

LOTUS







lotus - лотос

['lʌʊtəs]



yellow lotus - желтый
лотос

['jeləʊ 'lʌʊtəs]



Indian lotus -
Индийский лотос

['ɪndiən 'lʌʊtəs]



blue lotus - голубой
ЛОТОС

[blu: 'ləʊtəs]



white Egyptian lotus -
белый египетский
ЛОТОС

[waɪt ɪ 'dʒɪptʃn 'ləʊtəs]



star lotus - звездный
ЛОТОС

[sta: 'ləʊtəs]

Lotus



Lotus is a genus of aquatic plants with large, showy flowers. Members are commonly called lotus, though "lotus" is a name also applied to various other plants and plant groups, including the unrelated genus *Lotus*. Members outwardly resemble those in the family water lilies.

There are only two known living species of lotus; *N. nucifera* is native to East Asia, South Asia and Southeast Asia and is better-known. It is commonly cultivated; it is eaten and used in traditional Chinese medicine. This species is the floral emblem of both India and Vietnam.

The other lotus is *Nelumbo lutea* and is native to North America and the Caribbean. Horticultural hybrids have been produced between these two allopatric species.

There are several fossil species known from Cretaceous, Paleogene and Neogene aged strata throughout Eurasia and North America.

The leaves of lotus are highly water-repellent and have given the name to what is called the lotus effect. It involves two criteria: a very high water contact angle between the droplet of water and the leaf surface, and a very low roll-off angle. This means that the water must contact the leaf surface at exactly one, minuscule point, and any manipulation of the leaf by changing its angle will result in the water droplet rolling off of the leaf. It is conferred by the usually dense layer of papillae on the surface of the lotus leaves, and the small, robust, waxy tubules that protrude off each papillae. This helps reduce the area of contact between the water droplet and the leaf.

Lotus is said to confer a very important evolutionary advantage. As an aquatic plant with leaves that rest on the water's surface, the genus *Nelumbo* is characterized by its concentration of stomata on the upper epidermis of its leaves, unlike most other plants which concentrate their stomata on the lower epidermis, underneath the leaf. The collection of water on the upper epidermis, whether that be by rain, mist, or the nearby disturbance of water, is very detrimental to the leaf's ability to perform gas exchange through its stomata. Lotus allows the water droplets to accumulate together very quickly, and then roll off of the leaf very easily at the slightest disturbance of the leaf, a process which allows its stomata to function normally without restriction due to blockage by water droplets.

Yellow lotus



Yellow lotus is a species of flowering plant in the family Nelumbonaceae. Common names include American lotus, water-chinquapin, and volée. It is native to North America. The botanical name *Nelumbo lutea* Willd. is the currently recognized name for this species, which has been classified under the former names *Nelumbium luteum* and *Nelumbo pentapetala*, among others.

American lotus is an emergent aquatic plant. It grows in lakes and swamps, as well as areas subject to flooding. The roots are anchored in the mud, but the leaves and flowers emerge above the water's surface. The petioles of the leaves may extend as much as 2 m and end in a round leaf blade 33–43 cm in diameter. Mature plants range in height from 0.8 to 1.5 m.

Flowering begins in late spring and may continue into the summer. The specific name means "yellow" in Latin and refers to the flowers, which may be white to pale yellow. The flowers measure 18–28 cm in diameter and have 22–25 petals.

It is the larval host plant of the American lotus borer, *Ostrinia penitalis*.

However, *Nelumbo lutea* populations are declining in the U.S. due to habitat destruction and have become an endangered species. Their populations have a low level of genetic diversity, showing variation among different populations rather than within populations.

Indian lotus



Indian lotus, sacred lotus, 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.[4] 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.

The roots of lotus are planted in the soil of the pond or river bottom, while the leaves float on the water's surface or are held well above it. The flowers are usually found on thick stems rising several centimeters above the leaves. The leaf stalks (petioles) can be up to 200 cm long, allowing the plant to grow in water to that depth, and a horizontal spread of 1 m. The leaves may be as large as 80 cm in diameter, while the showy flowers can be up to 30 cm in diameter.

Researchers report that the lotus has the remarkable ability to regulate the temperature of its flowers to within a narrow range just as humans and other warmblooded animals do. Roger S. Seymour and Paul Schultze-Motel, physiologists at the University of Adelaide in Australia, found that lotus flowers blooming in the Adelaide Botanic Gardens maintained a temperature of 30–35 °C, even when the air temperature dropped to 10 °C. They suspect the flowers may be doing this to attract coldblooded insect pollinators. Studies published in the journals *Nature* and *Philosophical Transactions: Biological Sciences* were in 1996 and 1998 important contributions in the field of thermoregulation, heat-producing, in plants. Two other species known to be able to regulate their temperature include *Symplocarpus foetidus* and *Philodendron selloum*.

Lotus seeds can remain viable after long periods of dormancy. In 1994, a seed from a sacred lotus, dated at roughly 1,300 years old \pm 270 years, was successfully germinated.

Blue lotus



Egyptian lotus, blue lotus, blue water lily, Cape water lily, frog's pulpit, blue lotus of the Nile, blue waterlily, blue Egyptian lotus, blue Egyptian water lily, sacred blue lily of the Nile, Cape blue waterlily and sacred blue lily, is a water lily in the genus *Nymphaea*, a botanical variety of *Nymphaea nouchali*.

