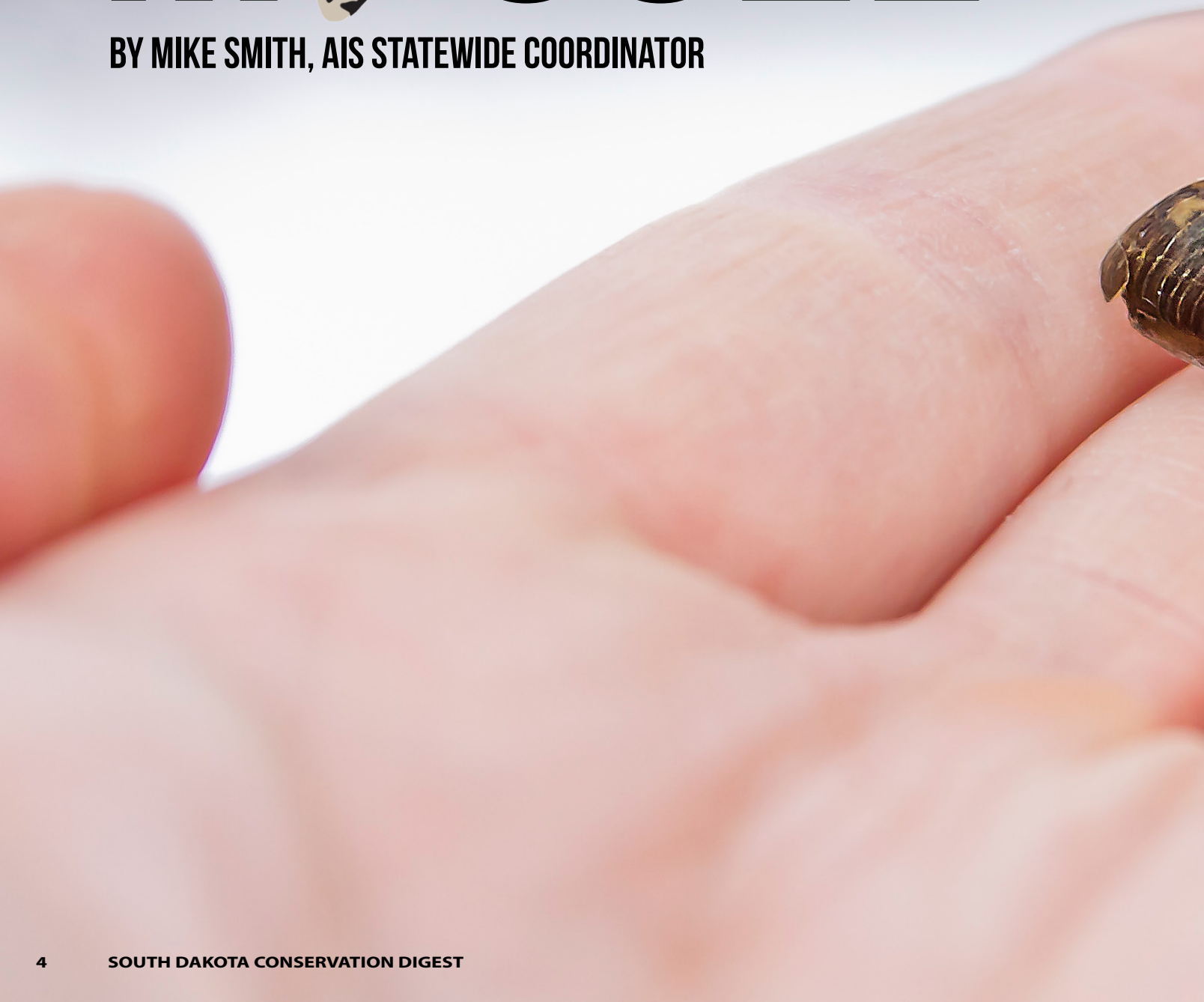
Don't move a MUSSEL

BY MIKE SMITH, AIS STATEWIDE COORDINATOR



AIS = AQUATIC INVASIVE SPECIES

Fall and winter begin a typically slow time of year in the world of Aquatic Invasive Species (AIS) in South Dakota. By then, Mother Nature has usually put an end to water body sampling and outdoor education events. The season consists of a lot of number crunching and annual report season is in full swing. The events that unfolded in South Dakota in the fall of 2014 forced AIS into the spotlight and contrasted the usual fall and winter lull with an action-packed season.

