

Twenty Sea Cucumbers from Seas Around India

D.B. James

Abstract

Twenty species of sea cucumbers from India are described briefly, with photographs which will enable research workers and farmers to identify them.

Introduction

Sea cucumbers are a fascinating group of marine animals. They live chiefly among corals but are also found among rocks and in muddy and sandy flats. They are distributed from the shore to the greatest depths. Their lengths range from a few millimeters to more than 2 m and they occur in all color combinations: white, black, red, blue, green, yellow, violet etc. Some of them are really very beautiful while alive and are in great demand for aquaria. The Chinese, Japanese and Koreans consider them a delicacy. The Chinese consume them in processed form while the Japanese and the Koreans consume *Apostichopus japonicus*, fresh. The toxins of sea cucumbers have antiviral, antitumoral, anticancerous and antifertility properties and find use in the pharmaceutical industry. Some species like *Pseudocnus echinatus* are fed to ducks in China.

At present nearly 1 400 species of sea cucumbers are known from all the seas in the world. Of these only 15 species are used for processing at present. There are nearly 200 known species in the seas around India, most of them in deep waters. About 75 species have been shown to be present in shallow waters while nearly 50 species can be collected from the intertidal region.

There are very few publications with color photographs of sea cucumbers. The South Pacific Commission (Anon 1974, 1979, 1994) has produced three publications on the processing industry of Tropical Pacific sea cucumbers with color photographs. Rowe and Boty (1997) have taken color photographs of sea cucumbers from Guam. James and James (1994) brought out a handbook on Indian sea cucumbers with color photographs of the commercially important species. The recent publication of Gosliner et al. (1996) on coral reef animals of the Indo-Pacific has excellent color photographs taken *in situ* and is of great help in identifying the species. The 20 species are described below in the order of importance for processing. Some non-commercial sea cucumbers are also included in this report.

Holothuria scabra (Jaeger)

Popularly known as Sandfish, this sea cucumber can grow to a length of 400 mm and reach a weight of 1.5 kg. The upper side is grey in color with white or yellow horizontal bands. The lower side is white in color with fine black dots. It is found in silty sand, often near low saline areas and frequently on



Fig. 1. *Holothuria scabra* (Jaeger).

Cymodocea beds. It spends part of the day buried in sand. It can be found in the intertidal region to a depth of 10 m. Younger forms are distributed near the shore and as they grow they migrate to deeper waters for breeding. This is the most widely used species after *A. Japonicus* and also the most valuable species for processing. It is gregarious in nature and is therefore easily exploited. The seed of this species was produced for the first time in India in 1988. Deeper water forms are known as *Holothuria scabra* var. *versicolor*. They can grow to a length of 450 mm and their color can range from beige to a uniform black. They can be found in the seas around India from the Andaman and Nicobar Islands and in the Gulf of Mannar and Palk Bay. The deep water form is also known to occur in the Lakshadweep.

***Holothuria fuscogilva*
(Cherbonnier)**



Fig. 2. *Holothuria fuscogilva* (Cherbonnier).

Popularly known as White Teatfish, this sea cucumber can reach a length of 400 mm and weigh between 2 to 3 kg. Six to eight teat-like structures are present on each side of the body. These are clearly seen only in live specimens in water. The body color is brown and it is often covered with a fine coat of sand. It occurs in slightly deeper waters and is common on coral slabs near reef passages or at the foot of reef slopes. This is a high value species for processing. It is common to the seas around India from the Lakshadweep. Recently it has been recorded in the Gulf of Mannar.

***Holothuria nobilis*
(Selenka)**



Fig. 3. *Holothuria nobilis* (Selenka).

This sea cucumber is commonly known as Black Teatfish. Its body is loaf-shaped and its maximum length and weight is similar to the previous species. Six to eight teat-like projections are seen on each side of the body in live specimens. The body is covered with a fine coat of

coral sand, and is cream colored with black blotches. This species is found in shallow waters in lagoons. It is more commonly found on shallow reef bottoms that are not subject to terrigenous influence. Juveniles may be found on turtle-grass beds. This species is valuable for processing. In the seas around India it is found only in the Andamans and Lakshadweep.

