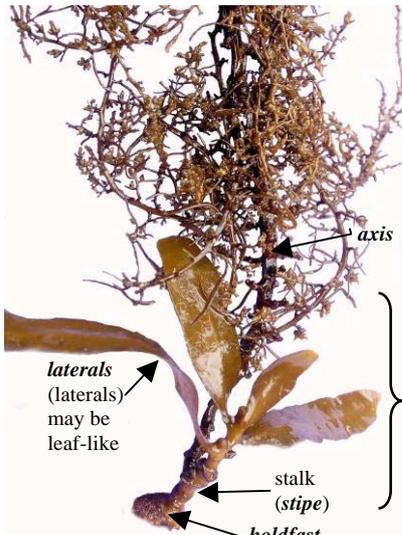


PICTURED KEY TO THE SOUTHERN AUSTRALIAN SPECIES OF SARGASSUM

The 10c piece in the images below is 24mm across or almost 1 inch in diameter. Commonest species are often treated first.

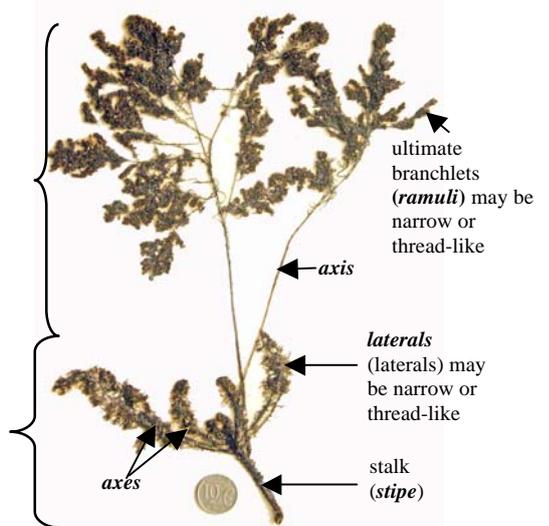
BASIC SHAPES (MORPHOLOGY) OF SARGASSUM

Whole plants



upper parts are often reproductive, deciduous and may be remarkably different in structure to lower parts. They may be missing for most of the year

basal, perennial parts are vegetative, often leaf-like

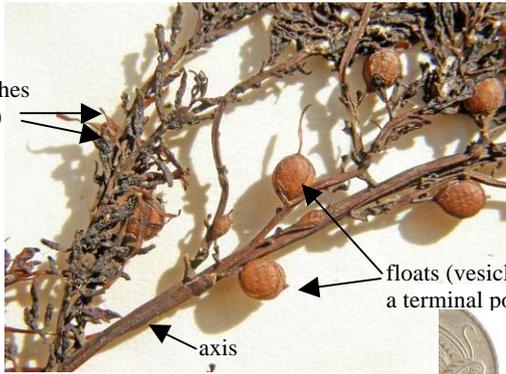


Types of axes

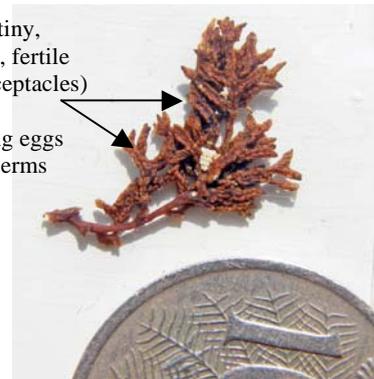


Upper parts: types of laterals

fertile branches (receptacles)



detail of tiny, branched, fertile parts (receptacles) with pits containing eggs and/or sperms



