

BIODIVERSITY OF JAMAICAN MANGROVE AREAS

Volume 7

Mangrove Biotypes VI: Common Fauna



**BY
MONA WEBBER (PH.D)**

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MANGROVE BIOTYPE VI:
COMMON FAUNA

**CNIDARIA, ANNELIDA, CRUSTACEANS, MOLLUSCS &
ECHINODERMS**

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CNIDARIA, ANNELIDA, CRUSTACEANS, MOLLUSCS & ECHINODERMS

INTRODUCTION

Mangrove habitats support a large group of animals belonging to a range of taxonomic groups. There are many taxonomic groups which are commonly seen in the environment. Individually, each group, is not diverse enough to occupy an entire volume but are seen so frequently and in large enough numbers to be considered important mangrove taxa. Many of these animals live in association with the prop roots of the red mangrove or may be found on the benthos of the mangrove lagoon and are taken in trawls or easily seen where the lagoon waters are clear enough. Yet others live in the mangrove forest, occupying forest floor or canopy. See volume 1 for details on the different habitats created in the mangrove environment. Table 1 below gives the specific habitat where each species was found.

Table 1. Common mangrove species and their habitats.

Species Name	Common Name/Description	Habitat	Reference Number
CNIDARIA			
<i>Aiptasia tagetes</i>	Anemone	Prop root	PRML Cnid.0105
<i>Cassiopeia</i>	Up-side-down jellyfish	Lagoon floor	PRML Cnid.0205
ANNELIDA			
<i>Sabellastarte magnifica</i>	Large Fan worm	Prop root	PRML Poly.0305
CRUSTACEANS			
<i>Panulirus argus</i>	Spiny lobster	Lagoon floor	PRML Crust.0605
<i>Calinectes sapidus</i>	Blue Crab	Lagoon floor	PRML Crust.0705
<i>Calinectes exasperatus</i>	Brown Crab	Lagoon floor	PRML Crust.0805
<i>Portunus sp.</i>	Crab with red pattern on back	Lagoon floor	PRML Crust.0905
<i>Persephone sp</i>	Purse crab	Lagoon floor	PRML Crust.1005
<i>Lupella forcepes</i>	Forceps Crab	Lagoon floor	PRML Crust.1105
<i>Penaeus duorarum</i>	Shrimp	Lagoon floor	PRML Crust.1205

<i>Aratus pisoni</i>	Mangrove tree crab	Forest	PRML Crust.1405
<i>Uca spp.</i>	Mangrove mud crab	Forest floor	PRML Crust.1505
<i>Balanus Amphitrite</i>	Striated barnacle	Prop root	PRML Crust.1605
<i>Balanus eberneus</i>	Ivory barnacle	Prop root	PRML Crust.1705
<i>Chthamalus sp.</i>	Small barnacle	Prop root	PRML Crust. 1805
MOLLUSCA			
<i>Perna viridis</i>	Green oyster	Prop root	PRML Moll. 1905
<i>Isognomon alatus</i>	Flat oyster	Prop root	PRML Moll. 2005
<i>Crassostrea rhizophorae</i>	Mangrove oyster	Prop root	PRML Moll. 2105
<i>Pinctada</i>		Prop root	PRML Moll. 2205
<i>Murex spp.</i>		Lagoon floor	PRML Moll.2305
<i>Brachidontes exustus</i>	Bivalve	Lagoon floor	PRML Moll.2405
<i>Anadara chemnitzii</i>	Bivalve	Lagoon floor	PRML Moll.2505
<i>Martesia sp.</i>	Bivalve	Lagoon floor	PRML Moll.2605
<i>Piculata gibbosa</i>	Sea Hare	Lagoon floor	PRML Moll.2705
<i>Divaricella quadrisulcata</i>	Cross-hatched Lucina	Lagoon floor	PRML Moll.2805
<i>Bulla striata</i>	Striated Bubble	Lagoon floor	PRML Moll.2905
<i>Macoma brevifrons</i>		Lagoon floor	PRML Moll.3005
<i>Nassarius vibex</i>		Lagoon floor	PRML Moll.3205
<i>Centhium sp.</i>		Lagoon floor	PRML Moll.3305
<i>Strombus pugilis</i>	West Indian Fighting Conch	Lagoon floor	PRML Moll.3405
<i>Trachycardium isocardia</i>	Prickly Cockle	Lagoon floor	PRML Moll.3605
<i>Littorina angulifera</i>	Forest littorinid	Forest floor	PRML Moll 3705
<i>Melampus coffeus</i>	Coffee snail	Forest floor	PRML Moll 3909
<i>Diplodonta punctata.</i>		Lagoon floor	PRML Moll.3105
<i>Dosinia sp.</i>		Lagoon floor	PRML Moll 3505
ECHINODERMATA			
<i>Oreaster reticulates</i>	Cushion sea star	Lagoon floor	PRML Echin.3805
<i>Lytechinus variegates</i>	Variegated (Green) Urchin	Lagoon floor	PRML Echin.3905
<i>Ophiocoma sp.</i>	Spiny brittle star	Prop root	PRML Echin.4005
<i>Mellita sp.</i>	Sand Dollar	Lagoon floor	PRML Echin.4105
<i>Astropecten duplicatus</i>	Two-Spined Sea star	Lagoon floor	PRML Echin.4205
<i>Linckia guildingii</i>	Common Comet Star	Lagoon floor	PRML Echin.4305
<i>Holothuria Mexicana</i>	Donkey Dung Sea Cucumber	Lagoon floor	PRML Echin.4405
VERTEBRATA- PISCES <i>Gobiosoma sp.</i>	Smooth Sea Cucumber Goby	Lagoon floor Forest floor	PRML Echin.4505 PRML Pisces 5006

CNIDARIA

Cnidarians are more commonly known for members like corals and jellyfish.

