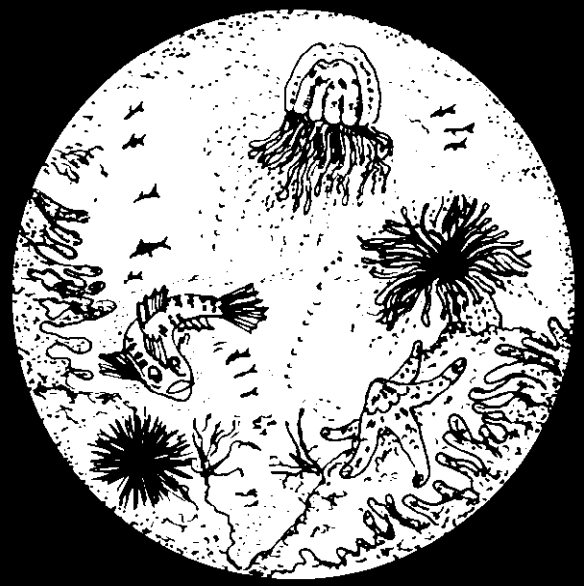
THE SANDRINGHAM ENVIRONMENT SERIES No. 6

MARINE LIFE OF THE COASTAL FRINGE



BY BOB WHITEWAY
with drawings by Des Bunyon
1985

Published by the City of Sandringham in consultation
with its Natural Environment Advisory Panel.

Contents

	Page
Introduction	1
When to Explore	1
Platforms and Reefs	2
Seaweeds	7
Animals:	
Sponges	10
Anemones and Jellyfish	12
Seastars and Sea Urchins	14
Shellfish	17
Crabs, Shrimps and Barnacles	23
Other Animals	26
Care of the Marine Environment	28
Further Reading, Acknowledgements	Inside Back Cover

National Library of Australia, Card Number and ISBN —
ISBN 0 9596863 7 1

Introduction

The nearshore reefs of the Sandringham Coast are a valuable natural asset. Such reefs are one of the richest habitats for living things, in both numbers of organisms and variety of species. Some of the species are the descendants of forms that first evolved four or five hundred million years ago.

This booklet describes the location and nature of the more common marine life between Picnic Point (Hampton) and Beaumaris Bay. It is addressed to interested readers, excursion leaders, and skin divers. Those who experience the marine world at first hand invariably find it stimulating. Skin diving should not be considered a difficult or dangerous sport, therefore in calm weather it requires only elementary skills, and is suitable for people of all ages.

Unfortunately our coastal fringe has been subject to some damage and pollution, but as more people come to appreciate and enjoy it, it is hoped that this process will be reversed.

When to Explore

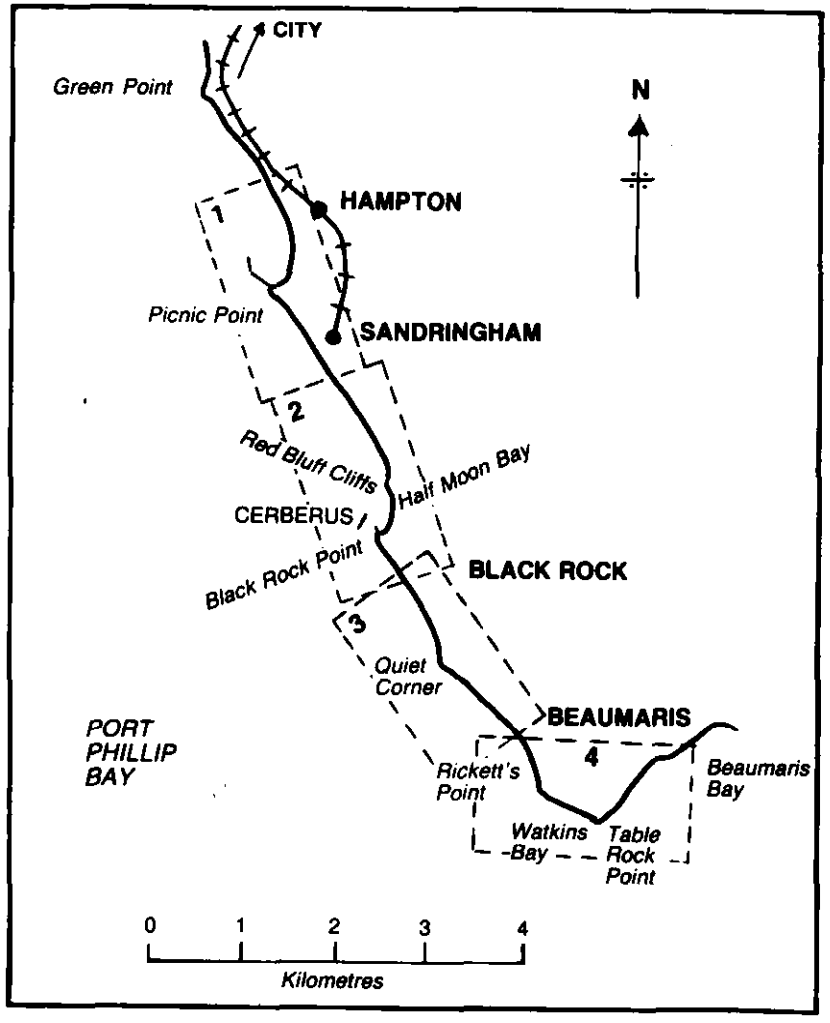
Time your outings wisely. **Explore at low tide,** which is shown together with the weather map in the daily papers. Use the Williamstown Tide Predictions. (Tide tables give the predicted range of each tide: Low spring tides are a good time to explore the nearshore area).

Also, consider wind. Go skin diving when there is no wind, or when it is blowing *offshore,* that is, from the north or east. South-westerly winds (onshore) stir up the sediment — often reducing visibility to less than one metre. Good conditions are often present as the latter part of an anticyclone (a high pressure cell) passes through.

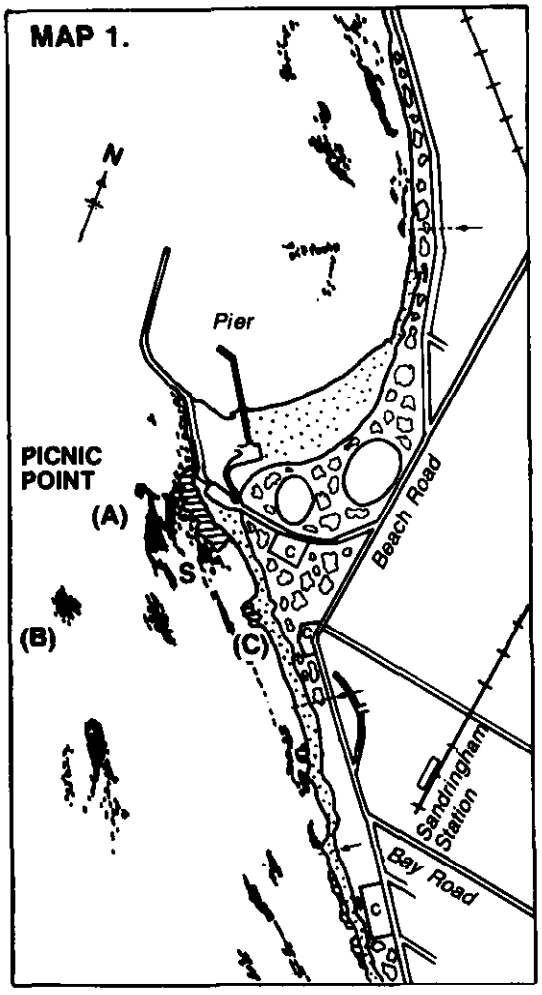
Platforms and Reefs

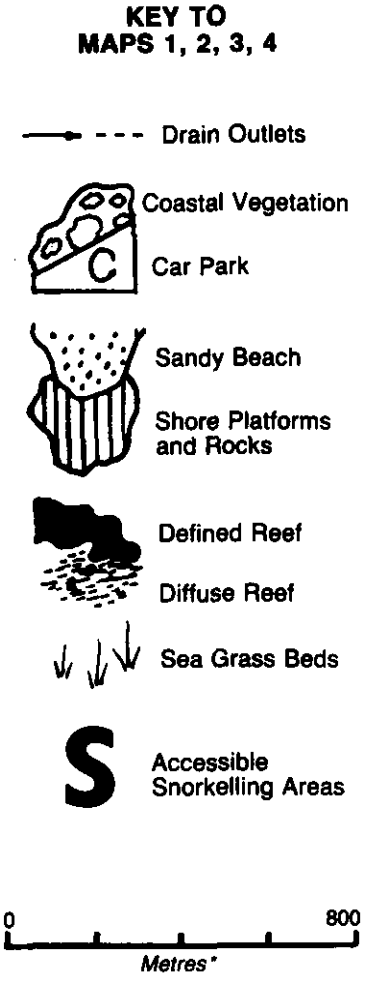
The marine life of the coastal fringe is largely confined to rocky habitats, the location of which is shown in the accompanying maps. The first map indicates the position of four sequences of the Sandringham coastline; enlargements of each are presented on the following pages.

These maps highlight points of particular interest to the naturalist and skin diver, but discoveries may be made on any rocky outcrop along the shore, or in the nearshore area.



Sandringham Municipality Coastline, showing positions of segment maps.

