

Fisheries and Aquatic Resources

2016-2020

Aquatic Invasive Species

Strategic Management Plan

South Dakota Game, Fish and Parks

Wildlife Division



Geno Adams

Aquatics Program Administrator

John Lott

Aquatics Section Chief

Will Sayler

Aquatics Program Administrator

Mike Smith

Senior Biologist/AIS Coordinator

Adopted by GFP Commission June 03, 2016

DIVISION OF WILDLIFE



Agency Mission

The purpose of the Department of Game, Fish and Parks is to perpetuate, conserve, manage, protect, and enhance South Dakota's wildlife resources, parks, and outdoor recreational opportunities for the use, benefit, and enjoyment of the people of this state and its visitors, and to give the highest priority to the welfare of this state's wildlife and parks, and their environment, in planning and decisions.

Wildlife Division Mission

The Division of Wildlife will manage South Dakota's wildlife and fisheries resources and their associated habitats for their sustained and equitable use, and for the benefits, welfare, and enjoyment of the citizens of the state and its visitors.

Wildlife Division Motto

"Serving People, Managing Wildlife"

Table of Contents

| | |
|---|----|
| I. Introduction..... | 4 |
| II. Inventory..... | 5 |
| III. Issues..... | 7 |
| IV. Objectives, Strategies & Tasks..... | 8 |
| Appendices..... | 13 |
| Appendix A: Aquatic Invasive Species Regulations..... | 13 |
| Appendix B: Range Maps of AIS Fish and Invertebrates Present in South Dakota..... | 15 |
| Appendix C: Acronyms..... | 20 |

I. Introduction

Aquatic Invasive Species (AIS) are a significant threat to the biodiversity and ecological health of the aquatic resources of South Dakota. These species have the potential to dramatically alter the ecology of a lake or river, impose substantial economic costs to maintain water infrastructure, and decrease the recreational value and use of a waterbody. While South Dakota has largely remained free of AIS, the expansion of the geographic range of Asian carp, and the recent discovery of a zebra mussel infestation in Lewis & Clark Lake, highlight the need for a strategic management plan to guide efforts to prevent additional introductions into South Dakota waters as well as to control, prevent, and mitigate the effects of existing AIS on the aquatic resources of the state.

The South Dakota Aquatic Nuisance Species Management Plan was approved by Governor Mike Rounds in 2008. This plan was developed in response to Section 1204 of the Nonindigenous Aquatic Nuisance Prevention and Control Act (NANPCA) of 1990, which provides States an opportunity for federal cost-share support for implementation of a plan to address AIS.

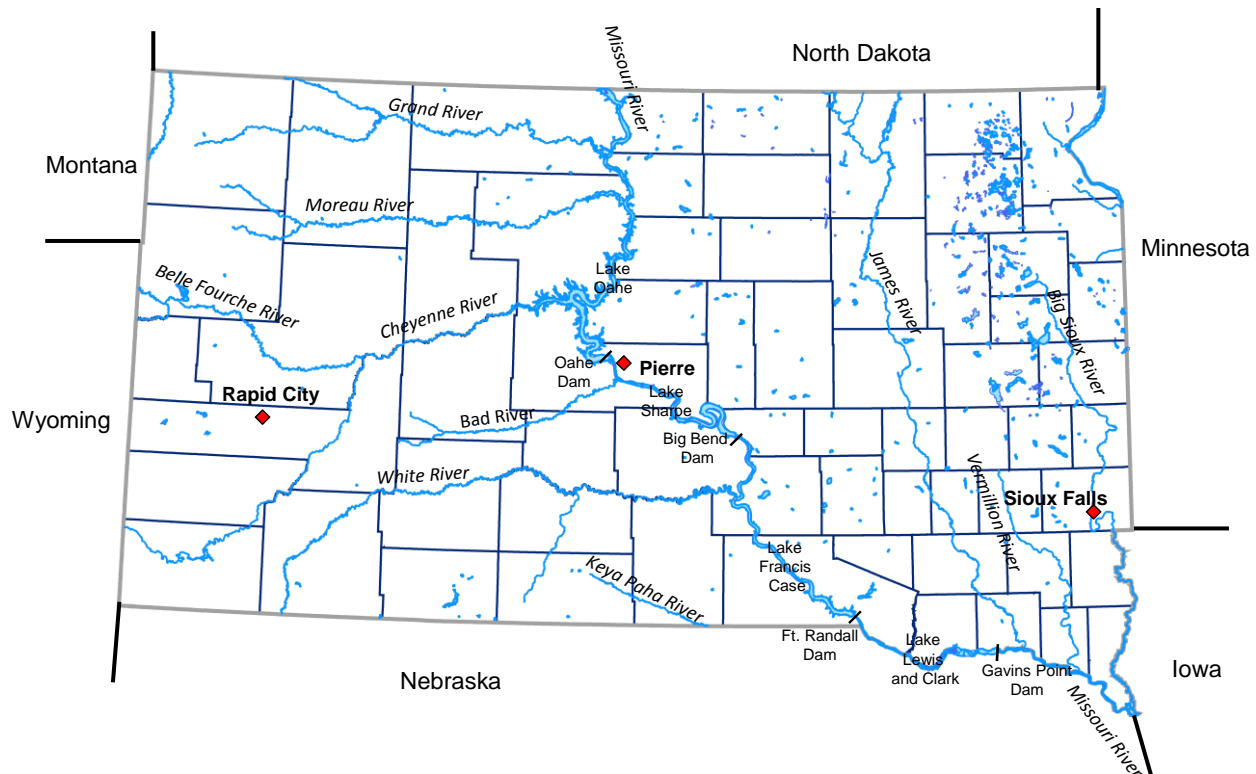
The Department of Game, Fish and Parks led the effort to draft the 2008 plan in collaboration with multiple state, federal, tribal, and non-governmental organizations, and is responsible for the administration of the plan; however, this plan was broadly designed for use by all entities that may have AIS management responsibilities. Therefore, it is pertinent that the Department of Game, Fish and Parks develop a strategic plan to direct Department resources and collaborative efforts that support this plan.

