



MACRO
PLANT



Techniques needed and shape

Classification

Phylum: Rhodophyta; Order: Nemiales; Family: Liagoraceae

*Descriptive name

variable worm weed

Features

1. red-brown, 30 – 200mm tall, irregularly branched, *variable in shape*
2. branches cylindrical, slimy, 1-2mm wide
3. branching slender and open in calm water; dense in intermediate forms; main branches (axes) narrowly conical in outline in rough water forms

Occurrences

New Zealand. In southern Australia, near Perth W Australia to southern Queensland on rock or sea grasses in the lower intertidal to shallow water

Usual Habitat

Similar Species

Helminthocladia spp, but outer threads end in larger, skittle-shaped tips in those species

Description in the Benthic Flora

Part IIIA, pages 79, 83 - 84

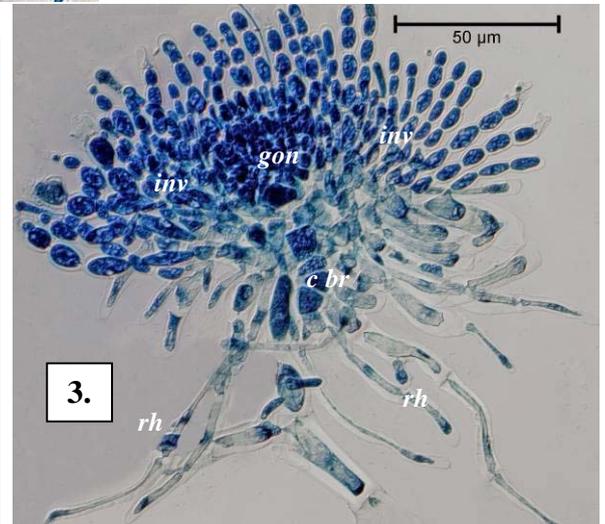
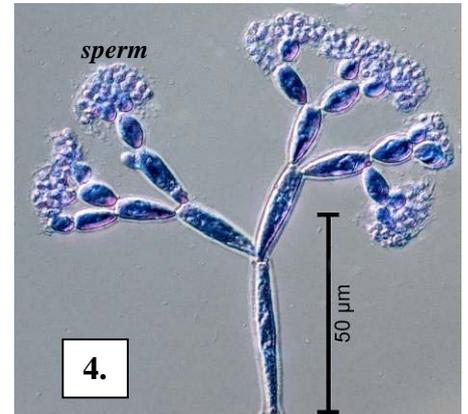
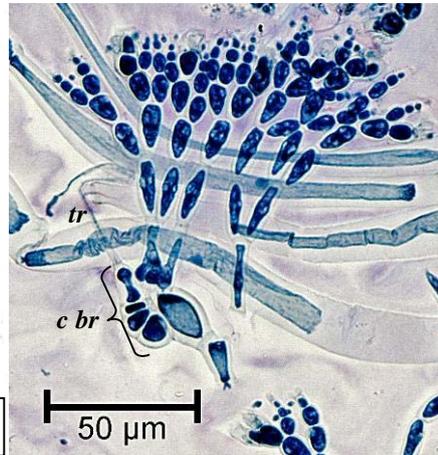
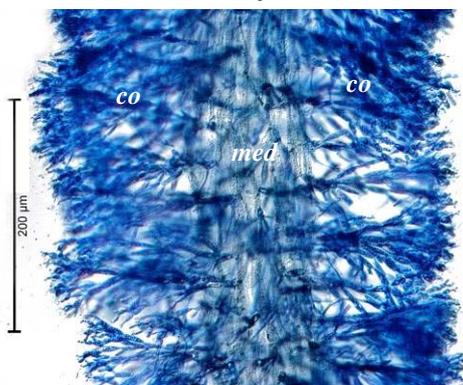
Special Requirements

view a tissue squash microscopically to find:-

1. core (medulla) **compact**, of colourless, slender threads running lengthwise, (mixed with thinner rhizoidal threads when mature)
2. outer layers (cortex) of tufts of slightly curved threads of **egg-shaped** cells, **forked** mainly basally, tip cells **small, ball-shaped**
3. in the cortex of female plants, **dense** masses, the products of fertilisation, of a bunch of fertile cells ending in carposporangia, wrapped in sterile threads (involucre) with **short**, rhizoids at the base
4. early female stages with **curved**, 4-celled chains of cells (carpogonial branches) attached near a fork of lower cortical branches, tip cell **dumbbell shaped** () ending in a hair-like trichogyne
5. in the cortex of male plants, open, **fan-like** branches with dust-like spermatangial **caps** on tip cells