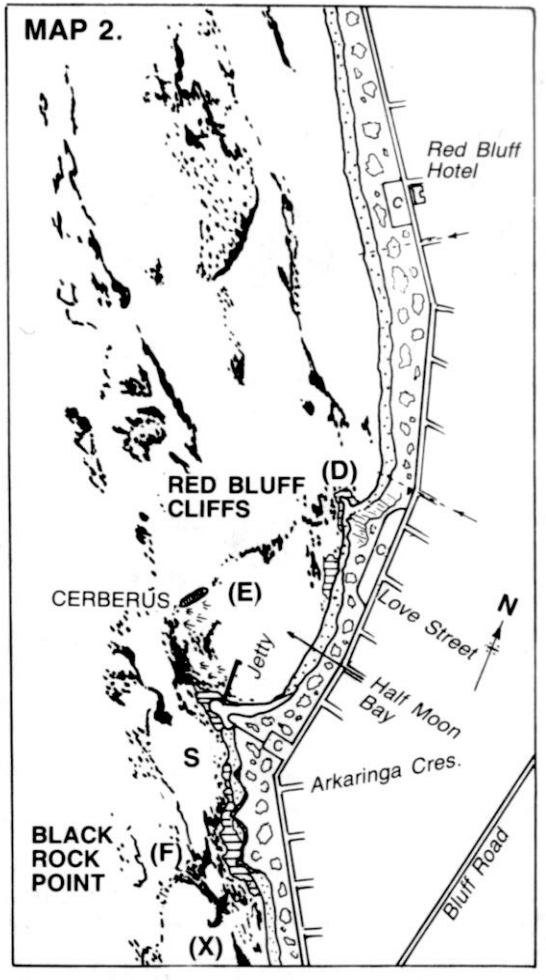




MAP 1. *The rocky foreshore at Picnic Point* (A) offers a variety of seaweeds and sea floor animals such as worms, crabs, and shellfish. Water over the reef about 300m offshore (B) is remarkably shallow at low spring tide (when the moon is new or full). This is a steep-sided reef, supporting an abundance of plant and animal life, including fish such as snapper.

The modest shore reef at the foot of Abbott Street (C) bears close inspection. Much of it is covered with the tube worm *Galeolaria*, whilst many colourful animals shelter beneath its ledges.

**Aerial photography on which segment maps are based renders them subject to slight variation of scale.*

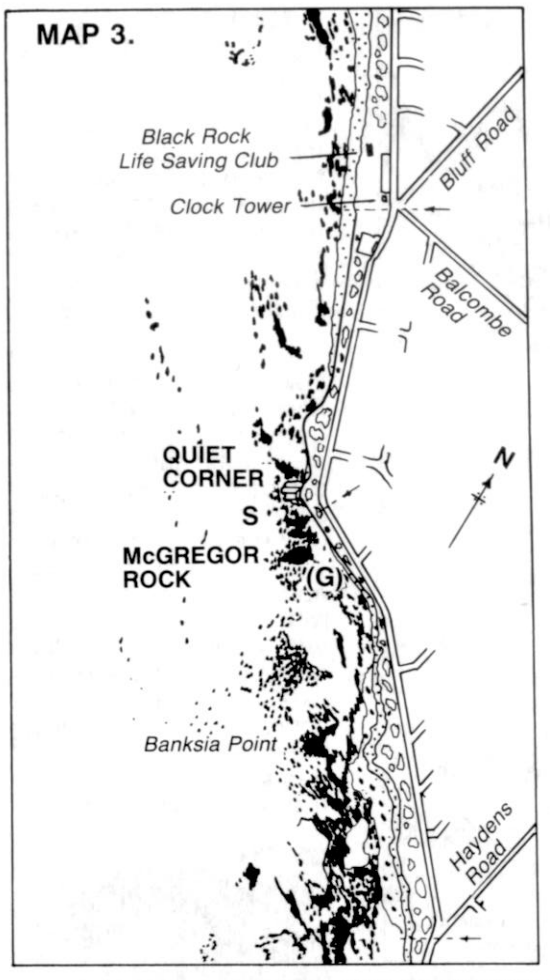


MAP 2. *Red Bluff Cliffs* (D). While not a highly productive area for natural history, the boulder-like outcrops carry unusual underwater reef communities. The rare, exquisite feather duster worm can be seen in this area.

Half Moon Bay (E). Colourful sponges, can be found beneath the jetty, and sea grass meadows lie immediately to the west. The more venturesome will also find rich beds around the Cerberus, the hull of which is heavily encrusted with marine life.

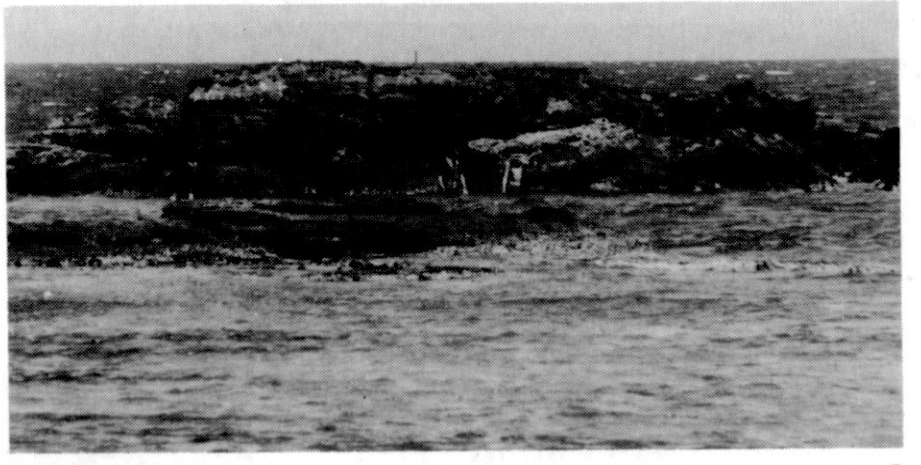
Black Rock Point (F). The snorkelling beginner may start safely from the sandy bottom here (X). On calm days the colourfully adorned vertical outer edge of the shore platform may be seen. Offshore, rocky outcrops abound, and can be easily explored at low tide.

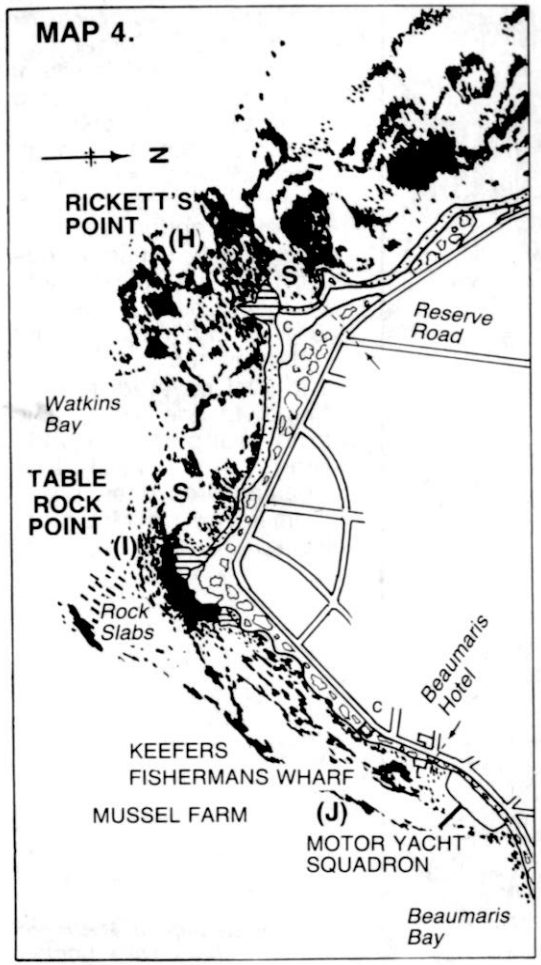
Shore platform at Black Rock Point.



MAP 3. *McGregor Rock — Quiet Corner* (G). Because of the diversity of life surrounding the reef, a dive around McGregor Rock is highly recommended. Sea grass meadows occupy the sandy bottom on the landward side; dense, tall seaweeds grow to the east side; cavernous undercut ledges border the deeper water off the south side, and well-covered reef is found to the west. The area supports a wide range of animal life. Coastal birds often preen themselves on McGregor Rock.

Divers enter at McGregor Rock, Quiet Corner.





MAP 4. *Rickett's Point* (H). This is a favourable location for naturalists because large areas of shallow reef, particularly to the south of the point, are exposed at low tide, and are well covered with plant and animal life. The area is also a favoured location for Silver and Pacific Gulls, Cormorants and Terns.

Table Rock Point (I). At low tide a variety of crabs, anemones, shellfish, fingerling fish, seastars, seaworms and seaweeds can be found here, especially in the pools and crevices. The smooth shore platform gives way abruptly to a craggy underwater garden, supporting and hiding many sea floor animals. Shrimp and blennies, as well as schools of young garfish and whiting are common. The reefs of *Beaumaris Bay* (J) are less rich but still interesting.

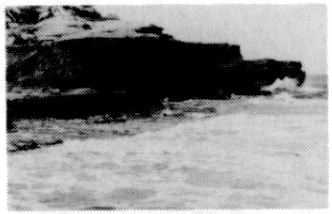
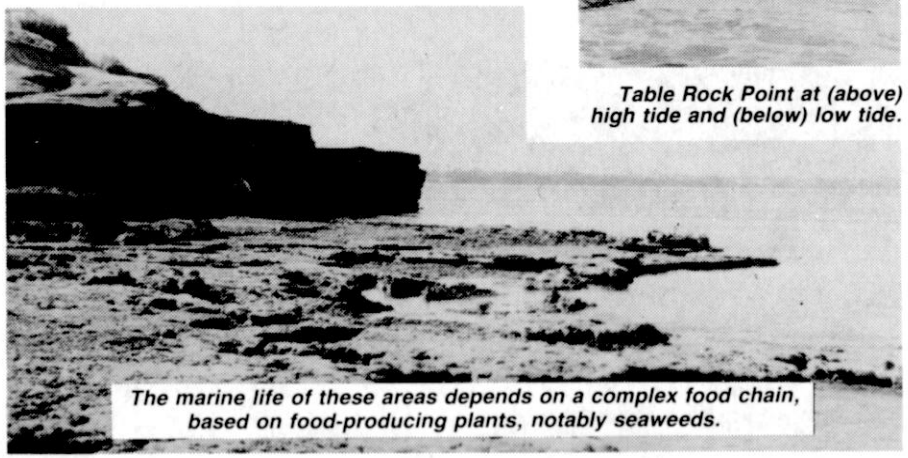


Table Rock Point at (above) high tide and (below) low tide.



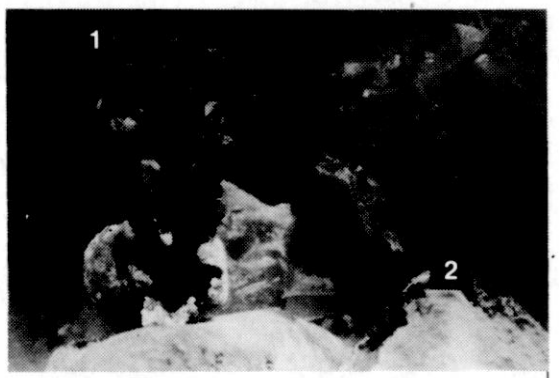
The marine life of these areas depends on a complex food chain, based on food-producing plants, notably seaweeds.

