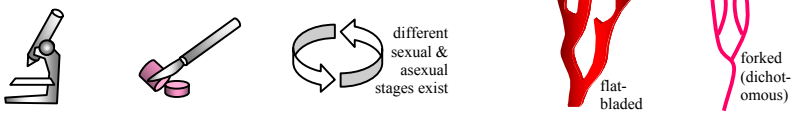
Dichotomaria australis

(Sonder) Huisman

(not found in the Benthic Flora)

45.140

Techniques needed and plant shape



Classification

Phylum: Rhodophyta; Order: Nemaliales; Family: Galaxauraceae, Huisman (Algae of Australia: Nemaliales, 2006) placed *Galaxaura* species with compressed branches into the genus *Dichotomaria*.

Life cycles

the outer layers (cortex) of **sexual plants** (gametophytes) are slightly different to those of the **asexual spore phase** (sporophyte)

Features

plants *limey*, to 160 mm tall, dirty red sometimes drying pale red-green; upper branches *flat*, 2-3 mm wide, lower branches *cylindrical*, to 2 mm wide; branching forked every 7-15 mm

Special requirements

remove lime using dilute acid, then view surfaces and cross sections to find:

in sexual plants

- a wide core (medulla) of thick-walled, branched threads
- inner cortex below the surface of ***2-layers*** of large, *colourless*, rounded cells merging together at their sides
- outermost ***single*** layer of smaller, *coloured* cells, their top surface cut across and flat when viewed in cross section (or cup-shaped if the specimen has distorted on drying) *but* 4-6 sided and compacted in surface view

in asexual (spore) plants (not illustrated below):

- a wide core (medulla) of sparse, branched threads (as in the sexual plant)
- inner cortex below the surface of a ***2-3 layers*** of large, *colourless*, rounded cells that may merge together at their sides
- outermost layer of ***pairs*** of coloured cells, sharing a common stalk, their top surface cut across and flat when seen in cross sectional view, similar to sexual plants

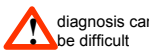
Occurrences

Rottnest I., WA around southern Australia and Tasmania to southern Queensland

Usual Habitat

a relatively shallow species (to 16 m)

Similar Species

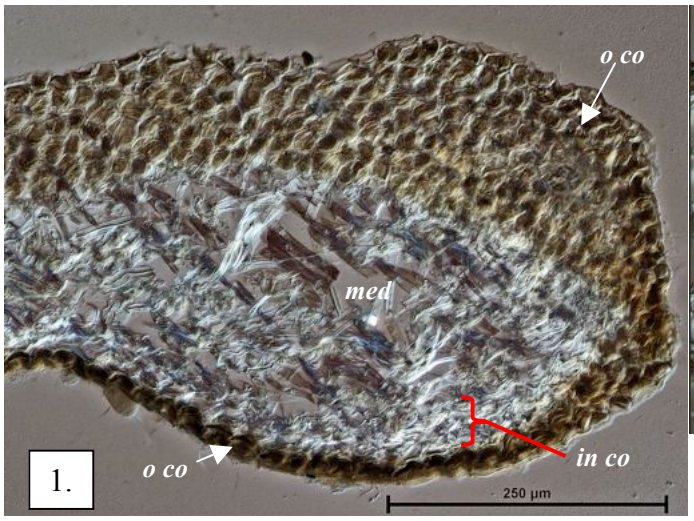


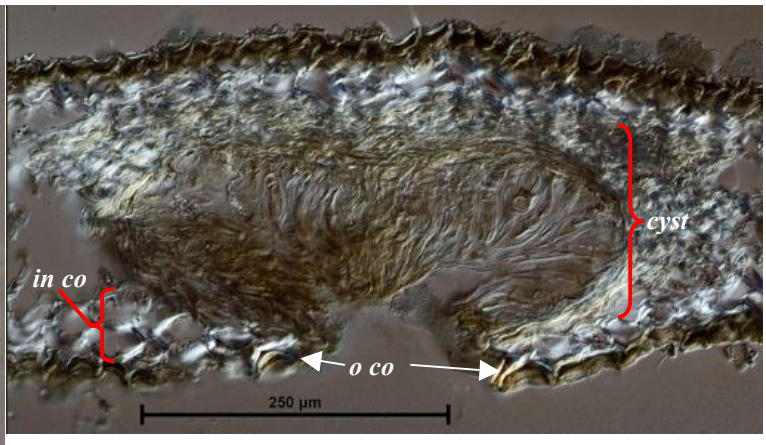
surface cells of *Dichotomaria marginata* (tropical) and *D. spathulata* (temperate) − both forked, flat branched species − bear microscopic ***spine cells in sexual plants***. Surface cells of ***spore plants*** of *D marginata* have ***pointed tips*** but these are ***absent*** in *D. spathulata*