II. Inventory

Aquatic Resources of South Dakota

South Dakota lies almost entirely within the Missouri River Basin, although a small portion in the northeast corner of the state flows into the Red River. Lakes and impoundments of various sizes can be found throughout the landscape. Major rivers in South Dakota include the Grand, Moreau, Cheyenne, Bad, White, James, Vermillion, and Big Sioux (Figure 1). The largest waters, by area, in South Dakota are the Missouri River and its associated reservoirs Oahe, Sharpe, Francis Case, and Lewis & Clark.

Figure 1. Aquatic Resources of South Dakota.



The aquatic resources of South Dakota include a variety of lentic and lotic systems that vary significantly in size, biodiversity, and economic and recreational value. The Wildlife Division of the Department of Game, Fish and Parks has identified four distinct Fisheries Management Areas within the state. A general description of each management area can be found in the Statewide Strategic Plan. A more detailed description of habitats, fish assemblages, and additional information can be found in each individual management area plan.

Aquatic Invasive Species Present in South Dakota

South Dakota has remained relatively free of AIS when compared to other states in the Northern Plains. Nevertheless, various AIS fish, plant, and invertebrate species have become established in the state (Table 1). The list of species classified as AIS in South Dakota can be found in Appendix A. The geographic range of these species within South Dakota has largely remained localized to single waterbodies; however, species such as silver carp and bighead carp were able to successfully colonize very large regions of the state due to the connectivity of the aquatic resources. Range maps for AIS fish and invertebrates that are currently present in South Dakota can be found in Appendix B.

Table 1. Aquatic Invasive Species present in South Dakota, by species and waterbody.

| | | Fish* | | | | Plants | | | | | | Invertebrates | | | | |
|---|---------------------------------|--------------|-------------|------------|---------------|---------------|----------------|----------|------------------------|--------------------|----------------|----------------|--------------|---------------|------------|--------------------|
| | | Bighead Carp | Silver Carp | Grass Carp | European Rudd | Brittle Naiad | Curly Pondweed | Didymo | Eurasian Water-milfoil | Purple Loosestrife | Flowering Rush | Rusty Crayfish | Zebra Mussel | Quagga Mussel | Asian Clam | Red Rimmed Melania |
| Waterbody | Lake Oahe | | | | Infested | | Infested | | Infested | | | | | | | |
| | Lake Sharpe | | | | Infested | | Infested | | Infested | Infested | | | | | | |
| | Lake Francis Case | | | | Infested | | | | | | | | | | | |
| | Lewis & Clark Lake | | | | Infested | | Infested | | Infested | | | | Infested | | Infested | |
| | MO River below Gavins Point Dam | Infested | Infested | Infested | Infested | | | | | Infested | | Infested | Infested | | Infested | |
| | James River | Infested | Infested | Infested | | | | | | | | | | | | |
| | Big Sioux River | Infested | Infested | Infested | | | | | | | | | | | | |
| | Vermillion River | Infested | Infested | Infested | Infested | | | | | | | | | | | |
| | Fall River | | | | | | | | | | | | | | | Infested |
| | Cascade Creek | | | | | | | | | | | | | | | Infested |
| | Castle Creek | | | | | | | Infested | | | | | | | | |
| | Angostura Reservoir | | | | | | Infested | | | | | | | Suspect | Infested | |
| | Big Stone Lake | | | | | | Infested | | | | | | | | | |
| | Canyon Lake | | | | | | Infested | | | | | | | | | |
| | Interstate Lakes (Brookings) | | | | Infested | | | | | | | | | | | |
| | Lake Alice | | | | Infested | | Infested | | | | | | | | | |
| | Lake Byron | Infested | Infested | | | | | | | | | | | | | |
| | Lake Faulkton | | | | | | | | | | | | | | | |
| | Lake Louise | | | | | | | | | | Infested | | | | | |
| | Lake Madison | | | | Infested | | | | | | | | | | | |
| | Lake Mitchell | | | | | | Infested | | | | | | | | | |
| | Lake Vermillion | | | | Infested | | | | | | | | | | | |
| | McCook Lake | | | | | Infested | Infested | | | | | | | | | |
| | Mina Lake | | | | Infested | | | | | | | | | | | |
| | Newell Reservoir | | | | Infested | | | | | | | | | | | |
| | Pactola Reservoir | | | | Infested | | | | | | | | | | | |
| | Rapid Creek | | | | | | Infested | Infested | | Infested | | | | | | |
| | Roy Lake | | | | | | Infested | | | | | | | | | |
| | Sheridan Lake | | | | Infested | | Infested | | | | | | | | | |
| | Stockade Lake | | | | | | Infested | | | | | | | | | |
| * Common Carp and Western Mosquitofish can be found statewide | | | | | | | | | | | | | | | | |

III. Issues

Aquatic Invasive Species management is comprised of three key components: prevention, control, and regulation. A holistic management approach must be utilized as the successful implementation of each component is typically dependent upon the successes of one or both of the other components.

