LARGE BROWN ALGAE

Common and prominent Brown algae of southern Australia, larger than 10cm.

For small and obscure algae see "turf and fouling algae", "crusts, stains, scum and scales" and "thread and worm-like Brown algae"

Unmarked common names in brackets come from Edgar, G. J. (2008) *Australian Marine Life. Second edition*. Sydney. New Holland, while names marked § are descriptive names of the author. The treatment below looks first at species most easily encountered or recognised by their unusual shape and provides snap-shots of them. Then it directs you to more detailed searches (in red), or in one case, a pictured key to one of the larger species.

Magnification is occasionally needed to view diagnostic features. The coin used as a scale is 24 mm or almost 1inch in diameter.

Acknowledgement: thanks to Carolyn Ricci who kindly proof read these pages

Brown algae usually larger than 10cm tall

- Plants with unusual shapes –
  - *beaded*
  - *warty*
  - *net-like*
  - *worm-like*
  - **Go to pages 2, 3**
  - Examples: *Hormosira Hydroclathrus Scaberia Scytosiphon*
- Plants large, shaped like trees (with "roots", "trunk", and a "canopy")
  - **Go to page 4.**
  - Examples: *Durvillea, Ecklonia Undaria*
- Plants with strap- or ribbon-shaped fronds
  - Axes rubbery or tough, floats (vacuoles) ***present*** **Go to page 5.**
    - Examples: *Macrocystis Phyllospora*
  - Axes ***tough*** floats ***absent*** **Go to pages 6, 7.**
    - Examples: *Carpoglossum Lessonia Scytothalia Seirococcus*
  - Plants completely flat, thin, with mainly forked branching **Go to pages 7, 8.**
    - Examples: *Cutleria Dictyota Dilophus Glossophora*
  - Plants flat, ***thick,*** branching alternate, reproductive "pustules" produced **Go to pages 9-12.**
    - Examples: *Hormophysa Myriodesma Platythalia*
- Whole or parts of plants are fan-shaped
  - **Go to pages 13, 14.**
  - Examples: *Homoeostrichus Lobophora Padina Zonaria*
  - Blades are minute *Lobospira*
- Main branches flat or cylindrical, laterals leafy ***or*** thin, branched, bushy or flat and spreading
  - **Go to pages 15-17.**
  - Examples: *Acrocarpia Caulocystis Cladostephus Cystophora Sargassopsis Sargassum Sirophysalis*
- Plants bubble-shaped or hollow
  - **Go to page 18.**
  - Examples: *Adenocystis Asperococcus Colpomenia Splachnidium*
- Main branches wiry
  - **Go to page 19.**
  - Example: Family Sporochnaceae

Plants with unusual shapes

Plant body (thallus) consists of branched chains of ***tough***, water-filled bladders; plants exposed at low tide on rocky shores

Plants often in sand among seagrasses, pencil thin, ***warty***, but can have wiry, denuded bases

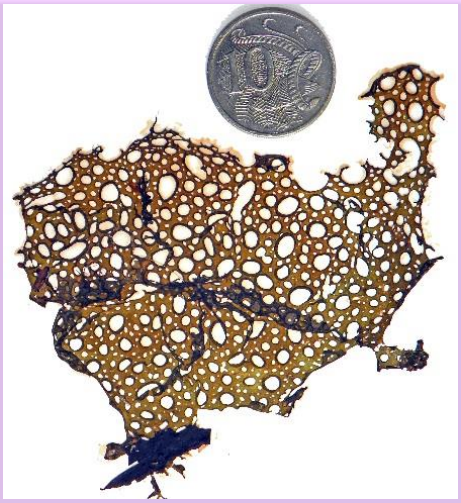
Hormosira banksii
(Neptunes necklace)
Family: Hormosiraceae

