GREEN ALGAE

SOME COMMON MARINE BENTHIC GROUPS IN SOUTHERN AUSTRALIA

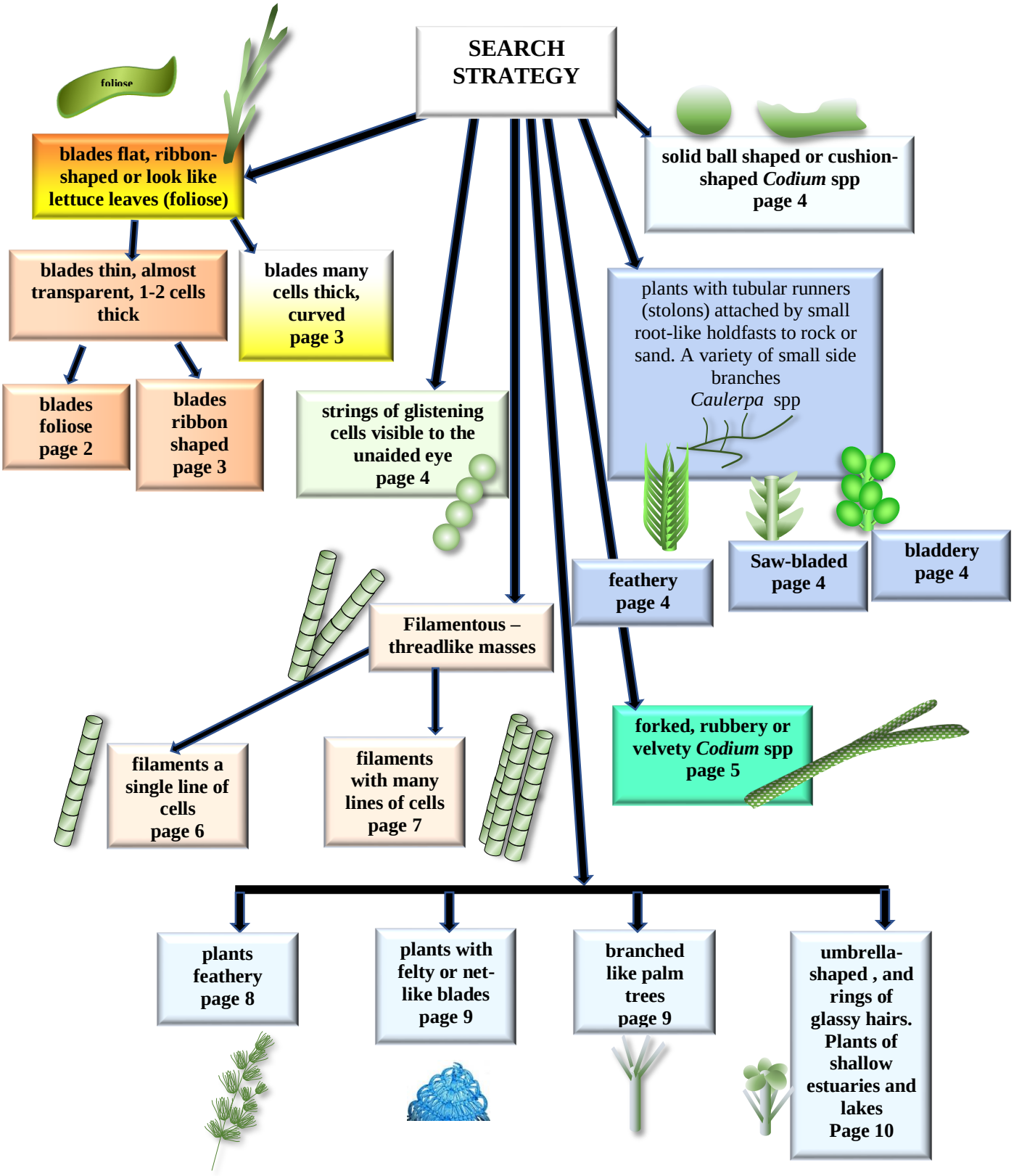
Microscope views are in blue; the coin scale is 24mm or almost 1" wide

§Denotes a common name found in Edgar J G (2008) *Australian marine life second edition* Reed Australia

Some identifications will require the use of a microscope

Others will require some magnification with a hand lens

The more common examples of major types are provided below with references to more detailed identification tools. Names follow Womersley, H B S (1984) as it continues to be the most complete and acceptable source of descriptions of southern Australian algae. Name updates from A*lgaebase* have been added.



