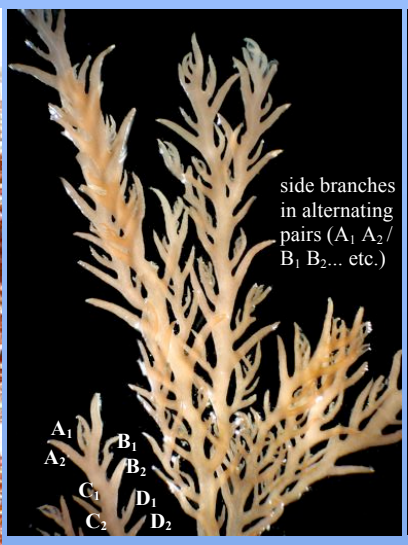
SOUTHERN AUSTRALIAN SPECIES OF *PLOCAMIUM* AT A GLANCE

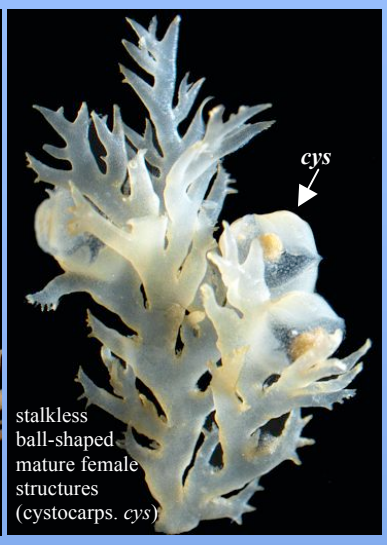
(microscope views are often stained blue, preserved specimens are colourless; the coin scale is 24mm or almost 1" wide)

In this genus, ultimate branches (ramuli) are flat, *paper thin*, occasionally cylindrical but flattened in pressed specimens, pointed, arranged in sets of 2's, or 3's, 4's and 5's alternating along opposite sides of major branches (axes), repeated also on side branches.

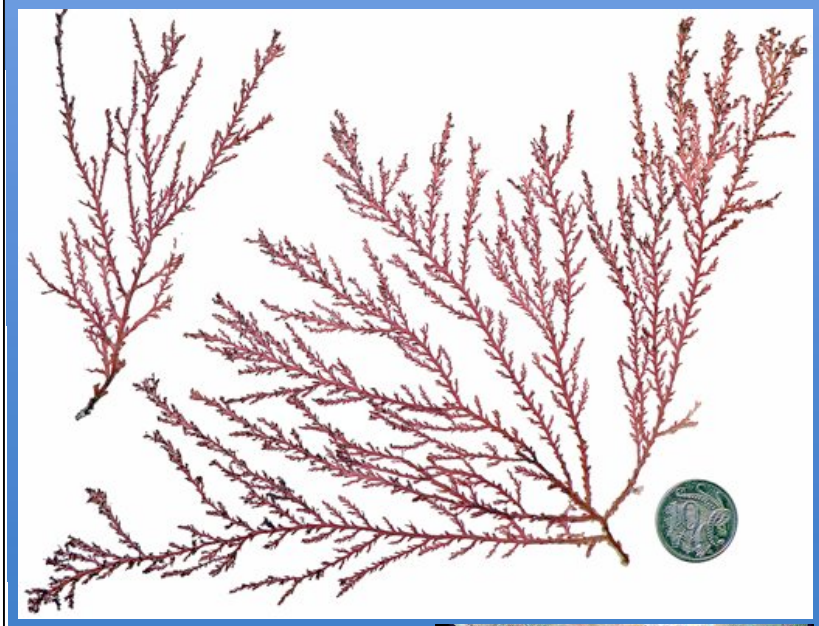
1.0: SHORT SIDE BRANCHES (RAMULI) ALTERNATE ALONG MAIN BRANCHES (AXES) IN *PAIRS*