Nearly everyone who baits a hook or straps on a wakeboard is familiar with the "star" of AIS: the zebra mussel. Many people have seen pictures of objects like shopping carts or boat propellers completely covered with these tiny invaders. A smaller group of outdoor enthusiasts may also be familiar with quagga mussels; the zebra mussels' equally invasive cousin. Both species belong to the dreissenid family of freshwater mussels. They are small in size, but can pack a punch for aquatic ecosystems throughout the United States.

Ecologically speaking, both species fill the same role in the ecosystem. They are filter feeders, feeding on plankton and other microorganisms suspended in the water column. These are the same sources of nutrients juvenile fish depend on. Each individual mussel can filter approximately one liter of water per day. After considering some populations have been found in densities of 700,000 mussels per square meter, it is easy to see how dreissenid mussels are at the top of the SD Least Wanted list.

Dreissenid mussels are able to out-compete native mussels due in part, to differences in the early stages of their life cycles. Dreissenid larvae, called veligers, free float in the water column for approximately three to four weeks. After maturing into juveniles, they become too heavy to float and attach to the substrate layer, where they get nourishment during the larva stage of their existence.

Native mussel larvae are much different than veligers. After they are released by the female, they must attach to a fish and remain a parasite on gills or fins to mature and fall to the substrate. Dreissenids have a distinct advantage because they do not require a fish host to provide larvae with nutrients.

This shopping cart was left partially submerged in zebra mussel-infested waters for just a couple of months in Wisconsin.

This pipe has been so infested with zebra mussels that water would have a difficult time passing through it.

Zebra and quagga mussels also have the unique ability to firmly attach to nearly any object submerged in the water. Although aluminum cans, rocks and tree limbs are common attachment sites, many more worrisome objects, like water intake structures, are also affected. Dreissenid mussels thrive in dark, protected places; the inside of a pipe is the perfect place for zebra mussels to call home. Mussels can become so dense within a pipe that water can no longer pass through the intake structures. This is particularly alarming for an agricultural state like South Dakota, as many water sources are used for drinking and irrigation. In areas of the country with large dreissenid mussel populations, municipal water facilities are forced to clean or replace infrastructure monthly or even weekly. The maintenance costs of these projects are extensive and usually have to be passed on to consumers.

South Dakota has seen its share of AIS introductions in recent years, but remained one of the last states east of the Rocky

Mountains to be zebra and quagga mussel-free for several years. That changed quickly in the fall of 2014.

The South Dakota Department of Game, Fish and Parks (GFP) collaborates with state and federal agencies to perform AIS sampling in South Dakota. The U.S. Bureau of Reclamation (USBR) performs veliger sampling on large reservoirs in the Black Hills region. Veliger sampling is an efficient means to sample for dreissenid mussels; allowing biologists to obtain and analyze samples from many waters in a relatively short amount of time. In mid-September 2014, the USBR notified GFP that their lab found 15 quagga mussel veligers in a water sample from Angostura Reservoir.

Sampling protocol dictates if evidence of dreissenid mussels is found, a second sample must be obtained to confirm the presence of the species and guide future sampling and management actions.

