Caranx sexfasciatus Quoy & Gaimard, 1825

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IDENTIFICATION

Order	:	**Perciformes**
Family	:	**Carangidae**
Common/FAO Name (English)	:	**Bigeye trevally**

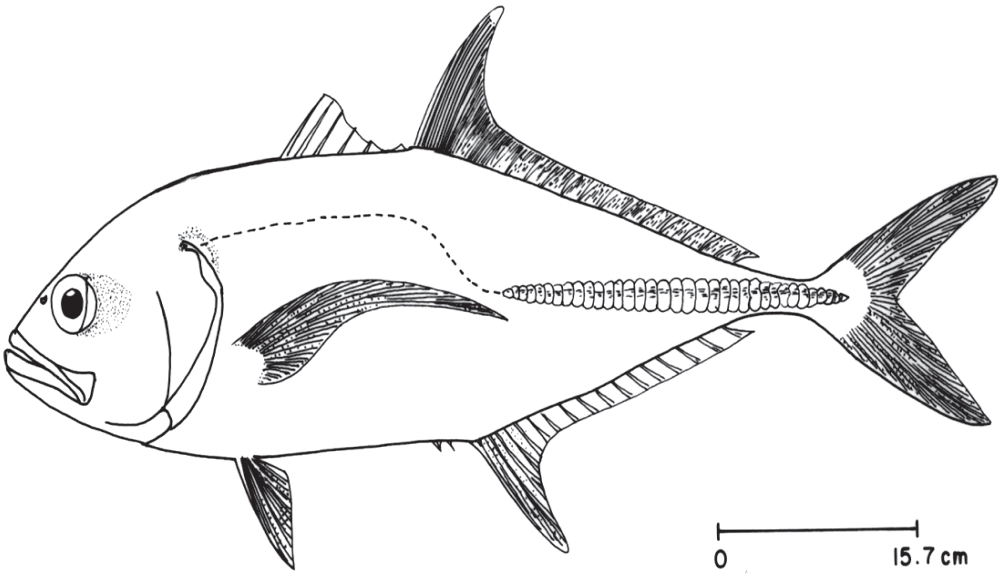
Local names: Bangada, Kala bangada (**Gujarati**); Kala bangada (**Marathi**); Gondlu (**Kannada**); Kuluvel, Maduthala, Varayan para, Vatta (**Malayalam**)

MORPHOLOGICAL DESCRIPTION

The bigeye trevally has a body shape similar to the giant trevally. However it has a slightly more pointed snout which is greater in length than eye diameter. All fins are similar to giant trevally fins with slight differences only in the soft ray numbers. Dorsal fin rays are 19-22; anal fin rays are 14-17; pelvic fin rays are 17-18. Caudal fin is strongly forked while the pectoral fin is falcate as in giant trevally. However, unlike the giant trevally, in this species the breast is completely covered with scales. The species has well-developed adipose eyelids; mouth with an outer row of canine teeth and an inner row of villiform teeth in the upper jaw, and conical teeth on the lower jaw. The bigeye trevally has 21-25 gill rakers and 25 vertebrae.

Similar to the giant trevally, the bigeye trevally shows colour changes as the fish grows. Juveniles are silvery-yellow in colour, with 5 to 6 dark vertical bands. The bands lighten as the fish grows and disappear completely in adult fish. Adult fish are silvery-olive to blue green colour dorsally and silvery-white ventrally. Fins also darken in colour as the fish grows. The tip of the second dorsal fin has a distinctive white tip in adults.

Source of image : RC of CMFRI, Mandapam Camp



PROFILE

GEOGRAPHICAL DISTRIBUTION

The bigeye trevally is widely distributed in the Indian and Pacific Oceans. In the Indian Ocean, it extends from South Africa, the Red Sea and Persian Gulf, further eastwards to India, south-east Asia, Indonesia and Indian Ocean islands. It extends north to Japan and south to Australia in the Indo-Pacific region. In the Pacific Ocean, the bigeye trevally is distributed in most islands including Hawaii, and extends further east to west coast of North America where it ranges from California in the north to Ecuador and the Galapagos Islands in the south.

