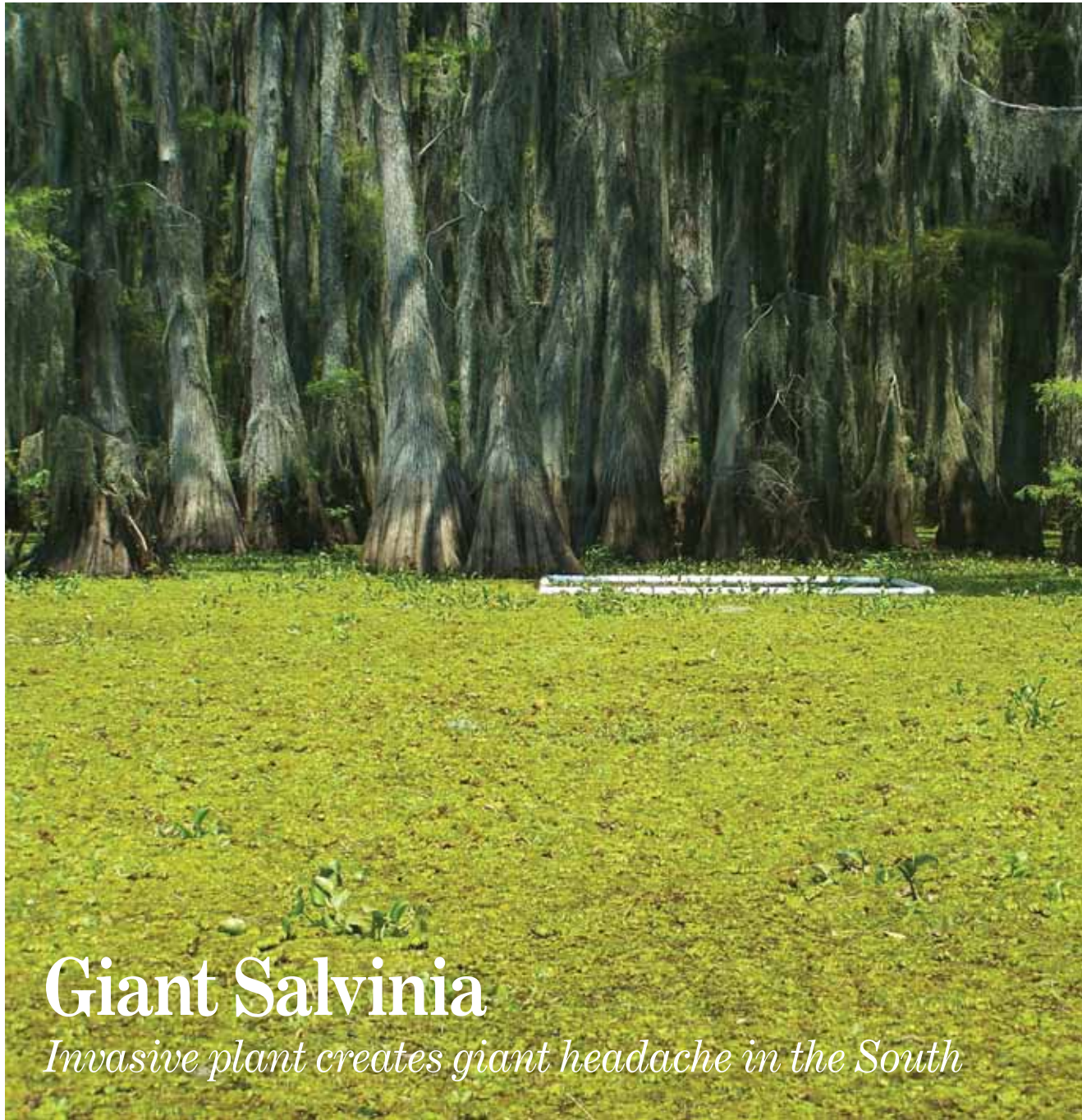


By Bob Pitman



Giant Salvinia

Invasive plant creates giant headache in the South

It is not a field. This east-Texas bayou is covered with the invasive giant salvinia.

Its scientific name couldn't be more appropriate: *Salvinia molesta*. This floating plant has a predilection for being a problem. It's often called "the world's worst aquatic weed" for good reasons. In common terms, it's known as giant salvinia.

Giant salvinia isn't a towering plant, but it grows voluminous. Unchecked,

it rages out of control spreading over water surfaces, doubling the area it can cover in as little as five days. It is an invasive floating fern native only to Brazil. It has become a giant problem in Texas and Louisiana where it was unintentionally introduced. The plant threatens all southern-tier states where warmer conditions suit the plant. In the last 70 years it has been



Texas Parks and Wildlife Department

the plant made its way into the open waters of Texas in 1998.

Once established in open water, boat movement most likely spread plant fragments to several east-Texas lakes including Toledo Bend, Caddo, Conroe, and Sam Rayburn, as well as to several Louisiana lakes. Anglers and boaters lost open water and fishing opportunities, and related businesses lost some livelihood. Ducks lost habitat, and lake-front property dropped in value.