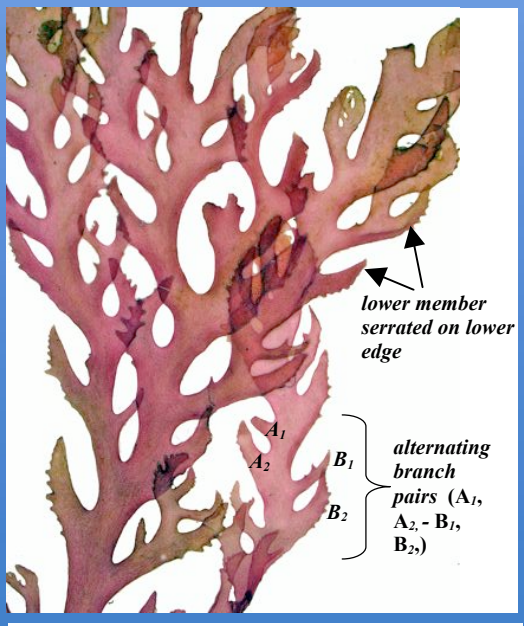
1.1 MAJOR BRANCHES (AXES) NARROW, ≤ 2 mm WIDE, MATURE FEMALE STRUCTURES (CYSTOCARPS) *STALKLESS*





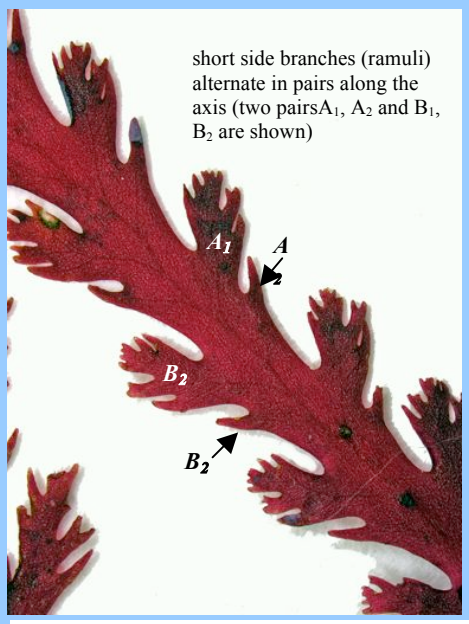
major branches (axes) ≈ 1 mm wide, ultimate branches (ramuli) *not* serrated (but can be divided into prong-like branches)
– ***Plocamium angustum***



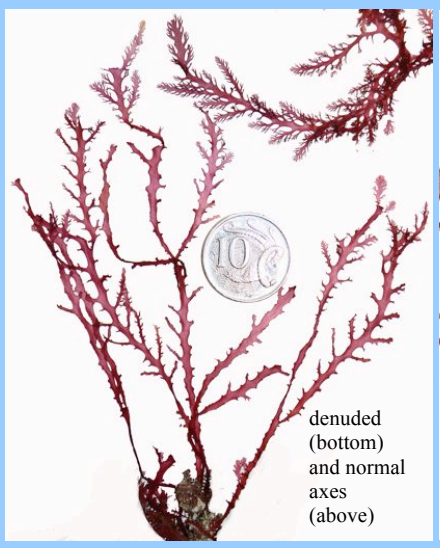


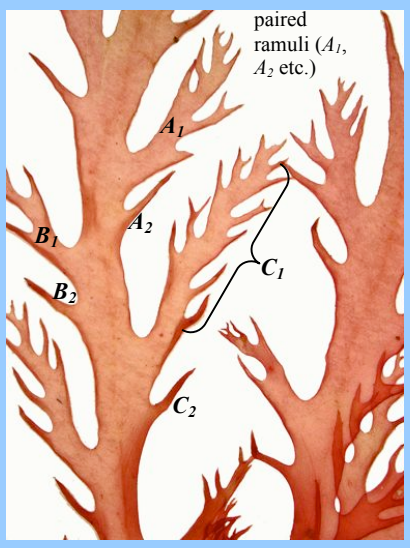
major branches (axes) 1-2 mm wide, *lower* of the ramuli pairs is *serrated* – ***Plocamium costatum***