Description in the Benthic Flora

not present

Details of Anatomy



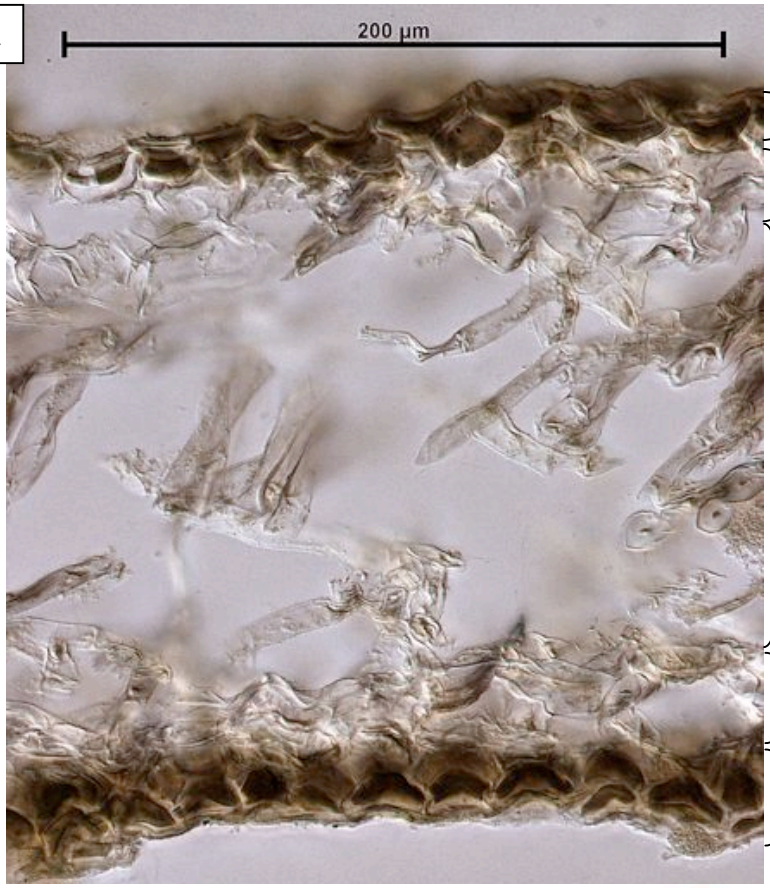


2.

Dichotomaria australis A15963 slide 20683 (unstained)

1. *slanting* cross section of the thicker branch edge with *surface view* of tightly-packed 3-6 sided coloured cells; *cross sectional view* of the wide core (medulla, *med)* of thick-walled threads; layer below the surface (inner cortex, *in co*) of colourless cells; coloured outermost layer (outer cortex, *o co*) of cells looking cup-shaped in cross sectional view (see also Fig. 3)
2. cross section of a mature female structure (cystocarp, *cyst*); detail of the inner cortex (*in co*) of 2 layers of colourless cells; outer cortex (*o co*) of a single layer of cup-shaped coloured cells *without* accompanying spine cells found in the similar species, *D. spathulata*

3.



3. *Dichotomaria australis*
A15963 slide 20683, cross section (unstained):

- outer layers (cortex) consisting of a *single* outermost layer (outer cortex, *o co*) of closely packed flat-topped, *coloured* cells and a *double* inner layer (*in co*) of larger, *colourless* cells tending to merge together
- core (medulla) of thick-walled threads

Dichotomaria australis (Sonder) Huisman A52745
spore plant from Waterloo Bay, West Coast SA, 2-5 m deep