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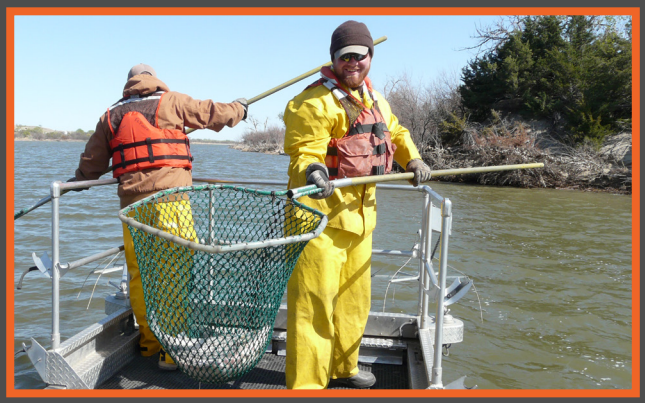


Describe your job.

I coordinate Aquatic Invasive Species (AIS) management in South Dakota including implementation of the AIS management plan, directing education and outreach events, and coordinating AIS sampling throughout the state.

What do you enjoy about your job?

I enjoy opportunities to work with children at outreach events. They are fascinated by species like silver carp. I think teaching them about AIS and showing them simple things they can do to help can efficiently spread information.

Describe your most recent project.

My biggest project is the SD Least Wanted campaign. The department recognized the need for a large-scale outreach campaign to get AIS information to anglers and boaters. We have utilized many tools like social media and ice-machine decals to help get the message out. We are perhaps most excited about the launch of our completely redesigned AIS website, **sdleastwanted.com.**

What benefits come from this project?

The SD Least Wanted project continues to improve our education and outreach activities. People can now quickly recognize AIS materials. The website is a resource for anglers and boaters to learn more about AIS in South Dakota.

Describe a day in the life of Mike Smith.

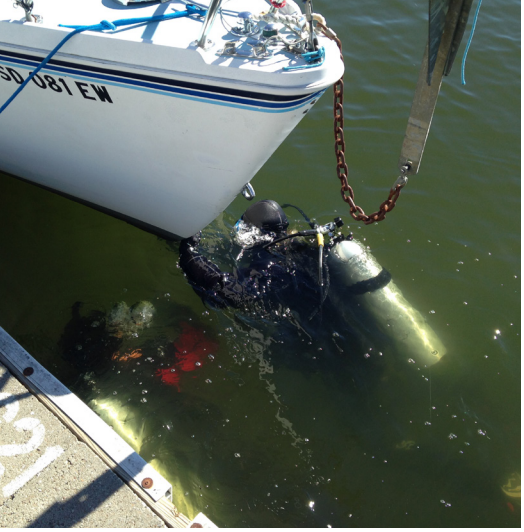
There are two "seasons" for me. During the summer months, I can be found in a boat with college interns searching the shoreline of a lake for new plants or invertebrates, or at an outreach event showing boaters how to easily clean their boats. Outside of the field season, I am often on the road speaking to groups about AIS, at meetings outside the state working with federal and regional partners on upcoming projects or studying the data collected during summer sampling.

How does the project tie directly into AIS?

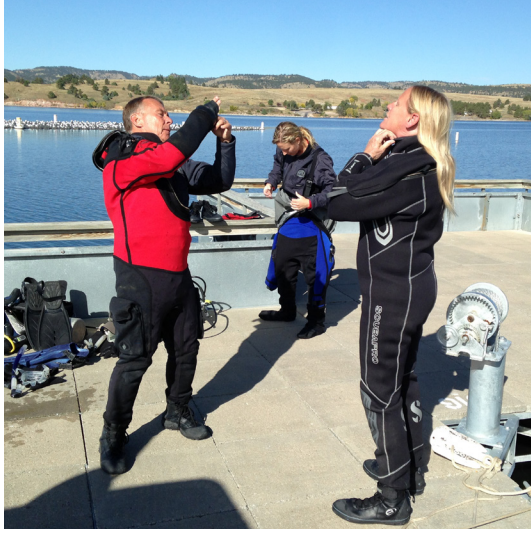
AIS management is based on three things: control, prevention and regulation. Outreach and education fall under prevention. There are few times the old adage "an ounce of prevention is worth a pound of cure" is more accurate. If we can provide information to outdoor enthusiasts now at a small cost, we will hopefully avoid attempting to eradicate an invasive species with costly chemicals or removal programs later.

