

Kansas Water Plan

Aquatic Nuisance Species Management

August 2011

Issue

Aquatic nuisance species (ANS) have invaded Kansas lakes and streams and expanded populations continue to be discovered in Kansas aquatic environments. ANS, also called invasive species, are not only detrimental to native species in Kansas; they also cause problems for recreational activities, such as boating and fishing, municipal and industrial users and even agricultural producers. Two aquatic invasive species that are of particular concern are the Zebra mussel and the Asian carp.

While state laws exist to manage ANS, lack of funding for education, inspections and enforcement limits effective implementation of these laws resulting in continued spread of these species.

Background

Aquatic nuisance species represent a potential threat to the environment, as well as a threat to water suppliers, industry, power generation and ultimately, the economy. The negative impacts of ANS include:

- Clogged water intakes
- Possibility of burned out water pumps and pivots
- Clogged and damaged power generating equipment
- Decreased recreational opportunities
- Increase flooding risk due to clogging of water control structures
- Bioaccumulation of toxins in waterfowl
- Changes in water quality
- Increased algal blooms
- Habitat degradation
- Decreased property value

Zebra Mussels

Zebra mussels, *Dreissena polymorpha*, produce free-floating microscopic larvae, which enables aquatic users to unknowingly transport them between water bodies and allows them to easily infest facilities through surface water intakes. Zebra mussels are native to the Black and Caspian seas of Europe. They were introduced to the Great Lakes Region in 1988 through the purging of ballast waters of cargo ships. Since that time they, and their cousin the Quagga mussel, have infected water bodies across the nation (Figure 1).

Zebra mussels were first confirmed in the state in 2003 in Eldorado Reservoir in the Walnut River Basin in south central Kansas. Since that time, Zebra mussels have spread to nine other Kansas lakes, including Lake Afton, Winfield City Lake, Cheney Reservoir, Perry Reservoir, Wilson Reservoir, Marion Reservoir, Milford Reservoir, Council Grove City Lake and John Redmond Reservoir.

Once introduced, new populations of Zebra mussels expand quickly. The last confirmed was in John Redmond Reservoir in July 2010. It is likely that Zebra mussels will move downstream in the Neosho River and infest Council Grove Reservoir and Coffey County Fishing Lake (Wolf Creek Lake). Zebra mussels were confirmed in Perry Reservoir in 2007 and as of October 2009 their presence was confirmed by various municipalities and industries downstream along the Kansas River.

Nationwide expenditures to control Zebra mussels in water intake pipes, water filtration equipment, and electric generating plants are estimated around \$1 billion per year. Due to the high economic impact that Zebra mussels can have on water intake systems, the Kansas Department of Wildlife, Parks, and Tourism (KDWPT) and the Kansas Water Office (KWO) have notified those municipalities and industries in the affected basins of the infestations and the need to protect their facilities.

Asian Carp

Asian carp are another invasive species that can be costly and even dangerous to those who use Kansas waters. The aquatic nuisance group of Asian carp consists of three species. Common names for these three species are the Bighead carp, the Silver carp, and the Black carp. Asian carp are a problem because they directly compete with native fish for food resources and grow quickly, consuming 40 percent of their body weight every day. Black carp are particularly detrimental to native snails and mussels, as they feed exclusively on them. Silver carp, distinctively pose a threat to boaters as they will leap out of the water when disturbed by boat motors and can cause injury.

Asian carp have received increased publicity due to their noticeable population increase in both the Kansas and Missouri Rivers in the summer of 2010. As reported by KDWPT, Asian carp have been reported in increased populations below Bowersock Dam in Lawrence, below WaterOne's weir in Johnson County and below the dam at Atchison State Fishing Lake. Asian carp can now be found in the Big Blue, Kansas, Missouri, and Wakarusa rivers and in any stream that connects to the Kansas and Missouri rivers.

Additional ANS Animal Species

While Zebra mussels and Asian carp are certainly the poster children for ANS, the list of invasive species does not end there. Additional ANS include White Perch, Rudd, Ruffe, Rusty Crayfish, Round Goby and New Zealand mudsnails. These species are detrimental because they displace the native aquatic species from prime habitat and spawning areas. ANS also disrupt the food chain by eating eggs and young fish of native species, feeding on baitfish utilized by other species, and consuming algae, which competes with native aquatic species. Another problem with these ANS species is some of them are capable of hybridizing with native aquatic species.

