

# Vermont Invasive Exotic Plant Fact Sheet

## Giant salvinia, Kariba weed, African pyle, Aquarium watermoss, Koi kandy

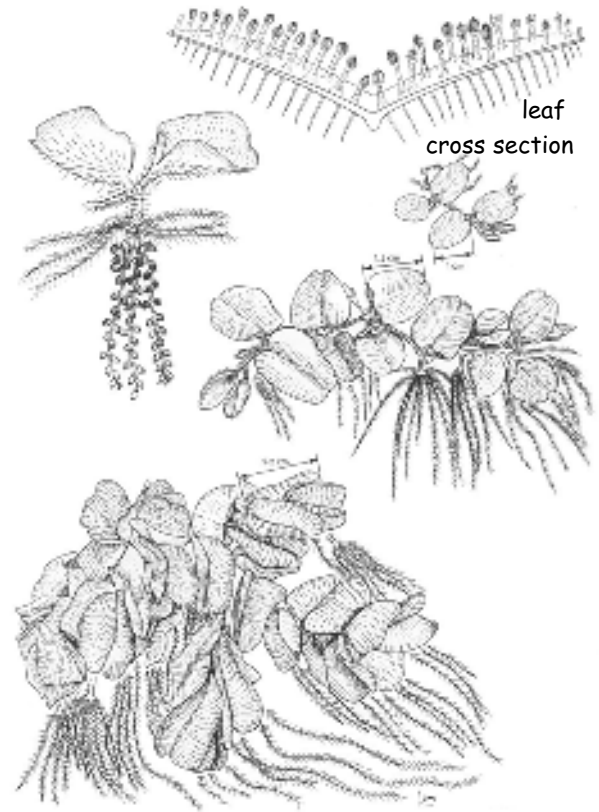
*Salvinia molesta* D.S. Mitchell (includes a group of closely related species, *S. auriculata* Aublet, *S. biloba* Raddi, *S. herzogii* de la Sota, and *S. molesta* D.S. Mitchell)

Water-fern Family  
Vermont Class A Noxious Weed

**Description:** *Salvinia molesta* is a free floating aquatic fern. It consists of a horizontal stem that floats just below the water surface and produces, at each node, a pair of small spongy green floating leaves and a third submersed leaf that is brown, highly dissected and root like. The leaves are ovate to oblong in shape with a midrib that creates two leaf halves. Plants are capable of several growth forms; individual leaves can range from a few millimeters to .1-1.5 inches (4 cm) long. During early growth stages plants are small and leaves lie flat on the water surface. As plants grow, leaves curl at the edges (or fold at the midrib) and eventually become emersed as mature plants press into tight chains and form mats of many floating plants. Upper surfaces of green leaves are covered with rows of white bristly hairs that create a water-repellant covering. The stalks of each hair divide into 4 thin branches that then rejoin at the tips to form a cage, resembling tiny egg-beaters. (Look on young, unfolding leaves to find intact hairs that are descriptive for the species, as hairs on mature leaves may be damaged and uncharacteristic). Chains of egg-shaped spore cases develop among the submersed leaves. The spore cases are usually empty, resulting in plants that are sterile and reproduce by vegetative means only. The stems fragment easily and new plants grow from buds, a form of reproduction that is efficient and leads to rapid spread.

**Habitat:** Lakes and ponds, slow flowing streams and rivers, ditches, swamps and marshes. Prefers high nutrient levels and water temperatures around 68-86°F (20-30°C). Giant salvinia can survive freezing air temperatures, as well as reduced water levels if there is moist soil.

**Threats:** Giant salvinia is prolific and under ideal conditions can double the size of its mats in 7 to 10 days. These thick floating mats alter



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**Threats continued:** aquatic ecosystems in many ways. Native, beneficial plants are usually out-competed. Dense mats block light and absorption of atmospheric oxygen into the water. Dying plants sink to the bottom and use up dissolved oxygen as they decompose, impairing fish and wildlife habitat. A lack of open water may pose a problem for migrating birds and waterfowl. Large mats of giant salvinia clog water intake pipes and can interfere with irrigation and electrical power generation. Boating, fishing, and swimming may become impossible in waterbodies where giant salvinia becomes established.

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Aquarium watermoss, Koi kandy  
Water-fern Family (*Salviniaceae*)

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**Distribution:** Giant salvinia is native to South America (Brazil). It has spread throughout tropical areas of the world quickly due to aquarium disposal and cultivation. Giant salvinia was introduced into the United States in the mid 1990s, and now occurs in Texas, Louisiana, Mississippi, Alabama, Georgia, Florida, Arizona, California, Hawaii, and North Carolina.

**Control:** To date the most dramatic control has come from the use of the non-native salvinia weevil, *Cyrtobagous salviniae*. This weevil damages plants by feeding on buds and tunneling through stems. The weevil has been used successfully internationally and occurs in Florida (although genetic differences within this species are currently being researched). Herbicides have been used with some success, but giant salvinia is especially hard to treat chemically due to plants and buds being hidden in thick mats, and the difficulty in wetting the leaves due to their hairy surfaces. Mechanical harvesting is difficult because of the thickness of floating mats and because harvesting can create fragments that aid further dispersal.

\* No person may use pesticides, biological controls, bottom barriers, structural controls or powered mechanical devices in waters of the state to control nuisance aquatic vegetation, insects or other aquatic life including lamprey unless that person has been issued a permit by the secretary of the Agency of Natural Resources.

## References:

<http://salvinia.er.usgs.gov/> - Main Source

<http://www.nrm.qld.gov.au/factsheets/pdf/pest/PP12.pdf>

Jacono, Colette and Bob Pitman. 2001. *Salvinia molesta: Around the world in 70 years.* ANS Digest, volume 4 No.2.

Ramey, Victor. 1990. *Florida Prohibited Aquatic Plants*, Florida Department of Natural Resources, Rule 16C-52.



For more information about Vermont's invasive exotic plant species or if you would like to know how you can help, please contact:

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Vermont Department of Forests, Parks and Recreation, 103 S. Main St., Bldg. 10 South, Waterbury, VT 05671-0601 Tel. 802-241-3678

