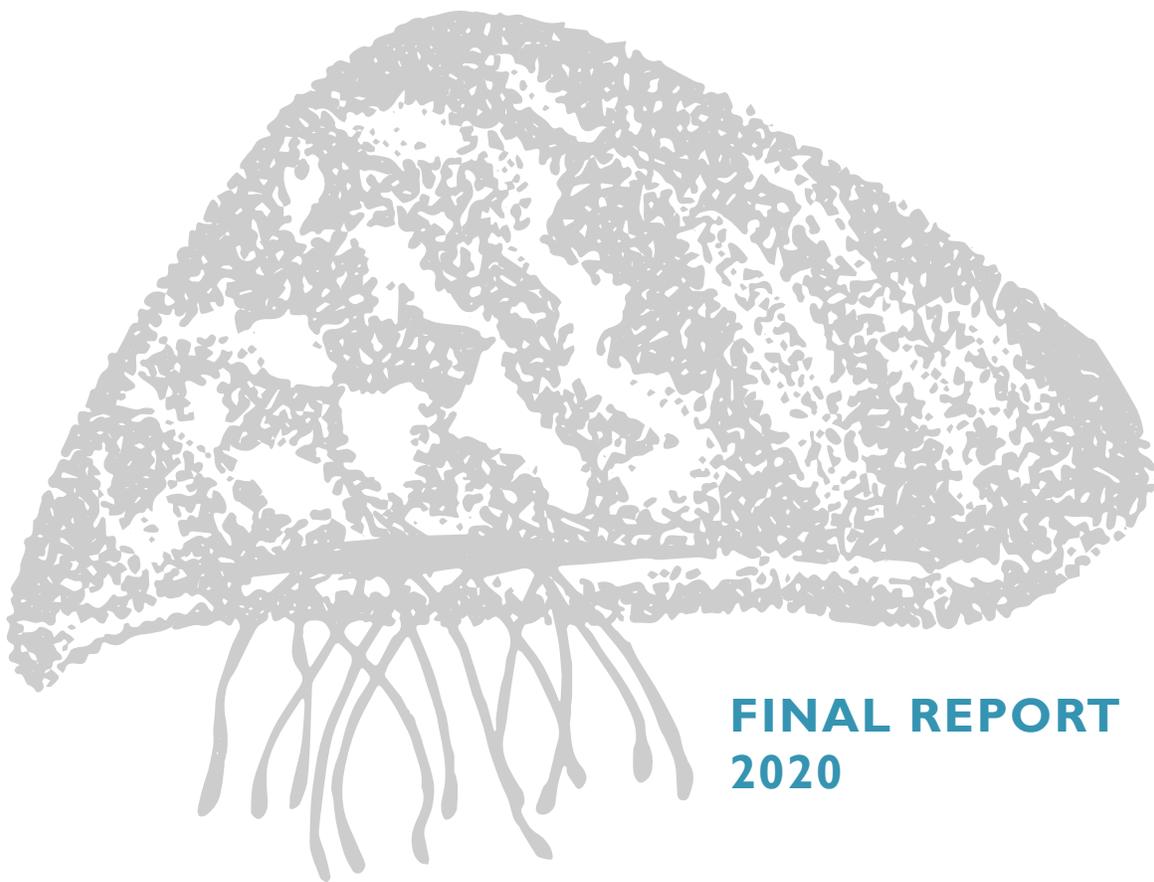


# Safeguarding the West from Invasive Species

*Actions to Strengthen Federal, State, and Tribal  
Coordination to Address Invasive Mussels*



**FINAL REPORT  
2020**



# Final Report

In June 2017, the U.S. Department of the Interior (DOI) announced a set of actions that it undertook to protect western waters from invasive quagga and zebra mussels (*Dreissana rostriformis bugensis* and *D. polymorpha*). Invasive mussels pose significant threats to water-based recreation, hydropower, water delivery, fisheries, and aquatic ecosystems. DOI led this call-to-action in the spring of 2017 in collaboration with the Western Governors' Association (WGA), and Federal, State, and Tribal representatives. This intergovernmental process resulted in the report, *Safeguarding the West from Invasive Species: Actions to Strengthen Federal, State, and Tribal Coordination to Address Invasive Mussels* [hereafter, *Safeguarding the West*], which described DOI commitments to prevent, contain, and control invasive mussels in the West.

The *Safeguarding the West* initiative built on decades of Federal-State collaboration and advanced priorities identified in interagency plans, including the *Quagga-Zebra Mussel Action Plan (QZAP) for Western U.S. Waters* developed by the Western Regional Panel (WRP) on Aquatic Nuisance Species. Through *Safeguarding the West*, DOI leveraged investments to address invasive mussels, strengthened relationships with WGA, States, Tribes, and partners, and increased DOI engagement at national, regional, and field levels on policy and program initiatives.

