Lysmata amboinensis (de Man, 1888)

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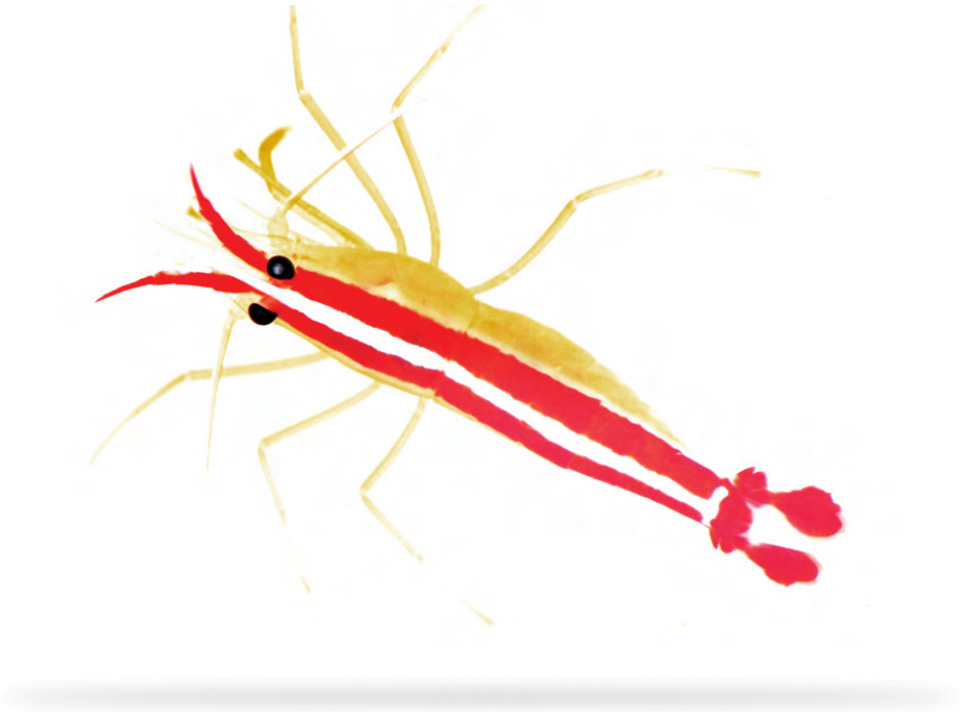
IDENTIFICATION

Order	:	**Decapoda**
Family	:	**Lysmatidae**
Common/FAO Name (English)	:	**Pacific cleaner shrimp**

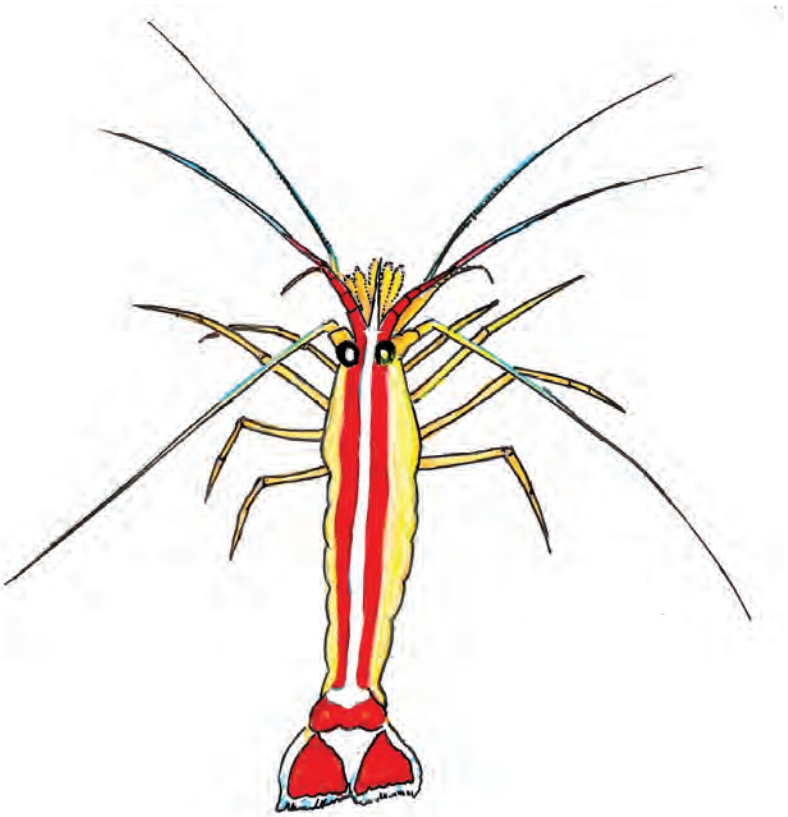


Local names: Not available

MORPHOLOGICAL DESCRIPTION

The Pacific cleaner shrimp is easily identified by its colour patterns. The body is light brown with one white band dorsally and two red bands laterally running longitudinally. The tail has two white spots on either side. The antennae are white in colour and the first pair has red coloured base. It grows up to a maximum of 6 cm.

