Member Update Reports for the 2023 Western Regional Panel Annual Meeting Salt Lake City, UT

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

Northern pike continue to be the invasive species of greatest concern to ADF&G due to their significant negative impacts on salmon fisheries, sportfishing opportunities, and local economies. After nearly two decades of partnering with State, Federal and Tribal entities to accomplish successful pike eradication (using rotenone) in many lakes within Southcentral Alaska where pike are invasive, this year staff treated one lake in the Matanuska Susitna Valley. Like other eradication projects, this one included tasks associated with restoring native fish and invertebrate populations post-treatment. Additionally, lakes on the Kenai Peninsula where pike had previously been eradicated, continue to be monitored. Regionally, in open systems where use of rotenone is not feasible and suitable pike habitat is abundant, ADF&G continues to implement suppression practices to reduce pike populations and thereby support salmonid populations. When reports of northern pike are received, staff make every effort to detect new populations.

In 2022, ADF&G piloted early detection monitoring for dreissenid mussels in 28 lakes. Initial efforts include assessing suitability for dreissenid mussel survival by analyzing water quality parameters including temperature, dissolved oxygen, pH, dissolved calcium concentration and salinity. Artificial substrates were deployed in a subset of sampled lakes. In 2023, we again sampled high use lakes for suitability. Although, equipment and lab costs are funded with ANS Management Plan funding, staff time is not. Staff capacity has been identified as a challenge.
ADF&G continues to collaborate with the Alaska Invasive Species Partnership. This collection of dedicated agencies, organizations, university staff and stakeholders continues to lead the state by engaging a broad base of users through outreach and educational opportunities, direct communications promoting invasive species management to policy makers and leaders, and fostering greater collaboration statewide.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

European green crab (EGC) were detected within Annette Islands Reserve (Metlakatla Indian Community) in 2022. Since then, ADF&G has invested in raising awareness about the threats to Alaska coastal ecosystems, economies and communities from this global invader. Early detection trapping efforts have occurred proximal to know infested waters as funding and department staff time and resources are available. In early 2023, funding from PSMFC allowed the department to purchase additional traps, and to partner with AK Sea Grant, AK Region NMFS, and local organizations to host an EGC workshop in southern Southeast Alaska and at Annette Islands Reserve. The result has been engagement by new community-based early detection monitors,

who have joined a decades long network of marine invasive species monitors. New monitors receive equipment, protocols, datasheets, and permit assistance to begin sampling.

USFWS funded contractors to work with State, Federal, Tribal agencies and the Kachemak Bay National Estuarine Research Reserve to update an Alaska EGC Management and Response Plan. With additional funding from PSMFC, a consortium of entities participated in a rapid response drill for EGC in Homer, Alaska, to run through steps outlined in the plan. This project has identified gaps and assets and will be valuable for planning for EGC strategic efforts in the future.

ADF&G will continue to build community-based monitoring for aquatic invasive species in the future. With limited staff capacity, the department will collaborate with partners to train, engage and incentivize new monitors. Citizen monitors will be essential for early detection of dreissenid mussel and EGC statewide.

Question 3: Outline your priorities for the upcoming year (up to 5).

• Continue to partner with the Alaska Invasive Species Partnership, regional and local partners, and identify new partners to help raise awareness and advance department objectives to protect aquatic resources from impacts by AIS.
• Increase training opportunities for partners and community-based early detection monitoring for AIS, including dreissenid mussels and European green crab.
• Identify funding sources to maximize capacity for early detection monitoring and response.

Question 4: **Provide Photos!** (with captions) that show off your ANS work over the last year.

European green crab workshop participants ferry from Ketchikan to Annette Islands Reserve, 04.2023. ADF&G

EGC workshop participants deploying Fukui traps for early detection monitoring, 04.2023. ADF&G.

ADF&G catching zero EGC and numerous native crabs, Bostwick Inlet.

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

The Arizona Game and Fish Department (AZGFD) AIS Program continued expanding its monitoring program statewide in Spring/Summer 2023. Stocked waters in Arizona were prioritized for 2023. Efforts will be expanded next season as resources allow. New detections in creeks adjacent to 2 AGFD hatcheries have led to those hatcheries closing to the public until biosecurity concerns are addressed.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

- AZGFD has continued staffing launch ramps at Lake Powell (AZ) with contractor provided inspectors. This partnership allows more efficient utilization of resources by partners at Glen Canyon National Recreation Area and allows for year round ramp coverage to ensure containment of quagga mussels despite changing lake conditions.
- Expanded AIS monitoring program statewide in Spring 2023.
- New Zealand mudsnails were detected in four new waters in Fall 2022 and Spring 2023.
- AZGFD and partners have performed over 6900 inspections and 210 decontaminations since October 2022.

Question 3: Outline your priorities for the upcoming year (up to 5).

- AZGFD will continue to operate current watercraft inspections and decontamination locations.
- Expand prevention capacity at non-AIS listed waters.
- Provide outreach and ensuring AIS compliance.
- Expand monitoring program as resources allow.

Question 4: **Provide Photos!** (with captions) that show off your ANS work over the last year.

AIS Program surveying below Sterling Springs Hatchery

New Zealand mudsnails at Canyon Creek

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

The California Invasive Species Council, by way of a recommendation from the California Invasive Species Advisory Committee (CISAC), set aside funding within the Invasive Species Account to fund seed funds for rapid responses to emerging invasive species needs. CISAC continues to work on developing the process to receive, review, and award funding requests.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

- **Quagga Mussel Program** (Lead Agency – Department of Fish and Wildlife Invasive Species Program)

The statewide program continued to work toward prevention through interdiction of watercraft, outreach and education, early-detection monitoring, support to responsible parties implementing containment at infested waters, and prevention at uninfested waters.

- **Nutria Eradication** (Lead Agency – Department of Fish and Wildlife Nutria Eradication Program)

March 2018 through August 24, 2023, the nutria eradication efforts in California have:

- Completed full and/or rapid assessments on over 1.9 M acres
- Executed entry permits with nearly 4,600 landowners for over 9,800 parcels in 14 counties
- Set up 8,916 camera stations (1,502 currently active)
    - Conducted 74,730 camera checks
- Detected nutria within nearly 826 sites
- Deployed 10,265 trap sets for a total of 118,559 trap nights
- Taken or accounted for the take of 3,640 nutria from six Central Valley counties
  Merced- 2,136; Stanislaus- 970; Fresno- 349; San Joaquin- 110; Solano-46; Sacramento- 16; Mariposa-12; Madera- 1 (San Joaquin River; Fresno County line)

- **Quagga and Zebra Mussel Infestation Prevention Grant Program** (Lead Agency – State Parks Division of Boating and Waterways (DBW))
- DBW is gearing up to increase outreach to boaters on the Mussel Fee Sticker, which is required of all Department of Motor Vehicle-registered vessels boating in fresh water, unless exempted. The sticker is $16, is valid for two years, and is available at www.dmv.ca.gov/MusselFee, at DMV field offices, or at AAA branch offices (for members). Mussel Fee Sticker sales have declined since 2021, which affects our QZ Grant Program funding. DBW will step up outreach this fall when the stickers are typically purchased for their two-year cycle.
- With $3 million dollars available for the 2023 QZ Grant cycle, and 17 applications reviewed, DBW's Chief of the Aquatic Invasive Species Branch, Eddie Hard, made award determinations, considering CDFW's recommendations. Grant agreements are being finalized. The two-year grants are expected to begin in October 2023.

- Since the first grant cycle in 2014/15 through the 2022 grant cycle, approximately $22 million has been awarded statewide for the prevention of quagga and zebra mussel infestation at uninfested publicly accessible reservoirs. To view of list of funded projects visit: www.dbw.ca.gov/QZGrant. This program is funded by the quagga and zebra mussel prevention sticker fees, collected by the California Department of Motor Vehicles, from registered boaters.
- The next grant cycle for 2024, is anticipated to kick off in the spring of 2024. To sign up for notifications for the QZ Grant Program, visit www.dbw.parks.ca.gov/QZGrant (and click on the blue button). QZ Grant Program information is available at www.dbw.ca.gov/QZGrant, or send an e-mail to: QZGrant@parks.ca.gov.

- **Aquatic Invasive Plant Control Program (AIPCP)**(Lead Agency – State Parks Division of Boating and Waterways (DBW))

AIPCP is working on improving remote sensing capabilities through contract with NASA for use of satellite imagery through utilization of the Space Act Agreement and will synergize with the Delta311 app and new GIS software (Survey123 and collector). AIPCP has also focused on assisting tidal wetland area restoration through contractual agreement to provide aquatic invasive plant control services to DWR. AIPCP continues to work with USDA-ARS on biocontrol that may be viable in the California River Delta to support IPM. AIPCP is also working with stakeholders on better utilizing existing resources to better control the Delta in a way that allows the limited AIPCP resources to cover as much area as possible.

- ***Caulerpa prolifera* Eradication** (Lead Agency – Fish and Wildlife Marine Region)

In April 2021 *C. prolifera* was confirmed in the China Cove area of Newport Bay and the California Department of Fish and Wildlife and the Santa Ana Regional Water Quality Control Board reconvened the Southern California Caulerpa Action Team (SCCAT) to address the *C. prolifera* infestation. The SCCAT continues to work to lead efforts surveying, removing, and monitoring the area. Additionally funding has been identified to meet short-term efforts, but additional future funding will be needed.

Question 3: Outline your priorities for the upcoming year (up to 5).

- Continue *C. prolifera* eradication efforts.
- Continue Nerodia eradication efforts.
- Continue nutria eradication efforts.
- Continue quagga/zebra mussel prevention and containment efforts.

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

CPW detected adult zebra mussels in Highline Lake near Grand Junction, Colorado in the fall of 2022. This is the first time adult zebra mussels have been detected in a water in the state of Colorado.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

- CPW detected adult zebra mussels in Highline Lake near Grand Junction, Colorado in the fall of 2022. This is the first time adult zebra mussels have been detected in a water in the state of Colorado.
    - Following that initial detection, CPW initiated our rapid response plan and implemented a whole lake eradication effort that combined a significant drawdown of the reservoir and an application of Earthtec QZ. CPW will continue monitoring the reservoir on a regular basis for the next 5 years to determine the effectiveness of this first of its kind eradication attempt.
    - In response to the detection, CPW has implemented a robust containment watercraft inspection & decontamination program at Highline Lake. Every trailered and motorized watercraft leaving the reservoir in 2023 has been inspected and decontaminated. To date, Highline has decontaminated more than 1,800 exiting watercraft during the 2022 season.
- CPW has implemented year 2 of a 2 year pilot program inspecting watercraft at Ports of Entry and Welcome Centers. In 2023, CPW has implemented roadside check stations at 7 different locations with the goal of more broadly informing the potential long term implementation of this supplement to CPW's existing ramp based inspection & decontamination program.
    - CPW Leadership approved a new full time Invasive Species Specialist position that will be responsible for the implementation of CPW's roadside watercraft inspection & decontamination program. This individual will be starting with CPW in September of 2023.
- CPW has actively engaged with the Don't Let it Loose program, promoting responsible pet ownership in Colorado. To date, CPW has partnered with 23 pet stores in Colorado, deployed approximately 100 educational signs, and is in the process of developing a classroom program for elementary educators across the state.

Question 3: Outline your priorities for the upcoming year (up to 5).

- CPW Leadership has approved a new full time position as well as an operating budget to begin the long term implementation of a roadside watercraft inspection & decontamination program in Colorado. The implementation of this program will begin in 2024 following the conclusion of year 2 of the 2 year pilot program.
- CPW is extending our outreach to non-motorized watercraft users and anglers. Over the winter, the CPW ANS Program will be collaborating with our education and public information teams to develop a

series of videos targeting various non-motorized user groups and illustrating proper methods to clean, drain, and dry their gear. There will also be a series of supplemental rack cards and an overhaul of portions of CPW's website to better address this important vector.

Question 4: **Provide Photos!** (with captions) that show off your ANS work over the last year.

CPW Eradication Effort @ Highline Lake

CPW Staff Remove Water Hyacinth From A Neighborhood Pond

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

Added 3 additional full-time staff to KDWP AIS program. Three additional AIS FTEs were hired in September 2022. Two staffers are focused on invasive carp management and removal. The other position is focused on organisms in trade concerns, AIS monitoring and detection, and AIS education and outreach.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

- **Conducted WID for the first time in Kansas –** Funding through the Bureau of Reclamation provided KDWP the ability to conduct WID activities at 6 BOR waters in Northwest Kansas:
  - Norton Reservoir – not known to contain zebra mussels
  - Lovewell Reservoir – not known to contain zebra mussels
  - Webster Reservoir - not known to contain zebra mussels
  - Kirwin Reservoir - not known to contain zebra mussels
  - Cedar Bluff Resrvoir – zebra mussel infested
  - Glen Elder Reservoir – zebra mussel infested

  KDWP plans to maintain and expand WID efforts in future years as funding and staffing allows.

- **Completed a research project to design a protocol for sampling invasive and native crayfish in Kansas lakes and streams -** This is a joint project between the Fisheries and Ecological Services divisions of Kansas Wildlife and Parks and New Mexico State University. Crayfish are the second most imperiled group of animals in North America (behind only native mussels). Negative interactions with invasive crayfish species and the diseases they carry threaten to further impact Kansas' crayfish populations. In 2019, the first introduced population of invasive Red Swamp Crayfish were found in Kansas and tested positive for crayfish plague There is very little existing data on Kansas' crayfish and most crayfish research that has taken place in North America has focused on stream populations, therefore no good protocols exist for sampling crayfish in lakes. This project looks to address these issues by:
  - Compared a suite of common sampling techniques to determine the best sampling methods for crayfish assemblages in Kansas lakes and streams
  - Determined effort requirements needed to detect all species of crayfish inhabiting a lake or stream
  - Evaluated habitat-species relationships for crayfish assemblages in lakes and streams
  - Provided management recommendations to Kansas Department of Wildlife and Parks regarding long-term monitoring of crayfish in lakes and streams

  Using this information, KDWP is planning to follow up with a university project to sample approximately 100 waterbodies in 2024 and 2025.
- **Continued bighead carp research project on Neosho River - Grand Lake system –** The project, funded in conjunction with FWS, aims to better understanding the small, isolated, but reproducing population of bighead carp in the Neosho River – Grand Lake system. The project objectives are to:

- Identify locations of presence and upstream extent of bighead carp population within the Neosho River – Grand Lake system.
- Collect baseline population demographic information including relative abundance, age and growth, and size structure.
- Determine broadscale movements within the Neosho River system using otolith microchemistry.
- Identify locations within the Neosho River – Grand Lake system for containment, removal, and/or eradication efforts.

Two years of field sampling has been completed and final report will be completed in the fall of 2023. As a natural outgrowth of this project, KDWP, OWDC, and MSU have been able to educate and build relationships with fishers - and fishing guides in particular – about the need to suppress bighead carp in the system. Fishing guides have begun using live-imaging sonar to target the bighead carp in the system and have removed more carp in spring of 2023 (approximately 40-50 fish) than have been documented in the system in the last 30 years (approximately 20-30 fish).

- **Continued removal of invasive carps from the Kansas River below the Bowersock dam –** In 2022, 24,000 pounds of invasive carp were removed from the Kansas River below the Bowersock Dam to prevent upstream range expansion and to benefit native species and river users below this barrier. So far in 2023, an additional approximately 20,000lbs. have been removed.
- **Conducted a survey to understand the impacts and perceptions of invasive carp by Kansas River users -** Until the creel survey conducted on the Kansas River in 2022, the Kansas Department of Wildlife and Parks (KDWP) was unaware of the breadth of the diversity of recreation and river users in the Kansas River. The Kansas River is one of three navigable rivers in Kansas and is a popular destination for public recreation such as kayaking and canoeing, fishing, hunting, and wildlife viewing. From March to October 2022, KDWP conducted in-person surveys of recreationists in the invasive carp-infested portion of the Kansas River to determine impacts and challenges river users experienced due to invasive carp. Results indicated carp did have negative impacts on KS River users, but were not viewed as negatively as expected and that education and outreach (in multiple languages) and enforcement are needed to prevent users from unintentionally or intentionally spreading invasive carps from this location

Question 3: Outline your priorities for the upcoming year (up to 5).