vegetative, leaf-like laterals and floats



thin ultimate branchlets (ramuli) without floats

Basal parts: types of laterals

divided, flat-branched and leaf-like laterals



un-divided, leaf-like laterals



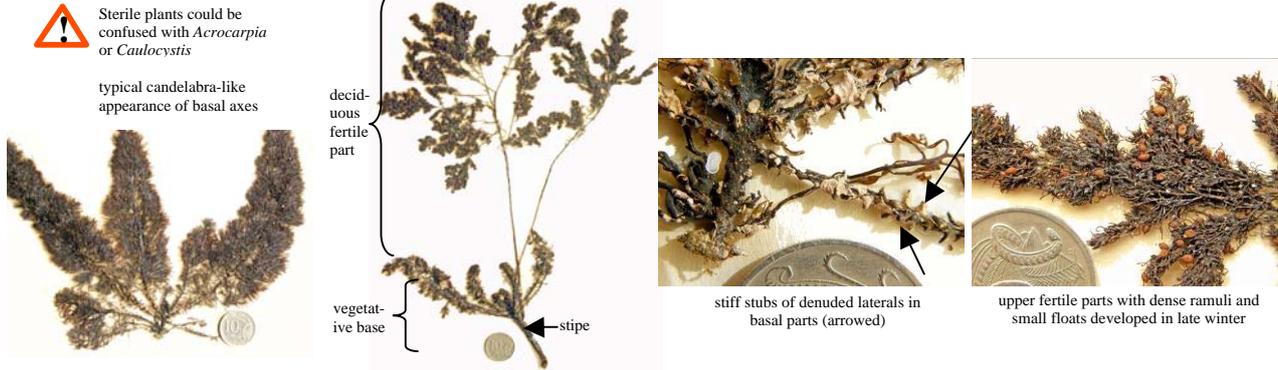
thread-like and obscurely divided laterals



KEY TO SARGASSUM SPECIES BASED ON SUPERFICIAL FEATURES

- 1a.** basal (perennial) axes candelabra-like from a stumpy stipe roughened with stiff stubs of denuded laterals. Laterals fine, compressed in basal parts of the plant, thread-like in upper parts of the plant.

..... *Sargassum decipiens*

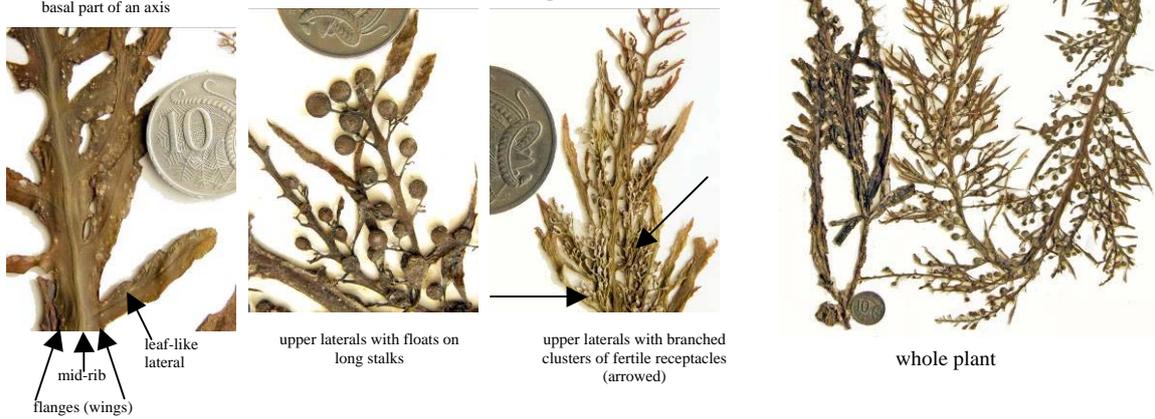


- 1b.** *not* as above. Basal laterals usually leaf-shaped, although sometimes very narrow

..... **2**

- 2a.** axes *flat*, 5-10mm wide, *flanged* (winged). Laterals leaf-shaped, from the edges of the axes, *narrow* towards the plant tip. Floats 3-6mm in diameter on long stalks. Probably a subtropical relict species with a western distribution, only drift plants reaching Adelaide shores

..... *Sargassum decurrens*



- 2b.** axes compressed, angular 3-sided or cylindrical, *not* flanged, less than 10mm wide **3**