1. *Issue: Prevention*

Prevention is the most cost-effective and efficient part of a plan to preserve the aquatic resources of South Dakota. If an AIS can be prevented from entering South Dakota, the potential for an infestation is non-existent.

Prevention is difficult because of the evolving threat of AIS. New AIS are regularly introduced to the United States, and the number and complexity of vectors that have the potential to transport AIS to South Dakota presents a significant challenge. Many aquatic resources in South Dakota have multiple users (recreation, construction, municipal water etc.) which results in many diverse user groups and many vectors for transport.

The prevention of AIS introductions is largely achieved through education and outreach activities; however adequate regulations and a control program to prevent introduction of AIS and, secondarily, to eradicate AIS in their pioneering stages after introduction, are also essential.

2. *Issue: Control*

The control of AIS that have become established or are starting to establish in South Dakota is vital to managing AIS. Control activities include sampling and monitoring water bodies for AIS populations and attempting to eradicate populations where and when it is feasible.

The geographic size and complexity of South Dakota's aquatic resources makes control efforts challenging. Limited time and resources restrict the quantity and quality of the sampling that can be completed. With the exception of AIS plants, attempts to eradicate AIS are extremely costly, largely ineffective and are likely infeasible in most instances.

3. *Issue: Regulation*

Adequate regulations are essential to preventing AIS from entering the state and keeping established populations from spreading to new water bodies or new areas of a water body. Restrictions on the movement of water are in place, as water is the primary vector for the spread of many AIS. AIS regulations can be found in Appendix A.

Although AIS regulations are becoming more prevalent and accepted, it is always challenging when regulations are placed upon user groups. It is important to ensure the balance between reasonable use and ecological protection is maintained.

IV. Objectives, Strategies and Tasks

*(Acronyms defined in Appendix C)

Objective 1: To coordinate and implement an updated and comprehensive management program for South Dakota.

Strategy 1A1: SDGFP, the SD AIS Task Force, and the SD AIS Plan Committee will draft and submit an updated AIS management plan to guide AIS management in South Dakota.

Task 1A1a: Identify key groups and agencies involved in state AIS issues for participation in a state AIS Task Force and an AIS Plan Committee.

Task 1A1b: SDGFP will present the South Dakota AIS Management Plan to the SDGFP Commission for review and approval.

Strategy 1A2: SDGFP will annually coordinate all AIS management activities within South Dakota in cooperation with tribal, state, and federal partners.

Task 1A2a: SDGFP will maintain a full-time State AIS Coordinator position.

Task 1A2b: The State AIS Coordinator will annually hire and train seasonal AIS technicians for monitoring and field inspections.

Task 1A2c: SDGFP will incorporate AIS duties and responsibilities into annual Fisheries Management Area work plans.

Strategy 1A3: Monitor and evaluate the South Dakota AIS management program.

Task 1A3a: AIS Task Force and AIS Plan Committee will meet annually to review state, regional and national AIS issues and revise plan content to adapt to changes in AIS risk or resources for AIS management.

Task 1A3b: SDGFP will provide an annual report of AIS activities and accomplishments to the SDGFP Commission.

Strategy 1A4: SDGFP will continually work with partners to develop permanent funding sources for implementation of the AIS management Plan.

Task 1A4a: SDGFP will work with the USFWS Region 6 AIS Coordinator to obtain federal funding from the ANS Task Force via the annual State ANS Plan grant program.

Task 1A4b: SDGFP will work with the SDGFP Commission and state agencies to identify or develop funding sources.

Task 1A4c: SDGFP will continue to work with tribal, state, federal, and non-governmental partners to fund AIS education and outreach efforts.

Task 1A4d: SDGFP will seek additional grant funding from available federal and state grant programs.

Objective 2: To prevent the introduction of new AIS into South Dakota waters.

Strategy 2A1: Continually identify AIS that have the greatest potential to infest South Dakota and identify existing and potential pathways that facilitate AIS introductions.

Task 2A1a: SDGFP will review and update the AIS Risk Assessment for South Dakota as required.

Task 2A1b: SDGFP will work with potentially affected water user groups to identify risks to agriculture, municipalities, and other water users.

Task 2A1c: The AIS Coordinator will network with regional AIS panels and adjacent states and tribes to exchange AIS information and cooperate on issues or waterbodies with overlapping jurisdictions.

Task 2A1d: SDGFP will work with partners to expand the use of HACCP planning to identify and mitigate AIS threats posed by standard work activities.