- Expansion of WID activities in Kansas.
- Increased removal of invasive carp from the Kansas and Neosho Rivers and continue coordination of efforts to install an invasive carp deterrent at Bowersock Dam.
- Increased ANS education and outreach, specifically targeting organisms-in-trade and coordination with law enforcement officers.

Question 4: **Provide Photos!** (with captions) that show off your ANS work over the last year.

Kansas initiates watercraft inspection.

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

The largest highlight to report on this year is our dedicated program staff and partners working around the state on invasive species and noxious weed issues. ISDA was fortunate to be approved by the Idaho Legislature for five additional full time permanent staff for the Noxious Weed and Invasive Species Program. The additional staff will be located in Idaho Falls, Post Falls, Twin Falls, Boise, and Pocatello. The Program also relies on a robust seasonal workforce of hard driven roadside watercraft inspectors, roving inspection crews and survey crews. These dedicated individuals are often found out in the field during the busy summer months performing everything from watercraft inspection decontamination, aquatic plant survey or removal to public outreach and education. Most of this work involves overnight trips away from home, long workdays in treacherous conditions. Lastly, but not least, we have a wide network of partners and collaborators across the state who help ensure the success of the program.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

1. Watercraft Inspection Station Operation.
Idaho operated 19 watercraft inspection stations located throughout Idaho on major travel corridors into the state as well as 5 roving inspection crews and 4 regional offices providing watercraft inspection and decontamination cervices. YTD Data (9/1/2023): Total watercraft Inspections: 87,211. Hotwashes (140F) performed: 750. Weeds on boat: 400. Q/Z Fouled watercraft: 28. Idaho continued the expanded nighttime operations at Idaho stations which consisted of 24-hour operations at Cotterell (I-84W) inspection station, 18-hour operation at Cedars I-90 W, Jackpot Hwy 93-N and Malad I-15 N. “All daylight hours” operations at remaining stations. ISDA partners with local entities for inspection station operations through cooperative agreements including an agreement with the Bear Lake Regional Commission to support two Utah stations.

ISDA partners with Law enforcement at both the local county level and state ISP level continue to provide emphasis patrols through cooperative agreements for all watercraft inspection station. These patrols focus on both boater compliance for bypass and inspection station staff safety. ISDA staff have been in communication with law enforcement captains and lieutenants this season to focus patrols during high traffic. FY21 Budget included increased law enforcement from Idaho State Police Trooper to support nighttime operations at Cottrell I-84 W, Cedars I-90 W, Hwy 93 N and Malad I-15 N.

2. Monitoring Operations:
ISDA performs annual early detection monitoring at 80 waterbodies throughout Idaho utilizing over 1,600 plankton tow samples for microscopy analysis. Monitoring occurs during multiple sampling events, bi-monthly for each waterbody throughout the summer season. Samples are shipped overnight same day with a two-week turnaround for lab analysis. Early detection monitoring also includes visual inspection of artificial substrate performed by Idaho Department of Environmental Quality and shoreline walks survey during reservoir low pool. Idaho Rapid Response Plan defines decision making, response, and communication in cases of suspect or positive results.

3. Education/outreach:
ISDA continues to provide education and outreach on Invasive Species throughout various avenues including media new releases, watercraft inspection station staff, brochure material, interactive website and facebook page. Messages used to promote the Idaho invasive species program include “Clean, Drain, Dry” “Know what you grow”, “Don’t let it loose”, and “Knock it off”. Please visit our webpages at:
www.invasivespecies.idaho.gov
www.invasivespecies.idaho.gov/watercraft-inspection-station/
www.invasivespecies.idaho.gov/edrr-monitoring/
www.invasivespecies.idaho.gov/maps/

4. 2023 Legislation & Funding:
Idaho legislature provided the ongoing $3.14 M from the General Fund to continue enhanced operations of the state's watercraft inspection stations for FY23. This funding has made it possible to extend inspection station season duration and hours of operation. Idaho was also provided an additional $600K in Idaho General Fund to be utilized on watercraft inspection long term site improvement projects across the state. Overall program funding also includes $1 M from federal funds to enhance operations or equip watercraft inspection stations. The watercraft inspection budget for FY23 is $1.4 M from the dedicated Watercraft Inspection Fund, $3.14 M from the General Fund, $600K for watercraft inspection site improvements and $1.0 million from federal funds. Intent Language: Encourage the use of roving stations where appropriate, the addition of staff on busy weekends, the collection of data regarding the number of watercraft bypassing inspection stations, and procurement of federal funds. Requires the department to report to JFAC, the House Agricultural Affairs Committee, and the Senate Agricultural Affairs Committee, during the legislative session, the results of the data gathering, securement of federal funds, and provide an operational review of the boat inspection stations.

Pacific States Marine Fisheries WRDA Funding agreement ($1 M) to support watercraft inspection and monitoring efforts. USFWS ANS Task Force Grant for $90K in federal funds for the statewide outreach program. USFS funds continues to be available for the Redfish watercraft inspection station.

5. Idaho Invasive Species Council
Executive Order 2017-05 outlines the purpose of the Council to foster coordinated approaches that support local initiatives for the prevention and control of invasive species. The Council shall meet at least twice annually. Membership shall include: Governor’s office, nine state agencies, member of the Idaho Senate, member of the Idaho House, representative of the Idaho Outfitters and Guides. Chaired by the ISDA Director or her designee. Other invitations by the Director. Provide policy level recommendations and planning assistance for combating harmful invasive species infestations throughout the state and preventing the introduction of others that may be potentially harmful. Serve as a nonpartisan forum for identifying and understanding invasive species issues. Identify opportunities for cooperating and coordination between departments, tribal governments, stakeholders, Idaho universities, private and not-for-profit organizations, other states, and the federal government. Recommend steps for implementing actions proposed in the Strategic Action Plan for Invasive Species. Take measures that will encourage control and prevention of harmful non-native species. Organize and streamline the process for identifying and controlling invasive species among all stakeholders. Consider ways to halt the spread of invasive species as well as finding possible ways to bring existing problems under control.

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

- Expanded partnerships with tribes, conservation districts and NGO's with watercraft inspection, AIS survey and outreach activities.
- Expanded eDNA early detection sampling for dreissenid mussels.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

- Expanded watercraft inspection operations to address boat movement from mussel impacted areas in the Black Hills.
- Over 86,000 watercraft inspected and 43 mussel fouled vessels intercepted.
- On track to collect and analyze over 2,500 dreissenid early detection microscopy samples in 2023.
- Eradication treatment projects appear to be successful for Eurasian watermilfoil and corbicula clams in several areas.
- Expanded social media presence through AmeriCorps member support.

Question 3: Outline your priorities for the upcoming year (up to 5).

- Upgrade to on-demand decontamination systems at all high traffic stations.
- Continue to expand partner involvement in AIS prevention, early detection and outreach activities state-wide.
- Expand AIS outreach and social media presence.

Question 4: **Provide Photos!** (with captions) that show off your ANS work over the last year.

Ballast decontamination and education trailer finally completed and used for training state-wide. Funded through BOR.

AIS outreach with help from AmeriCorps members.

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

The greatest challenge of 2023 was the discovery of Zebra Mussels in Beaver Lake, a private waterbody near Omaha. This required significant sampling and coordinator with private entities regarding management options for this waterbody and containment measures to reduce the likelihood of spread to further waterbodies. In addition, NGPC staff invested considerable efforts in treating Eurasian Watermilfoil and other invasive aquatic plants throughout Nebraska.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

The top priority in Nebraska was the containment and prevention of Zebra Mussels and Eurasian Watermilfoil. In addition, we have begun funding several research projects to investigate and drive management efforts for invasive carp throughout the State.

Question 3: Outline your priorities for the upcoming year (up to 5).

1) Prevention/containment of Zebra Mussels from waterbodies in surrounding States.
2) Herbicide treatment of waterbodies to remove Eurasian Watermilfoil, Brittle Naiad, and Curly-leaf Pondweed.
3) Sampling of interior Nebraska rivers and streams to detect the leading edge of carp invasion to inform future management efforts.

Question 4: **Provide Photos!** (with captions) that show off your ANS work over the last year.

Invasive crayfish found in Petco stores

Zebra Mussels found in Beaver Lake, Nebraska

Live blue crabs found dumped in an Omaha area lake

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

- Took steps to eradicate a newly discovered invasive species in Southern Nevada. When NDOW was notified of the presence of Australian Redclaw Crayfish in the Clark County Wetland Park we were able to rapidly respond to assess the extent of the infestation and make plans to eradicate the species. We learned a ton from the initial eradication effort, even if it proved to be unsuccessful. With the help of many partners, Clark County, Southern Nevada Water Authority, National Park Service, Desert Research Institute, we were able to perform a large trapping and eDNA survey of the Wetlands Park. These results will guide eradication efforts this winter.
- Continued to operate at a high capacity at Lake Mead National Recreation Area (LMNRA) while simultaneously growing NDOW's partnership boat dealers and auction houses in the greater Las Vegas area. NDOW contacts the dealers monthly to discuss the condition of the current watercraft inventory. The partnership with the dealers has proven very successful, they routinely call NDOW when they have concerns with a watercraft.
- Nevada's AIS program was able to fund suppression efforts of Northern Pike in Comins Reservoir in Eastern Nevada and Common Carp in Chimney Reservoir in Northern Nevada. The suppression efforts were performed to improve the sport fishery present in both reservoirs.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

- Staffing in remote locations has still proven to be a challenge. Staffing WID stations at locations such as Rye Patch Reservoir and Elko Roadside was difficult this year, NDOW is currently looking for solutions.
- Drought and low water levels at Lake Mead. The winter of 2022 – 2023 was a great water year and raised Lake Meads level approximately 20 ft., this allowed some boat ramps to re-open in 2023, many remain closed. Projections are for the lake to continue to decline, NDOW will continue to adjust WID operations as ramps open and close.

Question 3: Outline your priorities for the upcoming year (up to 5).

- Continued coordination with NDOW's Law Enforcement division to increase enforcement of AIS regulations. NDOW's Game Wardens are already spread thin, NDOW's Fisheries Division and AIS program are currently working with the wardens to increase enforcement of fisheries and AIS regulations while not taking time from other high priority activities.
- Increase the number of permanent NDOW AIS employees in Northern Nevada. NDOW currently has four full-time AIS employees in Southern Nevada at LMNRA and Alamo. For Northern Nevada there is only a single employee whose workload is at capacity, we still rely on contract staff to meet the program needs. Additional full-time employees in Northern Nevada would lessen the workload on the current employee and help address chronic problems such as high turnover in the contract positions.

- Continue eradication efforts of the population of Australian Redclaw Crayfish in the Clark County Wetlands Park with the hope of achieving a complete eradication in 2024.

Question 4: **Provide Photos!** (with captions) that show off your ANS work over the last year.

NDOW Fisheries Biologist Kevin Guadalupe with two Australian Redclaw Crayfish during eradication efforts at the Clark County Wetlands Park, February 21, 2023.

Mark Schoffstall decontaminating a boat at Lake Mead while it's being hoisted by a crane.

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

Prevention efforts in New Mexico fully took effect in 2013. In ten years of staffing inspection stations, the NM AIS program has conducted over 355,000 watercraft inspections of which 1,883 have required hot water decontamination in order to further reduce the risk of AIS introduction.

Navajo Reservoir marina continues to expand and gain notoriety; a continued increase in houseboat arrivals has put pressure on the BOR contractor (ExplorUs) as they try to manage daily visitor watercraft inspections along with these houseboat arrivals. The ExplorUs crew should be applauded as they continue to meet the challenge with minimal delays and complaints.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

Partnerships continue to be a priority for the New Mexico AIS program. Bureau of Land Management, Bureau of Reclamation, New Mexico State Parks, US Army of Corps of Engineers, City of Farmington and New Mexico Department of Game and Fish all have contributed with education/outreach, Early Detection Monitoring and Prevention efforts. In 2023, the Navajo Nation Department of Fish and Wildlife joined efforts and will be assisting with education/outreach and prevention at Morgan Lake, NM.

Question 3: Outline your priorities for the upcoming year (up to 5).

- Continue to expand the NM AIS program to additional waterbodies/areas by reaching out to potential partners.
- Work with Bureau of Reclamation as they finalize inspection/decontamination station drawings for both Navajo Reservoir and Elephant Butte Reservoir.

Question 4: **Provide Photos!** (with captions) that show off your ANS work over the last year.

You let your guard down and don’t train to inspect for Dinosauria and they sneak into your lake!

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

In the spring of 2023, the North Dakota state legislature approved a significant bump in spending authority of the Game and Fish's ANS program. This will allow us to seek federal dollars to increase our ANS efforts.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

1. Continue to recruit and strengthen partnerships to raise ANS awareness in North Dakota and beyond.
2. Continue to deploy a diverse ANS outreach/education program using a variety of media outlets. In 2023, we again partnered with Midco, a regional TV/internet provider, to develop and disseminate ANS commercials.
3. To date, we have inspected over 8,500 watercraft.
4. Maintain/support a dozen ANS prevention devices, including CD3s, ILIDS, and wash stations. ILIDS are remote inspection cameras that encourage boaters to comply with AIS regulations.
5. Conducted annual early detection surveys on more than 150 waterbodies utilizing various techniques. In 2023, we collected well over 1,000 plankton tow samples for the early detection of Dreissenid mussels and Corbicula.

Question 3: Outline your priorities for the upcoming year (up to 5).

1. Secure funding
2. Expand ND WID program efforts
3. Expand partnerships
4. Update internal ANS policy documents

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

We were able to increase the number of reservoirs we sampled for zebra mussel veligers this year due to the hiring of the vacant ANS Technician in January. Of the 33 reservoirs we sampled in Spring 2023 for zebra mussel veligers, we had ZERO positive hits!

With the help of paddlefish guides, we were able to significantly increase the number of bighead carp we got out of the Grand Lake system, going from 6 in 2022 to 72 in 2023. We are also gearing up to hire our third employee in our program.

The Grand Lake bighead carp population has been challenging. We have not collected an individual under 1000mm out of the system, but based off of our age data, they appear to have spawned and recruited at least 3 different times since their initial spotting in 1991. Another challenge we face is finding an effective method for sampling a potentially low abundance population that is already known for being shy in the presence of a world class paddlefish fishery.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

Our top ANS activities over the past year have consisted of collecting bighead carp from anglers on the Grand Lake system and zebra mussel veliger sampling in the spring. On the bighead carp that we collected, we gathered otoliths, blood samples, lengths, weights, sexes, and fin clips off of the fish. We intend to run genetics and microchemistry on these fish in the near future as well as starting a telemetry project on them.

Question 3: Outline your priorities for the upcoming year (up to 5).

1. Hire another technician.
2. Start invasive carp eDNA project on the Arkansas River.
3. Start telemetry project on invasive carp in the Grand Lake system.
4. Apply for zebra mussel funding and get a project put together.
5. Include more aquatic invasive plant surveys throughout the year and increase overall knowledge on invasive vs. native aquatic vegetation (department wide).

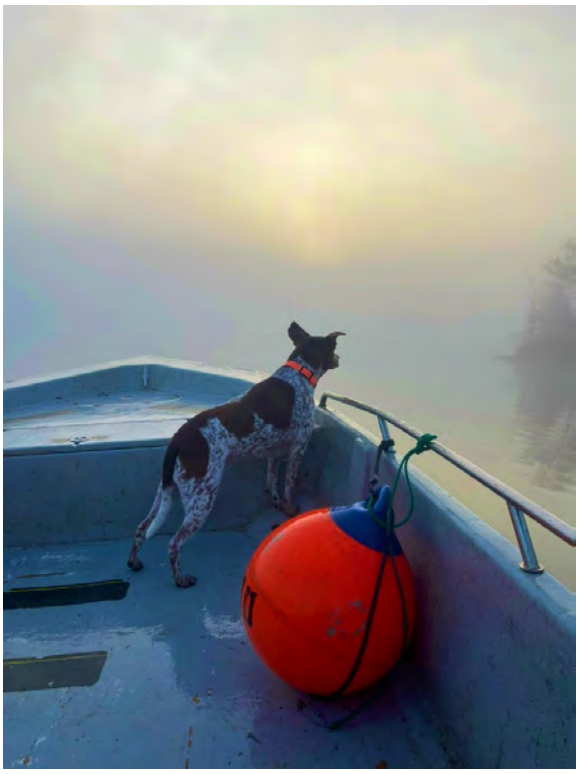
Question 4: **Provide Photos!** (with captions) that show off your ANS work over the last year. Lots of bigheads-BEWARE!