There are however, large numbers of anemones associated with the prop root habitats of the mangroves. The main species found in the Port Royal Mangroves is *Aiptasia tagetes* (Fisher, 1978). *Aiptasia* is a small anemone, (Plate 1) no more than 10 cm in length.

There are two colour varieties (brown and white) but the brown is most commonly seen (Plate 2).



Plate 1. *Aiptasia tagetes* with column fully extended. From Fisher (1978). Scale = 1 cm.

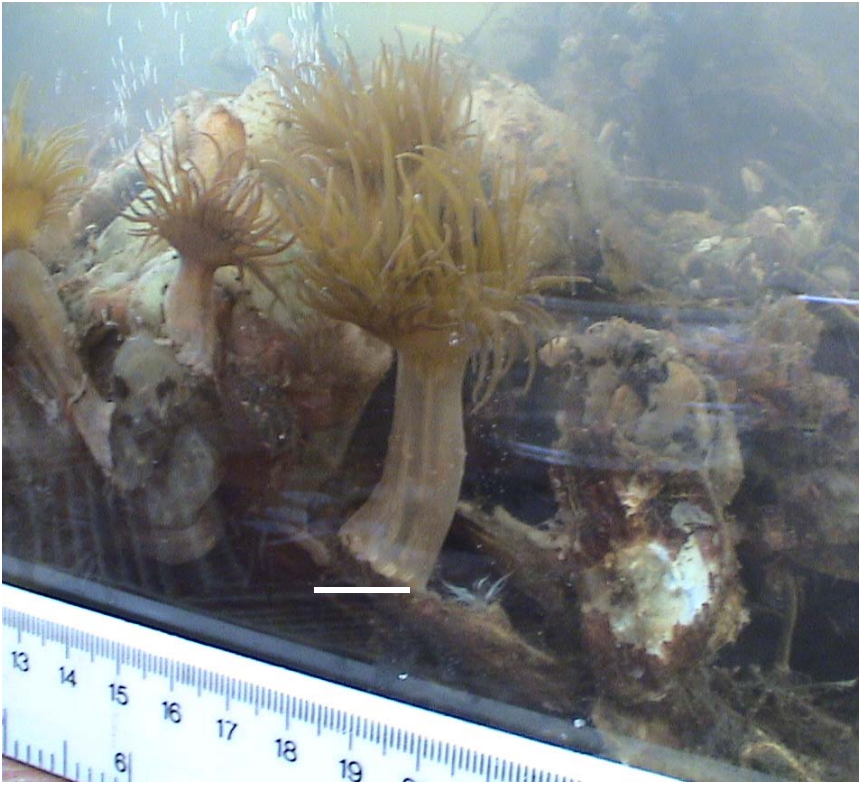


Plate 2. *Aiptasia tagetes* with column fully extended. Brown (above) & white variety (below). Scale = 1 cm.

Cassiopeia xamachana is more commonly known as the up-side-down jellyfish because it sits on the bottom of clear mangrove lagoons and feeds using the symbiotic algae trapped in its modified tentacles which look like long ribbon-like or leaf-like appendages on the oral arms (Plate 3). If the lagoon benthos becomes shaded by overgrowth of trees the *Cassiopeia* move to another more illuminated area.