ANS Plants

Aquatic Nuisance Species do not just include animal species, but plants as well. Plants considered invasive in Kansas include, but are not limited to: Eurasian watermilfoil, Hydrilla and Salt Cedar. Many invasive species of plants outcompete native pond and wetland plant species. This can affect the plants they are outcompeting as well as the native animals that depend on that habitat and food source. ANS plants also inhibit flow and can sometimes hinder recreational activities.

A complete list of both animal and plant species can be found listed on the KDWPT website. <http://www.kdwp.state.ks.us/news/Fishing/Aquatic-Nuisance-Species>

Of the ANS plants, the phreatophyte Salt Cedar, also referred to as Tamarisk, is a serious concern for Kansas. In the 2009 update of the *Kansas Water Plan* (KWP), Salt Cedar was noted as a primary problem affecting both water quantity and quality. Salt Cedar can also outcompete native obligate phreatophytes during drought periods. http://www.kwo.org/Kansas_Water_Plan/KWP_VolumeIII.htm

In 2005 the Governor signed a 10-Year Strategic Plan for the Comprehensive Control of Tamarisk and Other Non-Native Phreatophytes. That plan can be accessed using the following link: http://www.kwo.org/reports_publications/Reports/Rpt_Tamarisk_10-Year_Plan_FINAL_120805_sm.pdf

Salt Cedar is also listed in the Kansas Aquatic Nuisance Species Management Plan.

Kansas Water Plan Objectives

Recreation

Increasing recreational opportunities at the lakes, rivers and streams of Kansas is an objective of the *KWP*. A key policy issue identified in surveys conducted by the KWO and KDWPT is that demand for water-based recreation exceeds present

availability. The presence of ANS in any of the recreational areas can have detrimental impacts. ANS can decrease the quality of the recreational experience or eliminate it all together. With decreased or eliminated recreation an area can suffer economically.

It is best to protect recreational areas from the infestation of ANS. However, protecting them can become difficult with the multitude of access points and lack of enforcement staff. In order to protect these valuable resources additional funding will be needed to hire and train essential enforcement staff and to educate user groups on ways to protect their resource and prevent infestations.

Public Water Supply

Kansas has approximately 1,100 public water supply systems, serving approximately 2.6 million Kansas residents. Public water supply systems are typically managed by a public entity, such as a municipality or a rural water district, but may also be managed privately. The governing bodies of public water supply systems bear primary responsibility, and cost for providing an adequate supply of high quality drinking water to the public.

With the threat of ANS, providing adequate high quality drinking water will be more difficult and costly. Public water suppliers will have to install chemical or mechanical means of treatment or removal of ANS such as Zebra mussels. This will not only add additional steps to the water treatment process, but will also add additional costs in order to provide quality drinking water. Another adverse side affect is by adding additional copper or potassium to the water. The environmental levels of these chemicals will increase which can be detrimental to native aquatic species and possibly humans.

Existing Approaches

Kansas Aquatic Nuisance Species Management Plan

The *Kansas Aquatic Nuisance Species Management Plan* was approved by the Governor in 2005. <http://www.kdwp.state.ks.us/news/Fishing/Aquatic-Nuisance-Species/KS-Nuisance-Species-Plan>

The plan is designed to protect Kansas residents and the state's aquatic resources from the multitude of potential losses associated with ANS plants and animals. Actions outlined in the Management Plan focus on the listed priority species and their pathways of introduction.

Since adoption of the Plan in 2005, the KDWP has been increasing and improving their capacity to prevent, control, contain, or eradicate ANS in Kansas while partnering with other Kansas natural resource agencies. Federal grant assistance, in addition to generous private donations, has provided the primary funding mechanism for ANS management in Kansas, but more is needed. In comparison to other states Kansas lags behind in funding from both federal and states resources. Below is a comparison between states and the funding amounts they received in 2008. In 2010 the Kansas ANS Program only received \$65,048 from federal funding and \$0 from state funds.

Funding limitations have made comprehensive ANS management difficult and a consistent source of funding to further develop ANS prevention and enforcement program capacity is needed. Legislative action is necessary to further the success of the ANS management program in Kansas and suggested actions are outlined in the Implementation Portion of the Recommendations in this policy paper.

Legislation

Several pieces of national legislation allow Kansas to work towards the control and prevention of ANS and to participate in federal cost-share programs to receive funds to help manage ANS.