1.2 MAJOR BRANCHES (AXES) > 2 mm WIDE, MATURE FEMALE STRUCTURES (CYSTOCARPS) *ON STALKS*



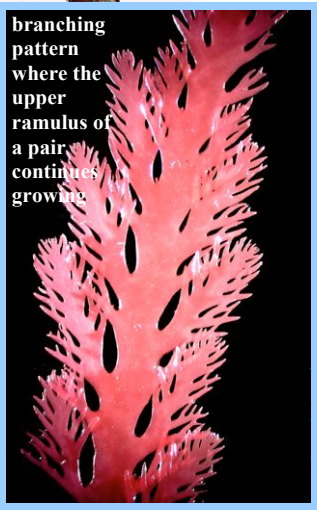
major branches (axes) ≈ 4 mm wide; upper ramulus of a pair is stubby, and has finger-like branching, lower one is unbranched and *not* serrate
– ***Plocamium patagiatum***





major branches (axes) usually < 3 mm wide; plants delicate, but often large (to 500 mm tall); ramuli pairs variable, the upper one continues growing, repeating the alternating paired branching pattern found in the axes, the lower one is occasionally serrate, ***or*** forked many times forming tree like tufts

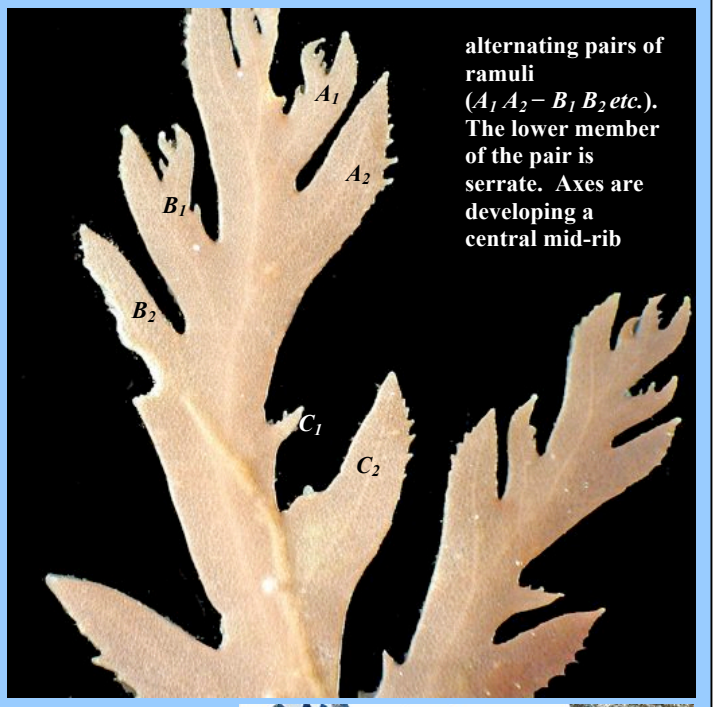
– ***Plocamium mertensii***



1.2 MAJOR BRANCHES (AXES) > 2 mm WIDE, MATURE FEMALE STRUCTURES (CYSTOCARPS) *ON STALKS*

continued next page

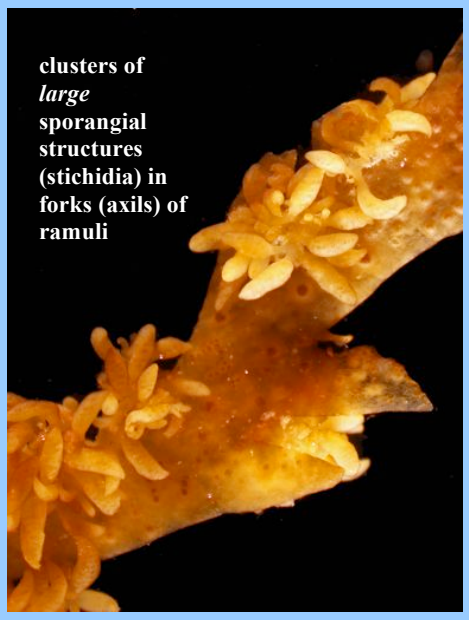
1.2 MAJOR BRANCHES (AXES) > 2 mm WIDE, MATURE FEMALE STRUCTURES (CYSTOCARPS) ON STALKS (CONTINUED)



