

WHITE WATER LILY

Those of us who have visited ponds or lakes have probably observed lily pads floating upon the water's surface. Although some of these lily pads may be of an alien species, there is one species that is native to this area. That species would be the White Water Lily (*Nymphaea odorata* Aiton).

The White Water Lily is a member of the Order *Nymphaeales*, the Water Lily Family (*Nymphaeaceae*), the Subfamily *Nymphaeoidae*, and the Tribe *Nympheae*. Water Lilies are not true Lilies (*Liliaceae*). The generic name, *Nymphaea*, is from the Greek name, *Nymphe*, who was the goddess of water in both Greek and Roman mythology. The specific epithet, *odorata*, is Latin for "fragrant" or "scented".

Previous scientific names for this species were *Castalia lekophylla* Small, *Castalia minor* (Sims) Nyarady, *Castalia odorata* (Aiton) Wood, *Castalia pudica* Salisbury, *Castalia reniformis* (deCandolle) Trelease ex Brenner and Coville, *Castalia tuberosa* (Paine) Greene, *Nymphaea alba* Michaux, *Nymphaea minor* (Sims) deCandolle, and *Nymphaea tuberosa* Paine.

Nymphaea tuberosa Paine was a name of a separate Water Lily species. Because these 2 species often experienced separate growing conditions, they were thought to be 2 separate species. However, they have now both been reclassified as subspecies of a single species of the White Water Lily.

At different times and places both Water-lilies species had other common names. Some of these names were Alligator Blankets, Alligator Bonnet, American White Water Lily, Beaver Roots, Bennets, Cow Cabbage, Fairy Boots, Fragrant Water Lily, Large White Water Lily, Pond Lily, Purple-leaves Water Lily, Queen of the Water, Scented Pond Lily, Small White Water Lily, Sweet Water Lily, Sweet-scented Pond Lily, Sweet-scented Water Lily, Toad Lily, Tuberos Water Lily, Water Cabbage, Water Nymph, Water Queen, and White Pond Lily.

DESCRIPTION OF THE WHITE WATER LILY

Perennial

Height: Being an aquatic plant, its height varies with the depth of the water. They can live in water as shallow as 6 inches if the water level is stable or as deep as 15 feet if the water is clear.

Stem: Their stems are long, cylindrical, soft, flexible, spongy, and mucous-coated. They anchor the leaves and flowers to the roots. Both the leaves and the flowers have separate stems. Depending upon the subspecies, these stems may or may not have 4-5 purple streaks.

These stems have rounded cross-sections and have 4 hollow air-filled channels or tubes (lacunae) for buoyancy and for the movement of oxygen, carbon dioxide, and methane gases between the leaves and the roots. These gases enter through the younger leaves and exit through the older leaves.

Leaves: The White Water Lily only has basal leaves. Their 1st year leaves are a cluster of pointed leaves upon short stalks and are submerged below the water. Their 2nd and subsequent year leaves are flat, floating, and orbicular. Their oval rounded shape may

have evolved to protect it from both the wind and the waves. They have a V-shaped notch or cleft at their base and have entire margins. They are palmately veined and are about 3-12 inches in diameter.

These leaves have smooth and leathery surfaces. The upper surfaces of the leaves are shiny green and have heavy, waxy, cuticle layers for waterproofing. The lower surfaces of the leaves have thick, slippery, mucous-like coatings to protect them from mechanical abrasion with other plants or from aquatic herbivores.

Unlike the leaves of other plant species, their stomata (air pores) are located upon the top of their leaves. These pores regulate the flow of gases in and out of the leaves.

Depending upon the subspecies, the lower surfaces are either green or purple-red. The purple-red color may help raise the leaf's temperatures above that of the water in order to speed transpiration.

These leaves provide shade, shelter, and habitat for many species of fish and aquatic invertebrates. However, too many leaves can hinder boaters and fishermen.

Flowers: The White Water Lily usually flowers during their 3rd year. These flowers are white or pink, radially symmetrical, about 1½-9 inches wide, and are solitary. Each flower has numerous upright spreading or overlapping petals arranged in numerous rows with those within the inner rows being narrower and with all petals having their tips being either broadly rounded or tapered. Each flower also has 4 rounded, green or colored sepals that may be red on the outside and white on the inside; about 40-100 yellow stamens with the outer stamens being as wide as the petals; and 1 compound pistil with many united carpels, a disk-shaped stigma with 10-35 lines radiating from the center, and no style. Depending upon the subspecies, these flowers may or may not be fragrant.