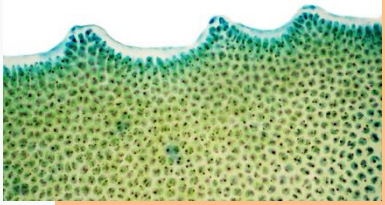
Family: Ulvaceae §Sea lettuces

Ulva

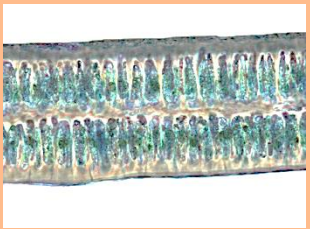
the plant body **A BROAD SHEET**

- is ***thin***, 1-2 cells thick
- is a ***broad sheet*** like a lettuce leaf
- edges may be ruffled, or have microscopic teeth
- plants may form dense blooms in the intertidal at the end of summer

Above: mass of *Ulva*, Sea lettuce in the intertidal
Right: whole pressed plant of *Ulva lactuca*, a common species

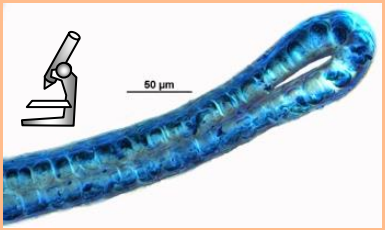


Ulva rigida
Left: whole plant
Above: blade edge, microscopic teeth
Below, cross section showing 2 cell layers narrowly separated



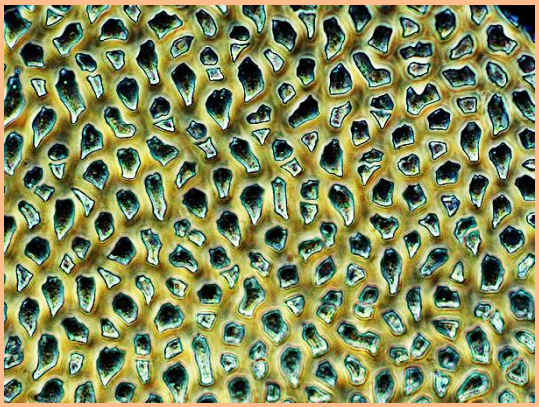
Above: *Ulva australis (*syn. *spathulata*)
§**southern sea lettuce**
narrow bases to blades

Enteromorpha linza (as *Ulva linza* in *Algaebase*)
Left: whole plant
Below: cross section, gap between cell layers at blade edge



Ulvaria/Ulva

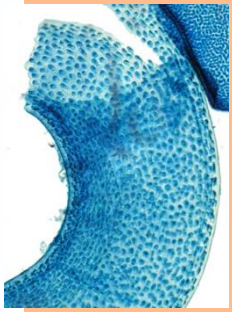
Ulvaria oxysperma (as *Gayralia oxysperma* in *Algaebase*)
Above: whole plants
Right: surface detail ***single-layered*** blade with characteristic small cells with tails



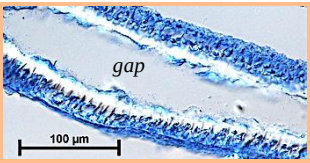
Enteromorpha (now *Ulva* spp in *Algaebase*) & *U. taeniata*

the plant body (thallus) **RIBBON-SHAPED**

- is ***thin*** 2 cells thick with a sizeable ***gap*** between adjacent walls of ribbons
- ***ribbon-shaped***
- edges may be ruffled,
- plants may form dense blooms in the intertidal at the end of summer



Enteromorpha prolifera (as *Ulva prolifera* in *Algaebase*)
Left: whole plants
Right: torn branch showing ***hollow*** construction of the ribbon shaped thread

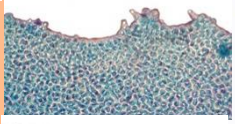


Enteromorpha compressa (as *Ulva compressa* in *Algaebase*) [§]**baitweed**

Left: whole plants, broad ribbons, ruffled edges
Right, above: numerous narrow ribbon plants attached to a seagrasss stalk
Right, below: cross section, wide gap between ribbon walls

