

# Problematic Aquatics

JOE JERNIGAN

**I**t's first light of a warm summer day as your boat glides into your favorite fishing hole. You have been dreaming about this spot: a big shallow cove with plenty of places for bass and bream to hide. Suddenly the motor quits; "That's unusual," you think as you try to restart the motor. "This thing never quits. I just had it serviced." That's when you notice that your honey hole has changed. It is now full of weeds. After lifting the motor and clearing the prop of all the thick growth of weeds, you try to fish, casting to all the best hiding places. Weeds tangle your hook each and every cast. Nothing in your tackle box seems to work. Finally, in disgust, you leave. You have just had an experience with an aquatic nuisance species.

*Joe Jernigan, Aquatic Plant Management Supervisor,  
Division of Wildlife and Freshwater Fisheries*

## **What Is an Aquatic Nuisance Species?**

Most aquatic nuisance species (ANS) are exotic plants and animals that adversely impact our native species and the commercial and recreational uses of a waterway. Exotic plants and animals impact native species by eating them, out-competing them for limited habitat, or causing extensive changes to the ecosystem.

ANS impact more than just native species. Waterfront property owners, lake managers, and recreational water users spend millions of dollars annually on equipment maintenance, herbicides, and other control measures in attempts to manage or utilize aquatic resources impacted by ANS. Municipal and industrial water users also spend millions of dollars each year cleaning clogged intake

pipes. ANS are also responsible for human health risks — for example, the outbreak of a South American form of human cholera in Mobile Bay in 1991.

Submerged aquatic plants, such as Eurasian watermilfoil or hydrilla, are exotic ANS that can establish themselves in suitable environments where they quickly replace native species creating vast monoculture stands of vegetation. These stands not only degrade water quality and fish and wildlife habitat, but they also make both recreational and commercial access to the water difficult, if not impossible.

Many bass anglers sing the praises of fishing "in the grass." What they do not realize is that ideal plant coverage for a fishery is between 20-40 percent. Unfortunately, when the plant communities are exotic, plant coverage rarely stops at 20-40

percent unless the plants are actively managed. As weed beds expand and utilize all available shallow water habitat, sport fish growth rates often slow considerably. This reduction in growth occurs not only because of poor water quality but also because the fish cannot forage efficiently. In dense weed beds there are many places for small fish to hide, causing predator fish to expend a great deal of energy to capture their prey. With so many small fish able to avoid predation and survive in the weeds, the number of aquatic insects and other prey available decreases. The result is many small, slow-growing fish in areas with dense weed beds.

Even though 20-40 percent plant coverage of a lake is ideal for a fishery, it can be less than desirable for other water-based recreation. A lake front property owner, unable to get his boat in the water because of excessive weeds around his dock, will not care whether plants might improve fishing! Therefore, when they are managing aquatic plant communities, lake managers must balance the needs of many resource user groups including municipal power generation, property owners, anglers, and other recreational boaters.

## Water Hyacinth



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### Water Hyacinth

In Alabama the most problematic exotic plant currently established is floating water hyacinth. Water hyacinths are free-floating plants from Brazil that can reach up to 3 feet in height. The leaves are thick and spongy and provide flotation. This plant has a beautiful purple flower and is very popular with water-gardening enthusiasts. However, its beauty belies its troublesome nature. These plants quickly reproduce, mostly through vegetative runners but also by seeds and fragments. They form large

mats that can completely obstruct waterways. In some instances these plants reproduce so quickly that during a growing season one plant could potentially infest 40 acres of water. The mats completely cover the surface of the water like a blanket, blocking all sunlight and the chemical interactions between the air and water. This significantly curtails the primary production of the food web, causing vast ecological deserts to be created in the water. Thankfully, water hyacinths do not tolerate cold temperatures very well, so their abundance can be significantly reduced by a cold winter.