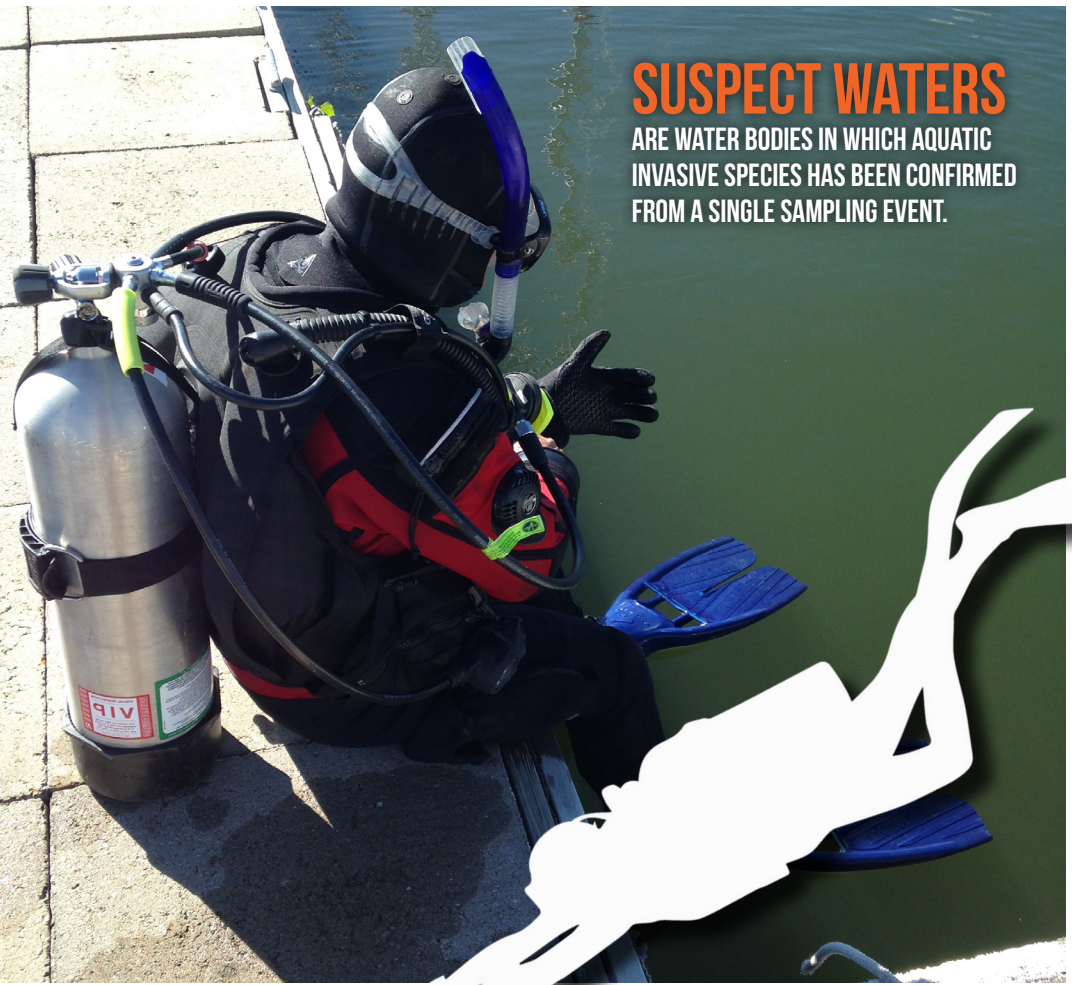
Why should people care about AIS?

