

OF DINNER PLATE, COCHLEAR AND PACMAN CORALLINES

Seven common intertidal encrusting coralline red seaweeds of the Cape Peninsula.

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In the fifth and final part of this series of articles on common intertidal seaweeds of the Cape Peninsula, we look at encrusting coralline algae. These encrusting coralline red seaweeds are widespread in shallow water in all of the world's oceans, where they often cover close to 100% of rocky substrates. Nowhere are they more important than in the ecology of coral reefs. Not only do encrusting coralline algae help cement the reef together, but they make up a considerable portion of the mass of the reef itself and are important primary products and food for certain herbivores.

Local representatives of encrusting coralline algae are equally abundant throughout the intertidal zone of the Cape Peninsula. Even so, they are a poorly known group of seaweeds, readily recognizable as pink, pinkish-grey, red, mauve or purple blotches as though a clumsy

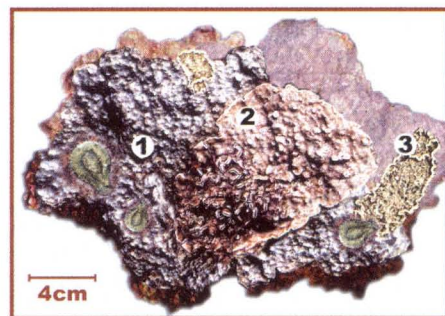
painter's apprentice spilled them all over the rock surfaces, animals and even other seaweeds. Like all red seaweeds, coralline algae possess the phycobilin photosynthetic pigments that give them their red coloration. Unlike fleshy seaweeds though, coralline algae are calcified (they have their cell walls impregnated with lime) so that they are extremely hard. When one considers that our teeth are calci-fied, you can quite easily imagine how hard these seaweeds are.

The common encrusting coralline algae of the Cape Peninsula include *Spongites yendoi*, *S. impar*, *Leptophytum acervatum*, *L. ferox*, *L. foveatum*, *Mesophyllum engelhartii* and *Heydrichia woelkerlingii*.

Encrusting coralline algae are important in the ecology of marine ecosystems where they serve as food and shelter for many marine animals. Despite their hard, calcified nature, they also have a number of economic uses. They are used in medicine in the preparation of dental bone implants. Coralline rubble known as *maerl*



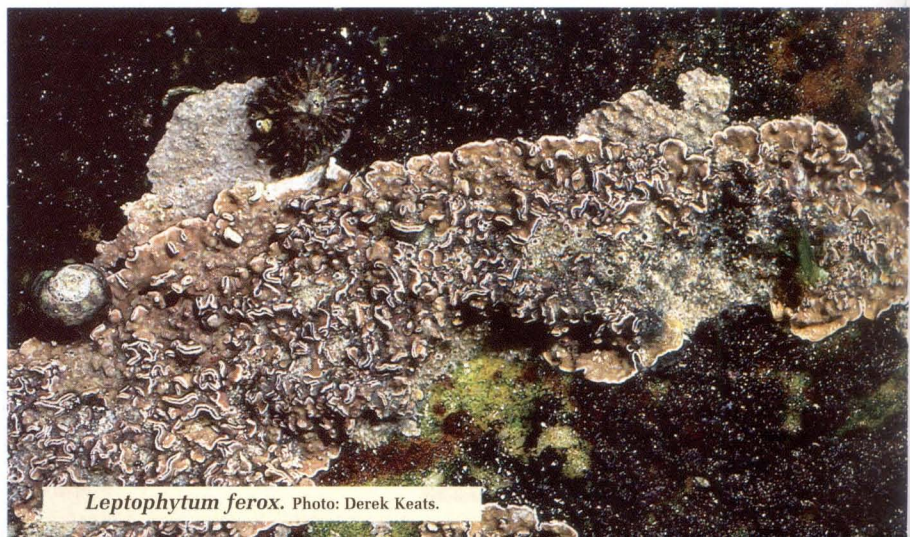
SPONGITES YENDOI (1), is the most abundant encrusting coralline in the intertidal, occurring from the mid intertidal to the immediate subtidal. Its colour varies from grey-pink in well-lit areas to mauve in the shade. Individuals generally fuse together when crusts meet, so that large expanses of the coralline are often thought of as a single seaweed. This coralline is closely associated with the territorial 'gardening limpet' *Scutellastra cochlear*, more commonly known as the pear-shaped limpet, where it forms an extensive covering of limpets' shells and the base of limpet zone. For this reason, it is commonly known as the cochlear coralline. In association with the limpet, *S. yendoi* is relatively thin because the limpet grazes it.



SPONGITES IMPAR (3), closely related to *S. yendoi*, is a thicker, strikingly beige to olive-yellow encrusting coralline. Unlike *S. yendoi*, individuals do not fuse together so that distinct entities are separated by paler margins that are raised and often twisted where individuals have met. This feature has given rise to the name 'scrolled crustose coralline'. The texture of this encrusting coralline is characteristically like that of an elephant's skin. This species is common in areas of strong wave action

and often competes with *S. yendoi* for space in the mid intertidal.

