
EXPERIMENT 11 IDENTIFICATION OF COMMERCIALY IMPORTANT SEAWEEDS

Structure

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11.1 INTRODUCTION

Seaweeds or marine algae are comparatively simple plants. There are numerous seaweeds and for convenience they are classified into various groups. Several species occur in Indian waters and many of them are useful in the manufacturing of various products. However, it is beyond the scope of this course to have an elaborate study of all the seaweeds. Instead, we shall familiarize with a few species that have commercial significance.

Objectives

After performing this experiment, you will be able to:

- understand the different parts of seaweeds; and
- identify some of the commercially important seaweeds.

11.2 EXPERIMENT

11.2.1 Principle

Various morphological characteristics are used in the identification and classification of seaweeds. These include colour of the pigments, the extent of differentiation of the plant into various parts, shape or form of each part, tissues, etc.

11.2.2 Requirements

- Seaweed specimens – freshly harvested plants or preserved specimens
- Magnifying glass, scalpel/ forceps
- Trays with water

11.2.3 Procedure

- 1) Put the seaweed specimens in a tray of water and study the different parts such as holdfast, stem, leaves and vesicles. The main part of the plant is

called the thallus or frond. (Remember! These are simple plants and the structures you see such as stem and leaf are not well-developed structures as in the case of higher plants).

- 2) Use forceps and magnifying glass to observe small structures.
- 3) Compare the characteristics you can observe with those given for each alga.

Some of the characteristics for the three classes of seaweeds and three species under each class are given below. Their photographs and diagrams have also been provided.

A) Class: *Chlorophyceae*

This class includes the green algae. They have the typical green colour.

- i) *Enteromorpha compressa* (Fig.11.1)

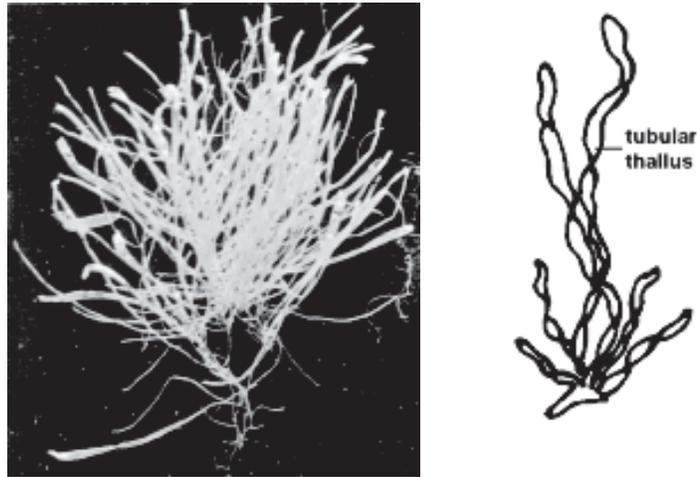


Fig.11.1: *Enteromorpha compressa*

The plant is profusely branched near its base. Each branch is tubular but flattened.

- ii) *Ulva reticulata* (Fig.11.2)

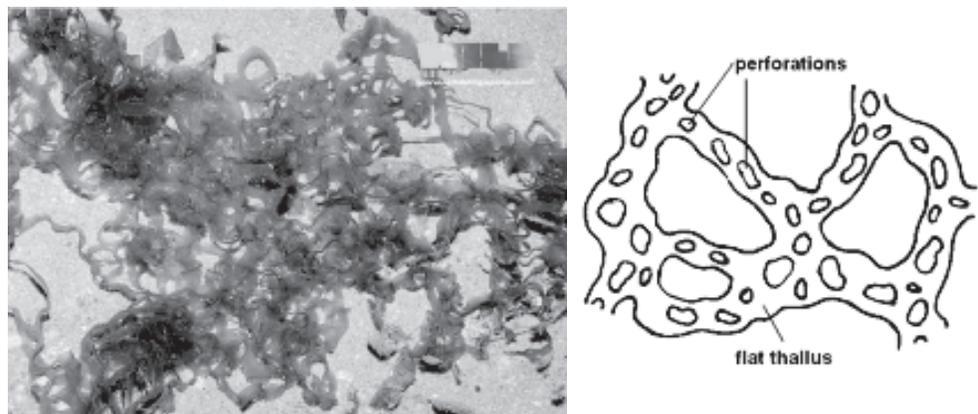


Fig.11.2: *Ulva reticulata*

Ulva species in general have thin, flat structure (frond). In the case of *U. reticulata* these fronds are with perforations or it is net-like in structure.

iii) *Caulerpa racemosa* (Fig.11.3)

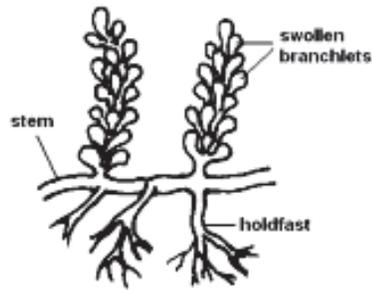


Fig.11.3: *Caulerpa racemosa*

In the case of *Caulerpa* species, the plants are differentiated into roots (holdfast), horizontal stem and erect foliar elements (leaf-like structures). In *C. racemosa*, the erect fronds are with crowded branchlets arising from all sides. The branchlets are also swollen and spherical as seen in the figure.

All the three plants mentioned above are edible.