Enteromorpha intestinalis (as *Ulva intestinalis* in *Algaebase*)
Left: whole plants
Right: cross section, large gap between the ribbon walls

Enteromorpha flexuosa (as *Ulva flexuosa* in *Algaebase*)

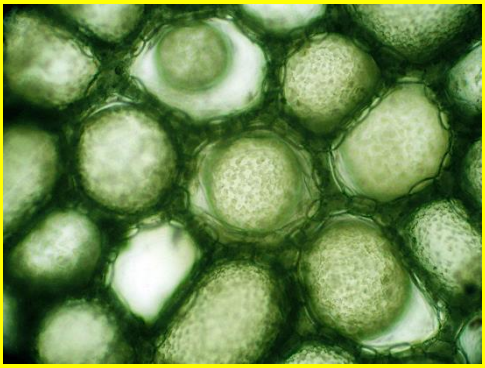


Ulva taeniata ruffled sea lettuce
Above: toothed blade edge, cross section
Right: whole plant

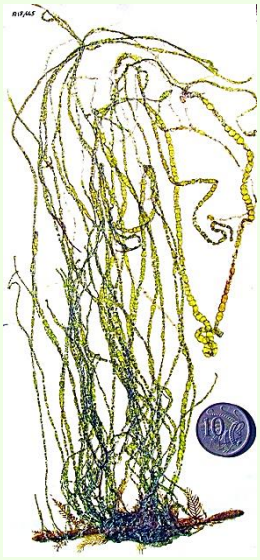
Dictyosphaeria sericea [§]liverwort seaweed

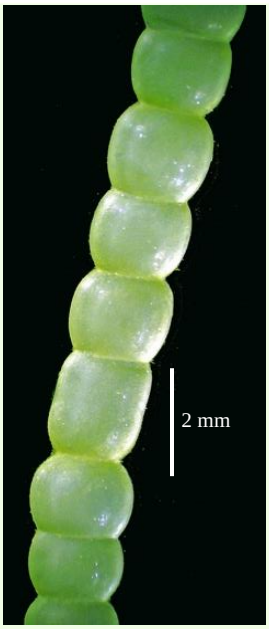
the plant body (thallus)

- is ***thick***
- lobed or with wavy edges
- strongly attached to rock in the **subtidal**, often on the underside of rock overhangs
- surface view under the microscope, showing very large balloon like cells each ringed by minute cells



Dictyosphaeria sericea
Above: whole plants
Right: surface view of large cells ringed by small cells





Chaetomorpha coliformis
§Mermaids necklace
Family: Cladophoraceae
Above: masses of plants growing on a sea grass stem
Right: chains of cells that make up the necklace-like thallus

Caulerpa sedoides (as *C. geminata* in Edgar 2008)
§Bubble caulerpa
Family: Caulerpaceae
Above:
amongst sponge and red algae at Aldinga, SA Photo: D Muirhead
Below:
backlit to show grape-like upright branches

ball-shaped or cushion -shaped *Codium* species

Above:
Codium mamillosum
Surface looking rough because of minute emergent cells

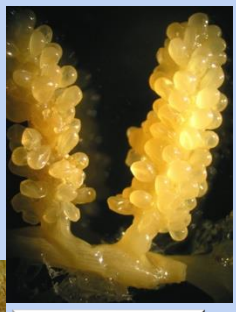
Above:
Codium pomoides
§**sea apple**
Smooth, shining surface

Codium laminarioides
spreading lobes from a tiny stalk

Codium spongiosum
§**green spongeweed**
lumpy spongy lobes

Caulerpa cactoides §cactus caulerpa

Caulerpa hodgkinsoniae
§amulet caulerpa



bladdery

surface of small droplets

Caulerpa vesiculifera
§beaded caulerpa

Caulerpa cylindracea
as *Caulerpa racemosa* f. *cylindracea* in the Flora

Caulerpa papillosa
§pimpled caulerpa

surface of microscopic droplets

Caulerpa simpliciuscula
§simple-branched caulerpa

Caulerpa go to "Caulerpa at a glance"