This is DOI's final *Safeguarding the West* report and provides both an update on activities that occurred in 2019 and 2020 and a summary of accomplishments since the initiative's inception in 2017. DOI released its first progress report in February 2018 and its second in February 2019.

Although DOI has fulfilled its commitments in *Safeguarding the West*, much of this work is ongoing and is part of Bureaus' core programming to manage aquatic invasive species. DOI will continue to collaborate with partners to meet the most pressing needs to protect western waters from invasive mussels and other aquatic invasive species. This includes working in coordination with others at the local level, such as at Lake Mead and Glen Canyon National Recreation Areas; State and Tribal levels; basinwide, such as in the Columbia River and Colorado River Basins; westwide through the WRP and WGA; and at the national level through the Aquatic Nuisance Species Task Force.

In addition, the WRP's Updated Recommendations for the Quagga-Zebra Mussel Action Plan for Western Waters (QZAP 2.0) provides an important blueprint for collectively advancing mutual priorities to manage zebra and quagga mussels in the West in the years ahead.

### **Summary of DOI Fiscal Year Investments**

DOI spent \$17 million in FY 2019 to prevent, contain, and control invasive mussels nationwide; this included an additional \$4.0 million for the Bureau of Reclamation (Reclamation) above baseline dollars. Reclamation's increase supported a variety of activities that emphasized containment of mussels in the Lower Colorado Region and prevention in the Pacific Northwest such as:

- ▶ Supporting watercraft inspection and decontamination stations throughout Washington and Oregon, as well as aquatic invasive species programs in North and South Dakota, Wyoming, Montana, Arizona, and Colorado.
- ▶ Supporting the Colville Confederated Tribes to establish an aquatic invasive species program that would enable their full participation in regional aquatic invasive species issues.
- ▶ Continuing to support watercraft inspections and containment efforts at Lake Mead National Recreation Area and Glen Canyon National Recreation Area.
- ▶ Further developing the winning solution from the *Eradication of Invasive Mussels in Open Water Prize Challenge*, in partnership with Reclamation's Research and Development office, to develop a control method that is capable of eradicating invasive zebra and quagga mussels from large reservoirs and lakes in a cost effective and environmentally sound manner.

Prior to *Safeguarding the West*, DOI spent approximately \$7.6 million in FY 2016 to address invasive mussels. Under *Safeguarding the West*, DOI spent an estimated \$40 million from FY 2017 to FY 2019. In the FY 2020 enacted budget, DOI invested at least \$15.9 million. This included \$1 million in new spending by the Bureau of Land Management (BLM) for containment efforts in the Lake Havasu region.

Given the magnitude of spending among DOI Bureaus on invasive mussel activities, ensuring that resources are leveraged to maximize impact and effectiveness, avoid duplication, and achieve the greatest risk reduction is key.

As a result, DOI formed an inter-Bureau work group of mussel funding leads to improve communication, coordination, and planning of investments among Bureaus. Through this effort, DOI formed inter-Bureau teams to review proposals, developed a project list for raising awareness among Bureaus about funding agreements with partners, and developed an Interagency Agreement among the BLM, Reclamation, National Park Service (NPS), and U.S. Fish and Wildlife Service (USFWS) to support mutual priorities that benefit multiple Bureaus and States.

## ACTION ITEM HIGHLIGHTS

*Safeguarding the West* included more than four dozen action items generated by six *ad hoc* committees composed of Federal, State, and Tribal representatives that formed in the spring of 2017. The committees identified opportunities to strengthen work across the following focal areas: watercraft inspection and decontamination, monitoring, research and innovation, aquatic infrastructure, education and outreach, and policy and coordination. Each action item had a lead agency and point of contact. Most actions are completed, and those few that are not finished should be in FY 2021. Highlights of some of the accomplishments are summarized below by geographic area, followed by the outcomes of individual actions.

### **COLUMBIA RIVER BASIN**

Preventing the introduction of invasive mussels to the Columbia River Basin and enhancing capacity for rapid response was a catalyst for initiating *Safeguarding the West*. This included substantial investments in and collaboration with State, Tribal, Federal, and other partners to expand the coverage of watercraft inspection and decontamination efforts, strengthen coordinated early detection monitoring of waterbodies in the region, conduct tabletop and field exercises to test rapid response plans, and develop the Endangered Species Act consultation manual to inform environmental compliance during emergency response. Together these and other actions enabled State- and Tribal- led efforts to build a more robust, comprehensive, and coordinated perimeter defense for the Columbia River Basin that serves as a model for other areas.

