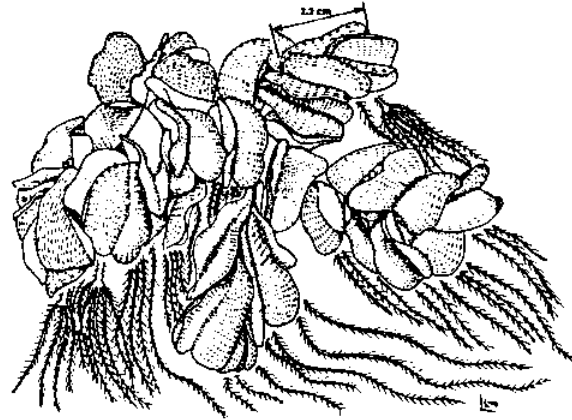
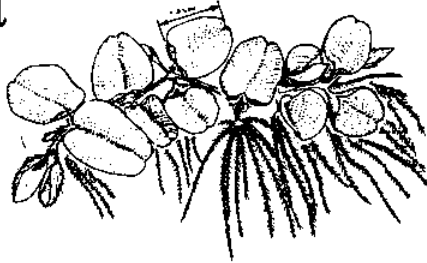


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## GIANT SALVINIA: THE GREEN MONSTER

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By Jerald Horst\* and Karl Mapes\*\*

Exotic or nonnative aquatic plants can have serious impacts on wetland ecosystems. For decades, Louisiana has been battling the water hyacinths and other non-native plant species that choke its waterways. Now a new invader, giant salvinia (*Salvinia molesta*), has made its appearance in Louisiana waters. Native to Brazil, this plant has been spread to Australia, New Zealand, New Guinea, Africa, and India, each time with disastrous results. Worldwide, giant salvinia ranks only behind water hyacinth as the most damaging aquatic weed. In the U.S., giant salvinia has been found and eradicated in plant nurseries and ponds in South Carolina, Florida, Missouri, Texas, and Virginia. In late 1998, a dense concentration of the plants was discovered in Toledo Bend Reservoir on the Texas-Louisiana border. It's feared that the plant will spread to other waterbodies in the state and, indeed, it has already been found in Bayou Teche.

Giant salvinia does its damage by growing into dense mats that can eventually cover an entire waterbody with vegetation as thick as three feet. These mats smother native plants and phytoplankton by blocking the penetration of sunlight into the water. With no phytoplankton present and no water surface open to the air, available dissolved oxygen rapidly becomes depleted, killing the fish in the waterbody. The loss of native aquatic plants and open water also destroys the value of an area as waterfowl habitat.

Solid mats of giant salvinia may also reduce or eliminate boating and fishing opportunities simply because boats are not able to penetrate the mats. Salvinia infestations can also devastate rice, crawfish, and catfish farming operations.

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Another threat, especially in a subtropical climate such as Louisiana's, is that the plant mats can slow currents, causing increased siltation that fills in waterbodies until they disappear. Dead plants that sink from the bottom of the mat may accumulate on the waterbottom, where the lack of oxygen prevents decay. Thick mats also serve as floating islands that allow other plants species to sprout and grow on top of them.

Very few animals are likely to use giant salvinia as food, because its high levels of crude ash, lignin, and tannins make the plant low in nutrients and hard to digest.

Giant salvinia is fairly easy to identify. The oblong floating leaves are one-half to one and one-half inches long, larger than those of its smaller, more frequently found cousin, common salvinia. Young plants have leaves that lie flat on the water's surface. As the plants mature and grow into mats, the leaves fold, become compressed upright, and develop a chain-like appearance. Both species of salvinia also have many small spike-like hairs on the upper surface of the leaves. A foolproof method of separating giant salvinia from common salvinia is to examine the hairs with magnifying glass. Giant salvinia's hairs split into four prongs that rejoin at the tips to form a structure that resembles an egg beater or cage. The four prongs on common salvinia do not rejoin at the tips.



Once giant salvinia becomes established, eradication is very difficult. The most effective herbicide sprays are not permitted for use in the United States. The effectiveness of sprays is also hampered by the leaves' surface hairs, which shed spray particles. On thick mats, only the plants on the surface of the mat are exposed to the sprayed herbicide.

Raking the weed from the water is only moderately effective for a short time. Removing all of the plants is nearly impossible. A single plant can, under ideal conditions, multiply to cover 40 square miles in only three months.

Freezing weather will reduce the number of plants but not eliminate them, and the survivors rapidly multiply when warm weather returns. Researchers have studied several insects, including a moth, an aquatic grasshopper, and a weevil, for their potential to biologically control giant salvinia, but only the weevil has any proven effectiveness.

Because of giant salvinia's negative ecological effects, the difficulty of its eradication, and its explosive growth rate, the best control is to prevent its introduction, or at least attack the problem early before it gets out of control.

Some spread of giant salvinia into new areas is caused by water currents and the movements of wildlife and waterfowl. Most spreading seems to occur when aquarium or water garden plants are discarded and when boaters do not remove plant fragments from their boat trailers. Both of these methods of spread can easily be prevented.

The Louisiana Department of Wildlife and Fisheries requests that the public report any sightings of giant salvinia by calling (337) 948-0255.

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