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# Identifying Algae

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## Level

7-8+

## Key questions

How do we use a key to find out about algae?

## Key outcome

Identify the features of algae that determine their classification into major groups.

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Key used with permission from Moroney, D., Bourke, S. and Hanson, S., 1994, *Caring for the Coast: Coastal Activities for Primary Schools*, City of Henley and Grange, Henley Beach, SA.

## What you need

Suitable seashore with variety of algae

Key sheets

Field guide to algae/seaweeds

Magnifying glasses

## What you do

Take care while doing this activity that you do not slip on rocks covered in algae. Don't pick up a large clump of seaweed on the beach without shaking it first to dislodge any stinging jellyfish, syringes, or glass. As this key has been developed for temperate and sub-tropical Australian shores, it may not contain all tropical algae.

Work in small groups or pairs to locate algae. Some may be on rocks and in crevices; others may be floating in the sea, or washed up on the beach at the high tide mark. It is not necessary to always pick individual alga (the singular of algae).

Biological keys rely on a logical procedure to review certain characteristics and eliminate some which do not relate to one species. Work through the keys provided and name your sample specimens.

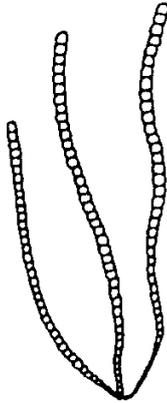
Consider your data: how many different algae did you find? Where were most located? Which was the smallest one? Which was the largest? Which is the dominant colour? Are there any algae which you could not key out and identify?

### Extensions

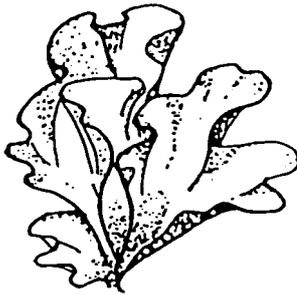
You could do the 'Algal Pressing' activity, and the 'Red Algae Bloom'. The latter looks at a problem associated with there being too much of one type of alga.

Undertake research into the consumers of algae.

# Identifying Algae Key



*Chaetomorpha*  
(Mermaid's necklace)



*Ulva*  
(sea lettuce)



*Dictyosphaeria*

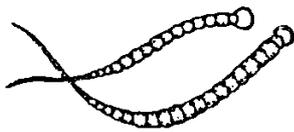
## The Green Algae – *Phylum Chlorophyta*

The green algae are the most common kind of freshwater algae and they are common at sea, especially in shallow water.

### Key to some Green Algae

- 1a. Plants consisting of single filaments of large cells, un-branched ..... *Chaetomorpha*
- 1b. Plants consisting of single filaments of large cells, branched ..... *Cladophora*
- 1c. Plants not as above.....2
- 2a. Plants pale green, thallus (body) a thin sheet or a hollow tube.....3
- 2b. Plants darker green, Thallus complex, not a flat sheet or hollow tube.....4
- 3a. Thallus a thin sheet of bright green cells, two cells thick..... *Ulva*
- 3b. Thallus a thick sheet of dull green cells ..... *Dictyosphaeria*
- 3c. Thallus a thin-walled, hollow tube: often branched near base, tube sometimes flattened ..... *Enteromorpha*
- 4a. Plants with erect branches (from horizontal stolons) branches with many protrusions called ramuli; ramuli can be fine and pointed or vesicular ..... *Caulerpa*
- 4b. Plants with erect branches (without stolons); branches with many ramuli; ramuli fine, slender with rounded ends ..... *Bryopsis*
- 4c. Plants erect and branched, or almost globular or appressed to rocks, consisting of the fine interwoven filaments ending in small swollen 'bulbs' on the surface ..... *Codium*

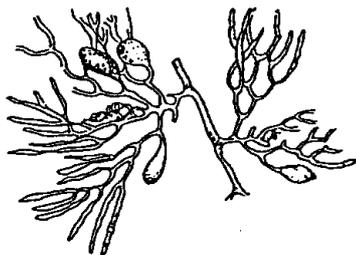
# Identifying Algae Key



*Calothrix*



*Rivularia*



*Cystophora*  
(About 25 species)

## The Blue-Green Algae – *Phylum Cyanophyta*

Blue-Green Algae are very primitive plants. Several species are common in the inter-tidal and sub-tidal zones in South Australia.

### Key to Two Blue-Green Algae

- 1a. Forming a thin black film on a rock, or epiphytic and slimy when wet, supralittoral.....*Calothrix*
- 1b. Forming small or round or irregular blobs on rocks or epiphytic, 1-2 cm across, blue-green in colour, gelatinous.....*Rivularia*

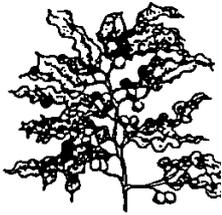
## The Brown Algae – *Phylum Phaeophyta*

The brown algae are usually the most conspicuous plants in the sublittoral and sub-tidal zones in South Australia. The common ones are large, tough plants growing attached to rocks and reefs.

