Aquatic Miracles: Some Aquatic Plants and Their Uses

Latife Ceyda Irkin
Canakkale Onsekiz Mart University, School of Applied Science,
Department of Fisheries Technology, Canakkale, Turkey
E-mail: latifeirkin@gmail.com

Abstract
Water plants have many benefits in aquatic ecosystems. They not only provide nutrients and oxygen to the environment, but also assists the creatures that are part of the ecosystem and ecological environment by being a shelter and reproductive occasion for aquatic creatures.
Our country is one of the richest regions of the world. The reason for this is the richness of many different ecological environments. One of these ecological environments is aquatic lands. These areas contain many different plant species.
Aquatic plants with different habitats and characteristics from land plants have an important place in the fields of landscape architecture. In addition to its highly attractive images, it offers a unique display with water plants, leaves or flowers.

Keywords: Aquatic, Plant, Wetland, Architecture.

1. Introduction

1.1 General characteristics of aquatic plants

The most well-known of these plants are de algae but seed plants also contain important species of aquatic plants. Seed plants have become aquatic plants with to return k to underwater life. They derive from land (or above) plants and pass through many adaptation stages.
Aquatic plants are an important factor in creating a balanced ecosystem pool. Balances the pool ecosystem; nitrogen, ammonia, nitrates and other minerals from the pool to create biological filtration (https://cals.arizona.edu/azaqua/extension/Classroom/pdffiles/789a.pdf)
The living conditions of the plant are completely different from the living conditions on land or soil. It does not have to fight against gravity in water, but must be resistant to the movements of water and water. The most suitable forms are the swim leaves being round, the leaves in the water are in strip form.
The problem of the circulation of the plant in the plant loses its importance and it is seen that the wood vessels in the species living in the fresh water disappear. This causes the functions of the roots to diminish, and they only function as a grip. The circulation of the plant is not like in the land plants, but the peel pipe remains important, because this tissue carries the inheritance.
The contact of the tissues with the air in aquatic plants is much more difficult than the plants on land. For this reason, as in the leaves and flower stalks of water lilies, there are highly developed air ducts and intercellular spaces. The spongy tissue in the leaves is irregular. Because they are not necessary, there are no pore-permeable pores, but only pores that provide water exchange (https://loxahatcheefriends.com/nature/aquatic_plants/aquatic_plants.htm).
These harmonies do not manifest themselves in different types; species in the sea or in saline waters also have to resist the environmental salinity. Blooming in these plants is in the air and is normal. In addition, changes are observed in warehouse organs and structures that provide resistance.
The species living in the sea are probably the most differentiated ones. These include rhizomes, which enable the plant to bind to the bottom and make them form communities in the form of dense weeds.
These are important places for fish and spawning. *Zostera* and *Posidonia* are the most common species on the European coast (Jackson et al., 2001).
Water plants can be divided into several basic categories;
Water lilies, edging plants, water surface and underwater plants (oxygen transmitter). Aquatic plants can also be divided into two main types as 'tropical and' resistant plants. While durable plants can spend the winter in cold climates, tropical plants live in cold climates for a year, but are more suitable for hot climatic conditions.
Lilies; they are among the most admired aquatic plants and are often used as ornamental elements. In

addition to its magnificent beauties, it also provides shade areas that cool the pool and make shelter for fish. Ideally, thirty to sixty percent of the water surface should be covered with water plants.
Edging plants; It is the largest group of aquatic plants with its durable and tropical plants. Yellow lily or Rudbekya in moist soil or on the bottom of the plant with 5-10 cm upper part of the water grows in stagnant water. Some of the edge plants are sprigs of root, primrose, kulkas, rosemary and water lily.
Water surface plants; as they are known, they only stand on the surface of the water. Roots hang under the plant to draw all the nutrients from the water. It provides a great benefit in filtering the pools by cleaning the nutrients from the water.
Underwater plants; oxygen devices. Some of them bloom and the flowers are mostly water surface. Swamp-loving, water grass, horn grass, cicada, and includes species such as seagrass (https://www.proflowers.com/blog/aquatic-plants-and-flowers).