***Thelenota ananas*
(Jaeger)**



Fig. 4. *Thelenota ananas* (Jaeger).

Commonly known as Prickly Redfish, this species of sea cucumber can grow to a massive size and reach a length of 700 mm. Live weight varies from 3 to 6 kg. It is very distinctive in appearance with large pointed ‘teats’ in groups of two or three all over the body surface. There are numerous large tube feet on the flat underside. The body is reddish orange with ‘teats’ darker than the rest of the body surface. The tube feet on the underside are bright orange. However the specimens from the Lakshadweep are brown on the upper side and bright orange on the lower side. They feed exclusively on the calcareous alga *Halmeda* sp. and are found in lagoons at depths of up to 30 m on clean sandy bottoms or on slabs near large coral heads. It is a medium-value species for processing. In the seas around India it is known to occur only in the Lakshadweep.

***Holothuria spinifera*
(Theel)**



Fig. 5. *Holothuria spinifera* (Theel).

Commonly known as Brown Sandfish, its length can reach 300 mm. The color of the upper surface is a uniform brown, and there are small sharp projections all over the body. The lower side is generally lighter in color. This species is never found in the intertidal region. It is found on clean sand in slightly deeper waters. It is a highly burrowing form and is usually found in night trawl catches. This species which was once considered very valuable is now of medium value for processing. In the seas around India it is found only in the Gulf of Mannar and the Palk Bay.

***Actinopyga miliaris*
(Quoy and Gaimard)**



Fig. 6. *Actinopyga miliaris* (Quoy and Gaimard).

Commonly known as Blackfish, this species of sea cucumber can reach a maximum length of 300 mm. Its live weight ranges from 0.5 to 2 kg. The body is cylindrical, with the upper side arched and the lower side flat. Its color is uniformly black.

This species lives gregariously like *H. scabra* and is therefore easily exploited. It is distributed in shallow waters up to a depth of 10 m. It is a medium-value species for processing. It has been processed from the Gulf of Mannar only since 1991. In the seas around India it is found in the Gulf of Mannar, the Andamans and the Lakshadweep.

***Actinopyga echinites*
(Jaeger)**



Fig. 7. *Actinopyga echinites* (Jaeger).

Commonly known as Deep Water Redfish, this sea cucumber species can grow to a length of 300 mm and reach a maximum weight of 2 kg. The body is wider in the middle and tapers at both ends. The upper surface is wrinkled, often with fine sand settled over it. The color is uniformly brown. It attaches itself to rocks with its tube feet. It occurs at depths of between 3 to 7 m. It is a medium value species for processing. Processing first began in the Gulf of Mannar around 1990. In the seas around India it is distributed in the Gulf of Mannar, the Andamans and the Lakshadweep.

***Actinopyga mauritiana*
(Quoy and Gaimard)**

Commonly known as Surf Redfish, the body of this species of sea cucumber is arched on the upper side and flat on the lower side. It can grow to a length of 250 mm and its live weight can reach about 1 kg.

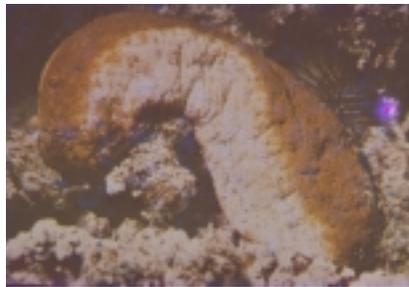


Fig. 8. *Actinopyga mauritiana* (Quoy and Gaimard).

The color of live specimens is brick red on the upper side and white on the lower side. It is usually found where the surf breaks on the reefs, firmly attached to coral stones. It is a medium-value species for processing. In the seas around India it is found in the Andamans and the Lakshadweep. Recently a single specimen was collected from the Gulf of Mannar.

***Bohadschia marmorata*
(Jaeger)**



Fig. 9. *Bohadschia marmorata* (Jaeger).