### **COLORADO RIVER BASIN**

One of the most important actions to prevent the spread of invasive mussels is to contain infestations at their source. *Safeguarding the West* leveraged

investments and action at Glen Canyon National Recreation Area, Lake Mead National Recreation Area, Lake Havasu, and other mussel infested waterbodies, to further expand, and initiate where needed, effective containment programs that included enhancements to staffing, equipment, housing, and education efforts. Coordination between DOI Bureaus and States and Tribes in Colorado, Utah, Nevada, Arizona, and California was essential to understand opportunities and limitations to adapt programs to meet jurisdictional needs. In addition, inter-region communications and information sharing between entities in the Pacific Northwest and Lower Colorado also increased understanding about concerns, challenges, and opportunities, resulting in improved standard operating procedures, cross-boundary notifications of movement of high-risk watercraft, and data sharing.

## **WESTWIDE**

The network of States, Tribes, Federal agencies, and partners across the West sets up the region for success to implement coordinated programs. DOI funding through the USFWS for coordinating services performed through the WRP and for harmonizing watercraft inspection and decontamination programs, laws, and regulations was central to much of the progress made. In addition, a core component of the regionwide watercraft inspection and decontamination program is the use of a database, developed and maintained by the State of Colorado, to track and report inspections and decontamination. One of the signature deliverables of *Safeguarding the West* was the NPS's ability to contribute information to this database, once approval was received from the Office of Management and Budget. A five-year Interagency Agreement signed by the BLM, Reclamation, NPS, and USFWS provides a mechanism to fund, pending annual appropriations, the maintenance of this database as well as annual watercraft inspection and decontamination training sessions across the West. Furthermore, routine monitoring across DOI-managed waters and identification and mapping services provided by DOI Bureaus improved understanding of the westwide distribution of invasive mussels and informed facility vulnerability and risk assessments and other program activities.

## **NATIONWIDE**

*Safeguarding the West* leveraged existing actions underway and enabled new opportunities at the national level to meet evolving needs. For example, DOI Bureaus in consultation with partners provided guidance on the use of environmental DNA for invasive mussel monitoring, contributing to discussions

not only in the West but also nationwide. In addition, DOI Bureau research on effective control techniques benefitted facility operations and maintenance as well as natural resource management across the country. DOI opened regular and meaningful communication lines with key networks including WGA, WRP, and the Columbia River Basin Team on *Safeguarding the West* and other DOI-led initiatives. In addition, an interagency effort among DOI Bureaus, the U.S. Army Corps of Engineers, and the U.S. Department of Agriculture - Forest Service explored opportunities to strengthen preparedness and rapid response to new occurrences of invasive mussels in western waters. And, work through the Aquatic Nuisance Species Task Force is making important progress on evaluating the effectiveness of education and outreach campaigns.

These are just some examples of the work leveraged and amplified through *Safeguarding the West*. Collectively, DOI's work at individual parks, refuges, and other land management units, with partners, and through all of the actions implemented through *Safeguarding the West* contributed to a more effective enterprise to prevent, contain, and control invasive mussels so that the whole of the initiative was greater than the sum of its parts.

## ACTION ITEM STATUS

The status of implementation of 60 action items in *Safeguarding the West* is color-coded below. The Bureau listed in parentheses had the lead, but most items involved close coordination with others. All actions were completed, except for three that are still in process (expected completion dates are in FY 2021) and five that changed focus to be responsive to needs at the time. Eight new action items were added in FY 2019 and FY 2020. Outcomes of all actions are listed in parentheses. Though actions are listed as completed, many are ongoing from year to year, pending appropriations, as part of core programming.

### PREVENTION

#### RISK ASSESSMENT AND IDENTIFICATION

- Develop vulnerability assessments for facilities and infrastructure at risk of mussel infestation in the Columbia River Basin (Reclamation) (*Identified high and medium risk facilities and completed assessments in FY 2018; planned assessments for Grand Coulee and Banks Lake Dams in FY 2020*) [Columbia River Basin]
- Predict the fate and transport of invasive mussel veligers in the Columbia and Snake River reservoir system (USGS) (*Refocused to refine regional risk assessment criteria*) [Columbia River Basin]
- ▣ Conduct a physical based risk analysis for invasive mussels in the Columbia and Snake River reservoir system (USGS/Reclamation/NPS) (*Compiled and summarized water quality information for the Columbia River Basin, mapped dreissenid establishment risk as functions of this water quality information, and developed a web interface to download these data and view establishment risk; to be completed in December 2020*)\* [Columbia River Basin]

#### WATERCRAFT INSPECTION/DECONTAMINATION—COLUMBIA RIVER BASIN

- Support Salish Kootenai College students to assist with watercraft inspections and other prevention, detection, and outreach efforts at tribal and public waters, through BIA project funding (BIA) (*Hired student interns to participate in education, monitoring, and watercraft inspections and decontaminations throughout the Flathead Lake Basin*) [Montana]

