



GOAC Information Request **Aquatic Invasive Species Program**

This document includes questions presented to Game, Fish and Parks (GFP) Secretary Kevin Robling by Representative Randy Gross, September 21, 2022, on behalf of the Government Operations and Audit Committee (GOAC) and replies from the department. Questions were generated in response to GFP's August 1, 2022, report to the legislature required by SCR 602 of the 2022 South Dakota Legislature. Questions provided by GOAC are indicated in bold font with department responses provided below each question.

SCR 602: To encourage the executive branch of this state to examine mitigation efforts to curtail the spread of aquatic invasive species.

Resolved: to strongly encourage that the executive branch of state government use all resources necessary to fight the spread of zebra mussels and other invasive species into our waters; and that the executive branch of state government provide a detailed description of upgrade efforts to the Legislature by August 1, 2022.

Questions and Responses

1. On June 03, 2016, the GFP Commission adopted the 2016 – 2020 Aquatic Invasive Species Strategic Management Plan. There is no updated plan. The 2022 report lacks a discussion of forward-looking strategies beyond 2022. When comparing the 2021 AIS report to the 2022, it is essentially the same information with updated numbers. How does this report meet the intent of SCR 602 when the Legislature asked to be provided with “a detailed description of upgrade efforts to fight the spread of zebra mussels and other invasive species in SD waters”? What is the plan moving forward?

Plan Creation and Implementation

- We continue to develop an updated AIS plan for 2023 implementation. Many of the management objectives from the 2016-2020 plan continue to be utilized. While not in a current management plan, work priorities for 2021 and, 2022, were shared with the Game, Fish and Parks (GFP) Commission. The department annually reports to the commission on progress towards accomplishment of objectives and priorities.
- Education and outreach are primary approaches to AIS management in South Dakota. Communications plans for 2021 and 2022 are included in the packet of supportive information for question responses.

2021-2022 AIS program priorities focused on slowing the spread to new waters by:

Field Operations

- Increased inspection stations to help boaters develop best management practices.
- Maximize contacts with boaters who use infested waters.



- Train local businesses in decontamination practices.

Communications and Outreach Plans

- Reinforce “Clean, Drain, Dry” with watercraft owners.
- Remind anglers to not move lake water when transporting bait and fish.
- Inform boaters that stopping at inspection stations is required, inspections are easy and if you see an inspection station, you need to do your part.
- Inform anglers boaters how to decontaminate their watercraft.
- AIS species and infested waterbody awareness.

Communications and Outreach

- From 2021 to 2022:
 - Expenditures on communications and outreach increased from \$42,000 to \$62,000.
 - Visitations to the SDLEASTWANTED website increased from 7,905 to 9,526
 - Emails increased from 978,400 emails sent containing AIS messaging to 1,997,000 emails sent containing AIS messaging regarding AIS.
 - Social media featured 35 dedicated posts on GFP social media platforms in addition to the geofenced Instant Experience. The Instant Experience is a clickable post that displays to individuals who have visited a location with our gas station TV message or a boat ramp at an infested waterbody.
 - Conspicuous signage was placed at access areas on waters infested with zebra mussels to enforce the need to Clean, Drain, and Dry all watercraft.
 - The number of views of AIS educational videos on YouTube increased by 11 percent.
 - Outdoor Campus’ added AIS into outdoor educational classes and an AIS Curriculum is being developed for students in grades 6-8.

Upgraded Efforts for 2022

Field Operations

- Assembled a Rapid Response Team
- GFP used data from 2020 and 2021 watercraft inspection operations to schedule stations on days, time of day, and locations to increase inspections per hour of operation. Roadside stations, in central and eastern SD, and access-based stations in western SD, were scheduled for locations and times of day that maximized boater contacts.
- Total watercraft inspections in South Dakota increased by over 22% from 2021 to 2022. States immediately west of South Dakota experienced a 10-15% decrease in inspections from 2021 to 2022.