Passed in 1900, the Lacey Act is the nation's first far-reaching federal wildlife protection law. This law helps control the movement of ANS, while also protecting native species from introduction of ANS.

In 1990 the Nonindigenous Aquatic Nuisance Prevention and Control Act was established to limit the spread of ANS. Then in 1996 the National Invasive Species Act was established to provide opportunity for federal cost-share support to states, including Kansas, to help manage ANS.

In 1999 Executive Order 13112 established The National Invasive Species Council (NISC) to ensure that Federal programs and activities to prevent and control invasive species are coordinated, effective, and efficient.

In 2008, Kansas Senate Bill 606 was introduced which would have specified that fines and grants would fund ANS control efforts and would have also created an aquaculture advisory council. The bill failed to move out of committee. Nothing since has been introduced in the Kansas legislature and the program has continued to operate with minimal funding resulting in widespread negative impacts.

A National Look

ANS are the cause of significant ecological and socio-economic problems for water users in North America. ANS have spread beyond historic ranges and have adversely affected infested waters by threatening the integrity of the water resources. Since ANS have few natural controls in their new habitats, they spread rapidly, destroying native plant and animal habitat, threaten the diversity and abundance of native species, and damage industrial, agricultural and recreational activities dependent on surface waters. Currently there are 36 approved State ANS Management Plans, which includes 33 states and three Interstate Plans (Figure 4). It is vital to have all states involved as ANS are easily transported across state lines.

To ensure implementation of these plans many agencies and organizations, nationwide, must work together. A brief list of those agencies and organizations with responsibility for the control and prevention of ANS are listed below.

Federal Agencies:

U.S. Fish and Wildlife Service
U.S. Army Corps of Engineers
U.S. Coast Guard

Regional Organizations:

The Western Regional Panel
The Mississippi River Basin Regional Panel
Western Governors Association

Statewide:

Kansas Department of Wildlife, Parks, and Tourism
Kansas Department of Agriculture
Kansas Department of Health and Environment
Kansas Water Office

ISSUES AND RECOMMENDATIONS

ANS have expanded populations in Kansas lakes and rivers and are detrimental to native species. They can cause problems for recreational activities, such as boating and fishing, municipal and industrial users and even agricultural producers. There are national, regional and statewide efforts to control and prevent these invasive species, but there is still work that needs to be accomplished. To implement parts of the Kansas Aquatic Nuisance Species Management Plan, additional education, enforcement, and funding are needed. The following recommendations will help accomplish this goal.

RECOMMENDATIONS

Education

1. Educate resource user groups about the risks and impacts of ANS and how to reduce their spread and harmful impacts.
2. Promote education and seek local input through the state's Basin Advisory Committees.

Funding

1. Secure a funding source to implement the Kansas Aquatic Nuisance Species Management Plan.

Research

1. Continue an evaluation of the most effective and cost-efficient control measures for ANS.

Coordination

1. Continue to work with federal, state, and local agencies and other groups to implement the *Kansas Aquatic Nuisance Species Management Plan*.

Legislation and Administrative Changes

1. Introduce legislation to establish means of preventing the spread of ANS.
2. Administratively change current regulations to prevent the spread of ANS.

IMPLEMENTATION

Education

1. Development and dissemination of materials to educate the general public through various media.
2. Development and dissemination of materials to schools to assist educators.
3. Training of law enforcement officers to conduct inspections and identify and respond to ANS.
4. Provide ANS information to numerous public venues.
5. Continue training for state personnel and expand to other interested entities. Personnel will be trained in the concepts of Hazard Analysis and Critical Control Point (HACCP).

Funding

1. Secure a funding source to implement the Kansas Aquatic Nuisance Species Management Plan through the State Water Plan Fund and through funds provided by the Expanded Lottery Act Revenues Fund (ELARF).
2. Proposal of an annual budget of \$1,626,750 be allocated to support a comprehensive ANS management program in Kansas. The funding will be evaluated annually by the Kansas Water Authority (KWA) for recommendation to the Governor. Funding at this level will provide the following:
 - a. Four FTE positions
 - i. The current ANS Program Coordinator is with the KDWPT. The coordinator position would continue with the Agency and complete program oversight would remain including a new statewide effort to conduct boat inspections at launches and as requested by the public.
 - ii. A pathologist/aquaculture specialist would be hired to address aquaculture needs, fish imports, and fish health issues.
 - iii. Two law enforcement officers would be hired to specialize in fish import inspections and ANS issues as the addition of new statutes would require more law enforcement staff be hired to address these challenges.
 - b. Temporary/seasonal employees and college students would be hired to carry out other implementation objectives and further the educational pursuits of Kansans.
 - c. Outreach activities
 - d. Boat inspections
 - e. Research

Research

1. Identify, predict, and prioritize potential ANS introductions, management alternatives for effect of ANS on native species, and facilitate the collection and dispersal of information gathered.