■ Complete    ▣ In Progress    ■ Refocused

\*Completed; will continue pending appropriations

- Support watercraft inspection stations and K-9 inspection units on the Blackfeet Indian Reservation, through BIA project funding(BIA) *(Supported Tribal-operated check station to enhance capabilities for inspection and decontamination and increase comprehensive protection)* [Montana]
- Maintain or enhance mussel prevention programs at vulnerable National Parks in the Columbia River Basin, and evaluate existing programs for effectiveness (NPS) *(Enhanced prevention programs in Columbia River Basin parks including Glacier National Park, Grand Teton National Park, Yellowstone National Park, and Lake Roosevelt National Recreation Area; enhancements included support for prevention agreements with the Blackfeet Indian Nation and the Confederated Salish and Kootenai Tribes at Glacier, watercraft inspection and decontamination staff at Grand Teton, implementation of aquatic invasive species panel recommendations at Yellowstone, and watercraft inspections and decontamination equipment at Lake Roosevelt)\** [Columbia River Basin]
- Assess establishing watercraft inspection and decontamination programs at Lake Chelan National Recreation Area in the North Cascades Complex (NPS) *(Completed a vulnerability and habitat suitability assessment at Lake Chelan in partnership with Chelan County in 2019; will initiate a watercraft inspection and decontamination program in 2022)* [Washington]
- Establish a Memorandum of Understanding between Lake Roosevelt National Recreation Area and the Washington Division of Fish and Wildlife to provide “ex officio fish and wildlife officer” status for NPS commissioned law enforcement officers, authorizing their utilization of state regulations on invasive species (NPS) *(Signed Memorandum of Understanding in 2017 that deputized NPS law enforcement personnel, allowing them to enforce state aquatic invasive species laws; the MOU continues to serve as the framework for cooperative mussel prevention, early detection, education, and outreach at Lake Roosevelt)* [Washington]

**WATERCRAFT INSPECTION / DECONTAMINATION — DATA SHARING**

- Explore options for sharing information on trailered boats that are putting in and taking out of NPS managed waters, for inclusion in a database developed by the State of Colorado and used by western states(NPS) *(Received Office of Management and Budget approval in February 2020 to use the western states database and app for trailered boats; a number of western parks with watercraft inspection and decontamination programs incorporated the database into their work)* [Westwide]

- Support the continued development, maintenance, and administration of the trailered boat database developed by the State of Colorado and used by western states (USFWS) *(Awarded funding from USFWS to the State of Colorado in FY 2017, from Reclamation in FY 2018, from USFWS and Reclamation in FY 2019, and from BLM, NPS, Reclamation, and USFWS in FY 2020 through a new interagency agreement to support this work)\** [Westwide]

#### **WESTWIDE WATERCRAFT INSPECTION / DECONTAMINATION COORDINATION**

- Better coordinate and harmonize agency watercraft inspection and decontamination policies and protocols through the Building Consensus in the West Initiative (USFWS) *(Awarded funding to PSMFC and National Sea Grant Law Center in FY 2017; finalized model Memorandum of Understanding for state agencies to collaborate on watercraft inspection and decontamination programs)* [Westwide]
- Complete a comparative analysis of watercraft inspection and decontamination requirements along the Lower Colorado River to aid the 23 Federal, State, and Tribal governments and local jurisdictions in the development of collaborative watercraft programs (USFWS) *(Completed analysis, available online at <https://nsglc.olemiss.edu/projects/model-legal-framework/files/lower-colorado-wid.pdf>)*† [Colorado River Basin]
- Continue teaching regional standardized watercraft inspection and decontamination in a series of free classes to western partners and maintain information at [www.westernais.org](http://www.westernais.org) (USFWS) *(Awarded funding to PSMFC in FY 2017 - FY 2020; supported over 115 watercraft inspection training programs to-date in 19 western states and British Columbia involving thousands of participants; finalized a new interagency agreement among BLM, NPS, Reclamation, and USFWS to support this work)\** [Westwide]

## **EARLY-DETECTION MONITORING**

#### **ENVIRONMENTAL DNA AND OTHER DETECTION TECHNOLOGIES**

- Assess various eDNA methodologies and develop criteria, guidelines, and decision-support tools for using eDNA in concert with other tools to increase the probability of detecting mussel populations (USGS/Reclamation) *(Tested multiple dreissenid eDNA assays for sensitivity, specificity, repeatability, and reproducibility and published findings as peer-reviewed research; developed and published peer-reviewed eDNA decision-support tree; published peer-*