2. In September 2021 there was a large citizen driven forum in Webster, SD where the alarm was sounded for increased effort in the NE region of the state to stop the spread of AIS. GF&P personnel attended. The report states that 12,706 inspections for AIS occurred through YTD July 25, 2022. A lopsided 69% of those inspections took place at 6 reservoirs in Western SD. Only 23% of the inspections took place east of the Missouri river. The report states that 2022 YTD inspections increased by 1,746, but nearly all of that increase can be accounted for at 3 of those Western SD reservoirs. Inspections actually decreased in Eastern SD by 131, where the vast majority of lakes are located. How can this be described as upgraded efforts in Northeast SD when SCR 602 was spearheaded by an extensive number of citizens in this part of the state and brought forward by Legislators representing that contingent?

- Watercraft inspection stations are the highest level of communications and outreach efforts, the objective being to actively engage individual boaters and inform them how to clean, drain, and dry their watercraft.
- The number of inspections is related to the number of stations in operation, periods during the day that stations are open, and the amount of boater traffic encountered.
- Due to workforce issues the number of stations in operation was the same in 2021 as in 2022, at 12 stations. Complete staffing levels would have allowed for 15 stations to operate in 2022.
- An additional watercraft inspection station in northeastern SD, focused on inspections at busy lake access areas, was planned for 2022. However, the department was unable to hire staff. Hiring people to staff western South Dakota inspection stations was also a challenge, with 17 inspector positions left unfilled.
- Planned staffing level for watercraft inspection stations in 2022 was 53 people, with only 31 positions filled.
- Southeast roadside inspections increased by almost 50%, from 1152 in 2021, to 1705 in 2022, with similar effort, as locations and hours of roadside stations were modified to help increase boater engagement.
- Fewer inspections from 2021 to 2022 for the roadside and Enemy Swim stations in northeastern South Dakota was the result of lower boating use in that area of the state.

3. In 2021 South Dakota GF&P had 50 inspectors, 14,556 inspections, and 18 decontamination units. During the same time period Wyoming had 59 inspectors, 68,288 inspections, 36 decontamination units. Minnesota 1,033 inspectors, 538,763 inspections, 57 decontamination units. Why is SD so low on inspections and effort?

- The annual number of watercraft inspections in South Dakota has significantly increased since passage of HB 1033 during the 2020 legislative session, with over 18,500 inspections conducted in 2022.
- GFP's objective with inspection stations is to slow the spread of AIS by contacting boaters and informing them how to comply with AIS regulations, including "Clean, Drain, Dry". One of our



performance measures, and one used by many states, is compliance with boat plug removal regulations.

- From South Dakota watercraft inspection data for 2022, the compliance rate for the boat plug regulation was 96%. Minnesota’s compliance rate with their plug regulation was 97% in 2021.
- Minnesota’s total AIS program, with over 500,000 inspections of some level each year, costs approximately \$10 million. In 2021, Minnesota documented 31 new waters infested with zebra mussels and 19 waters connected to these waters.
- There is no convincing evidence that there is a direct relationship between more inspections and fewer infestations.
- Direct comparisons of AIS management programs between states are practical. Each state evaluates their AIS situation and determines its specific needs for AIS management efforts. Management beliefs and philosophies also vary among states.

Number of Watercraft Inspections by State and Year*

State	Year	Inspections	Registered Boats	State	Year	Inspections	Registered Boats
North Dakota	2021	5,362	65,088	Iowa	2021	6,015	231,282
South Dakota	2022	>18,500	61,628	Minnesota	2021	538,763	830,073
Nebraska	2022	6,627	80,392	Wisconsin	2022	104,113	618,207
Kansas	2022	None	86,073	Wyoming	2021	68,288	25,860

*Most recent data referenced.

4. In recent years interns have been used to fill summer AIS positions. With the risk of veligers spreading from water body to water body in watercraft when water temperatures are above 60 degrees Fahrenheit, how does GF&P staff roadside AIS inspections, in the spring and fall, when water conditions are ripe for spread and interns are in school?

- Targeting inspections on dates and locations where we can maximize boater contacts is key to increasing awareness and adoption of best practices to slow the spread of AIS.
- GFP’s objective in operating inspection stations is not to inspect every watercraft prior to launch. That is not realistic. Our objective in operating inspection stations is to engage boaters and help them implement practices to slow the spread of AIS by informing them how to comply with AIS regulations, including Clean, Drain, Dry.
- The peak of the boating season is from Memorial Day to Labor Day and inspections are focused during this period to maximize boater contacts by inspection crews.



