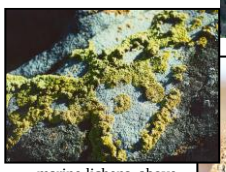
MARINE INDICATOR SPECIES OF REEFS:
II. REEFS OF RESISTANT CRYSTALLINE ROCKS, IN ROUGH, TEMPERATE WATERS
Examples: "The Bluff" (Rosetta Head) Victor Harbor and Port Elliot headlands, S Australia



marine lichens, above the highest tide

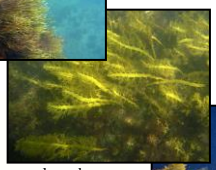
barnacles under water during high tide

black band of blue-green algae and dense red algal mat wet by wave wash

details of red algal turf and denuded brown alga *Cystophora intermedia*

giant barnacles on outlying rocks of roughest parts

dense algal mats of mixed species, just under the lowest tides



large brown algae in shallow water

kelp on rock under low tide

Baldock, R. N. (2015). Marine indicator species of reefs: II. Reefs of resistant crystalline rocks in rough temperate waters. *Algae Revealed*. 3pp. Adelaide: State Herbarium of South Australia. flora.sa.gov.au/algae_revealed

THUMBNAIL SKETCHES OF INDICATOR ORGANISMS — DISTRIBUTED ON THE REEF ACCORDING TO TIDE LEVELS

1a. black lichen, *Lichina*, 2 mm tall; above high tide, occasionally splashed (belongs to the "splash zone")

1b. orange lichen, *Caloplaca*, 4 mm tall; above high tide, occasionally splashed

2. blue snail, *Austrolittorina unifasciata* (to 16 mm tall), clusters in rock crevices and grazes lichens and algal crusts on rocks in the splash zone

3a. barnacles encrust rocks at extreme edge of the high tide level. Above: honeycomb barnacles, *Chamaesipho tasmanica*, each 8 mm across, grow in groups

3b. six-plated barnacle *Chthamalus antennatus* about 12 mm across, may grow high up in the intertidal region

3c. flat, grey, mid-intertidal barnacle, *Tetraclitella purpurescens* to 25 mm across

3d. surf barnacle, *Catomerus polymerus*, 30 mm wide, in the mid intertidal, exposed coasts. (Prior name was *Catophragmus*.)

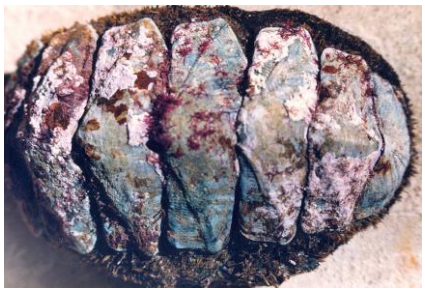
4a. molluscs in mid tide levels. Above: the small, black bi-valve, *Limnoperna pulex* (formerly *Xenostrobus*), to 25 mm long, massed on rocks, being attacked by its predator, a veined rock shell, *Lepsiella venosa*

4b. this large limpet, *Cellana solida*, to 80 mm across, grazes the rocks bare of algae

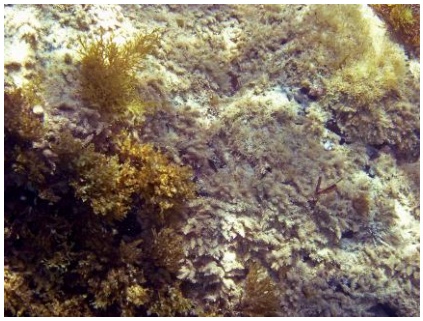
4c. lined siphon shells, *Siphonaria diemenensis*, 25 mm across, are air breathers

5. white tubes of the polychaete worm, *Galeolaria caespitosa*, to 25 mm long, form a band in the mid intertidal region

6. lozenge colonies of microscopic blue-green algae/ bacterium, *Rivularia australis* (previously *R. firma*) to 20 mm across



7. large chiton, *Plaxiphora albida* (previously *Poneroplax*), to 100 mm long, girdle bristly, valves with pink encrusting coralline algae, grazing algal mats



8. algal mats running from the lower intertidal to below low water, often of partly bleached, articulated coralline red algae. Left: detail of the mat-forming articulated red alga *Corallina*

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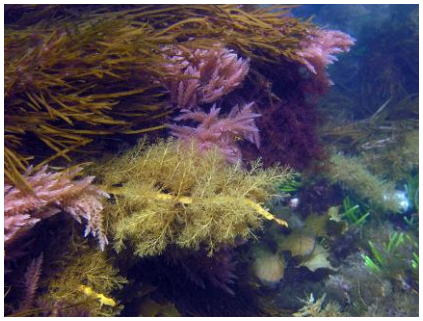
9. encrusting coralline red algae. A variety of species coats rocks, usually underneath algal mats, from the lower intertidal down

10. the brown alga *Cystophora intermedia*,, to 500 mm, grows in wave surge at the lowest level of the tide, losing its tufted branch ends, with only the zig-zag, rounded, denuded axes remaining

11. the hyper-active crab, *Plagusia chabrus*, 75 mm wide, scrambles about the wave-washed lower intertidal region

12. giant surf barnacle, *Megalabalanus nigrescens*, to 50 mm tall, occurs on isolated rocks exposed to pounding surf



13. algal rich community at the reef edge, dominated by large brown, fucoid algae

14. kelp, *Ecklonia radiata*, to 2 m tall, forms a "forest" canopy below low tide mark

15. caves formed beneath boulders and large joints in rocks have a sponge covering and resident fish or crustaceans

16. green algae, *Caulerpa* sp., about 200 mm tall, create a splash of colour amongst the drab brown algae

17. "barrens" sometimes occur where rocks have been stripped of large algae by the sea urchin, *Heliocidaris*, to 100 mm across, seen here in 3 colour variations

SOME LARGE BROWN ALGAE FOUND IN SHALLOW WATER

Common names come from Edgar G.J. (2008) **Australian Marine Life. Second edition**. Sydney, New Holland

western cray weed, *Scytothalia*, to 2 m long

zig-zag cystophora, *Cystophora moniliformis* can grow to 0.5-4.0 m long

three-branched cystophora, *Cystophora monilifera*, to 1 m long

Brown's cystophora, *Cystophora brownii*, about 600 mm long

lacerated sargassum. *Sargassum lacerifolium* has ball-shaped floats and jagged-edged "leaves", broad basally, decreasing in size up the plant

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