One of the paddlefish guides and his helper "scoring" on 4 bighead carp.

ODWC ANS Technician Morgan Winstead collecting a zebra mussel veliger sample. This lake ended up being clean- yay!

Another successful day gathering bighead carp from paddlefish guides and collecting samples from them.

The very first bighead carp we caught in a net when we were intentionally targeting them.



By-catch bighead carp in a paddlefish net. Fun fact, this day was 12/8/2022 and we caught another bighead carp in paddlefish nets exactly a year before. Stay tuned if we get another this year! AND The lucky charm. This is my dog Nashville. He helped set the net on 12/8/2022 that caught the bighead carp.

Another paddlefish guide with his customer that reeled in this 110lber

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

- Rusty crayfish have been successful eradicated out of Summit Prairie Pond which is located near one of headwaters creeks of the Malheur River Basin.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

- Biggest challenge was to recruit and hire staff for the inspection stations. The program was not able to fill six staff positions, was not able to open one station, had to delay opening two other stations and reduced hours at the other station due to staffing issues.
- As an AIS program, this season we have completed over 200,000 inspections.

Question 3: Outline your priorities for the upcoming year (up to 5).

- To be fully staffed at the inspection stations at the start of the 2024 season.

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

South Dakota implemented two new watercraft inspection crews this year. There was an additional access-based roving watercraft inspection crew implemented for the northeastern part of the state that focused on high use waterbodies with hopes to engage new users and mitigate the spread of AIS. An additional watercraft inspection station was also implemented at Sheridan Reservoir in the Black Hills, two total now, to mitigate the spread of zebra mussels that were found in Pactola Reservoir last year. An aquatic invasive species survey was also added to GFP standard lake surveys to increase our early detection monitoring in the state.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

1. **Watercraft Inspections** - As of 8/27/23, South Dakota has conducted 17,148 inspections have been conducted and based off last year, 19,000 inspections should be attainable by the end of the open water season.

2. **Significant findings and response** - Currently, only one new waterbody, the James River, has been added to the infested waters list for zebra mussels. Mussels were found the week after July 4th within Sand Lake Refuge on the James River. Downstream movement of veligers weas most likely the cause since the James River was deemed positive for zebra mussels previously in North Dakota. Through our Rapid Response Plan that was developed last year, it enabled staff to act quickly after mussels were detected.

3. **Invasive Carp** - Other priorities continue to be understanding invasive carp movement, natal origins, and areas of risk for expanded distribution.

4. **Outreach** – South Dakota continues to focus on outreach and education as the main tool to mitigate the spread of AIS. This year, we conducted our first ever AIS Awareness week the week prior to Memorial Day weekend. South Dakota GFP also partnered with Lawrence and Schiller again for our AIS marketing campaign. Through the campaign, gas station TV was present at 43 gas stations across the state reminding folks to Stay Clean. Drain. Dry. Through the campaign we also ran radio PSA's and conducted instant experiences on our social media platforms for folks in certain areas of the state that may come in contact with infested waters. SDGFP also partnered on an AIS workshop educated volunteers on how to identify and report AIS in the field. Finally, our communications staff ran numerous articles on our social media platforms and through email regarding AIS information.

Question 3: Outline your priorities for the upcoming year (up to 5).

1. Continue to improve the SD WID program
2. Build relations with partners focusing on AIS prevention
3. Help better understand invasive carp movement in the Missouri River Basin
4. Expand AIS outreach efforts to new audiences
5. Further develop education related to aquatic invasive species for SD users

Question 4: **Provide Photos!** (with captions) that show off your ANS work over the last year.

Mussel detection at Hecla Day Use Area in Sand Lake Wildlife Refuge on the James River (7/6/23)
For more information please visit sdleastwanted.sd.gov

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

ANS Program Highlights:
Aquatic invasive vegetation management has been highly successful at reducing infestation acreage and ensuring no water bodies are impaired for boater access.
Giant salvinia weevils are proving to be a valuable tool in the management of this species, and recent observations are suggesting they are more tolerant of low temperatures than originally thought, with overwinter survival being seen in several reservoirs north of what was previously believed to be the northernmost latitude at which they would survive.
The spread of zebra mussels in Texas seems to have slowed. This is the second year with only two new detections—potentially only one as the status of Lake Amistad is in question (see below).

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

Top ANS Activities:
Aquatic Invasive Plant Management
Aquatic invasive plant management continues to be a priority in Texas, with Giant Salvinia and Water Hyacinth remaining the most problematic species, although a high degree of control has been achieved and we continue to have no water bodies currently considered impaired for recreational access. Giant salvinia integrated pest management strategy includes a variety of control methods including salvinia weevil introductions as biological controls.
Department policy has recently established that, while invasive and problematic in some areas, hydrilla often provides the only fish habitat in many aging reservoirs, which can be beneficial to sportfish populations. As such, TPWD will focus treatment efforts on maintaining open boat lanes and swim beaches and treatments around boat ramps to aid in preventing spread. Reservoirs with 40% or more total hydrilla coverage will be considered for more extensive treatments and/or considered on a case-by-case basis if other issues arise.

Riparian Invasive Plant Management
Watershed-scale riparian plant management in key Native Fish Conservation Areas also continues to be a key priority. Efforts are ongoing to manage saltcedar across the Upper Brazos

River watershed, with over 150 private landowners participating and over 20,000 acres treated to date. However, no treatments were conducted in 2023 due to contractor issues; we will seek to use a different vendor next year. The Healthy Creeks Initiative has partnered with more than 450 private landowners and the Nueces River Authority to treat Arundo (*Arundo donax*; aka giant reed) infestations along streams and rivers in the Pedernales, Blanco, Guadalupe, Medina, Nueces, and Llano rivers and San Felipe Creek watersheds of the Texas Hill Country in Central Texas. This project continues and has been highly successful.

Invasive Carp Population Assessment

Invasive silver and bighead carp have been detected in the waters of the Red River Basin, but in the past information regarding this species was limited primarily to isolated angler reports. Texas partnered with Oklahoma and Arkansas and researchers from Auburn University and Texas Tech University to conduct an invasive carp population assessment and collect baseline native fish assemblage data. The project is reaching the end of the third year and a telemetry study is underway. Future plans will be dependent upon study results, but plans are being made to conduct some interagency removal events.

Zebra/Quagga Mussel Early Detection/Population Monitoring

A group of 9 partner agencies and one university conduct zebra mussel early detection monitoring at 164 sites on 44 water bodies and some degree of population monitoring on 28 water bodies. This partner approach to monitoring significantly increases the number of water bodies that can be monitored and coordination prevents duplication of efforts. In the past year, there have only been two new detections of invasive mussels in Texas. In April 2023, zebra mussels of multiple size classes were discovered in Hords Creek Lake in Coleman County—another lake near Brownwood and O.H. Ivie farther west than most infestations; this lake was designated as fully infested. Zebra mussel larvae and eDNA were also detected in Lake Amistad on the Texas/Mexico border once samples began to be sent to the TPWD Analytical Services Lab in addition to contracted labs. The TPWD lab has found no evidence of quagga mussels, bringing into question earlier detections of this species in Lake Amistad by NPS-contracted labs. This is the second year with very few new zebra mussel detections.

Public Outreach Campaign

Public outreach on aquatic invasive species is a key component of Texas' ANS management strategy and is funded by TPWD and a group of partners. The 'Protect the Lakes You Love' public awareness campaign made hundreds of millions of impressions through billboards; gas station advertising including clean, drain, and dry pump videos; digital pre-roll video ads; Facebook ads and posts; geofenced Pandora radio ads near infested and high-risk lakes; boater registration mailings; emails to registered boaters and marinas; and print ads in outlets such as the Outdoor Annual, Texas Parks & Wildlife magazine, and the Marina Association of Texas newsletter. Outreach this year also included focus on the Never Dump Your Tank campaign and direct, targeted angler outreach to prevent the spread of invasive carp.

Question 3: Outline your priorities for the upcoming year (up to 5).

Priorities for the Upcoming Year:

1. Aquatic & Riparian Invasive Plant Management
2. Zebra/Quagga Mussel Monitoring and Outreach/Prevention
3. Invasive Carp Population Assessment and Movement

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Question 1: Provide one achievement / highlight from your ANS program that you would like WRP to know about.

1. In 2022, the Washington Department of Fish and Wildlife (WDFW) in partnership with the Washington Invasive Species Council, held a statewide art contest inviting high school-age artists to participate in an art contest that will help spread the word about not spreading invasive species through an educational trailer for use statewide. Art contest submissions were judged by a bi-partisan panel of state legislators to select the winner. The winning submission now adorns the trailer which includes invasive species exhibits for use at public events statewide. More information and photos are available at https://wdfw.medium.com/washington-student-takes-on-invasive-species-with-art-467af2897df.

Question 2: Provide a description of your top five ANS activities/accomplishments/priorities (up to 5) for the past year.

1. In response to a significant increase in green crab populations at various locations around the state, Governor Jay Inslee issued Emergency Proclamation 22-02 in January 2022 directing WDFW to begin implementation of emergency measures and urged the Legislature to provide additional emergency funding to WDFW for response. Using more than $6 million per year provided by the State Legislature, more than 285,000 European green crab were removed in 2022 and more than 185,000 have been removed in 2023 as of September 3, which is ongoing. To assist efforts in management, reporting, and communications, the department developed and published a European Green Crab Hub in January 2023 available https://wdfw-egc-hub-wdfw.hub.arcgis.com/.

2. WDFW's Enforcement Program leads a watercraft inspection program focused on preventing aquatic invasive species from entering Washington waterways. In 2022, staff at WDFW watercraft check stations inspected nearly 52,000 vessels for aquatic invasive species, intercepting 871 boats carrying aquatic noxious weeds and other unwanted invasive species that pose a risk to the state's waters. Already in 2023, more than 50,058 watercraft have been inspected, 15,823 last used on waters positive for aquatic invasive species, 932 required some form of decontamination including 19 being invasive mussel fouled to date.

3. WDFW's Fish Program leads statewide efforts to sample waterbodies to detect and monitor aquatic invasive species in partnership with tribal nations, public utilities, and others. In 2022, staff monitored 306 sites at 124 waterbodies and collected samples for zebra mussels, quagga mussels, northern pike, New Zealand mudsnails, and alligator gar. 2022 sampling found no invasive dressenid mussels in Washington's waters.

4. Northern Pike (*Esox lucius*), a non-native predator fish in the Columbia River Basin and prohibited level 1 species in the State of Washington poses a significant environmental and economic threat to Washington and the downstream State of Oregon. WDFW in partnership with the Kalispel Tribe of Indians, Confederated Tribes of the Colville Reservation, and Spokane Tribe of Indians removed more than 1,400 northern pike in a coordinated effort to ensure that the invasive species do not spread

downstream into the anadromous portion of the Columbia River, less than 60 miles from known infestations. To further prepare for statewide northern pike response, WDFW completed a response plan. Learn more about the risk of northern pike to regional salmon by visiting pike.nwcouncil.org.

5. In 2022, WDFW completed Invasive Species Management Protocols, developed in consultation with the Washington Invasive Species Council, Washington Department of Transportation, Pacific States Marine Fisheries Commission, National Oceanic and Atmospheric Administration, U.S. Bureau of Reclamation, and the U.S. Geological Survey. This document establishes protocols for all WDFW employees engaged in activities that may place them in direct or indirect contact with known and unknown invasive species, or that might otherwise cause or contribute to the introduction or spread of invasive species. The protocols are available at https://wdfw.wa.gov/publications/01490.

Question 3: Outline your priorities for the upcoming year (up to 5). This will help identify coordination opportunities moving forward.

1. In 2023-2024, WDFW is continuing European green crab emergency measures which include implementation of the Incident Command System (ICS). This approach has provided a clear command structure, standardized communications, and management action implementation across the state between WDFW, co-managers, tribes, and partners. Moving forward, WDFW is developing a strategy to achieve the incident management objective of post-emergency transition to long-term EGC management by local co-managers, tribes, and partners with WDFW oversight, through development of a 5-year management plan. Post-emergency, this management plan will drive policy, resource allocation, research, and operations.

2. In coordination with the Washington Department of Ecology, WDFW is leading state review, commenting and objections to the U.S. Environmental Protection Agency (EPA) as national vessel discharge standards rulemaking under the Vessel Incidental Discharge Act (VIDA) continues. WDFW is in the process of hiring a Ballast Water and Biofouling Lead, who will lead WDFW staff and efforts to address both ballast water and biofouling.

3. WDFW is integrating Invasive Species Management Protocols, referenced in Question 2, Item 5 above, into agency-wide programs with initial focus being on the WDFW's Capital and Asset Management Program (CAMP). As an initial step, CAMP is integrating spatial locations of priority aquatic invasive species into project management systems so that construction planning considers invasive species and ensures staff take steps to avoid spreading problem species. In January 2024, WDFW hopes to onboard a Decontamination Biologist who will lead WDFW efforts to develop and deploy trainings to all WDFW staff and external partners.

Washington invasive species education trailer.

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

The Wyoming Game and Fish Department (WGFD) responded to the mussel infestation detected in Pactola Lake, South Dakota mid-July, 2022. This infested water is only 27 miles from the Wyoming border, significantly increasing the threat to Wyoming. As a result, Wyoming closed all watercraft access to LAK Reservoir in northeastern Wyoming starting Aug 1st, 2022. In 2023, only hand-launched non-motorized watercraft will be allowed. Additionally, Wyoming closed all but one boat ramp on both Keyhole and Glendo Reservoirs, and limited launching/retrieving hours starting October 5, 2022. These closures remained in effect until ice on (Nov 30 for Keyhole and Dec 19 for Keyhole) in an effort to inspect 100% of watercraft launching at these locations, as they are the most popular next destination in WY for Pactola watercraft.

In 2023, WGFD constructed two new AIS check stations in the towns of Lusk and Newcastle in response to the Pactola infestation. Operations at these locations began March 1, 2023 and will be open until Nov 30, 2023.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

- In 2023, watercraft check stations began operation March 1 and in select locations, will stay open until November 30, at seventeen permanent check stations at port of entry, rest area, and other locations to intercept watercraft entering the state. Roving crews focused on inspections at major waters throughout the state to contact resident boaters. As of September 1, a total of 61,165 inspections have been conducted. Of these, 6,274 were high risk watercraft and 1,011 have been decontaminated for water onboard or suspect AIS. A total of 60 boats have been intercepted with mussels attached or in compartments, one of which was harboring live mussels, already surpassing our record 58 mussel boats in 2022.
- The WGFD increased seasonal personnel hiring in 2023 by over 20% to combat the increased workload and to staff the new check stations with the added risk from Pactola Reservoir. Additionally, our technician hourly wages were increased from $16.11 to $18.71 to address recruitment and retention issues from previous years. The program now operates with 75 personnel during peak season; 5 FTE personnel, four 12 month contract Specialists, four crew leads and 62 seasonal inspectors.
- In 2022, Wyoming initiated the roll out of tablets and wireless printers for all AIS inspections at our permanent check stations, in an effort to cut back on data entry and interact with surrounding states real-time. Additionally, this has allowed Wyoming to intercept high risk boats that may have been overlooked in years pasting trusting watercrafts users in where they said they boated last. In 2023, more units were purchased to so we can be 100% live at all locations and regional offices.
- The WGFD completed multiple rigorous regulation changes to further protect our state from AIS in regards to Private Hatchery fish importation, which was implemented Jan 1, 2023. All hatcheries requesting to import fish to Wyoming will now be required to have a valid AIS Hatchery Inspection following to rules set

in Chapter 51. Additionally, the AIS program adopted the AIS Hatchery Inspection obligations in 2021 and will continue their annual monitoring of hatcheries in the coming months.