B) Class: ***Rhodophyceae***

This constitutes the red algae which are characterized by their reddish pigments.

i) *Gelidiella acerosa* (Fig.11.4)

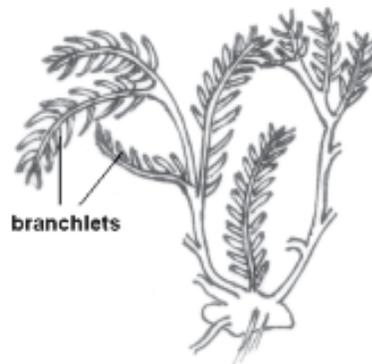
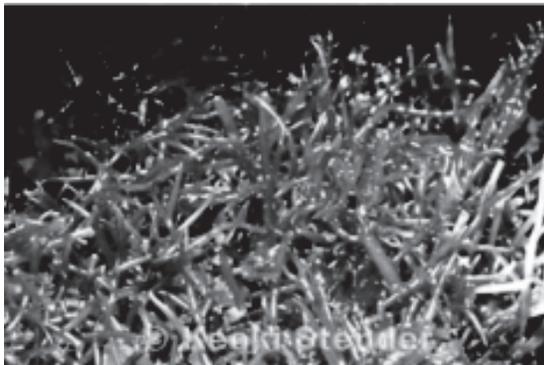


Fig.11.4: *Gelidiella acerosa*

The plant is wiry and grows as a bunch that is attached at the base. Each branch has several short branchlets. The plant is an agarophyte and therefore commercially used for the production of agar.

ii) *Gracilaria edulis* (Fig.11.5)

This is also a commercially important agarophyte. The plant is also branched but the branching is irregular.



Fig.11.5: *Gracilaria edulis*

iii) *Porphyra vietnamensis* (Fig.11.6)

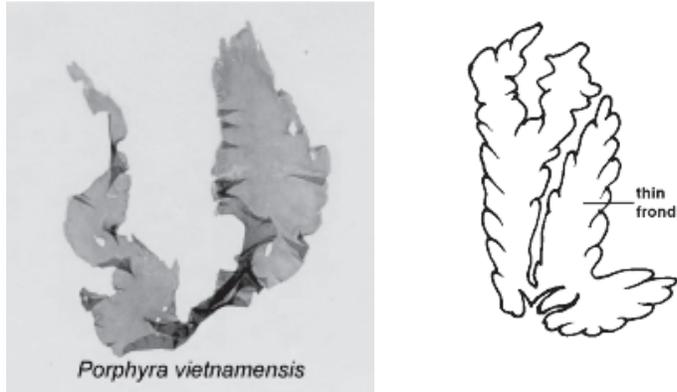


Fig.11.6: *Porphyra vietnamensis*

The plant is formed of a thin, flat thallus (frond). It's dark violet or mahogany red in colour. It is rich in nutrients.

C) Class: *Phaeophyceae*

On account of the pigments present, the plants under this class take up brownish colour and are therefore called brown algae.

i) *Sargassum wightii* (Fig.11.7)

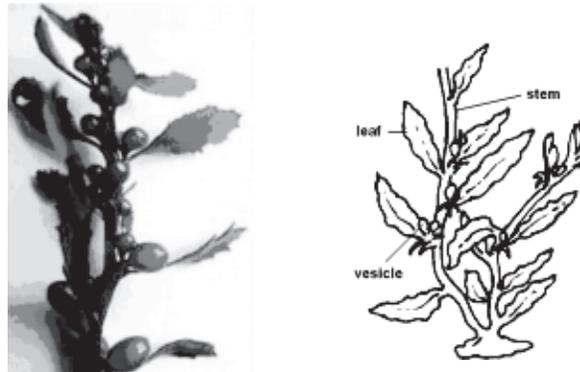


Fig.11.7: *Sargassum wightii*

Sargassum species are comparatively more developed than most other seaweeds. One common species is *S. wightii*. The various parts are distinguishable and are similar to those of terrestrial plants. Holdfast, stem, leaf-like structures and vesicles or air bladders are all visible. *Sargassum* is commercially used for the production of algin (alginophyte).

ii) *Turbinaria ornata* (Fig.11.8)



Fig.11.8: *Turbinaria ornata*

Even in *Turbinaria* species, the various structures such as stem, holdfast and leaf are well-differentiated. *T. ornata* is characterized by triangular leaves with marginal teeth-like structures. The leaves are also densely packed. *Turbinaria* is also an important source of algin.

iii) *Padina gymnospora* (Fig.11.9)

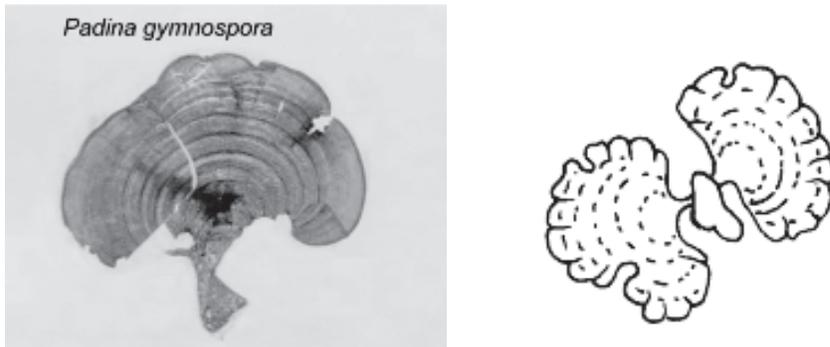


Fig.11.9: *Padina gymnospora*

This is a flat plant with fan-shaped fronds.

11.2.4 Observations

After examining the specimens, record your observations. Then, try to name each plant and the class to which it belongs. Show your observations in a tabular form as follows:

Specimen No.	Characteristics Observed	Class	Name of Alga

11.2.5 Results

The seaweeds identified are

11.3 PRECAUTIONS

- The characteristics given for each plant are only a few simple ones. In order to correctly identify the species, more elaborate examination of the specimen is necessary.
- In case specimens other than those mentioned above are given, you'll have to refer to other books such as those given under references for theory.