Techniques needed and plant shape

**Classification**

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

**Descriptive name**

cylindrical galaxaura

**Life cycles**

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

**Features**

plants limey, 50-140 mm tall, red to chalky grey-red; branches cylindrical, but flattening when drying, 3-5 mm wide, in elongate or egg-shaped sections or segments rounded at both ends, branching forked

**Special requirements**

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

in sexual plants (images not available below):

- a wide core (medulla) of sparse, branched threads
- inner cortex below the surface of 2-layers of large, colourless, rounded cells that may merge together at their sides
- outermost layer of a single layer of smaller, coloured cells, their top surface cut across and flat when viewed in cross section

in asexual (spore) plants (illustrated below):

- a wide core (medulla) of sparse, branched threads (as in the sexual plant)
- inner cortex below the surface of a single-layer 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**

tropics in general. In Australia, from as far south as Albany WA, around northern Australia to Lake Macquarie NSW

**Usual Habitat**

a relatively deep species (to 20 m)

**Similar Species**

*Amphiroa anceps* is jointed and chalky, but anatomically and reproducitively very different

**Description in the Benthic Flora**

Part IIIA, pages 109, 112, 113

**Details of Anatomy**

1, 2. **spore plant** of *Dichotomaria* (*Galaxaura*) *obtusata* A56644 slide 9151:

- surface view of a tissue squash showing tightly-packed, 5-6-sided, coloured surface cells (outer cortex, *o co*) and larger, rounded colourless cells beneath (inner cortex, *in co*)
- cross section showing a core (medulla, *med*) of sparse, branched threads (*med fil*) mostly lost in the preparation of the slide; 2-layered outer part (cortex) consisting of a single layer of larger, inner, colourless cells (*in co*) and outer layer (*o co*) of smaller, coloured cells

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1Name used by Edgar, G (2008) in Australian Marine Life (2nd ed.).

“Algae Revealed” R N Baldock, State Herbarium SA, June 2013
**3. Asexual plant of** *Dichotomaria obtusata* A56644 slide 9151, cross section of outer layers (cortex):
- single inner layer *(in co)* of large, colourless cells merging along their sides
- outer layer *(o co)* of pairs of coloured cells, cut flat on their upper surfaces, *in pairs* *(A1, A2, etc)*, each pair sharing a common stalk cell *(st)*

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*Dichotomaria obtusata* (J Ellis & Solander) Lamouroux A33338 from Rottnest I, WA.
Cylindrical segments have collapsed and flattened in this pressed specimen.

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1. Name used by Edgar, G (2008) in Australian Marine Life (2nd ed.).
2. “Algae Revealed” R N Baldock, State Herbarium SA, June 2013