■ Complete    ▨ In Progress    ● Refocused

\*Completed; will continue pending appropriations

† New action item

*reviewed evaluation of adding robotic and human eDNA surveillance to the USGS streamgage network; leading a critical comparison of field sampling methods)\* [Nationwide]*

- Develop and validate a portable eDNA detector tool for mussels (USGS) *(Developed tool and validated using eDNA samples) [Nationwide]*
- Develop, apply, and evaluate eDNA and microscopy technologies to support sampling and detection efforts (Reclamation) *(Analyzed 775 samples for invasive mussel DNA and analyzed 1,623 samples microscopically in 2017; analyzed 569 samples for invasive mussel DNA and analyzed 1,582 samples microscopically in 2018, no new mussel detections in 2018; analyzed 294 samples for invasive mussel DNA and analyzed 1,505 samples microscopically in 2019, no new mussel detections in 2019)\* [Westwide]*
- Conduct eDNA sampling efforts in high risk waters on the Blackfeet Indian Reservation, through BIA project funding (BIA) *(Conducted testing of the most susceptible bodies of water using plankton tows with no mussel veligers detected) [Montana]*
- Develop and implement a next-generation, field-detection technology for rapid, on-site monitoring eDNA, and quantify lowest natural abundance of invasive mussels observable using technology (USFWS) *(Awarded funding to the University of Montana in FY 2017 and FY 2018) [Westwide]*
- Develop statistical guidelines to increase the effectiveness of plankton tow early detection surveillance for larval *dreissenid* mussels (USGS/Reclamation) †\* *(Reclamation funded USGS in FY 2019 to complete a peer reviewed paper by September 2021) [Westwide]*

#### **SAMPLE ANALYSIS AND CONFIRMATION**

- Support the mussel detection lab at Montana Fish, Wildlife and Parks to process samples received throughout the Missouri River Basin and from National Fish Hatcheries at no charge to States (USFWS) *(Awarded funding in FY 2017 - FY 2020)\* [Westwide]*
- Continue to analyze water samples from across the western United States and provide results to staff and stakeholders (Reclamation) *(Analyzed samples from 16 states in FY 2017 and FY 2018 and from 15 states in FY 2019; no new mussel detections in FY 2018 or 2019)\* [Westwide]*

■ Complete    ▨ In Progress    ■ Refocused

\*Completed; will continue pending appropriations

† New action item

#### REGIONAL AND SITE-SPECIFIC MONITORING

- Continue monitoring efforts throughout Lake Roosevelt National Recreational Area, in conjunction with the Spokane Tribe of Indians and the Washington Department of Fish and Wildlife (NPS) (*Sampled annually throughout Lake Roosevelt National Recreational Area, in conjunction with the Spokane Tribe of Indians and the Washington Department of Fish and Wildlife*)\* [Washington]
- Enhance capacity of Tribes to monitor for mussels and other aquatic invasive species in the Columbia and Snake Rivers, through the Columbia River Inter-Tribal Fish Commission and in coordination with USGS, Washington State University, and other partners, through BIA project funding (BIA) (*Conducted coordinated monitoring, field activities, and training workshops for Tribal biologists*) [Columbia River Basin]
- Continue or expand monitoring activities at Lake Mead and Glen Canyon National Recreation Areas and share lessons learned from implementing a large-scale aquatic invasive species program (NPS) (*Developed and shared joint lessons learned document and continued monitoring activities*)\* [Colorado River Basin]
- Continue monitoring for mussels in Bureau of Reclamation waters and facilities, as well as connected waters (Reclamation) (*Received 1,582 samples from Reclamation waters and facilities and connected waters in 2017; received 1,623 samples in 2018, no new mussel detections in 2018; received 1,505 samples in 2019, no new mussel detections in 2019*)\* [Westwide]
- Install settlement samplers for monitoring in Fort Peck Reservoir, Montana (USFWS) (*Installed settlement samplers by USFWS dive teams in cooperation with Montana Fish, Wildlife and Parks and U.S. Army Corps of Engineers in FY 2019*)†

#### REGIONAL MONITORING COORDINATION

- Establish a committee to explore the establishment of a regionally coordinated early detection monitoring program for mussels in the Columbia River Basin, with the potential for expansion to other aquatic invasive species and regions (USGS) (*Held workshop in June 2018 and established multi-jurisdictional committee; organized planning meetings and informational webinars that are ongoing; using existing infrastructure and datasets to develop a transboundary, interagency, coordinated regional monitoring framework*)\* [Columbia River Basin]

