Pictured Key to common red algae of southern Australia: *Chondria* and *Husseya* 2nd Ed.

**Red Algae.** With some 800 species, many of which are endemic (found nowhere else), southern Australia is a major centre of diversity for red algae. Classification is based on detailed reproductive features. Many species unrelated reproductively have similar vegetative form or shape, making identification very difficult if the technical systematic literature is used.

**This key** Fortunately, we can use this apparent problem to advantage - common shapes or morphologies will allow you to sort *some* algae directly into the level of Genus or Family and so shortcut a systematic search through intricate and often unavailable reproductive features. The pictured key below uses this *artificial* way of starting the search for a name. It’s designed to get you to a possible major group in a hurry. Then you can proceed to the appropriate fact sheet.

**Scale:** The coin used as a scale is 24 mm or almost 1” wide.

**Artefacts** Microscope images are usually blue stained, or have a black background. Branches of pressed specimens are often flattened, looking un-naturally compressed, preserved specimens yellow or brown

The key on the next pages identifies species of *Chondria* and *Husseya*, 2 genera of the Family: Rhodomelaceae, Tribe: Chondrieae. Some of these are commonly found by reef-walkers, and easily confused with other narrow-branched red algae such as *Laurencia* and *Chondrophycus*.

Other members of Chondrieae have recognisably different shapes:
- *Acanthophora* (Figs 1, 2) has small spines, and is rare. It is described in a separate Fact Sheet in this Website
- *Coeloclonium* (Figs 3, 4) has hollow branches, pinched top and bottom into sections or segments. It is listed with similar red algae in *Algae at a glance: Beadlike Red Algae*.
- *Cladurus elatus* (Figs 5-7) has branches with visible internal partitions like bricks in a wall, and as in other members of the Chondrieae when viewed in cross section, has a well defined central thread ringed by 5 (pericentral) cells (Fig. 6).
Chondria and Husseya have these features:

- plants dark brown-red to yellow in colour, branches cylindrical or slightly compressed, usually firm, but often drying gristy or tough
- 1-several main branches (axes) and shorter side branches arranged radially or in one flat surface
- internal microscopic structure, when seen in cross section, largely of equal-sided cells (parenchyma)
- cross sections of young branches show the cell of a central thread ringed by 5 large cells (pericentals) (Fig. 8). Some surface views of branch tips especially those containing sporangia have thread-like pericentals radiating out from the central filament like spokes of a wheel (Fig. 9).
- inner cells often have wall thickenings seen under the microscope as bright bands or caps on cells (Fig. 10).
- male structures consist of unique, thin, flat discs (Fig. 11.)
- branch tips pointed or blunt. Hair tufts (trichoblasts) at tips are responsible for the growth of the branch. (Fig. 11). In some species these are found in a dimple or pit.

Laurencia

- a cross section near branch tips shows a ring of 4 pericentral cells about each central thread cell in this genus (Fig. 12). This pattern is soon obliterated by the production of numerous additional cells
- in fresh specimens viewed microscopically, plants may have unique, bright cell bodies (corps en cerise) (Fig. 13).

Chondrophycus

- in a cross section, no visible central thread ringed by pericentral cells is apparent (Fig. 14).
- there are no bright cell bodies

Flat male discs are absent in both these genera.

A separate pictured key is provided for Laurencia and Chondrophycus in the Algae Revealed Web pages.
1a. dark brown-red; branches wiry, with flattened ends in pressed specimens; cross sections of mature axes show rings of large cells separated by minute rhizoids; mature female structures (cystocarps) with a prominent stalk, sporangial structures bunched in angles between axes and short side branches. Figs 15-20. Widespread in relatively shallow water. ........................................ Husseya rubra

1b. plants fleshy; rings of large cells absent; cystocarps on short stalks or stalkless; sporangia in short branches .............................................................. 2.

2a. plants grow flat on other algae, attached by many-celled clamps (haptera) from undersides of flat axes. Mature female structures (cystocarps) attached along their edges to neighbouring branches. Figs 21-24. Apparently an E states species. .......................... Chondria infestans

2b. plants upright, sides of cystocarps not touching the branches ................................................................. 3.
3a. main branches (axes) cylindrical ................................................. 4.
3b. axes mostly compressed, at least near the plant base ...................... 15.

4a. smaller branches thin, < 0.25 mm wide ........................................ 5.
4b. smaller branches thicker, > 0.25 mm wide ..................................... 6.