Invasive species are one of the biggest threats facing natural resources today. They have the potential to irreparably alter ecosystems. Outdoor recreation is essential to the culture of South Dakota. Taking steps to fight invasive species today can help preserve these opportunities for future generations.



Within days, GFP biologists scoured the shallow areas of Angostura Reservoir looking for adults and took veliger samples from 15 new locations. Additionally, GFP worked with the U.S. Fish and Wildlife Service (USFWS) to bring a team of SCUBA divers to search for adults under the docks and boat slips as well as on structures in deep water. The USFWS divers spent approximately 20 hours underwater over two days looking at every boat and structure in the marina areas.



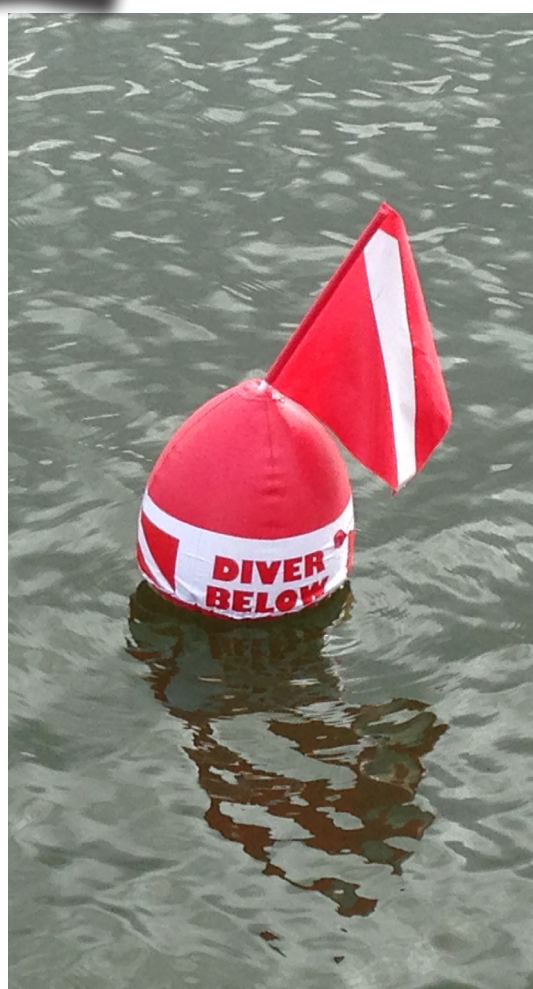


SUSPECT WATERS

ARE WATER BODIES IN WHICH AQUATIC INVASIVE SPECIES HAS BEEN CONFIRMED FROM A SINGLE SAMPLING EVENT.

No adults were found in any of the surveys and all veliger samples were negative. Since the presence of quagga mussels could not be verified, GFP designated Angostura Reservoir as "suspect" for quagga mussels.

Not to be outdone by its cousin, a single adult zebra mussel was discovered at Lewis and Clark Lake in November 2014. A Parks Division employee found the mussel while performing maintenance on a courtesy boat dock at the Midway boat ramp.