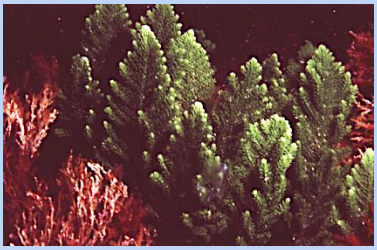
Caulerpa longifolia
§long filament caulerpa

saw-bladed

feathery

Caulerpa scalpelliformis
§serrated caulerpa
-teeth alternate)

Caulerpa flexilis §Fern caulerpa

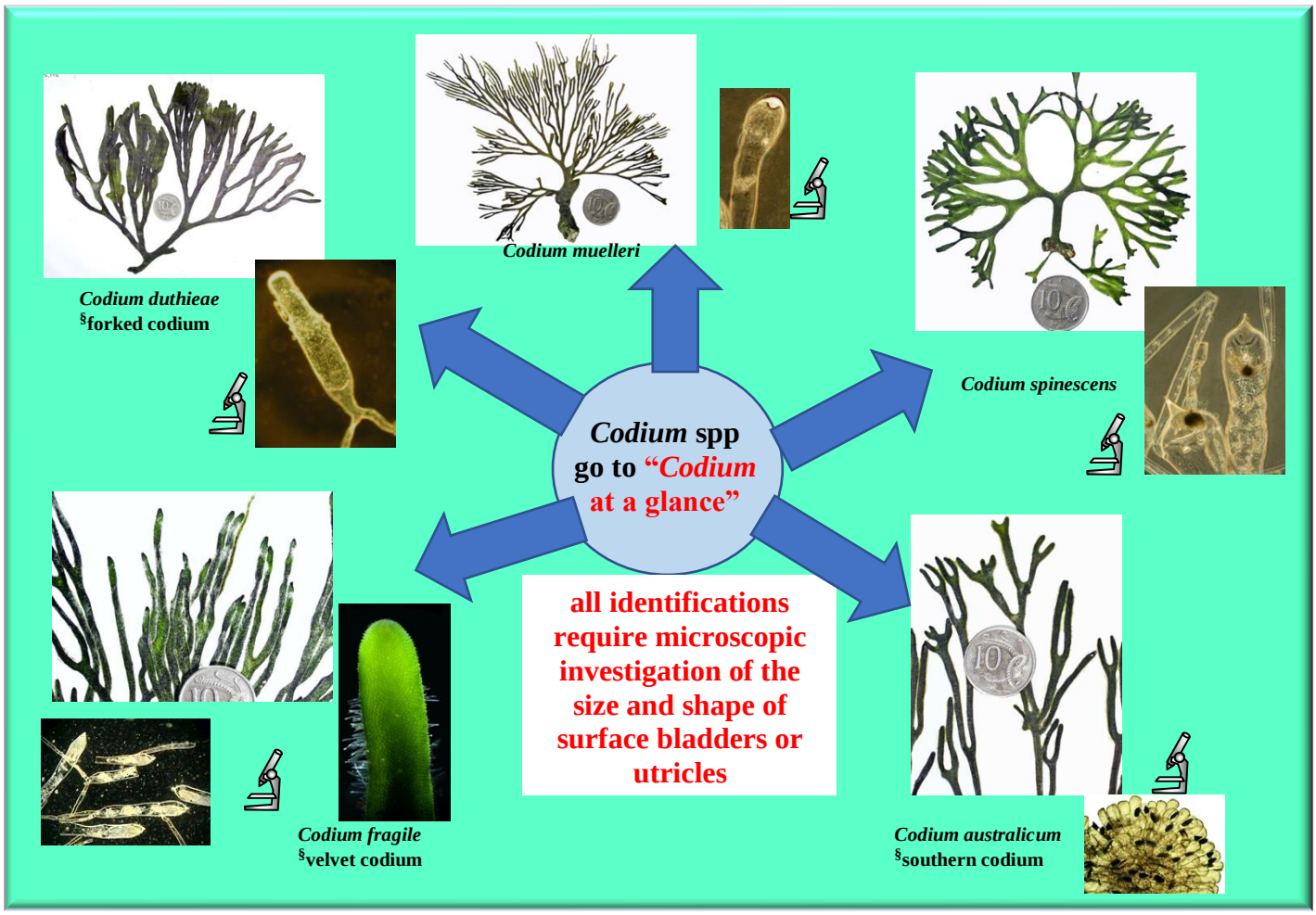


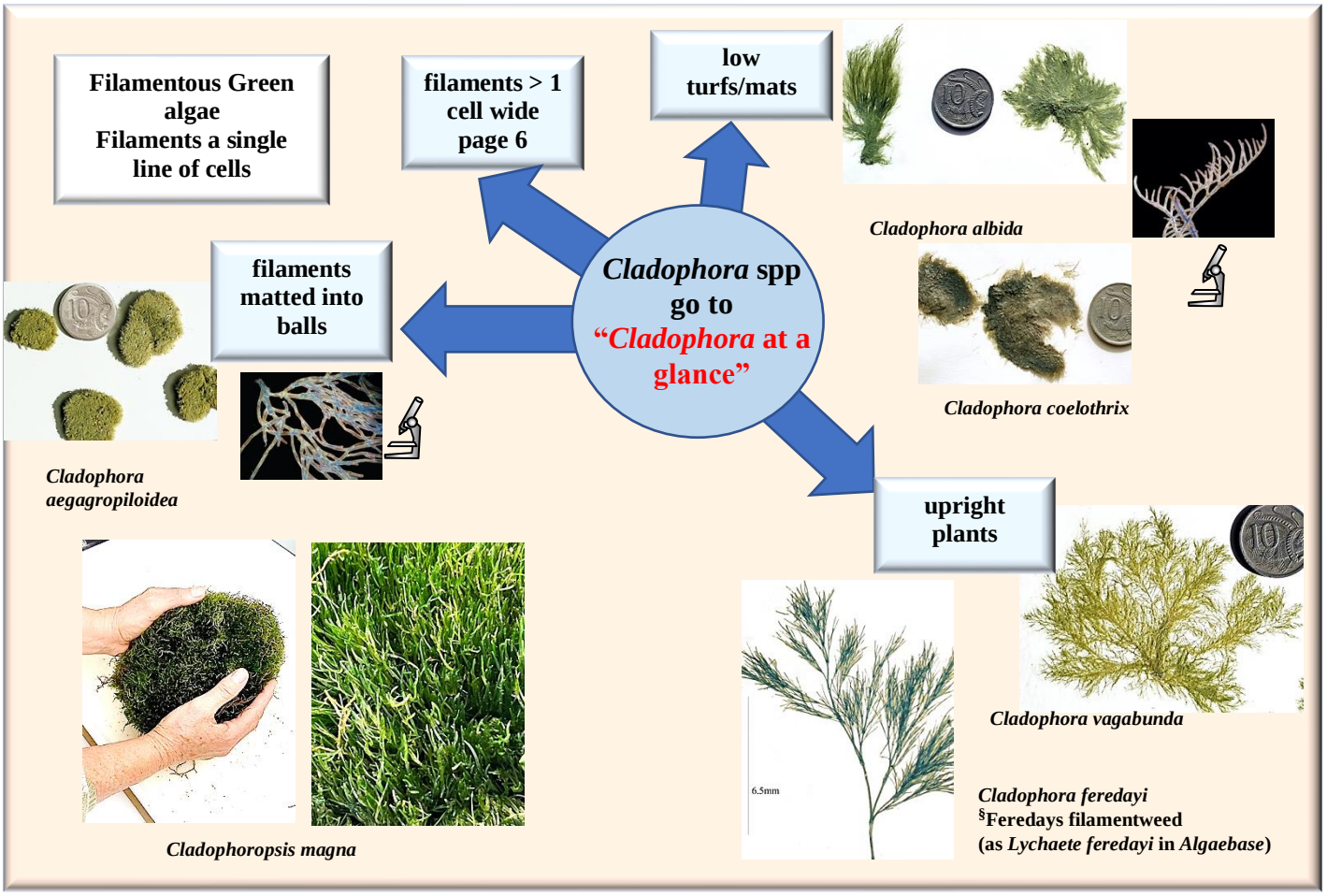
Caulerpa brownii §Browns caulerpa

Caulerpa muelleri (as *Caulerpa flexilis* vas. *muelleri* in the Flora)