Here is something else to consider. Giant salvinia is a big financial burden for state fish and game agencies, as they are forced to deal with yet another stressor on natural resources management. Recently, Louisiana managers began partially draining popular Lake Bistineau to improve giant salvinia control. The drawdown may last throughout 2011.

A single plant of giant salvinia consists of a horizontal stem floating just below the surface with two thumb-sized emergent green leaves covered with short hairs that are joined at the tips, resembling an eggbeater. A modified third leaf is brown, highly divided and dangles below the water surface resembling roots. Leaf pairs are produced at each node growing ropes of giant salvinia. The prolific plant reproduces by fragmenting. Pieces grow into entirely new plants. Individual plants or floating fragments are readily dispersed by wind, water currents, or people. The plant easily invades new locations. Giant salvinia is native to Brazil's temperate waters and can survive some winter freezing but will not persist where surface ice forms. With optimum conditions of temperature, sunlight and nutrients, the plant grows at an astonishing rate. A single plant has been known to cover forty square miles of water in three months.

spread by people to Australia, New Zealand, Africa, India, and Papua New Guinea.

You may have seen it by its market name, "koi kandy," where it has been popularly sold to aquarium owners for several decades. The aquarium or aqua-garden trade is probably how

*Unchecked,
it rages out
of control
spreading over
water surfaces,
doubling the
area it can cover
in as little as
five days.
...A single plant
has been known
to cover forty
square miles of
water in three
months.*

Aquarium owners and aqua-gardeners desire giant salvinia because it is persistent, hard to kill, easily shipped with minimal expense and guaranteed to arrive alive to customers. Unfortunately, these are also classic qualities inherent to invasive species. Giant salvinia is a notorious hitchhiker. Suppliers often unintentionally send it, if only fragments, in shipments of other requested aquatic plants.

Australian researcher Dr. David Mitchell scientifically described *Salvinia molesta* in the early 1970s. He appropriately named the species “*molesta*” to emphasize what he had seen this plant do to waters in Australia, Africa and Papua New Guinea. The U.S. Department of Agriculture responded to his warning and listed *Salvinia molesta* as a Noxious Weed to prevent its

purposeful importation. However, the loose net of federal and state regulations and authorities used to block invasive species distributions and movements were not sufficient to prevent the inevitable release of giant salvinia. It is now, and probably forever, a permanent challenge to conservation in the southern U.S.

Giant salvinia is a serious invasive species, but it does have some weakness.

Present controls involve spray crews regularly treating giant salvinia mats with herbicides to temporarily reduce coverage. Only in rare circumstances do herbicides provide long-term relief. Mechanical controls are also very costly and temporary. Giant salvinia control may ultimately be achieved by the herbivorous salvinia weevil. The weevil and the plant

naturally co-exist in nature in Brazil, the weevil so named since it eats the plant. The weevil has successfully controlled giant salvinia around the world.

Scientists have researched, reared, and released the control weevil in Texas and Louisiana for a decade, but with limited success so far. Giant salvinia spreads quicker than the weevil can eat, or the bug can reproduce. Winter weather sets the weevil back, more than it does giant salvinia. A control strategy it seems, will include weevils, herbicides and mechanical removal.

Giant salvinia is only one among a list of other aquatic invasive plants. One thing they almost all have in common is that invasions of these plants cost much money to control—not eradicate, but control. Federal



Texas Parks and Wildlife Department

The salvinia weevil shows promise in controlling giant salvinia, especially when combined with mechanical and chemical controls.



Texas Parks and Wildlife Department

Cypress trees, up to their knees in giant salvinia, is a sign that fish and waterfowl habitats are compromised. Restoring habitat will be no easy or inexpensive task.

and state agencies, universities and stakeholder groups are increasingly working together to control the plant.

Hydrilla and Eurasian water milfoil are two such examples. Both are native to Asia and Europe. Hydrilla forms extremely dense colonies growing from bottom to surface in water up to 20 feet deep. Water milfoil forms dense colonies from the bottom to the surface, the colonies making boating and angling impossible. Hydrilla has its “Typhoid Mary,” tracing its origin in the U.S. to one aquarium dumped in a Florida canal by one person. This irreversible action will have ecological and economic costs that will never go away.

Prevention is cheaper than the cure, to paraphrase the old adage. Just ask home owners near Lakes Bistineau,

Caddo, or Conroe, who deal with giant salvinia year after year. Anyone who uses water for work or play should understand the consequences of their actions. Responsible users help protect our water and that which lives in it, on it, or near it. ♦

Bob Pitman retired as a fishery biologist from the U.S. Fish and Wildlife Service in 2010. Pitman exemplified a commitment to conservation, working on invasive species issues for over a decade. He’s headed to Montana, where he went to college years ago and minored in fisheries science and majored in flyfishing.