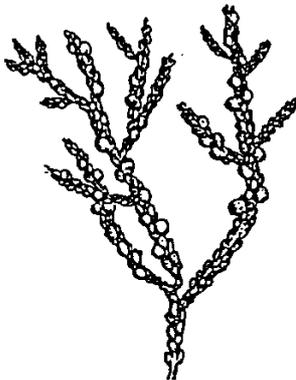
### Key to some Brown Algae

- 1a. Plants with hollow bladders on some part of the thallus.....2
- 1b. Plants without bladders.....5
- 2a. Plants consisting of branched chains of hollow bladders .....*Hormosira*
- 2b. Plants with stems and leaf like structures as well as bladders.....3
- 3a. Plants large, 1-10 m long, bladders (1.5–3 cm across) at the base of large flat blades (leaf like structure).....*Macrocystis*
- 3b. Plants usually less than 1 m tall, bladders small (3-8 mm), bladders not forming a part of the blade.....4
- 4a. Main axis with sympodial (zigzag) branching, the small ends of the branches (ramuli) usually long and thin.....*Cystophora*

# Identifying Algae Key



*Sargassum*  
(About 25 species)



*Scaberia*



*Ecklonia radiata* (Kelp)

- 4b. Main axis without sympodial branching, ramuli sometimes long and thin, sometimes broad and flat like a leaf (often both sorts on the same plant)..... *Sargassum*
- 5a. Stems long and thin (pencil thickness), rough and warty, no leaf-like blades..... *Scaberia*
- 5b. Plants consist of large holdfast (organ for attachment), and thick stems ending in large flat blades.....6
- 6a. Plants small, usually less than 1 m high, blades with an uneven surface.....*Ecklonia radiata*
- 6b. Plants large, 1.5-8 m long, blades thick and smooth with numerous long divisions.....*Durvillea*

## The Red Algae – Phylum Rhodophyta

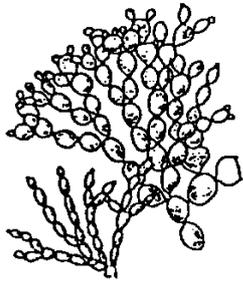
This group has the largest number of species. There is a great diversity in their structure and reproduction making their taxonomy very difficult. Many of the reds are deep water species and so are not often seen on reefs. Some of those commonly found on reefs secrete calcium carbonate (limestone) making them rock hard. These have the common name of coralline algae. Usually they are pale pink in colour but may appear white if bleached by the sun. They are commonly mistaken for corals.

## Key to some Coralline Red Algae

- 1a. Branching dichotomous (dividing exactly in two at each branch).....*Jania*
- 1b. Branching pinnate (feather-like).....*Corallina*
- 1c. Branching in irregular whorls.....*Metagoniolithon*

From *Below High Water* Smith, J.H., John, E.W. Education Dept. of South Australia, 1979.

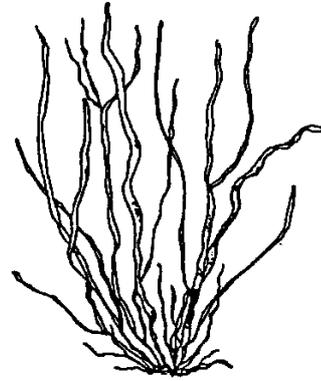
# Identifying Algae Key



*Hormosira*  
(Sea Grapes)



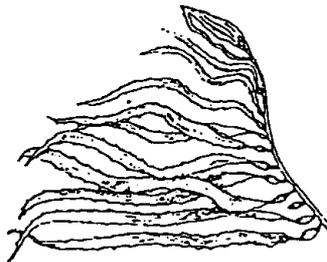
*Byropsis*



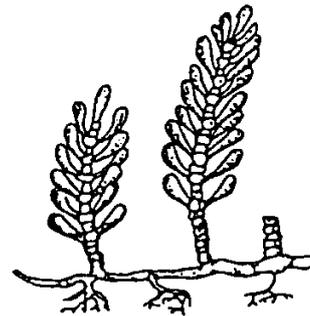
*Enteromorpha*



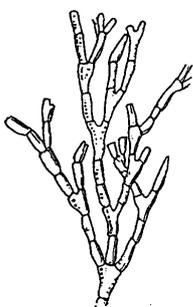
*Durvillea* (Bull Kelp)



*Macrocystis*



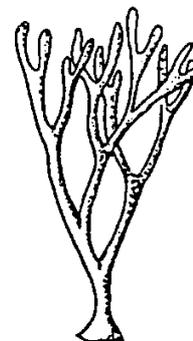
*Caulerpa*  
(About 20 species)



*Jania*



*Corallina*



*Codium*  
(About 15 species)