- 3a.** basal laterals leaf-shaped, *divided*, *flat-branched*, axes compressed, angular or cylindrical, floats *small*, 1-3mm in diameter

..... **4**

- 3b.** basal laterals usually *undivided*, broad, leaf-shaped, axes 3-sided, or angular to cylindrical, floats large, 4-10mm in diameter

..... **8**

4a. axis base sturdy, up to 10mm wide. Basal laterals **leaf-shaped** with a **broad central section** 5-10mm wide, **contrasting markedly** with upper **fine** short ultimate branchlets (ramuli) that are **irregularly branched**
 *Sargassum heteromorphum*



detail of a basal lateral (divided "leaf") with broad parts



detail of a upper lateral parts with small floats, and fine, irregularly branched upper laterals (ramuli)



4b. axis base relatively **thin** usually <10mm wide. Basal laterals with a **narrow** central part usually <5mm wide, either contrasting with or gradually merging in width into narrow ultimate branchlets (ramuli) near the plant tips

..... 5

5a. axis cylindrical, **flexuous** 6

5b. axis **base** compressed, **stiff** 7

6a. lateral stubs point downwards (**retroflex**), leafy laterals with **smooth** edges, floats **present**
 *Sargassum verruculosum*



basal laterals with narrow, divided parts. Main axes loosely zigzag, showing stubs of denuded laterals pointing downwards (retroflex, arrowed)



upper parts with floats and hair-like ultimate branchlets (ramuli)



whole plant

6b. lateral stubs point outwards or upwards, leaf-shaped laterals with **serrate** edges, floats **absent**.
 A species with western distribution only
 *Sargassum kendrickii*



Basal, leafy, flat, **branched** laterals with serrate margins



upper, **unbranched**, leafy ultimate branchlets (ramuli) with serrate margins



whole plant

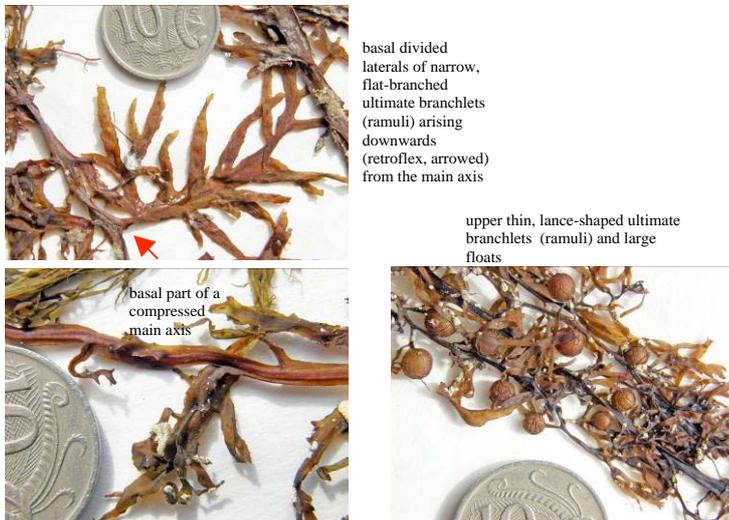
7a. axis to 6mm wide, knobbly, with prominent, lumpy stubs of denuded laterals. **Basal** laterals with **linear** divisions grading to **fine**, long ultimate branchlets (ramuli) near the plant tip. Floats (if present) **small**, 1-2mm in diameter

..... *Sargassum sonderi*



7b. axis 2-4mm wide, with stubs of denuded laterals pointing **downwards** (retroflex). **Basal** laterals undivided in young plants, dividing to form **lance-shaped** ultimate parts (ramuli). Floats **large**, 3-6mm in diameter, sometimes with a long apical thread

..... *Sargassum varians*



8a. axes **3-sided**, basal laterals leaf-shaped, usually **dark brown**, markedly larger than those on fertile (deciduous) upper parts **9**

8b. axes **not 3-sided**, basal laterals usually **lighter brown**, leaf-shaped or linear, slender and **similar** to those on upper parts