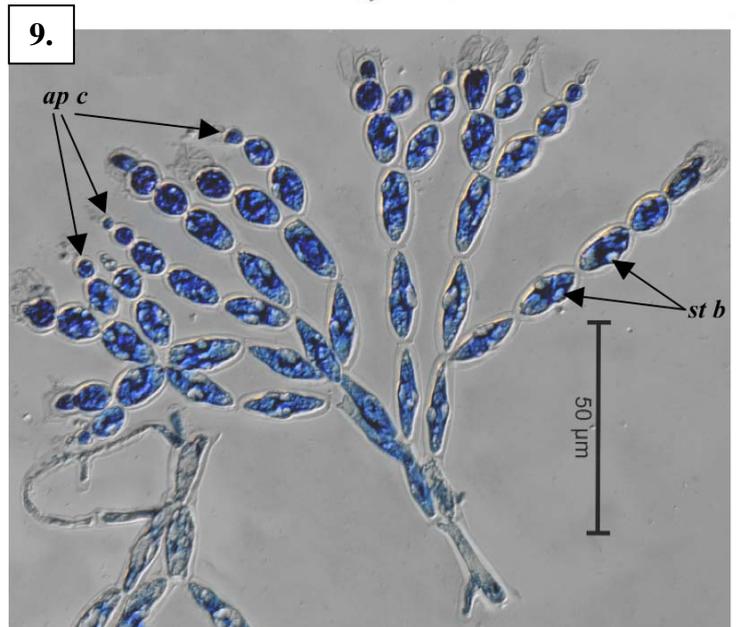
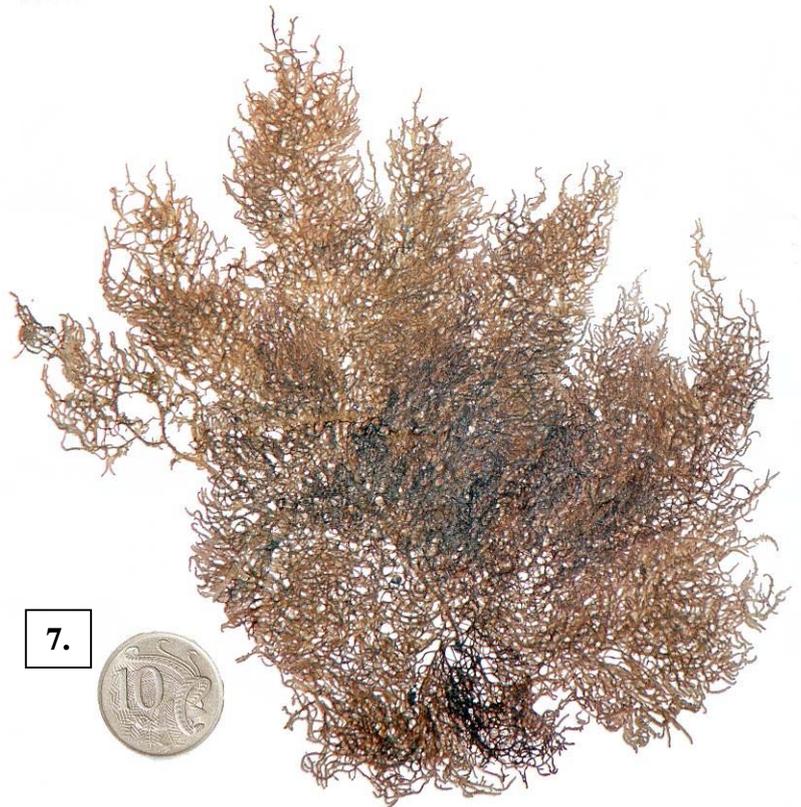
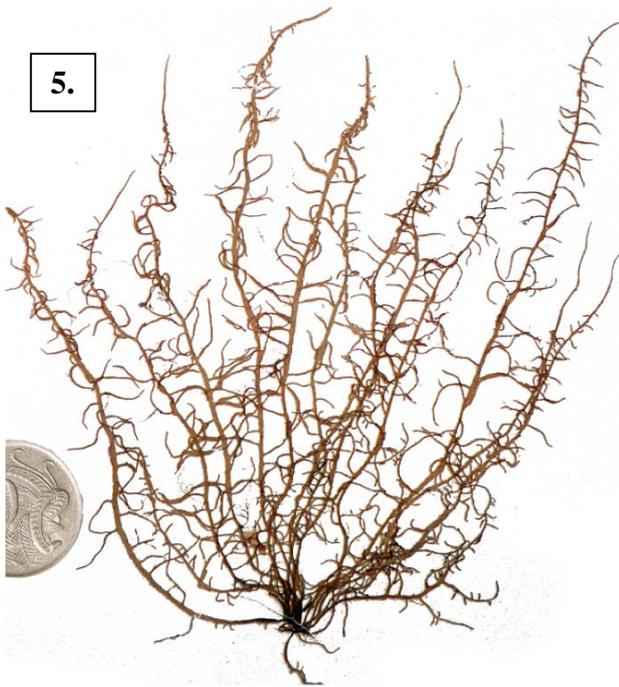


Details of Anatomy



Tissue squashes of *Helminthora australis* stained blue and viewed microscopically

1. side view: compact core of threads (medulla, *med*) and outer layers (cortex, *co*) of tufts of forked branches (A68698 slide 19308)
2. cortical tuft with young female stage: 4-celled carpogonial branch (*c br*) on the side of a swollen lower cortical cell, ending in a dumbbell-shaped tip cell and long thin trichogyne (*tr*) (A6141 slide 0211)
3. mature female structure after fertilisation extracted from the cortex: developing fertile cells (gonimoblast, *gon*), remnant carpogonial branch (*c br*), sterile threads (involucre, *inv*) similar in shape to surrounding cortical threads and **short** rhizoids (*rh*) growing into the medulla (A6141 slide 0211)
4. male structures extracted from the cortex: caps of dot-like spermatangia (*sperm*) on tip cells (A28984 slide 0448)



5-8. Variation in form of *Helminthora australis* J Agardh ex Levring

5. slender, open-branched, calm water form from Pennington Bay, Kangaroo I., S Australia (10783a)
6. single main branch (axis) from a rough water form, roughly conical in shape, sandy intertidal pool, Waratah Bay, Walkerville Victoria (A48475)
7. densely branched intermediate form from Hardwicke Bay west coast Yorke Peninsula S Australia (51842)
8. detail of open branching pattern from Kellidie Bay (Coffin Bay) S Australia, in the lower intertidal of calm water (A31824)
9. extracted cortical tuft stained blue and viewed microscopically: small ball-shaped tip cells (*ap c*) characteristic of the genus, spindle shaped lower cells with prominent starch bodies (*st b*) (A6141 slide 0211)