- The WGFD recently purchased a 10 acre lot on the east side of the Flaming Gorge Reservoir to construct a new check station in preparation to possibly implement rapid response efforts. The project is currently in the design phase and will hopefully be constructed the winter of 2024 with an anticipated operation start of spring 2025.
- The WGFD is upgrading utilities at check station around the state in an effort to provide power and water to locations historically operated using generators and water hauling. In 2022, a well was drilled at our Cheyenne I80 Port of Entry location and on-demand decontamination units will be installed this fall. Additionally, the Cheyenne I25 check station will undergo a move and remodel this fall with over $250,000 in upgrades, including power, water, on-demand decontamination units and cement pads for inspections and decontaminations.

Question 3: Outline your priorities for the upcoming year (up to 5).

1. The WGFD will continue to upgrade utilities at check stations while transitioning mobile decontamination units to on-demand units, to help deliver more reliable temperatures when preforming decontaminations.
2. The WGFD is in the process of constructing a new check stations at Keyhole Reservoir and the upgrading the Beulah AIS Check Station to more efficiently and effectively decontaminate watercraft coming from South Dakota and other eastern states, since our attention toward the northeast has shifted in the last year.
3. The WGFD will undergo revisions to their water specific rapid response plans as cost estimates have significantly changed since the initial drafting of these plans in 2020.
4. The WGFD will be pursuing the possibility of implementing a local/frequent boater program to reduce the workload of staffing so they can concentrate on higher risk watercraft.
5. The WGFD will be remodeling and moving the I25 Cheyenne AIS Check Station the fall of 2023 which will include power and water in order to provide on-demand decontaminations and better facilities for AIS technicians.

Question 4: **Provide Photos!** (with captions) that show off your ANS work over the last year.

WGFD Director Brian Nesvik completing the “find the mussel” exercise as part of his AIS certification for 2023.

WGFD personnel boarding walleye imported into Wyoming to ensure no aquatic hitchhikers are on board prior to stocking.

WGFD AIS Technician Walley Lamb requesting the boat owner to remove a bilge plug as part of an AIS inspection at the I-25 Cheyenne Check Station.

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

Highlight: Alberta remains invasive mussel free.

Challenge: Seeing a high volume of watercraft bypass inspection stations (skippers) – one inspection station along Alberta's border with Saskatchewan (Vermillion) is currently sitting at a 42.9% skipper rate. It is unknown as to why our Vermilion station sees a higher volume of skippers than other stations.

Achievement: Manufacturers Form – commercially hauled, shrink-wrapped watercrafts are exempt from quarantine at stations. Although the number of commercially hauled watercraft continues to grow, the Manufacturers Form allows inspectors to cut down on time they spent with commercially hauled watercraft at inspection stations and also continues to build great relationships with the marine shops.

Decontamination training in 2023 saw more than just Alberta Watercraft Inspectors. This year, staff from three national parks attended (Waterton, Banff , and Jasper), as well as 3 staff from Manitoba (two MB AIS staff and one Department of Fisheries and Oceans Inspector).

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

• Alberta has an Aquatic Invasive Species Early Detection and Rapid Response Plan. Lessons learned from November (2022) emergency AIS table-top exercise involving a simulated detection of invasive mussels will be incorporated into an updated plan.
• New detections of Prussian Carp in the North Saskatchewan watershed have triggered a species-specific management plan to support province and municipalities in evaluating response options for detections.
• Alberta's Watercraft Inspections Decontamination K9 program (WIDK9) intercepts AIS or suspect AIS before entering Alberta's waterbodies. All of the seasonal watercraft inspectors are trained to address AIS risks a watercraft may pose when entering the province. Senior Watercraft Inspectors are also trained to decontaminate mussel-fouled watercraft on site prior to the watercraft moving on to its destination.

Question 3: Outline your priorities for the upcoming year (up to 5).

• Policy & Legislation – no planned changes, status quo
• Education & Outreach – Continue to promote "Clean, Drain & Dry" and "Don't Let It Loose"
• Monitoring –Investing in training to support volunteer participation to AIS program monitoring
• Watercraft Inspections and Decontamination – Prioritize Alberta's east and south borders for watercraft inspections

• Response – Alberta remains committed to response of our 52 prohibited species as well as some additional species that threaten our aquatic environments





Top left - Don't Let It Loose Mascot, Tank promotes message that goldfish only belong in a tank
Top right - Technician uses citizen science eDNA sampler at lake shore to detect AIS, project in collaboration with University of Alberta
Middle left - Himalayan Balsam infestation found along lakeshore
Middle right - Prussian carp continue to be a challenge in Alberta, public are moving them to new waters challenging management and containment efforts
Bottom left - Member of the public requested their sea plane be inspected prior to using it in an irrigation district
Bottom right - Watercraft Inspector decontaminating Alberta's 14th mussel fouled boat

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

Highlight/Challenge:

- In June 2022, a 40ft mussel-fouled barge from Lake Ontario, destined for industrial use in southern/coastal BC, was tracked down in B.C. It was the largest, most significant discovery and decontamination of zebra mussels on a watercraft since the BC program started in 2015. Several western provinces notified BC about the contaminated barge. The decontamination was performed by two dedicated crews of trained AIS inspectors over two days. The successful decontamination of the barge before it reached B.C. waters highlights the effectiveness of tackling the threat of invasive species through a coordinated approach with our neighbouring provinces.

Achievement

- Release of the updated invasive mussel economic report which has estimated the annual costs in BC to be between $64-129M and this was an update from the original economic report that was conducted in 2013 which assessed impacts to hydropower, agricultural irrigation, municipal water supplies and recreational boating. This updated report includes additional sectors such as tourism and property values and the report can be accessed here

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

Activities/Priorities:

- Ongoing watercraft inspection station operations as part of the Invasive Mussel Defense Program (In 2022 approximately 20,100 inspections were completed and 13 mussel fouled boats were intercepted). The program is delivered in partnership with the BC Conservation Officer Service who leads the operational delivery of the watercraft inspection stations.
- Continued invasive mussel lake monitoring and management of associated grant program in partnership with the Habitat Conservation Trust Foundation
- Program staff initiated internal training on Incident Command System this past winter in collaboration with our federal partners from Fisheries and Oceans Canada and it incorporated lessons learned from the 2021 moss ball response. The program also initiated the review and update of the BC Zebra and Quagga Mussel Early Detection and Rapid Response Plan
- Ongoing implementation of a project to assess/pilot different control/suppression methods for smallmouth bass in Cultus Lake (southern-coastal BC) which has two native and at risk species present and chemical treatment is not an option.
- Strengthen and develop partnerships with government, First Nations, local municipalities, regional groups and Universities to collaborate, coordinate and co-manage AIS priorities.

Question 3: Outline your priorities for the upcoming year (up to 5).

1. Ongoing watercraft inspection station operations as part of the Invasive Mussel Defense Program. Exploring regulatory tools to enhance invasive mussel prevention (e.g. pull the plug legislation). The BC Conservation Officer Services continues to explore options to address the ongoing challenges with recruitment and retention of the AIS inspector positions. The Program continues to work with the existing program partners and explore opportunities to develop and strengthen the program's capacity and partnerships.
2. Expand Incident Command System and rapid response training and update of the BC Zebra and Quagga Mussel Early Detection Rapid Response Plan and response planning exercises
3. Continued invasive mussel lake monitoring and management of associated grant program in partnership with the Habitat Conservation Trust Foundation. Continued refinement of protocol and priority waterbodies.
4. The development of an operational eDNA early detection AIS survey program, targeting invasive mussels.
5. Strengthen and develop partnerships with government, First Nations, local municipalities, regional groups and Universities to collaborate, coordinate and co-manage AIS priorities.

Question 4: **Provide Photos!** (with captions) that show off your ANS work over the last year.

40Ft Mussel fouled barge destined for BC being commercially transported in two separate sections from Lake Ontario and BC received notification from several western provinces

Zebra mussels from the heavily fouled barge that was destined for BC and lab analysis verified that the mussels were viable

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Question 1: Provide one or two achievements/highlights/challenges from your ANS program that you would like WRP to know about.

The accomplishments of the PSMFC AIS program, in existence now for nearly 25 years, can be directly attributed to our outstanding personnel. Credit particularly goes to our current team of Amy Stark, Lisa DeBruyckere, Leah Elwell, Robyn Draheim, and Quagga D Davis.

Question 2: Provide a description of your top ANS activities/accomplishments/priorities / challenges (up to 5) over the past year.

1. **Watercraft Inspection Training (WIT):** PSMFC contractor Quagga D continued watercraft inspection trainings in Fall 2023 and 2023. See the "Training" tab @ https://www.westernais.org/ for further information.

2. **Outreach and Education:** Produced and distributed "AIS News" - bi-weekly e-newsletter (Robyn Draheim, editor); PSMFC contractor Lisa DeBruyckere spearheaded the *Call Before You Hall* program (which is now active in 43 states); reprinted, redesigned, and distributed "Western States Rack Card";" "Biofouling Best Practices" "On the Lookout", and "Threats to the West" to ANS coordinators and others throughout the region. Attended sport/commercial fishing shows with AIS booth in Seattle (with WDFW), Sacramento (with CDFW), Boise, and Portland.

3. **APC-WID:** In April 2017, the PSMFC entered into a cooperative agreement with the USACE (Walla Walla) to represent the 4 CRB states and administer the APC-WID ("WRDA") watercraft inspection station and monitoring funding. Again in 2023, PSMFC administered the WRDA funding watercraft inspection (MTFWP, ISDA, ODFW, WYGF, and WDFW) and monitoring matching programs (MTFWP, WSU, ISDA, PSU, and WDFW). The flowering rush cost-share program was added in 2022 with participants including Salish Kootenai College, ISDA, MTFWP, and WARCO.

4. **Coordination/Other:** We hosted meetings of the Columbia River Basin Team and Monitoring Forum of the 100th Meridian Initiative in December (Spokane) and June (Boise). Both meetings were hybrid. (https://www.westernais.org/coordination); Held October 2022 rapid response exercise @ Wildhorse Reservoir led by NDOW (Kevin Netcher) and ISAN (Leah Elwell). Held a May 15th virtual rapid response primer with the Wyoming Department of Game and Fish.

Question 3: Outline your priorities for the upcoming year (up to 5).

1. Expand *Call Before You Haul*
2. Continue Q/Z RR Exercises, potentially a cross-border event with BC
3. Continue to advocate for the establishment of a national NOAA Fisheries Office of Invasive Species
4. Continue to work on West Coast European Green Crab prevention efforts

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

- Achievement and challenge: Sampling ballast water from commercial ships to assess regulatory compliance. We began sampling vessels' ballast water to assess compliance at a pilot scale this year, with 20 vessels sampled. We hope to further refine our protocols and chain-of-custody procedures over the next 12 months to fully begin enforcement.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

- We published the 2023 Biennial Report on the California Marine Invasive Species Program for the California Legislature
- We published five peer-reviewed journal articles on topics related to commercial ships, biofouling, ballast water, and invasive species, including:
    - Balancing the consequences of in-water cleaning of biofouling to improve ship efficiency and reduce biosecurity risk (2023)
    - Biofouling occlusion of ships' internal seawater systems: operational, economic, and biosecurity consequences (2023)
    - Biofilms associated with ships' submerged surfaces: implications for ship biofouling management and the environment (2023)
    - Environment and shipping drive environmental DNA beta-diversity among commercial ports (2023)
    - Understanding the potential release of microplastics from coatings used on commercial ships (2022)
- We began sampling and analyzing ballast water from discharging vessels to assess compliance with regulatory performance standards
- We settled four enforcement actions for violations of the Marine Invasive Species Act, with one more currently in settlement proceedings
- Early detection and prevention of 10,881 metric tons of potential noncompliant ballast water intended for discharge.

Question 3: Outline your priorities for the upcoming year (up to 5).

- Update our enforcement regulations to incorporate penalties for violations of California's biofouling management requirements and ballast water discharge performance standards.
- Review new EPA draft VIDA regulations in fall 2023 and coordinate with other states to respond appropriately to protect state waters and maintain state rights.
- Continue data sharing project with other Pacific states' ballast water and biofouling programs to result in regularly posted regional data summaries.

- Continue sampling vessels' ballast water to refine and finalize our sampling and analysis SOP.
- Continue to publish California data in peer-reviewed journals to share our datasets with other researchers and regulatory programs.

Question 4: **Provide Photos!** (with captions) that show off your ANS work over the last year.

MISP staff (Chris Scianni and Lina Ceballos) sampling ballast water from a discharge line deep in the engine room of a commercial ship in Stockton, CA.

MISP staff collecting ballast water samples through a plankton net in the engine room of a commercial ship.

MISP staff (Lina Ceballos) collecting the contents of a plankton net cod end to capture organisms in a ballast water discharge.

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

ISAN hired a new executive director! Sara Ricklefs joined the team in late winter 2023. Sara was recently accepted to serve on the Montana Invasive Species Council.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

1. **Don't Let it Loose –** This outreach program continues to grow and reach new heights every year. In 2023, we onboarded 21 new pet stores across the state of Oklahoma. There are now 32 states that are participating in the program with either pet store outreach, or online information. Working with existing partner state agencies, we have been providing signage for placement at likely pet release locations that encourage rehoming. South Dakota, Colorado and Wyoming have placed signs this year. A new partnership area has focused on sharing information about responsible pet ownership and rehoming at aquariums and museums. The SEA Life Aquarium will be including key information into aquarium exhibits.
2. **Non-motorized Outreach –** ISAN partnerships with non-motorized recreation industry continues with distribution of information at point of sale. We continue to work with social media influencers to gain new audiences that will Clean, Drain, Dry non-motorized boats and this year that effort generated nearly 40,000 views on Clean Drain Dry information from our influencer post. Finally, we were able to attend Canoecopia and made in-person contact to share the CDD message with 7,700 attendees at the largest paddling expo in the world.
3. **Watercraft Inspection QAQC –** ISAN entered its 10th year in providing evaluations of watercraft inspection stations for multiple partners operating WID stations. We logged in roughly 8,800 miles and visited 8 states to complete the work this year alone!
4. **Rapid response Exercise –** This October we will be conducting a dreissenid-based rapid response exercise with Yellowstone National Park. This event is intended to assist in the identification of roles and potential actions for response should dreissenids be detected.
5. **National Invasive Species Advisory Committee –** Deputy Director, Leah Elwell was accepted to serve on the Invasive Species Advisory Committee (2022-2024) to the National Invasive Species Council.

Question 3: Outline your priorities for the upcoming year (up to 5).

1. The Don't Let it Loose program continues to offer new opportunities to address the release of unwanted pets. ISAN is working to expand new partnerships with industry members and in public aquariums across the US.
2. Woody Invasives Management in Montana. Addressing salt cedar, Russian olive and buckthorn across the state of Montana has become a growing priority. ISAN will work with key stakeholders to develop a state-wide management plan.

Question 4: **Provide Photos!** (with captions) that show off your ANS work over the last year.

ISAN attended a state legislative education event and encouraged photos with legislators to Clean, Drain and Dry.

Leah Elwell and Jennifer Riddle at the Montana State Educators Conference sharing Don't Let it Loose classroom packets.