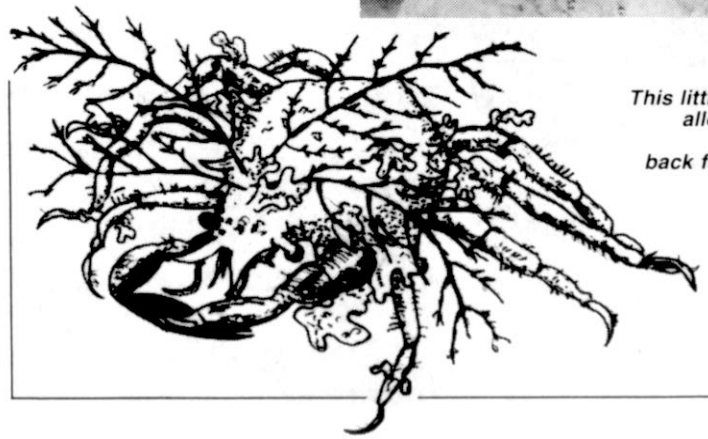
Seaweeds adorn the reefs with an incredibly rich variety of shape and colour. Generally speaking, they are sparser towards Sandringham and more profuse towards Beaumaris, especially around McGregor Rock (Quiet Corner) and off Table Rock Point.

GREEN SEAWEED

1. *Codium* (6-8cm) **left:** Deep green, soft, found just below low tide level.

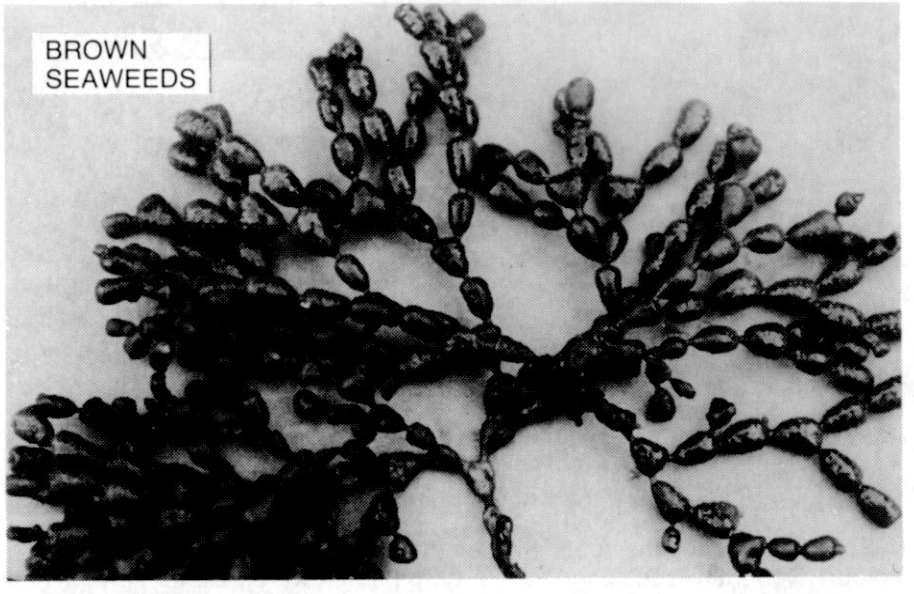
2. Sea Lettuce, *Ulva* species (6-8cm) **right:** Midgreen, sleek feeling, not unlike young garden lettuce. A favorite food of seastars. Common along rock platforms.





This little 'spider crab' allows seaweeds to grow on its back for camouflage.

BROWN SEAWEEDS

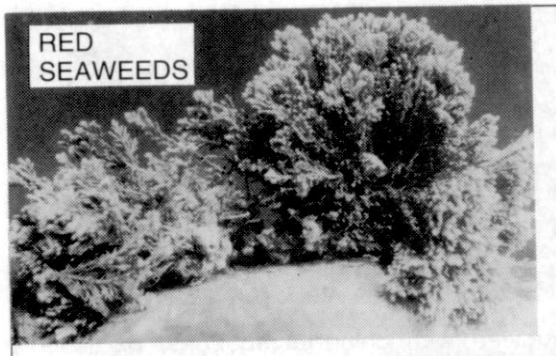


Neptune's Necklace, *Hormosira banksii* with grape-like beads about 1cm across. Named after Sir Joseph Banks of Capt. Cook's expedition.

Left: Kelp, *Ecklonia radiata,* grows up to 40cm in length. This shining leathery, light brown kelp is attached to the rocks by a strong holdfast. Common in waters deeper than 2m.

Below: Bubble Weed, *Colpomenia sinuosa* (3cm). Groups of these light brown bubbles inhabit sheltered places in shallow water; seen here beside two plum sponges.

RED SEAWEEDS



Coralline algae grow to 4-6cm in length. The delicately branched mauve seaweed, **left,** is often nibbled by shellfish. Its lime coating bleaches white when it dies.

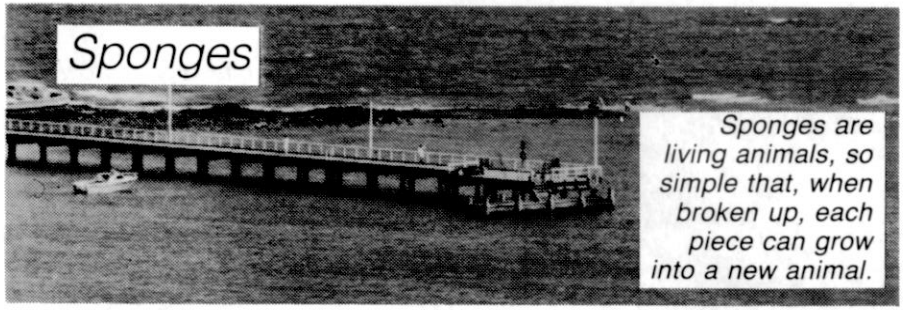
Blue Glow Weed*, **right,** grows to 5-10cm in length, found in shallow water. Brown and ragged, it glows with flashes of blue-green light which disappear when it is taken from the water.

*Identification uncertain.

Icing Seaweed forms a mauve, pink or red covering on rocks and shells. The fine silky threads of these seaweeds grow within an 'icing' of limestone, seen here on the rocks, **left** and **below.**

• *SEAWEED provides food, oxygen and protection for the animals of the reef, and adds colour and beauty. It also absorbs the carbon dioxide produced by plant and animal respiration.*

Sponges

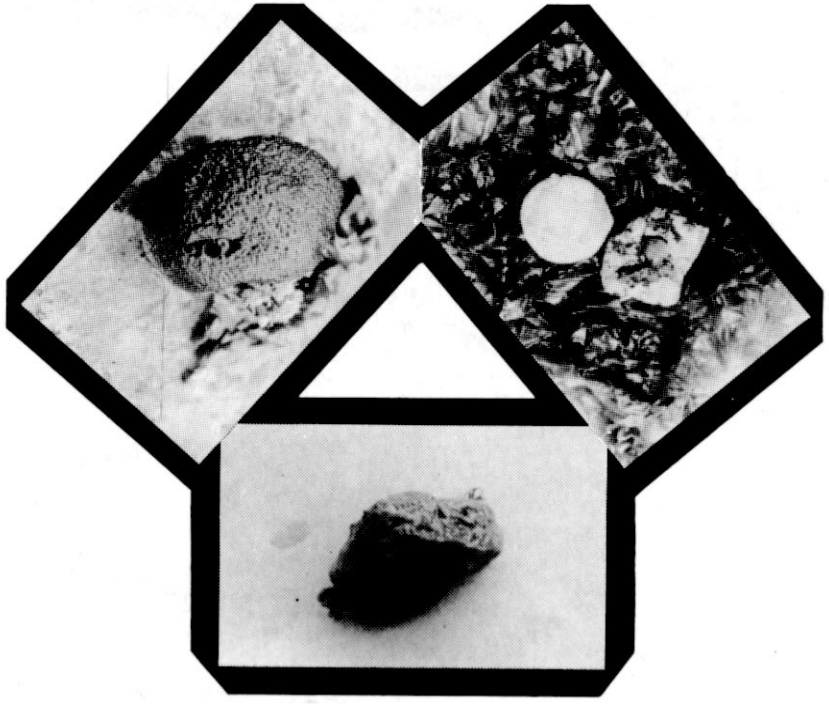


Sponges are living animals, so simple that, when broken up, each piece can grow into a new animal.

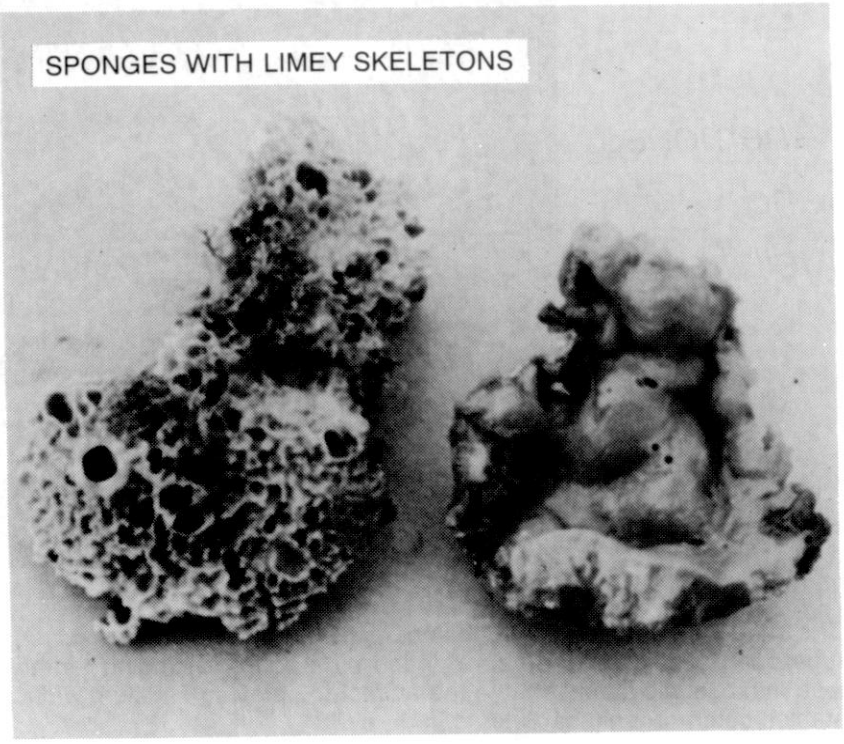
Our shores are richly endowed with colourful sponges, particularly between Beaumaris Bay and Half Moon Bay. Sponges can be bulbous in shape, or may consist of perforated tissue, conforming closely with the shape of the rock they cover. In some species the surface appears smooth and is slimy; some are soft whilst others are leathery. Some have holes which resemble miniature volcanoes. It would not be difficult to discover half a dozen species under the jetty at Half Moon Bay **(above)** and twice that number at Table Rock Point.

