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Northwest **Power** and **Conservation** Council

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Oregon

August 6, 2024

MEMORANDUM

TO: Council Members

**FROM: Stacy Horton, Washington Policy Analyst, Biologist
Windy Schoby, Idaho Fish and Wildlife Policy Analyst**

SUBJECT: Update on Response to Detection of Quagga Mussels

BACKGROUND:

Presenter: Nic Zurfluh, Invasive Species Bureau Chief Idaho State Department of Agriculture, Justin Bush, Aquatic Invasive Species Policy Coordinator Washington Department of Fish and Wildlife

Summary: For almost 20 years, the cumulative efforts of Columbia River Basin states and provinces have prevented the introduction and establishment of invasive freshwater quagga and zebra mussels. Routine early detection monitoring performed by the Idaho State Department of Agriculture in fall 2023, detected free-floating quagga mussel larvae, triggering notification by Idaho Governor Brad Little and implementation of the [Columbia River Basin invasive mussel rapid response plan](#). SCUBA surveys also located a single adult quagga mussel during scoping for a rapid response treatment which was performed in October 2024. Nic Zurfluh, Invasive Species Bureau Chief, will summarize the rapid response treatment, lessons learned, and ongoing efforts to understand results. Justin Bush, Aquatic Invasive Species Policy Coordinator, will summarize State of Washington efforts to increase prevention and early detection monitoring, including activities to prepare for downstream detections working with Columbia River Tribes, utilities, and potentially affected water users and managers, such as irrigation districts. Both speakers will share information

on regional efforts to increase prevention and readiness, with opportunities for involvement and support.

Relevance: The Council's [2014 Columbia River Basin Fish and Wildlife Program](#) calls the introduction of zebra or quagga mussels "the greatest known threat in the Columbia River Basin from aquatic invasive species." (P. 46) Zebra and quagga mussels multiply rapidly, clogging pipes and intake structures. The potential economic, hydropower and ecological impacts from invasive quagga mussels should not be underestimated. Critical infrastructure including the hydropower system and associated fish passage, hatcheries, irrigation, fish screens, navigation, municipal water, recreational facilities including boat ramps and golf courses, and data center cooling systems could all be affected.

Harmful ecological impacts result from zebra and quagga mussel introductions. Potential serious threats to food webs can negatively transform ecosystem productivity and undermine species mitigation and conservation efforts. Tribal trust and treaty obligations will be harder to meet with a diminished capacity to restore and conserve ecosystem value.

The states of Idaho, Montana, Oregon, and Washington have watercraft inspection stations in place to prevent aquatic invasive species from unintentional transport into Columbia River Basin waters. All four states continue to encounter boats transported with attached invasive mussels. Rapid Response Plans exist in each state so that effective and organized action can respond to possible detections. Each state has continued to advocate and work to secure additional funding to address and further prepare for quagga mussel prevention actions. In some cases, new laws have been adopted.

Workplan: The Council's [2020 Addendum](#) to the 2014 Columbia River Basin Fish and Wildlife Program supports a regional approach to establish a defensive perimeter to keep invasive mussels out of the Columbia River Basin. The Council is tracking the 'Number of watercraft inspected and decontaminated in the northwest states of the Columbia River Basin for zebra/quagga mussels' and the 'Ratio of positive detections of zebra/quagga mussels to number of inspected watercraft.' (P. 25)

The 2014 Columbia River Basin Fish and Wildlife Program calls upon Bonneville and other federal agencies to "...assist the Northwest states' efforts to prevent the establishment of quagga and zebra mussels." (P. 47) In addition, the Program finds that "If quagga and zebra mussels become established in the Columbia Basin, BPA and other federal agencies, along with FERC-licensed utilities, shall support regional rapid-response efforts." (P. 48). The Council has supported the work of the PSMFC 100th Meridian Initiative-Columbia Basin Team to collaboratively report on regional efforts like inspection and decontamination efforts, protocols, research priorities, containment and prevention, and Lessons Learned. (P. 48) As well, the

Council will assist with legislative efforts to prevent an invasion and control the spread of non-native invasive species in the Columbia Basin. (P. 48)
Finally, The Council and federal action agencies should coordinate with other federal, state, and tribal entities, and regional organizations such as the 100th Meridian Initiative-Columbia Basin Team, to track and monitor data on existing non-native invasive species distribution and population trend assessments in the Columbia Basin and encourage regional data sharing on rapid response, prevention, containment, control, eradication, enforcement, and education and outreach efforts. (P. 48)

