

AQUATIC PLANTS









aquatic plants - водные растения

[ə'kwætɪk plɑ:nts]



lotus - лотос

[ðɪ:'ləʊtəs]



water lily - водяная лилия

['wɔ:tə 'lɪli]



water poppy - водный
мак

['wɔ:tə 'pɒpi]



yellow water lily -
желтая кувшинка

['jeləʊ 'wɔ:tə 'lɪli]



arrowhead- стрелолист

['ærəʊhed]



pontederia -
понтедерия

[ˈpɒntədɪəriə]



water hawthorn -
водяной боярышник

[ˈwɔːtə ˈhɔːθɔːn]



water hyacinth -
водный гиацинт

[ˈwɔːtə ˈhaɪəsɪnθ]

Aquatic plants



Aquatic plants are plants that have adapted to living in aquatic environments (saltwater or freshwater). They are also referred to as hydrophytes or macrophytes to distinguish them from algae and other microphytes. A macrophyte is a plant that grows in or near water and is either emergent, submergent, or floating. In lakes and rivers macrophytes provide cover for fish, substrate for aquatic invertebrates, produce oxygen, and act as food for some fish and wildlife.

Macrophytes are primary producers and are the basis of the food web for many organisms. They have a significant effect on soil chemistry and light levels as they slow down the flow of water and capture pollutants and trap sediments. Excess sediment will settle into the benthos aided by the reduction of flow rates caused by the presence of plant stems, leaves and roots. Some plants have the capability of absorbing pollutants into their tissue. Seaweeds are multicellular marine algae and, although their ecological impact is similar to other larger water plants, they are not typically referred to as macrophytes.

Aquatic plants require special adaptations for living submerged in water, or at the water's surface. The most common adaptation is the presence of lightweight internal packing cells, aerenchyma, but floating leaves and finely dissected leaves are also common. Aquatic plants can only grow in water or in soil that is frequently saturated with water.

They are therefore 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 for a home, or for protection from predators. Some other familiar examples of aquatic plants might include floating heart, water lily, lotus, and water hyacinth.

Lotus



Nelumbo nucifera, also known as Indian lotus, sacred lotus, Nelum (in Sinhala), bean of India, Egyptian bean or simply lotus, is one of two extant species of aquatic plant in the family Nelumbonaceae. It is often colloquially called a water lily.

Lotus plants are adapted to grow in the flood plains of slow-moving rivers and delta areas. Stands of lotus drop hundreds of thousands of seeds every year to the bottom of the pond. While some sprout immediately, and most are eaten by wildlife, the remaining seeds can remain dormant for an extensive period of time as the pond silts in and dries out. During flood conditions, sediments containing these seeds are broken open, and the dormant seeds rehydrate and begin a new lotus colony.

Under favorable circumstances, the seeds of this aquatic perennial may remain viable for many years, with the oldest recorded lotus germination being from seeds 1,300 years old recovered from a dry lakebed in northeastern China. Therefore, the Chinese regard the plant as a symbol of longevity.

It has a very wide native distribution, ranging from central and northern India (at altitudes up to 1,400 m or 4,600 ft in the southern Himalayas), through northern Indochina and East Asia (north to the Amur region; the Russian populations have sometimes been referred to as "*Nelumbo komarovii*"), with isolated locations at the Caspian Sea. Today the species also occurs in southern India, Sri Lanka, virtually all of Southeast Asia, New Guinea and northern and eastern Australia, but this is probably the result of human translocations. It has a very long history (c. 3,000 years) of being cultivated for its edible seeds, and it is commonly cultivated in water gardens. It is the national flower of India and Vietnam.

Water lily



Nymphaeaceae is a family of flowering plants, commonly called water lilies. They live as rhizomatous aquatic herbs in temperate and tropical climates around the world. The family contains five genera with about 70 known species. Water lilies are rooted in soil in bodies of water, with leaves and flowers floating on or emergent from the surface. Leaves are round, with a radial notch in *Nymphaea* and *Nuphar*, but fully circular in *Victoria* and *Euryale*.

Water lilies are a well studied clade of plants because their large flowers with multiple unspecialized parts were initially considered to represent the floral pattern of the earliest flowering plants, and later genetic studies confirmed their evolutionary position as basal angiosperms. Analyses of floral morphology and molecular characteristics and comparisons with a sister taxon, the family Cabombaceae, indicate, however, that the flowers of extant water lilies with the most floral parts are more derived than the genera with fewer floral parts. Genera with more floral parts, *Nuphar*, *Nymphaea*, *Victoria*, have a beetle pollination syndrome, while genera with fewer parts are pollinated by flies or bees, or are self- or wind-pollinated. Thus, the large number of relatively unspecialized floral organs in the Nymphaeaceae is not an ancestral condition for the clade.

Water lilies do not have surface leaves during winter, and therefore the gases in the rhizome lacunae access equilibrium with the gases of the sediment water. The leftover of internal pressure is embodied by the constant streams of bubbles that outbreak when rising leaves are ruptured in the spring.

Water poppy



Hydrocleys nymphoides, the waterpoppy or water-poppy, is an aquatic plant species in the Alismataceae. It is widespread across South America, Central America, Puerto Rico, Trinidad and the Netherlands Antilles. It is cultivated in many places for use in decorative ponds and artificial aquatic habitats, and naturalized in Australia, New Zealand, South Africa, Fiji, New Caledonia, French Polynesia, Florida, Louisiana and Texas.

