

Nebraska Aquatic Nuisance Species Management Plan



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SECTION A

EXECUTIVE SUMMARY

The Federal Non-indigenous Aquatic Nuisance Prevention and Control Act of 1990 amended by the National Invasive Species Act of 1996, calls for the development of state and regional management plans to control aquatic nuisance species. With approval of a state plan by the national Aquatic Nuisance Species (ANS) Task Force, matching funds for activities detailed in the management plan are available. Using guidance from the National ANS Task Force and other accepted state agency plans, this management plan was developed to establish management actions in order to address the prevention, control, and effects of non-indigenous aquatic nuisance species that have invaded or may invade Nebraska waters. The Nebraska Aquatic Nuisance Species Management Plan serves as the initial step in establishing a program to specifically address ANS issues in Nebraska.

The plan includes 11 major sections. The introduction (Section B) describes the overall purpose of the plan, geographic scope, history of plan development (including scientific and public review), and the connection with other management plans in the region. Section C provides an overall review of ANS problems and concerns, summarizes the history (as known) of ANS in Nebraska, and describes ANS of high priority including a discussion of introduction pathways. The plan goals are described in Section D, broadly stating what the plan hopes to accomplish and in what time frame. Section E identifies all known existing federal, state, regional, and tribal authorities and activities related to ANS. Each authority, program, and activity is listed under this section, but greater detail for each is provided in Appendix A. The backbone of the plan is identified in section F, which explicitly states seven main objectives proposed to meet the goals of the plan. Under each objective are strategies and specific actions as well as estimated costs to implementing each action. Section G identifies which of the listed actions are of top priority and rational behind each. The objectives, strategies and actions of Section F are put into tabular form in Section H, and clearly identifies organizations responsible for implementing each action. A program evaluation process is described in Section I, indicating what performance measures will be used to assess the effectiveness of management actions. Finally, Sections J, K, and L include a glossary, literature cited, and appendices, respectively.

Aquatic nuisance species are a source of significant ecological and socio-economic problems throughout North America. Nebraska's aquatic ecosystems have already been invaded by ANS such as Asian carp, white perch, and Phragmites, among others. While their initial impacts have been limited and localized, there is little doubt that these and other ANS pose a serious threat to Nebraska's water resources. The future of Nebraska's aquatic resources requires a coherent response to the threat posed by ANS; however, we lack much information on which species are here and their current distribution. The environmental and socio-economic costs resulting from ANS infestations will only continue to rise with further introductions, making the costs associated with managing ANS a big concern for Nebraska as funding is extremely limited. The purpose of this plan is to provide Nebraska natural resource managers and public a framework for the prevention and control of aquatic nuisance species that have invaded or may invade Nebraska. The plan will also serve to pursue an opportunity for Federal cost-share support for implementation of the plan.

Many programs currently exist to help prevent and control ANS at the federal, state, regional, and tribal level. Federal authorities and national organizations (who are likely collaborators) with ANS related activities in Nebraska include:

- Nonindigenous Aquatic Nuisance Species Prevention and Control Act (NANPCA) and the associated coordinating efforts of the ANS Task Force
- U.S. Fish and Wildlife Service
- U.S. Geological Survey (USGS)
- U.S. Army Corps of Engineers (COE)
- U.S. Coast Guard (USCG)
- U.S. Department of Agriculture (USDA)
 - Natural Resources Conservation Service (NRCS)
 - Animal and Plant Health Inspection Service (APHIS)
 - US Forest Service (USFS)
- U.S. Environmental Protection Agency (USEPA)
- National Park Service (NPS)
- National Oceanic and Atmospheric Administration (NOAA)
- National Sea Grant (NOAA – Sea Grant)
- National Marine Fisheries Service (NOAA – Fisheries Service)
- Bureau of Reclamation (BOR)
- National Park Service
- The Nature Conservancy

Regional, state, and tribal authorities and organizations (who are likely collaborators) with ANS related activities in Nebraska include:

- The Western Regional Panel ANS Task Force
- Mississippi River Basin Panel ANS Task Force
- Western Governors' Association
- The Missouri River Watershed Coalition
- Missouri River Futures
- Omaha Tribe
- Ponca Tribe
- Santee Sioux Tribe
- Winnebago Tribe
- Nebraska Game and Parks Commission
- Nebraska Department of Agriculture
- Nebraska Department of Environmental Quality
- Nebraska Forest Service
- Nebraska Invasive Species Council
- Nebraska Invasive Species Project
- Nebraska Natural Resource Conservation Service
- Nebraska Department of Natural Resources
- USGS Nebraska Cooperative Fish and Wildlife Research Unit
- University of Nebraska-Lincoln Cooperative Extension Service
- Nebraska Weed Control Association
- Nebraska Weed Management Areas and Weed Groups

- Nebraska Wildlife Federation
- Nebraska Lakes Association

The goal of the Nebraska Aquatic Nuisance Species Management Plan is to minimize the harmful ecological, economic, and social impacts of ANS through prevention and management of introduction, population growth, and dispersal into, within, and from Nebraska.

The plan includes discussions of existing concerns, a summary of federal, regional, and state policy, a draft list of non-indigenous species known to exist in Nebraska, and a discussion of ANS that pose a threat to Nebraska's aquatic ecosystems. In addition, the plan sets objectives that will lead to the accomplishment of the plan goal. These seven objectives (with their corresponding strategies) include:

- Objective 1: Increase Coordination of all ANS management programs and activities in Nebraska.
 - Strategy 1A1: Coordinate all ANS management programs and activities within Nebraska
 - Strategy 1A2: Participate in and support national and international efforts.
 - Strategy 1A3: Develop a permanent funding mechanism for ANS management in Nebraska.
 - Strategy 1A4: Review and evaluate state efforts in addressing ANS.
- Objective 2: Monitor state waters to determine the occurrence and distribution of ANS.
 - Strategy 2A1: Develop and implement a statewide ANS monitoring program.
 - Strategy 2A2: Develop partnerships with neighboring states to share information concerning the distribution of ANS based on monitoring activities.
- Objective 3: New ANS introductions: Prevention and Rapid Response
 - Strategy 3A1: Develop and implement an early detection and rapid response (EDRR) program.
 - Strategy 3A2: Develop a boat inspection program for watercraft entering Nebraska high-risk waters.
- Objective 4: Control and eradicate established ANS
 - Strategy 4A1: Develop and implement control strategies to eradicate or reduce populations of priority ANS in state waters.
- Objective 5: Support ANS research and disseminate information to research and management communities
 - Strategy 5A1: Support research that identifies, predicts, and prioritizes ANS introductions and their spread.
 - Strategy 5A2: Support research that investigates management strategies that limit the introduction and spread of ANS populations.
 - Strategy 5A3: Facilitate the collection and dispersal of information, research, and data on ANS in Nebraska.
- Objective 6: Educate the public, policy makers, natural resource workers, private industry, and user groups about the risks and impacts of ANS and the importance of prevention.
 - Strategy 6A1: Educate the public about ANS, how their actions can prevent the introduction and spread of ANS.
 - Strategy 6A2: Develop and implement a 'Next Generation Education Strategy'

- Strategy 6A3: Develop and distribute identification and management information to resource agency staff.
- Strategy 6A4: Develop and provide ANS informational briefings and educational materials to key policy and decision makers.
- Objective 7: Prevent the introduction and spread of ANS in Nebraska through legislative and regulatory efforts:
 - Strategy 7A1: Review existing laws and regulations governing ANS and amend or add as required to achieve goals of ANS Plan.

The Nebraska ANS Plan focuses the establishment of a management structure that *coordinates* ANS activities, a *monitoring* and *prevention* program that allows for the early detection and rapid response of pioneering ANS, a *control* program aimed at established species, *research*, *education*, and *legislative* actions. The plan is structured for incremental implementation with high priority on;

- Forming ANS steering committee to direct implementation of the plan
- Identifying funding to implement ANS plan
- Identifying gaps in ANS legislation/policy and make adjustments as needed
- Hiring ANS coordinator
- Increasing surveys/monitoring so we know what is in NE and where
- Create online database entry program for entering ANS sightings
- Developing response plans for high priority species
- Increasing state-wide and inter-state collaboration

To ensure that the goals of this plan are being effectively addressed, a procedure for monitoring and evaluating the implementation of strategies and tasks will be initiated. This evaluation will focus on the feasibility and cost-effectiveness of management activities. The plan is a working document and will be periodically updated and expanded based upon the experience gained from implementation, scientific research, and new tools as they become available.

The implementation table in Section H summarizes the plan's funding from all sources. Existing funds that are dedicated to ANS related tasks total \$326,000 annually. The plan requests additional funding of \$70,000 annually from the Federal Task Force and will seek an average of \$370 additional dollars annually from other external sources.

SECTION B

INTRODUCTION

Aquatic Nuisance Species (ANS) are non-indigenous plant, animal, or pathogen species that threaten the diversity or abundance of native species, the ecological stability of infested waters, or commercial, agricultural, aquacultural, or recreational activities that depend on such waters. ANS are the cause of significant ecological and socio-economic problems throughout North America. Invasive species, such as zebra mussels, Eurasian watermilfoil, and whirling disease are being introduced into new habitats at an alarming rate. After introduction, populations often grow quickly and spread rapidly due to lack of natural controls. Once established, they often displace native species, clog waterways, impact municipal and industrial irrigation and power systems, degrade ecosystems, reduce or threaten recreational and commercial fishing opportunities. ANS can also pose serious health risks. For example, a South American strain of human cholera bacteria was found in ballast tanks in the port of Mobile, Alabama in 1991. Cholera strains were also found in oyster and fin-fish samples in Mobile Bay, resulting in a public health advisory to avoid handling or eating raw oysters or seafood.

As the introduction and spread of ANS continues, the associated problems intensify and create a wide variety of ecological and socio-economic problems for water users. In 1990, the Non-indigenous Aquatic Nuisance Prevention and Control Act (NANPCA) was passed by Congress to address ANS problems in the United States. This legislation provided an opportunity for federal cost-share support for implementation of state plans. While programs created by this national legislation were initially aimed at problems in the Great Lakes region, the reauthorization of NANPCA in 1996 as the National Invasive Species Act (NISA) established a national goal of preventing new ANS introductions and limiting the dispersal of existing ANS in all of the states. NISA specifies, among other things, that state plans identify feasible, cost-effective management practices and measures that can be implemented by the state to prevent and control ANS infestations in a manner that is environmentally sound. Approval of a state ANS management plan by the Federal Aquatic Nuisance Species Task Force is required for Nebraska to be eligible for federal cost-share support. Section 1204 of NISA regarding state ANS management plans, is included in **Appendix A**.

A Growing Problem

Several ANS have already been introduced into Nebraska; however, we lack much information on which species are here and their current distribution. The environmental and socio-economic costs resulting from ANS infestations will only continue to rise with further introductions, making the costs associated with managing ANS a big concern for Nebraska as funding is extremely limited. In order to help protect Nebraska's water resources, the ANS Planning Committee has developed this ANS Management Plan. Within this plan, the committee has identified some of the biggest ANS concerns for Nebraska's environment, economy, and public health. In addition, the committee has outlined a series of proposed objectives, strategies, and actions to help ameliorate the impact of ANS in Nebraska. The seven main objectives include; coordination, detection and monitoring, prevention and rapid response, control and eradication, research, education and outreach, and legislation.

The coordinated efforts contained within this plan are designed to protect residents of Nebraska and the state's aquatic resources from the multitude of potential losses associated with ANS. This management plan focuses on preventing the accidental introductions of new ANS, limiting the spread of existing ANS, and controlling or eradicating ANS where environmentally and economically feasible. The intentional introduction of non-indigenous species for aquaculture, commercial, or recreational purposes is also addressed to insure that these beneficial introductions do not result in accidental ANS introductions, and to improve information sharing among those agencies responsible for regulation of intentional introductions. In addition, Nebraska waters are diverse and cover a vast geographic area. While neighboring connecting water bodies are of concern (discussed separately), the geographic scope of this plan covers all the water bodies contained within the state of Nebraska (see map below). This map, as prepared by the UNL Water Center , shows the major water bodies in Nebraska and can be used to help identify those water bodies at high risk of ANS introduction/infestation. The map can be found at: <http://water.unl.edu/watermap/watermap>

Nebraska has the opportunity to prevent or prepare for the introduction of one of the most destructive aquatic nuisance species, the zebra/quagga mussel (*Dreissena polymorpha/Dreissena rostriformis bugensis*). In Nebraska, zebra mussels have been found in the Missouri River near Gavin's Point Dam, and until recently, Lake Offutt at Offutt Air Force Base (where they have been eradicated). While zebra or quagga mussels haven't appeared in other waters in Nebraska, neighboring states are experiencing various levels of infestation. Kansas, Missouri, Iowa, Minnesota, and Colorado all have current, active infestations. While each state is taking measures to help prevent the spread of these ANS, Nebraska receives many aquatic recreational visitors each year, increasing the risk of spread. States where zebra or quagga mussels are present have reported severe environmental and economic damage resulting from their accidental introduction.

The costs and impacts of ANS in Nebraska have not been determined precisely; however costs are incurred in two main categories. First is the loss in potential economic output, such as reductions in aquaculture, fisheries, and crop production. Second is the direct cost of combating and mitigating the impacts of invasion, including all forms of quarantine, control and eradication (Mack et al. 2000). Profitability in agriculture, for example, is reduced by the costs incurred to control non-native aquatic plants which clog irrigation canals. The zebra mussel would create substantial costs for Nebraskan's for the maintenance of industrial, hydropower, irrigation, and water supply systems. Impacts of the zebra mussel in the Midwest and eastern part of the country have been estimated to be \$1 billion annually (Khalanski 1997). Another recent study shows invasive species, including aquatics, are imposing an enormous economic burden (estimated over \$120 billion/year) on the United States (Pimentel et al. 2005). Non-indigenous aquatic nuisance plants, such as Eurasian watermilfoil, hydrilla, purple loosestrife, salt cedar, and Phragmites quickly establish themselves, displacing native plants. Environmental and economic problems caused by the dense growth of these weeds include: impairment of water-based recreation, navigation and flood control, degradation of water quality and fish and wildlife habitat, accelerated filling of lakes and reservoirs, and depressed property values.

These ANS and the growing list of non-native aquatic species in Nebraska (**Appendix C**) are classic examples of why the Nebraska ANS Management Plan has been developed. This plan is intended to help the state coordinate efforts and secure long term cooperative funding to prevent, eradicate or control new introductions more effectively, before they cause major environmental, economic, or public health damage.

Plan Development and Comment

The Nebraska Aquatic Nuisance Species Planning Committee developed the Nebraska ANS Management Plan. Members of the committee assumed an active role in preparation for the plan by providing critical information, reviewing draft plans, and providing guidance. A list of the committee members is provided in **Appendix D**. The plan was available for public comment for 60 days and a public input meeting was held on June 9, 2010. Public comments were solicited from local governments, regional entities, public and private organizations, and resource user groups that have expertise and interest in the control of ANS. Specific comments that solicited significant changes to the plan are detailed in Appendix E, along with our responses.

The Nebraska ANS Plan was developed with regional coordination in mind. For example, many of the states neighboring Nebraska have already developed an ANS plan, or have one in progress. In addition, states such as Colorado, Kansas, and Wyoming already have functioning ANS programs to varying extents, and as such, the Nebraska ANS Committee communicated frequently with each states coordinator to identify the most likely successful actions. Many of the objectives in this plan coincide with neighboring states goals, and specific actions of this plan (i.e., boat inspection programs) have been tailored from existing programs in other states so that implementation of this plan achieves regional consistency. The ANS Committee also sought input from many programs involved with projects on the Missouri River since activities (and often jurisdiction) is often shared across this boundary. Finally, many of the goals of the NE ANS Plan coincide with the Nebraska State Wildlife Plan and the Nebraska Natural Legacy Project, both of which have been considered during development.

The Nebraska ANS management plan covers the next five years and will be reviewed and revised annually or more frequently if needed to address the unexpected arrival of new ANS. Advances in knowledge of ANS management techniques could warrant alterations in proposed management strategies. The specific tasks employed to accomplish the goals and objectives of the plan must remain flexible to ensure efficiency and effectiveness. While this version of the plan is a good starting point for identifying and integrating existing ANS programs, and implementing new programs, future editions will be necessary to achieve Nebraska's ANS management goals.

SECTION C

PROBLEM DEFINITION AND RANKING

Several ANS have already been introduced and dispersed in Nebraska by various pathways. One of the major problems in Nebraska is the many modes of ANS introduction, many of which have yet to be examined thoroughly. In addition, while we know of some ANS present in Nebraska, we lack much information on which species are here, and their current distribution. The environmental and socio-economic costs resulting from ANS infestations will only continue to rise with further introductions, making the costs associated with managing for ANS another big concern for Nebraska as funding is extremely limited. This plan calls for an examination of major introduction pathways, an increase in ANS monitoring to identify what is here and where, and a thorough assessment of the economic and ecological costs associated with ANS which will not only estimate costs associated with the introduction and spread of specific ANS, but also compare costs of the proposed actions in this plan to the costs associated with having no management action. This will help guide management decisions and identify future funding sources. It is important to note that the problems and concerns identified in this plan are likely to change. Thus the plan aims to maintain and update our priorities regularly as new information is available.

Introduction pathways

ANS introduction pathways are of Nebraska's primary concerns. The number of new ANS introductions in Nebraska will continue to grow as new and existing ANS become established in Midwestern states, especially those that border Nebraska. There are several major pathways through which ANS are introduced, but most are the result of human activities both intentional and unintentional. Pathways of introduction into water bodies include aquaculture, aquarium trade, commercial navigation, and transport via vessel fouling, recreational boating and fishing, sale of bait fish, research activities, and distribution through interconnected waterways. In Nebraska, there is some regulation concerning aquacultural or aquarium importations, however, regulations addressing ANS transport via recreational boating and fishing is lacking. Thus, one priority is in identifying what regulatory changes are needed to implement a boat inspection program as well as educating the public about how they may be spreading ANS around the state.

Potential Pathways

Hitchhikers - Recreational boating is one pathway by which ANS can both enter the state and continue to spread throughout Nebraska. The state's lakes, ponds, rivers, and creeks provide abundant recreational opportunities for boaters and fishermen. Transportation of boats and boat trailers between water bodies presents a risk of ANS introduction through hull fouling, entanglements, and water discharge from bilge pumps and bait buckets. By not thoroughly washing or rinsing boats and boat trailers, boaters can easily transport ANS like zebra mussels from one water body to another. Other species that could be transported as hitchhikers can pose risks to human health. For example, the snail *Biomphalaria glabrata* carries schistosome parasites which affects nearly 83 million people worldwide (Crompton 1999).

Bait release: The transport and release of live bait by anglers poses a significant risk. When live bait or the bait's packing material is discarded into a water body, ANS may inadvertently be introduced into that water body. By lodging in nets and other equipment used to harvest baitfish, ANS can unintentionally be transported into non-infested waters. Some ANS

can survive up to two weeks out of water and remain viable when discharged into another water body. Fragments of ANS, such as hydrilla or Eurasian water milfoil, can be harvested along with target baitfish species. In addition, bait is often imported from outside the state or is brought into Nebraska by out-of-state residents. While regulations exist to allow only certain species to be used for bait fish, enforcement is minimal.

Stocking: Most federal and state government fish and wildlife agencies routinely stock game fish for recreational purposes. While many of the fish species being stocked in the state today are non-native (i.e. rainbow trout), none are considered invasive in Nebraska. Care must be taken to insure that water used to transport fish are not contaminated with invasive plants, invertebrates, or viruses. Fish stocking by unqualified individuals increases the chance of biological contamination, especially as these individuals are less likely to adhere to regulations and standards regarding transport methods and equipment. Unauthorized fish stocking can also result in the introduction of native or non-native fish species into areas of the state where they are not native.

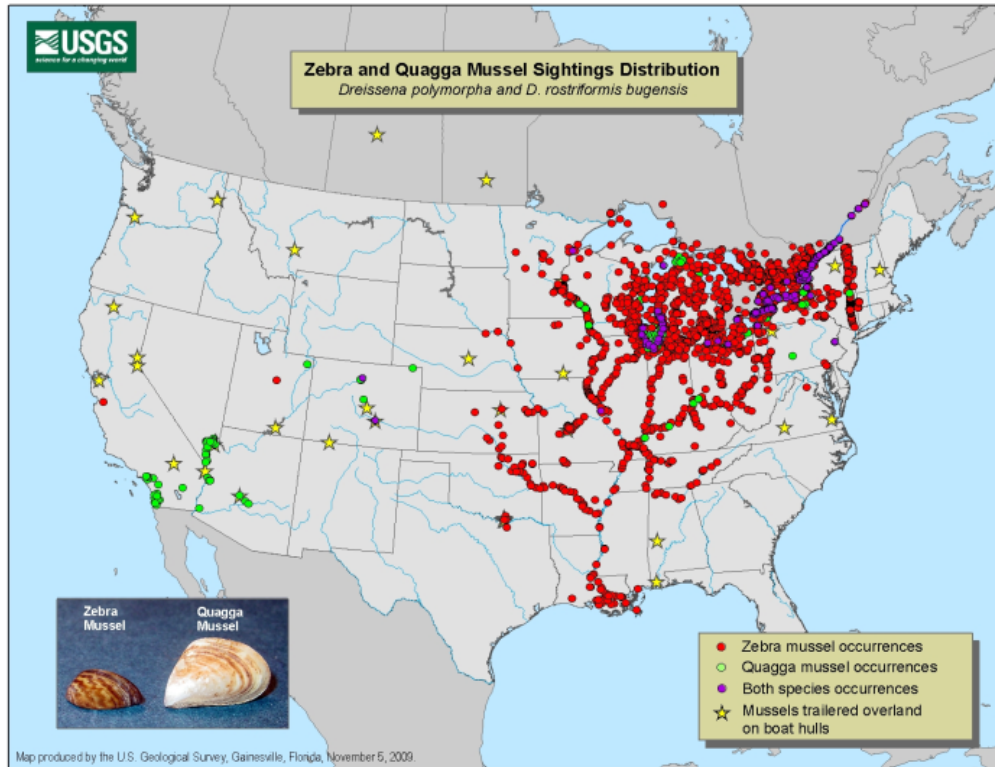
Aquarium release: Many plant and animal species sold in aquarium and pet stores are non-native. Releases usually occur when an aquarium or pet owner no longer wishes to care for the animal. The owner may release the pet into a water body, storm drain, or sewer system. Releases can also occur through escape from tanks and breeding farms (e.g., during storms), the drainage of water containing organisms from tanks or public aquariums. All of these activities can also release water-borne parasites and diseases.

Aquaculture: Nebraska has a diverse aquaculture industry. Nearly all regulatory authority for aquaculture and baitfish is promulgated through Nebraska Game and Parks Commission. Pertinent live fish import requirements are posted in NE Administrative Code (AC) Title 163 Chapter 2: Sec. 002 Non-resident fish dealers and exportation, importation and possession regulations, Sec. 005 Aquaculture Regulations, and Sec. 009 Bait collecting and dealer regulations. Unauthorized aquaculture could result in the introduction of unwanted stock and/or bait fish.

Water gardens: Water gardening is one of the fastest growing sectors of the gardening and nursery industry. However, many ANS, such as water hyacinth, salvinia, Eurasian watermilfoil, hydrilla, and Brazilian elodea have been or are being widely sold in the U.S. to decorate water gardens and oxygenate aquariums or backyard ornamental ponds. ANS are released or travel through this pathway into local waterways, storm drains or sewer systems.

Specific Concerns

Recently, Kansas and Colorado have identified zebra/quagga mussels in lakes that are very near the Nebraska border. The potential for ANS to be transported from these lakes to Nebraska waters is high as there is much recreational travel to and from these lakes. For example, there is a high risk of quagga mussel infestation into Lake McConaughy, NE from Lake Julesburg in Colorado; a mere 60 miles away. Also, Harlan Reservoir, NE is at high risk of zebra mussel transfer from several nearby lakes in Kansas. The map below shows current (November 2009) zebra and mussel sightings. Notice how Nebraska touches four states that have found zebra/quagga mussel infestations. This and other zebra/quagga distribution maps can be found at: <http://nas.er.usgs.gov/taxgroup/mollusks/zebramussel/>.



Connected water bodies in the region

The Missouri River, Platte River, and other water bodies connecting nearby states also represent important potential sources of ANS introductions. For example, Nebraska recently spent over two million dollars treating and eradicating Phragmites from the heavily infested portions of the Platte River. However, if a seed source exists upstream in Colorado or Wyoming, the threat of re-infestation remains. Particular attention will be given to identifying those connecting water bodies outside the plan boundaries that pose a significant threat for ANS introductions. The map on page 7, produced by the UNL Water Center, shows the major waterways in Nebraska and can be used to help identify those waterways that extend outside the state, but should be considered in management decisions. The map can be found at: <http://water.unl.edu/watermap/watermap>

Priority ANS of concern

Historically, response to ANS problems in Nebraska has been reactive rather than proactive. This is, in part, due to the lack of knowledge of what is actually in the state. Nebraska does not have a comprehensive list of the ANS in the state nor of where they are located. There has historically never been a common method for reporting ANS nor funding to conduct surveys for such species. Thus, we have been unable to track ANS introduction sites and their subsequent spread. Through discussion of ANS at various meetings, we know of several ANS that have been documented in the state, but unfortunately, do not have an estimate on their numbers or their distribution. Examples of ANS that have been documented in Nebraska include (but are not

limited to): Zebra mussels (although eradicated from the inland lake), bighead and silver carp, rusty crayfish, white perch, rudd, Phragmites, purple loosestrife, Eurasian watermilfoil, curly pondweed, and channel catfish virus (*Ictalurid herpesvirus 1*). Although many of these species have been located in the Missouri River (and not in any of Nebraska's interior water bodies), the risk of spread to inland waters is high.

All nonindigenous species impact native species and habitat in some manner, but not all of them pose a significant threat. While it is difficult to elucidate the effects that species will have once they are introduced, there are species whose current or potential impacts on native species and habitats and economic and recreational activity are known to be significant. These ANS are a priority for management actions. At the same time, the ability to manage each species varies greatly, and the resources available are limited. Management efforts must, therefore, be focused on species where actions can produce the greatest benefit. In recognition of the known threats, impacts, and potential problems of certain ANS and the state's current management capabilities, a system to classify/rank species is under development which will help in recommending management activities for each classification.

Non-indigenous Aquatic Species of high priority

The following examples of plant, animal, and pathogen species are identified by the Nebraska Aquatic Nuisance Species Planning Committee as aquatic nuisance species that are of high concern. This list is not comprehensive, but is provided to illustrate species that are known to cause significant damage in Nebraska or in neighboring states. The Plan provides for an ongoing assessment of potential priority class species. A complete draft list of all non-indigenous species in Nebraska is included in **Appendix C**. Draft lists are intended to provide a basis for discussion and further work identifying the presence, distribution, status, and threat of non-indigenous species. As time progresses, priority species are likely to change. Thus, the lists will be updated regularly as new information is received. Also, there may be ANS that have not yet been identified in Nebraska but have the potential of being introduced. Such species include, quagga mussel, Chinese and Japanese mysterysnail, round goby, giant salvinia, and hydrilla (although there are likely many others of concern). These species will be taken into consideration, particularly if they are known to cause damage in nearby states. Pathways for introduction of such species include boater hitchhikers, bait release, and water gardening. In addition, some native species may behave aggressively and cause problems similar to ANS. There are also species such as the freshwater jellyfish, that lack sufficient information to determine its native/non-native status in Nebraska. These species will also be considered in management actions. Ultimately, each species will undergo an assessment to determine which species are of low, moderate, and high priority for management actions. A risk assessment is currently under development by the Nebraska Aquatic Nuisance Species Planning Committee. Until the assessment is complete, the following list provides an initial ranking for those species considered as high priority (based on the best professional judgment of the committee).

Zebra/Quagga Mussel (*Dreissena polymorpha/Dreissena rostriformis bugensis*)

Zebra mussels were first discovered in North America in 1988 and Quaggas in 1989 in the Great Lakes. The first account of an established population came from Canadian waters of Lake St. Clair, a water body connecting Lake Huron and Lake Erie. By 1990, zebra mussels had been found in all the Great Lakes. Now, zebra mussels are found in most states along the Mississippi and Missouri Rivers, and quagga mussels are found in the Great Lakes and have spread to

several western states including California, Utah, Nevada, and Utah. Zebra mussels are notorious for their biofouling capabilities by colonizing water supply pipes of hydroelectric and nuclear power plants, public water supply plants, and industrial facilities. They colonize pipes constricting flow, therefore reducing the intake in heat exchangers, condensers, firefighting equipment, and air conditioning and cooling systems. Nebraska has had a prior infestation of zebra mussels in Lake Offutt at Offutt Air Force Base. The population has since been eradicated, but the threat of new introductions still exist, particularly since Kansas has identified several zebra mussel infestations and Colorado has several quagga mussel infestations. Since boaters regularly travel to and from these states into Nebraska waters, the risk of transporting zebra/quagga mussels is high. Because of the devastating harm they cause and the proximity to Nebraska, zebra/quagga mussels are a species of high priority.

Benson, A. J. and D. Raikow. 2010. *Dreissena polymorpha*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. <http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=5>. Revision Date: 8/28/2009. Accessed 2/1/2010.

Benson, A. J., M. M. Richerson and E. Maynard. 2010. *Dreissena rostriformis bugensis*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. <http://nas3.er.usgs.gov/queries/FactSheet.aspx?speciesID=95>. Revision Date 10/31/2008. Accessed 2/1/2010.

Rusty Crayfish (*Orconectes rusticus*)

Native to Ohio, Tennessee, and Cumberland drainages, the rusty crayfish has now been found outside its native range in over a dozen states. Rusty crayfish displace native crayfish and destroy plant bed abundance and diversity. They are found in streams, lakes, and ponds with varying substrates from silt to rock and plenty of debris for cover. Rusty crayfish need permanent water; they generally do not burrow to escape dry periods. Breeding occurs in the fall and eggs laid the following spring, hatching within several weeks. The introduction of one female carrying viable sperm could start a new population. Rusty crayfish have been identified in Benson Park Lake and recently in Lakeside Lake in Omaha. This species is listed as a high priority because of the damage they can cause to ecosystems; they have been identified in Omaha, very near the Missouri River. The introduction of this species into the Missouri River would cause major ecological and economic damage. In addition, the populations appear to be manageable and there is a good chance of eradicating the species before it becomes more widely distributed. Crayfish are often used as bait, so educating fishermen will be a top priority.

United States Geological Survey. 2010. *Orconectes rusticus*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. <http://nas3.er.usgs.gov/queries/FactSheet.aspx?speciesID=214>. Revision Date 1/30/2008. Accessed 2/1/2010.

Bighead Carp (*Hypophthalmichthys nobilis*)

The bighead carp is a large-bodied planktivore endemic to eastern China. It was first introduced in 1973, by an aquaculturist into Arkansas in an attempt to improve water quality in production ponds. Despite added regulations in 1974, bighead carp dispersed upstream into the Mississippi and Missouri River systems. Currently bighead carp have been found in over 20 states. Although the impact of this species in the United States is not adequately known, because bighead carp are planktivorous and attain a large size, these carp have the potential to deplete zooplankton populations. Bighead carp have been recorded in Nebraska in the Missouri River and Platte River. We are not sure how big these populations are, however, given the damage they have caused in the Mississippi River (and the Great Lakes region), this species is a top priority.

Nico, L. and P. Fuller. 2010. *Hypophthalmichthys nobilis*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. <http://nas.er.usgs.gov/queries/FactSheet.asp?speciesID=551>. Revision Date 3/13/2009. Accessed 2/1/2010.