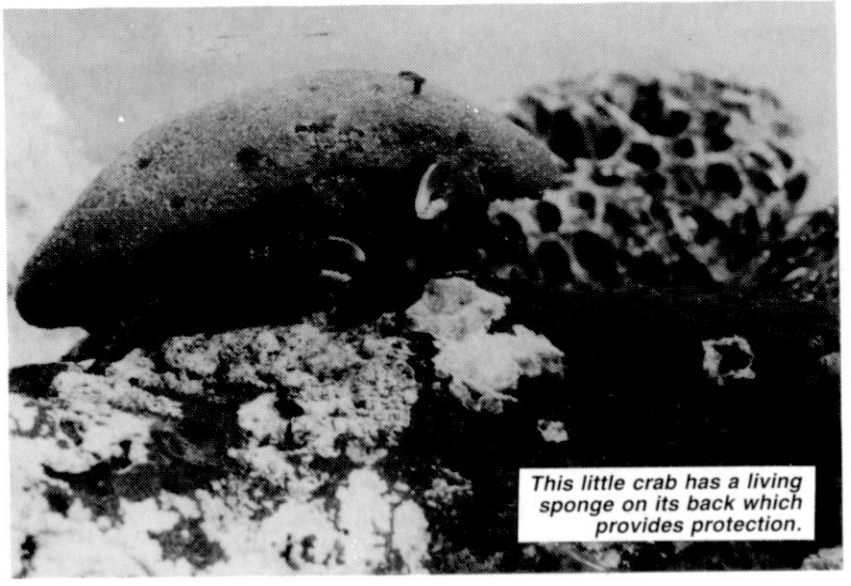
SPONGES WITH SILICA SKELETONS

These sponges are often bulbous masses. Some are soft, others have a tough leathery surface. Little crabs, worms and shellfish may be found sheltering inside them.



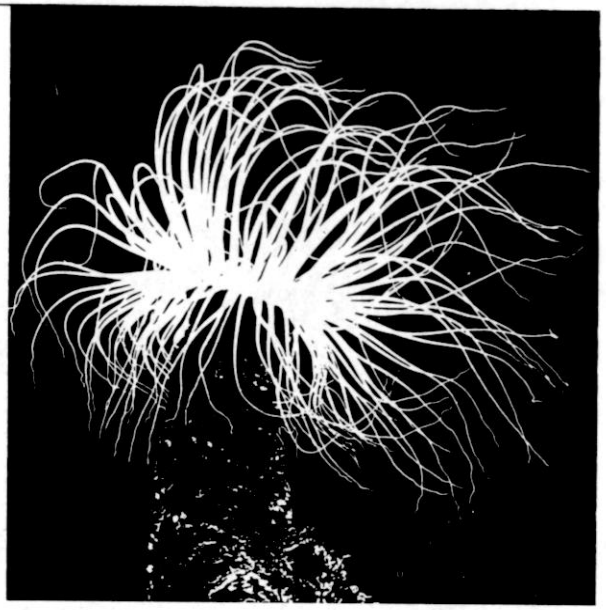
SPONGES WITH LIMEY SKELETONS



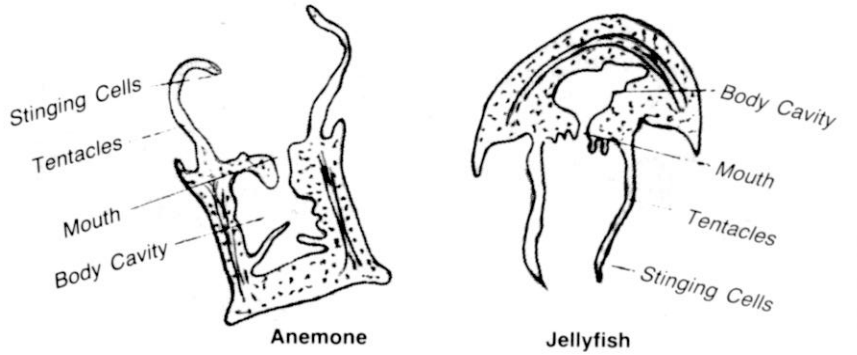


This little crab has a living sponge on its back which provides protection.

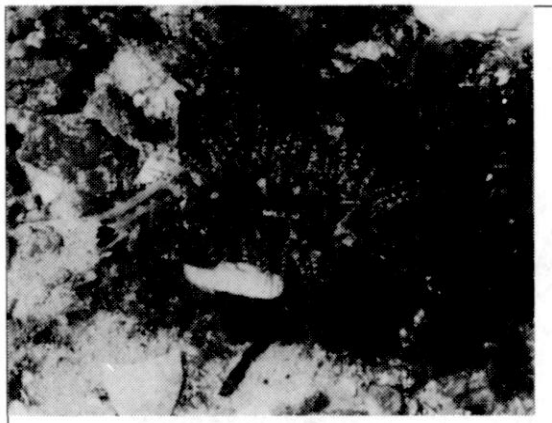
Anemones and Jellyfish



The sedentary anemones and their cousins the mobile jellyfish, consist of a tube open at one end and surrounded by a cone of stinging tentacles. These microscopic stings enable the animal to paralyse tiny fish, while the tentacles catch organic particles drifting by.

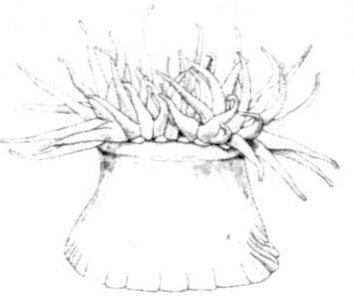


The design of jellyfish and anemones are similar, but one is an inversion of the other.



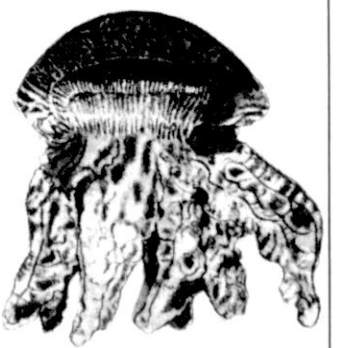
Some anemones, **left,** cover themselves with sand and broken shells, leaving only the tentacles showing. They are often found in sandy gullies between rocks. All local anemones are harmless.

'Blood-red Anemone' *Actinia tenebrosa,* 4-5cm, **right.** This 'sea flower' is distinguished by bright red tentacles extending from a dull red body. The illusion of a plant is quickly dispelled by placing a small piece of shellfish near the tip of one of the tentacles. It will be rapidly consumed. Common in pools and platform crevices at low tide level.

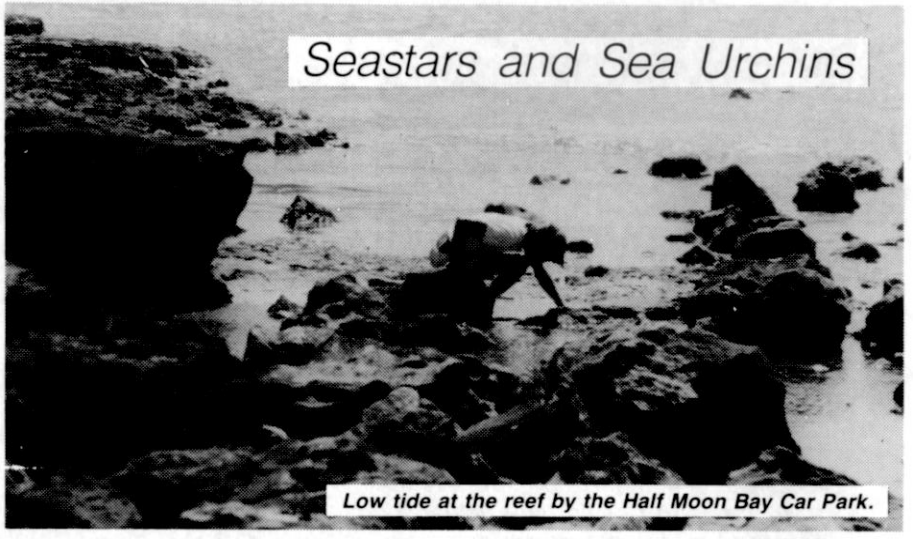


'The Striped Anemone' *Anthothoe albocincta,* **left.** Colonies of small (2cm) smooth, white anemones occupy rock faces and crags just below low tide level. The column, which has orange or green stripes, is topped by many dozens of small white tentacles. When disturbed, the Striped Anemone ejects a sticky white thread through openings in the column wall.

'The Blue-Domed Jellyfish' *Catostylus mosaicus,* **right.** The 'blue-domed' jellyfish consists of a large (20cm) translucent blue, half-spherical dome with 8 multi-noduled, thick tentacles tapering down from its many tiny mouths. These are sticky with mucus, and have stinging cells to catch tiny prey, perhaps copepods. Washed up specimens soon disappear because about 96% of their body weight is water.