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

- The Lake Tahoe AIS Program obtained a CD3 unit that was purchased with funds from a non-profit partner the League to Save Lake Tahoe that will be utilized primarily for non-motorized prevention.
- The Lake Tahoe AIS Program completed its 15th season of conducting watercraft inspections in 2022. No new invasives have ben discovered in Lake Taho since that time.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

- The first year of an innovative test designed to identify feasible invasive aquatic plant control treatments in the largest infestation in Lake Tahoe known as the Tahoe Keys, was completed in 2022. The test implemented aquatic herbicides and ultraviolet-C light treatments to obtain a 75% reduction in biomass in test treatment sites. That was realized in multiple locations, with non-herbicidal methods now being used in years 2 and beyond to maintain the 75% reduction. When the test is completed after the 2024 growing season, assessments will be made to determine what combination of treatments will give the best chance at long term control.
- A lakewide survey of aquatic plants in Lake Tahoe was conducted in the late summer of 2023 which includes acquisition of high-resolution aerial imagery, and a sonar methods test to identify what types of sonar and process given provide more refined information.
- The Lake Tahoe AIS Program developed Spanish language outreach materials for the first time that includes a non-motorized rack card and training video teaching non-motorized recreators how to clean, drain, and dry their paddlecraft.

Question 3: Outline your priorities for the upcoming year (up to 5).

- Continue the Tahoe Keys test project.
- Obtain 100% design plans for a permanent inspection station located on the Nevada side of Lake Tahoe, and obtain 30% design plans and environmental analysis for a permanent station on the south side of Lake Tahoe (CA).
- Continue the Taylor and Tallac Creeks and Marsh invasive aquatic plant treatment project that aims to locally eradicate 17 acres of Eurasian watermilfoil in the largest wetland in the Tahoe Region.

Question 4: **Provide Photos!** (with captions) that show off your ANS work over the last year.

CD3 unit be used at a popular beach put-in for paddle craft.

Spanish Language non-motorized outreach

Helicopter transporting benthic barriers to the Taylor-Tallac Creeks AIS project.

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

WAPMS had the privilege of awarding two scholarships this year in the amount of $2,500 each at our annual meeting. The student recipients are free to use the funds to further research on aquatic invasive plants in the western US and we're looking forward to hearing about their advancements in the field.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

Last March, WAPMS successfully held our annual meeting as a joint conference with the Western Society of Weed Science in Boise, ID. We were privileged to host speakers from across the country to discuss budding issues surrounding nuisance aquatic plants and the threats they present to our water.

In July, one of our board members, Zach Hache, attended the Aquatic Plant Management Society annual conference in Indianapolis, Indiana. He was able to share the WAPMS update and connect with national experts on the unique challenges we face in the West.

One of the priorities identified at the annual meeting was enhancing our student and university involvement. WAPMS is actively working to support student research on nuisance aquatic plants and their impacts on native plant communities, human health, and water quality. We've been tracking higher interaction in our social media accounts and believe this is a step in the right direction.

Question 3: Outline your priorities for the upcoming year (up to 5).

As we look ahead to our annual meeting in Las Vegas in 2024, one of our priorities is to make participation more affordable and rewarding for the attendees. We understand that many of our members are government employees and travel can be an obstacle. We plan to lower registration costs from last year and develop a program tailored to the local conference region to encourage attendance.

Another priority of WAPMS is to encourage more student involvement. Our student affairs committee is working to promote our scholarship opportunities to universities and programs that we have yet to work with. Last year we were happy to award two scholarships and this year we hope to distribute all four available.

Lastly, we're prioritizing relationships with organizations like Women of Aquatics, the California Lake Management Society, and local weed societies to strengthen the industry and further public knowledge. We have various board members attending the upcoming California Lake Management Society annual meeting, Colorado Weed Management Association meeting, and other local meetings.

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

1. During 2023 the Marine Board along with other AIS partner agencies and organizations, undertook a comprehensive update to our state-wide ANS plan (our state plan was first approved back in 2001) for re-approval by the ANSTF. This has been a large undertaking over the last 1.5 years as a lot has changed in Oregon over the past 20 years since the original plan was written. A final plan should be approved by the ANSTF by the end of the calendar year.

2. The Marine Board has partnered with Portland State University and their Center for Lakes and Reservoirs to allocate additional funding to increase their amount of effort to monitor Oregon waterbodies for the presence of zebra or quagga mussels (in addition to other high priority AIS). This increased funding will allow PSU summer staff to double and, in some cases, triple their effort to conduct EDRR activities within Oregon in comparison to previous years. This monitoring effort will put Oregon much closer in-line with the activities that are conducted throughout the Western States.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

1. During 2023 the Marine Board accepted the chairperson seat for the Oregon Invasive Species Council (OISC), the second time in five years. The pandemic seriously hurt the OISC as the organization lost its funding and participation during coordination/informational meetings plummeted. This year has seen a return to in-person meetings and the base organizational funding has been returned, allowing for the hiring of a new Council Coordinator. Council operations are slowly returning to pre-pandemic levels and with new members, there is a sense of excitement to revitalize state-wide coordination and educational activities.

2. Successfully partnered with the WA Invasive Species Council and the Western Invasives Network (OR based) as was part of the steering committee to plan and hold the 1st annual Coastal Invasive Species and Exotic Pest Workshop. This was a very successful event with 60 attendees which has resulted in plans for another similar workshop in 2024.

3. A major challenge in Oregon is the coordination with our law enforcement partners. Typically, the Marine Board contracts with County Sheriff Departments to enforce the stopping requirement at the ODFW operated AIS boat inspection stations. However, during the past three years it has become increasingly difficult for Sheriff Departments to hire adequate staff to fill the marine patrol deputy positions (focused on enforcing boating laws in OR). Therefore, only two remaining law enforcement agencies have been able to hire adequate staff to monitor our inspection stations for compliance, where in the past (pre-pandemic) all six inspection stations had law enforcement support. We have funding available for this work, but no law enforcement staff to work the necessary hours.

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

PSU's Center for Lakes and Reservoirs Surveyed for zebra/quagga mussels and other freshwater ANS. We revised our prioritization list of waterbodies to sample, based on calcium and pH in the water and boat visitation rates, expanding the list to include more waterbodies, including many ones in the greater Portland area to verify there have not been releases from moss balls and other aquarium fouling. Following that prioritization Center for Lakes and Reservoirs sampled high risk reservoirs at least two times each (goal is 3 to 4x each) except ones that were already dry in May or were too cold for veligers in May then dry in June. We sampled 227 sites (including repeats) at 53 lakes and reservoirs throughout Oregon plus another 25 in the greater Portland metro area. We sampled for an average of 3 hours per site and we collected veliger samples at each site. We didn't find any zebra or quagga mussel adults or, based on samples analyzed to date, veligers. We did find other ANS including the invertebrates: New Zealand mudsnail (*Potamopyrgus antipodarum*), big-ear radix (*Radix auricularia*), rusty crayfish (*Faxonius rusticus*), *Cipangopaludina* sp. (Mystery snails), Asian Claim (Corbicula), Parrotfeather (*Myriophyllum aquaticum)*, Eurasian water milfoil (Myriophyllum spicatum), knotweed (polygonaceae), curly-leafed pondweed (*Potamogeton crispus*), fragrant water lily (*Nymphaea odorata*), yellowflag iris (*Iris pseudacorus*).

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

- Surveyed for and removed *Carcinus maenas* from Oregon bays and provided content for a segment on them on Oregon Field Guide, Oregon Public Broadcasting;
- With other members of the Oregon Invasive Species Council (OISC: Cheryl Shippentower, Alex Staunch, Fiona Smeaton) and Northwest Regional Invasive Species and Climate Change (NWRISCC: Rachel Gregg) we helped research for, organize, and present the webinar, "Spreading Information not Invasives: Amplifying Climate Change and First Foods Considerations in an Invasive Species Knowledge Sharing Hub" Hosted by NWRISCC and OISC. June 22, 2023 link: https://sites.google.com/view/nwriscc/events/webinars ; Also participated in the Oregon Invasive Species Council, and in a working group on outreach about key invaders, our 'invasions hub.'
- Led student projects that created ANS projects on: a risk assessment for green crabs in Oregon, Outreach materials about aquatic invasive species for the Columbia Slough, EDRR plant training materials, Species profiles and a decision tree for adding species to the OISC's

Invasive Species Hub, annotated bibliography and database on velvet grass control, and others.

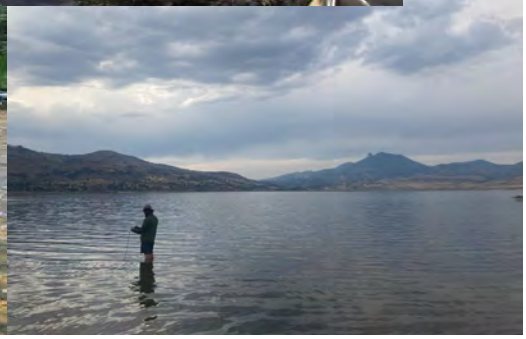
- Developed outreach materials on aquatic invasive weeds
- ANS Management Plans: We Helped work on the national 'Management Plan for the European Green Crab', and have now convened a working group for Oregon's management plan for *Carcinus maenas*. We also participated in the steering committee to greatly revise Oregon's ANS State Management Plan.

Question 3: Outline your priorities for the upcoming year (up to 5).

1. Continue early detection surveys for zebra and quagga mussels and other ANS, including with eDNA and a citizen science program, should we receive funding for these expansions;
2. Finish the state plan (for Oregon) for *Carcinus maenas*.
3. With Sam Chan and students, conduct a survey on perceptions about common names for aquatic invasive species that currently have place-based common names.
4. Organize and host a symposium on aquatic weeds
5. Finish a multi-species state plan (for Oregon) for non-native marine algae;

Question 4: **Provide Photos!** (with captions) that show off your ANS work over the last year.

Photos of ANS work. 1&2: Ashley Newcomb performing a rake survey and a ponar grab survey; 3: Joe Curran sampling with YSI. 4 & 5. Reagan Thomas performing a YSI survey and a stationary tow.



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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

Continuing research on and capture of the exotic invasive "Green Crab" *Carcinus maenas* to prevent further damage of the marine environment.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

- Limiting the spread of Green Crab on the West Coast of North America.
- Continue the breeding program to limit the mortality the spread of oyster herpes virus OsHV-1 would cause.
- Continuing the restriction of shellfish transfers from areas with exotic oyster drills, *Ocinebrellus inornatus,* to uninfected areas.

Question 3: Outline your priorities for the upcoming year (up to 5).

Have shellfish growers be able to identify Green Crab and follow practices that will not cause the industry to be a vector in its spread.

Question 4: **Provide Photos!** (with captions) that show off your ANS work over the last year.

This is a picture of various invasive tunicates growing on cultured mussels in Totten Inlet. The tan colored club shaped tunicate in the middle is *Styela clava* a species native to the NW Pacific which has been in Washington State for several decades but was restricted to one location in the Hood Canal and in the northern marine water s next to British Columbia. I found it approximately four years ago in north Totten Inlet (which is in the south Puget Sound) and it now appears to be well established. It is not a major problem and really is just another species of epibiota to clean from our mussels.

Agency interest seemed to wane with decrease in funding specific to this invasion.

Solitary tunicates *Styela clava* and colonial tunicate *Didemnum vexillum* settled on rope grown mussels.

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Question 1: Provide one achievement / highlight from your ANS program that you would like WRP to know about. Idaho Power Company continues to support state, regional and national efforts to prevent aquatic invasive species.

Question 2: Provide a description of your top five ANS activities/accomplishments/priorities (up to 5) for the past year:

- Continued supporting Idaho Department of Agriculture's dreissenid mussel early detection monitoring program by sampling on the Snake River in Hells Canyon.
- Participated at Pacific Northwest Economic Region's annual meeting in Boise in July 2023. Participated on a panel to discuss on Idaho Power's invasive species program.

3. Participated in Columbia River Basin's annual meeting in Boise, Idaho in June 2023.

Question 3: Outline your priorities for the upcoming year (up to 5). This will help identify coordination opportunities moving forward.

1.Keep supporting regional efforts to prevent aquatic invasive species.

2.Keep sampling to support Idaho's early detection efforts.

3.Keep our customers informed on aquatic invasive species issues.

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

Reclamation's primary focus for the past year has been the implementation of the Fiscal Year 2023 Mussels Spend Plan. Throughout 2023 Reclamation provided approximately $2.6 million to support various mussel management activities across the West including support for watercraft inspection and decontamination in California, Montana, Nevada, New Mexico, Washington, Kansas and Wyoming.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

- Reclamation's Science and Technology Program is currently funding 14 invasive species research projects, 12 of which are projects focused on invasive mussels. Two mussel research projects are concluding this year, and 6 mussel research proposals were submitted for funding consideration in FY24. The titles of the two concluding projects are listed below.
    - Investigation of environmental RNA (eRNA) as a detection method for dreissenid mussels and other invasive species
    - Alternate Control Strategy for Dreissinids Using Carbon Dioxide

- The Reclamation Ecological Research Laboratory at the Technical Service Center in Denver, Colorado, has received and analyzed 1,229 invasive mussel samples from 211 water bodies between October 2022 and August 2023.
- The CPN Regional Laboratory in Boise Idaho collected 205 samples, at 44 water bodies across the Columbia River Basin in accordance with the TSC sample protocol.

Question 3: Outline your priorities for the upcoming year (up to 5).

- The implementation of Reclamation's Fiscal Year 2024 Spend Plan to support various mussel management activities across the West
- Continued implementation of previous years spend plan multi-year activities and projects.
- Continued mussel monitoring
- Continued research on control technologies and early detection methodologies for mussels
- Identify and prioritize facility vulnerability assessments

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

Advocated for, partnered with, and helped facilitate a workshop in Ketchikan and Metlakatla, Alaska to build green crab monitoring and response capacity in southern Southeast Alaska communities.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

In addition to the workshop mentioned in Question 1, we have funding to continue support of the Metlakatla Indian Community Department of Fish and Wildlife green crab response, complete our eDNA sampling on Annette Island, initiate a pilot K-9 green crab detection project, and support additional capacity building to communities in southern Southeast Alaska.

Question 3: Outline your priorities for the upcoming year (up to 5). **See items in Question 2.**

Question 4: **Provide Photos!** (with captions) that show off your ANS work over the last year.

NOAA is highlighting green crab in Alaska as the September, 2023 "Postcard from the Field", an internal NOAA feature provided on a monthly basis to highlight happenings in the agency nation-wide.

POSTCARD FROM THE FIELD

Look out for green crab!

Invasive species heading north

Linda Shaw
Wildlife Biologist, Alaska Region
NOAA Fisheries

Dr. Joseph Krieger
Invasive Species Program Coordinator
NOAA Research, GLERL

European green crab bearing thousands of eggs

With fast-growing concern about the threat of invasive species in Southeast Alaska, NOAA and Sea Grant are helping tribal and coastal communities build monitoring and trapping efforts into environmental plans. Of particular concern is European green crab, now increasing on the West Coast and wreaking havoc on nursery habitat and native crab, shellfish and salmon, among other vital resources. The aim is to encourage local participation in managing the invaders as they continue to move north.

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

National Park Service (NPS) competitive funding for Dreissenid mussel prevention and containment (Aquatic Invasive Species / Quagga Zebra Mussel or AIS / QZM Fund) was increased from $3 million to $4.5 million in federal fiscal year 2023 (FY23). Despite the fact that this additional funding became available late in the budget cycle, all of it has now been obligated to on the ground projects and activities in or adjacent to NPS units. Along with park base-funded programs in nine western parks, the NPS investment in preventing the introduction and spread of quagga and zebra mussels is now $6.5 million annually.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

1. FY23 funds are supporting the expansion of Dreissenid mussel prevention efforts into seven additional parks: Apostle Islands National Lakeshore, Dinosaur National Monument, Isle Royal National Park, Olympic National Park, Redwoods National Park, Saint Croix National Scenic River, and Sleeping Bear Dunes National Lakeshore. FY23 are also supporting a new pilot AIS program in the NPS Midwest Region.

2. FY23 funds are supporting a $500K agreement between Lake Roosevelt National Recreation Area and the Washington Department of Fish and Wildlife for watercraft inspection and decontamination.

3. FY23 is the first year of a three-year, $500K agreement between Glacier National Park and the Blackfeet Tribe supporting watercraft inspection and decontamination by the Tribe.