Commonly known as Chalkyfish, this sea cucumber species has a short and thick body with the lower side slightly flattened. It can reach a length of 400 mm and live weight of between 1 to 2 kg. It is distributed between the intertidal region and a depth of 10 m. It occurs in coarse coral sand at depths between 2 and 6 m. It is also found in the intertidal region with a fine layer of mud which peels off easily. It is a burrowing form and comes out of the mud during cloudy days and at night. White sticky threads are abundant, which makes processing a bit difficult. It is a low value species for processing. In the

seas around India it is found in the Gulf of Mannar, the Andamans and the Lakshadweep.

***Bohadschia* sp.**



Fig. 10. *Bohadschia* sp.

This species was recently collected from the lagoon of Kavattati Island in the Lakshadweep. It is distributed in the lagoon at a depth of 2-3 m and is a rare sea cucumber. The body wall is thick and leathery. During collection white sticky threads are ejected by the animal. The body is cream colored with characteristic brown patches. Of value for processing, this is a new species. A detailed description will be published elsewhere.

***Stichopus varigatus*
(Semper)**



Fig. 11. *Stichopus varigatus* (Semper).

Popularly known as Curryfish, in adults the body is four-sided and loaf-shaped. It can reach a length of 900 mm. Larger forms occur in deeper waters. In younger forms the tubercles are more prominent. They occur on algal beds and on clean sandy bottoms. Alive they are dark

yellow with irregular brown patches. This species is of low value for processing. A pea crab is known to live in the cloacal chamber. In the seas around India it is found in the Gulf of Mannar, the Andamans and the Lakshadweep.

***Holothuria atra* (Jaeger)**



Fig. 12. *Holothuria atra* (Jaeger).

Commonly known as Lollyfish, this species reaches a length of 600 mm. When live specimens are handled a red fluid stains the hand. Sometimes this species is covered with a fine coating of sand. It lies out in the open and occurs on the dead coral reef flats. It prefers to live in areas which are abundant in the calcareous alga *Halmeda* sp., on which it feeds. Its color is uniformly black. It is a very low value species for processing and is the most widely distributed. In the seas around India it is found in the Gulf of Mannar and Palk Bay, the Andamans and the Lakshadweep.

***Holothuria edulis* (Lesson)**



Fig. 13. *Holothuria edulis* (Lesson).

Popularly known as Pinkfish, this species has an elongated body,

narrow at the anterior and blunt at the posterior. It is never found in the intertidal region in India. It is usually bright pink in color with varying degrees of black. The black color is well marked on the upper side only, while the lower side is uniformly pink in color. It is a low-value species for processing. In the seas around India it is found only in the Gulf of Mannar and the Andamans.

***Holothuria leucospilota* (Brandt)**



Fig. 14. *Holothuria leucospilota* (Brandt).

This species has a long and snake-like body. It has a peculiar habit of sticking its posterior end under a stone. The anterior end projects out from the stone and keeps on moving with the ventrally directed tentacles. On being disturbed the animal throws out white sticky threads. Like *H. atra* it is uniformly black in color. However on handling no red color stains the hand and no sand sticks to the body surface. At present it is of no commercial value. In the seas around India it is found in the Gulf of Mannar and Palk Bay, the Andamans and the Lakshadweep.

***Holothuria hilla* (Lesson)**

This species has a body which is long and cylindrical with blunt ends. It reaches a length of 200 mm. The body wall is soft with the upper and lower sides well demarcated, light brown in color with scattered white conical papillae. It is a fugitive form



Fig. 15. *Holothuria hilla* (Lesson).

and often two or three specimens are found under coral stones. In some specimens a Carapid fish is known to live at the base of the respiratory tree. At present it is not used for processing. In the seas around India it is found in the Gulf of Mannar, the Andamans and the Lakshadweep.

***Holothuria impatiens* (Forsk.)**



Fig. 16. *Holothuria impatiens* (Forsk.).