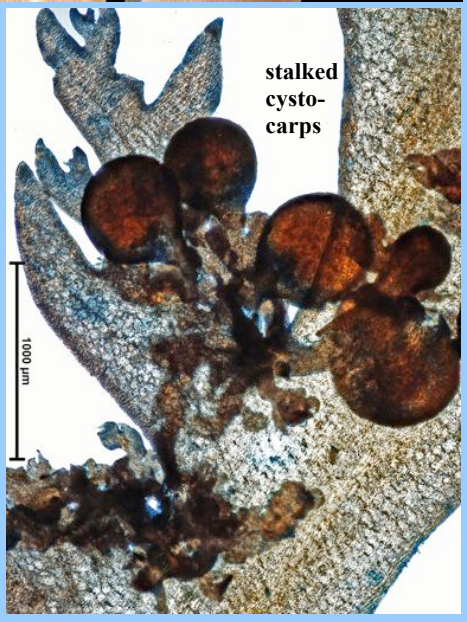
alternating pairs of ramuli (A_1 A_2 – B_1 B_2 *etc.*). The lower member of the pair is serrate. Axes are developing a central mid-rib

major branches (axes) ≈ 2.5 mm wide, with a mid-rib in older parts; plants robust, but small (to 240 mm tall); lower member of the alternating pairs of ramuli is serrate and undivided; sporangial structures are large (250 µm wide)

– ***Plocamium dilatatum***

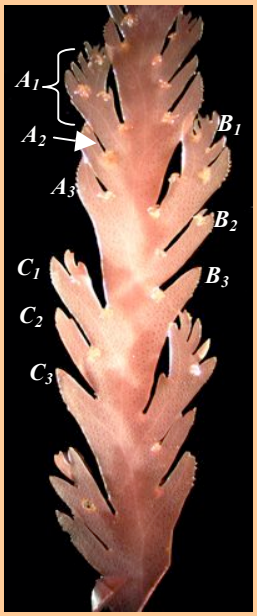


clusters of *large* sporangial structures (stichidia) in forks (axils) of ramuli



stalked cysto-carps

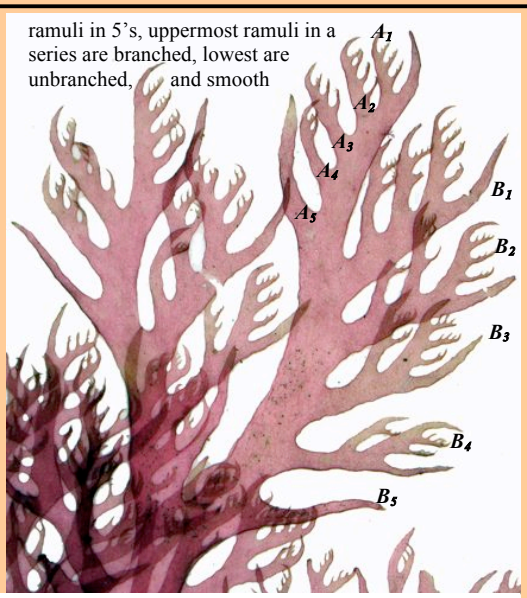
2.0: SHORT SIDE BRANCHES (RAMULI) IN SERIES OF 3, 4 OR 5's (RARELY PAIRED) ALTERNATING ALONG MAJOR BRANCHES (AXES)



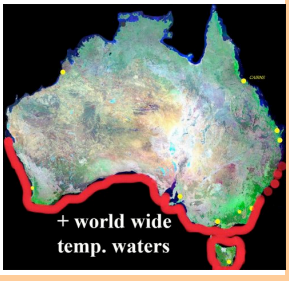
ramuli in 3's, (A_1, A_2, A_3, etc) alternating along axes

axes ≈ 2 mm wide, ***thickened*** below, ***ramuli in 3's***; stichidia clustered at bases of ramuli forks**;** cystocarps ***stalkless*** and ***warty***
– ***Placomium preissianum***