Caulerpa trifaria, §three-cornered caulerpa

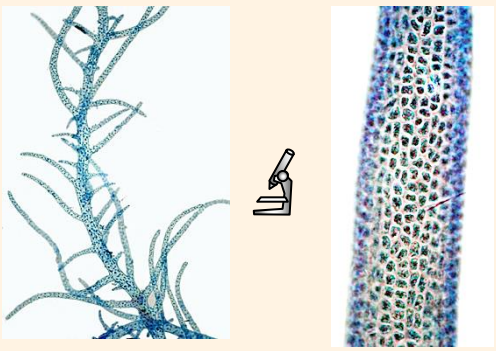
*Caulerpa taxifolia
§invasive caulerpa
-teeth opposite

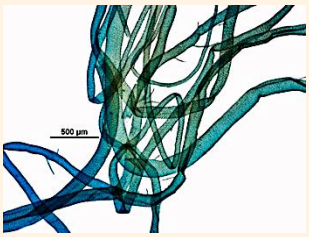

Codium duthieae
§forked codium
Codium muelleri
Codium spinescens
Codium spp go to "Codium at a glance"
all identifications require microscopic investigation of the size and shape of surface bladders or utricles
Codium fragile
§velvet codium
Codium australicum
§southern codium

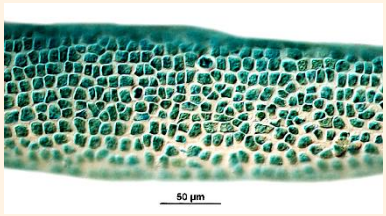

Filamentous Green algae
Filaments a single line of cells
filaments > 1 cell wide page 6
low turfs/mats
Cladophora albida
filaments matted into balls
Cladophora spp go to "Cladophora at a glance"
Cladophora coelothrix
Cladophora aegagropiloidea
upright plants
Cladophora vagabunda
Cladophoropsis magna
6.5mm
Cladophora feredayi
§Feredays filamentweed
(as Lychaete feredayi in Algaebase)

Filamentous Green algae
Filaments with many lines of cells

***Enteromorpha clathrata* (as *Ulva clathrata* in Algaebase)**







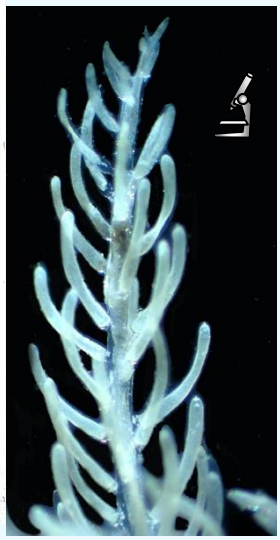
***Enteromorpha ralfsii* (as *Ulva ralfsii* in *Algaebase*)**

plants
feathery

Bryopsis foliosa

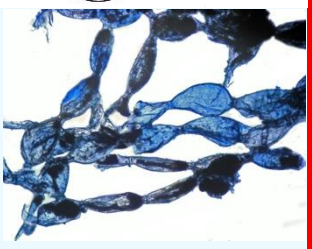
Bryopsis gemellipara
[§]**feather bryopsis**

Bryopsis macraildii
Left:
Whole plant
Right:
Branching pattern



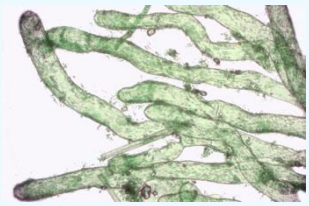
plants with felty or net-like blades

Rhipiliopsis robustus
§Neptunes mat



Struvea plumosa
§green veinweed
Stained thallus tip showing the lacy, interlocking filaments

