage farming and coastal mariculture in India.

SUGGESTED READING

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