

Profile

Salvinia is a floating fern that is native to Central and South America where it is common and wide-ranging from southern Mexico to northern Argentina and Brazil. There are 10 species of Salvinia in the world, seven originating in the Neotropics, and none are native to North America.

The species at Corkscrew, *Salvinia minima*, is about 3/4 inch in width and commonly occurs in freshwater ponds and swamps from the peninsula to the central panhandle of Florida. Another common name for it is Water Spangles.

Salvinia minima has been cultivated in greenhouses and gardens in the United States since the late 1880's. Early plants in Florida likely entered natural areas from flooding of cultivated pools or through intentional release. *Salvinia minima* is still widely available in the water garden trade, either as a sale item or a contaminant.

Although it continues to infest new regions, it is not included on the Federal Noxious Weed List and is prohibited only in the states of Texas and Louisiana.

Salvinia minima is most often found in shallow backwaters of lakes and ponds, ditches, slow flowing streams, cypress swamps and marshes.

Salvinia is a free floating, rootless aquatic fern. Horizontal, branching rhizomes (sort of like roots) float just below the water surface and produce two floating to emergent fronds (leaves), and a third, submersed frond that is divided into filaments. The floating fronds are circular to oval in shape, with heart shaped bases and rounded to notched tips. Leaf length ranges from 0.4 to 2.0 cm. Smaller round, flat fronds lie on the water surface; larger fronds become elongated and fold upright on the midrib.

Fronds growing in shade remain broadly flat and round, and emerald green. Fronds growing in full sun be-



come larger and elongated and are often a paler green to an almost rust brown. The upper surfaces of floating leaves are uniformly covered with rows of white, bristly hairs. The stalks of each hair divide into four thin branches that spread out at the tips. These branching hairs create a water repellent shield.

Although Salvinia is a true fern, it seems to be a sterile species and is not known to produce fertile spores. Regardless, it has sporocarps which are common among the submersed leaves of large plants. Sporocarps are sacs which enclose smaller sacs (sporangia) that are formed to hold microscopic spores. Shaped like small lemons about 1 mm wide, sporocarps are attached in spirals along the submersed filaments.

The plants reproduce strictly by the fragmentation of the rhizome (roots) and spread to other bodies of water by flooding or by being carried on the backs of turtles and alligators and on the feet of wading birds. The continuous branching and fragmentation of rhizomes turns out large volumes of vegetative daughter plants throughout the growing season. Copious hairy coverings minimize the desiccation of plants spotted on boats, boat trailers, alligators, turtles and even dogs leaving the water.

Lateral buds deeply imbedded in the rhizome may lie dormant during periods of dry downs and cold temperatures. Small rhizome fragments, commonly sheltered in associating vegetation, provide material for reintroduction on the return of favorable growing conditions.



While *Salvinia minima* often crowds out Duckweed (*Spirodela punctata*), an investigation of competition between Salvinia, Duckweed and *Azolla caroliniana* (Mosquito Fern) in north Florida found *Salvinia minima* dominating during the summer months. Later in the season, Salvinia was impacted by flooding and freezing and Duckweed became the most abundant species.

A nasty cousin...

Corkscrew's Salvinia is relatively benign, but it has a cousin that isn't, and Corkscrew has a biological control to help the USDA in eradication efforts.

Giant Salvinia, *Salvinia molesta*, is one of the world's most noxious aquatic weeds, dominating slow moving or quiet fresh waters. Its fronds may grow to silver dollar size, and it is an aggressive, species that negatively impacts aquatic environments and local economies.

Under optimal conditions, its mats can double in size every 2-4 days. Biomass weights of live plants approach those recorded for Water Hyacinth.

Salvinia molesta has been documented in Naples since 1999 in a canal along Airport Road where it has repeatedly been treated. In late 2000, heavily infested retention and irrigation ponds draining the canal were discovered to be the source of reoccurring growths.

The Salvinia Weevil, *Cyrtobagous salviniae*, is a proven biocontrol agent for *Salvinia molesta*, and it is present in Corkscrew. This tiny insect causes immense damage to plants by tunneling through rhizomes and feeding on terminal buds. Such feeding acts to greatly reduce large infestations of *S. molesta*.

The Florida type of *C. salviniae* has been collected here for several years by the USDA, bred in labs, and released to control Giant Salvinia elsewhere in the country. Its miniscule size makes it difficult to spot, but brown fronds indicate its presence.

Dot is Actual Size

