Sea Lettuce

Enteromorpha sp

Class: Chlorophyceae
Order: Ulotrichales
Family: Ulvaceae
Genus: Enteromorpha

Distribution
Enteromorpha species are distributed around the world in a wide variety of environments.

Habitat
It is both a temperate and tropical species, abundant in different forms worldwide.

Reproduction
Enteromorpha is dioecious, meaning it has separate sexes. It has several pathways for reproduction.

Development
Scientific studies are ongoing as to why there can be sudden, massive blooms of this genus covering huge areas on a global basis. These rapid and large accumulations are referred to as "Green tides".

Burntcoat Head shoreline

This can be seen year round on the shoreline.

Chlorophyceae forms a major class of green algae. There are a great number of species. Sea Lettuce belongs to this green algae group. It is abundant in Nova Scotian waters, and in some areas is considered to be an invasive, nuisance species.
Chlorophyceae is derived from the Greek word chloros, meaning "green"; it is indeed a very bright green.

Sea lettuce grows primarily on rocks in shallow areas that are relatively protected from waves and have good exposure to sunlight. It is also common in estuaries, and can attach near the base of eelgrass, where it forms an "understory" of vegetation. Where water and light conditions are favourable, sea lettuce also grows on pilings and dock floats. It is very tolerant

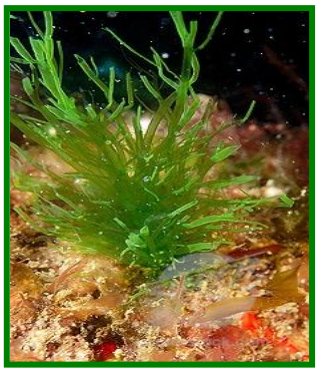
They use various methods of reproduction including sexual, asexual, and vegetative. Vegetative is also varied; fragmentation and cell division occur; cells from the upper and lower parts develop into shoots and roots creating new units. Both gametes and zoospores are released from the tips of the fronds. Gametes (sex cells) have two flagellae enabling them to swim; they find each other and form groups. Gametes join together as either egg or sperm to form new individuals. Asexual reproduction (mitosis) involves only one parent, the zoospore. This spore is able to single-handedly develop and lead to a new organism, while a gamete is a reproductive cell destined to merge with another gamete producing a diploid cell, the zygote , from which develops a new organism. This genus can be so prolific forming large floating masses of green algae.

BURNTCOAT HEAD Park

Characteristics

This particular algae features long, slippery tubes or fingers rising from the center of the plant attached by a single holdfast. The long tubes are flattened and crinkled, usually densely tufted, soft to the touch and very much branched. Latin term *"Enteromorpha"* literally means intestine-shaped.

There are many species of Sea Lettuce, some can only be identified with the help of a microscope. Single species can vary in response to environmental conditions. The tubes vary greatly in width, in different, or even in the same species. Sometimes it is of no greater diameter than that of human hair; and sometimes it is two or five centimetres across. Tubes also vary greatly in length. Locally the Sea Lettuce is slender, hair-like, and between 2.5 and 3.8 cm long. It is well tufted, dense, soft, and very slippery.



Adaptations

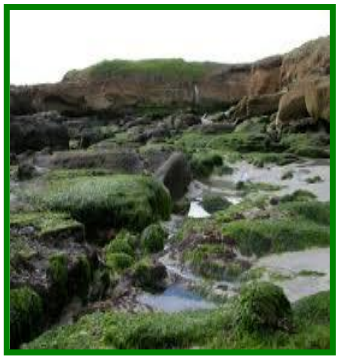
Spores have four flagellae and are able to move about, living for several months without growing, or attaching themselves until surrounding conditions are acceptable. It is very tolerant of environment changes e.g. salinity and temperature, and grows all over the seashore. It often grows where freshwater runs across shore lines

At low temperatures of -21°C, it still functions although the optimum is l7°C. It does prefer cooler water temperatures and can be seen year round locally. It also tolerates a wide range of salinities, from 17 ppt. to 40 ppt. It is an early colonizer of bare rock. It can survive drying out on the rocks near the top of the shore as it rehydrates rapidly when the tide comes back in. After being grazed by periwinkles and limpets it has a very quick recovery rate, regrowth is rapid. Sea lettuce is often found at the base of rivers and brackish water estuaries. It can cover mudflats giving the appearance of a "green meadow".

Ecological Aspects

In various parts of the world Sea Lettuce is a food source for many people. It is high in protein, soluble dietary fibre, and a variety of vitamins and minerals especially iron. It is also consumed by a variety of animals including fish, manatees, and periwinkles.

It is frequently used along coastal areas as a readily available fertilizer, and also used as animal feed. It has antibacterial properties and is used medicinally. Locally growth is kept somewhat in control by the fish, crustaceans and molluscs that graze on it. However, it can grow uncontrollably in the right conditions. In recent years there have been unprecedented amounts of algae washing up on shorelines. Floating green mats can grow to completely cover beaches and swimming areas, clog up harbours and shipping canals.



Status/Threats

It is extremely prolific globally and under no threat whatsoever.

It is still unclear which factors in particular cause "Green tides", and how they can be avoided and managed. A better understanding of the origin and persistence of green tide blooms is desirable in order to address the problems they cause.

Sightings in Nova Scotia

It is very common on Nova Scotian shorelines.