Calm-water form

Rough-water form

Scaberia agardhii
(Brown Fingerweed, §warty weed)
Family: Cystoseiraceae

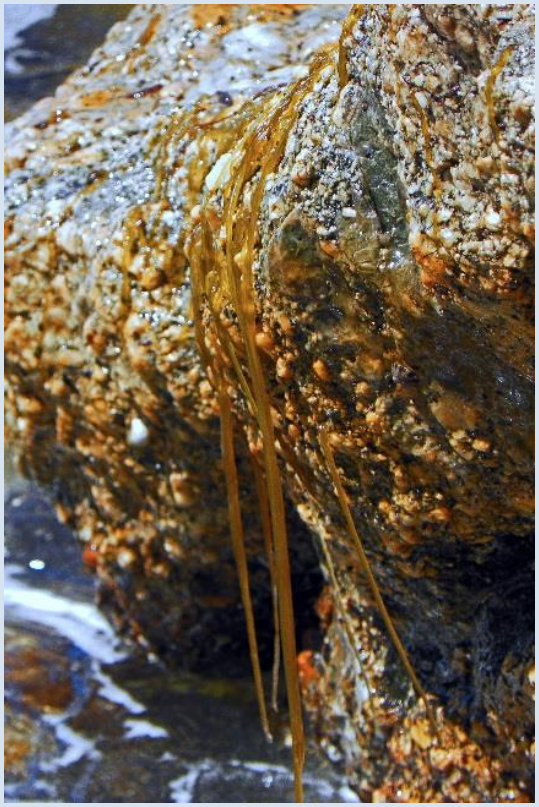
Hydroclathrus clathratus
(Lace Ballweed)
Family: Scytosiphonaceae



Plants lacy, initially hollow but often torn into a sheet

Plants slimy, cylindrical, "wormlike"
Go to "worm-like Brown algae"

Scytosiphon lomentaria
(Tubular Stringweed)
Family: Scytosiphonaceae



Scytosiphon hanging from rocks,
Victor Harbor, SA

Scytosiphon: thin and fat forms of plants

Plants large, shaped like trees

Ecklonia radiata
(Common Kelp)
Family: Alariaceae

Ecklonia, smooth fronds, short stalk, root-like holdfast

Ecklonia "forest" Photo" Simon Bryars

Ecklonia, prickly fronds, long stalk

Right: **look-alike introduced pest species**, **Undaria pinnatifida*, (Japanese Kelp) invading New Zealand, SE mainland Australia and Tasmania, and found in 2023 at Robe S Australia.

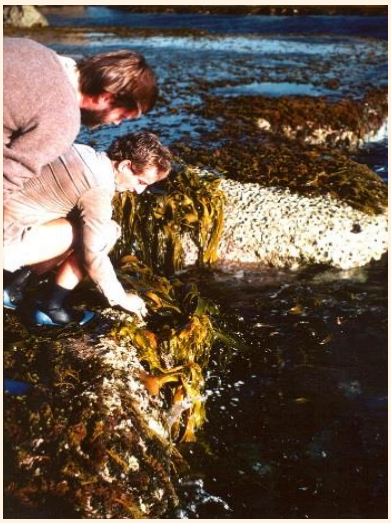
- Blade thinner
- Central broad "vein" present
- Lateral fronds narrow basally
- Reproductive wrinkled outgrowths may be present along the lower parts of the stalk

Durvillaea potatorum
(Bull kelp)
Family: Durvillaeaceae

Durvillaea
(***found in cold SE waters only***).

Durvillaea at Bruny I., Tasmania, barely submerged. Pad-like holdfast attached to rock and trunk-like stalk at left, leathery blades at right

Durvillaea seen underwater at Bruny I., Tasmania



Durvillaea at low tide, fronds hanging from the reef edge at Robe, SA

Plants with ribbon-like fronds continued

Plants with strap- or ribbon-shaped fronds

Axes rubbery or tough, floats (vacuoles) ***present***

Plants up to 15m long, stalks cylindrical and rubbery, ***floats*** occur at the ***base*** of long, flat blades edged with tiny points (***found in cold SE waters only***).