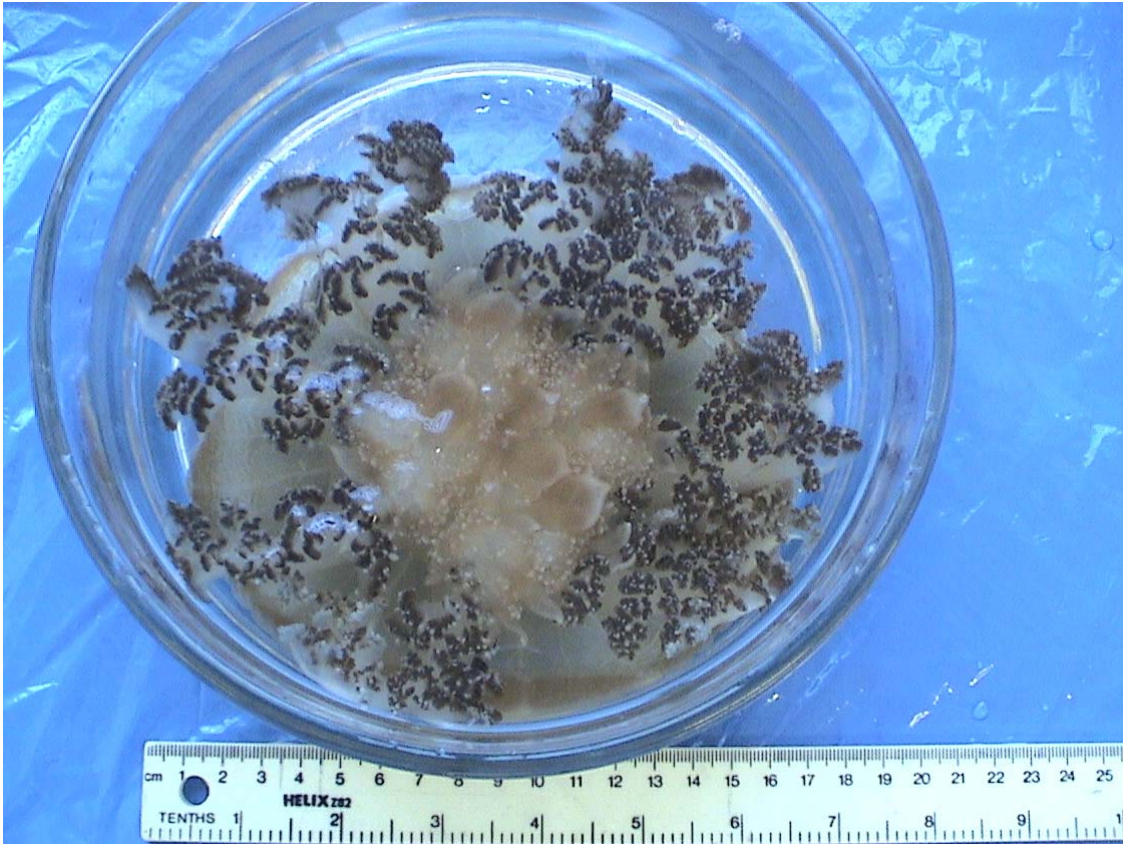


Plate 3a. *Cassiopeia xamachana* (upside-down jellyfish). Scale = cm.



Plate 3b. *Cassiopeia xamachana* (upside-down jellyfish). Scale = 1 cm.

ANNELIDA

Annelids occur on the red mangrove prop roots as various errant (e.g. syllids, nereids) and sedentary (e.g. terebellids) forms. However, the most conspicuous is the sedentary fan worm commonly called magnificent feather duster (*Sabellastarte magnifica*) Plate 4. The animal is attached to the root by its self secreted and constructed grey-brown tube. The feeding tentacles form a circular crown of variegated orange and white radioles. The tubes of the smaller species *Sabella* sp. are more often seen on the red mangrove prop roots (Plate 5).



Plate 4. *Sabellastarte magnifica* Scale = 1 cm.



Plate 5. Fanworm tubes (*Sabella* sp.) on the red mangrove prop root. Scale = 1cm.

CRUSTACEANS

The mangal has a range of crustaceans of which crabs are perhaps the most common. Small forms may be found on the prop roots or on the forest floor while larger specimens are often taken in trawls of the lagoon benthos.

There are several members of the genus *Callinectes*. There are all characterised by a wide carapace with a spine protruding from the widest point on each side. Usually between the lateral spine and the eye is a row of spines on the edge of the carapace. The appendages are typical of crabs except for the last pair of thoracic legs which are modified like paddles for swimming. These crabs may range from blue-green to red-brown (Plates 6 - 9).



Plate 6. *Callinectes exasperatus* Scale = cm.



Plate 7. *Portunus* sp. Scale = cm.



Plate 8. *Calinectes sapidus* (Blue Crab) Scale = cm.



Plate 9. *Lupella forcepes* Scale = cm.

The purse crab was taken from the floor of the mangrove lagoon. It is almost round or oval. Anterior spines on the carapace protect the eyes and posterior spines usually see a large central spine with smaller ones on each side (Plate 10). The chelipeds are long and moderately stout with short “fingers”.



Plate 10. *Persephone* sp. (Purse crab) Scale = cm.

The mangrove forest floor is riddled with the holes of the fiddler crab (*Uca* spp.). There are several species of *Uca* all characterized by the enlarged claw of the male (Plate 11).



Plate 11a. Scale = cm.



Plate 11b. *Uca* spp. Scale = cm.

The mangrove tree crab (*Aratus pisonii*) is also associated with the forest but it is found on the bark of the trees. Unlike the other grapsid crabs which have a squarish carapace (Plate 12), the carapace is turned strongly inward at the back. The animal is usually mottled green with redish legs but can be highly varied in colour.



Plate 12. *Aratus pisonii* Scale = cm.

Commercially important shell-fish species like shrimp and lobsters use the mangrove lagoon as a nursery. Trawls of the lagoon can yield these animals in juvenile or adult form. The Caribbean spiny lobster (*Panulirus argus*) and the pink shrimp have been taken in such catches. The pink shrimp (*Penaeus duorarum*) can vary in colour. Usually it is somewhat pinkish but juveniles may be white, grayish or greenish. This species was collected from the lagoon floor and has darkened in the preservative (Plate 13). The serrated rostrum and paired grooves running the length of the carapace are characteristic features.

The Caribbean spiny lobster (*Panulirus argus*) has spines and carapace covered with sharp spines. The colour is brownish with a scattering of dark spots on the carapace and pale spots on the abdomen (Plate 14). They have long antennae which can be moved up and down to produce a squeaky sound which warns other lobsters to stay out of their territory.



Plate 13. *Penaeus duorarum* Scale = cm.



Plate 14. Caribbean Spiny Lobster- *Panulirus argus* Scale = cm.