It is an aquatic plant of freshwater lakes, pools and rivers, naturally found throughout most of the eastern half of Africa, as well as parts of southern Arabia, but has also been spread to other regions as an ornamental plant. It was grown by the Ancient Egyptian civilization, and had significance in their religion. It can tolerate the roots being in anoxic mud in nutritionally poor conditions, and can become a dominant plant in deeper water in such habitats.

This is an aquatic herb with a tuberous rhizome. That is to say, it has small tubers that may develop into short vertical rhizomes. It is a perennial. One plant can spread over an area of about 1 metre.

The peltate leaves have long petioles and have leaf blades (lamina) which are 8–35 cm by 7.5–42 cm in size. The leaves are polymorphic, changing in form and texture depending if they are underwater or floating. These laminae have a chartaceous texture and can be glabrous or densely covered in pubescent hairs. The shape is incised-cordate and orbicular or subelliptic, with an acute or caudate apex.

The two lobes can overlap somewhat or be slightly apart from each other. The upper surface of the lamina is smooth, but the underside has conspicuously raised, green or rarely reddish or reddish-purple veins. There are eight to eleven primary lateral veins on each side of the midrib. There are six to eight pairs of secondary veins arising from the midrib. The primary veins form a pattern of closed, elongated areas stretching to more than two thirds of the way to the margin of the leaf. The leaf margin is entire towards the apex or more-or-less irregularly sinuate-lobulate throughout its entirety. The petioles are thick, blackish green and spongy. They continue to lengthen as they age, pushing older leaves towards the margins of the plant.

The flowers can be blue, white, mauve or pinkish in colour, but are usually have pale bluish-white to sky-blue or mauve petals, smoothly changing to a pale yellow in the centre of the flower, and are 8-12 cm in diameter. There are four sepals; these are coloured green and sometimes purple at the margins, and are 4-10 cm by 1.5-3.5 cm in size. There are 14-20 petals, of which the outermost are as long as the sepals. Their shape is oblong, and their apexes end in blunt or subacute tips. The stamens are densely congested and very numerous, numbering 100-200 or more. The outermost stamens have long appendages. There are 14-24 carpels, with a very short style. There are also carpellary appendages; these are what is known as 'osmophores', structures which serve to attract pollinators without actually rewarding them, thus by deceit. In this case they are visually attractive for bees and exude an odour mimicking food.

The flower buds rise to the surface over a period of two to three days, and when ready, open during the mid-morning, closing near dusk. This ability is controlled by the sepals, when these are cut off, the flower loses the ability to close. The flowers and buds do not rise above the water in the morning, nor do they submerge at night.

The flowers last some four days before they start to wither, closing up each night. The fruit are berries, 2.2 by 3.2 cm and flattened-round in shape. The seeds are ellipsoid and 1.2mm long. They are smooth, and have a fleshy, bell-shaped aril.

White Egyptian lotus



White Egyptian lotus, tiger lotus, white lotus or Egyptian white water-lily, is a flowering plant of the family Nymphaeaceae.

It grows in various parts of East Africa and Southeast Asia. The *Nymphaea lotus* var. *thermalis* is a tertiary relict variety, endemic to the thermal waters of Europe, for example the Peța River in Romania or the Hévíz lake in Hungary .

This species of water lily has lily pads which float on the water, and blossoms which rise above the water.

It is a perennial, grows to 45 cm in height. The color of the flower is white and sometimes tinged with pink.

It is found in ponds, and prefers clear, warm, still and slightly acidic waters. It can be found in association with other aquatic plant species such as *Utricularia stellaris*.

N. Lotus has exceptional ability to persist through dry season with rhizomes. It possesses ability to reduce evaporation by up to 18 percent on most of the days during the summer period.

Star lotus



Blue lotus, star lotus, red water lily, blue water lily, blue star water lily or manel flower is a water lily of genus *Nymphaea*. It is native to southern and eastern parts of Asia, and is the national flower of Bangladesh and Sri Lanka. In Sanskrit it is utpala. This species is usually considered to include the blue Egyptian lotus *N. nouchali* var. *caerulea*.

This aquatic plant is native in a broad region from Afghanistan, the Indian subcontinent, to Taiwan, southeast Asia, and Australia. It has been long valued as a garden flower in Thailand and Myanmar to decorate ponds and gardens. In its natural state, *N. nouchali* is found in static or slow-flowing aquatic habitats of low to moderate depth.

It is a day-blooming nonviviparous plant with submerged roots and stems. Part of the leaves are submerged, while others rise slightly above the surface. The leaves are round and green on top; they usually have a darker underside. The floating leaves have undulating edges that give them a crenellated appearance. Their size is about 20–23 cm and their spread is 0.9 to 1.8 m.

This water lily has a beautiful flower which is usually violet blue in color with reddish edges. Some varieties have white, purple, mauve, or fuchsia-colored flowers, hence its name red and blue water lily. The flower has four or five sepals and 13-15 petals that have an angular appearance, making the flower look star-shaped from above. The cup-like calyx has a diameter of 11–14 cm.