Sarcothalia crassifolia
(C Agardh) Edyvane & Womersley

**Techniques needed and shape**

**Classification**

- *Descriptive name*
- *Features*

**Phylum:** Rhodophyta; *Order:* Gigartinales; *Family:* Gigartinaceae

- Plants dark red to red-brown *fading* to yellow-brown, 80-300mm tall, slightly slimy but drying gristly, disintegrating if subsequently wet; of several flat upright main branches (axes) about 10mm wide; side branches 2-5mm wide, *spreading flat-branched, alternating* along axis *edges* (pinnate), dividing again into short, cylindrical or slightly compressed branches, sometimes crowded, tips *rounded*; stubby branches often occur from flat *surfaces* of older axes

**Occurrences**

- Usual Habitat: S coast of Kangaroo I., S Australia to Victoria and E coast Tasmania

- From shallow water to 10m deep on rough coasts

- Cut cross sections and view microscopically to find
  - A wide core (medulla) of *inter-connecting*, branched threads; outer layers (cortex) of *chains* of *small* cells facing outwards
  - In female plants: *large, rounded cells* with dense contents bearing 3-celled branches ending in a thread (trichogyne) (carpogonial branches) in early stages; in mature stages large, spherical female structures (cystocarps) embedded *near tips* of short branches; cystocarps with or without an envelope of threads (involucre), containing *clumps* of carposporangia separated by *large threads*. In the *same plants*, masses of threads producing spermatangia, lying close to cystocarps
  - In sporangial plants: tetransporangia in *deep-seated* masses (sori) on branch ends, sporangia dividing ultimately into a cross (*cruciate*) pattern, escaping through a common pore

**Similar Species**

- Gigartina pinnata has similar branching and texture, but sporangial masses (sori) are *irregular* in outline, *superficial* (in the cortex) and escape by dissolving holes in the surface

**Description in the Benthic Flora**

Part IIIA, pages 292, 295-297

**Details of Anatomy**

1. Part of a cylindrical end branch: inter-connecting threads of the core (medulla, *med*), chains of outward pointing small cells of the outer layer (cortex, *co*) with end cells lying in a gelatinous "rind" (sheath, *sh*) that often fragments during microscope preparation (slide 12456)

2. Part of the cortex of a young female structure with a large supporting cell (*su c*) bearing a 3-celled carpogonial branch ending in a thread (trichogyne, *tr*) (slide 5009)

3. Part of a cylindrical branch: mature female structure (cystocarp, *cys*), clusters of carposporangia (*ca sp*) separated by threads (slide 12460)

4. Deeply embedded, ball-shaped mass (sorus, *so*) of tetrasporangia: enlargement of sporangia in various stages of division into cross shaped (cruciate) divisions (slide 12461)

Cross sections of *Sarcothalia crassifolia* stained blue and viewed microscopically

- Descriptive names are inventions to aid identification, and are not commonly used.

"Algae revealed", R N Baldock, State Herbarium S Australia, May 2009; revised May 2014
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*Sarcothalia crassifolia* (C Agardh) Edyvane & Womersley from S Australia at different magnifications

6, 7. drift plant from Port MacDonnell (A61272); 3 times oppositely branched (tri-pinnate); outgrowths from the surface of the main branches
8. branchlet of a preserved (bleached) specimen, back-lit to emphasize the deeply embedded, dark sporangial masses (sori) (A41108)
9. branch tips of a preserved (bleached) specimen with swollen mature female structures (A41108)
10, 11. shallow water plant, Cape Lannes, Robe, (A37801), bleached yellow-brown: dense and crowded pinnate side branches