Silver Carp (*Hypophthalmichthys molitrix*)

Silver carp were first introduced from China in 1973 for phytoplankton control in eutrophic water bodies by an aquaculturist in Arkansas, and by 1980 was found in natural waters. This species has been found in nearly 15 states. In numbers, the silver carp has the potential to cause enormous damage to native species because it feeds on plankton required by larval fish and native mussels. This species would also be a potential competitor with adults of some native fishes and can cause harm to boaters as they jump from the water. Silver carp have been recorded in Nebraska in the Missouri River, and Elkhorn River. Similar to bighead carp, we are not sure how big these populations are, however, given the damage they have caused in the Mississippi River (and the Great Lakes region), this species is a top priority.

Nico, L. 2010. *Hypophthalmichthys molitrix*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. <http://nas.er.usgs.gov/queries/FactSheet.asp?speciesID=549>. Revision Date 3/13/2009. Accessed 2/1/2010.

White Perch (*Morone americana*)

The first report of white perch in the Great Lakes drainage was from Cross Lake, central New York, in 1950. The species apparently gained access to the lake via movement through the Erie Barge Canal in the 1930s and 1950s. Currently, white perch are established in all five Great Lakes and their surrounding states. Fish eggs are an important component of the diet of white perch especially in the spring months. White perch generally prey on eggs of walleye, white bass, and other species. White perch have been found in various lakes and sandpits (along the Platte river from flooding) in eastern Nebraska and as far west as Kearney (sandpit). Further monitoring is required to determine the full extent of this species' distribution. As a popular bait fish, this species is capable of spreading rapidly by fishermen. White perch are given high priority as it threatens many populations of desired game fish and is easily spread.

Fuller, P., E. Maynard, and D. Raikow. 2010. *Morone americana*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. <http://nas.er.usgs.gov/queries/FactSheet.asp?speciesID=777>. Revision Date 9/29/2006. Accessed 2/1/2010.

Common Reed (*Phragmites australis*)

This non-native common reed, which was introduced from Europe in the late 1800's, is distributed throughout the US. Over the past several decades, populations of non-native common reed in North America have dramatically increased in both freshwater and brackish wetlands. Once established, populations can expand rapidly to form dense monocultural stands which reduce plant diversity, prevent growth of more desirable species, and create an unsuitable habitat for various bird species, including migrating waterfowl. It is distributed throughout Nebraska, particularly along the Niobrara, Platte, and Republican rivers. It is currently listed as a state noxious weed in Nebraska and is thus a high priority. Several millions of dollars have been allocated to help eradicate *Phragmites* from the Platter River and efforts will continue into the future. The native version of *Phragmites* does exist within the state, however little is known to what extent the native species still remains.

Knezevic, S. Z., A. Datta, and R. E. Rapp. 2008. Noxious Weeds of Nebraska, Common Reed. University of Nebraska-Lincoln Extension, Lincoln, NE.

Purple loosestrife (*Lythrum salicaria* L.)

Purple loosestrife was introduced to North America in the early 1800's where it first appeared in ballast heaps of eastern harbors (Stuckey 1980). According to the U.S. Fish and Wildlife Service, purple loosestrife now occurs in every state except Florida. It is a wetland plant, growing in freshwater wet meadows, tidal and non-tidal marshes, river and stream banks, pond edges, reservoirs, and ditches. It prefers moist, highly organic soils but can tolerate a wide range of conditions. It grows on calcareous to acidic soils, can withstand shallow flooding, and tolerates up to 50% shade. As it establishes and expands, it outcompetes and replaces native grasses, sedges, and other flowering plants that provide a higher quality source of cover, food, or nesting sites for native wetland animals (U.S.EPA 2008). The highly invasive nature of purple loosestrife allows it to form dense, homogeneous stands that restrict native wetland plant species, including some federally endangered orchids, and reduce habitat for waterfowl. Purple loosestrife has been documented in Nebraska on the Platte, Niobrara, and Missouri Rivers. It is listed as a state noxious weed, and is thus a high priority species.

Knezevic, S. Z. 2006. Noxious Weeds of Nebraska, Purple Loosestrife. University of Nebraska-Lincoln Extension, Lincoln, NE

Cao, L. 2010. *Lythrum salicaria*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. <http://nas.er.usgs.gov/queries/FactSheet.asp?speciesID=239>. Revision Date 8/5/2009. Accessed 2/1/2010.

Saltcedar (*Tamarix ramosissima* Ledeb.)

Saltcedar is thought to have been brought from southeastern Europe and eastern Asia into the U.S. in the mid-1800's for use in landscaping and windbreaks and for stabilizing stream banks. Because of the invasive nature of Saltcedar, it often replaces willows, cottonwoods and other native vegetation along streams and wetlands. It can also increase the salinity of the soil, reducing productivity of native plants, and may utilize soil water to such an extent that it may dry up streams and reduce water levels of rivers and lakes. It is currently widely distributed across Nebraska, and is listed as a state noxious weed and thus a high priority species.

Wilson, R., and S. Z. Knezevic. 2006. Noxious Weeds of Nebraska, Saltcedar. University of Nebraska-Lincoln Extension, Lincoln NE.

Russian Olive (*Elaeagnus angustifolia*)

Russian-olive was introduced into the U.S. in the late 1800s, and was planted as an ornamental, and subsequently escaped into the wild. Until recently, the U.S. Soil Conservation Service recommended Russian-olive for wildlife planting and windbreaks. It is found primarily in the central and western U.S., as well as in the East. Russian-olive can outcompete native vegetation, interfere with natural plant succession and nutrient cycling, and tax water reserves. Because Russian-olive is capable of fixing nitrogen in its roots, it can grow on bare, mineral substrates and dominate riparian vegetation where overstory cottonwoods have died. It is found throughout Nebraska in grasslands and bottomlands and is listed on the watchlist for the Nebraska Department of Agriculture.

Muzika, R.M. and Swearingen, J.M. 2005. Plant Conservation Alliance fact sheet: Russian olive. <http://www.nps.gov/plants/alien/fact/pdf/elan1.pdf>. Accessed 2/1/2010.

Eurasian watermilfoil (*Myriophyllum spicatum* L.)

First documented in 1942 from a pond in Washington D.C., Eurasian water-milfoil was probably intentionally introduced to the United States (Couch and Nelson 1985). Spread occurred as the species was planted into lakes and streams across the country. This species is one of the most widely distributed of all nonindigenous aquatic plants; confirmed in 45 U.S. states, and in the Canadian provinces of British Columbia, Ontario and Quebec. Eurasian watermilfoil competes

aggressively to displace and reduce the diversity of native aquatic plants. It elongates from shoots initiated in the fall, beginning spring growth earlier than other aquatic plants. Tolerant of low water temperatures, it quickly grows to the surface, forming dense canopies that overtop and shade the surrounding vegetation. Watermilfoil has been observed in Nebraska; although noted as declining at Wildwood Lake, Lancaster County while increasing in Hord Lake, Merrick County. We are unaware of the extent to which this species has spread. However, given that it has been identified in only a few locations, the chance of eradication is high, making this species of high priority. This species has the potential to cause significant damage to Nebraska's waters and efforts will be made to help limit its spread.

Jacono, C. C. and M. M. Richerson. 2010. *Myriophyllum spicatum*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. <http://nas.er.usgs.gov/queries/FactSheet.asp?speciesID=237>. Revision Date 10/15/2008. Accessed 2/8/2010.

Curlyleaf pondweed (*Potamogeton crispus*)

Curlyleaf pondweed was introduced into the United States in the mid 1800's and has since spread across much of the United States, presumably by migrating waterfowl, intentional planting for waterfowl and wildlife habitat, and possibly even as a contaminant in water used to transport fishes and fish eggs to hatcheries. It can also spread by plant fragments attached to boats and equipment that are not properly cleaned. Curlyleaf pondweed competes with and displaces native plant life. Dense colonies of curly pondweed can restrict access to docks and sport fishing areas during spring and early summer months. It may interfere with late spring and early summer recreation due to the formation of dense mats and an increase in phosphorus concentrations causing an increase in algae blooms. Curlyleaf pondweed has been documented in various locations across Nebraska. We are unaware of the extent to which this species is distributed across the state. Given this, and the significant damage this species has caused in nearby states, it is identified as high priority.

Cao, L. 2010. *Potamogeton crispus*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. <http://nas.er.usgs.gov/queries/FactSheet.asp?speciesID=1134>. Revision Date 8/9/2009. Accessed 2/8/2010.

Reed canarygrass (*Phalaris arundinaceae* L.)

Both Eurasian and native ecotypes of reed canary grass are thought to exist in the U.S. The Eurasian variety is considered more aggressive, but no reliable method exists to tell the ecotypes apart. It is believed that the vast majority of our reed canary grass is derived from the Eurasian ecotype. It has become naturalized in much of the northern half of the U.S., and is still being planted on steep slopes and banks of ponds and created wetlands. Invasion is associated with disturbances including ditching of wetlands, stream channelization, deforestation of swamp forests, sedimentation, and intentional planting. The difficulty of selective control makes reed canary grass invasion of particular concern. Over time, it forms large, monotypic stands that harbor few other plant species and are subsequently of little use to wildlife. Once established, reed canary grass dominates an area by building up a tremendous seed bank that can eventually erupt, germinate, and recolonize treated sites. Reed canarygrass is found at various locations throughout the state of Nebraska.

Wisconsin Department of Natural Resources. 2009. Fact Sheet: Reed canarygrass. http://dnr.wi.gov/invasives/fact/reed_canary.htm Accessed 2/8/2010.

Largemouth Bass Virus

In largemouth bass (*Micropterus salmoides*), signs of the disease may include increased blood flow and darkened skin, distended abdomen, bloated swim bladder, lesions in the membrane lining the body cavity, necrosis (burst cells resulting in inflammation) of gastrointestinal mucosa, pale liver, red spleen, red intestinal caeca, infected gills, lethargic swimming, decreased responsiveness, swimming at the surface and/or in circles, and difficulty remaining upright. The native range of this virus is unknown; however, this virus is very similar to two fish viruses from Southeast Asia. Spread of LMBV has occurred from Florida through adjacent states, and has only recently reached the Great Lakes drainage. Transport of LMBV in North America probably occurs in live wells of fishing boats when infected fish or water are dumped into new habitat or put in contact with uninfected fish, which are then released. Stocking of infected fish could also be a vector. A major largemouth bass die-off occurred in Lake George in 2000. Die-offs involving 100-500 fish deaths (approximately 10% mortality rate) have typically occurred in affected areas throughout Michigan. LMBV has not been reported in Nebraska (Nebraska Game and Parks Commission, pers. comm. 2010); however since bass comprise a large component of recreational angler catch, if introduced could have devastating results. Given this, Largemouth Bass Virus is identified as a high priority species.

Kipp, R. M. 2010. *Ranavirus*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. <http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=2657>. Revision Date 6/12/2007. Accessed 2/8/2010.

Whirling Disease (*Myxobolus cerebralis*)

Whirling disease is caused by a metazoan parasite that infects cartilage tissue of most Salmonid species. The whirling disease parasite was first introduced into the U.S. from Europe in the 1950's. This parasite has a two-host life cycle which includes both the primary Salmonid host and a common aquatic worm (*Tubifex tubifex*). Infective spores are produced in each host and are capable of spreading the disease in a variety of ways. The disease is known to occur in over 22 states. Whirling disease has become a major problem in some western states, especially in Colorado and Montana and has caused major declines in some wild rainbow trout populations. There has been one instance of whirling disease in Nebraska in one isolated location in a closed private facility (Nebraska Game and Parks Commission, pers. comm. 2010), but there is potential for it to become established if infected fish are imported into the state, making this a high priority.

Kipp, R. M. 2010. *Myxobolus cerebralis*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. <http://nas3.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=2364>. Revision Date 4/23/2007. Accessed 2/8/2010.

Heterosporis

Heterosporis is a microscopic parasite which has the potential to infect several fish species resulting in muscle lesions and can cause serious harm to fish. The parasite was first reported in yellow perch, but may also be found in walleye, northern pike, fathead minnows, or other fish species. The parasite has been reported in Lake Ontario and northern parts of the Mississippi watershed in Wisconsin and Minnesota (Kipp 2010). It has never been reported in Nebraska (Nebraska Game and Parks Commission, pers. comm. 2010), but has the potential to become established if infected fish are imported into Nebraska. This parasite is identified as high priority because of the significant potential damage to Nebraska's fisheries and because it has previously been identified in other Midwest states.

Kipp, R. M. 2010. *Heterosporis*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. <http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=2661>. Revision Date 7/25/2007. Accessed 2/8/2010.

Lack of Knowledge

Much of Nebraska's ANS concerns stems from a lack of knowledge. While many studies have been conducted on the impacts of ANS, we lack a comprehensive review of the ANS of concern in our region, what the immediate threats are, and what major pathways are of most concern. In addition, we lack an understanding of the best management options in dealing with each ANS. This represents a problem, not only from the management perspective, but from an education standpoint as well. There exists a general lack of understanding among public entities in Nebraska as to the impacts of ANS. Some agencies and organizations are able to incorporate education and outreach into some of their programs and Nebraska is fortunate enough to have an Invasive Species Program to help in this effort. However, this endeavor is limited to only a few individuals across the state, and current ANS information is sparsely available. To help ameliorate these problems, we hope to identify the gaps in knowledge and focus efforts on filling those gaps. We also hope to incorporate many more folks into educating the public about ANS, and invasive species in general. We will then be able to make better management decisions and to better inform the public about ANS issues and how they can help to prevent new introductions and their spread.

SECTION D

GOALS

The goal of the Nebraska Aquatic Nuisance Species Management Plan is to: Minimize the harmful ecological, economic, and social impact of ANS through prevention and management of introduction, population growth, and dispersal of ANS into, within, and from Nebraska.

The goal will be achieved through implementation of a plan that:

- a. emphasizes prevention of introductions at the regional level
- b. focuses an effective Early Detection and Rapid Response (EDRR)
- c. permits appropriate and timely management response to new and existing populations with an adaptive management approach;
- d. protects and restores native plant and animal communities;
- e. provides for easy access to accurate and up-to-date species distribution and management information;
- f. supports research on ANS in Nebraska, and develops systems to disseminate information
- g. incorporates education and outreach elements;
- h. seeks legislative action to support objectives;
- i. produces agency collaboration;
- j. facilitates inter-jurisdictional coordination with state, federal and tribal agencies
- k. seeks cooperative solutions with the private sector and user groups

The plan aims to achieve these goals by meeting the objectives (outlined below) by 2015. To ensure that the goals of this plan are being effectively addressed a procedure for monitoring and evaluating the implementation of strategies and tasks will be initiated. This evaluation will focus on the feasibility and cost-effectiveness of management activities. The plan is a working document and will be periodically updated and expanded based upon the experience gained from implementation, scientific research, and new tools as they become available.

By fulfilling these goals, the plan contributes to the goals identified by the ANS Task Force, the U.S. Fish and Wildlife Service, NOAA Fisheries and other federal program long-term goals. This plan aims to reduce the risk of new introductions, minimize the effects of established ANS, facilitate research, and increase public awareness – which are identified as goals 1-4 of the ANS Task Force, are main activities of the USFWS ANS Program, and helps accomplish the NOAA Fisheries goal “ to optimize the benefits of living marine resources to the Nation through sound science and management.”

SECTION E

EXISTING AUTHORITIES AND PROGRAMS

FEDERAL

No single federal agency has comprehensive authority for all aspects of aquatic invasive species management. Federal agencies with regulatory authority over the introduction and transport of aquatic species that may be invasive or noxious include the U.S. Department of Agriculture Animal Plant Health Inspection Service, the U.S. Department of Agriculture, the U.S. Fish and Wildlife Service (USFWS), the U.S. Department of Commerce (DOC), and the U.S. Coast Guard (USCG). Many other agencies have programs and responsibilities that address components of ANS, such as importation, interstate transport, exclusion, control and eradication.

The primary federal authorities for managing and regulating ANS derive from the National Environmental Policy Act, the Nonindigenous Aquatic Nuisance Prevention and Control Act, the National Invasive Species Act, the Lacey Act, the Plant Pest Act, the Federal Noxious Weed Act, and the Endangered Species Act. An Executive Order signed by President William J. Clinton on February 3, 1999 expanded federal efforts to address ANS. The order created a National Invasive Species Council charged with developing a comprehensive plan to minimize the economic, ecological and human health impacts of invasive species. A brief description of the Executive Order 13112, NANPCA, and NISA are provided below and details can be found in **Appendix A**.

Executive Order 13112 on Invasive Species

President Clinton signed Executive Order 13112 on Invasive Species (64 Fed. Reg. 6183, Feb. 8, 1999), on February 3, 1999. The Executive Order seeks to prevent the introduction of invasive species, provide for their control, and minimize their impacts through better coordination of federal agency efforts under a National Invasive Species Management Plan to be developed by an interagency Invasive Species Council. The Order directs all federal agencies to address invasive species concerns as well as refrain from actions likely to increase invasive species problems. The National Invasive Species Management Plan was finalized on January 18, 2001. It can be found on the Council website at www.invasivespecies.gov.

Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (NANPCA; Title I of P. No.101-646, 16 U.S.C. 4701 et seq.)

This Act established a federal program to prevent the introduction of, and to control the spread of, introduced aquatic nuisance species and the brown tree snake. The U.S. Fish and Wildlife Service, the U.S. Coast Guard, the Environmental Protection Agency, the Army Corps of Engineers, and the National Oceanic and Atmospheric Administration share responsibilities for the implementing this effort. They act cooperatively as members of an Aquatic Nuisance Species Task Force. The mandate is prevention, monitoring, and control with these activities supported by research and education.

National Invasive Species Act 1996 (NISA; P. No.104-332)

In 1996, NISA amended NANPCA to mandate regulations to prevent the introduction and spread of aquatic nuisance species into the Great Lakes through ballast water and other vessel

operations. This Act required a U.S. Coast Guard study and report to the Congress on the effectiveness of existing shore-side ballast water facilities used by crude oil tankers.

It authorized funding for research on aquatic nuisance species prevention and control in the Chesapeake Bay, the Gulf of Mexico, the Pacific Coast, the Atlantic Coast, and the San Francisco Bay-Delta Estuary.

In addition, NISA required a ballast water management program to demonstrate technologies and practices to prevent aquatic non-indigenous species from being introduced into and spread through ballast water in U.S. waters. It modified: (1) the composition and research priorities of the Aquatic Nuisance Species Task Force; and (2) zebra mussel demonstration program requirements.

A list of other Acts is listed below and detailed in Appendix A:

1916 National Park Act
1931 Animal Damage Control Act
1960 Sikes Act
1970 National Environmental Policy Act (NEPA)
1972 Clean Water Act
1973 Endangered Species Act
1974 Federal Noxious Weed Act
1976 National Forest Management Act
1976 Federal Land Policy Management Act
2000 Plant Protection Act
2002 Animal Health Protection Act
2008 Lacey Act

Federal Authorities and Programs

Numerous federal agencies have authority to implement the laws and policies described above. Other federal agencies have mandates impacted by aquatic invasive species (ANS) and thus engage in research, monitoring, prevention or control programs. Still others delegate primary responsibility for implementation to state and regional agencies (see next section). The following descriptions attempt to provide a general introduction to the scope of each agency's work, as well as a brief review of the agency's recent (as of 2006) major ANS related activities.

U.S. Fish and Wildlife Service

USFWS has multiple programs that address ANS management. USFWS serves as co-chair of the Federal Aquatic Nuisance Species Task Force (ANSTF) and is the agency that provides federal funding for the implementation of Task Force approved state ANS management plans. USFWS also provides technical assistance to states regarding ANS management. USFWS administers the Lacey Act, which prohibits importation and interstate transport of listed species. USFWS prevention programs include the 100th Meridian Initiative, which focuses on preventing the western spread of zebra mussels. In cooperation with the USGS, USFWS supports the national ANS reporting hotline (1-877-STOP-ANS). USFWS refuges support invasive species control programs as part of their overall habitat restoration activities.

Other Federal Authorities are listed below and detailed in Appendix A.

U.S. Geological Survey (USGS)
U.S. Army Corps of Engineers (COE)
U.S. Coast Guard (USCG)
U.S. Department of Agriculture (USDA)
 Natural Resources Conservation Service (NRCS)
 Animal and Plant Health Inspection Service (APHIS)
 U.S. Forest Service (USFS)
U.S. Environmental Protection Agency (USEPA)
National Park Service (NPS)
National Oceanic and Atmospheric Administration (NOAA)
National Sea Grant (NOAA – Sea Grant)
National Marine Fisheries Service (NOAA – Fisheries Service)
Bureau of Reclamation (BOR)

NATIONAL

Some national programs are listed below and detailed in **Appendix A**.

Aquatic Nuisance Species Task Force
100th Meridian Initiative
Stop Aquatic Hitchhikers
Center for Aquatic and Invasive Plants
North American Weed Management Association
National Invasive Species Council
NatureServe
The Nature Conservancy
National Institute of Invasive Species Science
Center for Wildlife Damage Management
Center for Aquatic Nuisance Species

REGIONAL

Regional authorities and programs are listed below and detailed in **Appendix A**.

The Western Regional Panel ANS Task Force
Mississippi River Basin Panel ANS Task Force
Western Governors' Association
The Missouri River Watershed Coalition
Missouri River Futures

STATE

Basic information is provided below for each state agency, organization, or program and is detailed in **Appendix A**.

Gaps in policy/authority

The State of Nebraska currently has a limited number of statutory and regulatory authorities to address or potentially address the issue of prevention and control of ANS. Those that exist were

developed in response to individual target species and specific concerns as they arose. Nebraska does not have a comprehensive, coordinated, and vigorously enforced policy framework to deal with ANS and their effects. For this reason, one aim of Nebraska's ANS management plan is to identify gaps within state policies and statutes and develop recommendations for improvements. This is identified under Objective 1, action 1A1e as well as Objective 7, action 7A1a. Specifically, the ANS committee will examine the list of policies related to ANS issues and determine what changes need to be made in order to help achieve the goals of the ANS plan. Such improvements may entail developing new legislation and regulations, revising existing authorities, and developing methods for improving enforcement, coordination, and information dissemination regarding new or existing authorities. Work will be conducted with state policy advisors and legislators in order to obtain the most suitable routes of action.

Nebraska Game and Parks Commission

Specific rules and regulations under Nebraska Game and Parks Commission authority are found in Game and Parks Commission Regulations; Title 163, Chapter 2 Nebraska Administrative Code.

Nebraska Department of Agriculture

Noxious Weed Control Act; Title 25 Chapter 10 Nebraska Administrative Code
Noxious Weed Regulations; Title 25 Chapter 10 Nebraska Administrative Code
Plant Protection and Plant Pest Act Regulations; Title 25 Chapter 13 Nebraska Administrative Code
Seed Law Regulations; Title 25 Chapter 7 Nebraska Administrative Code

Nebraska Department of Environmental Quality

Standards for Water Quality; Title 117 Chapter 4 Nebraska Administrative Code

Other State Agencies/Organizations

In addition to the above, the following list represents agencies and organizations that have programs and practices instilled in the state of Nebraska relating to invasive species. Specific goals and activities for each are detailed in **Appendix A**.

Nebraska Invasive Species Council
Nebraska Invasive Species Project
Nebraska Natural Resource Conservation Service
Nebraska Department of Natural Resources
USGS NE Cooperative Fish and Wildlife Research Unit
University of Nebraska-Lincoln Cooperative Extension Service
Nebraska Weed Control Association
Nebraska Weed Management Areas and Weed Groups
Nebraska Wildlife Federation
Nebraska Lakes Association

TRIBAL

The Department of Interior is legally obliged to insure the American Indian resources and lands are properly managed, protected, and conserved. Interior, as a trustee for the tribes, has an affirmative duty to protect tribal health and safety, to fulfill all treaty and statutory obligations and to exercise utmost good faith in all dealings with the tribes. In recognition of the importance of the Department's trust responsibilities, the Secretary of Interior has established policies and procedures for the Departmental bureaus and offices to follow. It also provides policy review and other technical services to all departmental bureaus and offices and other Federal agencies, including education and training, liaison, and information services regarding the Federal Indian Trust responsibilities.

Potential impacts of any activities or proposals on Indian trust resources will be discussed before any activities take place. Discussion will include consultation with the tribal government(s) or their representative when impacts on tribal trust resources, tribal rights, and tribal health and safety are identified.

Four American Indian Tribes exist in Nebraska:

- Omaha Tribe
- Ponca Tribe
- Santee Sioux Tribe
- Winnebago Tribe

SECTION F

MANAGEMENT ACTIONS: OBJECTIVES, STRATEGIES, ACTIONS & COST ESTIMATES

Each main objective is followed by a set of strategies and actions proposed to meet each objective. Each action has identified an organization responsible for leading the implementation of that action, as indicated by *. Cost estimates are provided for those actions currently funded and for those not yet funded (italicized), and FTE's are provided as estimates of effort required to complete each action. Many of the actions require no funding as much is done via email/conference call, so FTE estimates indicate estimated effort required. Actions that require funding have listed a potential external funding source as there exists no state funding to implement the plan. Also, many actions are to be completed by the ANS coordinator, which also requires funding (requested from federal funds).

The major organizations involved in implementation include the following; The Nebraska Invasive Species Project, a program funded through a federal aid grant with the Nebraska Game and Parks Commission, serves as a central hub for all invasive species information. The Project is also involved in invasive species outreach/education, invasive species research, and assists in writing management plans for the state. The proposed ANS Coordinator position will be housed within the Nebraska Invasive Species Project. This position will oversee many of the actions listed below, however there are actions identified in which the Invasive Species Project supervisor will be responsible for completing, and thus these actions have been identified as such. The Nebraska Invasive Species Project is housed within the USGS Nebraska Cooperative Fish and Wildlife Research Unit at the University of Nebraska. The Nebraska Game and Parks Commission serves as a critical collaborator and is listed as assisting with many of the actions proposed below. As the ANS regulatory agency, the Commission will oversee the development of or changes in policy, rules, and regulations. The Nebraska Invasive Species Council is comprised of representatives from 12 different agencies and organizations in Nebraska aimed at coordinating invasive species efforts across the state. The ANS Steering Committee will be formed as a sub-committee of the Invasive Species Council and will guide implementation of the plan. These and other organizations listed have all agreed to lead or assist in the implementation of the plan and have reached a consensus as to the appropriation of activities in the plan.

OBJECTIVE 1: INCREASE COORDINATION OF ALL ANS MANAGEMENT PROGRAMS AND ACTIVITIES IN NEBRASKA.

Problem 1A: There is no clear authority or agency in Nebraska charged with limiting and managing ANS. Nebraska needs an organized and centralized approach to ANS management to prevent duplication of effort and eliminate gaps in coverage of ANS issues. State ANS management efforts need to be coordinated with regional and national efforts. Currently, most management activities are focused on isolated problems. The lack of coordination, oversight, and funding has allowed ANS to become established in Nebraska and continues to allow for new introductions. Gaps in ANS management include: unclear authorities, uncoordinated state activities, and staffing and funding shortages.

Strategy 1A1: Coordinate all ANS management programs and activities within Nebraska.

Nebraska Game and Parks Commission requests \$70,000 per year from federal to fund an ANS Coordinator position (\$35,000 in the first year as position will not begin until July) and will seek \$15,000 per year from external grants for annual conference. Other activities provided by the Nebraska Invasive Species Project.

Action 1A1a: The Nebraska Invasive Species Council* will create a Nebraska ANS Steering Committee which will meet regularly to implement the ANS Plan.

Cost estimate - \$1,000/yr (travel), 0.5 FTE total.

Funding status – Funded, Council and Steering Committee activities funded by representative stakeholders’ organizations and the Nebraska Invasive Species Project.

Action 1A1b: The Nebraska Game and Parks Commission* requests federal funds to create and hire an ANS coordinator position to be housed within the Nebraska Invasive Species Project.

Cost estimate - \$70,000/yr (1.0 FTE including benefits, plus travel and outreach materials), 0.05 FTE for hiring process.

Funding status - Unfunded. The plan seeks \$35,000 from federal in the first year as the position will likely begin in July 2011.

Action 1A1c: The ANS Coordinator* and Nebraska Invasive Species Project will organize an annual conference including workshops focused on ANS in Nebraska and the surrounding region to increase collaboration across state, federal, and tribal stakeholders.

Cost estimate - \$15,000/yr (conference location, meals, etc), 0.1 FTE total.

Funding status - Unfunded. The Nebraska Invasive Species Project will seek funding from the Nebraska Environmental Trust, and other external grants.

Action 1A1d: The Nebraska Invasive Species Project* and ANS Coordinator will identify and develop a database of all current ANS management activities conducted by the state, federal, local agencies and organizations.

Cost estimate - \$1,000/yr (web development, data entry), 0.1 FTE total.

Funding status – Funded through activities of the Nebraska Invasive Species Project.

Action 1A1e: The Nebraska Invasive Species Project*, ANS Coordinator, and Steering Committee will identify gaps in ANS authority and develop strategies to amend current and establish new authorities.

Cost estimate - \$0 requires no funding, 0.05 FTE total.

Action 1A1f: The Nebraska Invasive Species Project*, ANS Coordinator and Steering Committee will develop a set of uniform definitions and terms to describe aquatic nuisance species.

Cost estimate - \$0 requires no funding, 0.01 FTE total.

Action 1A1g: The Nebraska Invasive Species Project*, ANS Coordinator and Steering Committee will develop and maintain a list of all non-indigenous aquatic species present in Nebraska or in neighboring states.

Cost estimate - \$0 requires no funding, 0.01 FTE total.

Strategy 1A2: Participate in and support national and international efforts. Funding is identified under the funding request for an ANS Coordinator Position (1A1b) or provided by the Nebraska Invasive Species Project. No additional funding is required.

Action 1A2a: The Nebraska Invasive Species Project (ANS Coordinator)* will participate in the Aquatic Nuisance Species Task Force’s Western Regional Panel and Mississippi River Basin Panel.

Cost estimate - \$2,000/yr – (travel, meals, lodging), 0.02 FTE

Funding status – Funded currently through NGPC activities and/or the Nebraska Game and Parks Commission. Future funding incorporated under request for ANS Coordinator Position funding (see1A1b).

Action 1A2b: The Nebraska Invasive Species Project (ANS Coordinator)* will participate in and support ANS organizations and forums (i.e., Missouri River Futures, Missouri River Watershed Coalition, and others).

Cost estimate- \$1,000/yr (travel, meals, lodging) , 0.01 FTE.

Funding status – Funded through activities of the Nebraska Invasive Species Project. Additional funding incorporated under request for ANS Coordinator Position funding (see1A1b).

Strategy 1A3: Develop a permanent funding mechanism for ANS management in Nebraska. No funding is required.

Action 1A3a: The Nebraska Invasive Species Project* and Nebraska Game and Parks Commission will explore alternatives for permanent funding of ANS management activities.

Cost estimate - \$0 requires no funding, 0.05 FTE total.

Action 1A3b: The Nebraska Invasive Species Project* and Nebraska Game and Parks Commission will work with the Nebraska legislature to establish a permanent funding mechanism for ANS management activities in Nebraska.

Cost estimate - \$0 requires no funding, 0.07 FTE total.

Strategy 1A4: Review and evaluate state efforts in addressing ANS. Funding is identified under the funding request for an ANS Coordinator Position (1A1b). No additional funding is required.

Action 1A4a: The Nebraska Invasive Species Project (ANS Coordinator)* and the ANS Steering Committee will conduct a periodic assessment of ANS management in Nebraska.

Cost estimate- \$0 – funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.01 FTE.

Action 1A4b: The Nebraska Invasive Species Project (ANS Coordinator)* and the ANS Steering Committee will update the state ANS plan as needed, with annual progress reports and a five-year program report.

Cost estimate- \$0 – funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.01 FTE.

OBJECTIVE 2: MONITOR STATE WATERS TO DETERMINE THE OCCURRENCE AND DISTRIBUTION OF ANS.

Problem 2A: Numerous potentially damaging ANS are currently found in the Midwestern U.S. and are spreading closer to Nebraska. Presently, there are no state mechanisms in place for sharing information concerning the occurrence and distribution of non-indigenous aquatic species. Coordination of ANS monitoring across neighboring states is needed to improve Nebraska's ability to immediately recognize and respond to both established and new ANS.