- Operating roadside inspection stations during slow periods of the boating season, when only 2-3 boaters may be encountered during a day, is not using available resources wisely.
- We will never be able to intercept and inspect every boat, on every trip.

5. Based on the report, there is low overall effort to enforce boater AIS violations. There is highlighting of 91-99% boat plug compliance at all locations. Yet 533 inspected boats were in violation of SDCL 41-13A-3 for not pulling the boat plug, but only 40 (8%) received a citation for violating the law. Citations are expected to decrease substantially from 239 in 2021 to 53 (July 25 YTD annualized) in 2022, a reduction of 78%. Warnings are expected to decrease from 183 in 2021 to 80 (July 25 YTD annualized) in 2022, a reduction of 56%. Why is that and how does that match the intent of SCR 602 “to use all resources necessary to fight the spread of zebra mussels and other invasive species into our waters”?

- Compliance estimates and number of boats in violation are statistics from the watercraft inspection program. Inspection station staff inform boaters of violations and instruct them how to correct the violation. If law enforcement personnel are present at an inspection station, station staff will inform the law enforcement personnel of the violation for further consideration.
- Law enforcement is a tool to help increase compliance of regulations, with the issuance of citations and warnings at the discretion of officers.
- We work to achieve a careful balance of educating the public and strict enforcement of statutes and administrative laws. Our officers are tasked with exercising their discretion during these situations.
- As of October 12th, South Dakota has issued 63 citations and 80 warnings in 2022, which is a decrease from previous years. The number of citations peaked during the first year of mandatory watercraft inspections in 2020, at 299, and has decreased since then.
- For comparison, Minnesota conducted over 500,000 inspections in 2021 and issued 39 citations. South Dakota issued 240 citations and 187 warning in 2021.

6. The 2021 AIS report shared \$538,000 being spent on the “fight” with most funding sources being Federal dollars. The 2022 AIS report is silent regarding revenue sources/expenditures. What is being spent for SCR 602 upgraded efforts, and what are the revenue sources?

- The August 1, 2022, AIS program report to the legislature did not include expense and revenue source information, as some expenses for the season had not yet been incurred and GFP had not been billed for some expenses yet. The amount of each funding source used varies by management activity and allowable federal grant expenses and the split between license dollars and federal aid use of various sources was not known as of August 1st.
- With regards to upgraded efforts, expenditures for outreach and education increased from \$42,000 in 2021 to \$62,000 so far in 2022, all of which was license dollars.



- Expenditures for watercraft inspection stations in 2022 were expected to increase, though not being able to staff a second station in northeastern SD and being 17 staff short of the full staffing level in western SD, this likely will not occur.
- Though it should not be considered a year-end expenditure report, information on documented expenditures and funding sources are included in the packet of supportive information for question responses.

7. The 2022 AIS report states that 1,821,391 emails were sent with AIS content. Please describe these emails. Are they specific, direct AIS communications or are they part of other communications with “pull your plug” or “clean, drain, dry” as a tagged reminder?

- 5 Emails with AIS specific focus
 - Emails that fall into this category specifically focus on new infestations. Each new infestation, an email is informing individuals of this infestation and how they can do their part to slow the spread.
- 16 Emails with AIS reminder
 - Emails that fall into this category have AIS information included within the main message or as a subtopic.
 - These are not tagged reminders, but rather timely topics from reports we are hearing in the field, such as the need to remind jet skis to remove their plugs or for individuals to lower their lower unit.
- Email distribution lists include:
 - Licensed anglers (100,000 resident and nonresident individuals)
 - Campers and State Parks users (160,000 individuals)
 - Individuals who have signed up for previous AIS giveaways (3,000)
 - GFP News-individuals who sign up to stay informed on GFP topics (10,000 individuals)
- Nonresident Boaters:
 - All nonresidents who include their email when purchasing a fishing license in South Dakota have their email added to our AIS/fishing list.
 - The state park lists addresses nonresidents who may be just recreational boaters. If a nonresident has purchased a license or made a camping reservation in South Dakota with their email, they are on our mailing list and receive the above AIS content.
 - For nonresidents who are not included in these mailing lists, our other outreach and education efforts regarding Clean, Drain, Dry are designed to reach them before they are on the water as well.
 - Note that in 2022, all emails sent to nonresident anglers did include an AIS message.
- To date in 2022, 493,345 emails containing AIS content have been opened in 2022 and directed 494 direct clicks to SDLeastWanted.sd.gov.
- The content within the emails is designed to maintain engagement and keep things fresh, all messages are unique and will vary by audience. Boaters and anglers can expect to get specific emails focused on items such as watercraft inspection stations.