Seastars and Sea Urchins

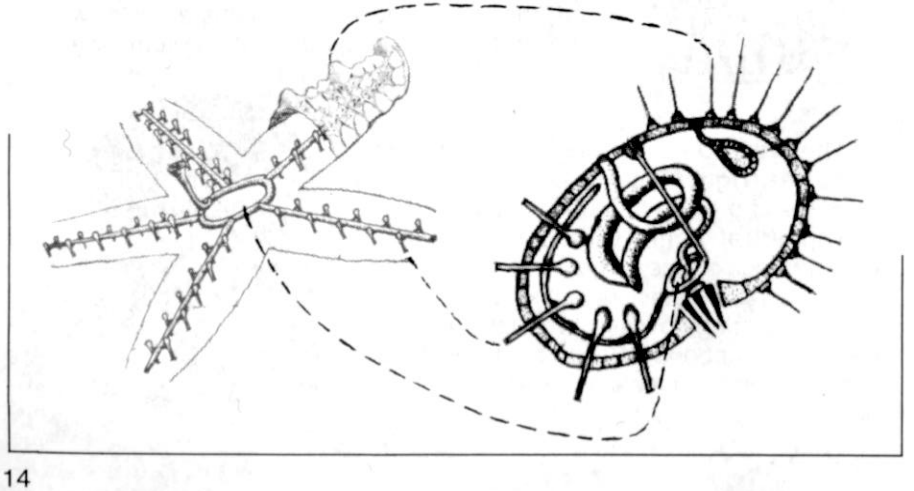


Low tide at the reef by the Half Moon Bay Car Park.

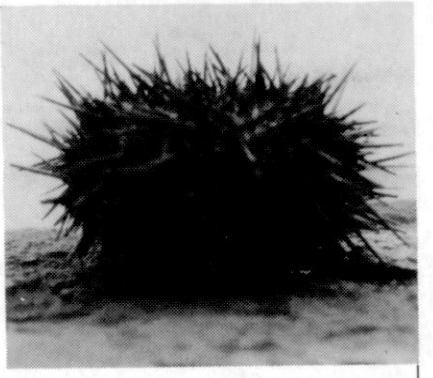
Just below the low tide line are the rough-skinned seastars and their cousins, the sea urchins.

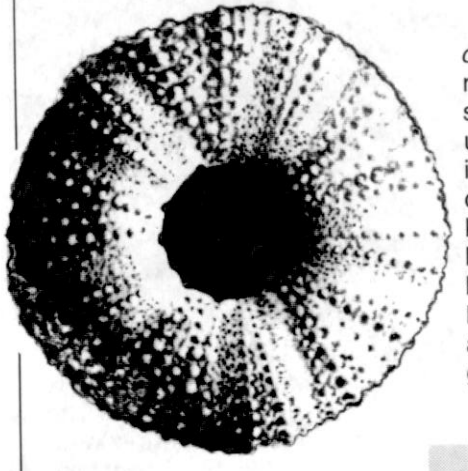
Their body design resembles a spoked wheel. They move on hundreds of tiny tubed feet, operated by water pressure. Seastars have a variable number of arms — usually 5 or 10. If one of these arms, together with a snippet of the centre section, is cut off it will grow into a complete animal. Another curious feature is that the anus is on top and the mouth centrally placed underneath.

In the diagrams below, the similarity of 'stars and 'urchins is indicated by following the dashed lines which link equivalent structures. **Left:** cutaway view of a seastar. **Right:** cross sectional view of a sea urchin.



Sea Urchins look like pin cushions. Their spines will not hurt, provided they are handled gently. If you let one sit on your hand underwater you will see the tube feet extend out beyond the forest of spines. The spines will then start moving in their turrets like anti-aircraft guns. They have five enamel-like teeth which are harmless, and are used to graze seaweeds.

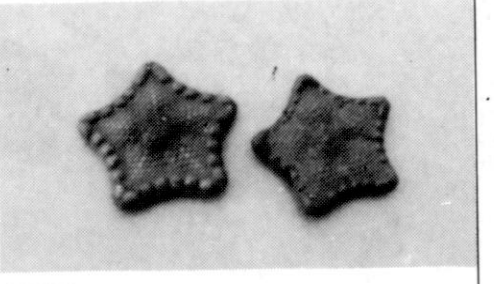


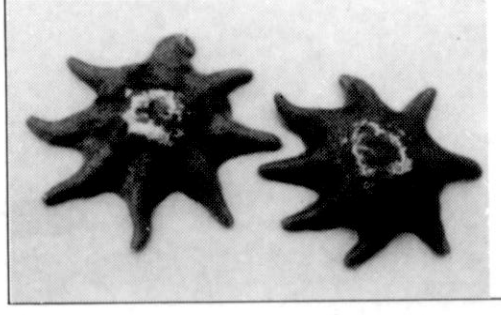


The Purple Sea Urchin, *Heliocidaris erythrogramma* **above,** has rich purple, pink and olive green shades. By day it rests in crevices, under rocks and ledges, or in holes in the rock which exactly fit each occupant. How this happens is not known. The reefs are not of limestone, which can be dissolved, but consist of insoluble sandstone. Perhaps sea urchins wear the rock away with their spines, as they grow. **Left:** sea urchin case.

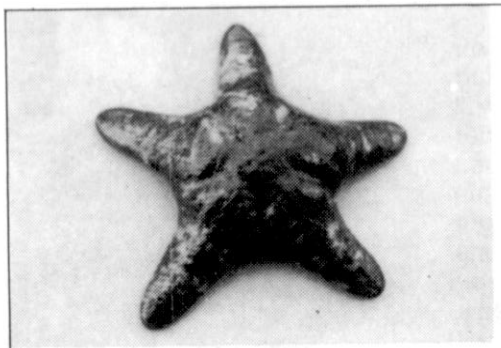
Seastars

Little Biscuit, *Tosia australis* (4cm) **right.** As firm as plywood, usually one bright colour — yellow, orange, red or brown.



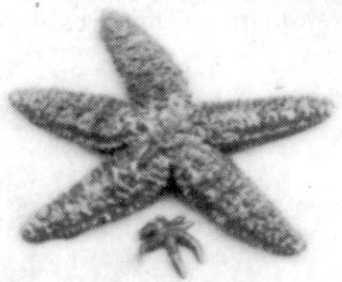


Common Seastar, *Patiriella calcar* (5cm) **left.** This star comes in a variety of colours, each with an individual pattern.



Petricia, *Petricia vermicina* (10cm) **left.** These have become scarce. They are fairly rigid, slippery, deep red in colour and have very tiny tube feet.

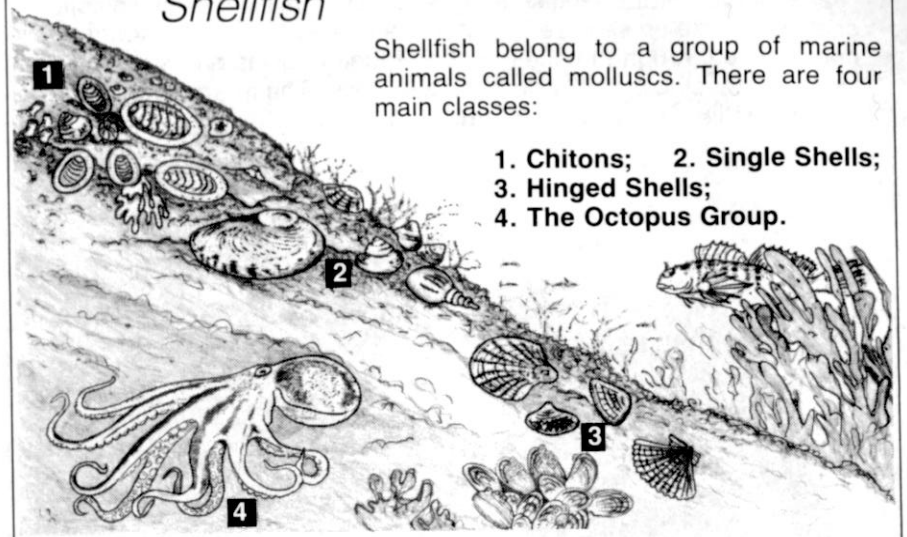
The Eleven-Arm, *Coscinasterias calamaria* (20-25 cm) **right.** Grey-bluish or green; 7 to 11 arms which it uses to open mussels. Like all local seastars, it is harmless.



The Little Seastar, *Allostichaster polyplax,* in this illustration **left,** shows the growth of new arms after reproduction by division into two halves. Stars which lose arms also grow new ones. The larger seastar is *Uniophora granifera* (8cm), commonly a uniform purple or violet.

Seastars may be found on platforms at low tide. Mask and snorkel will be needed to observe sea urchins in crevices and under rock ledges just off shore.

Shellfish



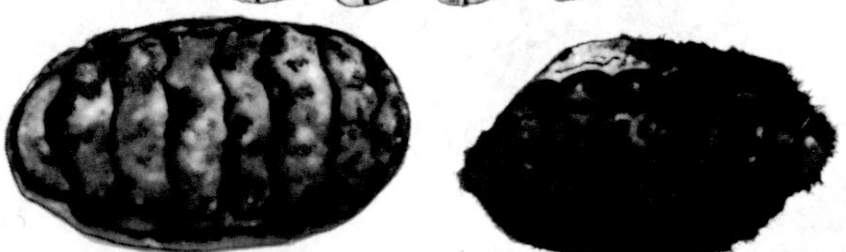
Shellfish belong to a group of marine animals called molluscs. There are four main classes:

1. Chitons; 2. Single Shells;
3. Hinged Shells;
4. The Octopus Group.

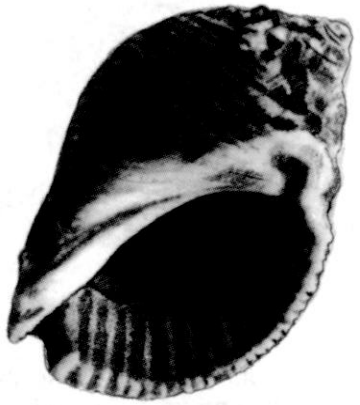
Remember that all shellfish are protected by law, but you may collect the empty shells.

1. CHITONS (pronounced Ky-tons). These animals have a flexible shell made up of eight overlapping plates. They are often coated with a furry seaweed, and are found in sheltered positions such as gutters and under rocks.

The Chiton *Plaxiphora albida* (5cm), **below,** with plates shown individually. This species is common locally and may be found up to high tide level. The girdle is usually dark green with lighter bars, but furry growths of seaweed give it a brownish grey appearance.

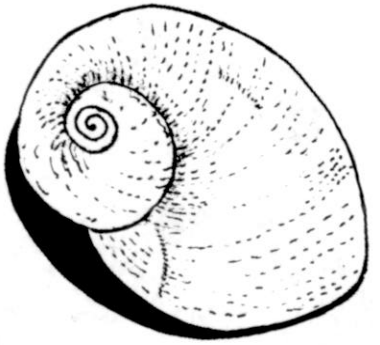


2. SINGLE SHELLS (Gasteropods). Most in this class have a coiled shell and graze on seaweeds, but some use a sand-papery tongue to bore a hole through the shell of one of their cousins and suck out its flesh. Some single shells do not have coils. These are the limpets, which look like a Chinaman's hat.