Coordination

1. Continue to work with federal, state, and local agencies and other groups to implement the *Kansas Aquatic Nuisance Species Management Plan*.

Legislation and Administrative Changes

1. Introduce legislation and review and administratively amend regulations to establish means of preventing the spread of ANS. Regulations to consider for changes and legislation to be introduced include:
 - a. Existing law generally prohibits the sale, possession, importation, transportation, transfer, and live release, of certain ANS species. It is proposed that a civil penalty not less than \$500 and not more than \$10,000 be established for each violation.

- b. The transport of harmful ANS may be facilitated by the movement of water and equipment from infested water bodies. To address this pathway for spread, several changes are requested. It is proposed that a civil penalty not less than \$500 and not more than \$10,000 be established for each violation.
 - i. It is proposed that all vessels being removed from a water body be required to drain all equipment holding water, bait containers, and livewells and bilges by removing the drain plug before transporting the watercraft and associated equipment on public roads and water from infested waters may not be transported on public roads.
 - ii. Further, the transport of aquatic macrophytes on any equipment should be prohibited.
- c. Currently, fish can be imported into Kansas with little oversight. A fish import permit should be required for all live fish imports.
 - i. Fish imported for resale could only be shipped to permitted pet stores, bait shops, or fish distributors.
 - ii. All permit holders would be subject to inspection for fish health and species compliance.
 - iii. Although repealed in 2006, Kansas State Statute 47-1903 established an Aquaculture Advisory Council through the Secretary of Agriculture to coordinate aquaculture activities. An Aquaculture Advisory Council may again be necessary to effectively address the issue of aquatic imports in a coordinated manner.
- d. The Kansas Department of Agriculture and the KDWPT maintain lists of species prohibited for import into Kansas.
 - i. Any species not on the approved list is prohibited but can be petitioned to be added to the approved list.
 - ii. Two lists would need to be developed; one for aquatic pets and one for aquaculture imports.
 - iii. A permit to import species not listed would need to be established for special circumstances (i.e. scientific research or zoological display specimens).
- e. All aquatic imports should be certified pathogen free according to American Fisheries Society Bluebook standards.
 - i. A list of regulated pathogens may need to be developed.
 - ii. Fish growers in Kansas would need to be certified under a special registration program.
- f. Current KDWPT regulations prohibit the transfer of baitfish between Department waters (KAR 115-8-6), yet it does not include the transfer from private waters. Anglers would no longer be allowed to transport live fish between waters of the State, thus fishing bait may be used only in the water where taken.
 - i. To aid in enforcement, anglers who transport fish must have a valid receipt from the permitted bait dealer where purchased.
 - ii. Law enforcement officers may be needed to enforce this rule. At present, the KDWPT Commission is evaluating the aforementioned recommendation.

REFERENCES

Kansas Department of Wildlife and Parks, Aquatic Nuisance Species, 2011 <http://www.kdwp.state.ks.us/>

Kansas Department of Wildlife and Parks, Kansas Aquatic Nuisance Species Management Plan, approved April 26, 2005, <http://www.kdwp.state.ks.us/news/Fishing/Aquatic-Nuisance-Species/KS-Nuisance-Species-Plan>

Kansas Water Office, Kansas Water Plan, 2010, http://www.kwo.org/Kansas_Water_Plan/Kansas_Water_Plan.htm

Kessinger, Sarah (February, 22, 2008) Bill targets creature's onslaught, Hutchnews.com. Retrieved from <http://www.hutchnews.com/Todaystop/mussells>

The National Invasive Species Council (NISC), 2011, <http://www.invasivespecies.gov/>

The US Fish and Wildlife Service, 2011, <http://www.fws.gov/news/newsreleases/LACEYACT.html>

Western Governors' Association. <http://www.westgov.org/home>