Strategy 2A1: Develop and implement a statewide ANS monitoring program. The Nebraska Invasive Species Project (ANS Coordinator), and Nebraska Game and Parks Program will seek \$50,000/yr from external grants for monitoring efforts. Other funding provided through activities of the Nebraska Cooperative Fish and Wildlife Research Unit or the Nebraska Invasive Species Project.

Action 2A1a: The Nebraska Invasive Species Project (ANS Coordinator)* will identify existing ANS monitoring efforts and data gaps.

Cost estimate- \$0 – funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.02 FTE.

Action 2A1b: The Nebraska Invasive Species Project (ANS Coordinator)* and ANS Steering Committee will identify water-bodies across the state that are at high risk of ANS infestation using data provided by the Nebraska Cooperative Fish and Wildlife Research Unit and advise monitoring efforts as such.

Cost estimate - \$150,000/yr (5-8 temp. technicians, travel), 0.02 FTE for analysis.
Funding status – Funded through the Nebraska Cooperative Fish and Wildlife Research Unit as part of a larger research project (boater survey data provided). Other funding incorporated under request for ANS Coordinator Position funding (see1A1b).

Action 2A1c: The Nebraska Invasive Species Project (ANS Coordinator)* will design and implement a monitoring program based on analyses provided in 2A1b.

Cost estimate- \$50,000/yr – (temporary technicians, travel, monitoring supplies), 2.2 FTE total; \$20,000 and 1.1 FTE in first year.

Funding status - Unfunded. The Nebraska Invasive Species Project and Nebraska Game and Parks Commission will seek funding from the Nebraska Environmental Trust, and other external grants.

Action 2A1d: The Nebraska Invasive Species Project* will develop a web-based information system for entering monitoring (and viewing) data under the currently planned Invasive Species Project database.

Cost estimate - \$1,000/yr (web development, printing data sheets), 0.1 FTE

Funding status – Funded through activities of the Nebraska Invasive Species Project.

Strategy 2A2: Develop partnerships with neighboring states to share information concerning the distribution of ANS based on monitoring activities. Funding is identified under the funding request for an ANS Coordinator Position (1A1b) or will be provided by the Nebraska Invasive Species Project. No additional funding is required.

Action 2A2a: The Nebraska Invasive Species Project (ANS Coordinator)* will establish working partnerships with ANS management programs in neighboring states to facilitate the sharing of monitoring data.

Cost estimate - \$0 funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.02 FTE.

Action 2A2b: The Nebraska Invasive Species Project* and Nebraska Invasive Species Council will develop and maintain lists of non-indigenous species known to exist in Nebraska and share the data with surrounding states' ANS management programs.

Cost estimate - \$0 requires no funding, 0.1 FTE total.

Action 2A2c: The Nebraska Invasive Species Project (ANS Coordinator)* will compile the results of monitoring activities annually and distribute information to neighboring states.

Cost estimate - \$0 funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.02 FTE.

OBJECTIVE 3: NEW ANS INTRODUCTIONS: PREVENTION AND RAPID RESPONSE

Problem 3A: There are many different pathways by which new species can arrive in Nebraska. Species that provide sport-fishing opportunities, erosion control, food, and aesthetic benefits have been intentionally brought into Nebraska and released into the wild or escaped from private ponds or holding facilities. For example, common carp, goldfish, milfoil, and purple loosestrife can become established through these pathways. Humans, through recreational, developmental, and management activities, may unintentionally introduce ANS. In addition, ANS introduced and established in neighboring states may be dispersed into and throughout Nebraska by natural means such as transport on domestic or wild animals.

Understanding how various pathways function as conduits for ANS into Nebraska is critical for intercepting species and preventing introductions. Prevention is the most cost effective and environmentally sound method of addressing this problem. Implementation of an early detection and rapid response program that reviews and regulates which species are intentionally allowed into Nebraska, and monitors the pathways by which species can be unintentionally transported into Nebraska, is necessary to slow the rate at which newly introduced ANS become established. Nebraska has no comprehensive program to prevent new ANS introductions or address new species if one should arrive.

Strategy 3A1: Develop and implement an early detection and rapid response (EDRR) program. Funding is identified under the funding request for an ANS Coordinator Position (1A1b), will be provided by the Nebraska Invasive Species Project, or is identified under the proposed annual ANS Conference (1A1c), pending funding. No additional funding is required.

Action 3A1a: The Nebraska Invasive Species Project* and the ANS Steering Committee will identify ANS with the greatest potential to infest Nebraska and research pathways of introduction.

Cost estimate - \$0 requires no funding, 0.1 FTE total.

Action 3A1b: Nebraska Invasive Species Project* and the ANS Steering Committee will identify current state and national early detection and rapid response efforts and coordinate with state and neighboring state agencies/organizations for a collaborative rapid response system.

Cost estimate - \$0 requires no funding, 0.05 FTE total.

Action 3A1c: Nebraska Invasive Species Project (ANS Coordinator)* will facilitate state-wide early detection and rapid response training workshops during annual conference.

Cost estimate - \$500/yr (travel, meeting expenses), 0.05FTE

Funding status – Partially Funded through EDRR activities of the Nebraska Invasive Species Project. Additional funding identified under the proposed ANS Conference 1A1c, and incorporated under request for ANS Coordinator Position funding 1A1b.

Action 3A1d: Nebraska Invasive Species Project* and the ANS Steering Committee will develop a rapid response plan for top priority species.

Cost estimate - \$800/yr (meeting expenses, travel), 0.3 FTE total.

Funding status – Funded through activities of the Nebraska Invasive Species Project.

Action 3A1e: Nebraska Invasive Species Project (ANS Coordinator)* and Nebraska Game and Parks Commission will identify possible funding sources for implementing rapid response plan actions.

Cost estimate - \$0, funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.04 FTE.

Strategy 3A2: Develop a boat inspection program for watercraft entering Nebraska high-risk waters. The Nebraska Invasive Species Project will seek ~\$120,000 annually from the Nebraska Environmental Trust and other external grants and the Nebraska Game and Parks Commission will seek additional funds from proposed boater registration ANS fees; total of ~\$240,000 required annually.

Action 3A2a: The Nebraska Invasive Species Project (ANS Coordinator)* will identify which water-bodies are at high risk of invasion using data provided by the Nebraska Cooperative Fish and Wildlife Research Unit and implement boat inspections at identified waters.

Cost estimate – \$390,000 annually (\$270,000 and 2.6 FTE in first year as inspections will not likely begin until mid-year) (includes start-up costs, decontamination stations, salary, materials, and travel for temporary staff), 5.2 FTE total.

Funding status – Partially funded, approximately \$150,000/yr through the Nebraska Cooperative Fish and Wildlife Research Unit as part of a larger research project (boater survey data provided). The Nebraska Invasive Species Project will seek funding (\$240,000/yr) from the Nebraska Environmental Trust and other external funding sources and the Nebraska Game and Parks Commission will seek additional funds from proposed boater registration ANS fees.

Action 3A3b: The Nebraska Invasive Species Project (ANS Coordinator)* and Nebraska Game and Parks Commission will seek continued funding for a long-term boat inspection program.

Cost estimate - \$0 funding incorporated under request for ANS Coordinator Position funding (see 1A1b), 0.04 FTE.

OBJECTIVE 4: CONTROL AND ERADICATE ESTABLISHED ANS.

Problem 4A: Established ANS often create the most noticeable impacts, yet they are often impossible to eradicate or control. Management activities are most effective when they are directed at limiting the impacts of a population or stopping that population from spreading into new waters. Management activities must be focused on populations of established ANS where there is a clear and significant impact on native species, and where the control or eradication of specific populations is feasible both economically and technically. Due to the high variability in ANS control costs, there are \$0 in funding associated with this section. This does not imply that ANS control efforts will not be made; it simply means that the ANS committee could not determine with any sort of accuracy what would be required for control/eradication funding. We will seek funds from external grants as the need arises.

Any ANS control decision shall include initial consultation with the Nebraska Department of Agriculture's FIFRA program for the regulation of pesticide use in Nebraska. The state law that recognizes FIFRA and provides comprehensive statutory language for the regulation of pesticides is the Nebraska Pesticide Act (Title 25, Chapter 2, Nebraska Administrative Code, Sections 2-2622 through 2-2654).

Strategy 4A1: Develop and implement control strategies to eradicate or reduce populations of priority ANS in state waters. Funding is identified under the funding request for an ANS Coordinator Position (1A1b) or will be provided by the Nebraska Invasive Species Project. No additional funding is required.

Action 4A1a: The Nebraska Invasive Species Project*, and ANS Steering Committee will identify established ANS in need of control and prioritize based on risk assessment.

Cost estimate - \$800/yr (meeting costs, travel), 0.1 FTE.

Funding status – Funded through activities of the Nebraska Invasive Species Project.

Action 4A1b: The Nebraska Invasive Species Project* and the ANS Steering Committee will identify current state and national management plans/actions for controlling established ANS and develop plans for priority ANS that are already established.

Cost estimate - \$800/yr (meeting costs, travel), 0.2 FTE.

Funding status – Funded through activities of the Nebraska Invasive Species Project.

Action 4A1c: The Nebraska Invasive Species Project (ANS Coordinator)* and Nebraska Game and Parks Commission will identify and apply for external funding sources for controlling priority established ANS.

Cost estimate - \$0, funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.04 FTE. Eradication funding will be sought on a need basis, thus dollar estimates applied for will vary depending on the species/system in need of control.

Action 4A1d: The Nebraska Invasive Species Project (ANS Coordinator)* will identify mechanisms to limit the dispersal of established ANS into new water bodies or to new areas of a water body.

Cost estimate - \$0, funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.04 FTE.

Action 4A1e: The Nebraska Game and Parks Commission* and Nebraska Invasive Species Project (ANS Coordinator) will develop guidelines and regulations to ensure the cleaning of water-based equipment such as dredges, fishing nets, traps, etc., that may spread ANS when moved from infested to uninfested waters.

Cost estimate - \$0, no funding required, 0.05 FTE total.

Action 4A1f: The Nebraska Game and Parks Commission* and Nebraska Invasive Species Project (ANS Coordinator) will develop regulations to quarantine infested water bodies to prevent the spread of ANS into uninfested waters.

Cost estimate - \$0, no funding required, 0.05 FTE total.

OBJECTIVE 5: SUPPORT ANS RESEARCH AND DISSEMINATE INFORMATION TO RESEARCH AND MANAGEMENT COMMUNITIES

Problem 5A: Little is known about the extent and magnitude of the ANS problem in Nebraska. Research is needed to quantify and clarify the effects that non-indigenous species have on native species and habitat. Research can identify the threat posed by specific species and the mechanism most likely responsible for transportation of those species. In addition, compiling and providing quick access to research information can facilitate quick responses to new introductions, as well as reduce redundancy in ANS research and management.

Strategy 5A1: Support research that identifies, predicts, and prioritizes ANS introductions and their spread. Funding is identified under the funding request for an ANS Coordinator Position (1A1b), will be provided by the Nebraska Invasive Species Project. The Nebraska Invasive Species Project and Fish and Wildlife Research Unit will seek \$100/yr for 3 years from external grants to cover 2 graduate student positions researching ANS.

Action 5A1a: The Nebraska Invasive Species Project (ANS Coordinator)* will review the life histories and impacts of ANS in Nebraska and surrounding states (ecology and management of ANS).

Cost estimate - \$0, funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.05 FTE.

Action 5A1b: The Nebraska Invasive Species Project (ANS Coordinator)* will identify critical data needed to prevent introductions and/or prevent spread.

Cost estimate - \$0, funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.03 FTE.

Action 5A1c: The Nebraska Invasive Species Project (ANS Coordinator)* and Nebraska Game and Parks Commission will attend scientific and technical conferences.

Cost estimate - \$2,000/yr (travel, meals, lodging) 0.05 FTE.

Funding status - Funded through activities of the Nebraska Invasive Species Project. Additional funding incorporated under request for ANS Coordinator Position funding (see1A1b).

Action 5A1d: The Nebraska Invasive Species Project (ANS Coordinator)* will review current and past ANS research efforts in the region.

Cost estimate - \$0, funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.05 FTE.

Action 5A1e: The Nebraska Cooperative Fish and Wildlife Research Unit*, Nebraska Invasive Species Project, and Nebraska Game and Parks Commission will support possible for research that improves Nebraska's ability to predict ANS introductions and/or spread.

Cost estimate - \$50,000/yr for 3 years (funding for graduate student salary and travel), 1.1 FTE total.

Funding status – Unfunded. The Nebraska Invasive Species Project and Nebraska Cooperative Fish and Wildlife Research Unit will seek funding from the Nebraska Environmental Trust and other external funding sources.

Action 5A1f: The Nebraska Cooperative Fish and Wildlife Research Unit*, Nebraska Invasive Species Project, and Nebraska Game and Parks Commission will conduct research on the economic and ecological impacts of ANS in Nebraska.

Cost estimate - \$50,000/yr for 3 years (funding for graduate student salary and travel), 1.1 FTE total.

Funding status – Unfunded. The Nebraska Invasive Species Project and Nebraska Cooperative Fish and Wildlife Research Unit will seek funding from the Nebraska Environmental Trust and other external funding sources.

Strategy 5A2: Support research that investigates management strategies that limit the introduction and spread of ANS populations. Funding is identified under the funding request for an ANS Coordinator Position (1A1b) or will be provided by the Nebraska Invasive Species

Project. The Nebraska Invasive Species Project will seek \$15,000 external funding for research project 5A2c.

Action 5A2a: The Nebraska Invasive Species Project*, Nebraska Cooperative Fish and Wildlife Research Unit, and Nebraska Game and Parks Commission will investigate and develop methods of managing ANS with an adaptive management approach.

Cost estimate - \$0 requires no funding, 0.05 FTE total.

Action 5A2b: The Nebraska Invasive Species Project*, Nebraska Cooperative Fish and Wildlife Research Unit, and Nebraska Game and Parks Commission will review the relationships between anthropogenic disturbance of aquatic systems and ANS invasion, establishment, and impacts.

Cost estimate - \$0 requires no funding, 0.1 FTE total.

Action 5A2c: The Nebraska Invasive Species Project*, Nebraska Cooperative Fish and Wildlife Research Unit, and Nebraska Game and Parks Commission will review the effectiveness of regulatory, education-based, and incentive-based programs in controlling ANS and their relative values.

Cost estimate – \$15,000/yr (survey mailings, travel), 0.2 FTE total.

Funding status – Unfunded. The Nebraska Invasive Species Project will seek funding from the Missouri River Basin ANS Panel, Western Regional ANS Panel, and apply for other external funding

Action 5A2d: The Nebraska Invasive Species Project*, Nebraska Cooperative Fish and Wildlife Research Unit, and Nebraska Game and Parks Commission will provide logistic and advisory support (as available) regarding scientific research between state and federal agencies and academic institutions that investigates potential alternative control strategies and associated environmental impacts.

Cost estimate - \$0, No funding required, 0.1 FTE total.

Strategy 5A3: Facilitate the collection and dispersal of information, research, and data on ANS in Nebraska. Funding is identified under the funding request for an ANS Coordinator Position (1A1b) or will be provided by the Nebraska Invasive Species Project.

Action 5A3a: The Nebraska Invasive Species Project* will create a central repository of reference material on ANS and other invasive species.

Cost estimate - \$0 requires no funding, 0.05 FTE total.

Action 5A3b: The Nebraska Invasive Species Project* will Create and coordinate a central database for research projects pertaining to ANS.

Cost estimate - \$2,000/yr (web development, printing, meetings) 0.05 FTE.

Funding status - Funded through activities of the Nebraska Invasive Species Project.

Action 5A3c: The Nebraska Invasive Species Project* and ANS Steering Committee will Develop and maintain a list of taxonomic experts for ANS identification.

Cost estimate - \$0 requires no funding, 0.01 FTE total.

OBJECTIVE 6: EDUCATE THE PUBLIC, POLICY MAKERS, NATURAL RESOURCE WORKERS, PRIVATE INDUSTRY, AND USER GROUPS ABOUT THE RISKS AND IMPACTS OF ANS AND THE IMPORTANCE OF PREVENTION.

Problem 6A: The lack of awareness concerning ANS impacts is one of the largest management obstacles. Few people understand the threat some non-indigenous species pose and how their actions might introduce them. Un- (or mis-) informed individuals, through the dumping of an aquarium or bait bucket, launching of a contaminated boat, or stocking of a private pond have introduced many ANS. The improper importation and holding of organisms have also allowed species to escape, or caused the receipt of unwanted organisms mixed with intentionally imported ones. These intentional and unintentional means of introduction can be curtailed by educating people of their potential to transfer ANS species into and around Nebraska. Nebraska currently has some ANS outreach programs (through the Nebraska Invasive Species Project), but activities are limited by time and funding.

Strategy 6A1: Educate the public about ANS, how their actions can prevent the introduction and spread of ANS. Existing programs like ‘Stop Aquatic Hitchhikers,’ ‘100th Meridian Initiative,’ ‘Protect your Waters,’ and ‘Habitattitude’ will be utilized to maintain consistency in national outreach efforts. Funding is identified under the funding request for an ANS Coordinator Position (1A1b) or will be provided by the Nebraska Invasive Species Project. The Nebraska Education and Awareness Campaign (as part of the Missouri River Watershed Coalition) has requested \$15,000/yr for inclusion of ANS information into hunter/boater education programs.

Action 6A1a: The Nebraska Invasive Species Project (ANS Coordinator)* will identify current ANS public education programs and activities in the state and region.

Cost estimate - \$0, funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.02 FTE.

Action 6A1b: The Nebraska Invasive Species Project (ANS Coordinator)* will develop a cohesive and consistent ANS outreach strategy using national programs such as STOP ANS and Habitattitude as models.

Cost estimate - \$0, funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.05 FTE.

Action 6A1c: The Nebraska Invasive Species Project (ANS Coordinator)* will develop and distribute educational materials (posters, fact sheets, ID cards) to the general public and to specific user groups (businesses that import or sell aquatic organisms, private land owners with aquatic habitat, angling clubs, etc.).

Cost estimate - \$5,000/yr (printing, outreach materials, travel), 0.1 FTE.

Funding status – Partial funding through activities of the Nebraska Invasive Species Project. Additional funding incorporated under request for ANS Coordinator Position funding (see1A1b).

Action 6A1d: The Nebraska Invasive Species Project (ANS Coordinator)* will incorporate ANS information into boater and hunter education classes.

Cost estimate - \$15,000/yr (printing and distribution), 0.01 FTE total.

Funding status – Unfunded, awaiting grant. The Nebraska Education and Awareness Campaign has submitted a grant with the Missouri River Watershed Coalition to the USDA Farm Bill suggestions/requests.

Action 6A1e: The Nebraska Invasive Species Project (ANS Coordinator)* will produce periodic press releases and public service announcements on specific ANS.

Cost estimate - \$0, funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.02 FTE.

Action 6A1f: The Nebraska Invasive Species Project (ANS Coordinator)* will create articles, videos, billboards, and web-based media (Facebook, Twitter) concerning ANS.

Cost estimate - \$2,000/yr (graphic design, printing, web development), 0.05 FTE.
Funding status - Partial funding through activities of the Nebraska Invasive Species Project. Additional funding incorporated under request for ANS Coordinator Position funding (see1A1b).

Action 6A1g: The Nebraska Invasive Species Project (ANS Coordinator)* will coordinate with the Nebraska Master Naturalist Program to educate volunteers on invasive species in Nebraska.

Cost estimate - \$0, funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.03 FTE.

Action 6A1h: The Nebraska Invasive Species Project (ANS Coordinator)* will investigate citizen-science based programs (with Nebraska Master Naturalist).

Cost estimate - \$0, funding incorporated under request for ANS Coordinator Position funding (see1A1b, 0.03 FTE) or led by the Nebraska Invasive Species Project.

Action 6A1i: The Nebraska Invasive Species Project (ANS Coordinator)* will give presentations on ANS issues to lake associations, fishing clubs, local conservation groups, gardening clubs, and other affected stakeholders.

Cost estimate - \$1,500/yr (travel, meals, lodging) 0.05 FTE.

Funding status - Partial funding through activities of the Nebraska Invasive Species Project. Additional funding incorporated under request for ANS Coordinator Position funding (see1A1b).

Action 6A1j: The Nebraska Invasive Species Project (ANS Coordinator)* and Nebraska Game and Parks Commission will Include ANS information in state hunting, fishing, and boating regulations.

Cost estimate - \$0 funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.01 FTE.

Strategy 6A2: Develop and implement a ‘Next Generation Education Strategy.’ Funding has been incorporated under request for ANS Coordinator Position funding (see1A1b) or is led by the Nebraska Invasive Species Project. In addition, The Nebraska Education and Awareness Campaign has submitted a grant with the Missouri River Watershed Coalition to the USDA Farm Bill suggestions/requests which requests ~\$15,000/yr (see 6A2c).

Action 6A2a: The Nebraska Invasive Species Project (ANS Coordinator)* will develop an educational curriculum on ANS for K-12 classrooms.

Cost estimate - \$0, funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.05.

Action 6A2b: The Nebraska Invasive Species Project* will coordinate with Nebraska's educators and the state science coordinator to train teachers on ANS/invasive species education at the annual Nebraska Association of Teachers of Science Conference.

Cost estimate - \$0 requires no funding, 0.02 FTE.

Action 6A2c: The Nebraska Invasive Species Project* will provide training opportunities (workshops) for K-12 teachers about ANS and other invasive species curriculum (in conjunction with the Missouri River Watershed Coalition – Outreach and Awareness Workgroup).

Cost estimate - \$15,000/yr (workshop facilities, training packets), 0.1 FTE total.
Funding status – Unfunded, awaiting grant. The Nebraska Education and Awareness Campaign has submitted a grant with the Missouri River Watershed Coalition to the USDA Farm Bill suggestions/requests.

Action 6A2d: The Nebraska Invasive Species Project (ANS Coordinator)* will coordinate with local universities and colleges to give ANS presentations to various classes or at organized symposiums.

Cost estimate - \$1,500/yr (travel, meals, lodging), 0.03 FTE.

Funding status - Partial funding through activities of the Nebraska Invasive Species Project. Additional funding incorporated under request for ANS Coordinator Position funding (see1A1b).

Strategy 6A3: Develop and distribute identification and management information to resource agency staff. Funding has been incorporated under request for ANS Coordinator Position funding (see1A1b), is identified under the proposed annual ANS Conference (1A1c), pending funding, or is led by the Nebraska Invasive Species Project. No additional funding required.

Action 6A3a: The Nebraska Invasive Species Project (ANS Coordinator)* will create and distribute ANS identification and educational material to all Nebraska entities with aquatic resource management responsibilities.

Cost estimate - \$1,500/yr (ID materials), 0.05 FTE.

Funding Status - Partial funding through activities of the Nebraska Invasive Species Project. Additional funding incorporated under request for ANS Coordinator Position funding (see1A1b).

Action 6A3b: The Nebraska Invasive Species Project (ANS Coordinator)* and Nebraska Game and Parks Commission will organize and facilitate ANS identification workshops, and Hazard Analysis and Critical Control Points (HACCP) training for state aquatic resource managers during annual conference.

Cost estimate - \$500/yr (ID materials, printing), 0.02 FTE.

Funding status - Partial funding through activities of the Nebraska Invasive Species Project. Additional funding is identified under the proposed annual ANS Conference 1A1c, pending funding.

Action 6A3c: The Nebraska Invasive Species Project (ANS Coordinator)* will develop and maintain a list of experts to whom ANS samples can be sent for identification and publish on agency websites.

Cost estimate - \$0, funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.02 FTE.

Action 6A3d: The Nebraska Invasive Species Project (ANS Coordinator)* will give presentations on ANS identification and management to professional resources management organizations (weed management areas, universities, extension service personnel, etc.).

Cost estimate - \$1,500/yr (travel, meals, lodging, materials), 0.03 FTE.

Funding Status - Partial funding through activities of the Nebraska Invasive Species Project. Additional funding incorporated under request for ANS Coordinator Position funding (see1A1b).

Strategy 6A4: Develop and provide ANS informational briefings and educational materials to key policy and decision makers. The Nebraska Invasive Species Project and Nebraska Game and Parks Commission will seek \$2,500/yr.

Action 6A4a: The Nebraska Invasive Species Project* will organize and facilitate ANS/invasive species field days for state legislators and their staff personnel.

Cost estimate - \$2,500/yr (field equipment, travel, food), 0.05 FTE.

Funding status – Unfunded. The Nebraska Invasive Species Project will seek funding from the Nebraska Environmental Trust (PIE Grant) and other external sources.

Action 6A4b: The Nebraska Invasive Species Project (ANS Coordinator)* will distribute an annual report of ANS projects and activities to state legislators.

Cost estimate - \$0, funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.03 FTE.

Action 6A4c: The Nebraska Invasive Species Project (ANS Coordinator)* will distribute educational materials to state legislators and meet with key policy-makers periodically.

Cost estimate - \$500/yr (travel, materials), 0.03 FTE.

Funding status - Partial funding through activities of the Nebraska Invasive Species Project. Additional funding incorporated under request for ANS Coordinator Position funding (see1A1b).

OBJECTIVE 7: PREVENT THE INTRODUCTION AND SPREAD OF ANS IN NEBRASKA THROUGH LEGISLATIVE AND REGULATORY EFFORTS:

Problem 7A: As knowledge of ANS issues improves, new laws must be passed and existing laws adapted to address this new information. The regulatory authority and financial support afforded by integrated state and federal legislation can enable Nebraska to avoid or minimize environmental and economic damage resulting from ANS infestations. While some state laws and regulations have been enacted to address specific problems, there exists no comprehensive effort to deal with ANS.

Strategy 7A1: Review existing laws and regulations governing ANS and amend or add as required to achieve goals of ANS Plan. Funding has been incorporated under request for ANS Coordinator Position funding (see1A1b), is identified under the proposed annual ANS Conference (1A1c), pending funding, or is led by the Nebraska Invasive Species Project. No additional funding required.

Action 7A1a: The Nebraska Invasive Species Project (ANS Coordinator)* and Nebraska Game and Parks Commission will compile and maintain list of current state and federal laws, rules, and regulations related to ANS, and identify gaps in regulating ANS in public and private waters.

Cost estimate - \$0, funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.05 FTE.

Action 7A1b: The Nebraska Invasive Species Project (ANS Coordinator)* and Nebraska Game and Parks Commission will determine statutory authority for new ANS issues.

Cost estimate - \$0, funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.05 FTE.

Action 7A1c: The Nebraska Invasive Species Project (ANS Coordinator)* and Nebraska Game and Parks Commission will compare Nebraska ANS laws to neighboring state's laws and regulations.

Cost estimate - \$0, funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.05 FTE.

Action 7A1d: The Nebraska Game and Parks Commission* and The Nebraska Invasive Species Project (ANS Coordinator) will develop recommendations for revised and new state ANS legislation, statutes, rules, and regulations addressing gaps in current laws (including importation, enforcement, and penalties).

Cost estimate - \$500/yr, (meeting costs, travel), 0.05 FTE.

Funding status - Partial funding through activities of the Nebraska Invasive Species Project and the Nebraska Game and Parks Commission. Additional funding incorporated under request for ANS Coordinator Position funding (see1A1b).

Action 7A1e: The Nebraska Invasive Species Project (ANS Coordinator)* and Nebraska Game and Parks Commission will identify funding for personnel to enforce ANS regulations.

Cost estimate - \$0, funding incorporated under request for ANS Coordinator Position funding (see1A1b), 0.05 FTE. Funding may be available through the soon to be proposed new boater registration ANS fee.

Action 7A1f: The Nebraska Invasive Species Project (ANS Coordinator)* and Nebraska Game and Parks Commission will promulgate and publicize legislation to educate public on the importance of gaining legislative support in preventing ANS introductions and spread.

Cost estimate - \$500/yr (materials), 0.05 FTE.

Funding status – Partial funding through activities of the Nebraska Invasive Species Project. Additional funding incorporated under request for ANS Coordinator Position funding (see 1A1b).

SECTION G

PRIORITIES FOR ACTION

Nebraska currently lacks a cohesive ANS management strategy. Thus, in implementing this plan, focus will initially be given to establishing an ANS Steering Committee as well as creating an ANS Coordinator position as much of the proposed work will be implemented by the coordinator and committee. In addition, the State of Nebraska currently has a limited number of statutory and regulatory authorities to address ANS. Those that exist were developed in response to individual target species and specific concerns as they arose. Nebraska does not have a comprehensive, coordinated, and vigorously enforced policy framework to deal with ANS and their effects. For this reason, another priority of Nebraska's ANS Management Plan is to identify gaps within state policies and statutes and develop recommendations for improvements. Such improvements may entail developing new legislation and regulations, revising existing authorities, and developing methods for improving enforcement, coordination, and information dissemination regarding new or existing authorities.

The Nebraska ANS Management Plan also emphasizes and prioritizes the need for collaboration among organizations in order to avoid duplication of effort and to ensure the same information base for dealing with ANS. In addition, while many organizations responsible for ANS management could develop a list of the top aquatic nuisance species of concern in Nebraska, the importance of addressing each species will often vary among groups. As a result, research, management, and outreach efforts are often disjunct and without a cohesive plan. To help identify current and potential ANS, the Nebraska ANS Plan calls for the development of a species ranking system in order to identify and prioritize current and potential ANS into distinct priority classes.

However, even when ANS are ranked and prioritized, the ability to manage each species varies greatly, and the resources available are often limited. Management efforts must, therefore, be focused on species where actions can produce the greatest benefit. In recognition of the known threats, impacts, and potential problems of certain ANS and the state's current management capabilities, the Nebraska ANS plan also calls for the development of an ANS risk assessment to help guide management activities for each current and potential ANS.

Below outlines tasks that the ANS Committee has identified as top priorities for the first year of plan implementation. These tasks were identified as important in establishing an effective ANS program that will be able to grow in the following years.

- Form ANS steering committee to direct implementation of the plan
- Identify funding to implement ANS plan
- Identify gaps in ANS legislation/policy and make adjustments as needed
- Hire ANS coordinator
- Increase surveys/monitoring so we know what is in NE and where; create online database entry program for employees to enter ANS sightings
- Develop response plans for high priority species
- Increase state-wide and inter-state collaboration (ANS conference/workshop)

SECTION H

IMPLEMENTATION TABLE

(NOTE: Plan implementation is entirely dependent upon acquiring funding)

Outline of objectives, strategic actions, and tasks, financial status, implementing organization(s) and planned efforts for the next 5 years; represents information in Section F in tabular format.

Legend for Planned Efforts and Funding:

Estimated dollar amounts are provided for general operating costs *needed* to complete each task. FTE's represent an estimate of effort required to accomplish each action – does not indicate additional dollars required.

x – Not planned for current year

0 – action planned for current year, but with little or no cost

Organizations in bold indicate lead organization for implementation

Legend for identifying acronyms of listed organizations/agencies is located in the footer of the table.