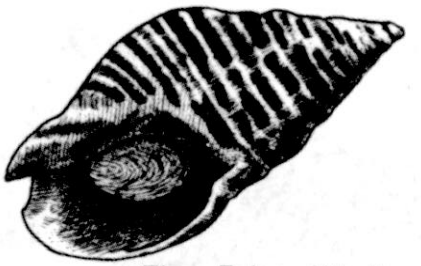
Two views of the Dog Winkle *Thais orbita*. These shells are quite large (6cm), and found below low tide level.

The Green Turban *Turbo undulatus* (4cm).



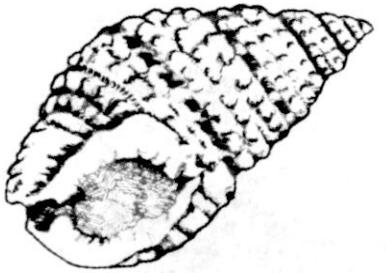
Sand Snail *Polinices* (3cm).

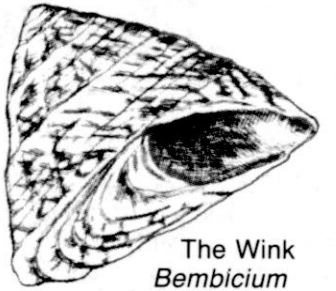
The Whelk-like *Lepsiella vinosa* (2cm).



The False Whelk *Cominella lineolata* (3cm).

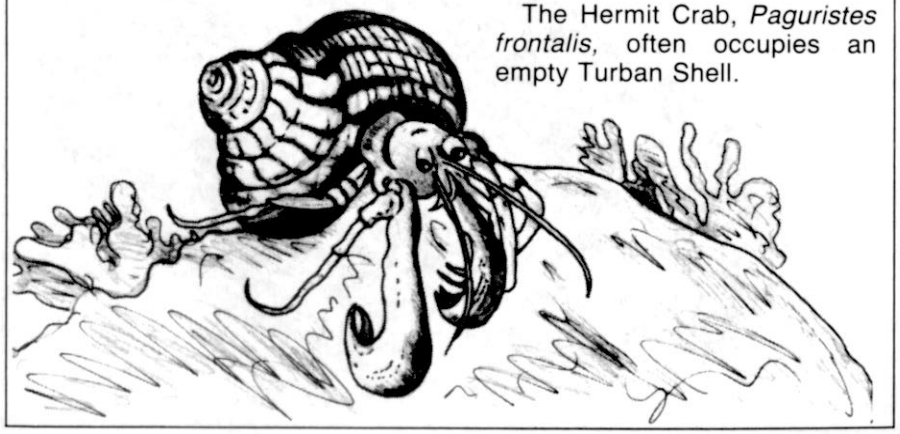
The Dog Whelk *Nassarius pyrrhus* (2cm).



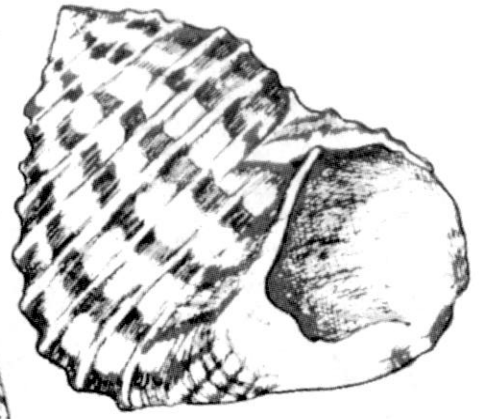


The Wink *Bembicium melanostomum (2cm).*

The Hermit Crab, *Paguristes frontalis,* often occupies an empty Turban Shell.

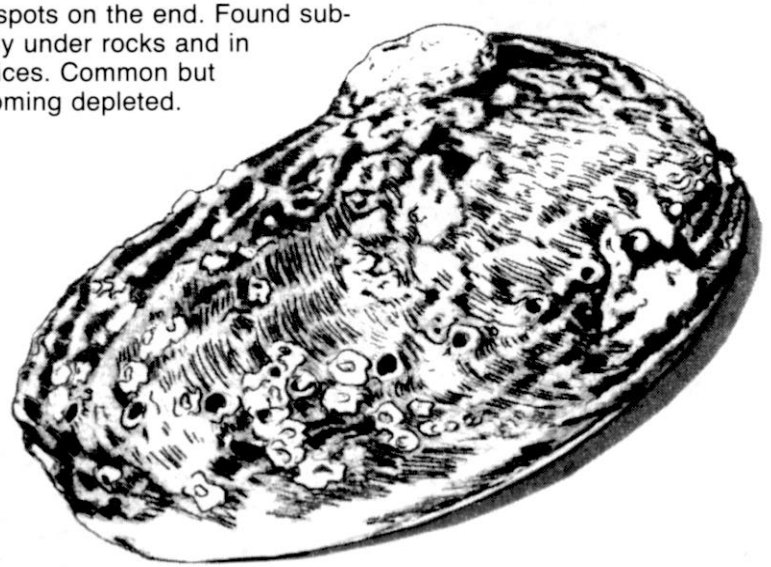


Top Shell *Austrocochlea odontis,* **below** (1.5cm).



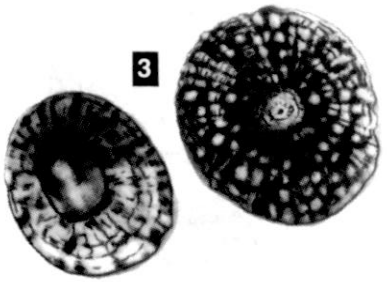
Top Shell *Austrocochlea constricta,* **above** (2cm).

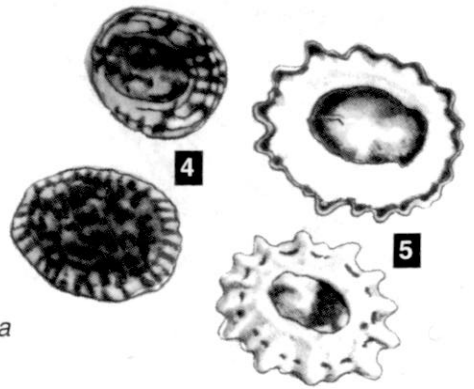
The Black-Lip Abalone, *Haliotis rubra.* This edible shellfish may be collected only if over 10cm in size. It has little black 'feelers' around the base of the shell, each of which has tiny eye-spots on the end. Found sub-tidally under rocks and in crevices. Common but becoming depleted.



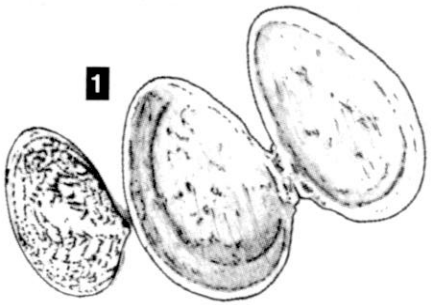
LIMPETS

1. *Collisella granulosa* (2cm).
2. *Siphonaria diemenensis* (2cm) air breathing; not a true limpet.
3. Colourful Limpet *Cellana tramoserica* (4cm).





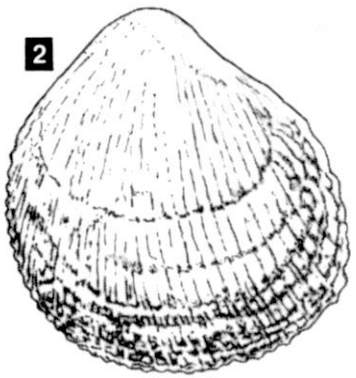
4. *Notoacmea flammea* (3cm).
5. Tall-ribbed Limpet *Patelloida alticostata* (4cm).

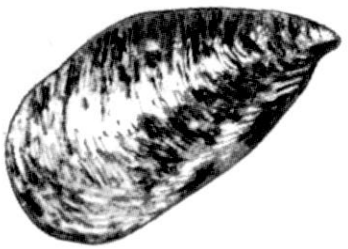


3. HINGED SHELLS (Bivalves), **left** and **below.**

1. *Eumarcia fumigata.* Common in sandy areas. Young shells show prettier markings than the creamy fawn adult (3cm).

2. *Fulvia tenuicostata,* showing fine radiating fluting (5cm).



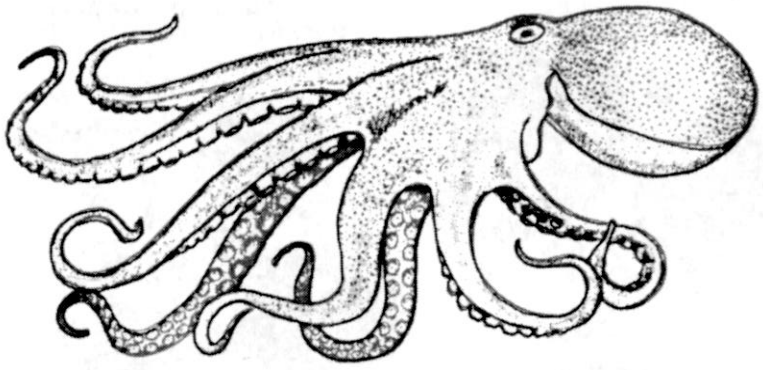


Edible Mussel, *Mytilus planulatus,* (5-10cm). Bluish black (young are brownish), common on jetty piles and rocks.