The snapping shrimp (*Alpheus* spp.) (Plate 15) may be found among the sessile fauna of the red mangrove prop roots and makes a clicking sound in defence. The sound is produced by the enlarged claw which is very heavy with short fingers.



Plate 15. *Alpheus* sp. (Snapping shrimp) Scale = cm.

Mantis shrimp are small elongate crustaceans with narrow bodies and broad tail fans. They possess prominent raptorial claws which are sub-chelate and not pincer-like (chelate) like most shrimp or crabs (Plate 16). The claw is armed with spines and is used to capture shrimp or even fish. The most common genus is *Squilla* and the animal has been found on the lagoon floor where it lurks in burrows emerging only to capture prey.



Plate 16. Mantis shrimp *Squilla* sp. Scale = cm.

Barnacles (Plate 17 - 19) are commonly found attached to the red mangrove prop roots in the upper zone which is exposed for long periods. The most common species seen is the large ivory barnacle (*Balanus eburneus*). *Balanus amphitrite* (Striated barnacle) is not as common in the mangroves as *Balanus eburneus* and seems to prefer attaching to floating debris and non-mangrove wood rather than the red mangrove prop roots. The least common of the barnacles is the smallest (*Chthamalus* sp.) which lives highest on the red mangrove prop roots but may also attach to the hard shells of other sessile creatures.



Plate 17. *Balanus eburneus* Scale = cm.



Plate 18. *Balanus Amphitrite* Scale = cm.



Plate 19. *Chthamalus* sp. on a *Crassostrea* shell. Scale = cm.

MOLLUSCA

Bivalvia

The bivalve species associated with the mangroves are primarily those that live attached to the red mangrove prop roots. They are almost always found throughout the area and often dominate the upper zones of the roots. The smallest of the bivalve species

(*Brachidontes exustus*) is usually attached to the root in clusters. The species tends to be dark brown, sometimes with a yellow border on the edge of the valves (Plate 20).

Isognomon alatus is called the flat oyster and lives attached by byssus threads to the prop root or other hard-shelled creatures attached to the root. The colour is dark brown to dull grey (Plate 21). The shell is fan shaped and very flat. It has identical (symmetrical) valves from which dark green byssus threads protrude.



Plate 20. *Brachidontes exustus* Scale = cm.

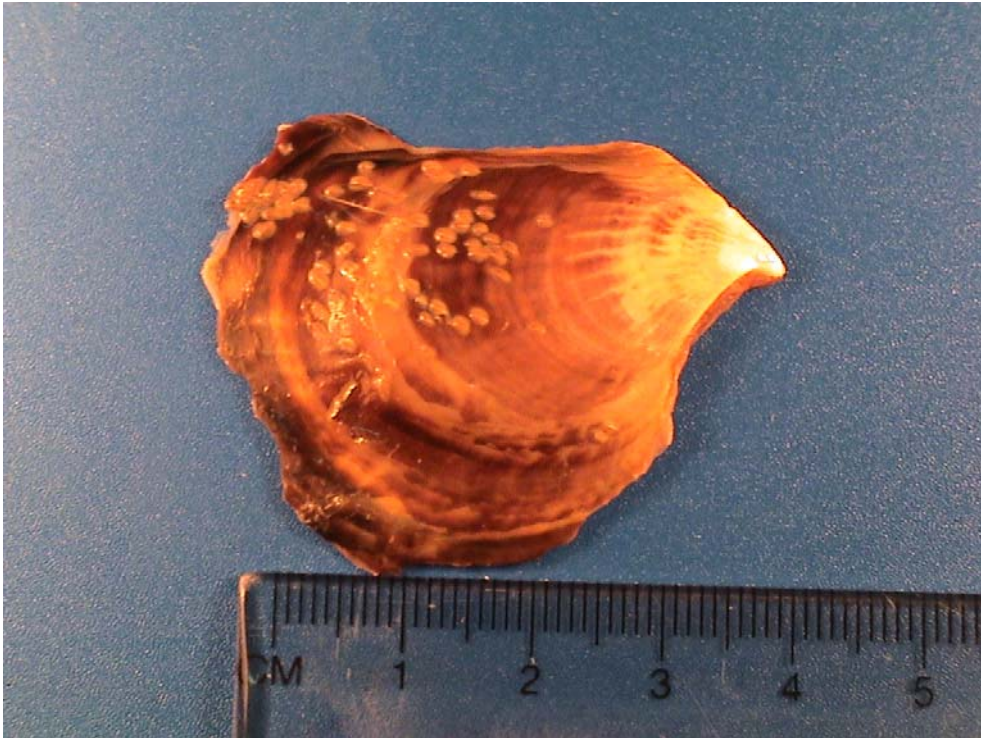


Plate 21. *Isognomon alatus* Scale = cm.

The mangrove oyster (*Crassostrea rhizophorae*) is grayish-brownish-white in colour (Plate 22) and the shell can have a variable shape. The animal cements itself to the substrate via the lower valve which tends to be cup shaped. The upper valve is flat to slightly convex and fits well down into the lower valve. The edges of the shell are straight (not scalloped) and smooth. The next two bivalves are far less common but may be found attached to substrate in the red mangrove root area. *Pinctada radiata* (Atlantic pearl oyster) superficially resembles *I. alatus* as it has a similar reddish-brown colour (Plate 23). The shell has thin delicate valves which are often covered with thin overlapping scales. *Plicatula gibbosa* (Kittens paw) is cream coloured with a thick strong deeply sculptured shell with 5 to 9 radial ribs (Plate 24). The radial ribs produce fluted margins.



