

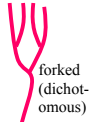
# *Dichotomaria australis*

(Sonder) Huisman  
(not found in the Benthic Flora)

45.140



different sexual & asexual stages exist



## 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

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

## Usual Habitat

a relatively shallow species (to 16 m)

## Similar Species

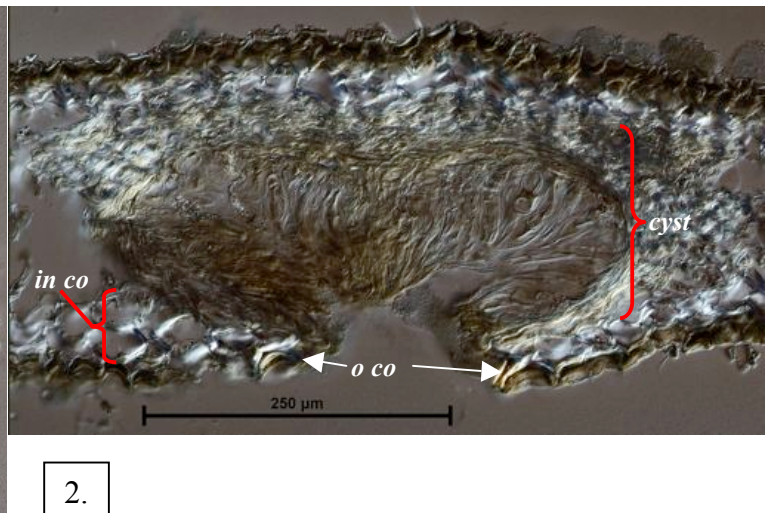
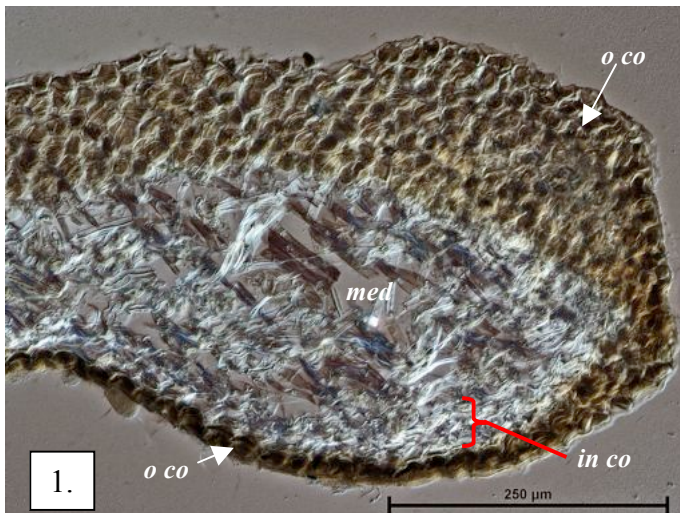


diagnosis can be difficult

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



*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.

200 μm



o co  
in co  
med  
in co  
o co

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