4. NPS FY22 funds ($500K) continue to support a Utah Division of Wildlife Resources effort to develop an automated check-in / check-out system that could be deployed at Lake Powell and other waterbodies.

5. Lake Amistad in Amistad National Recreation Area is considered by the State Texas to be contaminated on the basis of veliger identification and positive eDNA results but, to date, no adult mussels have been found.

Question 3: Outline your priorities for the upcoming year (up to 5).

Dependent upon the continuation of current funding levels:

1. Conduct an NPS workshop to update the NPS *Quagga / Zebra Mussel Strategic Plan for Western Parks* and build a community of practice comprising NPS staff engaged in watercraft inspection / decontamination programs and other aquatic invasive species work nationwide.
2. Hire an NPS AIS coordinator to oversee the AIS / QZM fund source and provide technical assistance related to AIS prevention and control to parks nationwide.

Question 4: **Provide Photos!** (with captions) that show off your ANS work over the last year.

Lake Roosevelt AIS Interpretive Trailer.

Clean Drain Dry signage at Lake Powell.

Mussels on an outdrive of in incoming boat prior to decontamination at Curecanti NRA.

WID staff checking a houseboat leaving Lake Powell.

Buena Vista elementary school AIS presentation at Amistad NRA.

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

- Thanks to a grant from the Greater Yellowstone Coordinating Committee and US Fish & Wildlife Service, the Northern Region worked with Clean Wake LLC and Missoula AIS Program to design, build, and test a hot water dip tank unit to decontaminate fire hoses and footvalves. The AIS decontamination system complies with PMS 444 and the Northern Rockies Coordinating Group mandatory AIS decontamination protocol for fire equipment. A prototype will be deployed September 2023.
- The Northern Region is collaborating with the National Genomics Center for Wildlife and Fish Conservation to analyze approximately 900 archived samples collected as part of the Pacific Anadromous Fish Strategy and Inland Fish Strategy Biological Opinion Monitoring Program (PIBO). The goal is to develop a long-term eDNA monitoring strategy by identifying and prioritizing additional AIS eDNA sample sites within the study area. This collaboration will inform how to incorporate eDNA technology into the USFS Northern Region AIS monitoring program for early detection of invasive species to contribute to the state-led early detection AIS monitoring networks, increase efficiency in rapid response on USFS lands, and coordinate efforts across Federal, state, and local governmental partners. This in coordination with the Pacific Northwest Region (R6).

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

- In addition to the achievements above, the Northern Region has established agreements with Montana Fish & Wildlife and Parks, Missoula County AIS Program, Whitefish Lake Institute, and other partner in the state-wide AIS monitoring program. Northern Region funding also supports education and outreach materials, presentations, trainings, and technical expertise. FY23 Invasive Species Infrastructure funding will provide additional support for the programs above plus a Rapid Response workshop for USFS staff and partners.
- FY23 Invasive Species Infrastructure funding will help support the North Dakota Game & Fish Department outreach and education campaigns and monitoring efforts.
- Wild Spotter (supported by EDDMapS) is a community science program aimed to engage and educate visitors in invasive species management through mapping. The custom detection lists for each forest includes AIS such as bullfrog, snapping turtle, curly-leaf pondweed, and red sliders.
- Northern Region purchased four CD3 Wayside Watercraft Cleaning Units to be placed at boat ramps on Idaho Panhandle, Flathead, Beaverhead-Deerlodge, and Custer-Gallatin National Forests with Clean Drain Dry messaging.

Question 3: Outline your priorities for the upcoming year (up to 5).

- To continue to support and expand our AIS monitoring and partnerships.
- Host Rapid Response exercises across the region.
- Finalize the Northern Region AIS Management Strategy.

- Provide AIS, watercraft inspection regulations, and science communication training for volunteers and staff.
- Continue to search for stable funding opportunities for our AIS program.

Figure 1 Missoula County AIS Program

Figure 2Missoula County AIS Program

Figure 3Flathead NF Lindbergh Lake sampling

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Question 1: Provide one achievement / highlight from your ANS program that you would like WRP to know about. We were able to apply for additional ANS funding through our Washington Office. We asked for and received an additional $400K for ANS prevention that will be primarily used to supplement funding with our Challenge Cost Share agreement with Colorado Parks and Wildlife for boat inspections and decontamination across various FS facilities in Colorado. The $400K combined with an additional $100K from a Regional Off the Top funding will keep our agreement with CPW funded for the next 2-3 years.

Question 2: Provide a description of your top five ANS activities/accomplishments/priorities (up to 5) for the past year:

REGION 2 (CO, E. WY, SD, NE, KS)

- USFS has a Cost Share Agreement with Colorado Parks and Wildlife (CPW) as well as other partnerships for boat inspection and decontamination programs on 10 reservoirs across 5 National Forests in the Region. In FY 2020, the FS cost-shared a total of $175,000 with CPW for boat inspections and decontaminations on NFS waters across Colorado:
    a. San Juan NF – McPhee Reservoir. 4-way partnership with CPW, FS, BOR, and Delores Water Users. FS Share = $30,000K
    b. Grand Mesa/Uncompahgre/Gunnison NF – Taylor Park Reservoir. FS share = $30,000K
    c. Pike/San Isabel NF – Turquoise and Twin Lakes. FS Share = $15,000K
    d. White River NF – Green Mountain and Ruedi Reservoirs. FS Share = $25,000K
    e. Arapaho Roosevelt NF – Colorado Big-Thompson System of Grand Lake, Shadow Mountain and Lake Granby. FS Share = $75,000 towards the annual cost with partners making up for FS deficit in cost share agreement.

Question 3: Outline your priorities for the upcoming year (up to 5). This will help identify coordination opportunities moving forward.

1. Try to get the Black Hills National Forest to hire an aquatics person to assist SDGFP with the recent zebra mussel infestation in the Black Hills. Also working with Forest to develop Proposal to improve water supply at boat ramps to increase efficiency for decontaminations.

2. Submitted 4 Aquatic AIS proposals to compete for National Funding. If successful, money will be coming in to San Juan, GMUG, PSICC, ARP, and White River National Forests. A total of 260K was requested for these AIS proposals.

Question 4: Provide photos (with captions) that show off your ANS work over the last several years.

Figure 1. McPhee Reservoir – San Juan National Forest boat decontamination

Figure 2. Green Mountain Reservoir mussel boat from Minnesota interception over Labor Day.

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Question 1:

Santa Fe NF- For the Hermit's Peak fire 2022 we had several Resource Advisors assist with AIS decontamination. I set up some disinfection tanks (for hoses and engines) for folks prior to entering Fire Camp or demobilizing. Unfortunately, no matter how much we stressed the importance of this, some folks completely bypassed this since it wasn't always emphasized or the message wasn't consistent in the IAP. We also ordered one "Hotsy" and had that stationed in Angel Fire for helicopters/buckets that were doing water drops on the incident. Most of these folks used the same water source for dipping and decontaminated before they left the incident. We requested another "Hotsy" decontamination sprayers for two other zones on the fire but the order kept getting cancelled. Regardless, most of the READs/REAFs did a fantastic job at emphasizing the importance of AIS decontamination.

Kaibab NF- Our primary work related to aquatic invasives includes:

- Physical presence/absence surveys (bullfrogs, crayfish).
- In 2020 we also started incorporating s eDNA surveillance surveys for bullfrogs and crayfish, as well as for invasive pathogens (rana viruses, Bd). We presented on some of this work as a case study via the aquatic invasive species CoP run by FWS, BOR and U of A (CCAST) last spring (April 2022). Results of that larger work ship include development of a strategic plan—recently published in story map format by CCAST—let me know if you need that link.
- We are collaborating with the RMRS genetics lab to modify their existing eDNA collection protocol to better reflect sampling in lentic environments.

Question 2:
Apple Snail Removal – Salt River
Quagga Mussels- Ongoing coordination with AZGF for forest reservoirs.
Plants - In 2022, we discovered a population of invasive Russian thistle along the East Verde River, a reach occupied by the federally listed yellow-billed cuckoo. We are in initial stages of partnering with Friends of the Tonto National Forest to adopt the site, search for additional patches, and eradicate them from the area.

Question 3:

Tonto NF –
Bullfrogs - We continue to monitor presence / absence of nonnative invasive American bullfrogs at or adjacent to habitats occupied by the federally threatened Chiricahua leopard frog (CLF); our efforts focused on two sites. We are in initial stages of partnering with Friends of the Tonto National Forest in hopes they will adopt one of the sites to monitor and remove bullfrogs when detected. In compliance with several grazing biological opinions, we also monitored four newly constructed earthen stock tanks to make ensure bullfrogs from known locations do not colonize new waters.

Coronado NF-

- We have been collaborating on a project with Virginia Tech University to investigate the effects of bullfrog removal on bullfrogs and native species. The project is funded primarily through a FWS Science Apps, but the SVRD also contributed $47 K of Joint Chiefs funding to help with the project. The project involves a landscape-scale acoustic monitoring network; a multi-year bullfrog population genetic dataset; a spatially-explicit, individual-based model designed to evaluate management outcomes of invasive species control on multiple species (SMARTSIM); and an in-person workshop to bring together researchers and managers from throughout the southwestern U.S. to identify opportunities for transferring this approach to other regions and species. (You can also watch a recording of a presentation she gave in Jan 2021 to the SW Non-Native Aquatic Species CoP meeting.)

- The Coronado NF contributed $78k to the University of Arizona in FY22 to help with bullfrog control in the upper reaches of the O'Donnell and Turkey Creeks on the Sierra Vista RD and the Cobre Ridge area of the Nogales RD. Both sites represent a buffer zone between suspected source populations and T&E habitat on NFS lands. The Coronado NF and partners (e.g., the University of Arizona) have made huge strides in reducing bullfrog populations in the past decade or so, and funding to continue monitoring and control are ongoing to manage buffer zones between NFS and private lands.

- Disease – We have participated in several meetings with AGFD and Phoenix Zoo regarding positive ranavirus results in CLFs housed for captive rearing. All CLFs collected from Tonto localities have been negative.

Coconino NF – In partnership with AZGF, removal of Green Sunfish and a few Rainbow Trout from East Clear Creek and East Leonard Canyon. Also Smallmouth Bass removal from Wet Beaver Creek. Opportunistically removal of Fathead Minnows from those streams and several others whenever we encounter them. Work with RMRS on eDNA for New Zealand Mud snails.

Carson NF- 2022 – In partnership with NMDGF, Piscicide treatments on Middle Ponil and Rio Costilla to restore populations of pure Rio Grande Cutthroat Trout.

Cibola NF – Salt Cedar removal Canadian River, ongoing.

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

1. LAMP procedure (loop mediated isothermal amplification) has been added to lake sampling for dreissenid eDNA in '23. This procedure provides same-day results and (in combination with qPCR analysis) facilitates early detection for a more rapid response in suspected eDNA vectors. Analysis procedure is being refined in collaboration with U.S.G.S. personnel.
2. eDNA sampling for dreissenid mussels and New Zealand mud snail has been accomplished for prioritized lakes on the Bridger-Teton N.F. Additional sampling will be completed within the calendar year for Flaming Gorge and Pineview reservoirs, along with Fish Lake.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

1. Administration of agreements with States to defray costs of AIS inspection / wash stations. Regional annual investment:
   - Wyoming - $33,000/year
   - Idaho - $33,000/year
   - Utah – $44,000/year
2. Regional Investment of $105,000 annually, allocated to forests for analysis of eDNA samples by the National Genomics' Center, RMRS – ~30-50% of the funds goes toward identification of invasive dreissenid mussels and invasive fish.
   - Issue: Capacity for continued collection of eDNA samples in the field by FS employees is limited. Given funding limitations – prioritization of species for eDNA analysis generally favors TES, Species at Risk, and SCC for forest NEPA analysis and monitoring requirements in land management plans, conservation strategies and recovery plans. This leaves less funding for AIS species sample collection and analysis.
3. Forest and Regional Biologists participate in quarterly meetings to discuss AIS prevention plans for the Flaming Gorge Reservoir in Utah & Colorado. This is a strong partnership to assure boats and equipment are inspected and washed, AIS samples are collected, and new methods for monitoring high use areas are tested and employed as appropriate.

Question 3: Outline your priorities for the upcoming year (up to 5).

1. Continued development / refinement of LAMP procedure for eDNA detection.
2. Expansion of lake sampling for eDNA in coordination with Utah, Wyoming, and Idaho.
3. Continued work with Forests in the region to expand eDNA sample analysis by the National Genomics center for aquatic invasive species. Related efforts will include detection and control of invasive brook trout, brown trout, rainbow trout, New Zealand mud snail, and dreissenid mussels. This will be accomplished through collaborative efforts with State Fish and Wildlife agencies,

NGO's, Idaho Department of Fish and Game, Utah Division of Wildlife Resources, and Trout Unlimited.

Outcome: Improved detection and control of invasive brook, brown trout rainbow trout, and invasive quagga & zebra mussels and New Zealand snails and Whirling Disease. This information is critical in developing proposed actions and resulting decisions for restoration and conservation activities for a wide variety of aquatic species across the forests including but not limited to Endangered: Bony tail chub, Humpback chub, and Colorado pike minnow; Threatened: bull trout, steelhead, chinook salmon; Forest Sensitive: Yellowstone, West slope, Colorado, Bonneville cutthroat trout, Southern & Northern Leatherside Chub, Boreal toad, and Columbia spotted frogs.

4. The Region has received approximately $46,000 of IRA/SIFI (no year) funds from the WO primarily going towards forests to analyze invasive dreissenid mussels and invasive fish.
    - With the regional and WO investments, the region will develop an agreement instrument with the National Genomics' Center.
5. Develop an Invasive species (Terrestrial and Aquatic) Best Practices Plan with the objective of Implementing an integrated, ecologically based invasive species management approach. *Note: the following is from R1 FY23 POW Guidance Document!*

- Collect and record in the FACTS application all pesticide-use records (including both spatial and tabular data) associated with the application of any chemical- or bio-pesticide on a National Forest or National Grassland, or other NFS Facility. This includes external cooperators under agreements with the USFS.
- Maintain invasive species management and education/outreach partnerships with counties, other agencies, private groups and individuals, cooperative weed management areas, etc.
- Incorporate Best Management Practices language into all applicable contracts, agreements, and special use permits.
    - Assure terrestrial/aquatic preventative best management practice protocols are included in applicable NEPA, Contracts, Agreement Incorporate for all activities where invasive species can be introduced or spread: fire management, timber, recreation, and other activities.
    - Incorporate Best Management Practices language into all applicable contracts, agreements, and special use permits.
- Evaluate the potential for the introduction and spread of invasive species in all project-level planning and analyses, and implementation of appropriate inventory, prevention, and treatment mitigation as part of the project.
- Establish invasive species interdisciplinary teams to coordinate management of all taxa of invasive species.
- Maintain invasive species management and education/outreach partnerships with counties, other agencies, private groups and individuals, cooperative weed management areas, etc.
- Emphasize preventing the establishment and spread of high-risk invasive species and Early Detection and Eradication (EDRR) of new or small infestations before they can establish or spread during Forest-level prioritization of aquatic and terrestrial areas for treatment or protection.

6. National Genomic Center development of a whirling disease qPCR assay ($10,000). The Region and Forests have concern about Whirling Disease (WD) presence in watershed with native salmonids including bull trout (T), cutthroat trout (T & S), and recreational coldwater fisheries. WD is a pathogen caused by a non-native parasite Myxobolus cerebralis (Mc) and can have devastating effects on native salmonids. Questions we have: What are the effects of the observed

habitat changes on populations of trout and T. tubifex? What is the current status of WD in the drainage? How would different approaches to forest management and to meadow restoration affect T. tubifex, trout, and the Mc parasite loads, and ultimately WD prevalence in the systems?
Outcomes: With a WD assay completed by the National Genomics Center to protocol standards, forests can include WD as a pathogen to identify from their eDNA samples; thus managers to make informed and critical land & species management decisions?