Objectives and Actions					Funding Needed (\$1,000's)/Estimate Effort Required (FTE)				
Task #	Description	Current Financial Status	Potential or Current Funding Source	Implementing Organization(s)	2011 \$/FTE	2012 \$/FTE	2013 \$/FTE	2014 \$/FTE	2015 \$/FTE
Objective 1: Coordinate & Implement									
Strategy 1A1: Increase coordination of all ANS management programs and activities in Nebraska									
1A1a	Create ANS Steering Committee	Funded	NISP, stakeholders	NISC	1/0.5	1/0.5	1/0.5	1/0.5	1/0.5
1A1b	Create and fund ANS coordinator position	<i>Unfunded</i>	Federal, others?	NGPC, COOP, NISP	<i>35/0.05 (to begin mid-year)</i>	<i>70/0</i>	<i>70/0</i>	<i>70/0</i>	<i>70/0</i>
1A1c	Hold an annual ANS conference/workshop	<i>Unfunded</i>	NET, others?	NISP, NGPC	<i>15/0.1</i>	<i>15/0.1</i>	<i>15/0.1</i>	<i>15/0.1</i>	<i>15/0.1</i>
1A1d	Develop database of all ANS management activities in NE and region	Funded	NISP	NISP, Coord	1/0.1	1/0.1	1/0.1	1/0.1	1/0.1
1A1e	Identify gaps in ANS	No		NISP, NGPC	0/0.05	0/0.05	0/0.05	0/0.05	0/0.05

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Objectives and Actions					Funding Needed (\$1,000's)/Estimate Effort Required (FTE)				
Task #	Description	Current Financial Status	Potential or Current Funding Source	Implementing Organization(s)	2011 \$/FTE	2012 \$/FTE	2013 \$/FTE	2014 \$/FTE	2015 \$/FTE
	authority	funding required							
1A1f	Develop uniform definitions	No funding required		NISP, ANSSC	0/0.01	0/0.01	0/0.01	0/0.01	0/0.01
1A1g	Develop and maintain list of non-native species in NE	No funding required		NISP, NISC, ANSCC	0/0.01	0/0.01	0/0.01	0/0.01	0/0.01
Strategy 1A2: Increase participation in and support national and international efforts.									
1A2a	Participate in the Aquatic Nuisance Species Task Force's regional panels	Partial funding (2000/yr)	NISP, NGPC, See 1A1b	Coord, NISP, NGPC,	2/0.02	2/0.02	2/0.02	2/0.02	2/0.02
1A2b	Participate in and support inter-state ANS organizations and forums	Partial funding (1000/yr)	NISP, NGPC, See 1A1b	Coord, NISP, NGPC,	1/0.01	1/0.01	1/0.01	1/0.01	1/0.01
Strategy 1A3: Develop a permanent funding mechanisms for ANS management in Nebraska									
1A3a	Explore ideas for permanent ANS funding	No funding required		NISP,NGPC	0/0.05	0/0.05	0/0.05	0/0.05	0/0.05
1A3b	Work with NE legislature for short- and long-term funding	No funding required		NISP,NGPC	0/0.07	0/0.07	0/0.07	0/0.07	0/0.07
Strategy 1A4: Review and evaluate state efforts in addressing ANS									
1A4a	Assess ANS management efforts	See 1A1b	See 1A1b	Coord, ANSSC	1A1b/0.01	1A1b/0.01	1A1b/0.01	1A1b/0.01	1A1b/0.01
1A4b	Update ANS plan as needed with annual	See 1A1b	See 1A1b	Coord, ANSSC	1A1b/0.01	1A1b/0.01	1A1b/0.01	1A1b/0.01	1A1b/0.01

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Objectives and Actions					Funding Needed (\$1,000's)/Estimate Effort Required (FTE)				
Task #	Description	Current Financial Status	Potential or Current Funding Source	Implementing Organization(s)	2011 \$/FTE	2012 \$/FTE	2013 \$/FTE	2014 \$/FTE	2015 \$/FTE
	reports								
Objective 1 Totals									
Funded/FTE provided					5/0.77	5/0.77	5/0.77	5/0.77	5/0.77
Unfunded/FTE needed					50/0.22	85/0.17	85/0.17	85/0.17	85/0.17
Objective 2: Monitoring									
Strategy 2A1: Develop and implement a statewide ANS monitoring program.									
2A1a	Identify gaps in ANS monitoring	See 1A1b	See 1A1b	Coord, NGPC	1A1b/0.02	1A1b/0.02	1A1b/0.02	1A1b/0.02	1A1b/0.02
2A1b	Identify high-risk water bodies for monitoring efforts	Funded	COOP, NGPC	Coord, ANSSC	150/2.2	150/2.2	150/2.2	150/2.2	150/2.2
2A1c	Design /implement monitoring program	<i>Unfunded</i>	NET, others?	Coord, NGPC	20/1.1	50/2.2	50/2.2	50/2.2	50/2.2
2A1d	Develop online database for tracking monitoring efforts	Funded	NISP	NISP, NGPC	1/0.1	1/0.1	1/0.1	1/0.1	1/0.1
Strategy 2A2: Develop partnerships with neighboring states to share information concerning the distribution of ANS based on monitoring efforts.									
2A2a	Facilitate sharing of monitoring data	See 1A1b	See 1A1b	Coord	1A1b/0.02	1A1b/0.02	1A1b/0.02	1A1b/0.02	1A1b/0.02
2A2b	Share ANS lists with region	No funding required		NISP, NISC	0/0.1	0/0.1	0/0.1	0/0.1	0/0.1
2A2c	Produce annual monitoring reports and distribute nationally	See 1A1b	See 1A1b	Coord, ANSSC	1A1b/0.02	1A1b/0.02	1A1b/0.02	1A1b/0.02	1A1b/0.02
Objective 2 Totals									
Funded/FTE provided					151/2.4	151/2.4	151/2.4	151/2.4	151/2.4
Unfunded/FTE needed					20/1.16	50/2.26	50/2.26	50/2.26	50/2.26

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Objectives and Actions					Funding Needed (\$1,000's)/Estimate Effort Required (FTE)				
Task #	Description	Current Financial Status	Potential or Current Funding Source	Implementing Organization(s)	2011 \$/FTE	2012 \$/FTE	2013 \$/FTE	2014 \$/FTE	2015 \$/FTE
Objective 3: Prevention of New Introductions									
Strategy 3A1: Develop and implement an early detection and rapid response (EDRR) program.									
3A1a	Identify ANS with greatest threat to invade	No funding required		NISP, ANSSC	0/0.1	0/0.1	0/0.1	0/0.1	0/0.1
3A1b	Identify current EDDR efforts and coordinate with neighboring states	No funding required		NISP, ANSSC	0/0.05	0/0.05	0/0.05	0/0.05	0/0.05
3A1c	Facilitate EDRR workshops during annual conference	Partial funding (500/yr)	NISP, See 1A1c	Coord, NISP	0.5/0.05	0.5/0.05	0.5/0.05	0.5/0.05	0.5/0.05
3A1d	Develop rapid response plan for priority species	Funded	NISP	NISP, ANSSC	0.8/0.3	0.8/0.3	0.8/0.3	0.8/0.3	0.8/0.3
3A1e	Identify funding sources for rapid response plan actions	See 1A1b	See 1A1b	Coord, NGPC	1A1b/0.04	1A1b/0.04	1A1b/0.04	1A1b/0.04	1A1b/0.04
Strategy 3A2: Develop and implement boat inspection program									
3A2a	Develop/implement watercraft inspection program; high-risk waters	Partial funding (150k COOP)	COOP, NET, others?	Coord, NGPC, COOP	270/4.6	390/7.2	390/7.2	390/7.2	390/7.2
3A2b	See continued funding for boat inspection program	See 1A1b	See 1A1b	Coord, NGPC	1A1b/0.04	1A1b/0.04	1A1b/0.04	1A1b/0.04	1A1b/0.04
Objective 3 Totals									
Funded/FTE provided					151.3/2.5	151.3/2.5	151.3/2.5	151.3/2.5	151.3/2.5
Unfunded/FTE needed					120/2.68	240/5.28	240/5.28	240/5.28	240/5.28

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Objectives and Actions					Funding Needed (\$1,000's)/Estimate Effort Required (FTE)				
Task #	Description	Current Financial Status	Potential or Current Funding Source	Implementing Organization(s)	2011 \$/FTE	2012 \$/FTE	2013 \$/FTE	2014 \$/FTE	2015 \$/FTE
Objective 4: Control of Established ANS									
Strategy 4A1: Develop and implement control strategies to eradicate or reduce populations of priority ANS established in state waters.									
4A1a	Prioritize established ANS in need of management	Funded	NISP	NISP, ANSSC	0.8/0.1	0.8/0.1	0.8/0.1	0.8/0.1	0.8/0.1
4A1b	Develop control plans priority ANS	Funded	NISP	NISP, ANSSC	0.8/0.2	0.8/0.2	0.8/0.2	0.8/0.2	0.8/0.2
4A1c	Identify funding source for managing established ANS	See 1A1b	See 1A1b	Coord, NGPC	1A1b/0.04	1A1b/0.04	1A1b/0.04	1A1b/0.04	1A1b/0.04
4A1d	Identify ways to limit dispersal of established ANS	See 1A1b	See 1A1b	Coord, NGPC	1A1b/0.04	1A1b/0.04	1A1b/0.04	1A1b/0.04	1A1b/0.04
4A1e	Develop guidelines for cleaning water-based equipment	No funding required		NGPC, Coord	0/0.05	0/0.05	0/0.05	0/0.05	0/0.05
4A1f	Develop guidelines to quarantine as needed	No funding required		NGPC, Coord	0/0.05	0/0.05	0/0.05	0/0.05	0/0.05
* Due to the high variability in ANS control costs, there are \$0 in funding associated with this section. This does not imply that no ANS control efforts will not be made; it simply means that the ANS committee could not determine with any sort of accuracy what would be required for control/eradication funding given the lack of knowledge of what species are established. We will seek funds from external grants as the need arises.									
Objective 4 Totals									
Funded/FTE provided					1.6/0.4	1.6/0.4	1.6/0.4	1.6/0.4	1.6/0.4
Unfunded/FTE needed					0/0.08	0/0.08	0/0.08	0/0.08	0/0.08
Objective 5: Research									
Strategy 5A1: Support research that identifies, predicts, and prioritized ANS introductions and their spread									

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Objectives and Actions					Funding Needed (\$1,000's)/Estimate Effort Required (FTE)				
Task #	Description	Current Financial Status	Potential or Current Funding Source	Implementing Organization(s)	2011 \$/FTE	2012 \$/FTE	2013 \$/FTE	2014 \$/FTE	2015 \$/FTE
5A1a	Review life history, ecology and management of ANS	See 1A1b	See 1A1b	Coord, NISP	1A1b/0.05	1A1b/0.05	1A1b/0.05	1A1b/0.05	1A1b/0.05
5A1b	Identify critical data needed for prevention	See 1A1b	See 1A1b	Coord, NISP, NGPC	1A1b/0.03	1A1b/0.03	1A1b/0.03	1A1b/0.03	1A1b/0.03
5A1c	Attend conferences	Partial funding (2000/yr)	NISP, NGPC, See 1A1b	Coord, NISP, NGPC	2/0.05	2/0.05	2/0.05	2/0.05	2/0.05
5A1d	Review studies done within the region	See 1A1b	See 1A1b	Coord, NISP	1A1b/0.05	1A1b/0.05	1A1b/0.05	1A1b/0.05	1A1b/0.05
5A1e	Improve ability to predict ANS introduction and spread – risk assessment	Unfunded	NET, others?	COOP, NGPC, NISP, UNL	x	x	50/1.1	50/1.1	50/1.1
5A1f	Identify ANS economic and ecological impacts	Unfunded	NET, others?	COOP, NGPC, NISP, UNL	x	50/1.1	50/1.1	50/1.1	x
Strategy 5A2: Support research that investigates management strategies that limit the introduction and spread of ANS populations									
5A2a	Investigate new management methods w/ adaptive management approach	No funding required		NISP, Coord, COOP, NGPC	0/0.05	0/0.05	0/0.05	0/0.05	0/0.05
5A2b	Review impacts of human disturbance on ANS	No funding required		NISP, Coord, COOP, NGPC	x	x	0/0.1	0/0.1	0/0.1
5A2c	Research effectiveness of ANS programs	Unfunded	NET? MRBP?	NISP, Coord, COOP, NGPC	x	x	15/0.2	x	x
5A2d	Provide	No		NISP, Coord, COOP,	0/0.1	0/0.1	0/0.1	0/0.1	0/0.1

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Objectives and Actions					Funding Needed (\$1,000's)/Estimate Effort Required (FTE)				
Task #	Description	Current Financial Status	Potential or Current Funding Source	Implementing Organization(s)	2011 \$/FTE	2012 \$/FTE	2013 \$/FTE	2014 \$/FTE	2015 \$/FTE
	logistic/advisory support for alternative control strategies	funding required		NGPC					
Strategy 5A3: Facilitate the collection and dispersal of information, research, and data on ANS in Nebraska									
5A3a	Create repository for ANS reference material	No funding required		NISP, Coord	0/0.05	0/0.05	0/0.05	0/0.05	0/0.05
5A3b	Create central database for ANS information	Funded	NISP	NISP, Coord	2/0.05	2/0.05	2/0.05	2/0.05	2/0.05
5A3c	Maintain list of experts for ANS identification	No funding required		NISP, ANSSC,	0/0.01	0/0.01	0/0.01	0/0.01	0/0.01
Objective 5 Totals:									
Funded/FTE provided					4/0.31	4/0.31	4/0.41	4/0.41	4/0.41
Unfunded/FTE needed					0/0.13	50/1.23	115/2.53	100/2.33	50/1.23
Objective 6: Outreach and Education									
Strategy 6A1: Educate the public about ANS, how their actions can prevent the introduction and spread of ANS									
6A1a	Identify all current education and outreach programs	See 1A1b	See 1A1b	Coord, NISP	1A1b/0.02	1A1b/0.02	1A1b/0.02	1A1b/0.02	1A1b/0.02
6A1b	Develop cohesive ANS outreach strategy	See 1A1b	See 1A1b	Coord, NISP	1A1b/0.05	1A1b/0.05	1A1b/0.05	1A1b/0.05	1A1b/0.05
6A1c	Develop/distribute educational materials to general public and specific user groups	Partial funding (5000/yr)	NISP, NGPC, See 1A1b	Coord, NISP	5/0.1	5/0.1	5/0.1	5/0.1	5/0.1

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Objectives and Actions					Funding Needed (\$1,000's)/Estimate Effort Required (FTE)				
Task #	Description	Current Financial Status	Potential or Current Funding Source	Implementing Organization(s)	2011 \$/FTE	2012 \$/FTE	2013 \$/FTE	2014 \$/FTE	2015 \$/FTE
6A1d	Incorporate ANS info into hunter and boater education	<i>Unfunded; awaiting grant</i>	MRWC	NISP , Coord, NEOC, MRWC	15/0.03	15/0.03	15/0.03	15/0.03	15/0.03
6A1e	Produce press releases and PSA's	See 1A1b	See 1A1b	Coord , NISP	1A1b/0.03	1A1b/0.03	1A1b/0.03	1A1b/0.03	1A1b/0.03
6A1f	Create articles and web-based media	Partial funding (2000/yr)	NISP, NGPC, See 1A1b	Coord , NISP	2/0.05	2/0.05	2/0.05	2/0.05	2/0.05
6A1g	Coordinate with NE Master Naturalist to educate volunteers	See 1A1b	See 1A1b	Coord , NISP, NMN	1A1b/0.03	1A1b/0.03	1A1b/0.03	1A1b/0.03	1A1b/0.03
6A1h	Investigate citizen-science based programs	See 1A1b	See 1A1b	Coord , NISP	x	1A1b/0.03	1A1b/0.03	1A1b/0.03	1A1b/0.03
6A1i	Give presentations to affected various stakeholders	Partial funding (1500/yr)	NISP, NGPC, See 1A1b	Coord , NISP	1.5/0.05	1.5/0.05	1.5/0.05	1.5/0.05	1.5/0.05
6A1j	Include ANS info in hunting, fishing, & boating regulations	See 1A1b	See 1A1b	Coord , NISP, NGPC	1A1b/0.03	1A1b/0.03	1A1b/0.03	1A1b/0.03	1A1b/0.03
Strategy 6A2: Develop and implement a 'Next Generation Education Strategy.'									
6A2a	Develop ANS curriculum for K-12	See 1A1b	See 1A1b	Coord , NISP	1A1b/0.05	1A1b/0.05	1A1b/0.05	1A1b/0.05	1A1b/0.05
6A2b	Coordinate with and train K-12 state science educators	No funding required		NISP , Coord	0/0.03	0/0.03	0/0.03	0/0.03	0/0.03
6A2c	Train K-12 teachers on ANS curriculum – invasives workshop	<i>Unfunded; awaiting grant</i>	MRWC	NISP , Coord, NEOC, MRWC, NMN	15/0.1	15/0.1	15/0.1	15/0.1	15/0.1
6A2d	Present ANS information in	See 1A1b	See 1A1b	Coord , NISP	1A1b/0.03	1A1b/0.03	1A1b/0.03	1A1b/0.03	1A1b/0.03

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Objectives and Actions					Funding Needed (\$1,000's)/Estimate Effort Required (FTE)				
Task #	Description	Current Financial Status	Potential or Current Funding Source	Implementing Organization(s)	2011 \$/FTE	2012 \$/FTE	2013 \$/FTE	2014 \$/FTE	2015 \$/FTE
	various classrooms								
Strategy 6A3: Develop and distribute identification and management information to resource agency staff.									
6A3a	Distribute ANS material to entities with aquatic responsibilities in NE	Partial funding (1500/yr)	NISP, See 1A1b	Coord, NISP	1.5/0.03	1.5/0.03	1.5/0.03	1.5/0.03	1.5/0.03
6A3b	Facilitate ANS ID & HACCP workshops for resource managers at annual conference	Partial funding (500/yr)	NISP, NGPC, See 1A1c	Coord, NISP, NGPC	0.5/0.02	0.5/0.02	0.5/0.02	0.5/0.02	0.5/0.02
6A3c	Maintain a list of experts with whom ANS samples can be verified	See 1A1b	See 1A1b	Coord, NISP	1A1b/0.02	1A1b/0.02	1A1b/0.02	1A1b/0.02	1A1b/0.02
6A3d	Give presentations to professional resource management organizations	Partial funding (1500/yr)	NISP, NGPC, See 1A1b	Coord, NISP	1.5/0.03	1.5/0.03	1.5/0.03	1.5/0.03	1.5/0.03
Strategy 6A4: Develop and provide ANS informational briefings and educational materials to key policy and decision makers									
6A4a	Facilitate field days and luncheons for legislators/staff	<i>Unfunded</i>	NET, others?	NISP, Coord, ANSSC	2.5/0.05	2.5/0.05	2.5/0.05	2.5/0.05	2.5/0.05
6A4b	Provide ANS annual report to legislators/staff	See 1A1b	See 1A1b	Coord, NISP, ANSSC	1A1b/0.03	1A1b/0.03	1A1b/0.03	1A1b/0.03	1A1b/0.03
6A4c	Distribute educational materials to and meet with key policy-makers	Partial funding (500/yr)	NISP, NGPC, See 1A1b	Coord, NISP	0.5/0.03	0.5/0.03	0.5/0.03	0.5/0.03	0.5/0.03

Organizations alphabetized by abbreviation: ANSSC - Aquatic Nuisance Species Steering Committee, COOP – Nebraska Cooperative Fish and Wildlife Research Unit, Coord – Aquatic Nuisance Species Coordinator, MRBP – Mississippi River Basin Panel, MRWC – Missouri River Watershed Coalition, NEOC – Nebraska Education and Outreach Campaign, NET – Nebraska Environmental Trust Fund, NGPC – Nebraska Game and Parks Commission, NISC – Nebraska Invasive Species Council, NISP – Nebraska Invasive Species Project, NMN – Nebraska Master Naturalist, UNL – University of Nebraska-Lincoln

Objectives and Actions					Funding Needed (\$1,000's)/Estimate Effort Required (FTE)				
Task #	Description	Current Financial Status	Potential or Current Funding Source	Implementing Organization(s)	2011 \$/FTE	2012 \$/FTE	2013 \$/FTE	2014 \$/FTE	2015 \$/FTE
Objective 6 Totals:									
Funded/FTE provided					12.5/0.34	12.5/0.34	12.5/0.34	12.5/0.34	12.5/0.34
Unfunded/FTE needed					32.5/0.47	32.5/0.50	32.5/0.50	32.5/0.50	32.5/0.50
Objective 7: Legislation									
Strategy 7A1: Review existing laws and regulations governing ANS and amend or add as required to achieve goals of ANS Plan.									
7A1a	Compile list of current laws, rules, and regulations for ANS and identify gaps	See 1A1b	See 1A1b	Coord, NGPC	1A1b/0.05	1A1b/0.05	1A1b/0.05	1A1b/0.05	1A1b/0.05
7A1b	Determine statutory authority for ANS issues	See 1A1b	See 1A1b	Coord, NGPC	1A1b/0.05	1A1b/0.05	1A1b/0.05	1A1b/0.05	1A1b/0.05
7A1c	Compare NE ANS laws to neighboring states	See 1A1b	See 1A1b	Coord, NGPC	1A1b/0.05	1A1b/0.05	1A1b/0.05	1A1b/0.05	1A1b/0.05
7A1d	Develop recommendations for revised and new NE legislation	Partial funding (500/yr)	NISP, NGPC, See 1A1b	NGPC, Coord, ANSSC, NISC	0.5/0.05	0.5/0.05	0.5/0.05	0.5/0.05	0.5/0.05
7A1e	Secure funding to enforce ANS regulations	See 1A1b	See 1A1b	Coord, NGPC	1A1b/0.05	1A1b/0.05	1A1b/0.05	1A1b/0.05	1A1b/0.05
7A1f	Promulgate legislation to educate public on importance of legislative support	Partial funding (500/yr)	NISP, NGPC, See 1A1b	Coord, NGPC	0.5/0.05	0.5/0.05	0.5/0.05	0.5/0.05	0.5/0.05
Objective 7 Totals:									
Funded/FTE provided					1/0.1	1/0.1	1/0.1	1/0.1	1/0.1
Unfunded/FTE needed					0/0.2	0/0.2	0/0.2	0/0.2	0/0.2

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Objectives and Actions					Funding Needed (\$1,000's)/Estimate Effort Required (FTE)				
Task #	Description	Current Financial Status	Potential or Current Funding Source	Implementing Organization(s)	2011 \$/FTE	2012 \$/FTE	2013 \$/FTE	2014 \$/FTE	2015 \$/FTE
Plan Summary				Funding Needed (\$1,000s)/ Planned Efforts(FTE)					
				2011 \$/FTE	2012 \$/FTE	2013 \$/FTE	2014 \$/FTE	2015 \$/FTE	
Objective 1 – Coordination Totals									
Funded/FTE provided				5/0.77	5/0.77	5/0.77	5/0.77	5/0.77	5/0.77
Unfunded/FTE needed				50/0.22	85/0.17	85/0.17	85/0.17	85/0.17	85/0.17
Objective 2 – Monitoring Totals									
Funded/FTE provided				151/2.4	151/2.4	151/2.4	151/2.4	151/2.4	151/2.4
Unfunded/FTE needed				20/1.16	50/2.26	50/2.26	50/2.26	50/2.26	50/2.26
Objective 3 – Prevention of New ANS Totals									
Funded/FTE provided				151.3/2.5	151.3/2.5	151.3/2.5	151.3/2.5	151.3/2.5	151.3/2.5
Unfunded/FTE needed				120/2.68	240/5.28	240/5.28	240/5.28	240/5.28	240/5.28
Objective 4 – Control of Established ANS Totals									
Funded/FTE provided				1.6/0.4	1.6/0.4	1.6/0.4	1.6/0.4	1.6/0.4	1.6/0.4
Unfunded/FTE needed				0/0.08	0/0.08	0/0.08	0/0.08	0/0.08	0/0.08
Objective 5 – Research Totals:									
Funded/FTE provided				4/0.31	4/0.31	4/0.31	4/0.31	4/0.31	4/0.31
Unfunded/FTE needed				0/0.13	50/1.23	115/2.53	100/2.33	50/1.23	50/1.23
Objective 6 – Education and Outreach Totals:									
Funded/FTE provided				12.5/0.34	12.5/0.34	12.5/0.34	12.5/0.34	12.5/0.34	12.5/0.34
Unfunded/FTE needed				32.5/0.47	32.5/0.5	32.5/0.5	32.5/0.5	32.5/0.5	32.5/0.5
Objective 7 – Legislation Totals:									
Funded/FTE provided				1/0.1	1/0.1	1/0.1	1/0.1	1/0.1	1/0.1
Unfunded/FTE needed				0/0.2	0/0.2	0/0.2	0/0.2	0/0.2	0/0.2
*Implementation dependent upon acquiring much funding from external grants									
Plan Totals:									
Funded/FTE provided				326.4/6.82	326.4/6.82	326.4/6.82	326.4/6.82	326.4/6.82	326.4/6.82
Unfunded/FTE needed				222.5/4.94	457.5/9.72	522.5/11.02	507.5/10.82	457.5/9.72	457.5/9.72

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SECTION I

PROGRAM MONITORING AND EVALUATION

The evaluation process of the Nebraska ANS Management Plan will provide a means of monitoring progress, evaluating needs and problems, coordinating efforts and pursuing the goal of prevention and management of introductions, population growth, and dispersal of ANS into, within, and from Nebraska. Mid-course corrections will be made when and if necessary. The process involves three main components: oversight, evaluation, and reporting.

OVERSIGHT

A program oversight committee will be established (with several members from the Nebraska Invasive Species Advisory Council), consisting of interested parties identified during the review process, various Nebraska state and federal agencies, tribes and other interested private/public parties including members from the original steering committee who authored the document. The role of this inter-agency committee will be to examine progress on management actions focused on the goal of the state management plan. The committee can evaluate the success of each strategy by examining the level of achievement of the tasks clearly defined within each action.

EVALUATION

The evaluation effort should not only examine progress, but also place special emphasis on funding needs to successfully accomplish the goals and associated tasks. This information will prove useful for future program planning purposes. Evaluation should also incorporate information from those groups affected by plan implementation. These include organizations involved with the responsibility of implementing management actions and resource user groups.

The Nebraska ANS Steering Committee will generate an annual report based on tasks identified in the implementation table. Successes of the plan will be evaluated each year by the Steering Committee based both on progress in meeting the plan objectives as well as successful implementation of identified tasks. Due to the difficulty in assigning quantitative measures of progress towards these goals, the ANS Steering Committee will evaluate plan implementation based primarily on the completion of specific tasks identified for each year (see implementation table).

The successful implementation of the plan will be evaluated based on the following:

1. A qualitative description of progress towards each of the objectives
2. A complete list of tasks identified in the previous year's work plan, budgetary needs identified for each, resources procured, and resources expended.
3. Designation of the implementation status (full, partial, or not implemented) of each task identified in the previous year's work plan and a brief justification of the designation. Various physical, chemical, and biological stressors that may or have impacted the success of plan implementation will be discussed.
4. A summary of resource requirements to achieve full implementation of tasks listed as partially or not implemented.

Evaluation of annual work plans will play a major role in directing activities for the following years, as well as restructuring tasks identified in the original plan. Work plans for upcoming years will be produced concurrently with each annual program evaluation document.

REPORTING

An annual progress report will be prepared and disseminated, highlighting the management actions regarding aquatic nuisance plants, animals and pathogens that year. This report will include information on the success in achieving the goals of prevention and maintenance of introductions, population growth, and ANS dispersal into, within and from Nebraska. It will be disseminated to state, federal, local agencies and organizations, tribes, policy-makers, and other interested private and public parties.

A program status report will be written every five (5) years that ties the annual progress reports to the overall ANS management plan, as well as future plans and directions. Successes, failures, and new directions within Nebraska will be evaluated in comparison to and in concert with neighboring states. The annual progress reports and the program status report (5 years) will be made available to the general public, local, state and federal decision makers.

SECTION J

Glossary

Adaptive Management: a management framework involving a cyclic process with the following components: identify the problem and objectives, develop multiple proposed actions, implement actions, monitor results of each action, evaluate successfulness of each, and adjust if necessary.

Aquatic Species: Aquatic species includes aquatic plant, animal, and pathogen species. Aquatic plants are introduced plants that have adapted to living in, on, or next to water, and that can grow either submerged or partially submerged in water. Aquatic animals require a watery habitat, but do not necessarily have to live entirely in water.

Aquatic Nuisance Species (ANS): nonindigenous species that threaten the diversity or abundance of native species or the ecological stability of infested waters, or commercial, agricultural, aquacultural or recreational activities dependent on such waters. ANS include nonindigenous species that may occur in inland, estuarine and marine waters and that presently or potentially threaten ecological processes and natural resources. In addition to adversely affecting activities dependant on waters of the United States, ANS can adversely affect individuals, including health effects.

Aquaculture: farming of freshwater and saltwater organisms such as finfish, mollusks, crustaceans and aquatic plants. Also known as aquafarming, aquaculture involves cultivating aquatic populations under controlled conditions, and can be contrasted with commercial fishing, which is the harvesting of wild fish.

Baitfish: fish species commonly sold for use as bait for recreational fishing.

Ballast water: any water or associated sediments used to manipulate the trim and stability of a vessel.

Biodiversity: the variety and variability among living organisms and the ecological complexes in which they occur.

Control: limiting the distribution and abundance of a species.

Ecosystem: system formed by the interaction of organisms with their environment.

Environment: the external surroundings including all of the living and non-living factors that surround and affect the survival and development of an organism.

Eradicate: the act or process of eliminating an ANS.

Exotic: any species or other biological material that enters an ecosystem beyond its historic range on the continent. Also referred to as *introduced, foreign, non-indigenous, alien, non-native, immigrant* and *transplants*.

Habitat: an ecological or environmental area that is inhabited by a particular animal, plant or other organism. It is the natural environment in which an organism lives, or the physical environment that surrounds (influences and is utilized by) a species population.

Infested water: any water body where an aquatic nuisance species is known to occur.

Invasive: plant or animal that is not native, and has, or is actively, spreading to new environments. Other terms used to describe non-native species include exotic or alien. In some cases they are extremely damaging to the economy, the environment, or human health.

Native: a species occurring naturally in a specified geographic area comprising its ecological range.

Non-indigenous species: any species or other viable biological material that enters an ecosystem beyond its historic range, including any such organism transferred from one country into another. Nonindigenous species include both exotics and transplants. Synonyms for NIS include *introduced, foreign, exotic, alien, non-native, immigrant* and *transplants*.

Non-native: a species not natural to a specified geographic area, having been introduced either purposely or unintentionally. Also referred to as *introduced, foreign, exotic, alien, non-indigenous, immigrant* and *transplants*

Pathogen: a microbe or other organism that causes disease.

Priority species: an ANS that is considered to be a significant threat to Nebraska waters and is recommended for immediate or continued management action to minimize or eliminate their impact.

Population: a group of individual plant, animal, or pathogen species occupying a particular area at the same time.

Watershed: an entire drainage basin including all living and nonliving components.

SECTION K

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APPENDIX A

SECTION 1204 OF THE NATIONAL INVASIVE SPECIES ACT OF 1996

(a) STATE OR INTERSTATE INVASIVE SPECIES MANAGEMENT PLANS—

(1) IN GENERAL -- After providing notice and opportunity for public comment, the Governor of each State may prepare and submit, or the Governors of the States and the governments of Indian Tribes involved in an interstate organization, may jointly prepare and submit—

(A) a comprehensive management plan to the Task Force for approval which identifies those areas or activities within the State or within the interstate region involved, other than those related to public facilities, for which technical, enforcement, or financial assistance (or any combination thereof) is needed to eliminate or reduce the environmental, public health, and safety risk associated with aquatic nuisance species, particularly the zebra mussel; and

(B) a public facility management plan to the Assistant Secretary for approval which is limited solely to identifying those public facilities within the State or within the interstate region involved for which technical and financial assistance is needed to reduce infestations of zebra mussels.

(2) CONTENT -- Each plan shall, to the extent possible, identify the management practices and measures that will be undertaken to reduce infestations of aquatic nuisance species. Each plan shall—

(A) identify and describe State and local programs for environmentally sound prevention and control of the target aquatic nuisance species;

(B) identify Federal activities that may be needed for environmentally sound prevention and control of aquatic nuisance species and a description of the manner in which those activities should be coordinated with State and local government activities;

(C) identify any authority that the State (or any State or Indian Tribe involved in the interstate organization) does not have at the time of the development of the plan that may be necessary for the State (or any State or Indian Tribe involved in the interstate organization) protect public health, property, and the environment from harm by aquatic nuisance species; and

(D) a schedule of implementing the plan, including a schedule of annual objectives, and enabling legislation.

