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Commentary

Role of Aquatic Plants in Maintaining the Biota in Water Bodies

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DESCRIPTION

Aquatic plants are plants adapted to life in an aquatic environment (salt or freshwater). They are also called hydrophytes or macrophytes to distinguish them from algae and other microalgae. Macrophytes are plants that grow, appear, submerge, or float in or near water. In lakes and rivers, large plants provide fish shelters, substrates for aquatic invertebrates, produce oxygen, and feed some fish and wildlife.

Macrophytes are primary producers and the basis of the food web for lot of organisms. They slow down the flow of water, trap pollutants and trap sediments, thus having a significant impact on soil chemistry and light level.

Excessive sediments settle in benthic organisms, that results slowdown of water by the presence of plant stems, leaves and roots. Some plants have the ability to absorb pollutants into tissues. Seaweeds are multicellular marine algae whose ecological effects are similar to those of other larger aquatic plants, but are not usually referred to as macrophytes.

Aquatic plants require special adaptation to live in or on the surface of the water. The most common indications are the presence of lightweight internal packaging cells, stomata, but floating and finely dissected leaves are also common. Aquatic plants can only grow in water or soil that is often saturated with water. Therefore, they are a common component of wetlands. One of the largest aquatic plants in the world is the Amazon water lily. One of the smallest is the minute duckweed. Many small aquatic animals use plants such as duckweed as a home or to protect themselves from predators. Other well-known examples of aquatic plants include floating hearts, water lilies, lotus, and water hyacinth. Historically, aquatic plants have not been as studied as terrestrial plants.

Distribution

The main factor controlling the growth of aquatic plants is the availability of water. However, other factors such as nutrient availability, wave turbulence, grazing, and salt can also controltheir distribution. Some aquatic plants, especially large algae, can breed in brackish water, salt and salt water.

Evolution

Aquatic plants are adapted to life in fresh or salt water. Aquatic plants have evolved multiple times in different plant families. They can be ferns or angiosperms, including monocotyledonous and dicotyledonous plants. The only angiosperms that can grow completely submerged in seawater are seagrass. Examples are found in genera such as Thalassia and Zostera. The aquatic origin of angiosperms is supported by evidence that some of the earliest known fossil angiosperms were aquatic plants. Aquatic plants make up less than 2% of angiosperms, but have at least 50 independent origins and are phylogenetically well distributed throughout angiosperms.

Archaefructus is one of the oldest and most complete angiosperms, back about 125 million years. These plants require special adaptation to live in the water or swim on the surface of the water.

Reproduction

Most aquatic angiosperms can reproduce by flowering and seed setting, but many have also evolved into widespread asexual reproduction using rhizomes, tubers, and common fragments.

Photosynthesis

Underwater aquatic plants have more restricted access to carbon than carbon dioxide, compared to terrestrial plants. In addition, lighting conditions may decrease. There is a Diffuse Boundary Layer (DBL) around the submerged leaves and photosynthetic stems. Aquatic plants have DBLs that vary with leaf thickness, shape, and density, and they are the main factors that significantly reduce the rate of gaseous transport through the leaf-water interface, thus carrying carbon dioxide transport. It strongly inhibits. To overcome this limitation, many aquatic plants have evolved to metabolize bicarbonate ion as a source of carbon.

Environmental variables affect the instantaneous photosynthetic rates of aquatic plants and the photosynthetic enzymes pigments. In water, light intensity rapidly decreases with depth. Respiration is also higher in the dark per the unit volume of the medium they live in.

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