LEPTOPHYTUM FEROX (2) is a pale-pink encrusting coralline commonly known as Pacman (after the arcade game character) because it characteristically produces small margins over its entire thallus that look like pouting lips. This species is a weakly attached coralline and most often it is found growing on top of the thinner individuals of *Spongites yendoi*. In the photo (left), *Leptophytum ferox* is surrounded by the tar crust *Hildenbrandia lecanellierii*, and the short surface margins resembling a pair of pouty lips can be seen.



is used in calcium mineral supplements, as soil pH conditioners, in the filtration of acidic drinking water and even as food additives for livestock. They are also used as 'live rock' in the marine aquarium industry. Coralline rock has even been used as building stones.

The commercial use of seaweeds in South Africa is but a small industry using mostly brown and fleshy red seaweeds. The increasing use of local seaweeds has resulted in a state policy to ensure the sustainable use of these commercial resources. This awareness has greatly increased research on local seaweeds and considerably increased our knowledge of most of the species. It is only with this increased awareness that we've been able to bring to you the knowledge that we have gained regarding this fascinating group of marine organisms. Now that you've come to know the green, brown and red seaweeds in a bit more detail, we hope that you will see them with a positive view and not just that smelly stuff lying on the beach! ♡

Acknowledgements

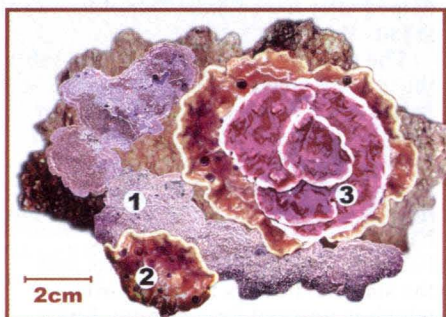
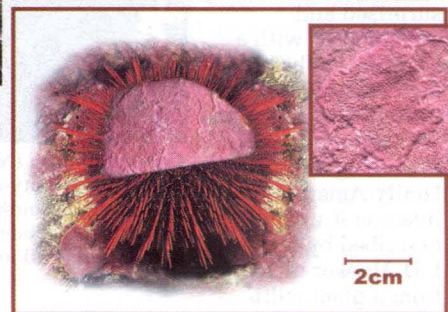
The graphic art for much of the seaweed series was adapted from the artwork by Margo Branch in *The Living shores of southern Africa* by Margo and George Branch.

Information about the authors and how to contact them can be found on page 125 in the September 2000 issue of *Veld & Flora*. Visit their website at www.botany.uwc.ac.za/clines/.



Leptophytum acervatum. Photo: G.W. Maneveldt.

LEPTOPHYTUM ACERVATUM, a thin pale-pink encrusting coralline, is characteristically found on pebbles throughout the intertidal, especially in sheltered tidal pools. The abundance of this coralline is negligible elsewhere within the exposed rocky intertidal - it seems either not to occur on rocky outcrops, or becomes overgrown quite quickly. Due to the relatively higher disturbance regime that pebbles can be exposed to, it appears that thicker encrusting corallines cannot survive on these pebbles; *Leptophytum acervatum* appears to be the opportunistic coralline algae. It often looks spotty as a result of the loss of its reproductive structures that leave minute craters at the surface (clearly seen on the insert of the graphic, right).



Leptophytum foveatum (1), *Mesophyllum engelhartii* (2) and *Heydrichia woelkerlingii* (3) competing for space.

The sublittoral fringe (the very low shore) is dominated to a large extent by the encrusting coralline **MESOPHYLLUM ENGELHARTII** (2). This species is a thin, relatively smooth, chocolate to purple-brown encrusting coralline with distinct, pale yellow to almost white, raised margins. It is able to dominate the sublittoral fringe and

LEPTOPHYTUM FOVEATUM (1) is an extremely thin, rosy encrusting coralline with almost white edges. It is common low down on the rocky shore where it may either form large expanses, or find refuge from the limpet *Scutellastra cochlear*. This coralline is often referred to as the 'imbricate coralline crust' because it produces numerous pale raised margins across its entire thallus that run more or less parallel to the primary margin. These regenerated secondary margins have been shown to prevent, and sometimes even counter, the effects of marginal overgrowth of this thin encrusting coralline by thicker corallines.

immediate subtidal because of its relatively fast growth rate and degree to which its margin is raised - growing over everything in its path. *Mesophyllum engelhartii* is often associated with the colonial worm shell *Dendropoma corallinaceus* that often riddle the coralline with their excavations (the circular excavations shown in the graphic).

By far the most abundant encrusting coralline alga within the immediate subtidal is **HEYDRICHIA WOELKERLINGII** (3). Named after two coralline taxonomists, *H. woelkerlingii* is an extremely thick (up to 20 mm), smooth, porcelain-like encrusting coralline with individuals easily attaining the diameter of a dinner plate. For this reason, it has been referred to as the 'dinner plate coralline' because to local divers, they look just like large glazed plates strewn across the subtidal floor. It is also called the velvety coralline crust because of its smooth velvety appearance, which can be seen clearly in the photo (left).



Heydrichia woelkerlingii. Photo: GW Maneveldt.