1.2 Importance of aquatic plants
Aquatic plants, which are the main producers of aquatic environment, are organisms that have a variety of forms ranging from a cell to more than a cell and contain chlorophyll. The importance of maintaining the balance of the environment is great.
Green plants and phytoplanktonic organisms, which are defined as primary producers (primary producers), produce organic matter as a result of photosynthesis by the help of water and carbon dioxide light energy thanks to their chlorophylls. Thus, they form vegetable protein sources. This constitutes the first link of the food chain in the aquatic environment.
Plants are carrying chlorophyll also form oxygen with photosynthetic activity and provide oxygen to water. Thus, they form the source of oxygen required for breathing in the aquatic environment.
Aquatic plants play a role in the removal of pathogenic bacteria. Pathogenic bacteria prefer acidic environment as known. Herbal organisms, because the base of the environment provides the basicization of bacteria (Ameh, 2017).
Water plants also affect the chemical structure of the environment. For example, some water plants such as Elodea and some other water plants, which cause the water hardness of water plants to soften by taking the lime in the water. In this way, suitable environment for aquatic organisms that do not tolerate hard water occurs.
Aquatic plants are important indicator (indicator) organisms to detect pollution by biological methods. Especially algae are very sensitive to oxidation in water. In the absence of oxygen, algae are replaced by fungi and bacteria (Mentzer, 2018).
Vegetable organisms in the aquatic environment are more intense on the coasts where sunlight can reach and in areas with low depth. Macrophytes are particularly distributed in the shore zone. These regions form the breeding grounds of fish and other creatures.
Protection and feeding area for hatched larvae. Plants are the food of the herbivorous fish. These fish also control the proliferation of aquatic plants.
Some organisms in the aquatic environment tend to escape light. Thanks to the light absorbing properties of aquatic plants, excessive light input is prevented. These creatures develop where water plants are.
Aquatic plants have effects on the aquatic base. With the help of growing roots and bodies, it destroys the effect of the waves on the water base and prevents drift of the base material. They also form the bonding area of many benthic creatures
(https://manoa.hawaii.edu/exploringourfluidearth/biological/aquatic-plants-and-algae/what-are-aquatic-plants-and-algae).
The mangrove plants seen in tropical and pantropical climatic conditions are important plants along the coast. This plant community is important in the control of flood and erosion, in reducing the impact of winds, in clearing waters and in fishing. However, this plant is not found in the coasts of our country.

2. Aquatic plants farming
Turkey ornamental plants has a share of 7 % in the world as the production of about a thousand. 28% of total production is done in greenhouses and 72% in open areas.
In aquatic plant cultivation, germination and growing environments have an effect on plant development and quality. In the selection of cultivation environment, plant species and ecological conditions must be taken into account. It is important that the cultivation medium is fibrous, porous, lightweight, well ventilated, rich in organic matter and sterile (Proctor and Sullivan, 2013).
Studies show that due to their increasing economic importance, aquatic plant cultivation increases day by day and many seedlings are produced for this purpose. Although water plant cultivation in our country has a very small share in the horticultural production area, it should be considered that it is an important sector with high economic value. Information on several aquatic plants with economic importance is

given below. These species are *Arundo sp*., *Scirpus sp*., *Tradescantia sp*., *Stratiotes sp*., *Callitriche sp*. and *Nymphaea sp.*

2.1 Some aquatic plants

Arundo sp. is a herbaceous plant with a tall, tubular and hard body, which grows on stagnant and fresh water edges. It is a species of rhizomes that grows in fresh water and light salt water. The adult body of the 2-8 m growing plant, which has good and rapid development in wetlands, is hollow and has a diameter of 2 cm. The leaves are in the form of strips or lances. The leaves that can extend up to 60 cm are 2-6 cm wide. It flowers in late summer. Usually flowers are in the form of a compound cluster or spike opens. Opens 40-60 cm flowers with gray-green hair. In optimum conditions, the amount of water can be up to 5 cm per day in spring. Reproduction with root rhizomes. It grows on various soil types including coarse sand, gravelly soil, heavy clay and river deposits in regions with annual rainfall of 300-4000 mm. The pH should be between 5-8.7.

Scirpus sp. is 90-150 cm tall, perennial, in clusters, rhizomes and salt marsh grasses that hold tight to the soil. Leaves rise from the base. Cylindrical and pointed tip, hollow or soft spongy coated. It is an elegant plant. 34 species in our country are grown naturally. It is spread between 800-1830 m altitudes in the interior of our country. It usually develops in wet soils in heavy soils. The development of rhizome in sandy soils will be slow and the soil is weak to hold. It is spread between 800-1830 m altitudes in the interior of our country. Their bodies are used for making baskets and similar articles. The sharp, hard-topping leaves of this species, which develops well in salty marshes, form a protective shelter against grazing for other plants and provide nesting of many animals.

Tradescantia sp has 60 species of woody and herbaceous species that are durable or semi-durable, perennial and often creeping plants. It is always a green ornamental plant. The stem and leaf are dark purple in color. The flowers are pink or white. The handle has a creep feature. Print the blooming season. 30-40 cm in length. It can be found in places where the temperature is between 18-24ºC. But it shows the best development at temperatures of 10-15ºC. The temperature should not fall below 8ºC. It requires high humidity (70 %). She likes semi-shaded or light sunny places. Grows in sunny or shade places and in well-drained soil. It prefers moist soils and light shadow cuts. Telegraph, which is very easy to grow and maintain, is easily produced by immersing anybody steel. Planting is usually done in autumn or spring. During the growth period, water should be sprayed with plenty of water and sprayed frequently in hot weather. In winter, the amount of water given should be kept moderately moist.