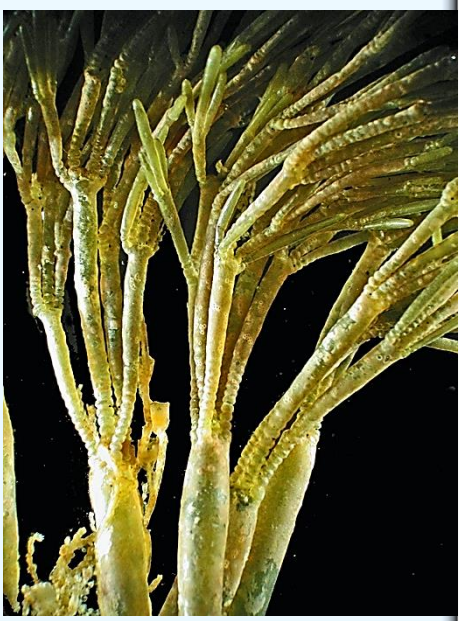
***Avrainvillea clavatiramea* §green seafan**



like palm trees

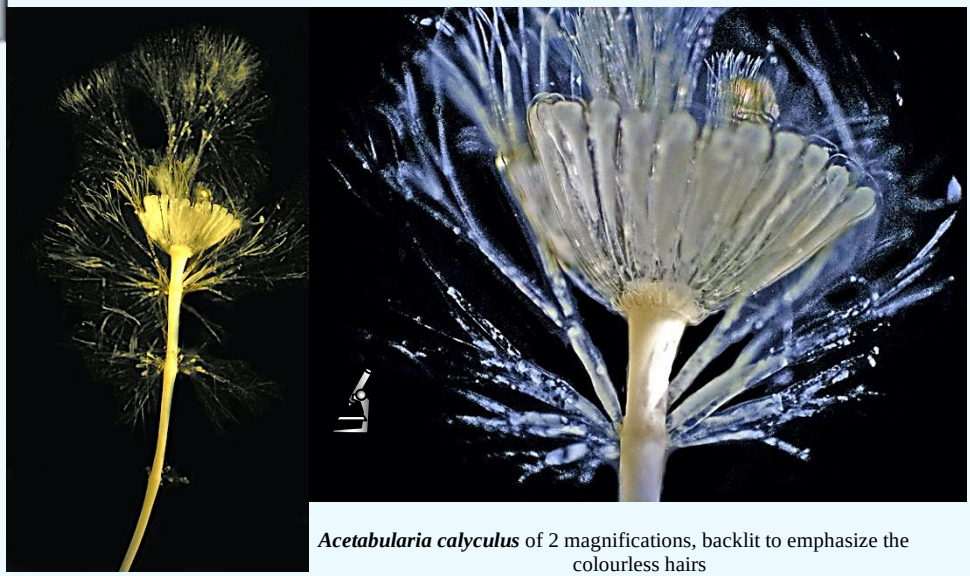
Apjohnia laetevirens

***Apjohnia laetevirens* §green brushweed**
Above: whole plant
Left: underwater image, regenerating basal stalks amongst red algae, iridescent colour
Right: magnified details of constricted ringed bases to branches



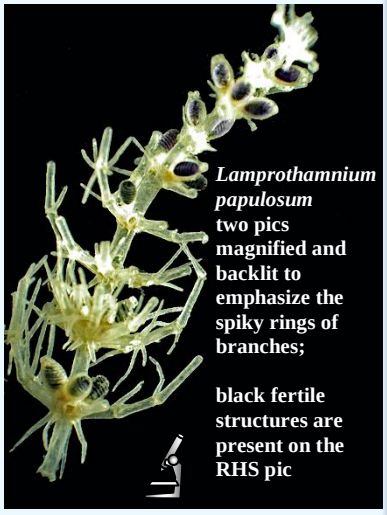
umbrella-shaped plants of shallow estuaries and lakes

Acetabularia calyculus
§mermaids cup



Acetabularia calyculus of 2 magnifications, backlit to emphasize the colourless hairs

Polyphysa peniculus
(as *Acetabularia peniculus* in *Algaebase*)



Lamprothamnium papulosum
two pics magnified and backlit to emphasize the spiky rings of branches;

black fertile structures are present on the RHS pic

Lamprothamnium papulosum

OTHER LESS COMMON GREEN ALGAE, not included in this key but for which species **Fact Sheets** are available:-

Cladophoropsis Family 50.530 Cladophoraceae	*Ulothrix* Family 50.240 Ulotrichaceae
Prasiola Family 50. 490 Prasiolaceae	*Uronema* Family 50.240 Ulotrichaceae
Rosenvingiella Family 50. 490 Prasiolaceae	*Urospora* Family 50.560 Acrosiphonaceae