These flowers are in bloom from early morning until early afternoon. Both the opening and the closing of these flowers last about 3-5 days. Flowering season is usually May-September.

These flowers are protogynous. The female flowers mature before the male flowers. This prevents self-fertilization of these flowers.

These flowers are insect pollinated. Honey Bees (*Apis mellifera* L.), Sweat Bees (Family *Halictidae*), or Beetles (Order *Coleoptera*) will pollinate these flowers. After fertilization, the flowers close, the stem coils like a spring, and the closed flowers are pulled underwater.

Fruit: The fruit pod is composed of globular or ovate, leathery, spongy, fleshy, and leathery berries. The fruit is submerged underwater for about 3-4 weeks while the seeds mature.

Each fruit pod may have about 600-700 seeds. Each seed is enclosed within a fleshy sac, called an aril, which gives the seeds buoyancy. After the seeds mature, the aril breaks off, floats away, and later decomposes to release the seeds.

Seeds: The seeds are about 1/12-1/6 inches long, oblong, starchy, and green. After the seeds are released from the decomposed aril in the fall, they sink to the bottom. These seeds will germinate the following spring. These seeds are a favorite food of Waterfowl, especially Wood Ducks (*Aix sponsa* L.), Scaups (*Aythya* sp.), and Teals (*Anas* sp.).

Rootstalk: Their rootstalks consist of roots and large, thick, horizontal, ovate, spongy, scaly, and starchy rhizomes. These rhizomes may be 3-4 inches long. They are brown but may turn purple when exposed to the air.

These rootstalks branch freely and can form new plants. They may break apart to float away and to form new plants elsewhere. During the winter, most of the plant dies back to the rootstocks. Muskrats (*Ondatra zibethicus* L.), North American Beavers (*Castor canadensis* Kuhl), and White-tailed Deer (*Odocoileus virginianus* Zimmermann) eat these rhizomes.

Habitats: The White Water Lily is found in ponds, in lakes, and in quiet waters of rivers and streams.

Range: The White Water Lily ranges in southeastern Canada and in the eastern U.S. as far west as the Great Plains. Within their range, they are a very common species. Unfortunately, in the western U.S., they are a non-native, invasive species.

Edibility:

Parts of the White Water Lily are edible to humans. The young, unfurling leaves may be eaten raw or cooked. The raw leaves should be washed, chopped, and added to soups or stews. The rhizomes' tubers may be boiled, roasted, or prepared like potatoes. The unopened flower buds may be cooked or pickled. The ripened seeds, which have protein and oil, may be boiled, fried, dried and ground into flour, or creamed like corn. All boiling should be done for about 5-10 minutes and within several changes of water.

Medicinal Uses:

Parts of the White Water Lily also had some medicinal uses. They contain gallic and tannic acids.

The rhizomes were used as an antiseptic, an antibiotic, an antispasmodic, an astringent, a cardiogenic, a demulcent, and an emollient. It was used as a decoction for intestinal troubles, as a gargle for sore throats, as eyewash, and was powdered as a poultice for boils, sores, ulcers, and other skin irritations. The macerated leaves were used as a poultice for swollen neck glands.

However, the White Water Lily can be toxic in large doses. It contains the glucoside nymphaline, and the alkaloids nupharine and nuparidine.

The Legend of the Water Lily:

In 1917, John Couchois Wright wrote *The Crooked Tree*, which told many stories of the Ojibway (Chippewa) Tribe. One of those stories was *The Legend of the Water Lily*.

The Ojibways took precedence over all other tribes in the richness of their legendary lore and traditional tales. One of their best known legends is that regarding the water lily.

Once a young warrior noticed a star which seemed to be much brighter and nearer the earth than any of its companions. Upon going to bed the young man dreamed that the star descended and remained suspended in the air before him in the form of a beautiful maiden, who spoke as follows:

"I desire to live with the people of the earthy. Show me a place where I can take up my habitation."

The young man suggested to her a place up in the trees.

"No," she said, "I would not be happy there. I would have only the birds for my companions. I would prefer to be nearer the ground where I can come in contact with the mortals of the earth whom I have learned to love."

The young man then suggested other places, along the hillside, in the valleys, or by the cliffs and rocks.

“None of those places will do, so I will select my own home.”

Thus saying, she descended to the water nearby and dropped out of sight in its depth.

The young man in sorrow darted to the spot where she had disappeared, in the hopes of rescuing her.

There he saw only a beautiful white lily into which the maiden had transformed.

Those lovely flowers have ever since been found in and around the waters of the north.

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