STOPPING THE SPREAD OF INVASIVES

Non-native invasive species threaten the ecology of natural systems as well as our economy. The costs of invasives to the U.S. economy in 2000 were estimated at 137 billion dollars annually.

These threats to Oklahoma's natural systems are both real and immediate. Zebra mussels currently inhabit several systems in northeast Oklahoma and new infestations are being found annually. Zebra mussels have the potential to reduce the productivity of infested systems, cause economic loss by clogging pipelines, locks and dams, marinas, and outboard motors, and impact recreational opportunities by fouling beaches (swimmers now have to wear tennis shoes at Oologah or risk being cut by mussel shells).

single zebra mussel and zebra mussel encrusted rock from Oologah Reservoir

Fish kills caused by golden alga have occurred in the Red River and in Lake Texoma. Although these kills not been extensive to date, golden alga related fish kills in Texas have completed decimated fisheries in several reservoirs.

Bighead carp have been found in the Neosho River, Red River, and Grand Lake. Although reproduction has not been verified in Oklahoma, this species has caused major economic and recreational losses in the upper Mississippi River system. Invasive plants often are moved from one system to another by boaters failing to remove plants from trailers. Eurasian watermilfoil and, more recently, hydrilla have been spread by recreational boaters. To learn more about these threats go to: http://www.wildlifedepartment.com/nuisancespecies.htm

The Oklahoma Department of Wildlife Conservation (ODWC) has recently initiated drafting a statewide plan to address this growing threat. This plan must rely on a coordinated effort of state agencies, municipalities, commercial resource users, and the private sector to be effective. The plan will be endorsed by the legislature, signed by the governor, and funded, in part, by a federal task force. As part of this plan, the Fisheries Division of ODWC has instituted a set of guidelines to ensure that its activities do not contribute to the spread of invasive aquatic species. A copy of these guidelines is available upon request.

Invasive species expand their range often faster than the scientific community has a chance to identify newly infested waters. Consequently, precautions to prevent spread of invasives should be taken not only when working in known areas of infestation but used on a routine basis. This brochure is intended to give private and commercial users of Oklahoma's aquatic resources guidelines to prevent their activities from contributing to the spread of invasive species.

COMMERCIAL AQUACULTURE OPERATIONS

While many culture facilities raise native species which pose no threat to natural aquatic systems, often shipments of minnows, grass carp, trout, crayfish, etc. are brought in from out-of-state, primarily from Arkansas, but shipments of trout from Missouri and Colorado, and minnows from the Great Lakes region are not uncommon. Non-target species, many with the potential to become invasive in natural systems, often are included in these shipments. White perch were included in a shipment of striped bass from Virginia to Kansas. Once stocked in Cheney Reservoir, the white perch reproduced, escaped into the Arkansas River, and are now found in Kaw and Keystone Reservoirs in Oklahoma in high numbers. A shipment of minnows to ODWC's Byron State Fish Hatchery from Minnesota contained brook sticklebacks, a species that poses a threat to native stream fish communities. New Zealand mudsnails are found on some commercial trout hatcheries in Colorado. Viral hemorraghic septicemia is a new disease identified in the Great Lakes region as the cause of significant fish kills and is currently present in some culture facilities in that area. Some states have already banned all shipments of fish from that area.

PREVENTIVE MEASURES

- Culture and sell only native species
- Purchase shipments from certified disease-free facilities only
- Get assurances from supplier that all shipments have been screened to

eliminate non-target species (ask for a copy of their guidelines to verify that this has been done)
- Transport in well water only-never release water from one lake or river into another

COMMERCIAL MINNOW DEALERS/SEINERS

Many of the treats and preventative measures relevant to the commercial aquaculture facility also apply to minnow dealers that import loads from out-of-state. Certainly the best preventative measure is to raise your entire product on your own facility and only culture native species. This is not often feasible for economic reasons which necessitate the need for preventative measures to ensure that shipments do not contain nonnative species. Rusty crayfish, brook sticklebacks, bighead carp, and viral hemorraghic septicemia are several of the potential threats associated with bait imports.

microscopic golden alga cells and yellow appearance of water during bloom

Golden alga toxins have been found in the Red River at concentrations high enough to cause fish kills. Golden alga can live for extended periods of time in nothing more than a wet net. Consequently, seining operations to collect minnows on the Red River have the potential to spread golden alga. Seining operations on the Arkansas River system have the potential to spread zebra mussels. Zebra mussel adults and larvae can also survive on wet surfaces making movement between bodies of water on equipment a liability. Seining operations and subsequent resale of bait have the potential to move species to systems outside their native range. Red River pupfish have been found in the Cimarron River, most likely the result of bait bucket releases.

PREVENTIVE MEASURES

- Culture and sell only native species
- Purchase shipments from certified disease-free facilities only
- Get assurances from supplier that all shipments have been screened to eliminate non-target species (ask for a copy of their guidelines to verify that this has been done)
- Transport in well water only-never release water from one lake or river into another
- Commercial seiners should dry their equipment for a minimum of 5 days before moving to a different body of water

Or

Immerse equipment in a 10% chlorine solution for 4 hours
- Wash boat and trailer using heated (140º F) high-pressure wash prior to moving to another body of water
- Remove all species from catch that do not have a statewide distribution

SCIENTIFIC COLLECTOR PERMITS

Individuals issued permits to collect specimens for scientific and/or consulting purposes should also take precautions to ensure that their activities do not contribute to the spread of invasive species. Collection of specimens from multiple locations within a short time period poses the threat of moving invasives on equipment. Potential pathways for spread of golden alga and zebra mussels were discussed previously. Collecting threadfin shad at Lake Texoma for use in farm ponds as forage for trophy largemouth bass management has potential of introducing golden alga to private impoundments. Golden alga has been found in a private impoundment in the Altus area.

PREVENTIVE MEASURES

- Transport in well water only-never release water from one lake or river into another
- Dry equipment for a minimum of 5 days before moving to a different body of water

Or

Immerse equipment in a 10% chlorine solution for 4 hours
- Wash boat and trailer using heated (140º F) high-pressure wash prior to moving to another body of water
- Remove all aquatic plants from trailer and other equipment prior to reuse in another body of water