Macrocystis:
toothed blades, some stalks denuded of blades, but with basal floats remaining

Macrocystis pyrifera, a diver about 15 m deep, amongst a "forest" of the alga, Bruny I., Tasmania

Macrocystis 3 species
(Northern Giant Kelp, String Kelp)
Family: Lessoniaceae

Macrocystis, young plant with prominent floats, Robe, SA

Phyllospora comosa (Crayweed)
Family: Seirococcaceae

Phyllospora: floats and narrow, strap-like blades

Plants with ribbon-like fronds continued

Plants with strap- or ribbon-shaped fronds (continued)

Axes tough, floats *absent*

Lessonia corrugata (Strapweed)
Family: Lessoniaceae

Lessonia: plants exposed at low tide, Tasmania.
Photo: F. Scott

Lessonia, pressed specimen, thick, toothed upper blades, floats ***absent.*** Found in cold ***SE mainland and Tasmanian waters only***

Scytothalia dorycarpa (Western Crayweed)
Family: Seirococcaceae

Scytothalia: beaked structures spotted along blade edges

Scytothalia: beaked fertile structures with fertile "spots" along blade edges

Impossible to separate from *Scytothalia* without fertile structures

Seirococcus axillaris (Bristled Crayweed)
Family: Seirococcaceae

Seirococcus: tiny, beaded fertile structures at edges of blades

Plants with ribbon-like fronds continued

Plants with strap- or ribbon-shaped fronds (continued)

Floats ***absent***,

Carpoglossum confluens (Succulent Weed)
Family: Cystoseiraceae

Carpoglossum, whole plant, single main axis, narrow blades pinched along their length

Carpoglossum, spathulate tips

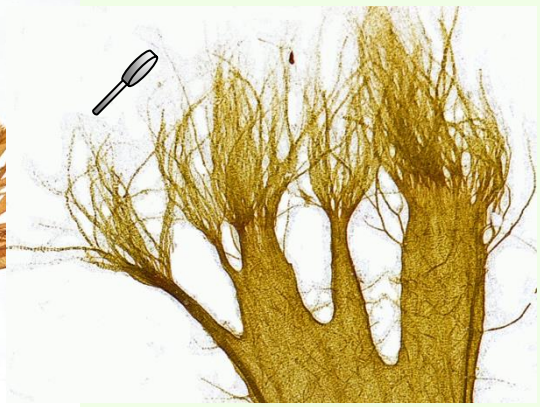
Plants with ribbon-like fronds continued

Plants with ribbon-like fronds (continued)

Plants completely flat, ***thin,*** mainly forked branching

Cutleria multifida
([§]Fringe Tips)
Family: Cutleriaceae

Cutleria
Delicate, thin blades sparsely covered in hairs, and tips ending in bunches of ***coloured hairs***



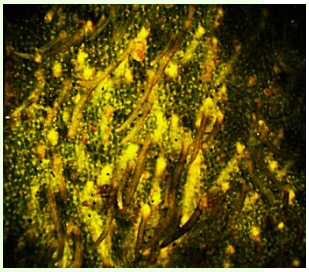
Plants with ribbon-like fronds continued

Plants with ribbon-like fronds (continued)

Plants completely flat, ***thin***, mainly forked branching (continued)

MORE EXAMPLES?:
Go to "Dictyotaceae"

Glossophora nigricans
(§Rough tongue-weed, Hairy Forkweed)
As *Dictyota nigricans* J. Agardh in *Algaebase*
Family: Dictyotaceae

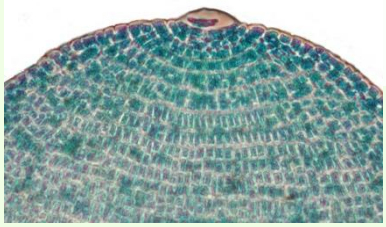


Glossophora: tufts of hairs on the blade surface

Glossophora: thin, forked blades look rough because of tufts of hairs on the blade surfaces

Dictyota
Family: Dictyotaceae

EXAMPLE:
Dictyota dichotoma
Regularly forked, thin.
Microscopic single apical cell



EXAMPLE:
Dictyota naevosa
Regularly forked, thicker

Plants with ribbon-like fronds continued

Plants with ribbon-like fronds (continued)

Plants flat, ***thick,*** alternate branching. ***Reproductive "pustules" produced***

Myriodesma
7 species
Family: Cystoseiraceae

KEY TO *MYRIODESMA SPECIES*

1a. blades usually <1.5 mm wide, midribs ***obscure***. Fertile pustules occur in broken lines on both sides of midribs
…..….*Myriodesma leptophyllum*
1b. blades >2 mm wide, midrib ***prominent***; fertile pustules in 2 rows ***or*** scattered ..... 2.