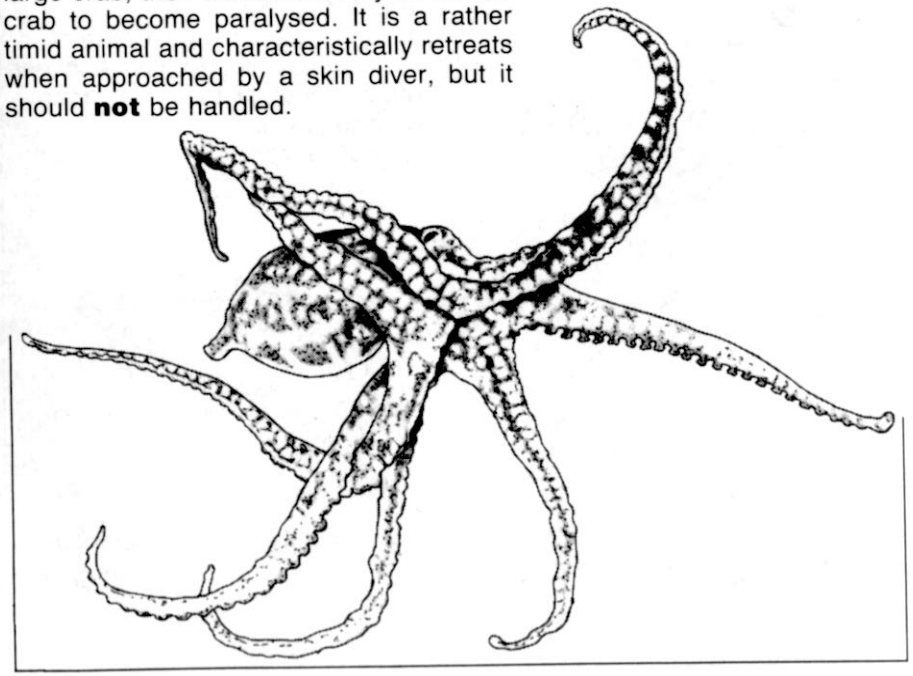
4. OCTOPUS GROUP (Cephalopods)

Two octopi are locally common — the larger *Octopus australis* (20cm) and the smaller Blue-Ringed octopus (10cm). Both are found below low tide in rocky areas.

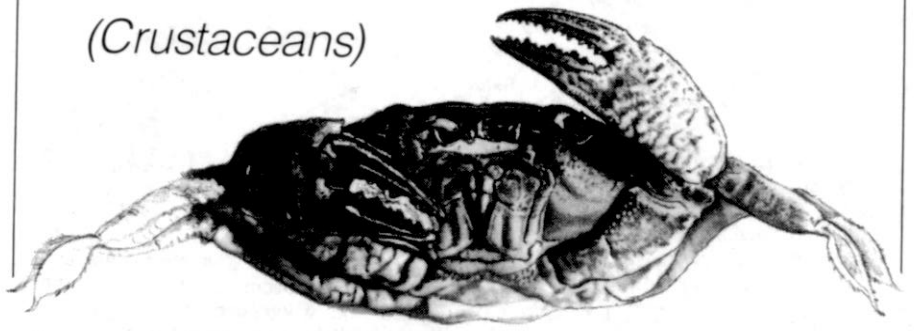
Octopus australis. Brown body with a lighter underside.



The Blue-Ringed Octopus, *Hapalochlaena maculosa* **below,** yellowish or buff coloured, but displaying electric purple-blue rings when distressed. Found under rocks and in shells, bottles and cans. Common from Black Rock to Beaumaris. **WARNING:** Deaths have occurred after handling this animal out of the water. There are however, no reports of it ever having bitten a man **in** the water. The mode of attack is to squirt its poison near a large crab, then wait a little way off for the crab to become paralysed. It is a rather timid animal and characteristically retreats when approached by a skin diver, but it should **not** be handled.

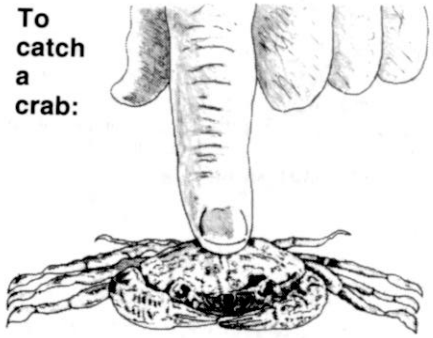


Crabs, Shrimps and Barnacles (Crustaceans)

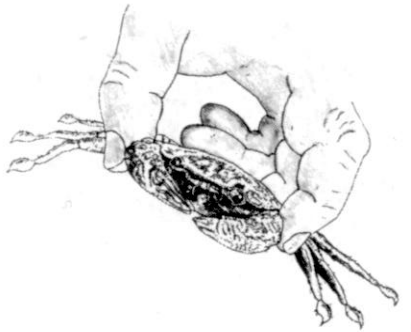


Crustaceans are animals with a hard crust, four antennae and a number of jointed limbs. They include crayfish, lobsters, prawns, sand hoppers and sea slaters, as well as the locally common crabs, shrimps and barnacles.

To catch a crab:



Immobilize.



Grip carapace behind claws.

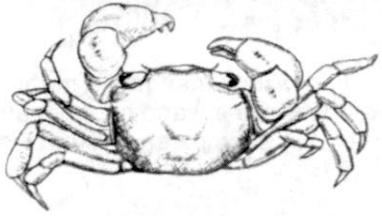
In order to defend themselves, crabs are either naturally camouflaged or acquire living sponges and seaweeds on their limbs and back. Their eyes on stalks enable them to spot predators, and their eight limbs carry them sideways with surprising speed to a rock crevice in which they are virtually impregnable. Should they be attacked, they have two fore-limbs with powerful claws, plus a sturdy body case, *the carapace.* If they are caught by a limb, that limb can amputate itself by muscular action at its base, thereby affording escape. Later a new limb will grow.

Mating rituals, reproductive and moulting stages, feeding and breathing techniques are equally fascinating. Some carry an anemone around on a claw to paralyse fish, and then share the catch.

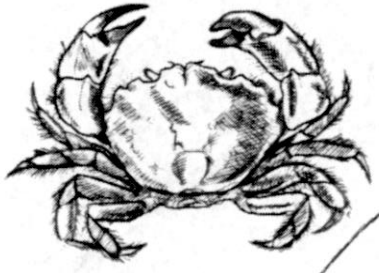
In addition they are important ecologically, as they scavenge and clean the sea bed of dead animals, and themselves provide a large food source (despite their defence mechanisms) for all manner of birds, fish and octopi.

'Small Claws' *Brachynotus spinosus* (1.5cm) **above,** inhabits quiet areas between high and low tide; rock pools are favoured places; green and brown in colour; common.

The European Crab *Carcinus maenas* (5cm) **above,** has now become common here. Inhabits seagrass and weed-covered rock; dark grey green. Note the four distinct notches each side of the eyes.



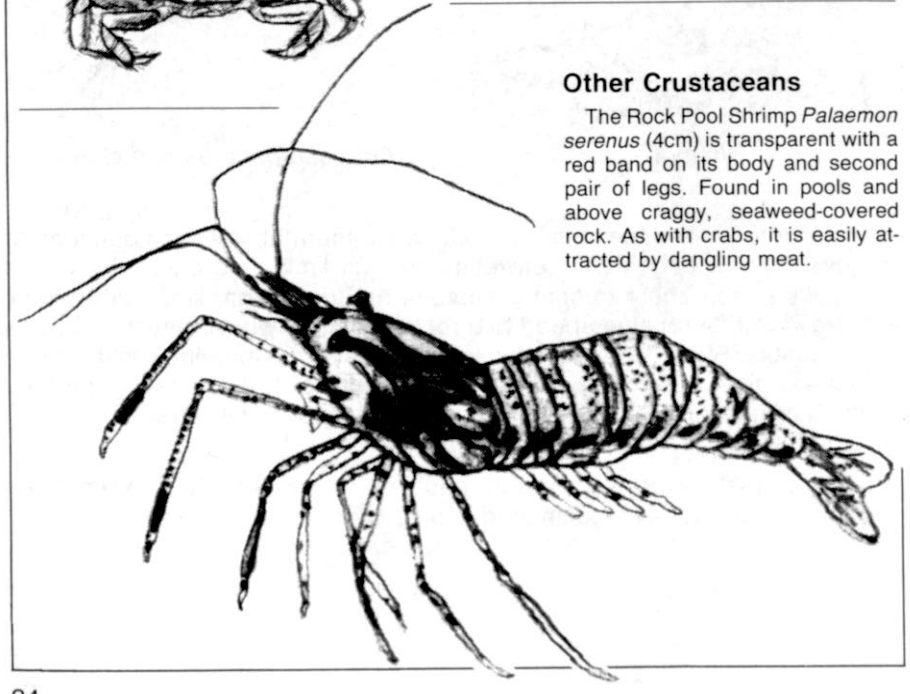
The Hiding Crab *Helograpsus haswellianus* (3cm) **centre left,** slips under rocks, or if above the tide mark burrows in firm mud or debris; one notch only; light brown, dark brown or olive.



The Hairy Crab *Pilumnopeus serratifrons* (2cm) **lower left.** This small crab is easy to miss among the seaweed or under stones. It has a notch between the eyes, stout hair on the legs and short hairs around the body; brownish-purple with black pincers.

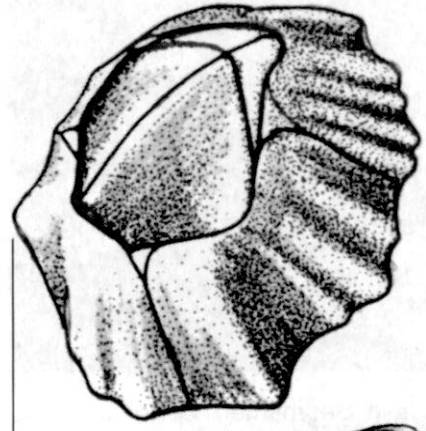
Other Crustaceans

The Rock Pool Shrimp *Palaemon serenus* (4cm) is transparent with a red band on its body and second pair of legs. Found in pools and above craggy, seaweed-covered rock. As with crabs, it is easily attracted by dangling meat.