5a. plants grow on sea grasses, algae, or in free, loose tangles; branching radial, tips pointed; mature female structures (cystocarps) with a short beak on the underside; male plates with only a few, scattered rim-cells Figs 25-27. Confined to sheltered estuaries. .............................. Chondria angustissima

5b. plants on rock or other hard surfaces, branching often on one side of axes, tips rounded with slight pits; beaks on cystocarps absent. Possibly an introduced species. Figs 18-21. Found mainly in harbours; possibly introduced. ...................................... Chondria arcuata

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Fig. 25: Chondria angustissima on a seagrass leaf
Fig. 26: Chondria angustissima, pointed tip; cystocarps with a beak (arrowed)
Fig. 27: Chondria angustissima, pointed tip; with hair-tufts (trichoblasts), male plates with discontinuous rim cells
Fig. 28: Chondria arcuata, sparse branching insert: branching, mainly on one side of axes
Fig. 29: Chondria arcuata, cystocarp beak absent
Fig. 30: Chondria arcuata, tip blunt, with a shallow pit (arrowed); tetrasporangia (t sp)
Fig. 31: Chondria arcuata, detail of male plate with continuous rim cells (arrowed)
6a. minute, swollen storage organs at the base of axes or in upper branches. Figs 32-34. A deep-water western species. 
6b. storage organs absent (but encrusting parasites may be present and cause some confusion in identification).

7a. bright cell-wall thickenings complex, forming elaborate patterns within branches; surface cells (epidermis) elongate. Figs 35-37. Known only from Victoria. 
7b. bright cell wall thickenings absent or simple, seen as caps or bands on cells within branches; epidermis cells short or long ………………. 8.

8a. surface cells short, length/breadth ~ 1.5; ultimate branches ~ 1 mm wide; some curved upwards, branching can be dense. Figs 38-41 (next page). A widespread species. 
8b. surface cells longer, length/breadth = 1.5-10; ultimate branches < 1mm wide, not curved ………………. 9.

Fig. 32: Chondria bulbosa. 
Fig. 33: Chondria bulbosa, bright, cell wall thickenings (above) 
Fig. 34: Chondria bulbosa, mature female structures (cystocarps, slightly squashed) at the base of short, pointed side branches bearing hair-tufts (trichoblasts) (right) 
Fig. 35: Chondria hieroglyphica 
Fig. 36: Chondria hieroglyphica, complex, bright, cell wall thickenings 
Fig. 37: Chondria hieroglyphica, elongate surface cells
9a. **rare**; side branches mainly arise from one side of axes; mature female structures (cystocarps) almost stalkless but with a basal swelling. Figs 42, 43. Known only from SE Australia.  

**Chondria subsecunda**

9b. side branches irregular or arise radially  

10a. plants in tangled masses; ends of side branches often curled (like tendrils), tips rounded; cell-wall thickenings often prominent. Figs 44-46. Found in tangled masses in sheltered habitats in tidal pools or tidal flats.  

**Chondria capreolis**

10b. ends of side branches straight; tips pointed or rounded  

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Fig. 38: *Chondria incurva* (left)  
Fig. 39: *Chondria incurva*, short curved branches (above)  
Fig. 40: *Chondria incurva*, swollen ultimate branches, tetrasporangia in bands across branches (above, right)  
Fig. 41: *Chondria incurva*, short surface cells (right)  

Fig. 42: *Chondria subsecunda*, largely one-sided branching  
Fig. 43: *Chondria subsecunda* mature female structure (cystocarp), almost stalkless, with a basal swelling (arrowed)  

Fig. 44: *Chondria capreolis*, prominent cell-wall thickenings of inner cells  
Fig. 45: *Chondria capreolis*, whole plant  
Fig. 46: *Chondria capreolis*, curled end (tendril) of a side branch; sporangial branches (stichidia, *stich*)
11a. ultimate branches coming to a point; cell-wall thickenings (when present) occur both ends of inner cells; mature female structures (cystocarps) with a basal spur; male plates with rim-cells 2-3 cells wide. Figs 47-50. Widespread.  

……………….. Chondria fusifolia

11b. ultimate branches with tips rounded or with shallow pits; cell-wall thickenings on tops of inner cells only; cystocarp spurs present or absent; male plates with rim-cells 1-3 cells wide  

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14a. plants red to dark red, usually *large*, 100–400 mm tall; branching *loose*, cell-wall thickenings *absent*; surface cells 10–15 μm wide, length/breadth ≈ 9–17. Figs 59-61. Widespread in sheltered habitats. 

............................ *Chondria harveyana*

14b. plants red-brown, usually smaller, 30–180 mm tall; cell-wall thickenings if present consist of caps on upper parts of inner cells; surface cells 20–25 μm wide, length/breadth varying from 1.5–7. Figs 62-64. Probably confined to sheltered inlets with strong water flow.

............................ *Chondria succulenta*
15a. plants small, 20-60 mm tall, on seagrasses or rock. Branches cylindrical near tips, compressed below, 0.3-0.8 mm wide, tips coming to a point. Figs 65-68. Possibly a western species only. 

…………………Chondria lanceolata

15b. plants larger, 50-300 mm tall. All branches compressed, 0.8-3.0 mm wide. 

……………………………………. 16.

16a. most tips pointed; main branches 0.8-1.5 mm wide; surface cells angular, 15-35 μm wide. Figs 69-71. Probably rare, a deep water species from SE Australia. 

………………… Chondria folicifera

16b. tips rounded or with a pit; main branches 1.5-3.0 mm wide; surface cells rounded, 20-85 μm wide. Figs 72-74. A widespread, distinctive species from rough-water coasts. 

………………… Chondria incrassata