2a. blades 2-4 mm wide ..... 3.
2b. blades >4 mm wide ..... 4.

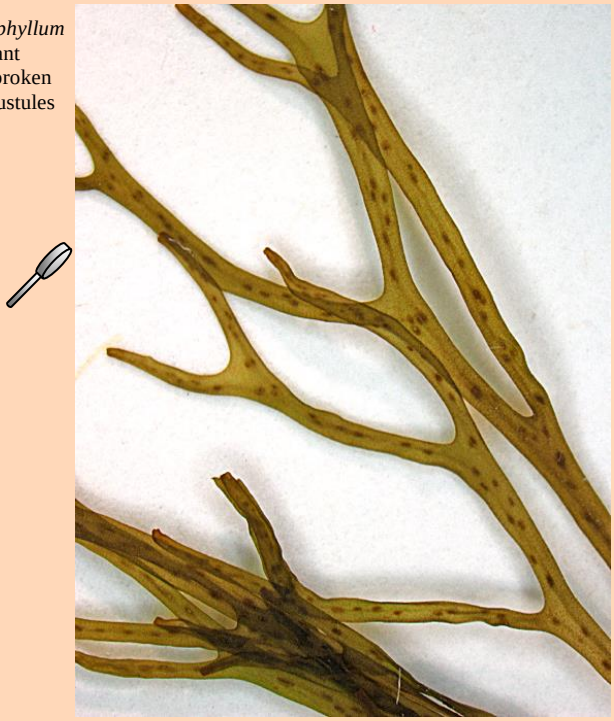
3a. blade edges ***distinctly toothed***; pustules scattered, protruding.
..... *Myriodesma serrulatum*
3b. blade edges ***without*** teeth ***or irregularly*** toothed; pustules scattered. (next page).
..... *Myriodesma integrifolium*

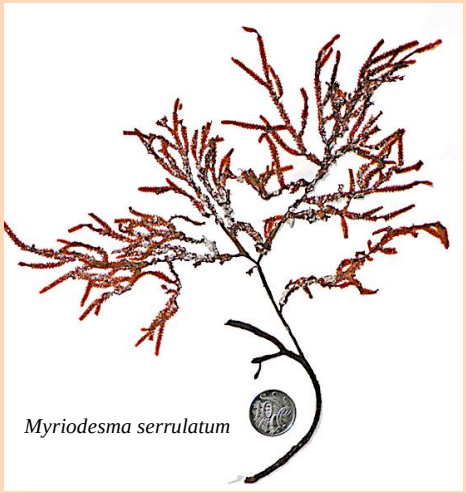
4a. laterals thick, in 2 regular rows (pinnate), edges minutely toothed; holdfast divided, root-like
……... *Myriodesma harveyanum*
(next page)
4b. laterals thin, branching irregular; holdfast a simple disc ……... 5.

5a. blades <10 mm wide, thin, light brown, edges finely toothed; a deep water species, apparently ***rare*** (next page)
..... *Myriodesma tuberosum*
5b. blades >10 mm wide, thicker, dark brown, edges either coarsely toothed or entire (without teeth)
..... 6.