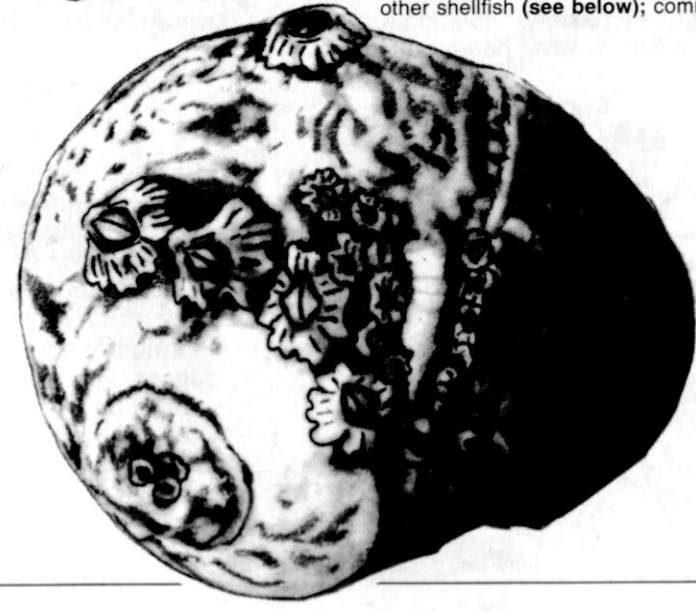


The Hermit Crab *Paguristes frontalis* **below,** is not found anywhere in Port Phillip Bay other than in Sandringham waters. It occupies empty shells — especially Turban Shells (see third photo, page 9). Body length up to 8cm; uses its large left claw to block shell entrance; retreats with a snap when disturbed, reappearing only with much caution.

The Purple Crab *Nectocarcinus integrifrons* (7cm) **above.** Very common under nearshore rocks in water a metre deep or more. Note the swimming paddles on its rear legs. Becomes docile after capture, as do most crabs.



The Barnacle *Elminius modestus* (0.5cm) **left,** looks like a shellfish, but is actually a crab-like animal which lives inside these four armour plates. Note the slits at the top — the plates slide open during feeding. Pale grey, they are found on rocks, pylons, mussels and other shellfish **(see below);** common.

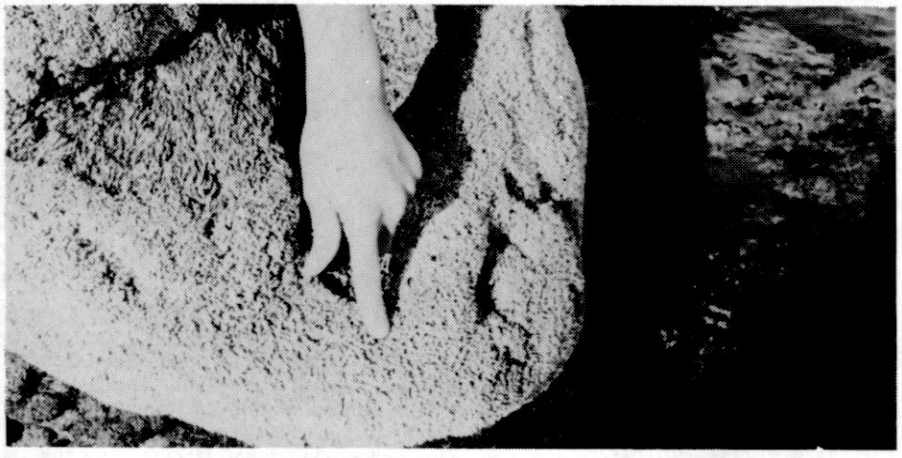


Other Animals

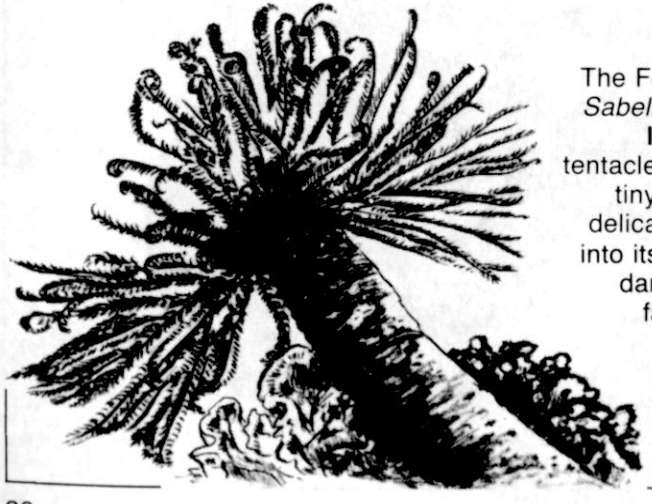
Most common of the other animals likely to be found are the worms and tunicates. Both groups have species which are attractive, and species which are not.

WORMS

Various species of worms can be found in mud and sand, among seaweed when the tide is out, on and under rocks, in sponges, and swimming around in rock pools.



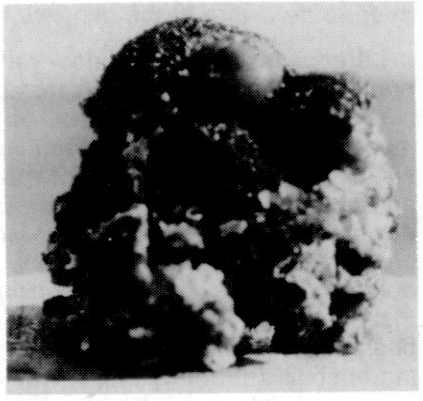
The Tube Worm *Galeolaria* **above,** is a Segmented worm. It builds masses of white limestone tubes on rocks. When covered by the incoming tide their tentacle-covered heads emerge to feed.



The Feather Duster Worm *Sabellastarte indica* (5cm) **left,** with its feathery tentacles extended to catch tiny food particles. This delicate structure retracts into its tube at any sign of danger. Found on rock faces below low tide.

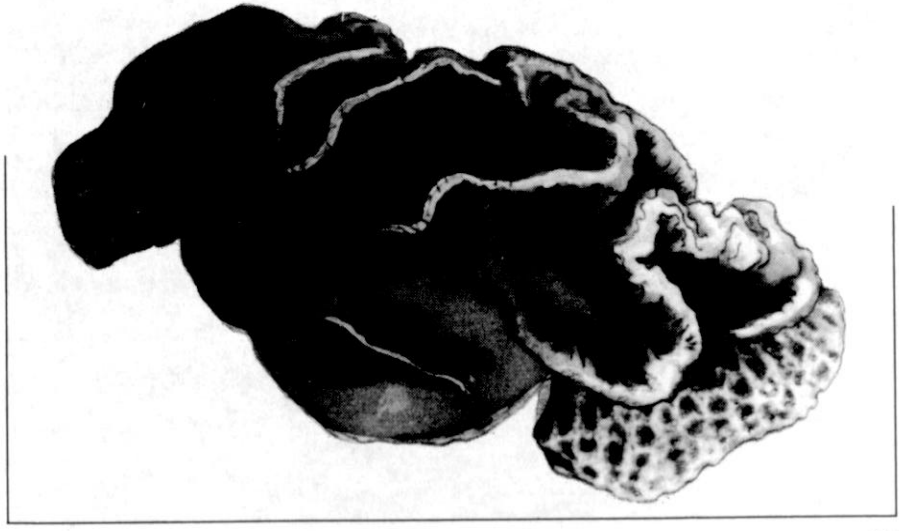
TUNICATES

Tunicates are so called because they have a stout leathery tunic. They encrust rocks and pylons from deep water up to mid-tide level. They are in the same animal group as man *(*Phylum *Chordata).*



Sea squirts or *Cunjevoi* (3-4cm) **right,** are stubby, light brown, and often covered with hairy brown seaweed. They appear in masses and can shoot out a strong jet of water; good fish bait; common.

An Ascidian, **below,** whose body resembles a folded, ribbed wall a few centimetres high; light orange at the base, merging to a striking red on the upper edge; colonies cover 10-30cm. Not very common but easily seen; usually well below low tide level; seen here with a green *soft coral* of temperate waters.



Care of the Marine Environment

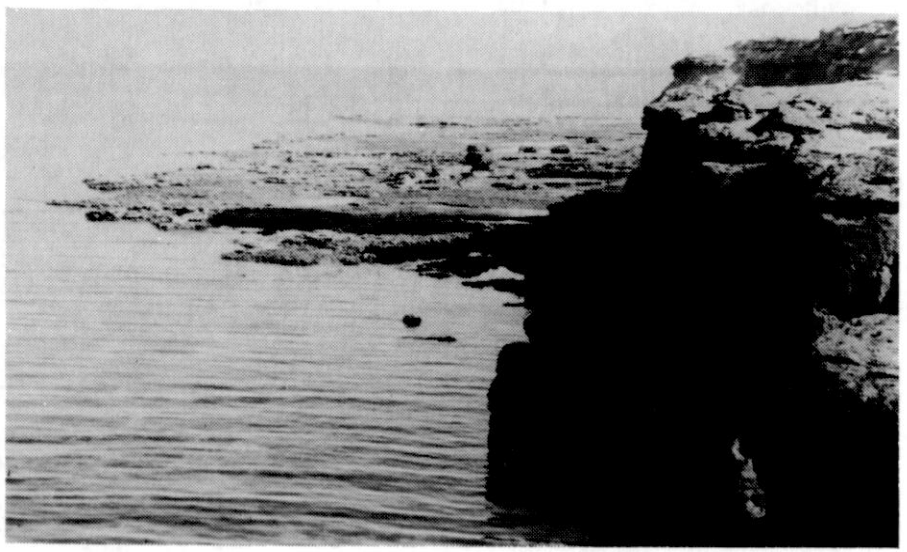
The popularity of mask and snorkel has opened up possibilities for pleasurable exploration, but has also meant that animals which were once relatively safe are now accessible and therefore extremely vulnerable.

We are the fortunate custodians of a rich community of marine life, and need to be aware of the dangers which threaten it.

Litter is as unpleasant under water as anywhere else. Storm water drains bring fine **sediments** which may have a long term detrimental effect on marine organisms, as may **oil or other chemical pollutants.** By far the most obvious threat results from people, who disobey the law by **collecting** shellfish. It is **illegal to collect these live animals** from the shore platform and underneath rocks. Abalones, which a decade ago were abundant, are now becoming scarce. One sees isolated mussels where beds of thousands once flourished, and Sea Urchins only in deeper water, or in more secret holes and ledges. Fewer periwinkles are found on the shore platforms. The Fisheries and Wildlife Division of the Conservation Department has long been aware of these depletions, and now polices such activities as the taking of shellfish. For example, Abalone may only be collected if they are at least 10cm (about 4 inches) in length. So do not take any animals from the reef, and be sure to replace rocks as you found them. There may be tens or hundreds of creatures living on the underside of a rock. Many will die if it is left upturned.

The Sandringham coastline offers a multitude of interest in plant and animal life, which needs our constant care.

Cliff and platform at Table Rock Point.



NOTES