Source of image : RC of CMFRI, Vizhinjam



PROFILE

GEOGRAPHICAL DISTRIBUTION

Scarlet cleaner shrimp or Pacific cleaner shrimp is one of the most popular species of ornamental crustaceans distributed in the waters of the Indo-Pacific region in Indonesia and Sri Lanka.

HABITAT AND BIOLOGY

It is one of the popular marine shrimp, associated with coral reefs and compatible with smaller sized marine ornamental fishes. It hides in the near shore, shallow and protected areas within a temperature range of 25-30 °C. In the Indo-Pacific areas and the Red Sea, it is mostly found in caves and crevices of coral reefs. It especially needs shelter from predators when it is moulting. It is an omnivore and a scavenger and often feeds on the external parasites of fishes. As its name indicates, this species cleans fishes including moray eels and groupers feeding on their external parasites as well as on mucous and dead or injured tissue. The shrimp moults once every 3-8 weeks and spawns regularly every 2-3 weeks. *Lysmata amboinensis* is a protandrous simultaneous hermaphrodite, i.e. individuals start out as males

(with ovo-testis, producing only sperm) but later convert to females with a functional ovo-testis, which can produce both eggs and sperm. However it is unable to self-fertilize or store sperms. Thus in the functional female phase, one individual of the mating pair acts as male (contributes sperm) and the other acts as female. The eggs (greenish in colour) are held in their brood pouch for 10-15 days and newly hatched larvae are released to the environment. The larvae are planktonic and metamorphose into juveniles within a period of 5-6 months.

PRODUCTION SY STEMS

BREEDING IN CAPTIVE CONDITIONS

The Tropical Marine Centre (TMC) of the United Kingdom is actively engaged in breeding of *L. amboinensis* and *L. debelius*. Pair formation is easy because of their less aggressive behaviour and most adults are simultaneous hermaphrodites, therefore almost any two will do. There is no sperm storage in *Lysmata*, so cross fertilization is required. Each female produces several hundred to 2,000 eggs during each spawn and carries the embryo under abdomen until they hatch 10-15 days later. The colour of the egg mass gradually changes and eye spots appear 4-5 days before hatching. Within 12 h after hatching, the adult shrimp will moult, mate and spawn again. Male shrimp can mate anytime during the inter-moult, once within 24 h. In *L. amboinensis*, paired shrimp synchronize their moult cycles in staggered fashion, such that individuals alter sexual roles. The broodstock were fed with mussel, polychaetes and *Artemia* nauplii. In another study in Mexico, a continuous reproductive cycle was observed in captivity for the species, with an average of 575 larvae per spawn per animal being produced in the hatchery.

LARVAL REARING

In *Lysmata amboinensis* the larval duration is for 140 days. Nursery rearing has been tried with rotifer and *Artemia*. Reports state that supplementing a nutritionally superior commercial diet to *Artemia* nauplii significantly reduces the moulting time, hence shortening the larval duration and increasing the survival. *L. amboinensis* has complicated metamorphosis phases and requires appropriate settlement cues in captive rearing. The study from Mexico reported that *L. amboinensis* larvae were facultative primary lecithotrophes, i.e. instead of relying solely on yolk, they are able to ingest external food within 24 h of hatching. Feeding the larvae with microalgae such as *Tetraselmis chuii*, within few hours of hatching, stimulates enzyme production and digestion. Enriched rotifers during first 3 days results in better larval growth and thereafter feeding them with *Artemia* or nematodes promotes their further growth. Rotifers should be given at densities of 35-50 nos./ml for larvae stocked at 10 nos./l.

FOOD AND FEEDING

The Pacific cleaner shrimp is omnivorous and generally a scavenger, eating parasites and dead and injured tissues of fishes. It even cleans the inner surface of the mouth and gill cavity of fishes, without it being eaten.

GROWTH RATE

In a study conducted in Australia, the species was reported to increase in total length by 7-11 % over 4 months, while being fed at 3.5 % of body weight per day.

DISEASES AND CONTROL MEASURES

Cleaner shrimp controls the parasites of other fishes. Practically no information is available on the diseases affecting this species in the wild, except for one report of bopyrid parasite infecting this shrimp.

PRODUCTION, MARKET AND TRADE

PRODUCTION

Information not available

MARKET AND TRADE

This is one of the highly priced ornamental shrimp and there is good market demand at present, which is being met from wild collections. The species is caught by divers using small scoop nets and transported in oxygen packed polythene bags. Globally a total of 1,07,462 numbers were exported during 1998-2003 and 2,88,484 numbers were imported during 1988-2002. USA (35 %) and Taiwan (22 %) are the major exporters and USA (80 %) and UK (15 %) are the major importers of marine ornamental invertebrates.

CHALLENGES TO MARICULTURE

Broodstock development, domestication and larval rearing of *Lysmata amboinensis* needs to be initiated and standardised in India. The larval cycle has not been fully understood for this species which is a challenge to culturing this species in captivity. The long larval duration and low survival of larvae is also a challenge to be overcome.

FUTURE PROSPECTS

Being a valuable and in-demand marine ornamental decapod, culture of *L. amboinensis* should be promoted. Being a decapod, broodstock maintenance is easier than that of marine fishes and can be carried out on a large scale, utilizing the present network of shrimp hatcheries in the country.

SUGGESTED READING

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