6a. blades up to 40 mm wide, edges finely ***toothed***. (see page 11).
……. *Myriodesma quercifolium*
6b. blades up to 20 mm wide, edges entire (without teeth). (see page 11) …… *Myriodesma calophyllum*

Myriodesma leptophyllum
Above: whole plant
Right: detail of broken lines of pustules





Myriodesma serrulatum

Myriodesma serrulatum

Myriodesma serrulatum

Myriodesma species continued

Myriodesma integrifolium
Whole plant

alternate branching pattern

fronds lacking marginal teeth
reproductive pustules scattered

Myriodesma harveyanum,
Left: whole plant (coated with white epiphytes)
Centre: detail of root-like holdfast
Right: detail of minute marginal teeth and pustules

Myriodesma tuberosum
Left: whole plant
Centre: midrib reaching the blade tips
Right: detail of minute marginal teeth

Myriodesma quercifolium
Fronds broad, with
minutely toothed margins

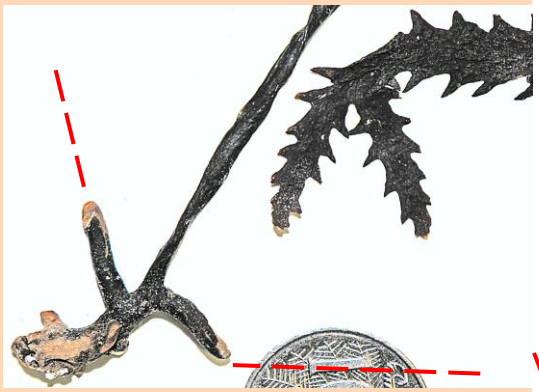
Myriodesma calophyllum

Myriodesma calophyllum
Blade edge without teeth,
mid-rib present

Myriodesma calophyllum
Holdfast is a pad

Plants with ribbon-like fronds continued

EXAMPLE:
Platythalia 2 species
Family: Cystoseiraceae
SW coasts of W Australia
Mature plants with a scrambling runner and upright flat axes, narrow blades, bearing ***protruding*** "***pustules***" (fertile structures)

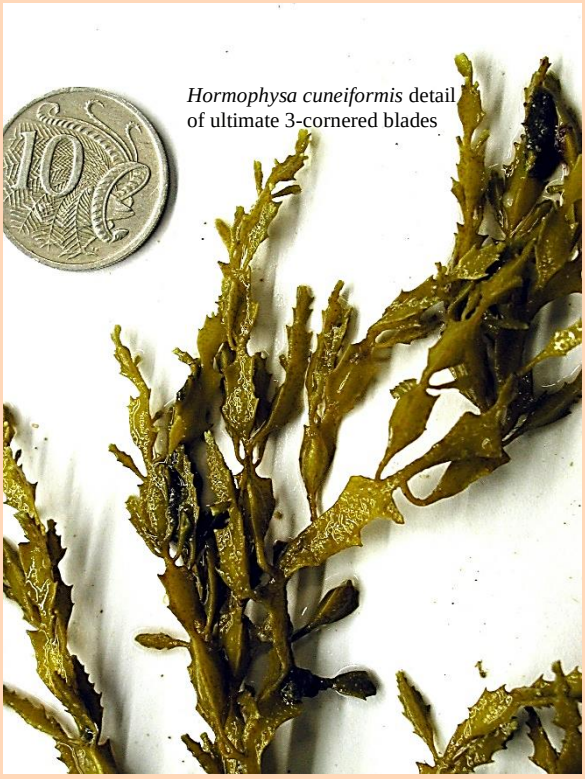


Platythalia quercifolia (Sawtooth seaweed): basal runners, their position shown by dashed lines, have been removed in this pressed specimen. Portion of upper, flat blades with serrated margins can be seen

Platythalia angustifolia
portion of a basal runner (arrowed) Upper blades narrow

from upper Spencer Gulf, SA

EXAMPLE:
Hormophysa cuneiformis (Three corners) as *Hormophysa triquetra* in the *Marine benthic flora of southern Australia*
Family: Cystoseiraceae
Reproductive pustules present in the spirally-arranged three-sided, flat wings that have marginal points.
The species has a disjunct distribution:-
W Australia, Indian Ocean, Port Stephens NSW, and is restricted to upper Spencer Gulf, as possibly a ***relict species*** from past tropical times in South Australia