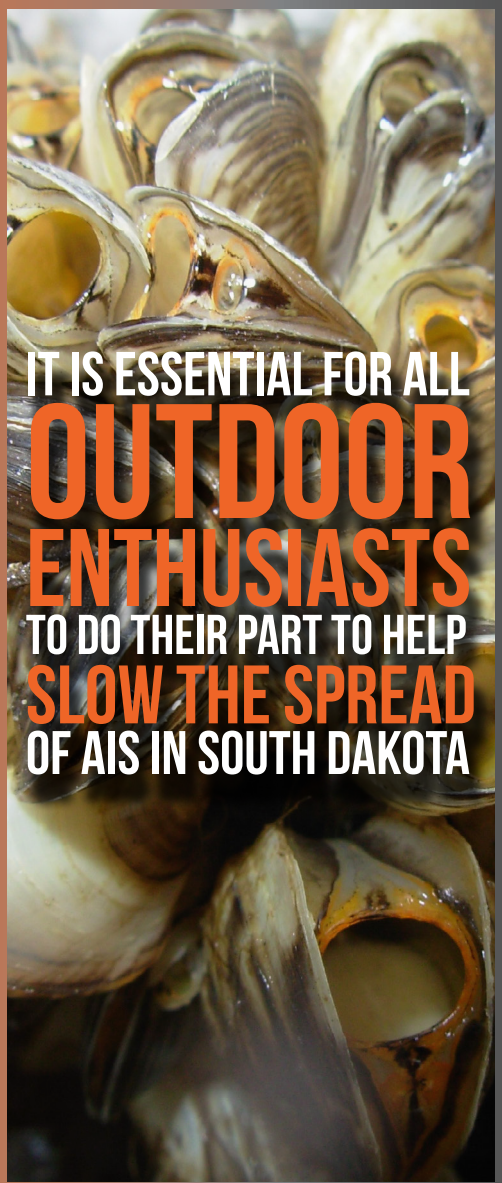
The next day, the pallid sturgeon crew out of Yankton, took a break from endangered species work to search for additional mussels at 11 boat ramps and shorelines near Midway and inspected boats at Lewis and Clark Marina. No veliger samples were obtained because water temperatures were too cold for zebra mussel production. No mussels were found so like Angostura Reservior, Lewis and Clark Lake was designated as "suspect" for zebra mussels.

WHAT DOES THIS ALL MEAN FOR SOUTH DAKOTA?

First, it is important to understand these events will not affect the quality of fishing at Angostura Reservoir or Lewis and Clark Lake in 2015. Many lakes throughout the country infested with dreissenid mussels provide excellent fishing and boating opportunities. Additionally, DNA analyses of the Angostura Reservoir veligers by a private laboratory (contracted by GFP) indicate the veligers were likely brought to the reservoir a single time in residual boat water or that a very small population of adults may be present. Since GFP biologists were unable to find other zebra mussels at Lewis and Clark Lake, it is also believed this is an isolated or a very small population.

Second, South Dakota is bordered by four states that have confirmed zebra or quagga mussels in at least one water body. Aside from downstream spread in rivers, the primary way these species are spread is by "hitchhiking" on boats to new waters. Veligers can survive for approximately 30 days in damp areas of a boat. The best way to slow the spread of these species is to eliminate the transfer of water between lakes. In March 2015, the GFP Commission enacted new regulations seeking to slow the spread of AIS in South Dakota.

Beginning May 2015, boaters will be required to remove any boat or livewell plug when the boat is not on the water or en route to a fish cleaning station immediately adjacent to the boat launch area. Similarly, bait and fish may not be transported in water obtained from a lake, river or stream except when traveling from the lake, river or stream to an immediately adjacent fish cleaning station. Anglers may transport fish and bait water obtained from domestic water sources (tap water, well water, bottled water) or on ice.



GFP, along with state and federal agencies, plans to substantially increase AIS sampling and outreach efforts throughout the state. Both Angostura Reservoir and Lewis and Clark Lake are listed as "suspect" water bodies. If no additional evidence is found within three years, both waters will again be classified as "negative." This means they will undergo intensive monitoring for three years in an effort to determine if dreissenid mussels are present.

Finally, it is essential for all outdoor enthusiasts to do their part to help slow the spread of AIS in South Dakota. Following steps like power washing boats and trailers when possible and making sure plugs are removed before leaving boat ramp areas are simple actions that can go a long way in preventing the spread of AIS.

Fishing, boating, hunting and other outdoor activities are deeply engrained in the culture of this state. If each of us takes responsibility to do what we can to protect our resources today, these outdoor recreational activities will continue to be enjoyed by future generations for years to come. ■