- For example: [Watercraft Inspection Stations Are Up and Running](#). Additionally, they will also get fishing information that includes AIS content as a reminder as well. For example: [It's Time to Think About Summer Fishing](#).
- Note that in 2022, all emails sent to nonresident anglers did include an AIS message.
- To reach recreational water users, AIS messages are included in our State Park Update messages, which are sent weekly. This list includes both resident and nonresidents as well, again with a focus on both day use and camping in state parks.
 - For example: [This Weekend: Get Outdoors](#).
- The third example of emails would be our press releases regarding new infestations. These emails are sent to our GFP News list, which includes all media contacts for stories and articles. These messages are entirely focused on that message and are utilized to both inform engaged individuals and serve as a press release for media outlets.
 - For example: [New Infestation Press Release \(Pactola\)](#)
- The goal of this content is to be engaging, not to check a box. To keep this content fresh and engaging each message, whether it is to park users or anglers the messages will have different content and a different theme each time.
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- South Dakota has aligned with this national strategy of “Clean, Drain, Dry” to ensure cohesive messaging with surrounding states as well so all individuals traveling to and from their respective states are receiving the same message.
- Examples of email and social media communications are included in the packet of supportive information for question responses.

8. In 2020 Governor Noem brought forward HB 1033 that was passed by the Legislature to fight AIS. In the first hearing in House Agriculture, there was passionate testimony by the Executive Branch and GF&P about seriously fighting this grave threat to SD waters. Now it is being said that “There is nothing that can be done to stop the spread”. What has changed in the past two years?

- HB 1033 was essential legislation for implementation of roadside inspection stations, making participation in inspections mandatory when stations are open, and to require decontaminations, when appropriate.
- As management experience with zebra mussels in South Dakota has evolved, we have focused on slowing the spread. We continue to make recommendations and decisions based on the best available data and research.

9. Current philosophy and comments from GF&P consistently speak to being unable to stop the spread of zebra mussels. Does that mean that the Executive Branch feels the same about other particularly harmful aquatic invasive species such as Eurasian water milfoil, starry stonewort and spiny water flea? What is the research used to base these comments and approach on?

- While different AIS ability to spread and become established varies, the possibility for establishment in new waters will always exist.



- Mitigation efforts vary based on species.
- Mitigation of AIS plants often involve physically or chemically removing vegetation to reduce impacts to water users.
- Young zebra mussels quickly disperse throughout a water, removing the potential for eradication. Zebra mussels are often undetectable until they have a sustained adult population...
- GFP AIS management efforts and the main message of “Clean, Drain, Dry” target and benefit mitigation of all AIS species.

10. In the last four years, South Dakota has 11 newly infested lakes: Lewis & Clark, McCook, Yankton, Sharp, Francis Case, Pickerel, Cochrane, Kampeska, Dahme Quarry, Mitchell, Pactola, Enemy Swim, Blue Dog and South Rush. Does this suggest that our strategy to “slow the spread” should be re-evaluated?”

- We believe we are slowing the spread and that additional waters would be infested by now without the implementation of HB1033 and outreach campaigns like Clean-Drain-Dry.

11. Minnesota and Wisconsin have been fighting the spread of zebra mussels for 30 or more years. After all that time, 5% or less of the lakes in those states are infested with zebra mussels. In South Dakota, we’re nearly halfway to the same % of infested lakes after only seven years, with most of the new infestations occurring in the past four years. How does that support the persistent comments suggesting that it is not worth the extra effort to fight the spread of zebra mussels and other aquatic invasive species?