Strategy 2A2: Review and update regulations.

Task 2A2a: SDGFP will coordinate an annual review of existing state AIS statutes and administrative rules with tribal, state, and federal partners.

Task 2A2b: SDGFP will work with the SDGFP Commission, the SDDENR, and other partners to update and create new AIS regulations as needed, and identify and support state legislative efforts that improve AIS management in South Dakota.

Strategy 2A3: SDGFP and law enforcement partners will work to prevent new AIS infestations through regulation enforcement and a State WID program.

Task 2A3a: SDGFP will provide AIS identification and regulation training to law enforcement personnel.

Task 2A3a: SDGFP will work with tribal partners, SDDOT, USBR, USACE and other water managers to determine the viability of implementing a statewide WID program that includes border WID stations or appropriate alternatives by 2018.

Task 2A3b: The state AIS Coordinator will provide WID training to all SDGFP law enforcement officers and additional Department staff or law enforcement agencies deemed necessary.

Objective 3: To educate all aquatic resource users about the risks, impacts, and issues associated with the establishment of AIS in South Dakota.

Strategy 3A1: SDGFP will create and maintain an education and outreach campaign.

Task 3A1a: SDGFP will manage an up-to-date website dedicated to AIS information and management

Task 3A1b: SDGFP will utilize traditional media (television, radio and print) to reach recreational users.

Task 3A1c: SDGFP will utilize new and emerging media outlets (social media, outreach events, etc.) to reach recreational users.

Task 3A1d: SDGFP will dedicate a section of the annual fishing and hunting handbooks to AIS information.

Task 3A1e: SDGFP will provide AIS signage at all public water access points.

Strategy 3A2: SDGFP and partners will develop and distribute AIS educational materials.

Task 3A2a: SDGFP and partners will create and distribute items such as trading cards, pamphlets, and rack cards to recreational users.

Task 3A2b: SDGFP and partners will continue to participate in established national education campaigns such as Habitattitude and the 100th Meridian Initiative.

Task 3A2b: SDGFP and partners will create a legislative packet to distribute to members of the South Dakota Legislature to highlight AIS issues.

Strategy 3A3: SDGFP will develop an AIS training program to train agencies and individuals on AIS Identification and WID protocols.

Task 3A3a: SDGFP will develop and provide AIS identification workshops and identification materials.

Task 3A3b: SDGFP will coordinate with the Pacific States Marine Fisheries Commission and Border States to certify the AIS Coordinator and additional personnel as authorized WID trainers.

Objective 4: To detect, monitor, and eradicate existing AIS populations.

Strategy 4A1: SDGFP and partners will implement a state AIS surveillance program.

Task 4A1a: SDGFP will implement a statewide monitoring plan.

Task 4A1b: SDGFP will work to utilize existing personnel to conduct annual AIS surveys, and will continue to evaluate the need for additional personnel.

Task 4A1c: SDGFP will provide training and materials to encourage AIS monitoring by the public.

Task 4A1d: SDGFP will maintain and distribute a current list of all AIS affected waters in South Dakota.

Task 4A1e: SDGFP will train staff to perform Dreissenid mussel veliger analysis.

Strategy 4A2: SDGFP and partners will develop State AIS rapid response protocols to quickly and effectively contain and eradicate pioneering populations.

Task 4A2a: SDGFP and partners will review existing state rapid response policies and capabilities; make necessary revisions and additions in order to ensure effective containment and eradication of pioneering AIS populations.

Task 4A2b: SDGFP and partners will create or identify defined funding sources for fast and effective control and eradication response to future AIS infestations in South Dakota.

Task 4A2c: SDGFP and partners will establish working relationships with states and Tribes with adjoining watersheds in order to efficiently eradicate or limit the spread of pioneering AIS populations.

Objective 5: To control and eradicate established AIS that have significant impacts.

Strategy 5A1: SDGFP and partners will work to limit the dispersal of established AIS to new waterbodies or to new areas of a waterbody.

Task 5A1a: SDGFP and partners will work to control or eradicate AIS populations where economically, ecologically, and technically feasible.

Task 5A1b: SDGFP will work with partners to develop guidelines to ensure the cleaning of water-based equipment that may spread AIS to uninfested waters.

Task 5A1c: SDGFP and partners will ensure that the control strategies developed and implemented by the state are done in coordination with federal agencies and regional AIS panels, local governments, inter-jurisdictional organizations, and other appropriate entities.

Task 5A1d: SDGFP and partners will ensure that control strategies are based on the best available scientific information and conducted in an environmentally sound manner.

Task 5A1e: SDGFP and partners will establish protocols that will provide guidance in designing and implementing control and eradication strategies.

Objective 6: Support research on AIS in South Dakota and develop efficient systems to disseminate results to research and management communities.

Strategy 6A1: SDGFP and partners will support research that identifies, predicts, and prioritizes potential AIS introductions.

Task 6A1a: Identify life histories and impacts of introduced aquatic plants and animals.

Task 6A1b: Identify data critical to preventing the introduction of new AIS.

Task 6A1c: Attend scientific and technical conferences addressing the mechanisms by which new AIS spread.

Task 6A1d: Monitor and support ongoing research efforts attempting to develop control mechanisms for AIS.

