Vegetation Field Work

Algal Pressings

Level

3-8+

Key question

How are marine alga pressed?

Key outcome

Identify features of algae that determine their classification.

Adapted from *ReefEd*, and Moroney et al., *Coastal Activities for Primary Schools*.

What you need

Clipboard
Paper, pencil
Petri dish or flat plate
Paintbrush
Absorbent paper
Newspaper
Glue
Heavy book
Field guide to seaweeds

What you do

There are many varieties of algae including those called seaweed. Try to collect different ones in small quantities.

1. Collect as many types of algae as possible. Place each in a dish filled with water and use a small paintbrush to spread the algae out.
2. Carefully lift the algae onto a sheet of absorbent drawing paper and use the paint brush to spread it out again. The easiest way to do this is to slide a piece of paper into the water under the seaweed and raise the paper slowly, allowing the water to drain off. Place another sheet of paper on top of the algae.
3. Press the algae by placing the paper wrapped in newspaper and place a heavy weight on top or use a plant press. An old telephone book makes a good press. Allow this to stand for at least a week. When dried, use craft glue to stick the algae to the paper.
4. Use text books to find out the scientific name of the algae. Write this on the sheet of paper along with the date the pressing was done.

Algal Pressings

Extensions

Devise methods of grouping the different types of algae.

Use the algae to create unique cards and writing paper.

Press other plants.

References

Christianson, I.G., Clayton, M.N. and Allender, B.M. (eds.) 1981, *Seaweeds of Australia*, Reed Pty Ltd, New Zealand.

Cribb, A.B. 1996, *Seaweeds of Queensland: A Naturalist's Guide*, Queensland Naturalists'Club. (Available from QNC, Dept. Anatomical Sciences, University of Qld 4072 for $15 and $3 postage.)

Hughes, J.M.R. and Davis, G.L. 1989, *Aquatic Plants of Tasmania*, University of Melbourne Press, Dept. Geography.

Identifying Algae

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.

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.

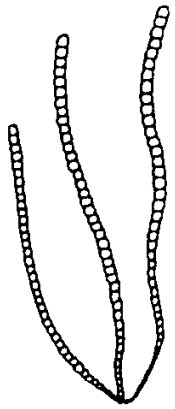
Consider your data: how many different algae did you find? Where were most located? Which was the smallest one? Which was the largest? Which is the dominant colour? Are there any algae which you could not key out and identify?

<u>Extensions</u>

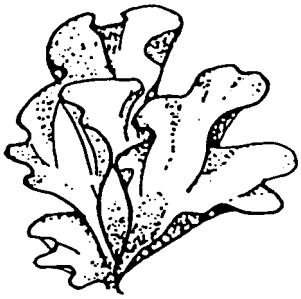
You could do the 'Algal Pressing' activity, and the 'Red Algae Bloom'. The latter looks at a problem associated with there being too much of one type of alga.

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*

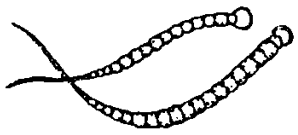
3c. Thallus a thin-walled, hollow tube: often branched near base, tube sometimes flattened .....*Enteromorpha*

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

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 epiphitic 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*

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

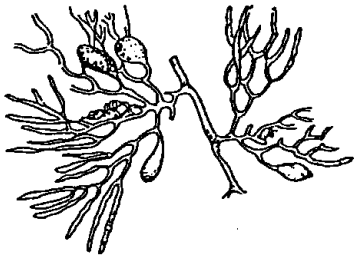
2a. Plants consisting of branched chains of hollow bladders .....*Hormosira*

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

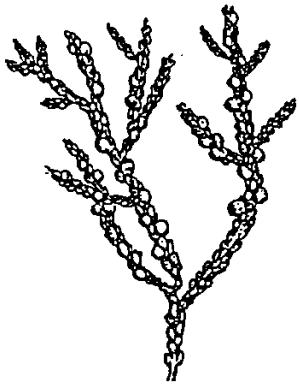
4a. Main axis with sympodial (zigzag) branching, the small ends of the branches (ramuli) usually long and thin.....*Cystophora*



Cystophora
(About 25 species)

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

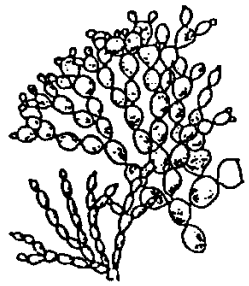
1a. Branching dichotomous (dividing exactly in two at each branch).....*Jania*

1b. Branching pinnate (feather-like).....*Corallina*

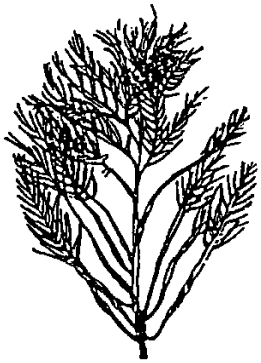
1c. Branching in irregular whorls.....*Metagoniolithon*

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

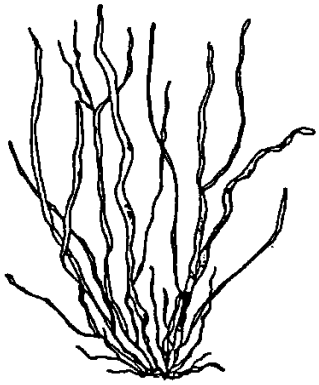
Identifying Algae Key



Hormosira
(Sea Grapes)

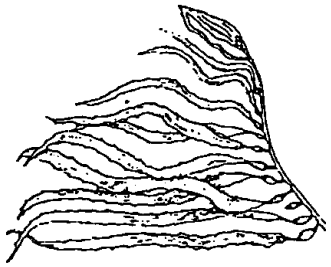


Byropsis

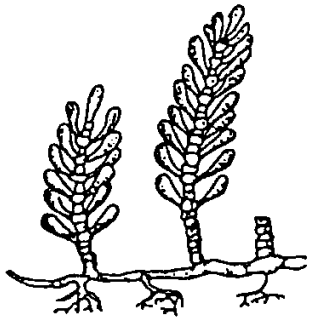


Enteromorpha

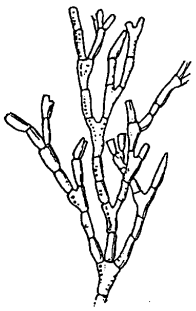
Durvillea (Bull Kelp)



Macrocystis

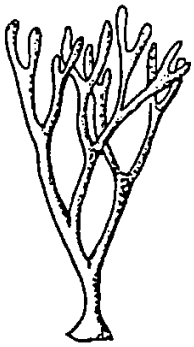


Caulerpa
(About 20 species)



Jania

Corallina



Codium
(About 15 species)