Plate 22. *Crassostrea rhizophorae* Scale = cm.



Plate 23. *Pinctada radiata* Scale = cm.



Plate 24. *Plicatula gibbosa* Scale = cm.

Martesia striata is a very common wood borer which is often overlooked due to its occurrence in the substrate and not on it. Very large numbers can occur in a relatively small area of wood (Figure 25). The shell of this bivalve is whitish and rather thin and fragile. It has a characteristic heart shape shield over the umbones. It has sculpturing of concentric growth lines.



Plate 25. *Martesia striata* (Wood boring bivalve) Scale = cm.

Perna viridis is the Indo-Pacific green mussel which was introduced into the Caribbean and seen in Jamaica for the first time in 1998. The animal was subsequently seen growing densely on several types of substrates around Kingston harbour including the red mangrove prop roots. Among the highest density was recorded from mangrove areas near the old airport runway (Buddo, 2003). Since then the numbers of *P. viridis* have declined. The animal was never a direct threat to the other mangrove bivalves as it prefers the lower zone of the red mangrove prop roots which *Isognomon alatus* and *Crassostrea rhizophorae* prefers the upper zone. The shell is brilliant green in the juveniles and brown with green margins in the adult (Plate 26).



Plate 26a. *Perna viridis* (whole specimen) Scale = cm.



Plate 26b. *Perna viridis* with right valve removed. Scale = cm.

The remaining bivalves are found on the lagoon benthos and have been collected in trawls of the area. *Trachycardium muricatum* is cream coloured with irregular patches of brown. It is sculptured with smooth radiating ribs which may have small spines (Plate 27).

Anadara chemnitzii is superficially similar but is smaller and white with thicker shells. The shell is inflated and almost as high as it is long. It has a sculpturing of broad ribs and many concentric grooves (Plate 28).



Plate 27. *Trachycardium muricatum* Scale = cm.



Plate 28a. *Anadara cheuinitri* Scale = cm.



Plate 28b. *Anadara cheuinitri* Scale = cm.

Diplodonta punctata is white bivalve with a rounded shape. The valves are sculptured with numerous concentric lines and fine growth lines (Plate 29). *Dosinia* (Figure 28) superficially resembles *Diplodonta* but is larger and with a smoother shell.



Plate 29. *Diplodonta punctata*. Scale = cm.



Plate 30a. *Dosinia* sp. Scale = cm.

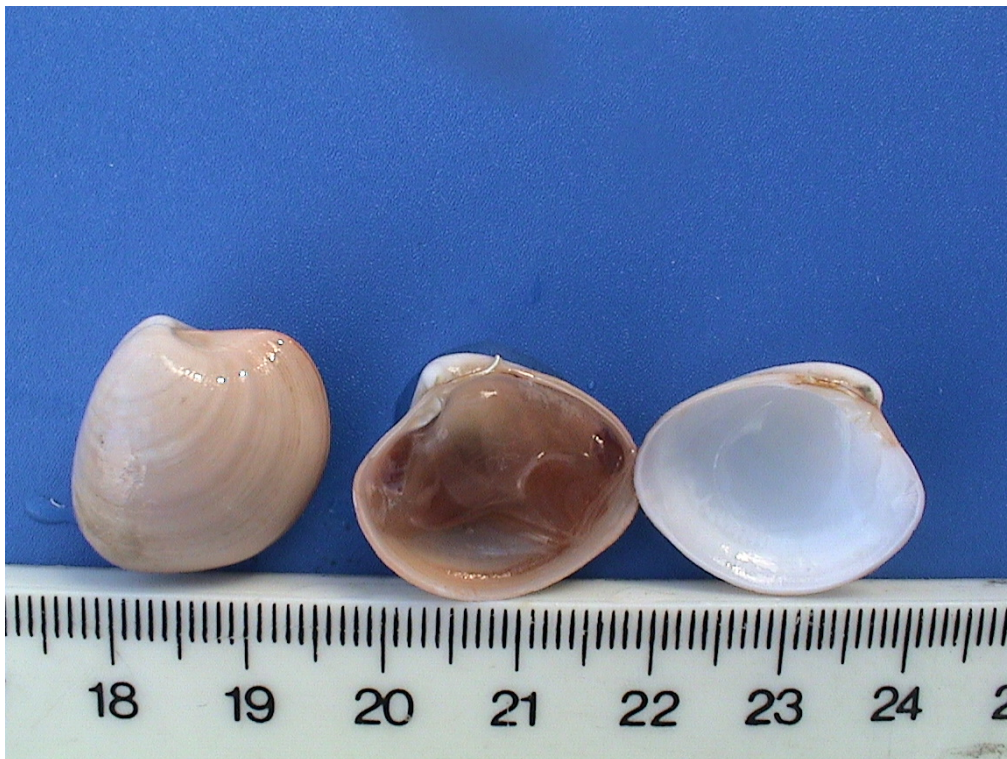


Plate 30b. *Dosinia* sp. Scale = cm.