■ Complete    ■ In Progress    ■ Refocused

\*Completed; will continue pending appropriations

† New action item

## RAPID RESPONSE

### TECHNOLOGIES FOR RAPID RESPONSE AND CONTROL

- Identify and assess available tools that can be used for rapid response and control (USGS) (*Evaluated temperature-dependent treatment data and conducted demonstration projects on select molluscicides, including carbon dioxide, low-dose copper, and Zequanox, to aid in development of a decision-support tool for rapid response actions*) [Nationwide]

### RAPID RESPONSE TEAM

- Continue to support a dive team that is “on call” to assist States with sampling to determine if adult mussels are present (USFWS) (*Dove the Tiber Reservoir annually 2017-2019 and participated in rapid response tabletop exercises in Washington and Flathead Lake, Montana in FY 2018*)\* [Montana, Washington]
- Test Columbia River Basin Rapid response plan via a tabletop theoretical exercise using the Incident Command System. Annual event rotates through the Columbia River Basin states and is coordinated by PSMFC (USFWS) (*Awarded funding to PSMFC to support exercises in Washington in FY 2017, in Flathead Lake, Montana in FY 2018, and on the Snake River at Hells Canyon, Idaho in FY 2019; PSMFC compiled a summary of lessons learned from these exercises in September 2019 to inform the use of the Incident Command System in rapid response; held virtual exercise in FY 2020 simulating detections in Lake Billy Chinook near Madras, Oregon and included interagency rapid response and emergency consultation for Endangered Species Act listed species*)\* [Columbia River Basin]

### PREPAREDNESS PLANNING

- Prepare and implement Rapid Response Plan for Jackson Lake for implementation as needed (NPS) (*Conducted a tabletop rapid response exercise with partners in 2016; in 2020, worked with Wyoming Game and Fish to complete a rapid response and containment plan*) [Wyoming]
- Hold a mock infestation rapid response exercise in Yellowstone National Park to inform the development of Rapid Response Plan (NPS) (*Refocused to implement the recommendations of the Yellowstone Aquatic Invasive Species Science Panel; postponed rapid response exercise*) [Wyoming]
- ▣ Explore options for strengthening rapid response, including the use of the Incident Command System, in western waters, in collaboration with US Army

■ Complete   ▣ In Progress   ■ Refocused

\*Completed; will continue pending appropriations

Corps of Engineers, US Department of Agriculture-Forest Service, WGA, and western states (DOI) (*Identifying opportunities among Federal agencies to promote preparedness and rapid response in coordination with others; target date for completion is FY 2021*)†\* [Westwide]

## CONTAINMENT AND CONTROL

### FACILITIES AND INFRASTRUCTURE PROTECTION

- ▨ Compile best practices, strategies, and technologies used at infested facilities to minimize risks and impacts (Reclamation) (*In process, target date for completion is FY 2021*) [Nationwide]
- ◻ Convene a multi-stakeholder workshop in the Columbia River Basin to share information on budgeting for and implementing control technologies to increase preparedness and protect water infrastructure (Reclamation) (*Refocused to support additional watercraft and inspection decontamination activities*) [Columbia River Basin]

### PRIZE COMPETITION

- ◻ Launch a prize competition to identify innovative concepts to eradicate or prevent mussel infestations in open waters, including large reservoirs and lakes (Reclamation) (*Received 238 solvers; selected three submissions for prizes; pursued solution that won the largest prize and established a cooperative agreement with the solver in FY 2019; awarded a second year of funding in FY 2020*) [Westwide]

### COLORADO RIVER BASIN CONTAINMENT ACTIVITIES

- ◻ Maintain or enhance existing mussel containment programs at contaminated NPS waters on the Colorado River, and evaluate existing programs for effectiveness (NPS) (*Implemented watercraft inspection and decontamination at Lakes Powell, Mead, and Mohave in cooperation with States of Utah, Nevada, and Arizona; made operational refinements based on communication with WGA and States in FY 2018; awarded additional funding to bolster program operations*)\* [Colorado River Basin]
- ◻ Explore options for housing near areas with Federal watercraft inspection and decontamination stations at Glen Canyon National Recreation Area (NPS) (*Completed a new dormitory at Lake Powell in 2020 for Utah watercraft*)

◻ Complete    ▨ In Progress    ◻ Refocused

\*Completed; will continue pending appropriations

† New action item

*inspection and decontamination personnel)* [Utah]