- Comparing percentages of “lakes” infested with zebra mussels in Minnesota and Wisconsin to the number of waters infested in South Dakota, is not an appropriate comparison.
- Minnesota considers any water body 10 acres or larger to be a lake. There are approximately 12,000 such waters in Minnesota. Wisconsin references 15,000 lakes, of which approximately 12,000 are less than 25 acres. South Dakota has approximately 10,000 waters 10 acres or larger in the state.
- Not all waters considered lakes have boating access and the degree of connectivity among waters in any state is not easily defined.
- Wisconsin has over 250 infested zebra mussel lakes and Minnesota has over 300 infested zebra mussel waters as of 2021.
- To date, there are 15 waters known to be infested with zebra mussels in South Dakota.
- Minnesota would have approximately 2.5% of their lakes infested with zebra mussels; however South Dakota’s rate would be 0.2%.
- In 2021, 31 new waters in Minnesota were documented to have zebra mussel infestations and 19 waters were connected to newly infested waters, even with the level of effort expended in the state to slow the spread of mussels. With these findings, Minnesota has over 300 lakes infested with zebra mussels and another 235 connected lakes.



12. In a study by Hansen et al. (2020) it shows that first-year walleyes are 14% smaller in zebra mussel (ZM) infested lakes and 12% smaller with spiny water fleas (SWF). When the water bodies are infested with both ZM & SWF the first-year walleyes are 25% smaller. What are the upgraded efforts to prevent this from happening? What efforts are happening to protect SD fishing and tourism?

- Upgraded efforts have been described in answers to previous questions.
- The study suggesting zebra mussels and spiny water fleas as the cause of smaller first year walleyes is only one of many studies conducted on possible impacts of zebra mussels and other AIS on fish populations and a water's ability to support a fishery. Other studies have not documented negative impacts of zebra mussels on walleye fisheries.
- The paper by Hansen et al. 2020 also discusses how the impacts of zebra mussels and/or spiny water flea on first year walleye or yellow perch growth are inconsistent in both direction and magnitude across studies to date.
- As examples:
 - Some lakes, like Lake Erie, have excellent walleye fisheries even though zebra mussels have been present for decades (Trometer and Busch 1999).
 - Gopalan et al. (1998) documented an increase in young-of-year walleye after the introduction of walleyes in Lake Erie, in association with changes in the structure of the fish community following zebra mussel invasion.
 - Often, changes in a fish community may occur, but the ability of a lake to provide a quality fishery for the public continues (Gopalan et al. 1998).
 - Katzenmeyer et al. (2019) documented that initially walleye in Clear Lake, Iowa are smaller at younger ages but quickly catch up to historical lengths. Neinhuis et al. (2014) documented a similar pattern of slower walleye growth initially
- Many of SD's lakes are shallow, wind-swept, and nutrient rich, and zebra mussels may affect these waters differently than lakes in the Minnesota study.
- There has been no change in walleye or sauger growth observed for Lewis and Clark Lake, the water with the most established zebra mussel population in the state. For lakes with newer infestations, no differences in walleye growth have been observed since mussel introduction.
- With regards to angler use and tourism in South Dakota use of state parks and recreation areas on waters where zebra mussels are present has not declined.

References

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13. In what way has our state evaluated the added annual costs and economic damages relating to hydro-electric power generation, municipal and rural water systems and irrigators as a result of allowing an accelerating spread of zebra mussels across South Dakota?

- GFP has not allowed an accelerated spread of zebra mussels. Department efforts have contributed to slowing the spread and the department has engaged surface water users on how to mitigate zebra mussel impacts.
- Costs incurred on mitigation activities for specific municipal and rural water supply, hydropower, and irrigation are available from the entities themselves and not all entities are willing to share expense information.
- GFP and the U.S. Fish and Wildlife Service hosted an Invasive Mussel Summit in December 2018 to inform surface water users of zebra and quagga mussel impacts to infrastructure and possible mitigation activities. Some of the case histories presented include cost estimate information (<https://sdleastwanted.sd.gov/news/default.aspx>).
 - Our agency will consider hosting another zebra mussel summit to inform municipalities, irrigators, and other interested parties on the latest findings and management approaches in conjunction with other state, federal, and private entities.
- South Dakota has not conducted a state-wide study of economic impacts of zebra mussel populations. In most waters where zebra mussels are present in the state, they have only been established for a few years and specific potential impacts have yet to be determined.
- The answer to question 15, focusing on economic impact studies, is directly related to the answer to the current question on economic impacts.