Gastropoda:

The gastropods associated with the mangroves are usually found in the mud of the mangrove lagoon. One such species is *Melongena melongena* which is usually cream coloured with bands of purplish brown or blue spiraling around the shell. The base of the shell bears blunt spines. The operculum is horny and oval and the outer lip flared and wavy edged. The female lays strings of fan shaped egg capsules (Plate 31).

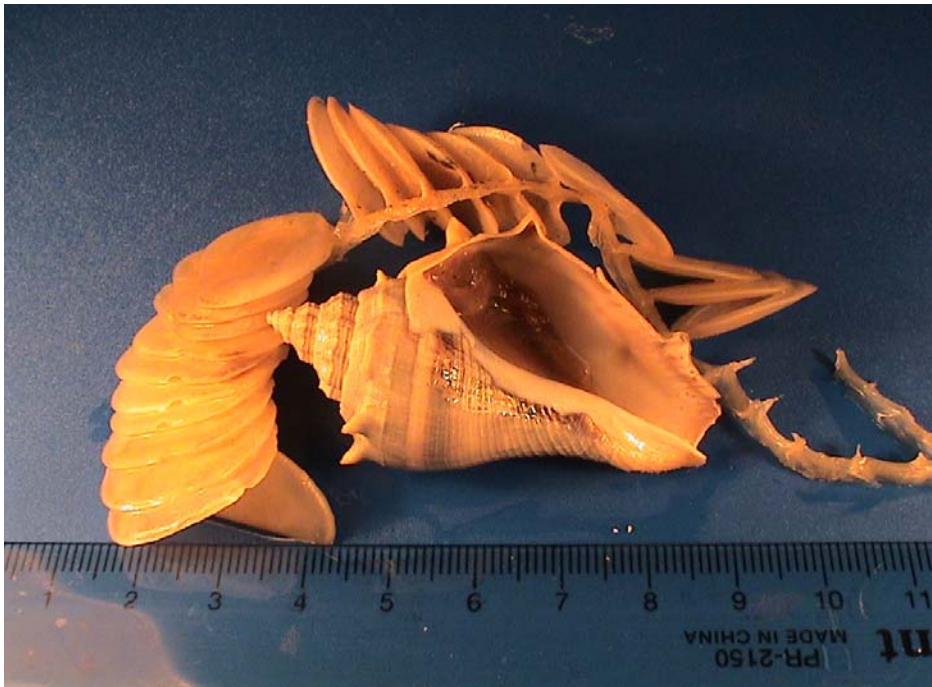


Plate 31. *Melongena melongena* with egg case. Scale = cm.

The West Indian fighting conch has a rich red-orange velvety shall (Plate 32). Salmon pink varieties exist. The shell has spines on the outer whirls, an expanded outer lip and a horny saw-edged operculum. Although expanded the outer lip is not winged as in other Strombidae.

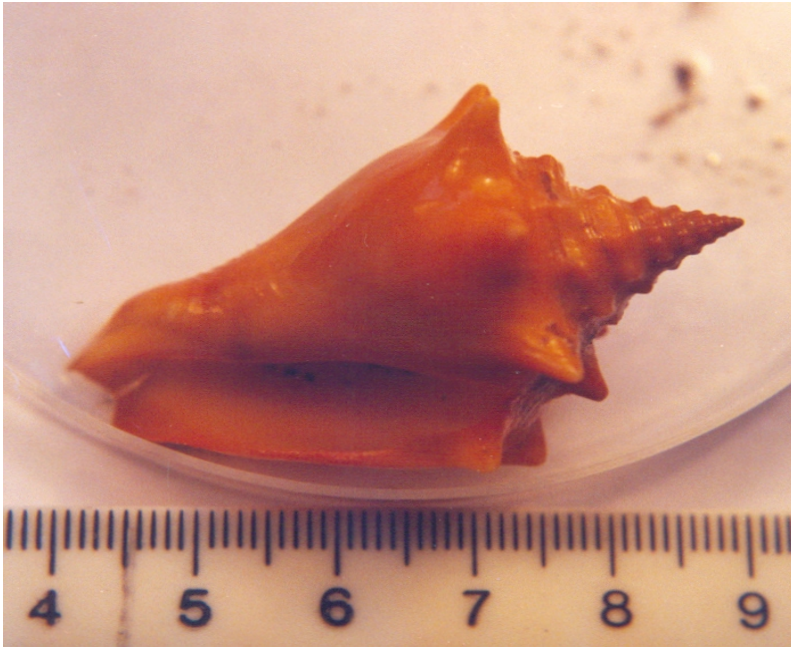


Plate 32. *Strombus pugilis* (West Indian fighting conch). Scale = cm.

The Muricidae is a large family of voracious carnivores which are characterized by a long siphonal canal and spinose projections from the shell (Plate 33). They all have a brown corneous operculum which fits tightly into the aperture. The group consists of a large number of species found worldwide.



Plate 33a. *Murex* sp. Scale = cm.