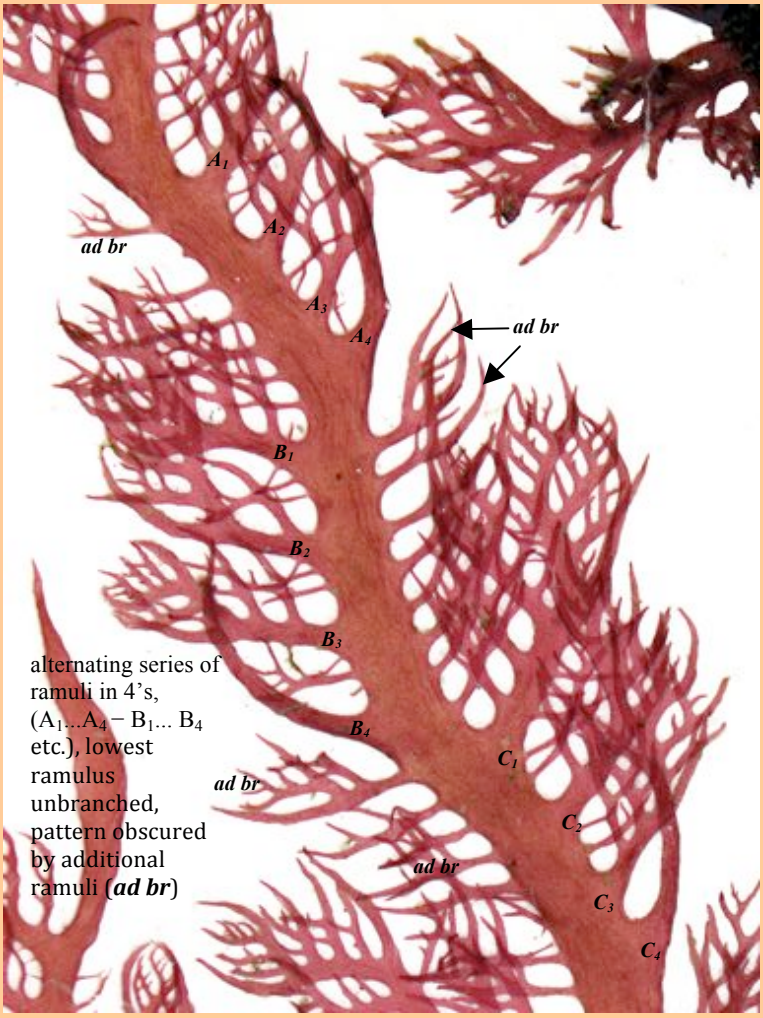
ramuli in 5's, uppermost ramuli in a series are branched, lowest are unbranched, and smooth



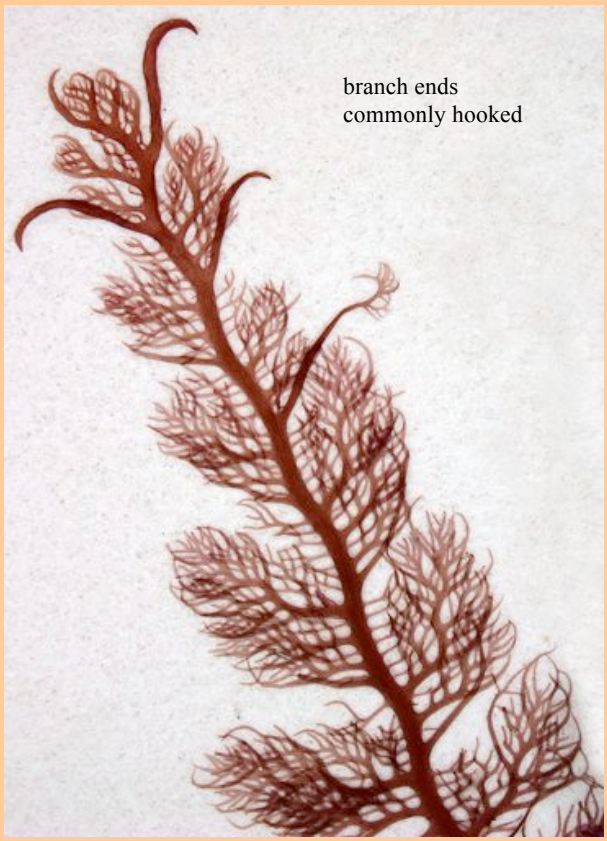
axes ≈ 1mm wide; ramuli in 3's, 4's or 5's, the several upper ramuli in a series are ***branched***, the lowest is unbranched, cystocarps ***smooth***; stichidia found along ***edges*** of forks between ramuli
— ***Placomium cartilagineum***