In this species the body is bottle-shaped with a long neck and rough surface, sandy to touch. It is covered with conical warts from which filamentous appendages emerge. It is a secretive form found under dead coral stones. Often two or three specimens are found under the same coral stone. On disturbing the animal white sticky threads are ejected. It is an active sea cucumber. It is light brown in color with 4-5 dark brown transverse bands on the upper side near the anterior end. At present it is not used for processing. In the seas around India it is found in the Gulf of Mannar, the Andamans and the Lakshadweep.

***Holothuria arenicola*
(Semper)**



Fig. 17. *Holothuria arenicola* (Semper).

The body of this species of sea cucumber is slender and vermiform. It reaches a length of 200 mm. It is a highly burrowing form. Often it is difficult to collect this species since it quickly burrows out of reach into the sand. Sometimes a fish is known to live inside the body of this species. Generally the color of the body is white. The upper side has reddish brown spots or dots of different sizes. At present it is not used for processing. It is found in the Andamans and the Lakshadweep. Recently, it has been reported in the Gulf of Mannar.

***Holothuria pervicax*
(Selenka)**



Fig. 18. *Holothuria pervicax* (Selenka).

This is a small species which can reach a length of 120 mm. The body is subcylindrical in shape and the upper and lower sides are well demarcated. The upper side is brown in color with 5-7 honey colored transverse bands, while the lower side is lighter, mottled with white and light violet colors. It is a rare species. At present it is not used for processing. In the seas around India

it is found in the Gulf of Mannar, the Andamans and Lakshadweep.

***Acaudina molpadioides*
(Semper)**



Fig. 19. *Acaudina molpadioides* (Semper).

The body of this species of sea cucumber is fusi-form with a more tapering posterior end compared to the anterior end. It reaches a length of 150 mm. Its body surface is smooth. Small specimens are transparent. This species is known to live in slightly less saline waters. It is uniformly flesh-colored. In the Palk Bay it is found year round in trawl catches. Sometimes huge quantities are caught during night trawling. At present this species is not used for any purpose. Perhaps this species can be used as feed for ducks. In the seas around India it is found in the Gulf of Mannar and Palk Bay and the Andamans.

***Synapta maculata*
(Chamisso and Eysenhardt)**



**Fig. 20. *Synapta maculata*
(Chamisso and Eysenhardt) .**

This species has a body which is long and snake-like. It can reach more than 2 m in length. It is usually found

on the reef flat. It shovels sand into the mouth with its relatively large tentacles. Tentacles are seen to be in active movement during feeding. It crawls along by holding on to solid objects. It is tan to brown in color with black markings. The whole body surface has small white rings which are closely arranged. In the seas around India it is found in the Andamans and the Lakshadweep. There is a record of one specimen found in the Gulf of Mannar.

Acknowledgments

I thank Dr. M.V. Gupta, Director, International Relations Office, ICLARM-The World Fish Center, Penang for kindly going through this paper and making improvements. I also thank Mr. K.Sachithanathan former Processing Expert of the FAO for three photographs presented here.

References

Anonymous 1974. Beche-de-mer of the South Pacific Islands : A handbook for fishermen. South Pacific Commission, Noumea, New Caledonia. 30 p.

Anonymous 1979. Beche-de-mer of Tropical Pacific Islands : A handbook for fishermen. South Pacific Commission, Handbook No. 18 : 1-29.

Anonymous 1994. Sea cucumbers and Beche-de-mer of Tropical Pacific : A handbook for fishermen. South Pacific Commission, Handbook No. 18 (Revised Edition) : 1-51.

Gosliner, T.M., D.W. Behrens and G.C. Williams. 1996. Coral reef animals of the Indo-Pacific. Sea Challengers, California. 314 p.

James, D.B. and P.S.B.R. James 1994. A handbook on Indian sea cucumbers. CMFRI Spl. Pub., 59: 1-46.

Rowe F.W.E. and J.E. Boty 1977. The shallow-water holothurians of Guam. Micronesia.13(2) : 217 – 250.

D.B. James is a retired Senior Scientist of Central Marine Fisheries Research Institute, Cochin, India.