### Purple Loosestrife

### Purple Loosestrife

Purple loosestrife is an emergent perennial originally from Europe. Although found throughout the United States, this plant has only been found in the Tennessee Valley area of Alabama. Purple loosestrife causes a great deal of problems for waterfowl managers because it displaces native wetland plants with dense stands of woody vegetation that have little value to waterfowl and other wildlife. The estimated annual costs associated with the management of this plant and the lost forage values have been to exceed \$45 million.

### Giant Salvinia

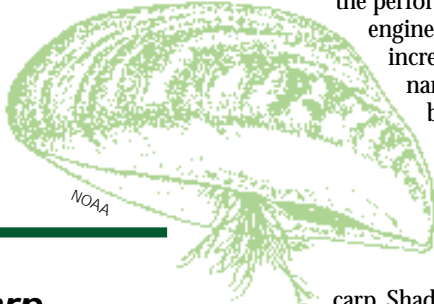
Giant salvinia is a floating fern from South America that has even faster growth characteristics than water hyacinths. This plant can survive freezing temperatures and even prolonged periods of total darkness, allowing this species to re-infest areas from the survival of just a single plant. In the last few years, it has been found in six ponds in east central Alabama but so far has been controlled and kept from spreading from these locations.

Continued on page 26 >>>



## Zebra Mussels

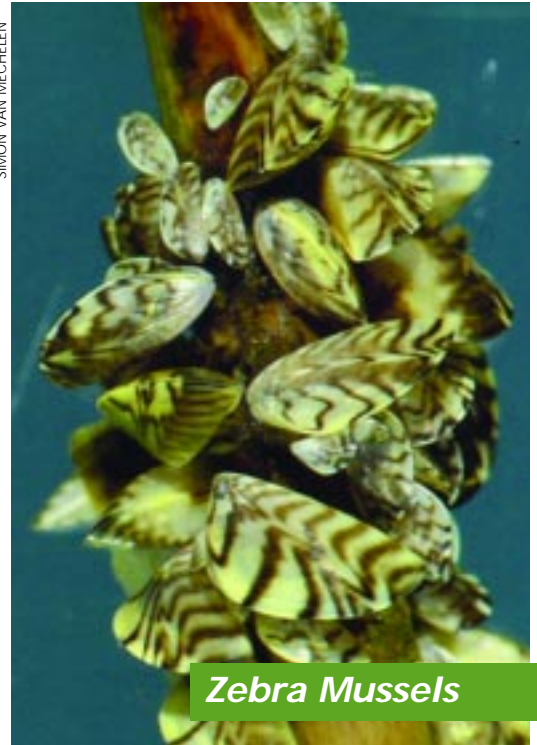
Plants are not the only aquatic nuisance species. Fish and invertebrates can also cause severe ecological as well as economic problems. Zebra mussels were introduced from Europe in 1986 through a ballast water discharge from a ship near Detroit. Now they are found in major drainages from Vermont to the Gulf of Mexico. Zebra mussels have caused massive changes to the ecosystems they invade by eliminating native species of mussels and severely depleting the microscopic plankton that provides the food for the fisheries. The impacts of the loss of this important component of the food web could be devastating to the recreational and



commercial fisheries of the region, which is valued at almost \$4.5 billion annually and supports more than 81,000 jobs.

Zebra mussels attach themselves to hard surfaces like the grates of a water intake at a power plant, wastewater treatment facility, or any large industrial water user. These colonies significantly reduce pumping capabilities and can even shut down equipment, causing a dramatic increase in operating costs for many consumer goods such as drinking water and power generation. Zebra mussel colonies can have the same impact on the motor and hulls of a boat, affecting the performance of the engine and significantly increasing maintenance costs for both recreational and commercial boat owners.