14. AIS affects the entire ecosystem, and combatting the spread is not a single department issue. What is being done to engage other stakeholders, such as DANR, tourism, economic development, municipalities, Tribes, lake associations etc. in the fight against AIS?



- State agencies have routinely been involved in discussions of what individual agencies can contribute to AIS management efforts and were part of the work groups established to gather input used to draft both the 2008 South Dakota Aquatic Nuisance Species Plan and the 2016 - 2020 GFP AIS plan.
- As we continue to develop the updated AIS plan, discussions with stakeholders continue to ensure the department has a good plan for the upcoming years.
- Game, Fish and Parks has engaged lake associations. We
 - Share information at meetings, through printed materials, email, and social media on early detection of AIS, how to slow the spread, and mitigating impacts to lakeshore property owners.
 - Cooperate on signage to inform boaters of infested waters and offered to partner with associations on communications and outreach and watercraft inspections.
 - Contacted 34 individuals associated with lake associations and the East Dakota and James River Watershed Development Districts about partnering opportunities in 2022.
 - Worked with the GFP Commission to promulgate administrative rules to assist lakeshore residents and marina slip holders in dealing with zebra mussel presence on watercraft, boatlifts, docks and lakeshore ([41:10:04:02](#) and [41:10:04:02.01](#))
- GFP invited municipalities, irrigators, rural water systems, Department of Agriculture and Natural Resources (DANR) staff, Corps of Engineers staff, tribal representatives, and lake association officers to the December 2018 conference on mitigating mussel impacts.
- GFP coordinated information sharing, mitigation, and coordination meetings with effected parties in association with the documentation of zebra mussels in Lakes Sharpe, Francis Case, and Lewis and Clark.
- DANR is the primary state agency contact for surface water users, including municipalities, rural water systems, and irrigators. DANR works with entities who have been issued temporary water rights to make them aware of AIS requirements. Contact lists are also provided, allowing GFP to share AIS information with water right holders.
- The Department of Revenue distributes rack cards on Clean, Drain, Dry to County Treasurers for distribution to boat owners, and provided boater registration information for mailings.
- The Department of Transportation (DOT) displays AIS messaging on holiday weekends, coordinates with GFP on use of DOT facilities for locating watercraft inspection stations, advises GFP on highway signage requirements for check stations and helps order signage, helps install high-profile infested water signs, and includes AIS requirements in contactor contracts.
- The Department of Pubic Safety allows use of motor carrier inspection facilities for watercraft inspection station.

15. Montana did an economic impact study and found that it would cost the state \$234 million dollars annually in mitigation and lost revenue. Idaho also conducted a study and determined an annual adverse economic impact of \$94 million from invasive zebra and quagga mussels. Has there been a SD attempt to look at or quantify the economic damage that can be expected to be caused in our state by AIS if we don't do a better job of slowing the spread?



- Nelson (2019) estimated Montana would incur \$234 million annually in mussel mitigation costs if zebra mussels successfully invaded the surface waters of the state. In this modeling exercise, zebra and quagga mussels were assumed to colonize all water bodies across Montana at their maximum potential and cost estimates were based on damages that would result from a worst-case scenario.
- Nelson (2019) includes methodology other states can use to generate economic impact estimates. When considering use of the methodology to estimate impacts for South Dakota, modeled estimated impacts were higher than anticipated, given known expenditures for existing mitigation efforts.
- Upon sharing this fact with the author of the Montana study, she conducted a ground truthing study of the methodology for South Dakota and Kansas (Nelson 2022). Zebra mussel populations exist in areas of both states, so actual costs to mitigate mussel impacts and reduced economic input because of mussels could be determined.
- When conducting modeling exercises of economic impacts of AIS in places where they do not currently exist, values for the costs of impacts are taken from studies conducted elsewhere. Values used in the Montana study seemed higher than are currently experienced in South Dakota and the ground truthing study conducted following the initial study supports this.

References

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