Strategy 6A2: SDGFP and partners will support research on potential management alternatives for their effectiveness on AIS and effects on native species.

Task 6A2a: SDGFP and partners will support scientific research between state, academic institutions and federal agencies such as regional AIS panels that investigate AIS control strategies and associated environmental impacts.

Appendix A: Aquatic Invasive Species Regulations

41:10:04:01. List of aquatic invasive species. Species classified as aquatic invasive species in the state are as follows;

(1) Fish:

- (a) Black carp, *Mylopharyngodon piceus*;
- (b) Common carp, *Cyprinus carpio*;
- (c) Grass carp, *Ctenopharyngodon idella*;
- (d) Bighead carp, *Hypophthalmichthys nobilis*;
- (e) Silver carp, *Hypophthalmichthys molitrix*;
- (f) European rudd, *Scardinius erythrophthalmus*;
- (g) Giant snakehead, *Channa micropeltes*;
- (h) Northern snakehead, *Channa argus*;
- (i) Bullseye snakehead, *Channa marulius*;
- (j) Blotched snakehead, *Channa maculata*; and
- (k) Western mosquitofish, *Gambusia affinis*;

(2) Plants:

- (a) Brittle naiad, *Najas minor*;
- (b) Curly pondweed, *Potamogeton crispus*;
- (c) Didymo, *Didymosphenia geminata*;
- (d) Eurasian water-milfoil, *Myriophyllum spicatum*;
- (e) Purple loosestrife, *Lythrum salicaria*;
- (f) Flowering rush, *Butomus umbellatus*; and
- (g) Common reed, *Phragmites australis*;

(3) Invertebrates:

- (a) New Zealand mudsnail, *Potamopyrgus antipodarum*;
- (b) Rusty crayfish, *Orconectes rusticus*;
- (c) Zebra mussel, *Dreissena polymorpha*;

- (d) Quagga mussel, *Dreissena rostriformis bugensis*;
- (e) Asian clam, *Corbicula fluminea*; and
- (f) Red rimmed melania, *Melanoides tuberculata*.

41:10:04:02. Aquatic invasive species restrictions. No person may possess, transport, sell, purchase, or propagate an aquatic invasive species except for the following:

- (1) A person possessing a valid scientific collectors permit issued by the department;
- (2) A person authorized by the department to stock triploid grass carp for pond management purposes;
- (3) A person contracted by the department to conduct commercial fishing operations as authorized in SDCL 41-13-7; or
- (4) A person in the process of removing an aquatic invasive species from a boat, motorboat, or equipment and returning it to the water from which it came.

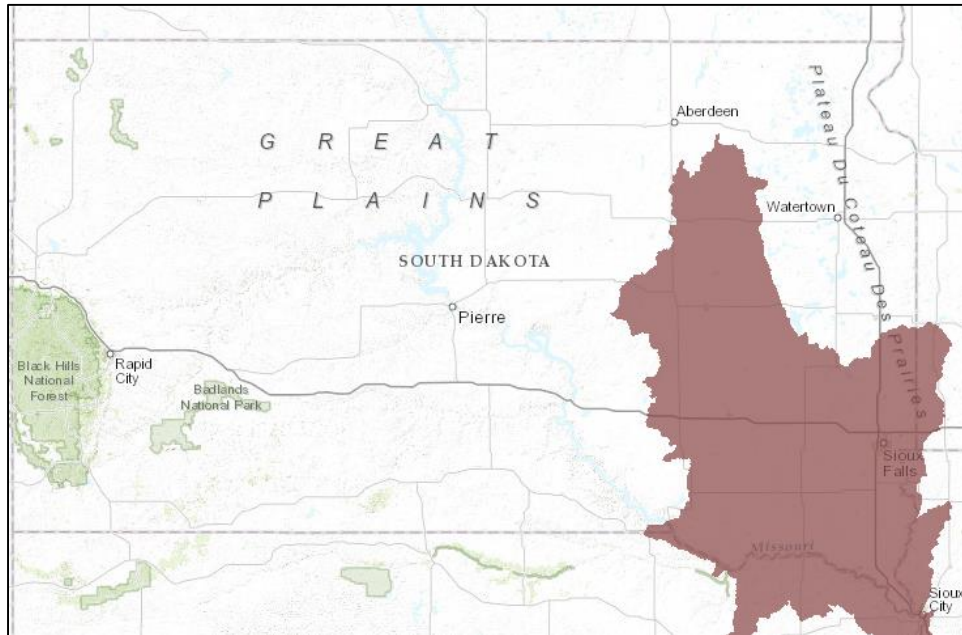
In the case of fish and crayfish species, only dead specimens may be transported or possessed.

41:10:04:03. Watercraft restrictions. No person may launch or attempt to launch a boat or boat trailer into the waters of the state with an aquatic invasive species attached or onboard. Except for emergency response boats, all trailered boats shall have all drain plugs, bailers, valves or other devices used to control the drainage of water opened or removed except while in a boat ramp parking area, being launched or loaded, or en route from a body of water to an immediately adjacent fish cleaning station.