2.0 Ramuli in 3-5's continued next page



alternating series of ramuli in 4's, (A_1...A_4 – B_1... B_4 etc.), lowest ramulus unbranched, pattern obscured by additional ramuli (***ad br***)



forked sporangial structures (stichidia) on the edges of ramuli

often growing on other algae (epiphytic).
Axes ≈ 0.5 mm wide, often floppy, ends of branches often re-curved or ***hooked***; short side branches (ramuli) in 3's, 4's or 5's, alternating along axes, the several upper ramuli in a series are ***branched***, the lowest ***unbranched*** but the pattern is quickly obscured by additional (adventitious) ramuli; rare sporangial structures (stichidia) on edges of ramuli are forked (sexual stages are unknown)

— ***Plocamium leptophyllum***

PLOCAMIUM LOOK-ALIKES

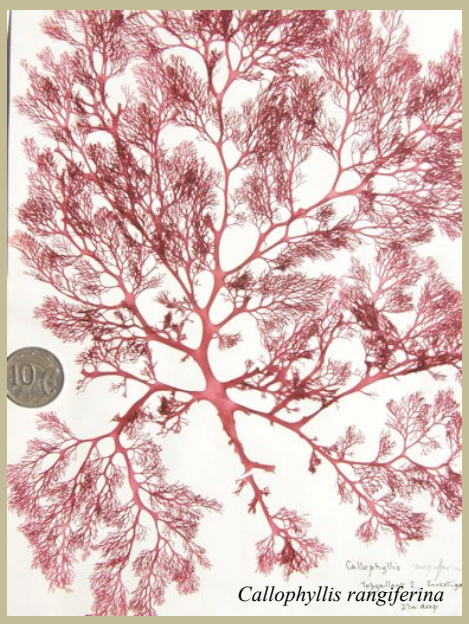
Callophyllis and *Austrophyllis*

these flat-branched species may superficially resemble *Plocamium* but
short side branches are

- irregularly forked
- do not occur in series of 2's, 3's, 4's, or 5's

and,

- reproductive organs form swellings embedded in the flat branches



Callophyllis rangiferina

Austrophyllis alcicornis

branching pattern of *Callophyllis rangiferina*

branching pattern of *Callophyllis lambertii*

Calliblepharis planicaulis

this has fine alternating side branches, some with hooked ends similar to *Plocamium leptophyllum*, but reproductive organs form swellings embedded in the branches, and the surface has large cells ringed by small cells (rosettes)

Calliblepharis planicaulis: two magnifications

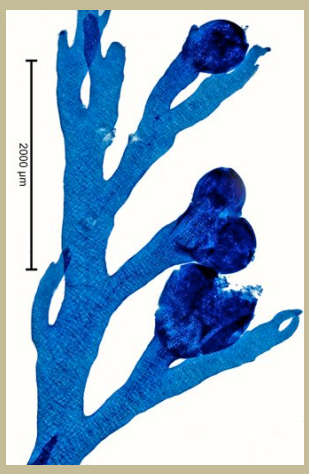
***PLOCAMIUM* LOOK-ALIKES** contnued next page

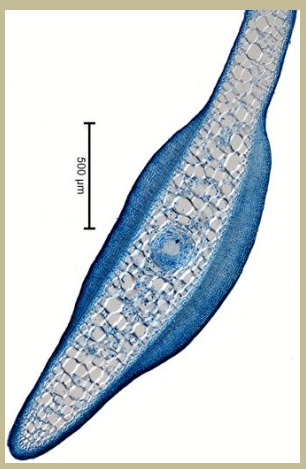
PLOCAMIUM LOOK-ALIKES (CONTINUED)

Ptilonia spp
These have alternating flat side branches
but
short side branches are
- irregularly forked, or
- do not occur in series of 2's, 3's, 4's, or 5's

and,
- reproductive organs form apical swellings
- there is a prominent central filament running through the flattened branches

Ptilonia australasicum, branching pattern and terminal cystocarps





Ptilonia subulifera, branching pattern , terminal cystocarps and cross section