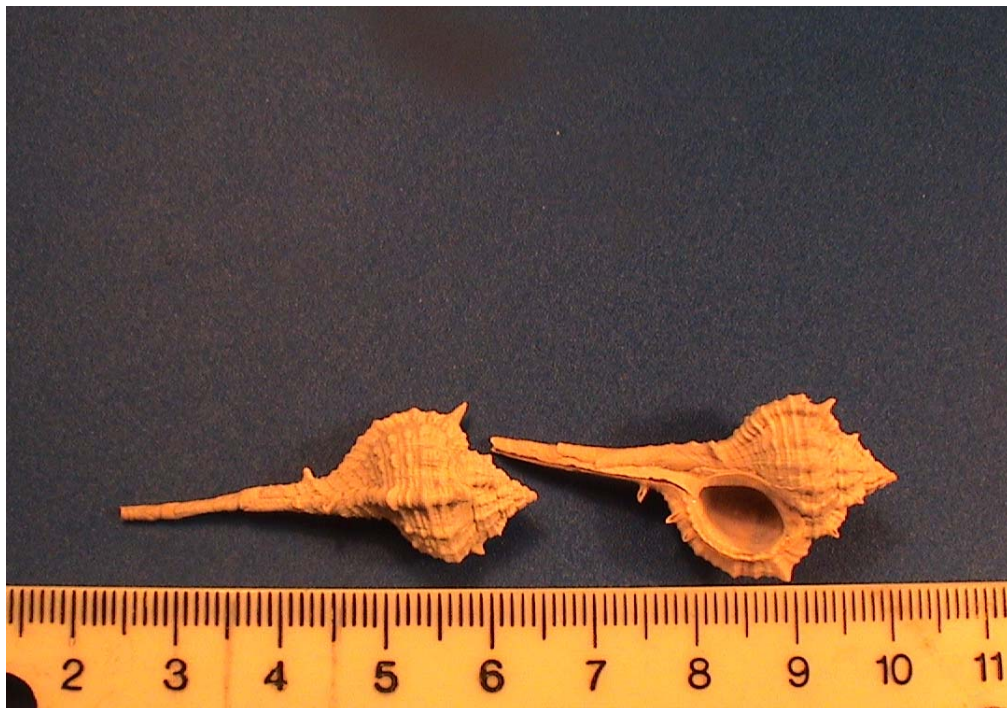


Plate 33b. *Murex* sp. Scale = cm.

The ceriths are another large group of gastropods (~300 species) which have a characteristic deep channel at the front of the shell aperture. *Cerithium variable* is a small member with light to dark brown shell colour. It has the characteristic channel where the outer lip joins the body whirl. (See plate 34).

Most Caribbean littorinids live above the high tide mark. They are most often associated with rocky shores but *Littorina angulifera* can be found attached to mangrove roots and will be found in the forest grazing the red mangrove tree. The animal has a dark brown shell with a sculpturing of fine spiral threads (Plate 35)



Plate 34. *Cerithium* sp. Scale = cm.



Plate 35a. *Littorina angulifera* Scale = cm.



Plate 35b. *Littorina angulifera* (gape visible) Scale = cm.

The Coffee snail (*Melampus coffeus*) is so named because it resembles a coffee bean.

It is small and brown and is often seen on the black mangrove pneumatophores or crawling on the floor of the mangrove forest in the wetter areas.



Plate 36 a. *Melampus coffeus* (Coffee snail). Picture courtesy of Edward Downer.



Plate 36 b. *Melampus coffeus* (Coffee snail). Picture courtesy of Edward Downer.

The striated bubble (*Bulla striata*) has a brown glossy shell with darker brown mottling. The shell is polished and oval with the aperture longer than the shell itself. The lip is simple (Plate 37). This specimen was collected from the muddy bottom of the mangrove lagoon.

Nassarius vibex has a small, solid oval shell. It is dark brown with a light spiral band at the shoulder of each whorl. Sculpturing includes 12 axial ribs and numerous spiral threads. See plate 38.



Plate 37. *Bulla striata* (Striated Bubble) . Scale = cm.



Plate 38. *Nassarius vibex*. Scale = cm.

Cerithiopsis sp. (mangrove cerith) is a small, white, “bumpy” snail found also on the forest floor. See Plate 39. It prefers the dryer parts of the forest and in the Port Royal mangroves is often found near a clearing between sections of forest.

Plate 39. Cerith

ECHINODERMS

Echinoderms may be associated with the lagoon floor in the mangal but will climb up onto prop roots to feed. The green sea urchin (*Lytechinus variegatus*) (Plate 38) is mostly confined to the benthos where enough light penetrates to allow the growth of seagrasses. Similarly sea cucumbers (Plate 39-40) are associated with the lagoon floor and feed on the detritus in this habitat.

Brittle stars (Plate 41) live among the prop root organisms and are usually only seen when these sessile fauna are removed from the root and carefully examined.

Starfish are predatory and the three main species caught in trawls of the area will feed on the prop root organisms. The *Oreaster* sp. (Plate 42) is the largest and most easily seen. *Linckia* sp. (Plate 43) is usually less common with *Astropecten* sp. (Plate 44) being least common. Occasionally sand dollars (Figure 43) are found on the benthos.



Plate 38. *Lytechinus variegatus* (Variegated Urchin) Scale = cm.



Plate 39. Warty sea cucumber Scale = cm.



Plate 40. *Holothuria mexicana* (Donkey Dung Sea Cucumber) Scale = cm.