HABITAT AND BIOLOGY

The bigeye trevally is an inshore species with some occurrence in offshore waters. It is mostly found near corals or rocky areas with juveniles being further inshore than the adults. Some tide-associated movement has also been reported for this species. The juveniles of this species have been reported from estuaries as well as from open waters, indicating their large salinity tolerance. The species has been reported to congregate around stationary buoys in open ocean waters, indicating that it may follow floating debris far out to sea. Studies in South Africa have shown a positive correlation between the abundance of this species and water temperature. The bigeye trevally mainly feeds on small fish; with some inclusion of a varied array of invertebrates also. These include crustaceans such as shrimps, copepods, decapods and stomatopods and other invertebrates

like cephalopods, gastropods, jelly fish, sponges and even species of open ocean sea-skater insects, of which it is the primary predator. Evidence from South African estuaries indicates a shift in diet as the fish grows. Young fish below 20 cm in length feed on other juvenile fish and penaied shrimps, while fish larger than 20 cm feed almost exclusively on small fish. The adult of this species are thought to move between coral reefs based on food availability. Bigeye trevally is a prey for other larger animals like sharks, other larger carangid fish, sea lions and various birds.

This species matures around 42 cm, with both males and females reaching maturity at a similar length and age. Spawning season varies with area, occurring between July and September in the east Pacific and during November to March in South Africa. Reports indicate that spawning may occur during new moon periods. The species is considered nocturnal and it is known to form semi-stationary to stationary aggregations of nearly thousands of individuals during the day. These large schools of the fish move from reef to reef and reach specific destinations for the purpose of spawning. Prior to spawning, pairs break off from the main aggregation to commence spawning. Courtship and spawning has been observed at dusk. The spawning pair increases their swimming speed to leave the school, with the male fish underneath, instantly changing colour to black. The colour-changed male fish chases off any other individual that approaches the pair. The fish then press their ventral surfaces together to spawn, often swimming almost horizontally. Once spawning is over they revert back to their silvery colour and return to the school. Even though the fish forms large spawning aggregations, mass spawning is not a common occurrence. The larvae of bigeye trevally have been described extensively, with defining features being a conspicuously pigmented supra-occipital crest, relatively deep body and an anal fin ray count of 15-17, the lowest of any east Pacific carangid. There has been little research into the later stages of growth and their growth rates. The bigeye trevally has recorded a maximum size of 120 cm in length and 18.0 kg in weight.

PRODUCTION SYSTEMS

BREEDING IN CAPTIVE CONDITIONS

Information not available

LARVAL REARING

Information not available

NURSERY REARING

Information not available

GROW-OUT

The species was one of the three species of non-reef fish (other two being, *Caranx malabaricus* and *Lates calcarifer*) that was cultured in cages in Sabah, Malaysia during the mid-1990s. Seed was collected from the wild. Box-shaped cages attached to frames were used for culture of reef fishes including *C. sexfasciatus*. Mesh size of the cage nets ranged from 0.5 to 3-4 inches. Depending on size of fish, either small or large cages were used for culture. Stocking density ranged from 0.6-23 kg/m^3 depending on the species and availability of wild seed. Trash fish was the major feed, fed at 10 % of body weight per day. Period of culture ranged from 8-12 months. Survival of the species ranged from 60-80 % and varied from region to region.

FOOD AND FEEDING

Information not available

GROWTH RATE

Juveniles (50 to 85 g) have been reported to attain 300-450 g in 150-180 days with 80-90 % survival in cages along west coast of India.

DISEASES AND CONTROL MEASURES

Caligus spp. infestation in bigeye trevally has been reported in Phillipines and Taiwan.

PRODUCTION, MARKET AND TRADE

PRODUCTION

Information not available

MARKET AND TRADE

The species attracts good demand in India with domestic market price of ₹ 350-400/kg.

CHALLENGES TO MARICULTURE

The main researchable issues, which have to be sorted out for this species in India, are (i) Domestication and broodstock development protocol (ii) Natural as well as induced breeding (iii) Larval rearing protocol: standardization of larval rearing by environmental and nutritional manipulations (iv) Standardization of techniques for nursery rearing and grow-out culture (v) Disease and feed management.

FUTURE PROSPECTS

Caranx sexfasciatus is an ideal candidate species for mariculture since it has shown good growth in preliminary cage culture carried out using wild seed in west coast of India. It is a high value fish (fairly good domestic demand as well as price) with good meat quality. Research can be focused on the captive broodstock development, breeding and larviculture of the species so that full fledge farming trials can be undertaken. In addition, this fish is known to form spawning aggregations, thus it is highly vulnerable to being over-fished. Hence exploring and popularizing mariculture of this species will go a long way in conserving the populations in the wild.

SUGGESTED READING

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