LAMP Protocol Training

- 

LAMP Sample Preparation

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

Second year of full implementation of our Regional Aquatic Invasive Species Monitoring Strategy, utilizing crews trained in the identification of key aquatic invasive species to perform ocular surveys at established sampling sites region-wide and sample popular recreational waters using eDNA. eDNA analysis is conducted by the National Genomic Center.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

See above.
In addition, we used 2023 and will use 2024 funds to support WAFWA (McIntosh) in their development of YY Male techniques to control invasive fish species.
Also, we supported SalmonWatch children education program to initiate their development of an AIS lesson to include in their outdoor, online, and classroom curriculum. Assistance will be provided by AIS experts in WA and OR.

Question 3: Outline your priorities for the upcoming year (up to 5).

Continuing with the above effort to support our early detection/rapid response efforts.

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

- The Department of Interior's Invasive Species Task Force tasked the USGS with building constituent parts of the National Early Detection Rapid Response (EDRR) Framework, which is a nationally coordinated set of tools, actions, and processes to proactively find and eradicate new invasive species before they establish, spread and cause harm. USGS projects that contribute to the National EDRR framework range from the development of species watchlists to automated warning systems to detect those species and to decision-support hubs to inform rapid response actions.
    - https://storymaps.arcgis.com/stories/75dcffd9b27543268a92dfee4e4ad6b6
- Co-produced an update of dreissenid mussel research priorities in support of QZAP 2.0.
    - https://www.reabic.net/journals/mbi/2023/Accepted/MBI_2023_Counihan_etal_correctedproof.pdf

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

- Multiple tribal, state, private and federal engagement events associated with the USGS National EDRR Framework projects. Engagement efforts have included virtual townhalls, in-person workshops, and quarterly updates.
- Publication of environmental DNA (eDNA) communication best practices and a call to action for a national federal strategy to ensure eDNA science is effectively and appropriately utilized to inform decision making and management actions.
    - https://doi.org/10.1002/edn3.432
    - Stein et al. (*in press*, Environmental DNA), 'Critical considerations for Communication Environmental DNA Science'
- The Northern Rocky Mountain Science Center worked with state and federal partners to assess invasive grass carp distribution in the Upper Colorado River Basin (CO, UT, WY).
- To assist regional federal, state, and tribal partners assess and manage European green crab populations on the U.S. west coast, the Western Fisheries Research Center has initiated a research program to refine early detection programs using eDNA, use bioenergetics models to predict the differential effects of climate change on green and Dungeness crabs, and to develop a green crab decision support framework to help managers identify optimal allocations of species control effort.

Question 3: Outline your priorities for the upcoming year (up to 5).

- Continue to progress on new and already-existing National EDRR projects, with a focus on partner engagement.

- Under the auspices of the White House Office of Science Technology & Policy's Subcommittee on Ocean Science and Technology, work with an interagency task team to complete a National Strategy for Environmental DNA.
- Complete a USGS fact sheet describing dreissenid mussel research activities.
- Initiate new research and monitoring of fish parasites and pathogens in the Colorado River through Grand Canyon using eDNA methods.

Question 4: **Provide Photos!** (with captions) that show off your ANS work over the last year.

Devin Jones (USGS Northern Rocky Mountain Science Center) deploying a Smith-Root eDNA autosampler prototype in a headwater stream (Montana). Photo Credit: A. Sepulveda USGS.

USGS READI-Net partner engagement meeting at the Monterey Bay Aquarium Research Institute.

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

In the past year, achievements have included:

1) Initiation of a multi-reservoir monitoring program for northern pike in the middle/lower Columbia River,
2) Multiple presentations focusing on the concerns of invasive species impacts on First Food resources and salmon recovery, key areas of importance to Columbia Basin Treaty Tribes

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

1) Inclusion of new CRITFC staff (Denise Kelsey) to assist with field efforts and outreach and education events.
2) Focus on northern pike monitoring and enlisting the help of tribal fishers on the Columbia River.
3) A key challenge is difficulty gaining attendance for in-person training versus web-based training in a post Covid environment.
4) Creation of permanent ANS positions with member Tribes continues to be a top priority.

Question 3: Outline your priorities for the upcoming year (up to 5).

1) Expand opportunities for CRITFC bios and Tribal bios for regional meeting participation on a regular basis.
2) Focus on northern pike monitoring efforts and seek funding for additional opportunities to maintain future years of monitoring and control efforts if necessary.
3) Continue to promote ANS education when and where the opportunities present themselves.

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

Rapid Response Fund for Aquatic Nuisance Species: This year, as part of the Bipartisan Infrastructure Law authorization for ecosystem restoration, the Department of the Interior (DOI) invested $1 million to establish a pilot Rapid Response Fund for Aquatic Invasive Species with an additional $1 million envisioned each year 2024 through 2026 as part of advancing a National Early Detection and Rapid Response Framework. The U.S. Fish and Wildlife Service, on behalf of the Aquatic Nuisance Species (ANS) Task Force, posted a Notice of Funding Opportunity (*F24AS00018, Rapid Response Fund for Aquatic Invasive Species*) on August 17, 2023 to request proposals that support the rapid response to a new species introduction within freshwater, estuarine, or marine waters of the United States, including the U.S. territories. In July 2023, the ANS Task Force approved The Model Process: Rapid Response Fund for Aquatic Invasive Species that outlines a structure and process for operation of the Fund. The deadline for the first cycle of proposals is **October 18, 2023**. After this cycle, we will continue with quarterly review and selections, anticipated to begin on or near November 1, 2023, February 1, 2024, and May 1, 2024. General information about the Fund and a list of Frequently Asked Questions can be found HERE

Salamander Bsal Rule: In January 2016, the Service published an interim rule to list 20 genera as injurious due to the risk they carry *Batrachochytrium salamandrivorans* (Bsal), a fungus that is causing massive die-offs in European salamanders, and currently we are following up with the final rule. Another rulemaking action now in progress is a second interim rule that is needed to add genera to the injurious list due to recent studies documenting additional genera that share the same susceptibility traits that make them injurious as carriers of Bsal. The final rule is already in effect and will remain so, and the second interim rule would take effect 15 days after the date of publication in the *Federal Register*. The Service anticipates publishing the rule this calendar year.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

Early Detection/Rapid Response Framework: Funded by President Biden's Investing in America agenda, the Department of the Interior's Restoration and Resilience Framework is working with other federal agencies, states, Tribes, territories and other partners to advance a long- called-for National Early Detection and Rapid Response Framework. The Framework is a coordinated and strategic set of actions to find and eradicate initial invasive species infestations before they establish, spread and cause harm, thereby protecting the nation's lands and waters and the communities they support. Working with partners, FAC has assisted advancement of several components of the Framework including:

• Horizon scans: include pathway-analyses and risk screening of species present at pathway origin points, with a focus on identifying species at high risk of being introduced, becoming established, spreading, and causing harm. These efforts utilize subject matter experts, taxonomists, and information from literature reviews and life history investigations to produce prioritized lists of potential invasive species for consideration to include in Watch Lists. Working under the Framework, efforts include a National Horizon Scan of terrestrial and aquatic plants, including hitchhikers of imported aquatic plants; a National Horizon Scan of invertebrate taxa; and a National Transportation Horizon Scan for terrestrial species.

• Invasion Hotspots: An invasion hotspot is an area that has been identified as high-risk for introductions of high-risk invasive species. Work will flow from horizon scans to watch lists to identification of invasion hotspots and then to early detection surveillance within those invasion hotspots.

• Genetic Marker Development: Surveillance under the Framework will rely on a combination of traditional methods such as netting and plankton sampling and newer methods, such as detection of eDNA. To utilize e-DNA as part of a surveillance program, species-specific markers are needed to detect watch list species.

• Molecular Lab Network: Molecular techniques and mapping will help with species identification, early detection, informing priority sampling areas, and species tracking. A Molecular Lab Network is being developed to process molecular surveillance samples (eDNA) in support of a national EDRR framework.

• Interjurisdictional Rapid Response Team: A DOI Interjurisdictional Rapid Response Team Workgroup completed a draft white paper titled "Building Capacity for Rapid Response: recommendations and considerations for forming a DOI Interjurisdictional Invasive Species Rapid Response Team (IInSRRT) to advance a National EDRR Framework for invasive species." The purpose of the report is to develop recommendations for how to form a DOI interjurisdictional team that would build capacity for responding to priority rapid response incidents within the DOI mission and authorities.

YY Consortium: The Service's Fish and Aquatic Conservation (FAC) program is funding and cooperating with the YY Consortium (including the states of Arizona, Colorado, Idaho, Kansas,

Nevada, New Mexico, Oregon, Washington, and Wyoming) on investigations of novel techniques for eradication of invasive fish species. Eradication involves the use of integrated pest management including the use of traditional techniques to reduce population numbers in combination with eventual elimination by shifting the sex ratio of the invasive population to all male over time by developing and stocking genetically YY males. The Consortium is developing and/or refining sex markers and sex reversal recipes for Brown Trout, Lake Trout, Common Carp, Walleye and Northern Pike. They are also distributing YY male Brook Trout eggs and evaluating effectiveness of using YY males for eradication. As part of the cooperative agreement, FAC will continue with feasibility and effectiveness studies on use of YY Male Brook Trout at Carson National Fish Hatchery and apply for approval by the Food and Drug Administration for an Investigational New Animal Drug (INAD) for estradiol use in fish for YY Male work.

Question 3: Outline your priorities for the upcoming year (up to 5).

• Early Detection/Rapid Response Framework: Ther Service will continue to work with DOI, other federal agencies, states, Tribes, territories and other partners to advance a long- called-for National Early Detection and Rapid Response Framework to continue to advance and prioritize efforts under the Framework.

• Injurious Wildlife evaluations: Service Staff have completed listing evaluations for 3 taxa of invertebrates that pose a risk to the United States to identify taxa for the next proposed rule to amend the injurious wildlife list under 18 U.S.C. 42. The primary goal of this effort is to preemptively list high-risk invasive species before they establish in the U.S.

• American Rescue Plan Act: To support rule promulgation related to injurious wildlife as hosts of zoonotic agents in wildlife trade, FAC has funded the Smithsonian Institution (SI) to conduct a global horizon scan and risk analysis of foreign wildlife species that may carry zoonotic pathogens and parasites. The SI is focusing on zoonoses not yet found in the United States or with the potential to significantly escalate impacts within the United States while also evaluating both risk and management options to mitigate risk. The Service expects to obtain from SI prioritized lists of host wild mammals and wild birds, followed by prioritized lists of amphibians/reptiles and aquatic wildlife (fishes, mollusks, and crustaceans) in calendar years 2023-2024. The Service's injurious wildlife listing team is also working with SI to develop and refine a database of zoonotic pathogens of global concern. This data will inform multiple stages of the risk analysis process.

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Question 1: Provide one achievement / highlight from your ANS program that you would like WRP to know about.

In FY23, certified trainers from the U.S. Fish and Wildlife Service and the National Park Service from multiple regions provided Hazard Analysis Critical Control Point (HACCP) planning certification courses to partner agencies and staff across the country. Trainings were offered in-person and online. HACCP-related training opportunities to prevent and mitigate the risk of unintentionally spreading invasive species will be offered in FY24.

Question 2: Provide a description of your top five ANS activities/accomplishments/priorities (up to 5) for the past year:

1. The Columbia River Fish and Wildlife Conservation Office (CRFWCO) is implementing an ongoing project to stock male brook trout with two Y chromosomes to eradicate a population of nonnative brook trout in Tyee Springs above Carson National Fish Hatchery (WA). Project activities in 2023 included removing 1,444 resident brook trout from Tyee Springs, followed by stocking 2,000 PIT tagged YY male brook trout on August 15th. A total of 1660 genetic samples collected from YY male and resident Tyee Springs brook trout populations (from 2021-2023) will be analyzed by Abernathy Fish Technology Center in fall 2023 to measure the progress of YY male stocking efforts in Tyee Springs using genetic assignment tests. The presence of YY male progeny and proportion of YY male progeny detected within our samples will help confirm the survival and spawning success of YY males and provide positive feedback that the YY male technique is progressing successfully.

2. The CRFWCO is conducting annual AIS monitoring at six lower Columbia National Fish hatcheries using eDNA and visual surveys. Although the primary focus of visual surveys is New Zealand mudsnail, all eDNA samples are tested for New Zealand mudsnail, zebra mussels, quagga mussels, northern pike and common carp. The purpose of this ongoing study is to evaluate the effectiveness of visual surveys and eDNA sampling, including the benefits and limitations of each approach as an AIS early detection monitoring tool for Lower Columbia National Fish Hatcheries.

3. FWS staff at the Western Washington Fish and Wildlife Conservation Office (WWFWCO) continued a research study with WDFW, King County, and the Muckleshoot Tribe to examine predation by non-native fishes (Yellow Perch, Largemouth Bass, Smallmouth Bass, Black Crappie, and Rock Bass) on ESA listed Chinook salmon in the Lake Washington Basin. In addition to examining predation, we finished collecting tracking data to document the movements of

Yellow Perch that were tagged in 2021. Results from this work were presented to the Lake Washington/Cedar/Sammamish Watershed (WRIA 8) Implementation Committee, with expected publication in FY24.

4. In cooperation with Washington Department Fish and Wildlife (WDFW), Washington Sea Grant (WSG), University of Washington, and other volunteer partners, the Western Washington Fish and Wildlife Conservation Office (WWFWCO) assisted with the sentinel site monitoring of invasive European Green Crabs (EGC) for WSG's "Crab Team" at Grays Harbor National Wildlife Refuge.

5. The Pacific Islands Fish and Wildlife Office (PIFWO) continues to work with the State of Hawaii, the US Territories of Guam and American Samoa, the Commonwealth of the Northern Mariana Islands and non-governmental partners to identify and strengthen biosecurity actions and communication frameworks to prevent the spread of invasive species within the State of Hawaii and across the Pacific Islands Region. PIFWO staff have been working with partners on early detection and rapid response planning for the potential introduction of stony coral tissue loss disease into the Pacific region. PIFWO staff have been collaborating with State and Federal partners on addressing a previously unknown aquatic species, *Unomia stolonifera* that was identified in Pearl Harbor and is a threat to the local maritime ecosystem. *Unomia* is popular with home aquarium hobbyists and could have been introduced into the area illegally. PIFWO staff have also been assisting USDA and the Office of Insular Affairs in developing and planning regional Territorial biosecurity training workshops that focus on pre-border, border and post-border biosecurity coordination, and local staffing professional development and capacity building.

6. PIFWO staff coordinate multi-agency brown treesnake (BTS; *Boiga irregularis*) interdiction, control, and suppression efforts, regionally and nationally, through the legislatively mandated Brown Treesnake Technical Working Group. BTS is an invasive species that has resulted in severe environmental and significant economic impacts to the U.S. Territory of Guam including extirpation or extinction of nearly all native vertebrates. Numerous Federal and Territorial agencies work together to plan, fund, and implement BTS interdiction, control, suppression, and eradication efforts. PIFWO staff continue to coordinate with multi-stakeholder group planning eradication activities for the incipient population of BTS discovered in 2020 on Islan Dåno' (Cocos Island) to protect the endangered native Ko'ko birds (Guam Rail) and Slevin's skinks (*Emoia slevini*), as well as other native skinks, seabirds, and Micronesian Starling populations. Before and following the impacts of Typhoon Mawar on Guam on 24 May 2023, PIFWO staff coordinated with the Department of Interior emergency response planning teams and provided biosecurity technical assistance to FEMA for recovery implementation.

Question 3: Outline your priorities for the upcoming year (up to 5). This will help identify coordination opportunities moving forward.

1. Provide Hazard Analysis Critical Control Point (HACCP) certification courses to partner agencies and staff across the country. The certification course will be offered in-person and online. The goal: to prevent and mitigate the risk of unintentionally spreading invasive species.

2. Work with tribes, states, and other partners to implement a Nationally Coordinated Early Detection and Rapid Response Framework for aquatic invasive species and pathways.

3. Work with entities responsible for key pathways (and associated vectors) to proactively reduce the risk of introduction of invasive species.

