

# OF SEA LETTUCES AND GREEN SEA INTESTINES

## Common green intertidal seaweeds of the Cape Peninsula.

by *Gavin W. Maneveldt and René Frans, University of the Western Cape*

Most of us know seaweed as that slippery stuff growing on the rocks or lying strewn along the beach at low tide making the beach smell. But do we really know much about them? Although not entirely true, seaweeds (or marine algae) are generally considered to be plants because they use solar energy to produce carbohydrate food from carbon dioxide and water (photosynthesis). They are simpler than land plants as they have no roots or shoots. Seaweeds absorb nutrients directly from the seawater: and therefore have no need for roots or complex conductive tissue. Some large seaweeds do however have root-like structures called holdfasts and leaf-like fronds that act like shoots. The photosynthetic pigments they possess reflect certain colours of light, producing what appear to be green, brown and red seaweeds, and thus they are divided into three main groups: green, brown and red. In this article we examine some of the green seaweeds that occur in the Cape Peninsula.

**L**ike land plants, green seaweeds contain two forms of chlorophyll which they use to capture light energy during photosynthesis. These chlorophyll pigments reflect green light, giving the seaweed its green colour. The common green seaweeds of the Cape Peninsula are *Ulva* species, *Enteromorpha intestinalis* and *Codium fragile*.

*Ulva* species are aptly called 'sea lettuce'. They may form dense clumps of membranous blades, only two cells thick, that resemble lettuce leaves.

*Enteromorpha intestinalis* too is aptly named the 'green sea intestines' because the seaweed is made up of membranous green tubes (often collapsed) only one cell thick, resembling an intestine. *Ulva* and *Enteromorpha* are fast growing, opportunistic seaweeds that have a wide salt and temperature tolerance. These features enable them to rapidly colonize any part of the rocky seashore if the conditions are right. They are often abundant high up the shore where desiccation stress prevents competition from other seaweeds. Under sheltered conditions, *Ulva* and *Enteromorpha* species may be the only seaweeds to occupy entire high shore tide pools with *Ulva* plants often attaining lengths in excess of half a metre.

*Codium fragile* is a forking, upright, somewhat velvety, spongy seaweed that is able to regulate the movement of its chloroplasts to maximize photosynthesis. This seaweed's thallus is composed of interlocking filaments which end in club-like structures bearing the chloroplasts and the reproductive structures. *Codium fragile* belongs to a group of seaweeds that are unique in that their internal filaments lack cross walls. Thus, instead of being divided into cells, each filament is a giant cell with many nuclei. Can you imagine a 30 cm



Above. The sea lettuce *Ulva* is probably the most common green seaweed on rocky shores of the Cape Peninsula. Right. Sea lettuce *Ulva*. Below left. Green sea intestines, *Enteromorpha intestinalis*. Below right. Green sea intestines, *Enteromorpha intestinalis*, is common in high shore intertidal pools.



high single-celled plant? *Codium fragile* is particularly abundant in intertidal rock pools that are also prone to sand inundation.

The word seaweed has been used indiscriminately, and to call these marine algae 'weeds' is far from the truth. Together with microscopic algae called phytoplankton, seaweeds form the basis of the food chain in the sea and are therefore valuable to humans. Although we can neither smell nor taste them, many ingredients in our foods and household products come from the sea and from seaweeds. *Ulva* as a whole plant has long been eaten in the Far East as a green vegetable in salads. Beta-carotene, a natural pigment derived from green seaweeds, is used as a yellow-orange food colorant in cheese, coffee creamers, egg substitute, margarine, mayonnaise, multi-vitamins, salad-dressing, and many more.

So you can see that green seaweeds are part and parcel of everyday life, and we hope that after this series of articles on the intertidal seaweeds of Cape Town, you will no longer think of them as weeds. ♡

**Coming in the next issue:**  
*'Of dead man's fingers, cord weed and hanging wrack.'*

**About the authors**  
Gavin Maneveldt is a phycology (the study of algae, including seaweeds) student in the Botany Department at the University of the Western Cape. He is presently studying toward a Ph.D. degree in marine botany. René Frans is a graphic art designer for the International Ocean Institute of Southern Africa based at the University of the Western Cape. His areas of expertise are in designing graphic art for multimedia and Internet websites. Gavin (<[www.botany.uwc.ac.za/gavin/](http://www.botany.uwc.ac.za/gavin/)>) and René (<[www.botany.uwc.ac.za/staff/rene/](http://www.botany.uwc.ac.za/staff/rene/)>) are both on the Internet and can be contacted at the following e-mail addresses <[gmaneveldt@uwc.ac.za](mailto:gmaneveldt@uwc.ac.za)> and <[rfrans@uwc.ac.za](mailto:rfrans@uwc.ac.za)>.



Above.  
The velvety, spongy *Codium fragile* lies scattered among the dense red seaweeds.  
Right.  
The upright codium, *Codium fragile*.

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