SIMON VAN MECHELEN



## Asian Carp

In the midwestern United States, Asian carp (includes black carp, silver carp, bighead carp, and hybrids) were originally stocked into aquaculture facilities to improve water quality, reduce parasites, and increase fish production. However, these fish have escaped over the years and are now found throughout the major river systems of the region. Due to natural reproduction, Asian carp now make up more than 6 percent of the commercial fish harvest in the Mississippi and Missouri Rivers. Primarily filter feeders, the environmental impacts of these fish are unknown. But they could adversely impact many native species of fish due to competition for food. Larval and juvenile sport fish such as largemouth bass and crappie eat the same foods as Asian

carp. Shad and other prey fish also rely heavily on these same foods. Large numbers of Asian carp could reduce the amount of forage available for these important native fish.

Although Asian carp weighing up to 65 pounds have been found in Alabama, biologists have not documented any natural reproduction. If water conditions became suitable for spawning, large numbers of Asian carp in our rivers could not only impact our native fishes but also adversely impact native mussel populations. Alabama has the largest diversity of mussels of any

state, but many of these species are already threatened or endangered, primarily due to habitat loss. The presence of large planktivores like these Asian carp could dramatically impact the food available for these mussels, possibly causing their extinction.



The author holds a bighead carp caught in the Jones Bluff Reservoir on the Alabama River.

Asian Carp

# Problematic Aquatics



## Snakehead Fish

Recently the snakehead fish, has made headlines across the United States. Several snakeheads, also native to Asia, were caught in 2002 by anglers in a pond near Baltimore, Maryland. They created an uproar in Maryland because snakeheads are voracious top-level predators and have the potential to quickly impact local fish populations through predation or displacement. Probably the greatest fear of the snakehead's introduction is the fish's ability to live for several days out of water and potentially invade new bodies of water away from the original infestation, causing irreparable harm to the resource. Luckily, these fish were discovered before they spread, and the population was eliminated by personnel of the Maryland Department of Natural Resources.



Snakehead Fish

US GEOLOGICAL SURVEY/SUSAN TRAMMELL

## Most ANS Caused by Humans

How did a fish from Asia get to Maryland? The snakeheads arrived in a way similar to most other ANS — through human activities. A man purchased two live snakeheads at a fish market in New York City. Eventually, he released these fish into a pond because he did not want them anymore. Unfortunately, this scenario is not all that uncommon. Most aquatic nuisance species that have caused untold damage to the natural resources of our country were introduced by humans. Although many times the introductions have been accidental or unintentional, some introductions have been intentionally made, like a water gardener putting water hyacinths in the lake down the road. Other species, like giant salvinia, are easily spread because they are attached to other plants as they are transported between nurseries. Many ANS are spread inadvertently by recreational boaters who do not clean their boat trailers or carry water in the livewells of their boats between water bodies. The ballast water used by large vessels when they are not carrying cargo is also a major source of ANS introductions.

**What can the people of Alabama do to protect our state from ANS? Here are a few recommendations:**

- ▶ Learn about potential problems of aquatic nuisance species.
- ▶ Be aware of what species are in your possession. Some plants, fish, and other animals are illegal to possess; others may be possessed, but fines would result if they

are “introduced, placed, or caused to be introduced or placed in public waters.”

- ▶ Resist the temptation to release fish, plants, and other aquatic organisms into area waters. Even if a fish or other ANS dies after its introduction, it may be a carrier of disease or parasites that could adversely affect the native species.
- ▶ Before leaving a boat ramp, anglers and other water users should drain all the water from livewells and other equipment. Any mud, plant, or animals that may have stuck to the boat or trailer should also be removed. Once the boat is stored, everything that came in contact with water should be cleaned and dried.

## Conclusion

Although many aquatic nuisance species are here to stay, we can manage their range and reduce the potential for more introductions. The key is education. As people become more aware of the problems ANS can cause, they will realize that everyone can be affected. The Alabama Department of Conservation is presently working on guidelines to begin the process of developing a statewide comprehensive ANS plan.

If you have questions concerning ANS, contact Joe Jernigan, Aquatic Plant Management Supervisor, Fisheries Section, Alabama Wildlife and Freshwater Fisheries Division at 251-626-5153 or send an e-mail to [jjernigan@dcnr.state.al.us](mailto:jjernigan@dcnr.state.al.us). 