Yellow water lily



Nuphar lutea, the yellow water-lily, brandy-bottle, or spadderdock, is an aquatic plant of the family Nymphaeaceae, native to northern temperate and some subtropical regions of Europe, northwest Africa, western Asia, North America, and Cuba. This interesting species found on both sides of the Atlantic Ocean was used as a food source and in medicinal practices from prehistoric times with potential research and medical applications going forward.

Nuphar lutea flowers emerge about three years after seed germination, blooming mid-spring through early autumn, each flower taking 4 to 5 days to develop -- a process incorporating secretion of a sweet-smelling nectar on the stigma, pollen cross-fertilization by a host of insects (bees, beetles, flies, aphids), expansion of the female reproductive parts (gynoecium) up to three times in diameter, birthing as many as 400 seeds, and finally dispersal of the seeds on the water surface as the seed-head bursts, spreading them up to 80 m/h (meters/hour) over a 72 hour period before they sink to the bottom.:19-23

The flower is solitary, terminal, held above the water surface; it is hermaphrodite, 2-4 cm diameter, with five or six large bright yellow sepals and numerous small yellow petals largely concealed by the sepals. Flowering is from June to September, and pollination is entomophilous, by flies attracted to the alcoholic scent. The flower is followed by a green bottle-shaped fruit, containing numerous seeds which are dispersed by water currents.

Arrowhead



Pontederia



Pontederia is a genus of tristylous aquatic plants, members of which are commonly known as pickerel weeds. Pontederia is endemic to the Americas, distributed from Canada to Argentina, where it is found in shallow water or on mud. The genus was named by Linnaeus in honour of the Italian botanist Giulio Pontedera.

Pontederia plants have large waxy leaves, succulent stems and a thick pad of fibrous roots. The roots give rise to rhizomes that allow rapid colonization by vegetative reproduction. Species are perennial, and produce a large spike of flowers in the summer. There is a species of bee (*Dufourea novaeangliae*) that exclusively visits *Pontederia cordata*; waterfowl also eat the fruit of the plant.

***Pontederia cordata*, and another member of the family, *Eichhornia crassipes*, have become invasive in many tropical and temperate parts of the globe, but are, on the other hand, efficient biological filters of polluted water in constructed wetlands.**

Water hawthorn



Aponogeton distachyos or **Aponogeton distachyum**, also known as waterblommetjie (lit. trans. water-floret), Cape-pondweed, water hawthorn, vleikos and Cape pond weed is an aquatic flowering plant.

It is an aquatic plant growing from a tuberous rhizome. The often mottled leaves float on the water surface from a petiole up to 1 m long from the rhizome; the leaf blade is narrow oval, 6–25 cm long and 1.5–7.7 cm broad, with an entire margin and parallel veins. The flowers are produced on an erect spike with two branches at the apex like a 'Y', held above the water surface; they are sweetly scented, with one or two white petal-like perianth segments 1–2 cm long, and six or more dark purple-brown stamens.

It is widely cultivated in South Africa for its edible buds and flowers, used in the recipe waterblommetjebredie.

It is also used as an aquarium and pond plant. It was introduced to Europe in the seventeenth century, and later into other parts of the world. It has escaped into the wild and has become widely naturalised in Australia, and more locally in France and England. In North America it is naturalised in southern and western California.

It will grow in full sun or partial shade. Planting depth should be about 18 inches (45 cm).

Water hyacinth



Pontederia crassipes, commonly known as common water hyacinth, is an aquatic plant native to the Amazon basin, and is often a highly problematic invasive species outside its native range. It is the sole species of *Pontederia* subg.

Water hyacinth is a free-floating perennial aquatic plant (or hydrophyte) native to tropical and sub-tropical South America. With broad, thick, glossy, ovate leaves, water hyacinth may rise above the surface of the water as much as 1 meter (3 feet) in height. The leaves are 10–20 cm (4–8 inches) across on a stem which is floating by means of buoyant bulb-like nodules at its base above the water surface. They have long, spongy and bulbous stalks. The feathery, freely hanging roots are purple-black. An erect stalk supports a single spike of 8–15 conspicuously attractive flowers, mostly lavender to pink in colour with six petals. When not in bloom, water hyacinth may be mistaken for frog's-bit (*Limnobium spongia*) or Amazon frogbit (*Limnobium laevigatum*).

One of the fastest-growing plants known, water hyacinth reproduces primarily by way of runners or stolons, which eventually form daughter plants. Each plant additionally can produce thousands of seeds each year, and these seeds can remain viable for more than 28 years. Some water hyacinths were found to grow between 2 and 5 meters (7 and 16 feet) a day in some sites in Southeast Asia. The common water hyacinth (*Pontederia crassipes*) are vigorous growers and mats can double in size in one to two weeks. And in terms of plant count rather than size, they are said to multiply by more than a hundredfold in number, in a matter of 23 days.

In their native range, these flowers are pollinated by long-tongued bees and they can reproduce both sexually and clonally. The invasiveness of the hyacinth is related to its ability to clone itself and large patches are likely to all be part of the same genetic form.

Water hyacinth has three flower morphs and is termed "tristylous". The flower morphs are named for the length of their pistil: long, medium and short. Tristylous populations are however limited to the native lowland South America range of water hyacinth; in the introduced range, the M-morph prevails, with the L-morph occurring occasionally and the S-morph is absent altogether. This geographical distribution of the floral morphs indicates that founder events have played a prominent role in the species' worldwide spread.