Stratiotes sp. is durable, perennial submerged water plant. At the time of flowering body has a rising body. Suitable for standing or stagnant waters, lake, ponds and marshes. The flower of the water shears plant is numerous and stands above the water. Flowers in June-August. It has hard and prickly leaves. There are long leaves like swords. Grows on the surface of the water, up to 50 cm in length. She likes shallow waters. They quickly close the water surfaces because they spread rapidly. It must therefore be kept under control. It likes sun and heat and is resistant to frost. The water level should be at least 50-80 cm and not more than 200 cm. He likes rich and clay soils in the amount of organic matter. It is grown in basic (pH 8 and above) and acidic waters (under pH 7) but it is more suitable to grow in acidic waters. In March, root separation is done by the separation. Planting is done on soils containing 8-30 cm deep water and the top of the seedlings is kept on water. As the calcium carbonate accumulates in the leaves, it is tried to be kept below the plant water level in autumn (http://www.megepmeb.com/tarim-teknolojileri-megep-modulleri/ic-mekan-sus-bitkileri-dersi-megep-modulleri.html).

Callitriche sp. is a green flowered perennial water plant that grows in the temperate regions of both hemispheres, along the banks of the streams and lakes, with its reptiles and trunks extending about 30 cm above the water surface.

The leaf shape depends on the depth of the water and the amount of light. Leaves coming from the surface of the water are in the shape of a rosette in opposite directions from the ovals. Flowers are leafless green and thin. Plant height varies between 30-100 cm. Flowers occur in the summer.

The plant is found in very hard and cold waters. It has a wide range of temperature. However, the ideal is 15-30ºC. Sand and muddy soils are suitable for cultivation. It requires a rich base material. The pH grows between 7.5-8. It is produced by separating from the new root strains in the roots. Long rhizomes should be preferred for strong seedling production. It is used to decorate the water edges in natural ponds and artificial pools, to fill passive zones in lake and pool and to create green area images.

Nymphaea sp. Grows in temperate and tropical regions. Compared to all aquatic plants in the world, the past is the oldest and completely real water plant. The fact is that other aquatic plants are both living outside the water
(http://megep.meb.gov.tr/mte_program_modul/moduller/S%C3%BCs%20Bitkileri.pdf).

It grows widely in stagnant waters in many parts of the world. Water lilies are durable perennial

herbaceous plants. There are three locations considered to be the motherland of the water lily: Africa, Australia and South America. They spread to many temperate regions of the world. The most recognized member of the *Nymphaea alba* is found in almost all parts of the world.
Body creep, stem body with rhizome, water-loving (aquatic), Leaves are long, usually simple, shielded, and floating on the water. Flower parts with spiral and spiral posture or circular arrangement. Flower stems come out of the water and flowers do not touch the water surface.
During the summer months (May-September) water lilies often show day, white, yellow, pink, red or blue-colored flashy flowers. This gives a large number of flowers. The root body is rhizome. Inside is filled with air gaps. The leaves are bright green and in the form of heart. It floats on the water and is covered with wax. There are many types and types. The water lily, which is one of the most admired water plants, can grow up to 10-20 cm from the surface of the water they are grown in and can spread to their periphery up to 50-300 cm.
It usually develops in shallow waters, swamps and lakes. Although they live in temperate and tropical regions, they are resistant to cold but do not give leaves and flowers in a cold environment. They love plenty of sunny environments. Flowering efficiency is reduced even if grown in light shade conditions. Many species like sunny and sheltered places, their development is slow.

3. Conclusion

All plants need water, which is the source of life. Water plants as found in various groups of non-flowered plants (Criptogam), for example, water candles (Charophyta), liver grasses and black mosses (Bryophyta), ferns and horse tails (Pteridophyta), flowering plants (Fanerogam), and the various families of the seedlings group.
One of the most important factors affecting the use of the plant in an area is the climatic characteristics of the area. Temperature is the most important factor in the use of restrictive environmental conditions. Many aquatic plants are of tropical origin and are not very resistant to low temperatures. For example, tropical water lilies can be given (Brown, 2014).
Light or light conditions in the area also affect the use of aquatic plants. All water plants need light for photosynthesis. However, in terms of light intensity, their demands are different from those of land plants. There are many benefits of aquatic plants in the water habitat; they do not only provide nutrients and oxygen to the aquatic environment, but also they serve as a shelter and reproductive place for aquatic organisms. Many of them have aesthetic functions with leaves or flowers as well as extremely attractive images. Water plants, which have different properties from land plants both in terms of habitats and botanical structures, have a very important place in the fields of landscape architecture.
Their use in water pools, which serve various purposes both in wetlands and with different qualities, is of importance both aesthetically and functionally. It is necessary to explain the qualifications of these plants which help the natural life functionally and also to appeal to the eye from an aesthetic point of view.

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