(3) CONSULTATION —

(A) In developing and implementing a management plan, the State or interstate organization should, to the maximum extent practicable, involve local governments and regional entities, Indian Tribes, and public and private organizations that have expertise in the control of aquatic nuisance species.

(B) Upon the request of a State or the appropriate official of an interstate organization, the Task Force or the Assistant Secretary, as appropriate under paragraph (1), may provide technical assistance in developing and implementing a management plan.

(4) PLAN APPROVAL -- Within 90 days after the submission of a management plan, the Task Force or the Assistant Secretary in consultation with the Task Force, as appropriate under paragraph (1), shall review the proposed plan and approve it if it meets the requirements of this subsection or return the plan to the Governor or the interstate organization with recommended modifications.

(b) GRANT PROGRAM —

(1) STATE GRANTS -- The Director may, at the recommendation of the Task Force, make grants to States with management plans approved under subsection (a) for the implementation of those plans.

(2) APPLICATION -- An application for a grant under this subsection shall include an identification and description of the best management practices and measures which the State proposes to utilize in implementing an approved management plan with any Federal assistance to be provided under the grant.

(3) FEDERAL SHARE —

(A) The Federal share of the cost of each comprehensive management plan implemented with Federal assistance under this section in any fiscal year shall not exceed 75 percent of the cost incurred by the State in implementing such management program and the non-Federal share of such costs shall be provided from non-Federal sources.

(B) The Federal share of the cost of each public facility management plan implemented with Federal assistance under this section in any fiscal year shall not exceed 50 percent of the cost incurred by the State in implementing such management program and the non-Federal share of such costs shall be provided from non-Federal sources.

(4) ADMINISTRATIVE COSTS -- For the purposes of this section, administrative costs for activities and programs carried out with a grant in any fiscal year shall not exceed 5 percent of the amount of the grant in that year.

(5) IN-KIND CONTRIBUTIONS -- In addition to cash outlays and payments, in-kind contributions of property or personnel services by non-Federal interests for activities under this section may be used for the non-Federal share of the cost of those activities.

(c) ENFORCEMENT ASSISTANCE -- Upon request of a State or Indian Tribe, the Director or Under Secretary, to the extent allowable by law and in a manner consistent with section 141 of title 14, United States Code, may provide assistance to a State or Indian Tribe in enforcing an approved State or interstate invasive species management plan.

EXECUTIVE ORDER 13112

Executive Order 13112 of February 3, 1999

Invasive Species

By the authority vested in me as President by the Constitution and the laws of the United States of America, including the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.), Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, as amended (16 U.S.C. 4701 et seq.), Lacey Act, as amended (18 U.S.C. 42), Federal Plant Pest Act (7 U.S.C. 150aa et seq.), Federal Noxious Weed Act of 1974, as amended (7 U.S.C. 2801 et seq.), Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.), and other pertinent statutes, to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause, it is ordered as follows:

Section 1. Definitions.

- (a) "Alien species" means, with respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem.
- (b) "Control" means, as appropriate, eradicating, suppressing, reducing, or managing invasive species populations, preventing spread of invasive species from areas where they are present, and taking steps such as restoration of native species and habitats to reduce the effects of invasive species and to prevent further invasions. "
- (c) "Ecosystem" means the complex of a community of organisms and its environment.
- (d) "Federal agency" means an executive department or agency, but does not include independent establishments as defined by 5 U.S.C. 104. (e) "Introduction" means the intentional or unintentional escape, release, dissemination, or placement of a species into an ecosystem as a result of human activity.
- (f) "Invasive species" means an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health.
- (g) "Native species" means, with respect to a particular ecosystem, a species that other than as a result of an introduction, historically occurred or currently occurs in that ecosystem.
- (h) "Species" means a group of organisms all of which have a high degree of physical and genetic similarity, generally interbreed only among themselves, and show persistent differences from members of allied groups of organisms.
- (i) "Stakeholders" means, but is not limited to, State, tribal, and local government agencies, academic institutions, the scientific community, nongovernmental entities including environmental, agricultural, and conservation organizations, trade groups, commercial interests, and private landowners.
- (j) "United States" means the 50 States, the District of Columbia, Puerto Rico, Guam, and all possessions, territories, and the territorial sea of the United States.

Sec. 2. Federal Agency Duties. (a) Each Federal agency whose actions may affect the status of invasive species shall, to the extent practicable and permitted by law.

1) identify such actions;

2) subject to the availability of appropriations, and within Administration budgetary limits, use relevant programs and authorities to: (i) prevent the introduction of invasive species; (ii) detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner; (iii) monitor invasive species populations accurately and reliably; (iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded; (v) conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species; and (vi) promote public education on invasive species and the means to address them; and

3) not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.

(b) Federal agencies shall pursue the duties set forth in this section in consultation with the Invasive Species Council, consistent with the Invasive Species Management Plan and in cooperation with stakeholders, as appropriate, and, as approved by the Department of State, when Federal agencies are working with international organizations and foreign nations.

Sec. 3. Invasive Species Council. (a) An Invasive Species Council (Council) is hereby established whose members shall include the Secretary of State, the Secretary of the Treasury, the Secretary of Defense, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce, the Secretary of Transportation, and the Administrator of the Environmental Protection Agency. The Council shall be Co-Chaired by the Secretary of the Interior, the Secretary of Agriculture, and the Secretary of Commerce. The Council may invite additional Federal agency representatives to be members, including representatives from subcabinet bureaus or offices with significant responsibilities concerning invasive species, and may prescribe special procedures for their participation. The Secretary of the Interior shall, with concurrence of the Co-Chairs, appoint an Executive Director of the Council and shall provide the staff and administrative support for the Council.

(b) The Secretary of the Interior shall establish an advisory committee under the Federal Advisory Committee Act, 5 U.S.C. App., to provide information and advice for consideration by the Council, and shall, after consultation with other members of the Council, appoint members of the advisory committee representing stakeholders. Among other things, the advisory committee shall recommend plans and actions at local, tribal, State, regional, and ecosystem-based levels to achieve the goals and objectives of the Management Plan in section 5 of this order. The advisory committee shall act in cooperation with stakeholders and existing organizations addressing invasive species. The Department of the Interior shall provide the administrative and financial support for the advisory committee.

Sec. 4. Duties of the Invasive Species Council. The Invasive Species Council shall provide national leadership regarding invasive species, and shall:

- (a) oversee the implementation of this order and see that the Federal agency activities concerning invasive species are coordinated, complementary, cost-efficient, and effective, relying to the extent feasible and appropriate on existing organizations addressing invasive species, such as the Aquatic Nuisance Species Task Force, the Federal Interagency Committee for the Management of Noxious and Exotic Weeds, and the Committee on Environment and Natural Resources;
- (b) encourage planning and action at local, tribal, State, regional, and ecosystem-based levels to achieve the goals and objectives of the Management Plan in section 5 of this order, in cooperation with stakeholders and existing organizations addressing invasive species;
- (c) develop recommendations for international cooperation in addressing invasive species; develop, in consultation with the Council on Environmental Quality, guidance to Federal agencies pursuant to the National Environmental Policy Act on prevention and control of invasive species, including the procurement, use, and maintenance of native species as they affect invasive species;
- (d) facilitate development of a coordinated network among Federal agencies to document, evaluate, and monitor impacts from invasive species on the economy, the environment, and human health;
- (e) facilitate establishment of a coordinated, up-to-date information-sharing system that utilizes, to the greatest extent practicable, the Internet; this system shall facilitate access to and exchange of information concerning invasive species, including, but not limited to, information on distribution and abundance of invasive species; life histories of such species and invasive characteristics; economic, environmental, and human health impacts; management techniques, and laws and programs for management, research, and public education; and
- (f) prepare and issue a national Invasive Species Management Plan set forth in section 5 of this order.

Sec. 5. Invasive Species Management Plan. (a) Within 18 months after issuance of this order, the Council shall prepare and issue the first edition of a National Invasive Species Management Plan (Management Plan), which shall detail and recommend performance-oriented goals and objectives and specific measures of success for Federal agency efforts concerning invasive species. The Management Plan shall recommend specific objectives and measures for carrying out each of the Federal agency duties established in section 2

(a) of this order and shall set forth steps to be taken by the Council to carry out the duties assigned to it under section 4 of this order. The Management Plan shall be developed through a public process and in consultation with Federal agencies and stakeholders.

(b) The first edition of the Management Plan shall include a review of existing and prospective approaches and authorities for preventing the introduction and spread of invasive species, including those for identifying pathways by which invasive species are introduced and for minimizing the risk of introductions via those pathways, and shall identify research needs and recommend measures to minimize the risk that introductions will occur. Such recommended measures shall provide for a science-based process to evaluate risks associated with introduction and spread of invasive species and a coordinated and systematic risk-based process to identify, monitor, and interdict pathways that may be involved in the introduction of invasive species. If recommended measures are not authorized by current law, the Council shall develop and

recommend to the President through its Co-Chairs legislative proposals for necessary changes in authority.

(c) The Council shall update the Management Plan biennially and shall concurrently evaluate and report on success in achieving the goals and objectives set forth in the Management Plan. The Management Plan shall identify the personnel, other resources, and additional levels of coordination needed to achieve the Management Plan's identified goals and objectives, and the Council shall provide each edition of the Management Plan and each report on it to the Office of Management and Budget. Within 18 months after measures have been recommended by the Council in any edition of the Management Plan, each Federal agency whose action is required to implement such measures shall either take the action recommended or shall provide the Council with an explanation of why the action is not feasible. The Council shall assess the effectiveness of this order no less than once each 5 years after the order is issued and shall report to the Office of Management and Budget on whether the order should be revised.

Sec. 6. Judicial Review and Administration. (a) This order is intended only to improve the internal management of the executive branch and is not intended to create any right, benefit, or trust responsibility, substantive or procedural, enforceable at law or equity by a party against the United States, its agencies, its officers, or any other person.

(b) Executive Order 11987 of May 24, 1977, is hereby revoked.

(c) The requirements of this order do not affect the obligations of Federal agencies under 16 U.S.C. 4713 with respect to ballast water programs.

(d) The requirements of section 2(a)(3) of this order shall not apply to any action of the Department of State or Department of Defense if the Secretary of State or the Secretary of Defense finds that exemption from such requirements is necessary for foreign policy or national security reasons.

WILLIAM J. CLINTON

THE WHITE HOUSE,
February 3, 1999.

Other relevant Acts are detailed below

1931 Animal Damage Control Act

Under the Animal Damage Control Act, the U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service has authority to control wildlife damage on federal, state, or private land, including damage from invasive species. The act protects field crops, vegetables, fruits, nuts, horticultural crops and commercial forests; freshwater aquaculture ponds and marine species cultivation areas; livestock on public and private range and in feedlots; public and private buildings and facilities; civilian and military aircraft; and public health.

<http://www.aphis.usda.gov/>

1960 The Sikes Act (16 USC 670a-670o, 74 Stat. 1052), as amended, Public Law 86-797-

The Sikes Act provides for cooperation by the Departments of the Interior and Defense with State agencies in planning, development and maintenance of fish and wildlife resources on military installations throughout the United States. Military installations with significant natural

resources are required to prepare in cooperation with the Department of the Interior and State agencies integrated natural resources management plans (INRMPs) [including invasive species management]. The Sikes Act also requires that the Secretary of the Interior, in consultation with state fish and wildlife agencies, to submit a report annually to respective Congressional committees with oversight responsibilities on the amounts expended by Interior and state fish and wildlife agencies on activities conducted [including invasive species management] pursuant to INRMP's. In 2009 the Sikes Act was amended to clarify the authority of the Department of Defense to enter into interagency agreements with other federal agencies to implement natural resource programs [including invasive species management] on military installations. In 2010 the Sikes Act was amended again to include state-owned lands supporting National Guard facilities to the requirements of the Sikes Act.

1970 National Environmental Policy Act (NEPA; 42 U.S.C.A. §§ 4321 to 4370e)

NEPA requires federal agencies to integrate environmental values into their decision making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions. To meet NEPA requirements federal agencies prepare a detailed statement known as an Environmental Impact Statement (EIS). EPA reviews and comments on EISs prepared by other federal agencies, maintains a national filing system for all EISs, and assures that its own actions comply with NEPA.

<http://www.epa.gov/compliance/nepa/index.html>

1972 Clean Water Act

Administered by the Environmental Protection Agency, the Clean Water Act strives to eliminate introduction of toxic substances into waters of the United States to ensure that surface waters are suitable for human sports and recreation. Additionally the Clean Water Act regulates discharge of dredge and fill materials into wetlands; enforcement as it relates to wetlands is coordinated by the U.S. Army Corps of Engineers. Various sections of the Clean Water Act regulate discharges of pollutants (such as ANS and ballast water) and fill material to waters of the United States. Section 402 of the act authorizes the National Pollutant Discharge Elimination System (NPDES), a permit program intended to reduce and eliminate the discharge of pollutants from point sources that threaten to impair beneficial uses of water bodies. The act defines point sources to include vessels (Section 502(14)) and prohibits all point source discharges of pollutants into U.S. waters unless a permit has been issued either under Section 402 (NPDES) or Section 404 (dredge and fill activities). <http://www.epa.gov/r5water/cwa.htm>, <http://unds.bah.com/default.htm>

1973 Endangered Species Act (ESA; 16 U.S.C.A. §§ 1531 to 1544):

The U.S. Fish and Wildlife Service administers the Endangered Species Act as part of its authority to effect ANS impacts that could extend to a listed species or listed critical habitat. The act, which is Public Law 93-205, has experienced several amendments across the years, and at its onset repealed the Endangered Species Conservation Act of 1969. The 1969 Act had amended the Endangered Species Preservation Act of 1966. The ESA aims to protect endangered and threatened species. When non-native invasive species threaten endangered species, this act could be used as basis for their eradication or control by the USFWS or by the National Oceanic and Atmospheric Administration– National Marine Fisheries Service (NOAA-Fisheries Service) The potential to harm a federally listed species and the need to obtain a permit from the USFWS or

NOAA-Fisheries Service should be taken into consideration when selecting methods to manage ANS. <http://www.fws.gov/endangered/>

1974 Federal Noxious Weed Act (7 U.S.C. § 360)

Enacted January 3, 1975, this established a Federal program to control the spread of noxious weeds. The Secretary of Agriculture was given the authority to designate plants as noxious weeds by regulation, and the movement of all such weeds in interstate or foreign commerce was prohibited except under permit. The Secretary was also given authority to inspect, seize and destroy products, and to quarantine areas, if necessary to prevent the spread of such weeds. He was also authorized to cooperate with other Federal, State and local agencies, farmers associations and private individuals in measures to control, eradicate, or prevent or retard the spread of such weeds. Section 15 of the Federal Noxious Weed Act requires federal land management agencies to develop and establish a management program for control of undesirable plants that are classified under state or federal law as undesirable, noxious, harmful, injurious or poisonous, on federal lands under the agency's jurisdiction (7 U.S.C. 2814(a)). The act also requires the federal land management agencies to enter into cooperative agreements to coordinate the management of undesirable plant species on federal lands where similar programs are being implemented on state and private lands in the same area (7 U.S.C. 2814(c)). The Secretaries of Agriculture and the Interior must coordinate their respective control, research and educational efforts relating to noxious weeds (7 U.S.C. 2814(f)). USDA's Departmental Regulation 9500-10 sets forth departmental policy relating to the management and coordination of noxious weeds activities among the agencies within USDA and other entities.

1976 National Forest Management Act, 1976 Federal Land Policy Management Act, and the 1916 National Park Act

Administered by the U.S. Forest Service, Bureau of Land Management, and National Park Service, respectively, these acts regulate native species, non-indigenous species introductions and habitat health on federal land.

2000 Plant Protection Act (7 U.S.C. 7701)

Administered by the U.S. Department of Agriculture Animal and Plant Health Inspection Service, the Plant Protection Act prohibits introduction and dissemination of plant pests and noxious weeds. The Plant Protection Act (PPA) authorizes the USDA to prohibit or restrict the importation or interstate movement of any plant, plant product, biological control organism, noxious weed, article or means of conveyance if the Secretary of Agriculture determines that the prohibition or restriction is necessary to prevent the introduction into the United States, or the dissemination within the United States, of a plant pest or noxious weed. The PPA specifically authorizes USDA to develop integrated management plans for noxious weeds for the geographic region or ecological range where the noxious weed is found in the United States. In addition, the act authorizes the USDA to cooperate with other federal agencies or entities, states or political subdivisions of states, national governments, local governments of other nations, domestic or international organizations or associations, and other persons to carry out the provisions of the act. <http://www.aphis.usda.gov/>

2002 Animal Health Protection Act (7 U.S.C Sec. 8301, et seq.)

The Animal Health Protection Act provides a flexible statutory framework for protecting domestic livestock from foreign pests and diseases. This act authorizes the USDA to promulgate regulations and take measures to prevent the introduction and dissemination of pests and diseases of livestock. The scope of such regulatory authority extends to the movement of all animals, domestic and wild, except humans. The fact that a pest or disease primarily affects animals other than livestock, including humans, does not limit USDA's authority to regulate a species, so long as it carries a pest or disease of livestock. Further, the act defines "livestock" to mean all farm-rANSed animals, clarifying the USDA's authority to conduct animal health protection activities in connection with farm-rANSed aquatic animals. <http://www.aphis.usda.gov/>

2008 Lacey Act (18 U.S.C. 42 through regulations contained in 50 CFR part 16):

The U.S. Fish and Wildlife Service, amongst other agencies, administer the Lacey Act, which is Public Law 110-246, as part of their authority to prohibit trade in wildlife, fish, and plants that have been illegally taken, possessed, transported or sold. The act, originally passed in 1900, has been amended several times; the most significant ones occurred in 1969, 1981, 1988 and 2008. The act further regulates activities involving specified species deemed to be injurious to the United States. As the first federal act that tried to control importations of nonindigenous species, the Lacey Act prohibits the importation and interstate transport of designated mammals, birds, amphibians, reptiles, fish, crustaceans, mollusks that are injurious to the interests of human beings, agriculture, horticulture, forestry, wildlife or wildlife resources of the United States. The Lacey Act allows for the import of species for scientific, medical, educational or zoological purposes. The USFWS is the lead agency for enforcing the Lacey Act. <http://www.fws.gov/laws/lawsdigest/lacey.html>

FEDERAL AGENCIES ARE DETAILED BELOW

U.S. Fish and Wildlife Service

USFWS has multiple programs that address ANS management. USFWS serves as co-chair of the Federal ANSTF and is the agency that provides federal funding for the implementation of Task Force approved state ANS management plans. USFWS also provides technical assistance to states regarding ANS management. USFWS administers the Lacey Act, which prohibits importation and interstate transport of listed species. USFWS prevention programs include the 100th Meridian Initiative, which focuses on preventing the western spread of zebra mussels. In cooperation with the USGS, USFWS supports the national ANS reporting hotline (1-877-STOP-ANS). USFWS refuges support invasive species control programs as part of their overall habitat restoration activities. <http://www.fws.gov/>, <http://www.100thmeridian.org>

U.S. Geological Survey (USGS)

USGS acknowledged its role in non-native species management in a White Paper on Invasive Species, which identifies the goal of developing new strategies for the prevention, early detection and prompt eradication of new invaders. The USGS further identifies information management and documentation of invasions as a priority for the agency. In keeping with this objective, the USGS developed and maintains an extensive, spatially referenced database of non-native species, which is accessible online. <http://www.usgs.gov> <http://nas.er.usgs.gov/>

Bureau of Reclamation

The Bureau of Reclamation is involved in several important projects related to this issue. The Bureau is investigating more effective coatings for preventing the settlement of quagga and zebra mussels and has partnered with a private company to investigate the potential biological control of these species through the use of native bacteria. <http://www.usbr.gov/>

U.S. Army Corps of Engineers

The COE provides engineering, construction and environmental project services for the military and local governments. Congress authorizes the COE to assist local governments with water resource development needs, which include flood control, navigation, ecosystem restoration and watershed planning. For ecosystem restoration, this includes research on invasive species. Specific programs addressing invasive species issues include the Aquatic Nuisance Species Research Program, the Aquatic Plant Control Research Program and the Water Operations Technical Support Program. COE is also responsible for permitting aquaculture projects, including oyster farms, which often involves ANS considerations. It is the policy of the Corps of Engineers to develop, control, maintain, and conserve the nation's water resources in accordance with the laws and policies established by Congress and the Administration. The Corps' Zebra Mussel Research Program (ZMRP) was authorized by the Non-indigenous Aquatic Nuisance Prevention and Control Act of 1990, Public Law 101-646, and is the only federally authorized research program for the development of technology to control zebra mussels. The Corps ANS programs were integrated into the ANS Task Force to ensure total coordination and leveraging to address all ANS issues. <http://www.usace.army.mil/>

National Oceanic and Atmospheric Administration (NOAA)

NOAA is the primary federal agency charged with management of marine resources. NOAA is the co-chair of the ANSTF and has been designated the Department of Commerce lead as co-chair of the National Invasive Species Council. <http://www.noaa.gov/>

National Marine Fisheries Service (NOAA – Fisheries Service)

NOAA-Fisheries Service is in charge sustaining the nation's marine fisheries, many of which are being directly impacted by ANS. <http://www.nmfs.noaa.gov/>

National Sea Grant (NOAA – Sea Grant)

The National Sea Grant Program is a partnership between the nation's universities and NOAA (under the Office of Oceanic and Atmospheric Research) that began in 1966.

<http://www.seagrant.noaa.gov/>

National Park Service

NPS strives to preserve the unimpaired natural and cultural resources of the national park system for the enjoyment, education and inspiration of this and future generations. The Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country. Finally, the NPS actively supports and hosts research projects on impacts of invasive species on ecological communities. www.nps.gov

U.S. Coast Guard

The U.S. Coast Guard gets its authority to regulate ballast water and ANS from NANPCA and NISA. NANPCA directed the Coast Guard to issue regulations and guidelines to control the

introduction and spread of ANS in the Great Lakes ecosystem. It also required an assessment of ballast water management practices in all U.S. ports. NISA tasked the Coast Guard with establishing a voluntary ballast water management (BWM) program for virtually all U.S. ports. The Coast Guard's BWM program is the primary emphasis related to ANS in the inland river system. Current Coast Guard efforts include establishing mandatory BWM standards and practices, establishing a program to approve ballast water treatment technologies, establishing penalties for failure to submit required reports, and increasing the applicability to all ships with ballast water tanks bound for all ports or places in U.S. waters. USCG activities focus on enforcement and monitoring to ensure compliance with the program, which includes regular onboard inspections. However, USCG activities related to ANS are diverse. The agency is working on the development of chemical and engineering methods to verify that a mid-ocean ballast water exchange has occurred. It is also evaluating technologies for the treatment of ballast water. USCG has determined that due to difficulties in establishing the effectiveness of ballast water exchange as it varies across ship types, voyages and from tank to tank, treatment technologies are best evaluated through a ballast water discharge standard (a benchmark for maximum numbers of organisms that may be discharged in ballast water). Such a standard will not only be helpful in evaluating the effectiveness of treatment technologies but also clearly establish when the ballast water no longer contains quantities of organisms that pose a significant risk. <http://www.uscg.mil/hq/g-m/mso/bwm.htm>

U.S. Department of Agriculture

USDA provides leadership on food, agriculture, natural resources and related issues. USDA conducts a number of programs and activities related to invasive species. USDA's Animal and Plant Health Inspection Service (APHIS) serves to facilitate safe international trade, monitor the health of animals and plants presented at the border, and regulate the import and export of plants and animals, plant and animal products, and biologicals. It also protects and improves the health, quality, and marketability of our nation's animals (including various wildlife), animal products, and veterinary biologics. The Plant Protection and Quarantine (PPQ) is a program within APHIS that safeguards agriculture and natural resources from the risks associated with the entry, establishment, or spread of animal and plant pests and noxious weeds to ensure an abundant, high-quality, and varied food supply. APHIS deals with invaders like the South American wetland rodent, nutria, in the Mississippi Delta region and has also worked on other invasive animal, fish and crab problems around the country. APHIS has done extensive noxious weed work, including exclusion, permitting, eradication of incipient infestations, surveys, data management, public education, and (in cooperation with other agencies) integrated pest management of introduced weeds, including biological control. Aquatic weeds are included in the federal noxious weed list through the APHIS Cooperative Agricultural Pest Survey (CAPS). Scientists at these facilities are responsible for research, the transfer of technology for improvement of management and control, and eradication of invasive aquatic and riparian weeds affecting agriculture and natural resources. These projects address three current ARS program priorities: 1) the reduction of dependence on pesticide use (specifically herbicides); 2) implementation of Executive Order 13112 (see above subsection on this order); and 3) water quality improvement. Research is conducted on the biology, reproduction, ecology, management or eradication of several important invasive aquatic weeds. The program provides technology transfer for the eradication and management of several problem species. <http://www.aphis.usda.gov/>, <http://www.ars.usda.gov/main/main.htm>

USDA Natural Resources Conservation Service

The Farm Bill, administered by the Natural Resources Conservation Service, working in close partnership with Nebraska's Conservation Districts, strives to improve private agricultural lands for wildlife habitat and agricultural purposes. In part, they target management of ANS as they affect production of crops or product from private land. **Note:** the Natural Resources Conservation Service manages the National Invasive Species Information Center www.invasivespeciesinfo.gov.

U.S. Forest Service

The U.S. Forest Service uses multiple authorities to manage aquatic and terrestrial invasive species (including vertebrates, invertebrates, plants, and pathogens), derived from laws enacted by Congress that authorize the Secretary of Agriculture to administer the agency (particularly the 193 million-acre National Forest System) and other resources and to issue necessary regulations. Many of these authorities have subsequently been delegated from the Secretary to the Chief of the U.S. Forest Service. Forest Service invasive species activities are guided by the agency's National Strategy and Implementation Plan for Invasive Species Management (2004) and other associated policies and program plans. The U.S. Forest Service uses its authorities and broad base of expertise to conduct activities to prevent, detect, control, mitigate, and research aquatic and terrestrial invasive species across a wide variety of landscapes and agency programs, including Forest Service Research and Development, State and Private Forestry, International Programs, and the National Forest System. The U.S. Forest Service emphasizes an integrated pest management approach against aquatic and terrestrial invasive species, utilizing a science-based structured decision-making process to prioritize activities across landscapes, and incorporates invasive species management considerations into Forest Land and Resource Management Planning efforts (Forest Plans) nationwide. The U.S. Forest Service provides technical and financial support to States and local organizations to address complex invasive species problems and establishment of cooperative partnerships against aquatic and terrestrial invasive species. The U.S. Forest Service participates on local, regional, and national invasive species coalitions and committees; including the Aquatic Nuisance Species Task Force and various ANS Regional Panels.

U.S. Environmental Protection Agency (USEPA)

USEPA leads the nation's environmental science, research, education and assessment efforts. It develops and enforces regulations, offers financial assistance, performs environmental research, sponsors voluntary partnerships and programs, furthers environmental education and publishes information. USEPA is responsible for enforcing the Clean Water Act (CWA). USEPA released its *EPA Authorities for Natural Resource Managers Developing Aquatic Invasive Species Rapid Response and Management Plans* in December 2005. This document provides an overview of USEPA authorities that apply to state or local ANS rapid response and control actions. The document summarizes relevant sections of the CWA and the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA); summarizes how to apply for CWA Section 404 permits to discharge dredged or fill material; summarizes how to apply for FIFRA Section 18 emergency exemptions and FIFRA Section 24(c) special local need registrations; and describes case studies in which state and local natural resource managers successfully obtained FIFRA emergency exemptions

and special local need registrations for ANS eradication or control actions.
http://www.epa.gov/owow/invasive_species

Federal and National Programs are detailed below

Aquatic Nuisance Species Task Force is an intergovernmental organization dedicated to preventing and controlling aquatic nuisance species, and implementing the Nonindigenous Aquatic Nuisance Prevention and Control Act (NANPCA) of 1990. The Task Force consists of 13 Federal agency representatives and 12 Ex-officio members, and is co-chaired by the U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration. The Task force coordinates governmental efforts dealing with ANS in the U.S. with those of the private sector and other North American interests via regional panels and issue specific committees and work group. Information can be found at: <http://www.anstaskforce.gov>.

100th Meridian Initiative is a cooperative effort between local, state, provincial, regional and federal agencies to prevent the westward spread of zebra/quagga mussels and other aquatic nuisance species in North America. The goals of this Initiative are to 1) prevent the spread of zebra mussels and other aquatic nuisance species in the 100th meridian jurisdictions and west and 2) monitor and control zebra mussels and other aquatic nuisance species if detected in these areas. Information can be found at: <http://www.100thmeridian.org/>.

Stop Aquatic Hitchhikers Campaign through the 'Protect Your Waters' website empower recreational users to become part of the solution in stopping the transport and spread of these harmful hitchhikers. It provides a valuable resource for ANS managers and researchers on recent ANS news, current contacts, and outreach resources. The national Aquatic Nuisance Species (ANS) Task Force, the U.S. Fish and Wildlife Service and the U.S. Coast Guard are the primary sponsors of this campaign. Information can be found at: <http://www.protectyourwaters.net/>.

USGS NAS website was established as a central repository for spatially referenced biogeographic accounts of introduced aquatic species. The program provides scientific reports, online/real-time queries, spatial data sets, regional contact lists, and general information. The data is made available for use by biologists, interagency groups, and the general public. The geographical coverage is the United States. Information can be found at: <http://nas.er.usgs.gov/>.

The Center for Aquatic and Invasive Plants is a multidisciplinary research, teaching and extension unit directed to develop environmentally sound techniques for the management of aquatic and natural area weed species and to coordinate aquatic plant research activities within the State of Florida. The Center was established in 1978 by the Florida legislature. Directed by Dr. William Haller, the Center utilizes expertise from many departments within UF/IFAS and its Agricultural Research and Education Centers throughout Florida. While house in Florida, the Center is a valuable resource for all aquatic and invasive plant information. As such, the mission of the CAIP Information Office is to inform and educate all stakeholders about the impacts and management of invasive plants. Information can be found at: <http://plants.ifas.ufl.edu/>.

North American Weed Management Association is a network of public and private professional weed managers who are involved in implementing any phase of a county, municipal, district, state, provincial or federal noxious weed law. There are active state weed and roadside vegetation associations and societies devoted to weed science organizations. Other organizations

focus on federal legislation and others are comprised of federal and state middle level managers. Information can be found at: <http://www.nawma.org/index.html>.

National Invasive Species Council was established by [Executive Order \(EO\) 13112](#) to ensure that Federal programs and activities to prevent and control invasive species are coordinated, effective and efficient. They provide high-level interdepartmental coordination of federal invasive species actions and works with other federal and non-federal groups to address invasive species issues at the national level. The National Invasive Species Council is also a valuable resource for all invasive species information. Their website is: <http://www.invasivespecies.gov/>.

NatureServe is a non-profit conservation organization whose mission is to provide the scientific basis for effective conservation action. NatureServe and its network of natural heritage programs are the leading source for information about rare and endangered species and threatened ecosystems. With support from the National Fish and Wildlife Foundation and the Turner Foundation, NatureServe and The Nature Conservancy have developed methods for assessing the invasiveness of non-native species. These assessments are designed to identify those invasive species that warrant particular attention based on their potential to cause ecological problems. NatureServe is also working collaboratively with the U.S. Geological Survey to integrate databases on the distribution and condition of native fishes with databases documenting the distribution of non-native fish species. Information can be found at: <http://www.natureserve.org>.

The Nature Conservancy has more than two decades of experience controlling invasive species and lessening their impact on native plants and animals. They began by working on a network of private reserves across the United States, later broadening our scope to work with other land managers and communities around the world to tackle invaders across public and private lands and waters. The Nature Conservancy is addressing the threat of invasive species by: providing science based solutions, managing invasions and restoring habitats, encouraging better business practices, promoting stronger public policies. Information can be found at: <http://www.nature.org/initiatives/invasivespecies/>

National Institute of Invasive Species Science is a consortium of government and non-government organizations formed to develop cooperative approaches for invasive species science that meet the urgent needs of land managers and the public. Administratively housed at the U.S. Geological Survey Fort Collins Science Center in Colorado, the National Institute of Invasive Species Science provides a hub for invasive species science collaboration, coordination, and integration across agencies and disciplines. Information can be found at: <http://www.niiss.org>.