- Identify approaches to develop commercial inspection and decontamination capacity for recreational watercraft, in collaboration with the private sector (NPS) (*Working with State partners to develop off-site commercial decontamination options for watercraft departing from Lake Powell*)\* [Colorado River Basin]
- Convene an interagency workshop to develop a multi-jurisdictional strategy to contain the spread of invasive mussels in the Lower Colorado River, from Lake Havasu and downstream (BLM) (*Held multi-stakeholder workshop in FY 2018 and developed strategy; formed Lower Colorado River Mussel Coordination Team; continued partnership with Arizona Game and Fish Department by funding a new agreement that supports education, outreach, inspection, and decontamination at Lake Havasu and the Parker Strip; received appropriation in FY 2020 for \$1 million for containment and decontamination*)\* [Lower Colorado River Basin]
- Support State watercraft inspection/decontamination programs and partner outreach programs in the Lower Colorado River (USFWS) (*Awarded funding to Nevada, Utah, Arizona, and Lake Havasu Marine Association in FY 2017; to Nevada, Utah, Arizona, and partner organizations in FY 2018; to Utah and Nevada in FY 2019*)\* [Colorado River Basin]
- Assess watercraft traffic entering southern California from Arizona and Nevada on routes without inspection stations to determine traffic patterns and vulnerabilities of quagga mussel spread into California from the Lower Colorado Basin [Reclamation] (*Funded California Department of Fish and Wildlife in FY 2019 and report is to be completed by August 2021*)†\* [Colorado River Basin]

## OUTREACH AND EDUCATION

### STOP AQUATIC HITCHHIKERS! (SAH!) WEBSITE

- Expand the SAH! Website to include an interactive portal that will enable sharing and tracking of outreach materials (USFWS) (*Launched portal in spring 2020 that includes downloadable materials, an images library, and a Marketing Showroom to showcase existing SAH! Products; online at <https://stopaquatichitchhikers.org/>*) [Nationwide]

■ Complete    ■ In Progress    ■ Refocused

\*Completed; will continue pending appropriations

† New action item

## MULTI-STATE MARKETING EVALUATION

- Explore options to evaluate existing outreach and education campaigns for message consistency, target audiences, delivery strategies, and gaps (ANSTF) *(Included in ANSTF Strategic Plan 2019-2024; Notice of Funding Opportunity expected to be published in grants.gov in FY 2021)\** [Nationwide]

## EFFECTIVENESS OF OUTREACH CAMPAIGNS

- Develop a research proposal to assess the efficacy of existing public outreach and refine specific recreational user behavior change goals (USGS/USFWS) *(Integrated into Multi-state Marketing Evaluation action item)* [Nationwide]

## RESEARCH

### RESEARCH AND DEVELOPMENT PROGRAM ACTIVITIES

- Continue research on effective technologies for the detection, prevention, control, and management of invasive mussels in lab and field settings (Reclamation) *(Funded 22 mussel research projects in FY 2020 through Reclamation's Science & Technology Program; online at <https://www.usbr.gov/research/projects/index.html>)* [Westwide]
- Identify options to pilot the use of dip tank technology, a potential tool for reducing watercraft decontamination times, at a site in Glen Canyon National Recreation Area, and evaluate the potential to expand dip tank technology to other sites (NPS) *(Identified options in collaboration with Utah Division of Water Rights, which is in discussions with a private company about new ideas for an effective dip tank system and process that would provide an effective treatment for boats with ballast tanks)* [Utah]
- Examine survivability of invasive mussel juveniles and veligers in antifreeze used to overwinter watercraft to determine management recommendations for spring boaters (USFWS) *(Awarded grant to KASF Consulting in FY 2017; completed and distributed project report in FY 2018)* [Westwide]
- Identify research priorities in USGS's annual guidance to support science needs recognized in *Safeguarding the West* (USGS) *(Funded 23 mussel research projects in FY 2018 – FY 2020)†* [Nationwide]

■ Complete    ■ In Progress    ■ Refocused

\*Completed; will continue pending appropriations

† New action item

## INCREASING CAPACITY

### REGIONAL, STATE, AND TRIBAL SUPPORT

- Continue to support regional panels of the Aquatic Nuisance Species Task Force that help to identify regional priorities and coordinate regional aquatic invasive species activities (USFWS) (*Published Notice of Funding Opportunity on grants.gov each year; awarded \$40,000 to each regional panel to assist operations in FY 2018; \$47,000 in FY 2019; and \$50,000 in FY 2020*)\* [Nationwide]
- Continue to provide cost-share grants to States, regional organizations, and Tribes, for the implementation of Aquatic Nuisance Species Management Plans (USFWS) (*Awarded funding for implementation of state Aquatic Nuisance Species Management Plans in FY 2017 (most entities received \$46,715), in FY 2018 (most entities received \$47,695), in FY 2019 (most entities received \$46,755), and in FY 2020 most entities received \$93,805*)\* [Nationwide]
- Continue to provide competitive grants to meet the goals of the Quagga-Zebra Mussel Action Plan (USFWS) (*Awarded \$930,000 in FY 2017 - 2019 and \$1.92 million in FY 2020*)\* [Westwide]
- Assist States and Tribal governments to draft interstate aquatic invasive species plans (USFWS) (*Partnered with the Columbia River Inter-Tribal Fish Commission on aquatic invasive species outreach and education to Tribal members to lay a foundation for an Interstate Aquatic Nuisance Species Tribal Plan; held a 2-day training workshop in September 2019 on aquatic invasive species coordination for Tribal fisheries staff; planned additional trainings in 2020; provided financial support to Tribes for training and travel*)\* [Westwide]