4. Continue to assist with EGC monitoring and trapping efforts and further development of ANS outreach and education materials.

Question 4: Provide photos (with captions) that show off your ANS work over the last year.
Hazard Analysis Critical Control Point (HACCP) Planning:

The first step in Hazard Analysis Critical Control Point (HACCP) Planning is describing the activity you want to evaluate for risk of unintentionally spreading nontarget species. An activity description includes specific information about the who, what, when, where, how, and why of a project.

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Question 1: Provide one achievement / highlight from your ANS program that you would like WRP to know about.

Region 2 will be awarding approximately $2.25M in grant awards to address QZAP 2.0 priorities in western waters. These projects have been selected by a team of AIS Specialist from multiple federal agencies. Additionally, Region 2 continued execution of an Interagency Agreement with BLM, BOR, NPS, and FWS to collectively support two Quagga/Zebra projects that benefit the greater western US including local governments, states, tribes and other federal agencies. These projects include watercraft inspection training, and watercraft inspection database.

Question 2: Provide a description of your top five ANS activities/accomplishments/priorities (up to 5) for the past year:

1. The Arizona Fish and Wildlife Conservation Office hired 20 seasonal staff, including 11 local tribal members, to assist the White Mountain Apache Tribe Game and Fish Department (WMATGFD) with Apache Trout recovery efforts during 2023. Nonnative trout removal is a significant focus of recovery work and 2299 Brook Trout and 113 Brown Trout have been removed so far this season during Apache Trout monitoring and nonnative trout removal surveys on tribal lands.

2. Region 2 also worked with partners (WMATGFD and U.S. Bureau of Reclamation) to install two permeable barriers to aid Brook Trout removal from upper Thompson Creek and upper West Fork Black River. Although both barriers were damaged during high stream and debris flows associated with monsoon rains, we think these devices will be useful (following modifications) for future AIS management projects.

3. Region New Mexico Fish and Conservation Office assists the Mescalero Apache Tribe with mechanical removal of Common Carp from Mescalero Lake. In 2023, we initiated discussions to establish a workgroup of interested parties including the Mescalero Apache Tribe's Conservation and Natural Resources departments and the Bureau of Indian Affairs. The goal of the workgroup is to discuss the Common Carp issue, identify management goals (i.e., suppression vs eradication), and develop a long-term Common Carp removal workplan including strategies, implementation schedule, cost estimates, and agency responsibilities. Additionally, we researched and evaluated potential capture gears including electrofishing, gill nets, fyke nets and hoop nets as well as the use of baits to increase captures. In 2022/23, we implemented a mark-recapture study to estimate Carp abundance and biomass.
4. Region AZFWCO staff continued monitoring the New Zealand Mud Snail population adjacent to the Alchesay National Fish Hatchery and developing control and risk-reduction options. Monitoring included eDNA and quantitative surveys of the population.

5. Abundance and Distribution of Early Life Stages of Asian Carp in the Red River Basin: Region OKFWCO's commitment to assessing spawning and recruitment of invasive carp in FY2023 continued to include conducting ichthyoplankton tows and light trapping for larval fish in the Red River mainstem and tributaries, such as the Kiamichi River, Choctaw Creek, and Muddy Boggy Creek. Larval fish were sampled May–August, and larval fish are currently being sorted, identified, and genetically analyzed for species confirmation. The OKFWCO has expanded its working relationships to aid in rapid detection and positive identification of larval fish. Recently the OKFWCO has collaborated with the Southwestern Native Aquatic Resources and Recovery Center, the Whitney Genetics Lab and the Missouri State University. These partnerships have agreed to aid the OKFWCO with genetic confirmation of eggs or larval fishes, ethanol screening to determine whether carp DNA is present in the sample and, additional hands to sort through samples to locate and identify eggs and larval fish.

Question 3: Outline your priorities for the upcoming year (up to 5). This will help identify coordination opportunities moving forward

1. Early Detection of invasive carp with Acoustic Telemetry on Arkansas River

2. Distribution and Population Demographics on Invasive Carp on the Red River 3. Continue to provide HACCP trainings across the country to assist internal and external partners with a prevention planning process.
3. Continue to provide HACCP trainings across the country to assist internal and external partners with a prevention planning process.
4. Work with HQ FWS and Regional Biologist to complete Southwest Rivers Horizon Scan
5. Continue assisting with the implementation of the national EDRR framework. Zachary Jackson (front row left) and Kristy Manuel (front row right) with the Apache Trout crew.

Kristy Manuell (Apache Trout Biologist), Kyler Journey (Pathways Student Trainee), Wyatt Baker (Biological Science Technician), and Leanna Grimes (AZCC Intern) conducting electrofishing removal of Brook Trout in West Fork Black River.

Two photos above: Region 2 FWS employee assembly line for transmitter implantation of silver carp

Staff from the Mescalero Tribal Fish Hatchery assisting with setting gill nets in Mescalero Lake in April 2023

Two photos above: Region 2 FWS employee assembly line for transmitter implantation of silver carp.

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

Watercraft Inspections at Critical Control Points: The U.S. Fish and Wildlife Service – Alaska Region (Service) completed another full season of Alcan Watercraft Inspection and Decontamination in collaboration with the U.S. Customs and Border Protection at the U.S.-Canada Border. As of August 14, 2023, we had inspected nearly 600 watercraft, only 20 were sealed prior to reaching Alaska, and we are on track to reach numbers similar to 2022. No decontaminations were required. We encountered 447 non-motorized, 65 simple, 58 complex, and 21 very complex vessels. Only one vessel was considered high risk and 33 were medium risk.

Enhanced Early Detection Capacity: The Service has begun building an early detection and rapid response program at our Southern Alaska Fish and Wildlife Field Office based in Anchorage, Alaska. Through a one-time investment and incremental base increases, we have been able to have a dedicated senior AIS biologist and seasonal crew enhancing our collaborative efforts in Southcentral Alaska. An early detection surveillance strategic plan will be developed by this winter with the current focal geographies as Anchorage and the Matanuska-Susitna River basins with emphasis on early detection of Elodea and Dreissenid mussels, secondary spread of Northern Pike. We are also enhancing our capacity of the Conservation Genetics Laboratory for eDNA analyses for Northern Pike and Elodea and will be verifying the assays for Quagga and Zebra mussels.

Question 2: Provide a description of your top ANS activities / accomplishments / priorities / challenges (up to 5) over the past year.

European Green Crab rapid response plan and drill: The Service has worked with partners to develop an updated Region-wide rapid response plan for European Green Crabs. Part of this process has also included developing and then holding (August 29-31, 2023) the first official rapid response drill that will be in Homer Alaska. The timing of these activities aligns well with the need for improving partnership efforts on addressing the initial invasion of European Green Crabs at Metlakatla, Alaska and the growing number of surveys occurring elsewhere in Alaska. National Aquatic invasive grass research Request for Proposals: The Service received a one-time increase in FY23 that committed $250,000 to aquatic invasive grass research throughout Alaska. The focal species were Elodea and two species that are not known to be in Alaska, Hydrilla and Eurasian Watermilfoil. The following two projects were funded: *Identifying Vectors from Elodea-Infested Big Lake to Prioritize Early Detection Rapid Response Efforts* (Tyonek Tribal Conservation District); and, *Quantifying the social benefits of managing Submerged Aquatic*

Invasive Grasses (SAIG) given resource user characteristics and behavioral traits informing prevention (University of Alaska Fairbanks).

Elodea persistence in several waterbodies in Interior and Southcentral Alaska: Partners in Alaska have had great success eradicating most infestations of Elodea when they have been found at the incipient stage of invasion. The collaborative efforts with State, Federal, Tribal, NGOs, and local landowners has been a great model for surveillance and rapid response. There are at least two locations that continue to be challenging to reach full eradication after 3-4 years of treatment. Elodea has been eliminated from over 95% of these systems. There are small areas where persistent patches are present, and these have been spot-treated. As part of our adaptive management process, the Service is working with partners to assess how response measures can be adapted to meet unique environmental conditions (e.g., turbidity, spring upwellings, etc.).

Marine vector analyses: The Service worked with the University of Alaska and industry to assess the estimated numbers of watercraft entering the U.S. through marine shipping (barge and ferries) compared overland transport on the Alcan Highway. A publication was released in February 2023 with the results: *Batten down the hatches: Opportunities to protect Alaska from biological invasions through watercraft trade and traffic - ScienceDirect*

Enhancing prevention efforts at critical control points: The Alaska Region continues to explore opportunities to enhance prevention efforts at critical control points in the U.S. (Alaska). In 2023, we began planning efforts and discussions with shipping industry leaders at the Port of Alaska, in Anchorage, to understand the logistics and feasibility of conducting inspections of watercraft and other items coming into the country via marine shipping. We have dedicated funds to purchase a portable decontamination unit that will be purchased/built in 2024 and stationed in Anchorage to assist in future operations.

Question 3: Outline your priorities for the upcoming year (up to 5).

Alcan Port of Entry WID operations will continue as a priority into the foreseeable future. The project will run from early May until the end of August. We are assessing extending our hours of operation to give us greater covering throughout the day.

Invasive species education: The Region's Invasive Species Outreach and Education coordinator will be expanding on collaborative efforts of raising awareness and a sense of action towards invasive species. We will be committing additional funding to build our exhibits at inter-agency visitor centers, hosting public service announcements on statewide public radio, and enhancing our interactions with youth.

AIS early detection surveillance strategic plans for invasion hot spots: The Service is working with multiple Cooperative Invasive Species Management Areas (CISMAs) to create Elodea specific and multi-AIS early detection surveillance plans around invasion hot spots. We anticipate finishing at least two of these in the next year.

Assessing Northern Pike prevention tactics: Working with partners, we hope to prioritize information needs associated with ways to minimizing the threat of invasive Northern Pike to the Kenai National Wildlife Refuge and other areas in Southcentral Alaska.

Enhancing marine invasive species surveillance and biosecurity efforts: The Alaska Region has recently hired a regional island invasive species biologist that will lead our efforts around biosecurity, surveillance, and eradication of invasive species on and near the 400 marine and freshwater islands the Services manages resources on in Alaska. This position's work will help us raise awareness of HACCP, biosecurity, and have dedicated resources for early detection of marine and terrestrial invaders.

Question 4: **Provide Photos!** (with captions) that show off your ANS work over the last year. Include photos of interesting observations, notable achievements, project highlights and pesky challenges.

Juvenile Coho salmon there were in a Northern Pike stomach after being re. Chuitbuna Lake, Alaska 2023 (USFWS)

Juvenile Coho salmon and strands of invasive Elodea (spp) in Little Survival Creek, a small stream near Anchorage that has been being treated for the invasive plant. (USFWS)

Alcan Port of Entry watercraft inspection and decontamination project at the US-CAN border, Alaska, 2023 (USFWS).

USFWS staff conducting European Green Crab surveillance in Cold Bay, Alaska, 2023. (USFWS)

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Question 1: Provide one or two achievements / highlights / challenges from your ANS program that you would like WRP to know about.

The USFWS Pacific Southwest Region received $600,000 in NWRS Resource Management funding and $331,000 in Partners funding for continuing efforts to eradicate Nutria.

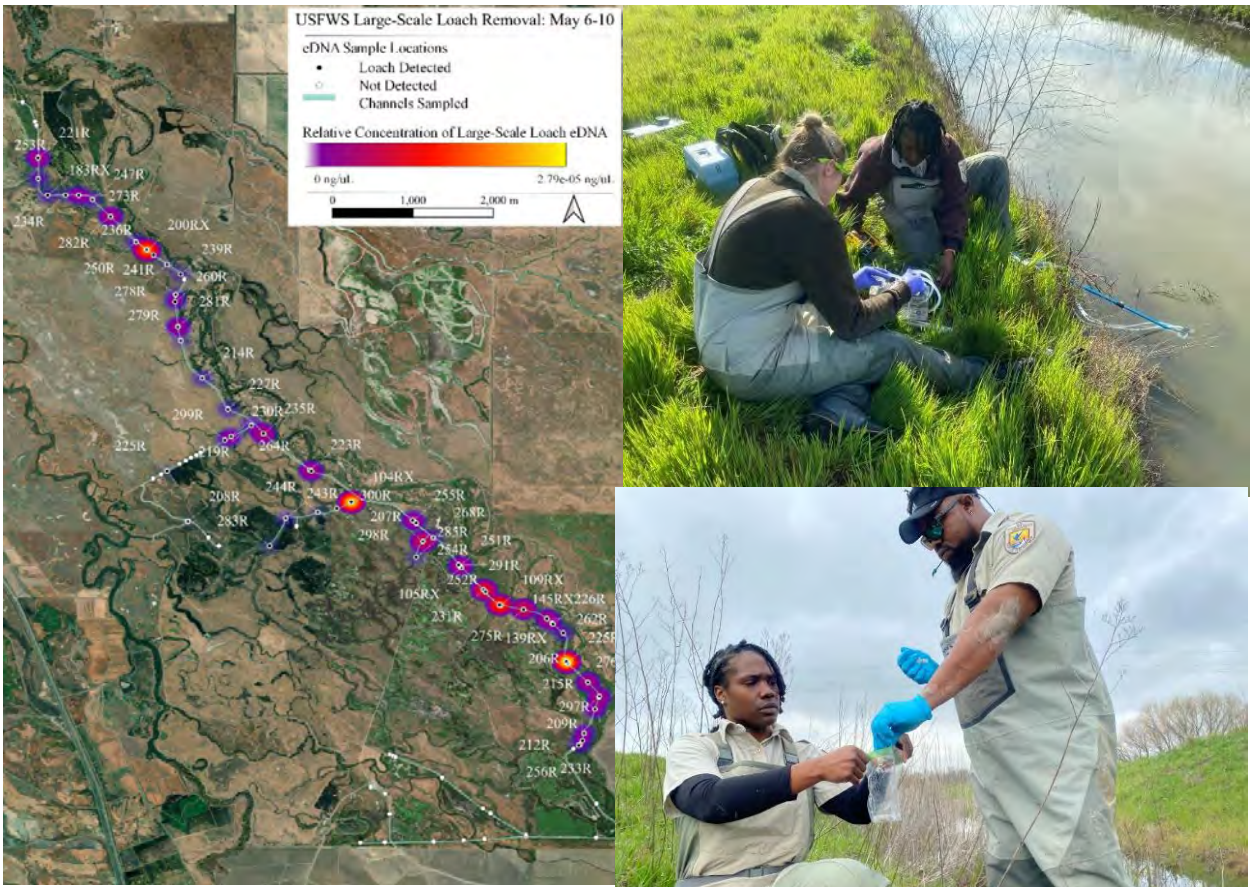
Question 2: Provide a description of your top five ANS activities/accomplishments/priorities (up to 5) for the past year:

- EDRR of Chinese Mystery Snail in the Sacramento River Basin Completed.4. EDRR of *Caulerpa* in Newport Bay and proximate Seal Beach NWR
- PSW Region Horizon Scans for Invasive Species Prevention Report Completed
- eDNA and Live Car detection/trapping of Large-Scale Loach in the San Joaquin River Basin
- Zebra/Quagga prevention in the Tahoe Basin and containment where present in the CA-GB

Question 3: Outline your priorities for the upcoming year (up to 5). This will help identify coordination opportunities moving forward.

1. Zebra/Quagga prevention in the Tahoe Basin and containment where present in the Pacific Southwest Region.
2. Phase III – EDRR population dynamics/DNA analysis of Large-Scale Loach specimens captured in the San Joaquin River Basin
3. EDRR and removal/eradication of *Caulerpa* in Newport Bay and proximate Seal Beach NWR continues
4. Alligator weed coordination for containment purposes
5. CA-GB Regional Transportation Horizon Scan Report submitted to R8 stakeholders

Question 4: Provide photos (with captions) that show off your ANS work over the last several years.



Example of a heatmap generated by the relative concentration of Large-scale loach DNA detected in the field at San Luis NWR. FWS staff collecting water samples for eDNA analyses.

Service Staff deploying minnow traps at San Luis NWR to capture LSL and specimens captured.