Center for Wildlife Damage Management is a non-profit, grant funded site that provides research-based information on how to responsibly handle wildlife damage problems. The Center aims to consolidate existing and future information on integrated pest management (IPM) in wildlife damage management and to increase adoption of IPM practices in wildlife damage management by centralizing resources. The website provides educational resources for pest management and invasive species and is found at: <http://icwdm.org/>.

Center for Aquatic Nuisance Species is working to slow, reduce and eliminate the spread of ANS by providing solutions to long-identified problems that must be addressed. By focusing on

scientific research, education programs and policy development CANS will help to engage people in the cooperative effort to reduce spread. Information can be found at: <http://stopans.org>.

REGIONAL

The Western Regional Panel

The Western Regional Panel (WRP) on Aquatic Nuisance Species was formed under a provision in NISA. The WRP was formed to help limit the introduction, spread, and impacts of aquatic nuisance species into western North America. This panel includes representatives from federal, state and local agencies and from private environmental and commercial interests.

The purposes of the WRP, as described in NISA, are to:

- identify Western Region priorities for responding to aquatic nuisance species
- make recommendations to the Federal ANS Task Force regarding an education, monitoring (including inspection), prevention, and control program to prevent the spread of the zebra mussel west of the 100th Meridian
- coordinate, where possible, other aquatic nuisance species program activities in the West not conducted pursuant to the Act
- develop an emergency response strategy for federal, state, and local entities for stemming new invasions of aquatic nuisance species in the region
- provide advice to public and private individuals and entities concerning methods of preventing and controlling aquatic nuisance species infestations
- submit an annual report to the Federal ANS Task Force describing activities within the western region related to aquatic nuisance species prevention, research and control

Mississippi River Basin Panel

The Mississippi Interstate Cooperative Resource Association (MICRA) has hosted the Mississippi River Basin Panel on Aquatic Nuisance Species (MRBP) since 2003 under the oversight of the National ANS Task Force headquartered in Washington, D.C. The MRBP project area includes the entire Mississippi River Basin, the largest watershed in the United States (see map below). Details on formation of the MRBP can be found on our Panel Formation page. The MRBP adopted a formal Operational Guidance Document on July 15, 2006.

The roles and responsibilities of the MRBP include the following:

- Identify priorities for activities in the Mississippi River Basin (Basin),
- Develop and submit recommendations to the national Aquatic Nuisance Species Task Force (ANSTF) (established via Public Law 101-646),
- Coordinate aquatic nuisance species program activities in the Basin,
- Advise public and private interests on control efforts, and
- Submit an annual report to the ANSTF describing prevention, research and control activities in the Basin.

Western Governors' Association

The Western Governors' Association (WGA) is developing a new program to address undesirable non-indigenous aquatic and terrestrial species in the West because of the significant

economic and ecological harm they cause. On June 30, 1998, the Western Governors passed Resolution 98-018, Undesirable Aquatic and Terrestrial Species, to develop and coordinate Western strategies and to support management actions to control and prevent the spread and introduction of undesirable species; to support the use of Integrated Pest Management concepts; to encourage broad-based partnerships; and to urge adequate support for the U.S. Department of Agriculture – Animal and Plant Health Inspection Service. Then on June 23, 2002, the Western Governor’s passed follow-up Policy Resolution 02-21, Undesirable Aquatic, Riparian, and Invasive Species. A copy of this Policy resolution is in **Appendix A**. This additional resolution reaffirmed the WGA’s commitment to this issue and among other things added riparian systems to the action list. WGA has formed a working group of state and federal agencies, industry, non-governmental organizations and academia to develop Western strategies to limit the spread of these species.

The Missouri River Watershed Coalition

The Montana, North Dakota, South Dakota, Wyoming, Nebraska and Colorado departments of agriculture signed a Memorandum of Agreement in 2006 and an MOA Addendum in 2008 to coordinate the management of invasive plant species in the six-state area. Saltcedar was the first species targeted. MWRC membership—agency personnel, businesses, universities, conservation groups, and private landowners—have drafted a Saltcedar Management Plan for the Missouri River watershed. In May 2008, the Center agreed to provide coordination for the Missouri River Watershed Coalition, a six-state coalition to develop management strategies and priorities for invasive plants and water resources in the region.

Missouri River Futures

Missouri River Futures was established in 2004 to coordinate efforts from various agencies and private landowners on Missouri River issues. MRF primarily focuses its efforts on the 39-mile and 59-mile segments of the Missouri National Recreational River (MNRR). Over 35 different federal, state, local, and nonprofit organizations are working on issues regarding the MNRR

STATE

Nebraska Game and Parks Commission

The mission of the Nebraska Game and Parks Commission is stewardship of the state’s fish, wildlife, park, and outdoor recreation resources in the best long-term interests of the people and those resources. To accomplish that purpose, the Commission plans and implements its policies and programs efficiently and objectively; maintains a rich and diverse environment in Nebraska’s lands and waters; provides outdoor recreation opportunities; manages wildlife resources for the maximum benefit of the people; and attempts to help Nebraskans appreciate their role in the natural world. Specific rules and regulations under Nebraska Game and Parks Commission authority

The following existing policies relative to Nebraska’s management of ANS are administered by the Nebraska Game and Parks Commission.

Commercial Put and Take Fisheries Regulations (163-001)

163-001-07B Prohibits importation of live fish without being inspected for Viral Hemorrhagic Septicemia (VHS), Spring Viremia (SVCV), Largemouth Bass Virus (LMBV), and Heterosporis.

163-001-12B Imposes immediate import prohibition upon identification of VHS, Infectious Pancreatic Necrosis (IPN), Infectious Hematopoietic Necrosis (IHN), *Renibacterium salmoninarum* (Bacterial Kidney Disease-BKD), *Yersinia ruckeri* (Enteric Redmouth Disease-ERM), *Aeromonas salmonicida* (Furunculosis), *Myxobolus (Myxosoma) cerebralis* (Whirling Disease-WHD), LMBV, and Heterosporis.

163-002-01 Prohibits stock of any species of fish, mollusk, amphibians, or crustaceans without permit

163-002-02 Prohibits the sale or offer of carp, carpsucker, buffalo, gar, quillback, or bowfin as bait.

163-002-03 Prohibits importation or transportation of live amphibians (as listed in section 009), fish, mollusks, or crustaceans into the state without permit (see species list **Appendix B.2**).

163-002-03C Prohibits the purchase, selling, trading, or bartering (or possession) of live members of the family Channidae (snakeheads)

163-002-05 Lists fish, mollusks, amphibians, and crustaceans as non-injurious (economically and ecologically) and therefore may be imported into the state by permit, but not intentionally released in to the wild (see species list **Appendix B.2**).

163-005-03A Prohibits un-permitted aquaculture stocking or transfer of fish infected with BKD, ERM, Furunculosis, VHS, IPN, IHN, EED, OMV, SVCV, WHD, or Heterosporis.

163-005-03B Prohibits un-permitted release of any aquatic organism in to public waters

163-005-03C Lists aquatic organisms approved for importation under an aquaculture permit (see species list, **Appendix B.3**).

163-006-03D1 Prohibits the giving, putting, or leaving of any fish, bullfrogs, snapping turtles, or mussels at any place or in the custody of another person unless tagged by the angler.

163-006-03Y Prohibits the transportation or possession of live white perch away from the water body from which they were captured.

163-009 Lists which species are identified as baitfish (see species list, **Appendix B.1**).

163-009-01A1 Prohibits the sale, import, transport or offer for sale as bait, any live species not defined as baitfish, except alewife and gizzard may not be sold, imported, or transported from the water body in which they were taken. Live black bullhead, yellow bullhead, bowfin, buffalo, carp, carpsucker, gar, gizzard shad, alewife, or quillback may be used for bait only in the same waters from which they are legally taken.

163-009-02 Provides details as to the legal transport of baitfish taken from the waters of Nebraska out of the State

163-009-03C Prohibits transport away from the river any baitfish collected on the Missouri River below Gavin's Point Dam

163-009-04G Prohibits bait dealers from taking baitfish from the Missouri River below Gavin's Point Dam downstream

Nebraska Department of Agriculture

Exotic Animal Auctions or Swap Meet Statutes 54-7,105 - 54-7,108 Authorizes the Bureau of Animal Industry to require exotic animal auction or swap meet organizers to notify the bureau of any scheduled exotic animal auction or swap meet and to maintain records for animal disease

tracking purposes. Exotic animals sold at exotic animal auctions or swap meets are often foreign to the United States or to the State of Nebraska. These exotic animals may carry dangerous, infectious, contagious, or otherwise transmissible diseases, including foreign animal diseases, which could pose a threat to Nebraska's livestock health and the livestock industry.

Noxious Weed Control Act; Title 25 Chapter 10 Nebraska Administrative Code

2-945.02 The Legislature finds and declares that:

(1) The failure to control noxious weeds on lands in this state is a serious problem which is detrimental to the production of crops and livestock and to the welfare of residents of this state and which may devalue land and reduce tax revenue; (2) It is the purpose of the Noxious Weed Control Act to establish a workable framework, delineate responsibilities, encourage education of the public concerning noxious weeds, and provide the necessary authority to effectively control noxious weeds; (3) It is the duty of each person who owns or controls land to effectively control noxious weeds on such land. County boards or control authorities are responsible for administration of noxious weed control laws at the county level; (4) The Department of Agriculture should have responsibility for (a) establishing basic standards such as designating which plants are to be considered noxious weeds and which control measures are to be used in particular situations and (b) monitoring implementation of the act by the control authorities; and (5) A state noxious weed advisory committee shall be convened by the director with broad representation to advise the director.

Noxious Weed Regulations; Title 25 Chapter 10 Nebraska Administrative Code

2-945.01-966 001 Designation and Publication of Noxious Weeds. The following weeds are hereby officially designated and published as noxious: Canada thistle - *Cirsium arvense* (L.) Scop.; leafy spurge - *Euphorbia esula* L.; musk thistle - *Carduus nutans* L.; plumeless thistle - *Carduus acanthoides* L.; knapweed (spotted and diffuse) - *Centaurea (maculosa* Lam. and *diffusa* Lam.); Purple Loosestrife - *Lythrum salicaria* L. and *L. virgatum* (including any cultivars and hybrids) Saltcedar - *Tamarix ramosissima* Ledeb and *phragmites australis*, subspecies *australis*. Noxious weed shall mean the plant, seed, or seedlings of such weeds.

Plant Protection and Plant Pest Act Regulations; Title 25 Chapter 13 Nebraska Administrative Code

2-1072 to 2-10,117 Public policy declaration; It is hereby declared to be the public policy of the State of Nebraska to protect and foster the health, prosperity, and general welfare of its people by preserving and protecting the plant industry. Because of the importance of the plant industry to the welfare and economy of the state and the damage which can result from the uncontrolled proliferation of plant pests, there is a need to impose standards and restrictions on the movement and care of plants within the state. The Department of Agriculture shall be charged with administering and enforcing such standards and restrictions through the Plant Protection and Plant Pest Act.

Plant Protection and Plant Pest Act Rules and Regulations; Title 25 Chapter 13 Nebraska Administrative Code

2-10,116 The department shall have authority to adopt and promulgate such rules and regulations as are necessary to the effective discharge of its duties under the Plant Protection and Plant Pest Act. The rules and regulations may include, but shall not be limited to, provisions governing:

(1) The issuance and revocation of licenses as authorized by the Plant Protection and Plant Pest Act; (2) The assessment and collection of license, inspection, re-inspection, and delinquent fees; (3) The withdrawal from distribution of nursery stock; (4) The care, viability, and standards for nursery stock; (5) The labeling and shipment of nursery stock; (6) The issuance and release of plant pest quarantines and withdrawal-from-distribution orders; (7) The establishment of a restricted plant pest list; (8) The preparation, maintenance, handling, and filing of reports by persons subject to the act; (9) The adoption of the American Association of Nurserymen's American Standard for Nursery Stock insofar as it does not conflict with any provision of the act; (10) Factors to be considered when the director issues an order imposing an administrative fine; and (11) The planting of certified seed potatoes in the state.

Seed Law Regulations; Title 25 Chapter 7 Nebraska Administrative Code

81-2,155 to 81-2,157 No agricultural, vegetable, or flower seed which is incapable of being identified by common seed characteristic or which is incorrectly represented as to kind, variety or origin may be sold unless said seed is accompanied by invoice, grower's declaration or suitable labeling information which will insure the identity to be stated. The grower's declaration, if used, shall be of a form to show the above information. Any lot of agricultural, vegetable, or flower seed not in compliance with the Nebraska Seed Law shall be subject to seizure on complaint of the director to a court of competent jurisdiction in the locality in which the seed is located. In the event the court finds the seed to be in violation of such law and orders the condemnation thereof, it shall be denatured, conditioned, destroyed, relabeled, or otherwise disposed of in compliance with the laws of this state, except that in no instance shall the court order such disposition of the seed without first having given the claimant an opportunity to apply to the court for the release of the seed or permission to condition or re-label it to bring it into compliance with such law.

Nebraska Department of Agriculture; FIFRA. The state law that recognizes FIFRA and provides comprehensive statutory language for the regulation of pesticides is the Nebraska Pesticide Act (Title 25, Chapter 2, Nebraska Administrative Code, Sections 2-2622 through 2-2654. With the exception of containment and loadout structures, and chemigation (application of pesticides in irrigation water), the Nebraska Pesticide Act and the NDA regulate all aspects of state and federal pesticide law. This includes the certification and licensing of pesticide applicators, registration of pesticides used in the state, licensing of pesticide dealers, and monitoring/enforcement of pesticide use. Because of this delegation of authority, the NDA serves as the administrative government agency for FIFRA Section 18 (emergency use exemptions) and Section 24(c) (special local need exemptions).

Nebraska Department of Environmental Quality

Standards for Water Quality; Title 117 Chapter 4 Nebraska Administrative Code

005 Aesthetics. This use applies to all surface waters of the state. To be aesthetically acceptable, waters shall be free from human-induced pollution which causes: 1) noxious odors; 2) floating, suspended, colloidal, or settleable materials that produce objectionable films, colors, turbidity, or deposits; and 3) the occurrence of undesirable or nuisance aquatic life (e.g., algal blooms). Surface water shall also be free of junk, refuse, and discarded dead animals.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1505(1)(2). NDEQ has also been granted primacy, and as such is the implementing authority for all federal Clean Water Act programs except the §404 (dredge and fill) program, which is administered by the US Army Corps of Engineers (see Appendix A, 1972 Clean Water Act). Thus, point source discharges (e.g., ballast water) that

require an NPDES permit under §402 of the Clean Water Act, would be issued that permit by NDEQ under its authorities in Title 119. Any control strategies involving the use of aquatic pesticides are addressed in Title 117, Chapter 2 and will soon come under regulation in the NPDES program.

State Agencies/Organizations

The following list represents agencies and organizations that have programs and practices instilled in the state of Nebraska relating to invasive species.

Nebraska Invasive Species Council aims to coordinate invasive species management and research across the State of Nebraska for the prevention and detection of invasive plant and animal species. Through a coordinated and well informed effort, the council provides land managers with the information needed to utilize funding and resources more effectively and efficiently. Their goal is to minimize the effects of harmful invasive species on Nebraska's citizens and ensure the economic and environmental well-being of the state. There is currently a bill being drafted for legislation to formally create the Nebraska Invasive Species Advisory Council. Information can be found at: <http://snr.unl.edu/invasives/council.htm>.

Nebraska Invasive Species Project continues through a federal aid grant from the Nebraska Game and Parks Commission, and the Nebraska Cooperative Fish and Wildlife Research Unit. The website is designed to provide information to the public and private sector on invasive species issues; information including invasive species biology, monitoring and management methods, actual and potential maps of impact and risk, and invasive species news and events. The project also assists in the development of statewide management plans, conducts invasive species research, and participates in various outreach activities. Information can be found at: <http://snr.unl.edu/invasives>.

Nebraska Natural Resource Conservation Service provides information on invasive plants in Nebraska, and maps of woody cover increases. In addition, NRCS provides information on conservation practices that address invasive plant treatments. A representative from NRCS is also a member of the Nebraska Invasive Species Council. Information can be found at: http://www.ne.nrcs.usda.gov/technical/Plant_files/NE_Invasive_Plants.html.

Nebraska Department of Natural Resources is dedicated to working with Nebraska's citizens and leaders to plan, establish and administer policies and programs for the effective management and conservation of the state's water and land resources. We are committed to providing the data and analyses needed to make wise resource decisions for the benefit of all Nebraskans, both now and in the future. This is accomplished through providing high quality services with a professional workforce devoted to the management and conservation of the water and land resources of the state of Nebraska. Information can be found at: <http://www.dnr.state.ne.us/>.

USGS NE Cooperative Fish and Wildlife Research Unit is a unique collaborative relationship between the Federal government, universities, states, and a non-profit organization. The mission of the Cooperative Fish and Wildlife Research Unit Program is to train graduate students for professional careers in natural resource research and management, conduct research that will create new information useful for management of natural resources; and provide technical

assistance to cooperators. The Coop Unit currently houses the Nebraska Invasive Species Project and has various graduate students working on a suite of invasive species issues. Information can be found at: <http://snr.unl.edu/necoopunit/>.

University of Nebraska-Lincoln Cooperative Extension Service provides research-based programs and educational materials to help you understand the value of Nebraska's natural resources and the value of good stewardship to ensure sustainability of those resources. Information can be found at: <http://www.extension.unl.edu/naturalresources>.

Nebraska Weed Control Association is a non-profit organization comprised of representatives known as weed control authorities in county government. Their website will provide you some valuable information in your noxious and invasive weed control. The Nebraska Weed Control Association is made up of Weed Control Authorities and Weed Superintendents from the 93 Counties and associate members involved with noxious and invasive species control in the State of Nebraska. Information can be found at: <http://neweed.org/>.

Nebraska Weed Management Areas and Weed Groups are local organizations that bring together landowners and managers (private, city, county, State, and Federal) in a county, multi-county, or other geographical area to coordinate efforts and expertise against common invasive weed species. The WMA functions under the authority of a mutually developed memorandum of understanding (MOU) and is subject to statutory and regulatory weed control requirements. WMAs have printed weed I.D./control brochures, organized weed education events, written and obtained grants, coordinated demonstration plots, and instituted joint eradication, mapping, outreach, and other effective weed management projects. Information can be found at: <http://neweed.org/weedmgareas.htm>.

Nebraska Wildlife Federation is a state-wide, non-profit chartered in 1970, membership based organization dedicated to fish and wildlife conservation through environmental education, fish and wildlife conservation, and common sense public policy. Through the 'Adopt a Stream' program, citizens monitor local water bodies for water chemistry/quality and actively monitor for dragonfly larvae, snails, and soon to be zebra mussels and other aquatic invasive species. Information can be found at: <http://www.nebraskawildlife.org/>.

Nebraska Lakes Association is an organization dedicated to addressing the issues private lake associations manage. From boating concerns to environmental issues, the Association has a wealth of information to share with private lake residents and Lake Associations. If you need information about water quality, fisheries, insurance, lake liability issues and/or boating safety, you have a great reference organization at your service.

TRIBAL

The Department of Interior is legally obliged to insure the American Indian resources and lands are properly managed, protected, and conserved. Interior, as a trustee for the tribes, has an affirmative duty to protect tribal health and safety, to fulfill all treaty and statutory obligations and to exercise utmost good faith in all dealings with the tribes. In recognition of the importance of the Department's trust responsibilities, the Secretary of Interior has established policies and procedures for the Departmental bureaus and offices to follow. It also provides policy review

and other technical services to all departmental bureaus and offices and other Federal agencies, including education and training, liaison, and information services regarding the Federal Indian Trust responsibilities.

Potential impacts of any activities or proposals on Indian trust resources will be discussed before any activities take place. Discussion will include consultation with the tribal government(s) or their representative when impacts on tribal trust resources, tribal rights, and tribal health and safety are identified.

Four American Indian Tribes exist in Nebraska:

- Omaha Tribe

- Ponca Tribe

- Santee Sioux Tribe

- Winnebago Tribe

APPENDIX B.1

Nebraska Game and Parks Commission Rules and Regulations Chapter 2

009. Baitfish shall be restricted to the following species.

Family	Scientific Name	Common Name
Minnow	<i>Semotilus atromaculatus</i>	creek chub
	<i>Cyprinella lutrensis</i>	red shiner
	<i>Notemigonus crysoleucas</i>	golden shiner
	<i>Notropis atherinoides</i>	emerald shiner
	<i>Notropis blennius</i>	river shiner
	<i>Notropis stramineus</i>	sand shiner
	<i>Notropis dorsalis</i>	bigmouth shiner
	<i>Pimephales promelas</i>	fathead minnow
	<i>Carassius auratus</i>	goldfish
	<i>Campostoma anomalum</i>	stoneroller
	<i>Hybognathus hankinsoni</i>	brassy minnow
	<i>Phenacobius mirabilis</i>	suckermouth minnow
	<i>Rhinichthys cataractae</i>	longnose dace
Sucker	<i>Catostomus commersoni</i>	white sucker
Topminnow	<i>Fundulus zebrinus</i>	plains killifish
Herring	<i>Dorosoma cepedianum</i>	gizzard shad
	<i>Alsoa pseudoharengus</i>	alewife
Amphibians		
Frogs	<i>Rana blairi</i>	plains leopard frog
	<i>Rana pipiens</i>	northern leopard frog
Salamander	<i>Ambystoma tigrinum</i>	tiger salamander
Crustaceans		
Crayfish	<i>Orconectes neglectus</i>	ringed crayfish
	<i>Orconectes immunis</i>	papershell crayfish
	<i>Orconectes virilis</i>	northern crayfish
	<i>Cambarus diogenes</i>	devil crayfish

APPENDIX B.2

163-002-05 Lists fish, mollusks, amphibians, and crustaceans as non-injurious (economically and ecologically) and therefore may be imported into the state by permit, but not intentionally released in to the wild

Family	Scientific Name	Common Name
Paddlefish	<i>Polyodon spathula</i>	paddlefish
Catfish	<i>Ictalurus furcatus</i> <i>Ictalurus punctatus</i> <i>Pylodictis olivaris</i> <i>Ameirus melas</i> <i>Ameirus natalis</i>	blue catfish channel catfish flathead catfish black bullhead yellow bullhead
Pike	<i>Esox americanus</i> <i>Esox lucius</i> <i>Esox masquinongy</i>	grass pickerel northern pike muskellunge
Trout* *(eggs only)	<i>Oncorhynchus clarki</i> <i>Oncorhynchus mykiss</i> <i>Orcorhynchus tshawtshca</i> <i>Salmo trutta</i> <i>Salvelinus fontinalis</i>	cutthroat trout rainbow trout chinook salmon brown trout brook trout
Temperate bass	<i>Morone chrysops</i> <i>Morone saxatilis</i>	white bass striped bass
Sunfish	<i>Ambloplites rupestris</i> <i>Lepomis cyanellus</i> <i>Lepomis gibbosus</i> <i>Lepomis humilis</i> <i>Lepomis macrochirus</i> <i>Lepomis microlophus</i> <i>Micropterus dolomieu</i> <i>Micropterus punctulatus</i> <i>Micropterus salmoides</i> <i>Pomoxis annularis</i> <i>Pomoxis nigromaculatus</i>	rock bass green sunfish pumpkinseed orangespotted sunfish bluegill redeer sunfish smallmouth bass spotted bass largemouth bass white crappie black crappie
Perch	<i>Sander vitreus vitreus</i> <i>Sander canadensis</i> <i>Perca flavescens</i>	walleye sauger yellow perch

Minnow	<i>Semotilus atromaculatus</i>	creek chub
	<i>Cyprinella lutrensis</i>	red shiner
	<i>Notemigonus crysoleucas</i>	golden shiner
	<i>Notropis atherinoides</i>	emerald shiner
	<i>Notropis blennioides</i>	river shiner
	<i>Notropis stramineus</i>	sand shiner
	<i>Notropis dorsalis</i>	bigmouth shiner
	<i>Pimephales promelas</i>	flathead minnow
	<i>Carassius auratus</i>	goldfish
	<i>Campostoma anomalum</i>	stoneroller
	<i>Hybognathus hankinsoni</i>	brassy minnow
	<i>Phenacobius mirabilis</i>	suckermouth minnow
	<i>Rhinichthys cataractae</i>	longnose dace
Gar	<i>Lepisosteus osseus</i>	longnose gar
	<i>Lepisosteus platostomus</i>	shortnose gar
Sucker	<i>Carpionodes carpio</i>	river carpsucker
	<i>Carpionodes cyprinus</i>	quillback
	<i>Ictiobus bubalus</i>	smallmouth buffalo
	<i>Ictiobus cyprinellus</i>	bigmouth buffalo
	<i>Catostomus commersoni</i>	white sucker
Topminnow	<i>Fundulus zebrinus</i>	plains killifish
Herring	<i>Dorosoma cepedianum</i>	gizzard shad
	<i>Alsoa pseudoharengus</i>	alewife

Note: This includes all hybrids of the above species

Crustaceans

Crayfish	<i>Orconectes neglectus</i>	ringed crayfish
	<i>Orconectes immunis</i>	papershell crayfish
	<i>Orconectes virilis</i>	northern crayfish
	<i>Cambarus diogenes</i>	devil crayfish

APPENDIX B.3

163-005-03C Lists aquatic organisms approved for importation under an aquaculture permit

Family	Scientific Name	Common Name
Paddlefish	<i>Polyodon spathula</i>	paddlefish
Catfish	<i>Ictalurus furcatus</i> <i>Ictalurus punctatus</i> <i>Pylodictis olivaris</i> <i>Ameirus melas</i> <i>Ameirus natalis</i>	blue catfish channel catfish flathead catfish black bullhead yellow bullhead
Pike	<i>Esox americanus</i> <i>Esox lucius</i> <i>Esox masquinongy</i>	grass pickerel northern pike muskellunge
Trout* *(eggs only)	<i>Oncorhynchus clarki</i> <i>Oncorhynchus mykiss</i> <i>Orcorhynchus tshawtshca</i> <i>Salmo trutta</i> <i>Salvelinus fontinalis</i>	cutthroat trout rainbow trout chinook salmon brown trout brook trout
Temperate bass	<i>Morone chrysops</i> <i>Morone saxatilis</i>	white bass striped bass
Sunfish	<i>Ambloplites rupestris</i> <i>Lepomis cyanellus</i> <i>Lepomis gibbosus</i> <i>Lepomis humilis</i> <i>Lepomis macrochirus</i> <i>Lepomis microlophus</i> <i>Micropterus dolomieu</i> <i>Micropterus punctulatus</i> <i>Micropterus salmoides</i> <i>Pomoxis annularis</i> <i>Pomoxis nigromaculatus</i>	rock bass green sunfish pumpkinseed orangespotted sunfish bluegill redeer sunfish smallmouth bass spotted bass largemouth bass white crappie black crappie
Perch	<i>Sander vitreus vitreus</i> <i>Sander canadensis</i> <i>Perca flavescens</i>	walleye sauger yellow perch
Minnow	<i>Semotilus atromaculatus</i> <i>Cyprinella lutrensis</i> <i>Notemigonus crysoleucas</i>	creek chub red shiner golden shiner

	<i>Notropis atherinoides</i>	emerald shiner
	<i>Notropis blennius</i>	river shiner
	<i>Notropis stramineus</i>	sand shiner
	<i>Notropis dorsalis</i>	bigmouth shiner
	<i>Pimephales promelas</i>	flathead minnow
	<i>Carassius auratus</i>	goldfish
	<i>Campostoma anomalum</i>	stoneroller
	<i>Hybognathus hankinsoni</i>	brassy minnow
	<i>Phenacobius mirabilis</i>	suckermouth minnow
	<i>Rhinichthys cataractae</i>	longnose dace
	<i>Cyprinus carpio</i>	common carp
	<i>Cyprinus carpio</i>	koi
Sucker	<i>Catostomus commersoni</i>	white sucker
Topminnow	<i>Fundulus zebrinus</i>	plains killifish
Herring	<i>Dorosoma cepedianum</i>	gizzard shad
	<i>Alsoa pseudoharengus</i>	alewife

Note: This includes all hybrids of the above species

Crustaceans

Crayfish	<i>Orconectes neglectus</i>	ringed crayfish
	<i>Orconectes immunis</i>	papershell crayfish
	<i>Orconectes virilis</i>	northern crayfish
	<i>Cambarus diogenes</i>	devil crayfish

Amphibians

Frogs	<i>Rana blairi</i>	plains leopard frog
	<i>Rana pipiens</i>	northern leopard frog
	<i>Lithobates catesbeianus</i>	American bullfrog
Salamander	<i>Ambystoma tigrinum</i>	tiger salamander

Mollusks

Freshwater mussels	<i>Actinonaias ligamentina</i>	mucket
	<i>Anodontooides ferussancianus</i>	cylindrical papershell
	<i>Arcidens confragosus</i>	rock pocketbook
	<i>Fusconaia flava</i>	Wabash pigtoe
	<i>Lasmigona complanata</i>	white heelsplitter
	<i>Lasmigona compressa</i>	creek heelsplitter
	<i>Leptodea fragilis</i>	fragile papershell
	<i>Ligumia recta</i>	black sandshell
	<i>Obovaria olivaria</i>	hickorynut

<i>Potamilus alatus</i>	pink heelsplitter
<i>Potamilus ohioensis</i>	pink papershell
<i>Potamilus purpuratus</i>	bleufer
<i>Pyganodon grandis</i>	giant floater
<i>Quadrula quadrula</i>	mapleleaf
<i>Strophitus undulatus</i>	creeper
<i>Toxolasma parvus</i>	lilliput
<i>Truncilla donaciformis</i>	fawnsfoot
<i>Truncilla truncate</i>	deertoe
<i>Unionomerus tetralasmus</i>	pondhorn
<i>Utterbackia imbecillis</i>	paper pondshell

APPENDIX C

LIST OF CURRENT/POTENTIAL AQUATIC NUISANCE SPECIES IN NEBRASKA

(Adapted from the USGS NAS List 2010: <http://nas.er.usgs.gov>)

This list to be updated regularly

FISHES

Group	Family	Scientific Name	Common Name	Native Habitat	Status
Fishes	Atherinidae	<i>Labidesthes sicculus</i>	brook silverside	Freshwater	Range expanding
Fishes	Catostomidae	<i>Erimyzon sucetta</i>	lake chubsucker	Freshwater	Limited
Fishes	Centrarchidae	<i>Archoplites interruptus</i>	Sacramento perch	Freshwater	Presumed extirpated
Fishes	Centrarchidae	<i>Lepomis gibbosus</i>	pumpkinseed	Freshwater	Limited
Fishes	Characidae	<i>Colossoma macropomum</i>	tambaqui	Freshwater	Aquarium, not viable
Fishes	Characidae	<i>Colossoma or Piaractus sp.</i>	unidentified pacu	Freshwater	Aquarium, not viable
Fishes	Characidae	<i>Piaractus brachypomus</i>	pirapatinga, red-bellied pacu	Freshwater	Aquarium, not viable
Fishes	Characidae	<i>Pygocentrus nattereri</i>	red piranha	Freshwater	Aquarium, not viable
Fishes	Cichlidae	<i>Astronotus ocellatus</i>	oscar	Freshwater	Aquarium, not viable
Fishes	Cichlidae	<i>Cichlasoma cyanoguttatum</i>	Rio Grande cichlid	Freshwater	Aquarium, not viable
Fishes	Cichlidae	<i>Heros severus</i>	banded cichlid	Freshwater	Aquarium, not viable
Fishes	Clupeidae	<i>Alosa pseudoharengus</i>	alewife	Freshwater-Marine	Stable
Fishes	Clupeidae	<i>Dorosoma petenense</i>	threadfin shad	Freshwater-Marine	Extirpated
Fishes	Cyprinidae	<i>Carassius auratus</i>	goldfish	Freshwater	Stable
Fishes	Cyprinidae	<i>Ctenopharyngodon idella</i>	grass carp	Freshwater	Range expanding