Hormophysa cuneiformis detail of ultimate 3-cornered blades

Hormophysa cuneiformis detail of scattered pustules on ultimate blades

Plants with ribbon-like fronds continued

Whole or parts of plants are fan-shaped

To find diagnostic features of species, **go to "Dictyotaceae"**

Many of this group of fan-shaped Brown algae show iridescence underwater

Padina 3 species
Family: Dictyotaceae

Lobophora variegata (Peacockweed – due to iridescence underwater)
Family: Dictyotaceae

Zonaria crenata (Fanweed)
Family: Dictyotaceae

Zonaria turneriana (Fanweed)
Family: Dictyotaceae

Homoeostrichus sinclairii
Family: Dictyotaceae
Enlarged tips showing the fan shapes

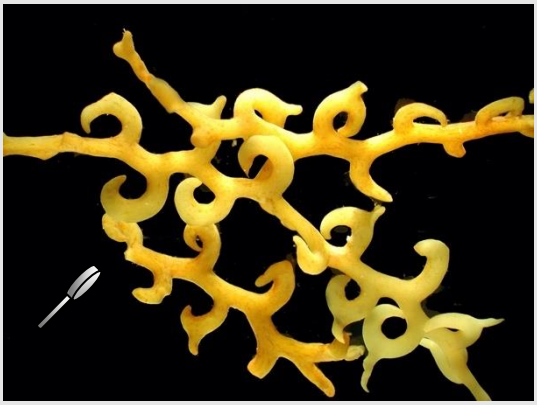
Whole or parts of plants are fan-shaped *continued*

Whole or parts of plants are ***minutely*** fan-shaped

Lobospira bicuspidata (Spiralled Forkweed)
Family: Dicyotaceae

Common. delicate, often densely branched plants

Magnified details:
Laterals flat but ***narrow***, minute fronds ending in 2 points.
Coiled tendrils often present towards the base of plants



Main branches flat or cylindrical, laterals leafy ***or*** thin, branched, bushy or flat and spreading

Floats ***present*** - arise ***directly*** from main axes.
Common in shallow waters and exposed at low tide

Caulocystis cephalornithos (Narrow Grapeweed)
Family: Cystoseiraceae

Floats (either beaked ***or*** ball-shaped) arise ***directly*** from the plant axis.

Sirophysalis trinodis (Three-node Seaweed)
(as *Cystoseira trinodis* in the *Marine benthic Flora of southern Australia*)
Family: Cystoseiraceae

Floats ***present*** but unusual in shape – usually in ***chains***
Plants can be mistaken for *Cystophora*

Sirophysalis
Stubs of terminal laterals that have been shed (arrowed) – a diagnostic feature of the species, but can also be mistaken for those of *Sargassum decipiens*

Sirophysalis
Chains of floats in upper parts

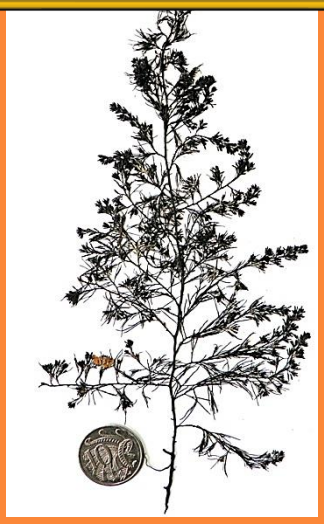
Sirophysalis
simpler floats in upper parts

Sirophysalis
several main axes from a common base

Main branches flat or cylindrical, laterals leafy ***or*** thin, branched, bushy or flat *continued*

Floats ***absent***, holdfast is ***root-like,***
-can be mistaken for *Cystophora* but that genus has a conical or disc-like holdfast

Acrocarpia 2 species (Tangleweeds)
Family: Cystoseiraceae



Acrocarpia paniculata
Plant with open-branching, terminal branches tufted

Acrocarpia paniculata
Plant with dense branching

Acrocarpia paniculata
Clusters of fertile branches

Acrocarpia paniculata
Root-like holdfast, in contrast to *Cystophora* that has a disc-like or conical holdfast