..... **13**

9a. *basal* laterals with varying degrees of incised or notched *edges*, narrowing in width *gradually* towards the plant tip there becoming always *deeply incised*

..... *Sargassum lacerifolium*

Top series of images: variation in extent of incised or notched edges of *basal* laterals



Bottom series of images: variation in incised edges of *upper* ultimate branchlets (ramuli)



whole plant

9b. *basal* laterals *not* notched or incised but some with *tiny* marginal spines, upper ultimate branchlets (ramuli) *not* markedly incised

..... 10

10a. *basal* leaf-shaped laterals *large, wavy*, 20-30mm wide, margins with varying numbers of *tiny* spines, *upper* ultimate branchlets (ramuli) narrow and *sparse*ly notched or with few spines

..... *Sargassum paradoxum*

Markedly different basal and upper parts of *Sargassum paradoxum*



Top left: wide, wavy basal leaf-shaped laterals
 Top right: detail of spines on edges of basal branches
 Bottom left: narrow, sparsely notched upper ultimate branchlets (ramuli) with clusters of dark fertile receptacles
 Bottom right: detail of receptacles and floats

10b. *basal* leaf-shaped laterals *smaller*, 5-15mm wide, *smooth* (not wavy), often *without* spines, *upper* ultimate branchlets (ramuli) narrow, threadlike or cylindrical, spines *absent*



..... for confident identification of species in the next steps, fertile upper parts with receptacles are needed

..... 11

11a. laterals arise *downwards* (retroflex)..... 12

11b. laterals arise at right angles. Upper ultimate branchlets (ramuli) leaf-shaped, *narrow* but *flat*, floats absent or when present, 4-8mm long, egg-shaped. Restricted to SE waters

.....*Sargassum vestitum*



flat, undivided basal leaf-like laterals



narrow, flat upper laterals



reproductive receptacles and two floats



whole plant

12a. upper ultimate branchlets (ramuli) *threadlike*, about 1mm wide but lost as the branch ages, floats *spherical* with an apical point, up to 10mm in diameter. A common species in rock pools but also at depth.

.....*Sargassum fallax*



flat, undivided basal leaf-like laterals



upper branches with floats (slightly shrunken in this pressed specimen) and downward-pointing (retroflex) branching (arrowed)



threadlike laterals of upper parts



12b. upper ultimate branchlets (ramuli) flat, *narrow* but *leaf-shaped*, up to 5mm wide and *distinct* from basal ones. Floats absent or few, 3-6mm in diameter when present

.....*Sargassum tristichum*



smooth, undivided, leaf-like basal laterals



flat, narrow, upper ultimate branchlets (ramuli) with largely un-notched edges



fertile receptacles and a solitary float



whole plant

13a. all laterals *linear* (narrow with parallel sides), largely undivided, *dark brown* with few marginal spines. Widespread, often in rock pools and shallow rough water
 *Sargassum linearifolium*



13b. lower leaf-shaped laterals lance-shaped with serrate edges, light brown..... **14**



for confident identification of species in the next steps, fertile upper parts with receptacles are needed

14a. plants *loosely-branched*, laterals distinctly *serrate*. Branching pattern alternately flat-branched in lower parts of the plant, radial in upper parts
 *Sargassum distichum*



14b. plants more densely *tufted*, branching pattern *radial*, leaf-shaped laterals less distinctly serrate

.....**15** ... *Sargassum spinuligerum/podocanthum*



Identification of species in the next steps requires fertile upper parts with receptacles. They may in future prove to be variations of a single species

15a. lower laterals 3.5-7.0 (up to 12mm) and 5-12mm wide, upper ultimate branchlets (ramuli) with *few* marginal spines, fertile receptacles *warty*, with *few* or *tiny* spines
 *Sargassum spinuligerum*



15a. lower laterals 10-40mm long, 3-5mm up to 8mm wide, upper ultimate branchlets (ramuli) more *regularly* edged in spines. Fertile receptacles only slightly warty, with several *large* spines
 *Sargassum podocanthum*