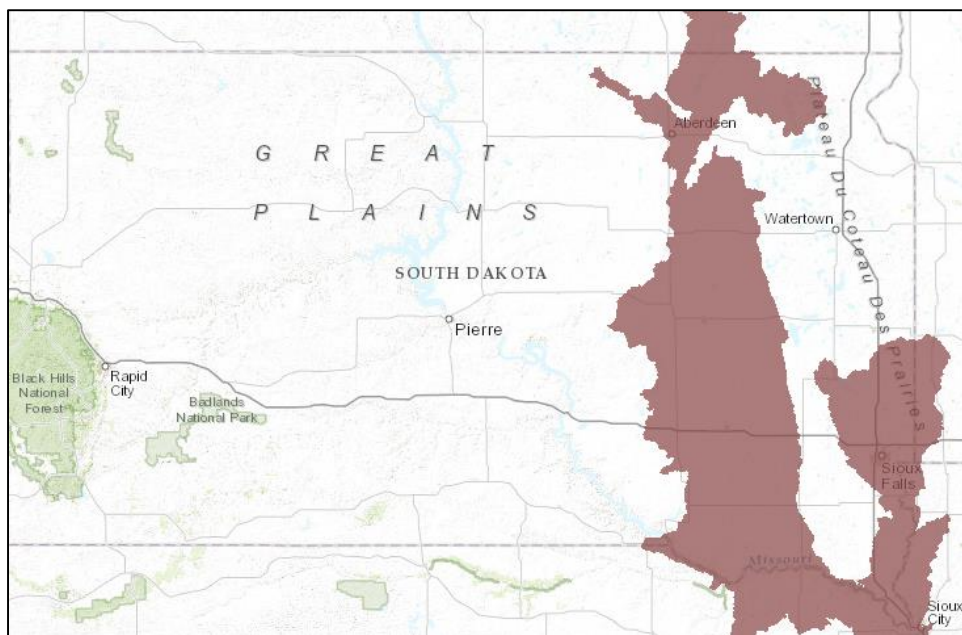
41:10:04:04. Watercraft inspections. Any boat or boat trailer may be inspected by a department representative. A department representative may require the removal of aquatic vegetation and aquatic invasive species from any boat, motor, trailer, and associated equipment. If an aquatic invasive species is found during inspection, a department-approved decontamination process, specific to the aquatic invasive species present, is required before launching or transport of the boat to another water of the state.

41:10:04:05. Fish and bait transportation restrictions. Except as authorized by the Secretary, a person may not transport fish or aquatic bait in water obtained from a lake, river, or stream except while en route from a lake, river or stream to an immediately adjacent fish cleaning station.

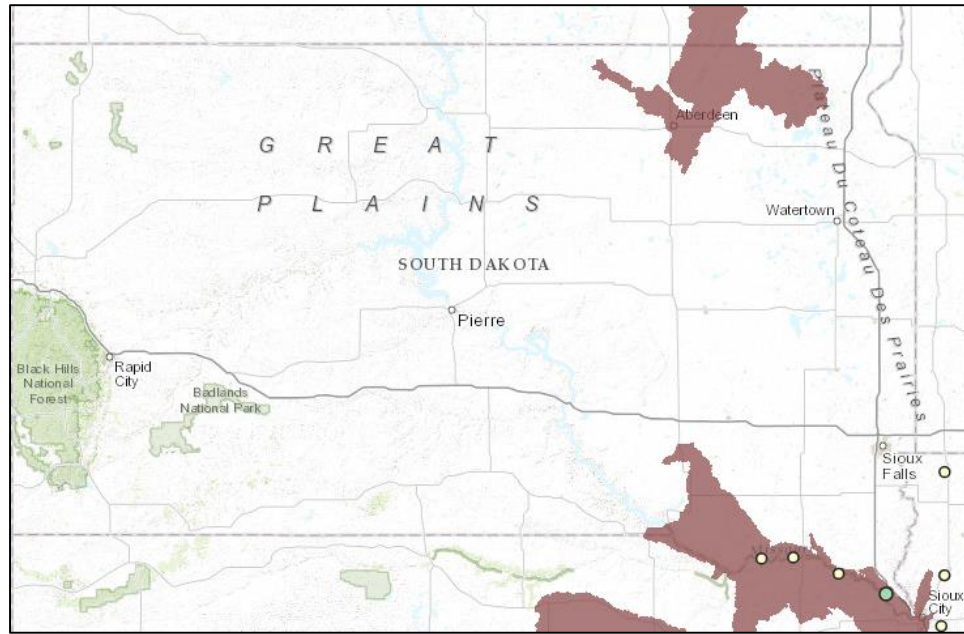
Appendix B: Range Maps of AIS Fish and Invertebrates Present in South Dakota