Fishes	Cyprinidae	<i>Cyprinella spiloptera</i>	spotfin shiner	Freshwater	Baitfish
Fishes	Cyprinidae	<i>Cyprinus carpio</i>	common carp	Freshwater	Widespread/nuisance
Fishes	Cyprinidae	<i>Hypophthalmichthys molitrix</i>	silver carp	Freshwater	Range expanding
Fishes	Cyprinidae	<i>Hypophthalmichthys nobilis</i>	bighead carp	Freshwater	Range expanding
Fishes	Cyprinidae	<i>Leuciscus idus</i>	ide	Freshwater	Extirpated
Fishes	Cyprinidae	<i>Scardinius erythrophthalmus</i>	rudd	Freshwater	Range expanding
Fishes	Cyprinidae	<i>Tinca tinca</i>	tench	Freshwater	Extirpated
Fishes	Esocidae	<i>Esox lucius x E. masquinongy</i>	tiger muskellunge	Freshwater	Stocked as sport fish
Fishes	Esocidae	<i>Esox niger</i>	chain pickerel	Freshwater	Extirpated
Fishes	Ictaluridae	<i>Ameiurus nebulosus</i>	brown bullhead	Freshwater	Limited
Fishes	Moronidae	<i>Morone americana</i>	white perch	Freshwater	Range Expanding
Fishes	Moronidae	<i>Morone mississippiensis</i>	yellow bass	Freshwater	Limited
Fishes	Moronidae	<i>Morone saxatilis</i>	striped bass	Freshwater-Marine	Extirpated
Fishes	Osmeridae	<i>Osmerus mordax</i>	rainbow smelt	Freshwater-Marine	Unknown
Fishes	Pimelodidae	<i>Phractocephalus hemioliopterus</i>	redtail catfish	Freshwater	Aquarium, not viable
Fishes	Poeciliidae	<i>Gambusia affinis</i>	western mosquitofish	Freshwater	Range expanding
Fishes	Salmonidae	<i>Coregonus artedi</i>	cisco	Freshwater	Extirpated
Fishes	Salmonidae	<i>Coregonus clupeaformis</i>	lake whitefish	Freshwater	Extirpated
Fishes	Salmonidae	<i>Oncorhynchus kisutch</i>	coho salmon	Freshwater-Marine	Extirpated
Fishes	Salmonidae	<i>Oncorhynchus nerka</i>	kokanee, sockeye	Freshwater-Marine	Extirpated
Fishes	Salmonidae	<i>Oncorhynchus tshawytscha</i>	Chinook salmon	Freshwater-Marine	Extirpated
Fishes	Salmonidae	<i>Salmo salar sebago</i>	landlocked Atlantic salmon	Freshwater-Marine	Extirpated
Fishes	Salmonidae	<i>Salvelinus namaycush</i>	lake trout	Freshwater	Extirpated
Fishes	Salmonidae	<i>Thymallus arcticus</i>	Arctic grayling	Freshwater-Marine	Extirpated

Fishes	Scorpaenidae	<i>Pterois volitans/miles</i>	lionfish	Marine	Aquarium, not viable
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MOLLUSKS

Group	Family	Scientific Name	Common Name	Native Habitat	Status
Mollusks-Bivalves	Corbiculidae	<i>Corbicula fluminea</i>	Asian clam	Freshwater	Range expanding rapidly
Mollusks-Bivalves	Dreissenidae	<i>Dreissena rostriformis bugensis</i>	Quagga Mussel	Freshwater	Not present, in nearby state
Mollusks-Bivalves	Dreissenidae	<i>Dreissena polymorpha</i>	zebra mussel	Freshwater	Indeterminate - Missouri River
Mollusks-Bivalves	Ostreidae	<i>Crassostrea virginica</i>	eastern oyster	Marine	Extirpated
Mollusks-Gastropods	Viviparidae	<i>Cipangopaludina chinensis</i>	Chinese mysterysnail	Freshwater	Stable, slowly expanding
Mollusks-Gastropods	Viviparidae	<i>Cipangopaludina japonica</i>	Japanese mysterysnail	Freshwater	Stable, slowly expanding
Mollusks-Gastropods		<i>Potamopyrgus antipodarum</i>	New Zealand Mudsnail		In nearby states
Mollusks-Gastropods		<i>Melanooides tuberculatus</i>	Red-rimmed melania		In nearby states
Mollusks-Gastropods		<i>Bithynia tentaculata</i>	Faucet snail		In nearby states

CRUSTACEANS

Group	Family	Scientific Name	Common Name	Native Habitat	Status
Crustaceans-Cladocerans	Daphnidae	<i>Daphnia lumholtzi</i>	water flea	Freshwater	Indeterminate, one known population
Crustaceans-Crayfish	Cambaridae	<i>Orconectes rusticus</i>	rusty crayfish	Freshwater	Unknown

COELENTERATES

Group	Family	Scientific Name	Common Name	Native Habitat	Origin	Status
Coelenterates	Olindiidae	<i>Craspedacusta sowerbyi</i>	freshwater jellyfish	Freshwater	Non-native?	Unknown

REPTILES AND AMPHIBIANS

Group	Family	Scientific Name	Common Name	Native Habitat	Status
Amphibians-Frogs	Ranidae	<i>Lithobates [=Rana] catesbeianus</i>	American Bullfrog	Freshwater	Stable
Reptiles-Turtles	Emydidae	<i>Trachemys scripta elegans</i>	Red-eared Slider	Freshwater	Extirpated
Reptiles-Turtles	Emydidae	<i>Trachemys scripta troostii</i>	Cumberland Slider	Freshwater	Extirpated

MAMMALS

Group	Family	Scientific Name	Common Name	Native Habitat	Status
Mammals	Capromyidae	<i>Myocastor coypus</i>	nutria	Freshwater	Extirpated

PATHOGENS

Group	Family	Scientific Name	Common Name	Native Habitat	Status
Pathogens	Myxobolidae	<i>Myxobolus cerebralis</i>	Whirling Disease	Freshwater-marine	Isolated in one location in closed private facility Nebraska

Pathogens		<i>Rhabdovirus carpio</i>	Spring Viremia of Carp	Freshwater	Unknown
Pathogens		<i>Heterosporis sp</i>	Heterosporis	Freshwater	Unknown
Pathogens		<i>Rhabdovirus</i>	Viral Hemorrhagic Septicemia Virus	Freshwater-marine	Unknown
Pathogens	Iridoviridae	<i>Ranavirus</i>	Largemouth Bass Virus	Freshwater	Unknown
Pathogens			Infectious Pancreatic Necrosis Virus	Freshwater-marine	Not identified in Nebraska
Pathogens		<i>Renibacterium salmoninarum</i>	Bacterial kidney disease	Freshwater-marine	Has been identified in private aquaculture facilities
Pathogens		<i>Yersinia ruckeri</i>	Enteric redmouth disease	Freshwater-marine	Has been identified in private aquaculture facilities
Pathogens		<i>Aeromonas salmonicida</i>	Furunculosis	Freshwater-marine	Has been identified in private aquaculture facilities
Pathogens		<i>Edwardsiella ictaluri</i>	Enteric Septicemia of Catfish	Freshwater	Has been identified in Nebraska
Pathogens	Rhabdoviridae	<i>Novirhabdivirus spp.</i>	Infectious Hematopoietic Necrosis Virus	Freshwater-marine	Not identified in Nebraska
Pathogens			Oncorhynchus Masou Virus	Freshwater-marine	Not identified in Nebraska
Pathogens			Epizootic epitheliotropic disease	Freshwater	Probably is present in Nebraska
Pathogens	Herpesviridae	<i>Ictalurid herpesvirus 1</i>	Channel Catfish Virus Disease	Freshwater	Has been detected in the wild in Nebraska
Pathogens	Herpesviridae	<i>Cyprinid herpesvirus 3</i>	Koi Herpesvirus	Freshwater	Has been detected in the wild and in one private facility in Nebraska
Pathogens	Iridoviridae		Pallid Sturgeon Iridovirus	Freshwater	Probably is present in Nebraska

PLANTS

Group	Family	Scientific Name	Common Name	Native Habitat	Status
Plants	Acanthaceae	<i>Justica americana</i>	Common Water-willow		
Plants	Acoraceae	<i>Acorus Calamus</i>	Eurasian Sweet-flag		no data

Plants	Adoxaceae	<i>Viburnum opulus</i> var. <i>opulus</i>	European Highbush Cranberry		
Plants	Apiaceae	<i>Conioselinum chinense</i>	Hemlock-parsley		very sparse (PLANTS)
Plants	Apiaceae	<i>Conium maculatum</i>	Poison-hemlock		2008 Missouri, non-specific (USGS), moderate (PLANTS)
Plants	Asteraceae	<i>Conoclinium coelestinum</i> (<i>Eupatorium coelestinum</i>)	Mistflower		? Present
Plants	Asteraceae	<i>Helianthus ciliaris</i>	Texas Blueweed		
Plants	Asteraceae	<i>Lactuca serriola</i>	Prickly Lettuce		
Plants	Asteraceae	<i>Scorzonera laciniata</i>	False-salsify		
Plants	Asteraceae	<i>Senecio vulgaris</i>	Groundsel		
Plants	Asteraceae	<i>Sonchus arvensis</i> var. <i>glabrescens</i> (<i>S. arvensis</i> ssp. <i>uliginosus</i>)	Field Sow Thistle		2008 Missouri, non-specific
Plants	Asteraceae	<i>Sonchus asper</i>	Spiny Sow Thistle		
Plants	Asteraceae	<i>Tanacetum balsamita</i> (<i>Chrysanthemum balsamita</i>)	Costmary		
Plants	Asteraceae	<i>Tripleurospermum inodorum</i> (<i>Matricaria maritima</i> , in part)	Scentless Chamomile		
Plants	Asteraceae	<i>Verbesina encelioides</i> var. <i>exauriculata</i> [<i>V. encelioides</i> ssp. <i>exauriculata</i>]	Golden Crownbeard		
Plants	Bignoniaceae	<i>Campsis radicans</i>	Trumpet Creeper		sparse, mostly southeast (PLANTS)
Plants	Boraginaceae	<i>Mertensia virginica</i>	Virginia Bluebells		
Plants	Brassicaceae	<i>Alliaria petiolata</i>	Garlic Mustard		? Present
Plants	Brassicaceae	<i>Armoracia rusticana</i>	Horseradish		very sparse, southeast (PLANTS)
Plants	Brassicaceae	<i>Barbarea vulgaris</i>	Wintercress		sparse, mostly east (PLANTS)
Plants	Brassicaceae	<i>Camelina sativa</i>	Large-flower False Flax		sparse (PLANTS)
Plants	Brassicaceae	<i>Conringia orientalis</i>	Hare's-ear Mustard		sparse (PLANTS)
Plants	Brassicaceae	<i>Hesperis matronalis</i>	Dame's Rocket		
Plants	Brassicaceae	<i>Lepidium latifolium</i>	Broadleaf Pepperwort		

Plants	Brassicaceae	<i>Lepidium perfoliatum</i>	Clasping Pepperwort		
Plants	Brassicaceae	<i>Nasturtium microphyllum</i>	Small Watercress		
Plants	Brassicaceae	<i>Nasturtium officinale</i>	Common Watercress	Freshwater	2008 Missouri, non-specific
Plants	Brassicaceae	<i>Rorippa austriaca</i>	Austrian Yellowcress		
Plants	Brassicaceae	<i>Rorippa sylvestris</i>	Creeping Yellowcress	Freshwater	2008 Missouri, non-specific
Plants	Butomaceae	<i>Butomus umbellatus</i>	flowering rush	Freshwater	1999 Missouri, non-specific (USGS)
Plants	Caryophyllaceae	<i>Arenaria serpyllifolia serpyllifolia</i> spp.	Thyme-leaf Sandwort		very sparse, southeast (PLANTS)
Plants	Caryophyllaceae	<i>Myosoton aquaticum (Stellaria aquatica)</i>	Giant Chickweed		
Plants	Chenopodiaceae	<i>Atriplex heterosperma</i>	Russian Orache		? Present
Plants	Chenopodiaceae	<i>Atriplex hortnesis</i>	Garden Orache		sparse (PLANTS)
Plants	Chenopodiaceae	<i>Atriplex patula</i>	Common Sparscale		moderate, central (PLANTS)
Plants	Chenopodiaceae	<i>Chenopodium album</i>	Lamb's Quarters		moderate (PLANTS)
Plants	Chenopodiaceae	<i>Chenopodium glaucum</i>	oak-leaved goosefoot	Freshwater	2008 Missouri, non-specific (USGS)
Plants	Chenopodiaceae	<i>Dysphania ambrosioides (Chenopodium ambrosioides)</i>	Mexican Tea		
Plants	Commelinaceae	<i>Commelina communis</i>	Asiatic Dayflower		sparse, mostly southeast (PLANTS)
Plants	Cyperaceae	<i>Carex squarrosa</i>	Squarrose Sedge		very sparse (PLANTS)
Plants	Cyperaceae	<i>Cyperus difformis</i>	Variable Flat Sedge		? Present
Plants	Cyperaceae	<i>Cyperus fuscus</i>	Brown Flatsedge		sparse (PLANTS)
Plants	Elaeagnaceae	<i>Elaeagnus angustifolia</i>	Russian Olive		
Plants	Fabaceae	<i>Lotus tenuis</i>	Narrow-leaf Trefoil		
Plants	Fabaceae	<i>Medicago lupulina</i>	Black Medick		
Plants	Fabaceae	<i>Trifolium fragiferum</i>	Strawberry Clover		
Plants	Fagaceae	<i>Quercus Palustris</i>	Pin Oak		

Plants	Gentianaceae	<i>Centaurium pulchellum</i>	Showy Centaury		? Present
Plants	Haloragaceae	<i>Myriophyllum spicatum</i>	Eurasian watermilfoil	Freshwater-brackish	Established, Platte, Salt
Plants	Hydrocharitaceae	<i>Egeria densa</i>	Brazilian waterweed	Freshwater	1984 Missouri, 1977 Middle Platte
Plants	Hydrocharitaceae	<i>Hydrilla verticillata</i>	Hydrilla	Freshwater	Not present, in neighboring states
Plants	Iridaceae	<i>Iris pseudacorus</i>	Yellow Water Iris	Freshwater	1986 Missouri, 1977 Big Blue
Plants	Iridaceae	<i>Iris versicolor</i>	Northern Blue-flag		
Plants	Juncaceae	<i>Juncus compressus</i>	Flattened rush	Freshwater	2008 Missouri, non-specific
Plants	Lamiaceae	<i>Galeopsis bifida</i>	Common Hemp-nettle		
Plants	Lamiaceae	<i>Leonurus marrubiastrum</i>	Horehound Motherwort		
Plants	Lamiaceae	<i>Leonurus sibiricus</i>	Siberian Motherwort		
Plants	Lamiaceae	<i>Marrubium vulgare</i>	Horehound		
Plants	Lamiaceae	<i>Mentha spicata</i>	Spearmint	Freshwater	2008 Missouri, non-specific
Plants	Lamiaceae	<i>Mentha x gracilis (M. arvensis x M. spicata)</i>	Scotch Mint		
Plants	Lamiaceae	<i>Mentha x piperita (M. aquatica x M. spicata)</i>	Peppermint		
Plants	Lamiaceae	<i>Perilla frutescens</i>	Perilla-mint		
Plants	Lamiaceae	<i>Physostegia virginiana spp. Praemorsa</i>	Obedient Plant		
Plants	Lamiaceae	<i>Prunella vulgaris var. vulgaris</i>	Lawn Prunella		
Plants	Lythraceae	<i>Lythrum salicaria</i>	purple loosestrife	Freshwater	Established, Noxious Weed
Plants	Malvaceae	<i>Althaea officinalis</i>	Common Marsh-mallow		? Present
Plants	Menyanthaceae	<i>Nymphoides peltata</i>	yellow floating-heart	Freshwater	2007 Benson Park Lake
Plants	Moraceae	<i>Morus alba</i>	White Mulberry		
Plants	Myrsinaceae	<i>Anagallis arvensis</i>	Scarlet Pimpernel		very sparse, southeast (PLANTS)
Plants	Myrsinaceae	<i>Lysimachia nummularia</i>	Moneywort		

Plants	Myrsinaceae	<i>Lysimachia punctata</i>	Dotted Yellow-loosestrife		
Plants	Oleaceae	<i>Ligustrum obtusifolium</i>	Border Privet		
Plants	Oleaceae	<i>Ligustrum vulgare</i>	European Privet		
Plants	Plantaginaceae	<i>Plantago lanceolata</i>	English Plantain		
Plants	Plantaginaceae	<i>Plantago major</i>	Common Plantain		
Plants	Plantaginaceae	<i>Veronica anagallis-aquatica</i>	Eurasian Water Speedwell		
Plants	Poaceae	<i>Agropogon lutosus (Polypogon interruptus)</i>	Ditch Rabbitfoot Grass		
Plants	Poaceae	<i>Agrostis gigantea</i>	Redtop	Freshwater	Isolated, Lewis & Clark Lake (USGS)
Plants	Poaceae	<i>Agrostis stolonifera var. palustris</i>	Creeping Bentgrass		widespread (PLANTS)
Plants	Poaceae	<i>Alopecurus arundinaceus</i>	Garrison Creeping-foxtail		? Present
Plants	Poaceae	<i>Alopecurus geniculatus</i>	water foxtail, marsh meadow foxtail	Freshwater	1900 record, not recorded since (USGS)
Plants	Poaceae	<i>Alopecurus pratensis</i>	Field Meadow-foxtail		sparse, few counties in east (PLANTS)
Plants	Poaceae	<i>Chasmanthium latifolium</i>	Indian Wood-oats		? Not present, in nearby states (PLANTS)
Plants	Poaceae	<i>Deschampsia cespitosa</i>	Tufted Hair-grass		
Plants	Poaceae	<i>Echinochloa crusgalli</i>	barnyard grass	Freshwater	2008 Missouri, non-specific
Plants	Poaceae	<i>Echinochloa frumentacea</i>	Japanese-millet		
Plants	Poaceae	<i>Elymus elongates var. ponticus (Agropyron elongatum)</i>	Tall Wheatgrass		
Plants	Poaceae	<i>Elymus junceus</i>	Russian Wildrye		
Plants	Poaceae	<i>Elymus repens (Agropyron repens)</i>	Quackgrass		
Plants	Poaceae	<i>Eriochloa villosa</i>	Woolly Cupgrass		
Plants	Poaceae	<i>Festuca rubra</i>	Red Fescue		
Plants	Poaceae	<i>Festuca trachyphylla</i>	Hard Fescue		
Plants	Poaceae	<i>Panicum miliaceum spp. miliaceum</i>	Broom-corn Millet		

Plants	Poaceae	<i>Panicum miliaceum spp. ruderales</i>	Broom-corn Millet		
Plants	Poaceae	<i>Phalaris arundinacea</i> L.	Reed Canarygrass		Various locations across the state
Plants	Poaceae	<i>Phragmites australis spp. australis</i>	Common Reed		
Plants	Poaceae	<i>Poa trivallis</i>	rough-stalked meadow grass, bluegrass	Freshwater	2008 Missouri, non-specific
Plants	Poaceae	<i>Polypogon monspeliensis</i>	Rabbitfoot Grass		
Plants	Poaceae	<i>Puccinella distans</i>	Weeping alkali grass	Freshwater	2008 Missouri, non-specific
Plants	Poaceae	<i>Schedonorus pratensis (Festuca pratensis)</i>	Meadow Fescue		
Plants	Poaceae	<i>Setaria pumila spp. pumila (S. glauca, misapplied)</i>	Yellow Foxtail		
Plants	Poaceae	<i>Setaria verticillata</i>	Bristly Foxtail		
Plants	Poaceae	<i>Setaria viridis var viridis</i>	Green Foxtail		
Plants	Poaceae	<i>Setaria viridis var. major</i>	Green Foxtail		
Plants	Poaceae	<i>Sporobolus pyramidatus</i>	Whorled Dropseed		
Plants	Polygonaceae	<i>Persicaria hydropiper (Polygonum hydropiper)</i>	Water-pepper		
Plants	Polygonaceae	<i>Persicaria maculosa (Polygonum persicaria)</i>	Lady's-thumb Smartweed		
Plants	Polygonaceae	<i>Persicaria minor</i>	Small Water-pepper		
Plants	Polygonaceae	<i>Persicaria orientale (Polygonum orientale)</i>	Kiss-me-over-the-garden-gate		
Plants	Polygonaceae	<i>Polygonum aviculare spp. aviculare</i>	Yard Knotweed		
Plants	Polygonaceae	<i>Polygonum caespitosum</i>	oriental lady's thumb	Freshwater	2008 Missouri, non-specific
Plants	Polygonaceae	<i>Rumex acetosella</i>	Sheep Sorrel		
Plants	Polygonaceae	<i>Rumex crispus</i>	Curly Dock		
Plants	Polygonaceae	<i>Rumex obtusifolius</i>	bitter dock	Freshwater	2008 Missouri, non-specific
Plants	Polygonaceae	<i>Rumex patientia spp. orientalis</i>	Patience Dock		
Plants	Polygonaceae	<i>Rumex patientia spp. patientia</i>	Patience Dock		

Plants	Polygonaceae	<i>Rumex stenophullus</i>	Narrow-leaf Dock		
Plants	Pontederiaceae	<i>Eichhornia crassipes</i>	Water Hyacinth	Freshwater	Not present, in neighboring states
Plants	Potamogetonaceae	<i>Potamogeton crispus</i>	curly pondweed	Freshwater	1977 established, several rivers
Plants	Primulaceae	<i>Lysimachia nummularia</i>	moneywort	Freshwater	2008 Missouri, non-specific
Plants	Ranunculaceae	<i>Ranunculus hispidus var. nitidus</i>	Bristly Buttercup		
Plants	Ranunculaceae	<i>Ranunculus repens</i>	Creeping Buttercup		
Plants	Ranunculaceae	<i>Ranunculus sceleratus var. sceleratus</i>	Cursed Crow's-foot		
Plants	Rhamnaceae	<i>Frangula alnus (Rhamnus frangula)</i>	European Alder-buckthorn		
Plants	Rosaceae	<i>Potentilla indica (Duchesnea indica)</i>	Mock Strawberry		
Plants	Rosaceae	<i>Sanguisorba minor</i>	Salad Burnet		
Plants	Rubiaceae	<i>Galium verum</i>	Yellow Bedstraw		
Plants	Salicaceae	<i>Salix alba</i>	White willow	Freshwater	2008 Missouri, non-specific
Plants	Salicaceae	<i>Salix fragilis</i>	Crack willow	Freshwater	2008 Missouri, non-specific
Plants	Salicaceae	<i>Salix x rubens (S. alba X S. fragilis)</i>	Hybrid Crack Willow		
Plants	Salviniaceae	<i>Salvinia molesta</i>	Giant Salvinia	Freshwater	SE United States
Plants	Saururaceae	<i>Anemopsis californica</i>	Yerba Mansa		? Present
Plants	Solanaceae	<i>Solanum dulcamara</i>	Bittersweet nightshade	Freshwater	2008 Missouri, non-specific
Plants	Tamaricaceae	<i>Tamarix ramosissima</i>	Salt-cedar		
Plants	Typhaceae	<i>Typha angustifolia</i>	Narrow-leaved cattail	Freshwater	2008 Missouri, non-specific
Plants	Typhaceae	<i>Typha domingensis</i>	Southern Cattail		
Plants	Ulmaceae	<i>Ulmus pumila</i>	Siberian Elm		
Plants	Violaceae	<i>Viola striata</i>	Striped Cream Violet		

APPENDIX D

ANS COMMITTEE AND TECHNICAL ADVISORS

<p>Dave Tunink Nebraska Game & Parks Commission Lincoln, NE 402 471-5553 Dave.Tunink@nebraska.gov</p>	<p>Jeff Runge/Erin Williams US Fish & Wildlife Service Jeff_Runge@fws.gov</p>
<p>Steve Schainost Nebraska Game & Parks Commission Alliance, NE 308-763-2940 Steve.Schainost@nebraska.gov</p>	<p>Justin King Nebraska Public Power District jwking@nppd.com</p>
<p>Darrol Eichner Nebraska Game & Parks Commission North Platte, NE 308 284-8803 Darrol.Eichner@nebraska.gov</p>	<p>Jason McCauley Bureau of Indian Affairs Jason.McCauley@bia.gov</p>
<p>Mitch Coffin Nebraska Department of Agriculture – Noxious Weed Program Mitch.Coffin@nebraska.gov</p>	<p>Craig Allen USGS NE Cooperative Fish & Wildlife Research Unit/UNL 422 Hardin Hall UNL East Campus 3310 Holdrege St. Lincoln, NE 68583 402-472-0229 allencr@unl.edu</p>
<p>Ken Bazata Nebraska Department of Environmental Quality Ken.Bazata@nebraska.gov</p>	<p>Karie Decker Nebraska Invasive Species Project 909 Hardin Hall UNL East Campus 3310 Holdrege St. Lincoln, NE 68583 Ph: 402-472-3133 kdecker4@unl.edu</p>

APPENDIX E

Comments and Public Review

The Nebraska Aquatic Nuisance Species Plan was pre-reviewed by members of the ANS Task Force and was available for public comment for 60 days and a public input meeting was held on June 9, 2010. In addition, comments were solicited from local governments, regional entities, public and private organizations, and resource user groups that have expertise and interest in the control of ANS.

Specific comments that solicited significant changes to the plan are detailed below along with our responses (italicized and in red):

Combined Preliminary Comments on The Nebraska Aquatic Nuisance Species Plan From The Members of the Aquatic Nuisance Species Task Force (June 23, 2010)

1) From Donald MacLean, U.S. Fish and Wildlife Service, Administrative Staff to the Aquatic Nuisance Species Task Force and State ANS Management Plan Coordinator

Note: The comments below are based on the ANSTF Guidance for State and Interstate Aquatic Nuisance Species Management Plans, which is available on the ANSTF web site (<http://www.anstaskforce.gov/stateplans.php>). In the comments below, the term “Guidance” refers to this document.

General Comments

- The information contained in the Nebraska ANS Management Plan is good solid information that serves as an excellent foundation for an ANSTF approved State ANS Management Plan. Although the plan is divided into the specific sections detailed in the Guidance, many of those sections are lacking some of the required pieces of information. See next section below for more information.
- The most critical issue that needs to be addressed in the NE Plan is the Aquatic Invasive Plant List in Appendix C, which needs to be completely redone. It looks to me as if someone just pasted a list of all invasive plants of Nebraska into the document. Looking over the list, I immediately noticed numerous upland plants that could never be considered aquatic. Upon spot checking the list, I found at least 6 on every page of the list that are definitely not aquatic. Each and every single species needs to be reviewed and only aquatic species (including wetlands plants – i.e. purple loosestrife) should be included on the list.

We have redone the Plant Listed in Appendix C. We have listed those species which have a wetland indicator status (from USDA PLANTS Database) of 1-3, limiting the list to those species that are complete aquatic to species that are equally likely to occur in aquatic or non-aquatic systems.

Comments on Missing Content by Section

- Executive Summary (Section A) – The executive summary is not a summary of the ANS plan. Instead, it seems more like a summary of the Introduction. According to the Guidance, the executive summary should give the reader an overview of the entire ANS Management Plan, and the existing text does not do so. The Guidance states:
 - “The executive summary should briefly summarize each management plan section and its major recommendations. The purpose of the plan, the background on ANS problems, the authorities and current programs of involved organizations, and the central focus should be mentioned. In addition, present and proposed management actions to overcome problems along with program goals and objectives should be succinctly outlined. Finally, a summary of the implementation table (to include funding required for implementation in the initial and future years by objectives and major strategies) and program monitoring and evaluation plans should be provided.”
 - Note: For the management actions, the whole implementation table does not need to be repeated. Perhaps just the objectives and strategic actions could be summarized.

The Executive Summary has been rewritten to better represent a summary of this specific plan.

- Introduction (Section B) – The introduction of the plan has a brief description of the ANS problem in general, but not specific to Nebraska. The addition of a description of the unique aspects of the ANS in Nebraska should be included. Also, the following items, listed in the Guidance, are not included in the preliminary draft:
 - Geographic scope of plan, including a map and discussion of the geographic area showing water bodies, drainage basins, and major structural features.
 - Note: The maps included in Appendix E look as if they could be quite useful to the reader in a discussion of the geographic scope of the plan. However, their small size makes them difficult to read. Could the large map from Appendix E be enlarged to fill the whole page? If appropriate, could any of the other much smaller maps also be enlarged as well? Links should also be provided to larger versions of the maps, if possible.
 - Discussion of any scientific review and/or public comment on the plan as well as a summary of specific comments and any indication of how those comments and reactions were addressed in the final plan.
 - Note: Since this is a preliminary review of a plan, I don't necessarily expect to see much information on specific comments yet, but the final plan should contain an appendix with highlights on the important comment periods and comments that helped shape the overall plan with a shorter summary in the main report and providing some information on how the comments may have shaped the development of the plan.
 - An explanation of the connection of the ANS plan to other plans (ANS or otherwise) produced by adjacent states or entities with overlapping jurisdictions covering shared waters.

The Introduction now includes the geographic scope of the plan (including a map), a brief discussion of comments received on the plan which directs further to Appendix E, and an

explanation of the connection of this ANS plan to other management plans in the state or in neighboring states.

- Problem Definition and Ranking (Section C) – The plan does have a specific section that covers this topic, but it lacks several of the crucial pieces of information that characterize the problem and its unique aspects particular to Nebraska. The following information from the Guidance is missing:
 - Brief description of the overall history of ANS problems in Nebraska.
 - An estimation of the number of species or other taxa in various classes, in the geographic area.
 - Description of pathways by which these species arrived in the State or region.
 - Description of how connecting water bodies outside the plan boundaries may introduce new ANS into the affected area.
 - Discussion of major problems and concerns, such as key introduced species and introduction pathways, lack of scientific knowledge, or limited public knowledge.
 - The plan should also identify all known and suspected ANS concerns and problems, even if no consensus exists about what species warrant attention.
 - Note: The few species that are profiled in Section C could be taken as major problems, but it is not presented that way. They are instead portrayed as “examples,” and the section doesn’t cover other problems such as introduction pathways, lack of scientific knowledge, or limited public knowledge.
 - Problems should be grouped into 3-5 categories (e.g., high, medium, low or some other scheme)
 - Page 4 of the NE Plan States: “Each species will undergo a ranking assessment and a risk assessment to determine which species are of low, moderate, and high priority of management actions.” While I am sympathetic to Nebraska not yet having a risk assessment process, some effort still needs to be made to identify some of the highest priority problems for immediate action. Otherwise it is difficult for the reader to understand what the most important ANS issues are. Perhaps some sort of initial ranking based on the best professional judgment of the authors could be added until the full risk assessment can be completed? Another method could be to categorize species into those already within the State, those not yet in NE but where the threat of introduction is imminent, and those that you are worried about but relatively sure have not yet been introduced into Nebraska waters.
 - The plan should acknowledge that problems and concerns may change over time. If problems and concerns are to be further described in the context of individual objectives, this section can provide a brief overview and summary discussion.
 - Discussion of:
 - Cryptogenic species (i.e., those which have not been determined as clearly native or nonindigenous), including, to the extent possible, probable pathway.

- Species that have not yet been identified in Nebraska’s waters, but have the potential of finding their way into the State’s waters and the pathways of concern.
- Any evaluations of the economic and ecological costs and benefits of proposed actions. The Task Force recommends using ecological risk assessment principles to understand and group ANS problems.