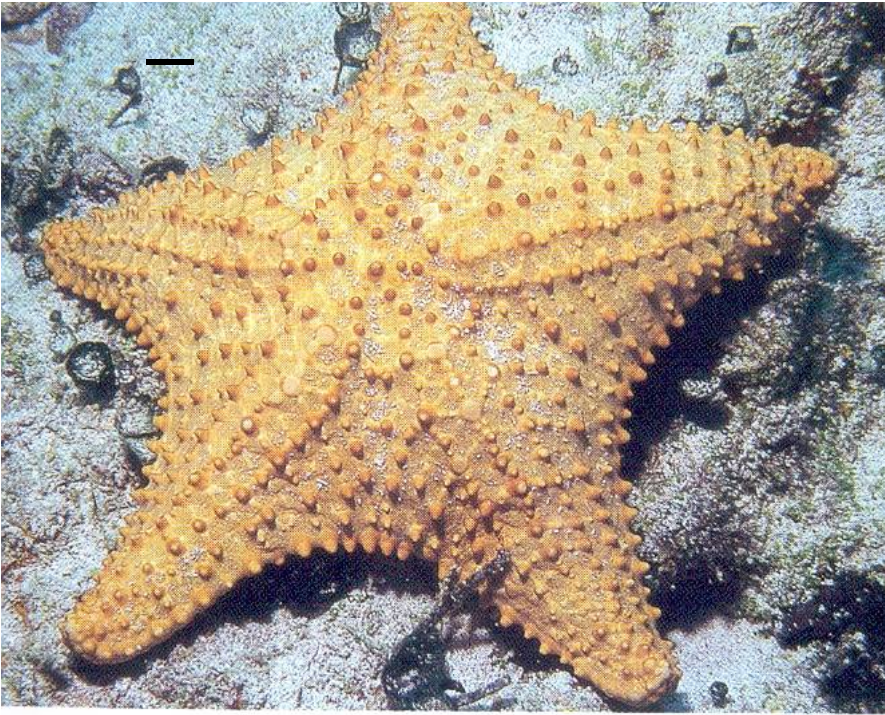


Plate 41. *Oreaster reticulatus* Scale = 1 cm.



Plate 42. *Linckia guildingii* (Common Comet Star). Scale = cm.



Plate 43. *Astropecten duplicatus* (Two-Spined Sea Star). Scale = cm.



Plate 44. *Ophiocoma* sp. Spiny brittle star. Scale = cm.

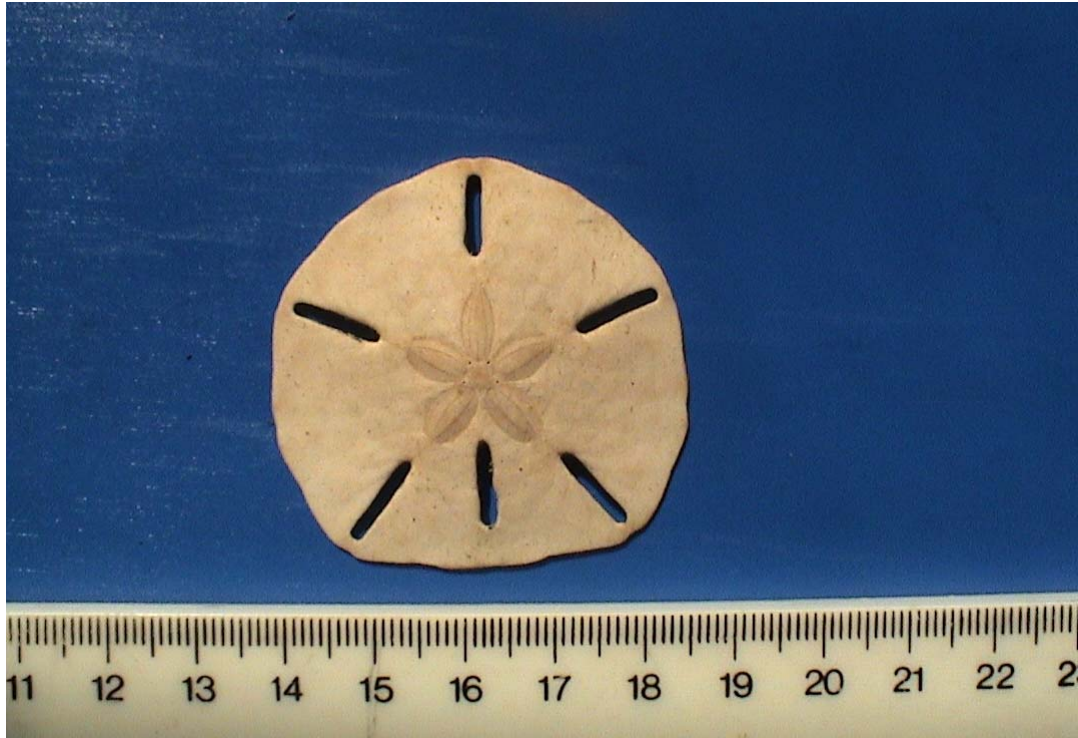


Plate 45. *Mellita* sp. (sand dollar). Scale = cm.

Vertebrata

Pises

Many fish live in the murky waters of the mangrove lagoon both as adults and juveniles. However, one unusual genus of goby fish (Plate 46) live on the floor of the mangrove forest using its modified pelvic fins to “walk” on the mud from pool to pool. The juvenile shows strong ontogenetic structural variability with the fins being far less developed and the body more elongated (Plate 46).



Plate 46. *Gobiosoma* sp. (juvenile on the ruler). Scale = cm.