Acrocarpia robusta with opposite branching

Holdfast of a typical *Cystophora* species

Cladostephus spongiosus (Bushy Brown alga)
Family: Cladostephaceae

Cladostephus
Tightly-packed rings of very short laterals about axes give the plant a spongy appearance

Cladostephus
Plants can be drastically denuded with only wiry axes remaining

Cladostephus
Plant back-lit to emphasise rings of (short) laterals

Cladostephus
Detail of axes with tightly-packed laterals and denuded axes (arrowed) with stubs of laterals in rings

continued

Plants often with a flat and zig-zag main branch (axis), ultimate branches all i***dentical***, floats if present without a small thread or leafy tip. Holdfast a pad or cone
Go to ***"Cystophora"***

Cystophora 24 species
Family: Cystoseiraceae

Left: *Cystophora botryocystis* with bunches of grape-like floats at the base of laterals
Centre: *Cystophora brownii*, floats ***absent***, flat-branched laterals arise downwards from the ***face*** of a flat axis
Right: *Cystophora moniliformis*, laterals branch from the ***edge*** of a flat axis

Plants often with a flat or cylindrical main branch (axis), basal branches ***leafy,*** upper ultimate branches ***either*** leafy but ***smaller*** than basal ones ***or*** thin; floats if present have a small apical ***thread or leafy tip***. Go to ***"Sargassum"***

Sargassum & *Sargassopsis* 15 species
Family: Sargassaceae

Sargassum distichum
Leafy terminal branches, large floats with an apical point

Sargassum. fallax
Leafy basal laterals, narrow upper ones, floats ***absent***

Sargassopsis heteromorphum divided basal "leaves", narrow upper terminal branches, floats ***absent*** (described in the Marine benthic Flora of southern Australia as *Sargassum*

Phyllotrichia decipiens
as *Sargassum decipiens* in the Marine Benthic Flora
Family: Sargassaceae

axis base short, sturdy, flattened; several laterals branching from it in a candelabra fashion with prominent dark stubs of denuded laterals basally. Common in shallow waters, the upper fertile part is rarely seen. Can be mistaken for *Cystophora*

Phyllotrichia decipiens
Lateral giving a candelabra appearance to the plant

Sargassum decipiens: detail of flattened base

Phyllotrichia decipiens: detail of prominent dark stubs on an axis, characteristic of the species. (Can be mistaken for those of *Sirophysalis trinodis*)

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Plants bubble-shaped or hollow

Go to **"balloon and hollow Brown algae"**

Colpomenia 2 species (Ballweeds)
Family: Scytosiphonaceae

Splachnidium rugosum
(Neptune's Fingers)
Family: Splachnidiaceae

Splachnidium: plants amongst lozenges of Blue-green algae (arrowed) on granite in the wave–breaking zone of the lower intertidal

Asperococcus 5 species
Family: Punctariaceae

EXAMPLE:
Asperococcus bullosus
(Bulbous Ballweed)

EXAMPLE: *Asperococcus fistulosus*
plants on a stem of a seagrass

Adenocystis utricularis
Family: Scytothamnaceae

Plants wiry, often with tufted ends to branches
Family: Sporochnaceae

Go to **"wiry Brown algae"**

EXAMPLE:
Perithalia caudata (Spiky Tuftweed)

EXAMPLE:
Encyothalia cliftonii

EXAMPLE:
Sporochnus 5 species (Tuftweeds)
Family: Sporochnaceae

Encyothalia in sand, Stokes Bay, Kangaroo I., SA
Photo: D Muirhead

EXAMPLE:
Bellotia eriophorum
(Chimney-brush Seaweed)
Family: Sporochnaceae

EXAMPLE:
Carpomitra costata (Stackhouse's Seaweed)
Family: Sporochnaceae

Carpomitra costata
Detail of branch tips

EXAMPLE:
Austronereia australis
Family: Sporochnaceae

SUMMARY
SPECIES/GENERA ILLUSTRATED ABOVE