Section C now includes a brief history of ANS in Nebraska, although, lack of funding/staff to monitor ANS in the past (and currently) has been extremely limited, thus our understanding of the history, the number of species, and pathways of introduction are slim. The plan now discusses the water bodies that are connecting NE to other states, and the potential for those water-bodies to serve as pathways of ANS introduction. Section C now includes a more detailed and clarified description of the major concerns and problems in NE, including introduction pathways, specific concerns, lack of knowledge, and key species, which show a preliminary ranking of the top-prioritized species based on the best knowledge available to the ANS Committee. These prioritized species are likely to change over time, particularly because we have yet to run each species through a risk assessment which will give us a better understanding of which species fit into which categories. This section now discusses cryptogenic species and species that have not yet been found in NE waters but have the potential for introduction into the state. Finally, section c discusses the economic and ecological costs/benefits of each proposed action.

- Goals (Section D) – The goal of the Nebraska plan is a solid goal that reflects the intent of the Non-indigenous Aquatic Nuisance Prevention and Control Act. The list of “sub-goals” (a – k), if you will, in Section D that will help guide the implementation of the plan are also acceptable. The goal could be improved by indicating how the goal(s) of the plan contribute to the accomplishment of ANSTF, Fish and Wildlife Service, NOAA Fisheries, or other relevant Federal program long-term outcome goals.”

Section D now includes a brief description of how the plan meets the goals of ANSTF, USFWS and NOAA.

- Existing Authorities and Programs (Section E) – This section adequately describes the existing Federal and State authorities pertaining to ANS. However, the following information from the Guidance is missing:
 - There is very little information on existing program activities.
 - The identification of gaps in those authorities or implementing regulations is quite brief, consisting of a few casual statements in some of the paragraphs instead of a concise treatment of the subject matter in its own right.
 - Note: I realize that one of the priorities in the section on “Priorities for Action” covers identifying gaps in state policies. It is perfectly acceptable for this to not necessarily be accomplished before a plan is finalized if it is an action in your implementation table (1A1f), but the action and what exactly you are planning on doing should be highlighted in this section if the actual gaps themselves are not yet going to be included.

Section E now includes a more detailed description of existing program activities (detailed in Appendix A), and discusses gaps in authority/implementing regulations in more detail (under the State sub-section) and by identifying which objective and action in the implementation table addresses the need to investigate this subject further.

- Objectives, Strategies, Action and Cost Estimates (Section F) – The Objectives and Strategies section of the Nebraska plan outlines the basic objectives and strategies of the plan, however, it fails to provide any detail at the task level (called actions in the Guidance) or provide cost estimates for these actions. The actions are mentioned in the implementation table, but enough details are not provided in the table or in the corresponding section of the plan itself. As per the Guidance document this section should include:
 - Actions - Each strategy should include Actions that describe the specific work or task that will be performed to implement a strategy. Short statements detailing the work required and organizations involved and their respective roles should be prepared for each action. The expected result should be described.
 - Each action, along with associated strategies, objectives and goals should have a title and be listed in the implementation table. For each action, the names of the implementing and funding organizations and their roles should be specified.
 - If necessary, include information about the problems and concerns being addressed to indicate why a particular strategy or set of actions is appropriate.
 - In the event that the authority to undertake the necessary action does not exist, an objective and related strategies and actions may be required to attain the authority to pursue the actions necessary to achieve the goal.
 - The plan should also disclose the consensus reached among organizations to apportion activities and work collaboratively on addressing ANS problems.
 - The roles and responsibilities of each participating organization need to be clearly defined and lead organizations need to be identified.
 - Cost Estimates - The basis for the cost estimates (i.e., salary of two field biologists 1/3 of the year, plus equipment and travel costs) should be presented here if that information is available. The estimated contribution of each organization and the total cost for each action should be shown in the implementation table.

Section F has been rewritten to include much more detail for each objective, strategy, and action. Each action now details the work to be done, expected results, and identifies who the lead organization is for insuring implementation of each particular action. Each action also now includes a cost estimate, estimated FTE, and identifies where the funding will potentially come from. Many of the actions require no funding as much is done via email/conference call, so FTE estimates indicate effort required. Actions that require funding have listed a potential external funding source as there exists no state funding to implement the plan. Also, many actions are to be completed by the ANS coordinator, which also requires funding (requested from federal funds). Finally, at the beginning of the section, there is a brief discussion of the major

organizations involved in implementation of the plan, how they are connected, the consensus reached to apportion activities of the plan, and each respective roles.

- Priorities for Action (Section G) – The NE Plan does not actually list a set of top priorities upon which it will focus its efforts. As per the Guidance document this section should include:
 - Priorities for action are established based upon the severity of a problem, the programmatic authority and scientific capability to resolve it, and the cost of the proposed solution.
 - The plan should discuss the rationale for focusing on certain species, pathways, economic and ecological impacts, or other problems/concerns and not others.
 - It should be explicit about which problems and concerns are to be addressed in this iteration of the plan and why they were included at this time while others were not.
 - Note: Looking at the NE Plan, I see 7 priorities that can be teased from the text. Perhaps these priorities (or similar ones if I have missed something) could be listed with some more detail given to each priority?
 - Establishing an ANS Committee;
 - Creating an ANS Coordinator position;
 - Identifying gaps in state policies and statutes and making recommendations related to those gaps;
 - Prioritizing the need for collaboration among organizations;
 - Development of a species ranking system;
 - Focusing on species where actions can produce the greatest benefit; and
 - Development of an ANS risk assessment to help guide management activities.

Section G now identifies a list of priority actions and the rationale for such priorities, and specifically those actions to be completed within the first year of plan implementation.

- Implementation Table (Section H) – The implementation table is quite complete for a preliminary plan. If I am reading the table correctly, all the entries with a zero in them are Tasks that will be accomplished by the Nebraska ANS Coordinator or the ANS Steering Committee. If this is indeed the case, then are the approximately 10 lines that actually have dollar figures in them the only tasks in the table requiring funds? In addition, the implementation table does not include FTE estimates.

The Implementation Table now includes more detail on activities that are funded or partially funded by the Nebraska Invasive Species Project, Nebraska Game and Parks Commission, and NE Cooperative Fish and Wildlife Research Unit (among others) and breaks the section (and final) total down into funding and FTE in place, and funding and FTE needed in order to better identify what is needed to really complete each action. FTE's are also included for each.

- Program Monitoring and Evaluation (Section I) – The NE Plan handles program monitoring and evaluation through a three part strategy of oversight, evaluation, and

reporting. However, for these actions, it is unclear exactly what the measurable performance measure will be and what the thresholds for success versus failure will be. The Guidance document includes the following information on program monitoring and evaluation, most of which is not covered in the NE Plan:

- Include in this discussion the performance measures that will be used to assess the effectiveness of management actions. For instance, on an annual basis this might include:
 - Whether or not objectives are achieved;
 - Rate of spread along a river reach or coastline;
 - Change in total acreage of habitat occupied by the ANS or the displaced native species;
 - Changes in abundance of an invader and directly or indirectly impacted species;
 - Changes to Federal and State T&E and extinct species lists due to ANS.
 - It is recognized that unforeseen factors may impact the progress of remedying a problem, and this would be evident through program monitoring and evaluation. The discussion should address how other physical, chemical and biological stressors are impacting the effectiveness of management actions and the success of objectives.
 - Describe the process that will be used to accumulate information about results (outcomes and outputs), compare them against planned results, evaluate effectiveness of efforts, and provide feedback. Monitoring and evaluation actions should be included as multiple line items in the Implementation Table.”

Section I has added much to clarify how the evaluation process will be achieved. It identifies success as having completed a task (performance measure) which leads to the overall success of achieving each objective. It also describes the process of reporting and what shall be included in reports as to an accumulation of information about the results from each year's efforts.

Specific Comments (content and typographical)

- Page 2, Table of Contents – Sections E and F do not have the same titles in the table of contents as they do in the body of the document.

Have amended title names

- Page 5, Last Paragraph – Pimental updated his \$137 billion dollar estimate in 2005. The newer estimate is \$120 billion. The reference is: Pimentel, D. & R. Zuniga, & D. Morrison. 2005. Update on the environmental and economic costs associated with alien-invasive species in the United States. Ecological Economics, Elsevier, vol. 52(3), pages 273-288, February.

The dollar estimates have been updated as well as the reference.

- Page 6, Last Paragraph – The first sentence in the last paragraph states that the NE Plan will be reviewed and revised annually. This is an excellent course of action. We want to make sure the authors understand, however, that it is not a requirement. The ANSTF currently recommends that a plan be revised after 5 years and is preparing to revise its State Plan development guidelines and may consider making plan revision a mandatory activity.

While not required, the ANS Committee decided it was the best course of action.

- Page 7. Section C – It is difficult to distinguish between the headings for three species categories (animals, plants, and pathogens) and the headings for the specific species. Suggest making some changes to make the different headings easier to differentiate.

This section has been redone, and provides descriptions for species of high priority only which should have cleaned up any confusion.

- Page 10, Common Reed entry – This entry does not mention the native genotype of *Phragmites*. Does the native genotype occur in Nebraska? If so perhaps that should be mentioned here.

This entry now mentions the status of native Common Reed in Nebraska. It does exist here, but we are unaware of to what extent it still persists.

- Page 10, Saltcedar entry – The genus name for saltcedar is “*Tamarix*,” not “*Tamariz*,”

Thanks! Oops!

- Page 14, 2nd Paragraph, Last Sentence –The abbreviation for the National Invasive Species Act is “NISA,” not “NISPA.”

Typo has been corrected.

- Page 15, List of Other Acts – Suggest putting the correct references from U.S. Code for these acts.

Nearly 2 hours were spent looking for the correct US Codes for each act, they were surprisingly difficult to find. After 2 hours, we had only half accounted for and decided to stop and rather than have only half done, decided it was better with none.

- Page 16, First Heading (Other Federal Authorities and Programs ...) – The heading says it is both Federal Authorities and Programs when in reality it is just a list of Federal agencies.

This has been changed to just Federal Agencies.

- Page 16, Second Heading (Federal Programs) – The heading says Federal Programs, but there are several agencies listed that I do not think are Federal such as the North American Weed Management Association, the Center for Aquatic and Invasive Plants, NatureServe, the Center for Wildlife Damage Management, and the Center for Aquatic Nuisance Species. I suggest this list be cleaned up – see my next comment.

This sub-section has been changed to read National programs/organizations

- Page 17, List of State Agencies/Organizations – The list of State agencies includes the Nature Conservancy which is not a State agency as well as several other organizations that do not look as if they are State agencies. Perhaps another list needs to be added of non-governmental organizations?

TNC was removed from the state agencies list and placed under the new ‘national programs’ list

- Page 19. Section F Title – The title of Section F is “Objectives, Strategies, Actions and Cost Estimates (aka the Guidance, I assume), yet the information in this section is organized as: “Objectives, Strategic Actions, and Tasks.”

The information in this section is now organized into Objectives, Strategies, and Tasks.

- Page 20, Strategic Action 2A2 – Two of the tasks in this section use the term “regional states.” This is a confusing term. Should it say “surrounding states” instead?

Regional states has been changed to ‘neighboring states’

- Page 21, Task 3A2a – No information is given on how the high-risk water of Nebraska will be determined. This is the kind of detail that the Section F needs more of as per my comment above.

Information has been added to identify how high-risk waters are selected. Data will be collected (and shared) by the NE Cooperative Fish and Wildlife Research Unit as part of a larger, multi-million dollar creel survey research project. We will analyze the data to look at boater movements within NE and around the region.

- Page 22, Tasks 4A1e, 4A1f and 4A1g – These actions seem more like prevention activities rather than control and eradication activities.

After discussion, we decided that these actions could easily fit into the prevention category. Since this focuses on preventing established ANS from spreading and the prevention section focuses on preventing NEW introductions from outside NE, we decided it would be best if left as is.

- Page 23, Objective 6 – Although not a requirement, I am disappointed not to see some mention of using the existing ANSTF public awareness campaigns Stop Aquatic Hitchhikers! and Habitattitude™. It could also be useful to take advantage of the USGS alert system. Taking advantage of existing programs saves money and resources, shows good collaboration, and allows the invasive species community to speak in a more unified voice.

We fully intend to use the nationally recognized ANS campaigns (and currently do through the Nebraska Invasive Species Project). We have added a statement under Objective 6 to indicate our intention to continue to use these campaigns.

- Page 24, Problem 7A, first sentence – The word “passes” needs to be corrected to “passed.”

The typo has been corrected.

2) From Tom Mendenhall, Bureau of Land Management:

- Just one comment to the Preliminary Nebraska ANS Management Plan - Page 8, Zebra/Quagga Mussel paragraph misstates that zebra mussels are found in most states along the Mississippi and Missouri Rivers where actually they have been detected additionally in Utah, Colorado, and in California (reference Quagga/Zebra Mussel Action Plan for Western U.S. Waters 2010).

It has been clarified to indicate that zebra/quagga mussels exist in the west as well.

3) From Mike Ielmini, U.S. Forest Service:

- The NE Plan looks fine overall. If possible, I would offer a suggestion to add a reference to the Sikes Act in their list of federal authorities....page 15 (and also appendix A).
 - Note from Don MacLean, USFWS: Mr. Ielmini provided a draft paragraph pertaining to the Sikes Act, but also stated that they were certainly welcome to seek draft their own language as well. In order to clarify Mr. Ielmini’s language, the USFWS Sikes Act Coordinator, Laura Norcutt, recommends using the following language:

The Sikes Act (16 USC 670a-670o, 74 Stat. 1052), as amended, Public Law 86-797, approved September 15, 1960 - The Sikes Act provides for cooperation by the Departments of the Interior and Defense with State agencies in planning, development and maintenance of fish and wildlife resources on military installations throughout the United States. Military installations with significant natural resources are required to prepare in cooperation with the Department of the Interior and State agencies integrated natural resources management plans (INRMPs) [including invasive species management]. The Sikes Act also requires

that the Secretary of the Interior, in consultation with state fish and wildlife agencies, to submit a report annually to respective Congressional committees with oversight responsibilities on the amounts expended by Interior and state fish and wildlife agencies on activities conducted [including invasive species management] pursuant to INRMP's. In 2009 the Sikes Act was amended to clarify the authority of the Department of Defense to enter into interagency agreements with other federal agencies to implement natural resource programs [including invasive species management] on military installations. In 2010 the Sikes Act was amended again to include state-owned lands supporting National Guard facilities to the requirements of the Sikes Act.

The Sikes Act has been added, thank you!

- Also, on page 16, they need to add U.S. Forest Service as one of the USDA agencies that has authority to prevent and control (as well as other activities such as inventory and monitoring) ANS/ANS, particularly on National Forests and Grasslands (National Forest System). Note that Nebraska referenced on page 15 the National Forest Management Act of 1976, but didn't mention the U.S. Forest Service on the next page 16. I'd suggest they do a little more research on those Acts (like NFMA, etc) and add more description like they did with the for Acts like the Endangered Species Act, etc.

We apologize for forgetting to add the USFS under the USDA agencies and recognize the tremendous efforts that USFS imparts on behalf of ANS!

- I'd also like to see them include a short description of the role that the U.S. Forest Service can play...similar to what they did for other agencies on pages 52-55. To assist, here is something that might work: *“The U.S. Forest Service uses multiple authorities to manage aquatic and terrestrial invasive species (including vertebrates, invertebrates, plants, and pathogens), derived from laws enacted by Congress that authorize the Secretary of Agriculture to administer the agency (particularly the 193 million-acre National Forest System) and other resources and to issue necessary regulations. Many of these authorities have subsequently been delegated from the Secretary to the Chief of the U.S. Forest Service. Forest Service invasive species activities are guided by the agency’s National Strategy and Implementation Plan for Invasive Species Management (2004) and other associated policies and program plans. The U.S. Forest Service uses its authorities and broad base of expertise to conduct activities to prevent, detect, control, mitigate, and research aquatic and terrestrial invasive species across a wide variety of landscapes and agency programs, including Forest Service Research and Development, State and Private Forestry, International Programs, and the National Forest System. The U.S. Forest Service emphasizes an integrated pest management approach against aquatic and terrestrial invasive species, utilizing a science-based structured decision-making process to prioritize activities across landscapes, and incorporates invasive species management considerations into Forest Land and Resource Management Planning efforts (Forest Plans) nationwide. The U.S. Forest Service provides technical and financial support to States and local organizations to address complex invasive species problems and establishment of cooperative partnerships against aquatic and terrestrial invasive species. The U.S. Forest Service participates on local, regional, and national invasive species coalitions and committees; including the Aquatic Nuisance Species Task Force and various ANS Regional Panels.”*

Thank you for this detailed description. It has been added to Appendix A which describes the activities of various agencies.

4) From Paul Zaicek, Florida Department of Agriculture (representing National Association of State Aquaculture Coordinators)

Thank you on behalf of the National Association of State Aquaculture Coordinators for the opportunity to comment on Nebraska's draft ANS plan. It is a nicely done plan that, at the risk of offending the authors, reflects a laconic Western philosophy of plain statement, clear argument and not a whole lot of palaver. This is a fair approach and provides for plenty of flexibility as the agencies and partners organize, coordinate and create tools and programs to implement. However, within the draft there is no clearly described lead agency or agency committee and for this particular topic additional information is required.

We have tried to clarify who the lead organization is for each task. We do not have one explicit agency to implement the entire plan. Rather it reflects Nebraska's collaborative efforts across institutional boundaries. The ANS coordinator will be housed within the Nebraska Invasive Species Project (which receives support from the Nebraska Game and Parks Commission) which is housed within the Nebraska Cooperative Fish and Wildlife Research Unit at the University of Nebraska (yes a complicated relationship all-in-all).

Specific Comments:

- A fair amount of discussion focuses on what is an aquatic nuisance species (page 4 and 5) and the overall statement emphasis seems to be ecological affects rather than equitably distributing potential affects to three topics that are widely recognized as being important: natural ecology, economic activities, and human health. The authors cite an article by Rendall that apparently focused upon economic and ecological impacts, but we suggest that authors provide equal consideration to potential human health impacts.

We have tried to mention and emphasize the potential for ANS to impact human health.

- A new section is needed that describes exactly who or whom will be responsible for the plan, put the plan in motion, monitor and report progress, employ the coordinator, and update the plan over time. These intertwined issues are somewhat addressed in Section G, but this discussion is rather nebulous and given the gravity of this challenge there should be clear lines of authority and responsibility. State agency representatives were involved in drafting this document, an agency or agencies will manage a public comment period, and the Governor will approve it. These activities hint at greater interagency cooperation and lines of responsibility than the plan describes.

A paragraph has been added to the beginning of Section F which identifies the major organizations involved, and the responsibilities and roles of each.

- A variety of programs or groups are mentioned in Section H footnotes: Aquatic Nuisance Species Planning Committee (ANSPC), Aquatic Nuisance Species Steering Committee (ANSSC), Nebraska Invasive Species Council (NISC), and Nebraska Invasive Species Project (NISP). Probably in the new section, or in the section that describes plan implementation, the composition, authority, responsibilities and relationship of these various groups and effort should be described.

As stated above, this new paragraph at the beginning of Section F should clarify all of this.

- Nebraska is listed as a member of the Western and Mississippi Basin regional panels (a laudable investment of time and money by the state); however, there is no acknowledgement within the state agency descriptions as to who and what has been

accomplished through this investment (a brief description of both panels can be found on page 56). Tasks 1A2a, 1A2b, and 1A2c indicate these activities are already funded. A second hint that there has been more accomplished by the state agencies that they seem willing to describe.

The NE Game and Parks Commission has had an unofficial ANS coordinator for several years at a 0.05 appointment, so historically activities have been spotty at best. We tried to better reflect funding status of all actions.

- Appendix C and species discussion within the plan makes excellent use of the USGS Nonindigenous Aquatic Species database. The authors may wish to strengthen those activities in the plan that involve prioritizing which species or pathways to address and how to address them by utilizing the tools that have been made available by the Aquatic Nuisance Species Task Force such as a risk analysis methodology (http://www.anstaskforce.gov/Documents/ANSTF_Risk_Analysis.pdf), pathways prioritization (http://www.anstaskforce.gov/Documents/Pathways_Training_and_Implementation_Guide_Jan_2007.pdf) and the rapid screening methodology developed by the Mississippi River Basin Regional Panel (http://wwwaux.cerc.cr.usgs.gov/MICRA/MRBP/MRBP_Working_Version_Model_Risk_Assess._&_Management_Process_5-12-09.pdf).

The ANS Committee fully intends on strengthening the prioritization of activities and species using a risk assessment and will evaluate these provided. We are also looking into using the newly developed USDA APHIS risk assessment as part of the Nebraska Invasive Species Project, so will consider for ANS as well.

- Similarly, the authors may wish to specifically recognize public education and outreach tools and programs supported by the Aquatic Nuisance Species Task Force such as Habitattitude™, Protect Your Waters and 100th Meridian Initiative. See <http://www.anstaskforce.gov/campaigns.php>. Notably the Nebraska Game and Parks Commission is listed as a 100th Meridian Initiative and Protect Your Waters member but no mention of this involvement is made within the plan.

We fully intend to use (and currently use) such programs/campaigns and each has been recognized under Objective 6.

5) From Kim Bogenschutz, Iowa Department of Natural Resources (Representing the Association of Fish and Wildlife Agencies)

I think Nebraska did a good job on the draft plan, especially since they have no clear agency for ANS authority. They recognize the gaps they have in ANS management and have plans in place to deal with them. Steve Schainost has been very active in the Mississippi River Basin Panel and is chair of its Education and Outreach Committee. This will be a good plan for Nebraska to have as they move forward with ANS management.

Thank you!

Comments received from local governments, regional entities, public and private organizations, resource user groups, and general public:

1) From Gerry Steinauer and Steve Rolfsmeier (NGPC)

- In the document the term "aquatic" is not defined, and this causes some confusion. Does it mean only deeper water, permanently flooded habitats such as lakes, deep marshes, and

streams? Or does it also include temporarily flooded sites, such as playa wetlands, wet meadows and floodplain forest? Two of the plants listed in the early portion of the document are truly aquatic, while phragmites and tamarix often occur in areas at most temporarily flooded.

The term 'aquatic species' has been added to the glossary to help clarify.

- *Phragmites australis* is rightly mentioned early on as a problematic invasive (page 10), but there is no mention that both native and invasive alien strains are present. This section implies all populations are non-indigenous, (whereas the vast majority are native).

We have added verbiage to account for the native strain of Phragmites

- Under Objective 7 there needs to be included a strategy that states “Prevent the sale, planting, and transportation of ANS”. Several highly invasive species, such as reed canary grass, Garrison creeping foxtail and others, are still promoted and sold by agronomists and seed dealers, which is enhancing their spread and the loss of native habitats.

We have discussed this very problem within the ANS Committee, and have decided not to include such detailed descriptions on how exactly new rules/regulations or legislation will read. It will depend on the agency of authority and the verbiage may change depending on legislative support. We fully intend to include this problem into the new regulations.

- Will one position, a coordinator, be enough to run this program? Seems like a huge task. Can you add another staff position or two to the project?

This is certainly a large task for one person. However, considering our extreme lack of funding, we wanted to keep things logistically feasible. We also are lucky to have the Nebraska Invasive Species Project and Council to help with these tasks.

- In the Appendix the list of “Current/Potential Aquatic Nuisance Species” needs revision. Many of the species on the list have proven not to be problem species, such as *Acorus calamus* and *Asparagaus officinalis*. For some of the listed species it is questionable as to whether they are truly aquatic. There are a few warm-water species, such as *Hydrilla* and *Salvinia*, listed that likely will not occur in Nebraska. There were also a few exclusions. Our primary wetland invader, reed canary grass, was not on the list.

The list has been completely redone thank to your help and many others. Thanks!

2) From Bruce Stephen, SECommunityCollege

Terrific job on the current version of the Nebraska Aquatic Nuisance Species Plan. However, I noticed very few aquatic snails species on the listed of current and potential nuisance species. I wanted to suggest that you include a few more aquatic gastropods as *potential* nuisance species.

The species are listed below:

New Zealand Mudsnail (*Potamopyrgus antipodarum*). Currently in Colorado as well as many western states. Bound to show up in Nebraska soon, though low survival in our hot summer may keep these snails at bay.

Red-rimmed melania (*Melanoides tuberculatus*). Also in Colorado currently. In contrast to the NZM above this species may be kept at bay due to the cold winters (it is subtropical and survives in warm springs in CO). This is a common aquarium snail for hobbyist and thus introductions are likely from this source.

Faucet snail (*Bithynia tentaculata*). These tiny invaders from Europe have been around for some time (1870s) and continue to spread slowly. They carry parasites (trematodes) implicated in large scale bird die-offs in Wisconsin and Minnesota.

We have added the species to the list in Appendix C and they will be reviewed when we run through the risk assessment to officially determine priority species.

3) From Tim Creger, Nebraska Dept. of Agriculture

While the ANSP mentions the U.S. EPA and FIFRA as the federal authority in regulating pesticides, it does not indicate that FIFRA and EPA further delegates authority to administer and enforce FIFRA to the Nebraska Department of Agriculture. The state law that recognizes FIFRA and provides comprehensive statutory language for the regulation of pesticides is the Nebraska Pesticide Act (Title 25, Chapter 2, Nebraska Administrative Code, Sections 2-2622 through 2-2654. With the exception of containment and loadout structures, and chemigation (application of pesticides in irrigation water), the Nebraska Pesticide Act and the NDA regulate all aspects of state and federal pesticide law. This includes the certification and licensing of pesticide applicators, registration of pesticides used in the state, licensing of pesticide dealers, and monitoring/enforcement of pesticide use.

Because of this delegation of authority, the NDA serves as the administrative government agency for FIFRA Section 18 (emergency use exemptions) and Section 24(c) (special local need exemptions). The NDA's Pesticide Program played a key role in the zebra mussel eradication effort at Offutt AFB Base Lake in 2008 and 2009. Without our involvement, the base Environmental Command would not have been able to submit or procure the necessary federal approval for the use of copper sulfate in the lake in the manner it was applied.

It would be very useful for anyone reading the ANSP to know about our program, the need to secure special pesticide labeling in many control projects, and the procedures and timelines involved in that process. While there are numerous aquatic pesticides already labeled and registered for use in our state, it would be illegal for anyone to use those products in a manner not specifically listed on the label. It would also be illegal to use a pesticide in an aquatic setting if it is not labeled for that use. For these reasons, I feel it is critical that the ANSP indicate any aquatic invasive species control decision should include initial consultation with our program in order to look at all the options before settling on a final decision. This will be even more important starting April of next year, as the national aquatic pesticide NPDES permit rule begins requiring additional considerations for any pesticide applications on/over/near water.

Information pertaining to the NDA's FIFRA program and pesticide use has been mentioned under Objective 4 (Control and Eradication) and is provided in full detail under state authority in Appendix A. Thank you for such useful and pertinent information!

4) From Nebraska Game and Parks Commission, Wildlife Division

Several individuals from the wildlife division at Nebraska Game and Parks reviewed the Nebraska Aquatic Nuisance Species Management Plan. Overall, we found the plan to be very well written and very comprehensive. We have just a couple comments:

Regarding the funding for prevention of new ANS, we think you should probably be thinking broader than a \$400k watercraft inspection program. In the document, it appeared to be focused primarily on existing species that is already in the state. As the plan mentions, the key to effective control is early detection AND the ability to take early action. We suggest that you

consider developing some type of contingency fund that would be available as having funds available upfront would facilitate early and decisive action.

Additionally, there were comments regarding which invasive species you chose to highlight in the main text. Many found that the diverse grouping you had represented the problems we face quite well. I received comments that individuals were surprised that canary grass was not highlighted in the text, but it is listed in the appendix.

A point of clarification, the Nature Serve is a 501C(3) organization and not a federal program although they participate in many federal activities and programs.

Again, well done. This was a very complete document

Thanks so much for submitting your comments. I agree that a boat inspection program really focused on early detection will likely take more than \$400k. I will suggest this to the group next week to see if we can get a more reasonable number pinned down, however given that there are no funds available for such a program, we would really like to keep these goals attainable. I will also suggest the idea of a contingency fund that will allow for rapid response once a species is detected.

We will emphasize the importance of eradicating new infestations, rather than focus on species that already exist in the state, and incorporate better the proposed 'early detection/rapid response program.' I think we kept existing species at the forefront because while we have reports of them being here, we have very little 'official' data of what is here and where - aside from the noxious weeds. Also, it's been surprising to find that there is little regulatory authority (or perhaps enforcement) over many of the species that have been introduced. We are hoping to focus on that as well in order to prevent the spread of what is already here.

As for reed canary grass, we received many comments about what should be listed in that section. We are working on clarifying what that section means. We are developing a ranking criteria to categorize species into low, medium, and high priority for management action, and thus will adjust that list to include examples of those in the high priority category.

Finally, thanks for the clarification about Nature Serve.

5) From John Bender, Nebraska DEQ

The purpose of this email is to comment on the Nebraska Aquatic Nuisance Species Management Plan – Draft V.1 (Plan) that is available for review until July 5, 2010. I was just made aware of the Plan today by Pat O'Brien of NARD, so I gave it a quick review.

In general terms you have covered NDEQ's authorities fairly well as it relates to the Plan. I would point out that NDEQ has been granted primacy, and as such we are the implementing authority for all federal Clean Water Act programs except the §404 (dredge and fill) program, which is administered by the US Army Corps of Engineers (see Appendix A, 1972 Clean Water Act). Thus, point source discharges (e.g., ballast water) that require an NPDES permit under §402 of the Clean Water Act, would be issued that permit by NDEQ under its authorities in Title 119. I would also point out that any control strategies involving the use of aquatic pesticides are addressed in Title 117, Chapter 2 and will soon come under regulation in the NPDES program.

Thanks for the added information pertaining to NDEQ's authorities. We have added this important information under Appendix A which details the description of each agency's authorities.

6) From Duane Hovorka, Nebraska Wildlife Federation (summary of comments)

In response to your request for comments on the draft plan, I would offer the following on behalf of the Nebraska Wildlife Federation.

You may not be aware of it, but Nebraska Wildlife Federation operates an Adopt a Stream program that would seem to be a great fit with, and should be an important component of, Nebraska's aquatic nuisance species management plan. We have recently put in place some basic program components that we believe will help us expand the program across Nebraska. Those same tools should be helpful in addressing invasive and nuisance aquatic species. The same people who are out several times per year actively monitoring their local stream for dragonfly larvae, snails, and dissolved oxygen levels, could also be monitoring for Zebra mussels, phragmites and purple loosestrife. Working with Doane College, we recently completed Version 1.0 of an online database, which now allows Adopt a Stream groups or individuals who collect data to record their data online. The system also allows others to view the data collected by any stream team in the state. This online database could be used as the primary database for recording invasive aquatic species as it outlined in the plan. It is easy to use, and could be used by both volunteer stream monitors and agency personnel who monitor for nuisance and invasive aquatic species. We would also like to supplement that with several videos on nuisance/invasive aquatic species, to provide an easy, online training system for our stream teams. Those videos would be supplemented by written information or links available online, to give volunteers and agency staff access to additional information that will help them identify and deal with these species. As is noted in the draft plan, funding for these efforts will be a challenge. We are also finding funding for our Adopt a Stream program to be a challenge, but one we are developing a partnership to address. It would only make sense to avoid duplicating efforts, such as the online database, and to utilize the resources in place and the volunteer network we are establishing to make both programs more effective.

Thank you for submitting comments on the Nebraska ANS Plan.

I am so excited to hear about the details of the Adopt a Stream Program. I was aware that the program existed, but being fairly new to Nebraska, have not been able to look into it yet. I think this program would be a great addition to our monitoring efforts and to help with educating folks about aquatic nuisance species. The online component sounds incredible - a great way to get information to a broad audience. We are also working on an online data entry program for resource professionals. We would eventually like the program to receive public reports, but would require a separate log-in, as we would need NGPC to confirm the status and location of the reported specimen. Let's keep in touch about this.

We will be sure to include the Nebraska Wildlife Federation as a collaborator. Let me know if you need some help during the development or implementation stage with regard to aquatic nuisance species or invasive species in general.