REFERENCES

- Edgar, G.J., (2008). **Australian Marine Life: the plants and animals of temperate waters. 2nd Ed**. Reed-New Holland
- Womersley, H.B.S., (1984). **The Marine Benthic Flora of Southern Australia. Part I.** Govt. Printer, S. Australia

SPECIES ILLUSTRATED ABOVE

species	author/s	page	name in *Algaebase*	author/s	page
Acetabularia calyculus	Lamouroux	10			
Apjohnia laetevirens	Harvey	9			
Avrainvillea clavatiramea	A. Gepp & E.S. Gepp	9			
Bryopsis foliosa	Sonder	8			
Bryopsis gemellipara	J. Agardh	8			
Bryopsis macraildii	Womersley	8			
Caulerpa cylindracea	Sonder	5			
Caulerpa flexilis	(Lamouroux *ex* C. Agardh)	5			
Caulerpa hodgkinsoniae	J. Agardh	5			
Caulerpa longifolia	C. Agardh	5			
Caulerpa muelleri	Sonder	5	*Caulerpa flexilis var. muelleri (syn.)*	(Sonder) Womersley	5
Caulerpa papillosa	J. Agardh	5			
Caulerpa racemosa f. cylindracea	(Sonder) Weber Bosse	5			
Caulerpa scalpelliformis	(R. Brown *ex* Turner) C. Agardh	5			
Caulerpa sedoides	C. Agardh	4			
Caulerpa simpliciuscula	(R. Brown *ex* Turner) C. Agardh	5			
**Caulerpa taxifolia*	(M. Vahl) C. Agardh	5			
Caulerpa trifaria	Harvey	5			
Caulerpa vesiculifera	(Harvey) Harvey	5			
Chaetomorpha coliformis	(Montagne) Kützing	4			
Cladophora aegagropiloidea	C. Hoek & Womersley	6			
Cladophora albida	(Nees) Kützing	6			
Cladophora feredayi (*syn.*)	Harvey	6	*Lychaete feredayi*	(Harvey) M. J. Wynne	6
Cladophoropsis magna	Womersley	6			
Codium australicum	P. C. Silva6	6			
Codium duthieae	P. C. Silva	6			
Codium laminarioides	Harvey	4			
Codium mamillosum	Harvey	4			
Codium muelleri	Kützing	6			
Codium pomoides	J Agardh	4			
Codium spinescens	P. C. Silva & Womersley	6			
Codium spongiosum	Harvey	4			
Dictyosphaeria sericea	Harvey	3			
Enteromorpha clathrata (*syn.*)	(Roth) Greville	7	*Ulva clathrata*	(Roth) C. Agardh	7
Enteromorpha compressa syn.	(Linnaeus) Nees	3	*Enteromorpha compressa*	Linnaeus	3
Enteromorpha flexuosa (*syn.*)	(Wulfen) J. Agardh	2	*Ulva flexuosa*	Wulfen	2
Enteromorpha intestinalis	(Linnaeus) Nees	3	*Ulva intestinalis*	Linnaeus	3
Enteromorpha linza (syn.)	(Linnaeus) J. Agardh	2	*Ulva linza*	Linnaeus	2
Enteromorpha prolifera (*syn.*)	(O.F. Müller) J. Agardh	3	*Ulva prolifera*	O.F. Müller	3
Enteromorpha ralfsii (*syn.*)	Harvey	7	*Ulva ralfsii*	(Harvey) Le Jolis	7
Lamprothamnium papulosum	(Wallroth) J.Groves	10			

species	author/s	page	name in *Algaebase*	author/s	page
Polyphysa peniculus (*syn.*)	(R. Brown *ex* Turner) C. Agardh	10	*Acetabularia peniculus*	(R. Brown *ex* Turner) Solms-Laubach	10
Struvea plumosa	Sonder	9			
Ulva lactuca	Linnaeus	2			
Ulva rigida	C. Agardh	2			
Ulva spathulata (*syn.*)	Papenfuss	2	*Ulva australis*	Areschoug	2
Ulva taeniata	(Setchell) Setchell & Gardner	3			
Ulvaria oxysperma	(Kützing) Bliding	2	*Gayralia oxysperma*	(Kützing) K.L. Vinogradova *ex Scagel* et al	2

Ulva turf exposed at low tide, limestone reef, Cape Dombey, Robe SA.