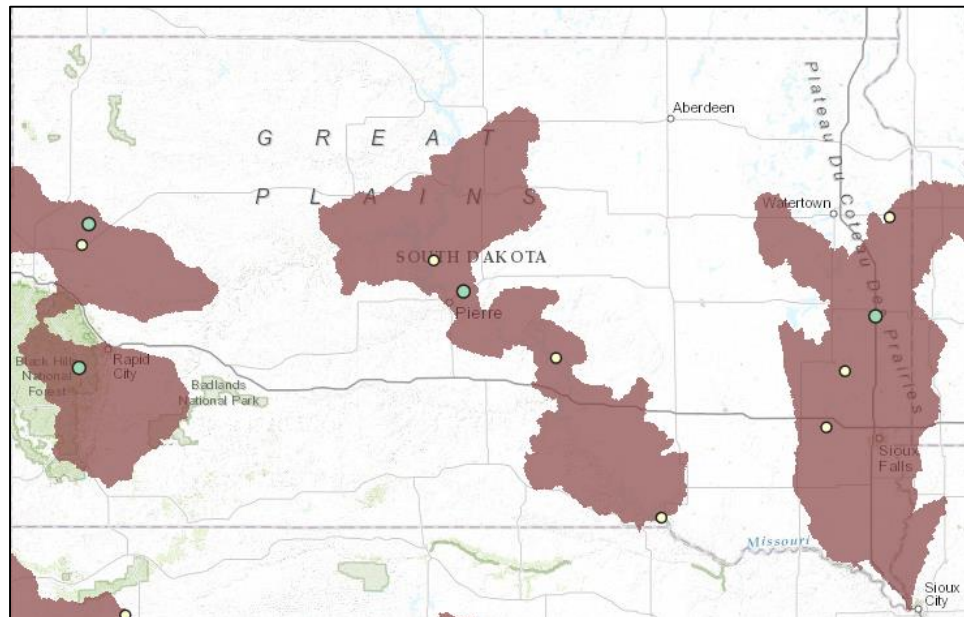
Bighead Carp



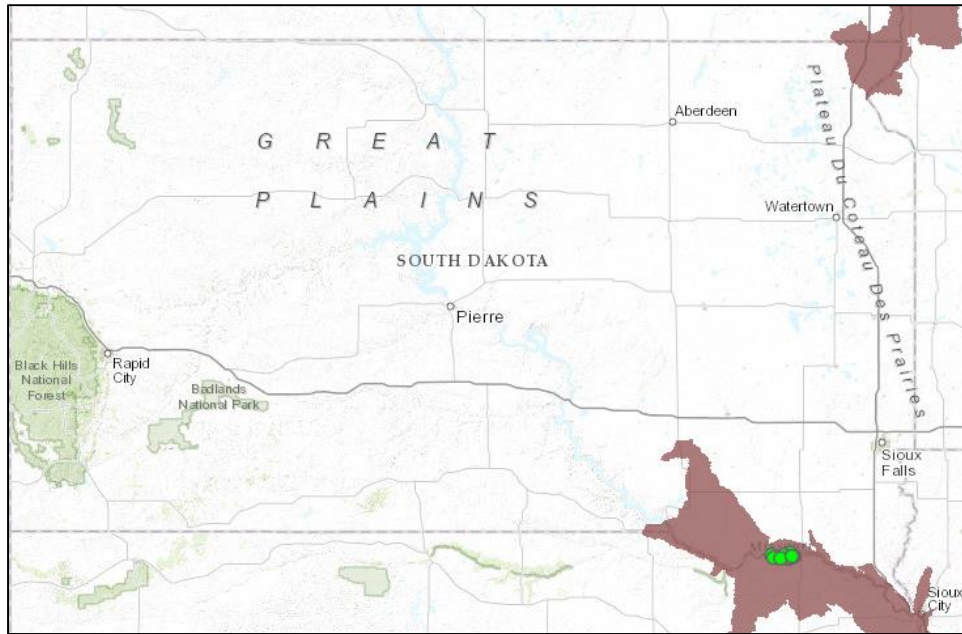
Silver Carp



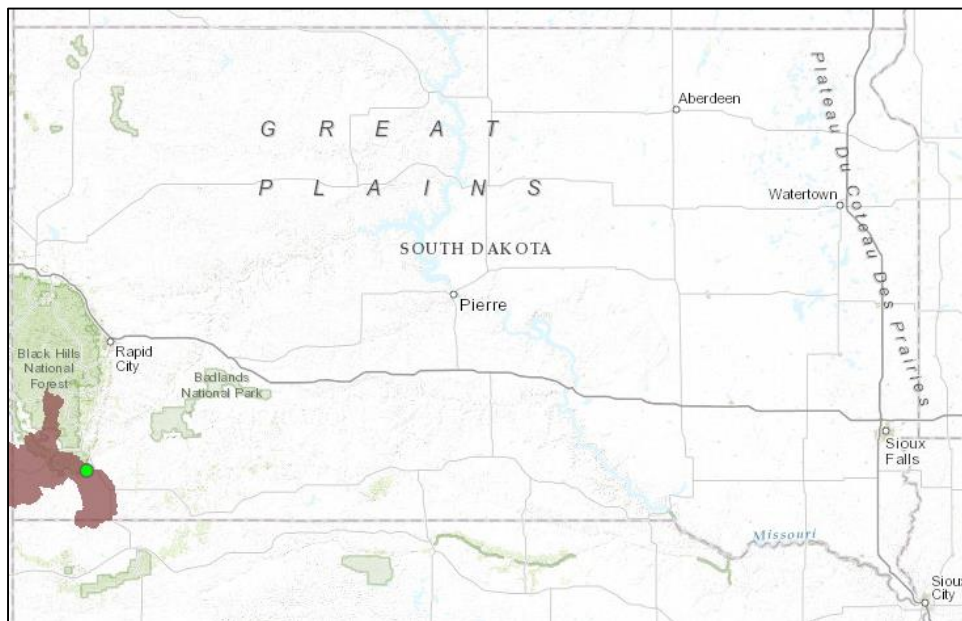
Grass Carp



European Rudd



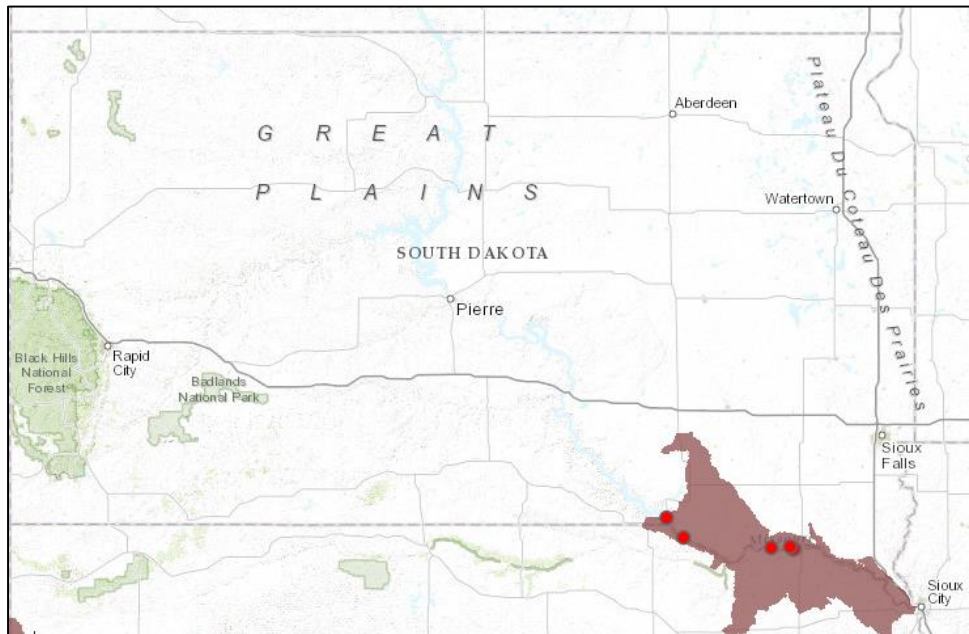
Zebra Mussel



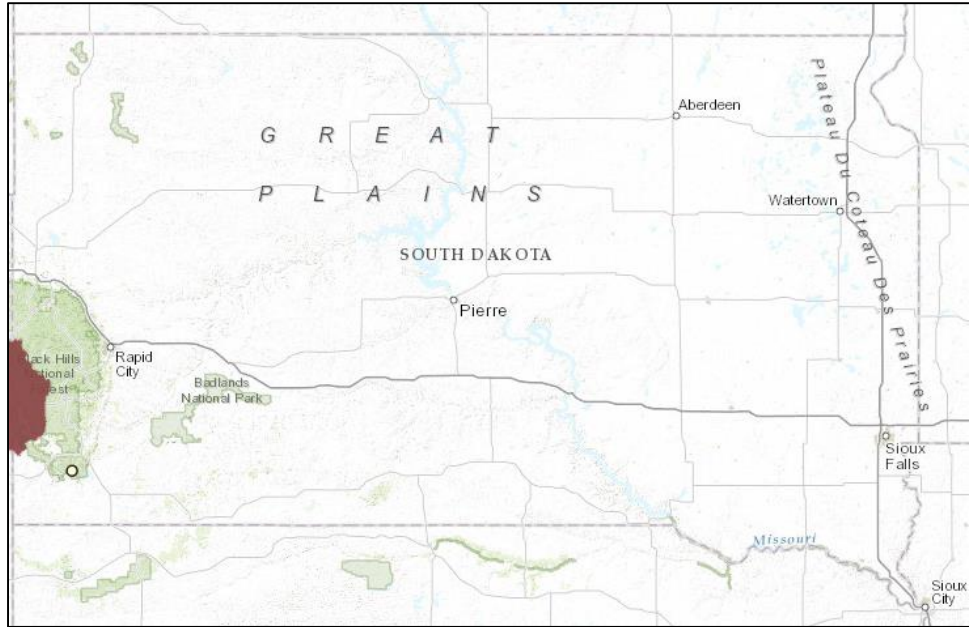
Quagga Mussel



Rusty Crayfish



Asian Clam



Red Rimmed Melania

Appendix C: Acronyms

| | |
|--------|--|
| AIS | Aquatic Invasive Species |
| HACCP | Hazard Analysis and Critical Control Points |
| SDDOT | South Dakota Department of Transportation |
| SDGFP | South Dakota Game, Fish & Parks |
| SDDENR | South Dakota Department of Environment and Natural Resources |
| USACE | United States Army Corps of Engineers |
| USBR | United States Bureau of Reclamation |
| USFWS | United States Fish and Wildlife Service |
| WID | Watercraft Inspection and Decontamination |