### LEADERSHIP ENGAGEMENT AND COORDINATION

- Convene Federal, State, and Tribal leaders in the Pacific Northwest to discuss current and future actions to address aquatic invasive species (Reclamation) (*Refocused in FY 2017 to support inspection and decontamination and engagement in existing partnership networks*) [Columbia River Basin]
- Explore options, in partnership with WGA, to enhance policy level coordination among Federal, State, and Tribal leaders (DOI) (*Increased regular*

communication and planning with WGA throughout the Safeguarding the West initiative and participated in WGA's Invasive Mussel Leadership Forum in 2019)\* [Westwide]

#### DEPARTMENT AND AGENCY POLICIES AND PLANS

- Improve DOI's Invasive Species Policy, to include emphasis of the importance of Federal-State-Tribal coordination, harmonization of policies and procedures, and reduction of regulatory impediments to effective and timely invasive species management (DOI) (*Revised policy, available online at <https://www.doi.gov/elips/about>*) [Nationwide]
- Revise Bureau invasive species guidance documents (Reclamation) (*Completed alignment of Reclamation's Policy, Directive, and Standards documents in May 2020*)† [Westwide]
- Explore options to leverage DOI investments to meet mutual priorities to address invasive mussels in western waters (DOI) (*Formed inter-Bureau mussel funding leads work group; developed interagency agreement among BLM, NPS, Reclamation, and USFWS to support the western watercraft inspection and decontamination database and watercraft inspection and decontamination training*)†\* [Westwide]

#### REGULATORY IMPROVEMENTS

- Evaluate NPS invasive species policy on watercraft inspection and decontamination to determine its adequacy for protecting NPS resources and working effectively with State, Federal, and other partners, and if necessary, explore options to improve it (NPS) (*Prepared paper that describes NPS's limited statutory and regulatory authority to require inspection and decontamination of boats leaving NPS units and identified cooperation with States in the enforcement of their laws as a legally sound alternative; developed cooperative agreements between western parks (e.g., Lake Mead National Recreation Area (NRA), Glen Canyon NRA, Curecanti NRA and Lake Roosevelt NRA) and State partners for prevention and containment activities; will continue discussions on effectiveness of different approaches and potential improvements*)\* [Westwide]
- Work with partners and other action agencies to identify steps to complete Endangered Species Act consultation, including the development of a reference manual, to facilitate rapid response activities to mussel introductions in the Columbia River Basin (USFWS) (*Completed manual, available online at [https://www.fws.gov/pacific/fisheries/aquaticnus/Documents/ESAManual\\_Final\\_5Oct2019.pdf](https://www.fws.gov/pacific/fisheries/aquaticnus/Documents/ESAManual_Final_5Oct2019.pdf)*) [Columbia River Basin]

■ Complete    ■ In Progress    ■ Refocused

\*Completed; will continue pending appropriations

† New action item

*Safeguarding the West* galvanized a DOI-wide effort to work with States, Tribes, and other Federal agencies at all scales of implementation to manage invasive mussels. It shone a spotlight on work in progress and enabled new efforts to gain traction. The depth and breadth of efforts supported through this initiative will continue to evolve. DOI is committed to continuing its engagement with others, particularly through coordinated efforts that identify mutual priorities, to safeguard the Nation’s lands and waters for generations to come.

## ACRONYMS

ANSTF	Aquatic Nuisance Species Task Force
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
EDNA	Environmental Deoxyribonucleic Acid
FY	Fiscal Year
NDOW	Nevada Department of Wildlife
NPS	National Park Service
NRA	National Recreation Area
PSMFC	Pacific States Marine Fisheries Commission
QZA	Quagga-Zebra Mussel Action Plan
Reclamation	Bureau of Reclamation
USACE	United States Army Corps of Engineers
USDA-FS	United States Department of Agriculture, Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WGA	Western Governors’ Association

U.S. Department of the Interior. 2020. *Safeguarding the West from Invasive Species: Actions to Strengthen Federal, State, and Tribal Coordination to Address Invasive Mussels – Final Report*.

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For 2017 Report, see: <https://go.usa.gov/xEE6u>

For 2018 Report, see: <https://go.usa.gov/xEEFa>

For 2019 Report, see: <https://go.usa.gov/xfzUm>

