

## Water Lettuce, *Pistia stratiotes*



Water lettuce, *Pistia stratiotes*.

Water lettuce is now pantropical, occurring in nearly all tropical and subtropical fresh waterways. It was first noted in Florida in 1765, and could have been there naturally but could also have been introduced there from elsewhere in the ballast water of earlier explorers' ships. It is now present in the southeast U.S. north to New Jersey and New York, and westward to Texas, Arizona and California, as well as in Hawaii and Puerto Rico.

Water lettuce is a tropical aquatic plant, thriving in warm water (72-86F) and only growing when the water temperature is above 60F. It is extremely frost-sensitive and will not tolerate freezing temperatures\*. It is very unique in appearance and not likely to be confused with any other aquatic plants.

Water gardens can contain a wide variety of types of plants, from submerged to emergent to free-floating with no contact with the substrate. One of those plants that float on the surface of the water is *Pistia stratiotes*, commonly called water lettuce because of its superficial resemblance to the green leafy vegetable. It is also occasionally called water cabbage or Nile cabbage, but is not edible. This species in the arum family (Araceae), the only one in the genus, likely originated in Africa or tropical America, but its origin is difficult to ascertain for sure. It was first described from Lake Victoria in Africa, but



Water lettuce forms rosettes of wavy leaves.

This is an herbaceous perennial monocot with a rosette of overlapping, stemless leaves and long, trailing roots. The leaves are densely covered with fine hairs that prevent wetting of the actual leaf surface and trap air so the plant has increased buoyancy to float easily. The thick, velvety soft, cuneate leaves are up to 6 inches in length. They are a dull light green color with parallel ridges (veins), wavy margins and a scalloped distal end. The numerous roots that dangle from the rosette are multiply branched so appear feathery

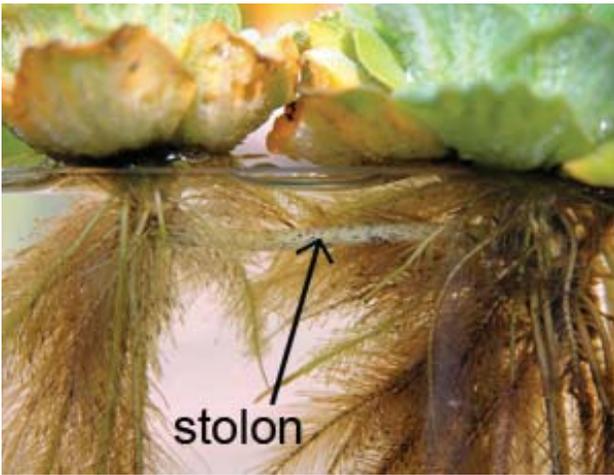


The leaves are densely covered with fine hairs.

under water. The roots are light-colored at first, then change to a dark purple to black color, and make a great refuge for small fish. They can hang down up to a foot below the floating rosettes.



Feathery roots hang down from the base of the floating plants.



The plant reproduces vegetatively by stolons, each of which grows another rosette, with the daughter plants remaining connected to the mother plant. Under ideal conditions numerous stolons and new rosettes are formed, allowing the colony to grow quickly to cover the water surface.

The tiny axillary flowers are very inconspicuous, nearly hidden at the base of the leaves in the middle of the plant.

**Water lettuce reproduces vegetatively by producing new rosettes on the ends of stolons.**

Each inflorescence is on a small stalk with a single female flower below and a whorl of male flowers above. A ½ inch, hairy, creamy white to pale green spathe encloses a single flower. Female flowers are sometimes followed by a small green berry. Although water lettuce can reproduce by seed, this is not a main means of propagation, especially when grown as an ornamental.



**The inconspicuous flowers are borne at the base of the rosette.**

This floater occurs in ponds, lakes, and slow-moving rivers, forming large, dense masses. It is considered an aquatic weed worldwide; it is included on the Federal Noxious Weed List, and is illegal to sell or transport in some southern states. In Wisconsin it is listed as “caution” (although proposed to be changed to “prohibited”)\*. Where prevalent, it can impede boating and fishing and adversely impact native flora and fauna – native submerged plants can be shaded out as the mat of leaves blocks light penetrating the water and fish may be killed from reduced oxygen in the water. In places where water lettuce is invasive, mechanical and biological controls are used to reduce populations. A leaf-feeding weevil from South America (*Neohydronomous affinis*) and a caterpillar from Thailand (*Spodoptera pectinicornis*) are being used for management of this pest in some places.



**Water lettuce covering a small pond in eastern Brazil.**

Although this plant is of concern in some places, it can be used as an ornamental in controlled situations where it cannot escape. It is a popular addition to container water gardens and is sometimes used in tropical aquariums where it provides cover for small fish and removes nutrients in the water to prevent algal blooms. However, even in climates where it should be killed over the winter by cold temperatures\*, it should not be used in open waterways as seasonal infestations have the potential to negatively impact the native environment. In small, isolated ponds the plants will help reduce build up of algae, but some of the plants may need to be removed periodically to keep them from overspreading the entire water surface and smothering other plants. The

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potential for flooding to cause even small ponds to overflow and allow for escape should be considered.

Water lettuce thrives in full sun in the Midwest, but does best with some midday shade in warmer climates. Combine water lettuce in container water gardens with miniature water lilies and emergent plants such as canna lilies, fiber optic grass, or corkscrew rush (*Juncus effusus* 'Spirailis'). Or combine it with other floaters that don't need to be rooted in a planter, such as water snowflake (*Nymphoides indica*), floating sensitive plant (*Neptunia oleracea*), or floating fern (*Salvinia minima*, another species proposed as "caution") for an interesting contrast of shapes and sizes of foliage.



As a tropical plant it should be placed on the water surface of outdoor containers or ponds after last frost. Remove small offsets to encourage more growth, or remove larger plants to slow reproduction.

**Water lettuce in a water garden.**



**Water lettuce overwintering in a fish bowl.**

This plant is difficult to overwinter in cold climates, so most people let it die out and purchase replacements the following season. But if you wish to try to save plants for the following season, they should be moved indoors when nighttime temperatures are in the low 40's. Supposedly plants can be overwintered on damp sand or peat. I have had success holding plants in a clear plastic goldfish bowl filled with rainwater (or snow melted and warmed to room temperature if my supply of stored rainwater runs out) kept in very bright light (a southern exposure or a greenhouse) and temperatures of at least 50F. Other plants kept in a mixed container in a greenhouse, where the other vegetation created some shade, have not fared as well, and the water lettuce there generally declines and disappears by mid-winter. Even in the fish bowl the plants languish over the winter, but with the arrival of longer days and warmer temperatures they begin growing again enough to restock my small water container garden in early summer.

\*Because of recent reports of its apparent ability to overwinter even in cold climates, it is now recommended to be listed as PROHIBITED in Wisconsin so this plant should NOT be used in any situations other than container water gardens. If it does become prohibited, it will not be allowed to be bought, sold or used at all.

– Susan Mahr, University of Wisconsin - Madison

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### **Additional Information:**

- *Pistia stratiotes* – on the Missouri Botanic Garden's Kemper Center for Home Gardening website at [www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/a623/pistia-stratiotes.aspx](http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/a623/pistia-stratiotes.aspx)
- *Pistia stratiotes* – on the Floridata website at [www.floridata.com/ref/p/pist\\_str.cfm](http://www.floridata.com/ref/p/pist_str.cfm)