More Information:

Invasive Mussels Update
Economic Risk of Zebra and Quagga Mussels in the Columbia River Basin
Independent Economic Analysis Board, September 3, 2013
[Document IEAB 2013-2](#)

Economic Risk Associated with the Potential Establishment of Zebra and Quagga Mussels in the Columbia River Basin
Independent Economic Analysis Board, July 14, 2010
[Document IEAB 2010-1](#)

Rapid Response Plans and Additional Information

What is Rapid Response?
<https://www.westernais.org/rapid-response>

Lessons Learned State Dreissenid Rapid Response Exercises September 2019
https://ec8c3022-1480-4580-96c0-98958d49781f.filesusr.com/ugd/0e48c2_72ed44f854244b2d953a70f9dd07da08.pdf

Columbia River Basin Interagency Invasive Species Response Plan: Dreissenid Species
Prepared for the 100th Meridian Initiative Columbia River Basin Team, 2018
https://www.westernais.org/files/ugd/bb76e5_aa7f2e9f7a724dfaa272f7b805809157.pdf

COLUMBIA RIVER BASIN DREISSENID INCIDENT RESPONSE TOOLKIT
A resource to facilitate a response to an introduction of dreissenids in the Columbia River Basin
<https://www.crbdirt.com/>

Idaho:

Idaho implements new measures to combat invasive species.

Monday July 1, 2024

<https://agri.idaho.gov/pressrelease/idaho-implements-new-measures-to-combat-invasive-species/>

June 20, 2024 Snake River Quagga Mussel Update
<https://static1.squarespace.com/static/564b8c9ae4b0459b2b8187a3/t/6674803c050a4529ae6ccd22/1718911037331/Snake+River+Quagga+Mussel+Access+-+Update+6.20.pdf>

EARLY DETECTION MONITORING PROGRAM

<https://invasivespecies.idaho.gov/edrr-monitoring>

RAPID RESPONSE PLAN

<https://invasivespecies.idaho.gov/rapid-response-plan>

TREATMENT PLAN

<https://invasivespecies.idaho.gov/snake-river-treatment>

Quagga Mussel 101

<https://invasivespecies.idaho.gov/quagga-mussels>

A Review of the State of Idaho Dreissenid Mussel Prevention and Contingency Plans, February 2012

https://ec8c3022-1480-4580-96c0-98958d49781f.filesusr.com/ugd/0e48c2_7bb6ce5ba12c41dc8d41f948b9eec779.pdf

Washington:

WASHINGTON DREISSENID MUSSEL RAPID RESPONSE PLAN, June 2017

https://ec8c3022-1480-4580-96c0-98958d49781f.filesusr.com/ugd/0e48c2_5d2d417e0e884cdfa48c24abe91cc4f5.pdf

Oregon:

OREGON DREISSENID MUSSEL RAPID RESPONSE PLAN, April 2017

https://ec8c3022-1480-4580-96c0-98958d49781f.filesusr.com/ugd/0e48c2_96ff2e007ca8422787e07931b0bd9068.pdf

Montana:

The State of Montana's DREISSENID MUSSEL RAPID RESPONSE GUIDELINES
Updated: 9/4/2018.

https://www.westernais.org/files/ugd/0e48c2_3213e58f30f24a5e8e4e3d629e9aa04c.pdf

Federal:

Federal Aquatic Invasive Species Contacts for Rapid Response to Zebra/Quagga
Mussels in Western Waters *as of April 2023

https://www.westernais.org/files/ugd/bb76e5_ef6a66adea894f52af902c3f40aa5d85.pdf

DREISSENID MUSSEL RAPID RESPONSE ACTION PLAN PROGRAMMATIC
ENVIRONMENTAL ASSESSMENT U.S. Army Corps of Engineers Northwestern
Division, November 2019

https://ec8c3022-1480-4580-96c0-98958d49781f.filesusr.com/ugd/0e48c2_b49213e299e145e594021e4f05b9f357.pdf

Canada:

Zebra and Quagga Mussel Early Detection and Rapid Response Plan for British
Columbia, February 2015

https://www.westernais.org/files/ugd/0e48c2_6d8bf0482ef94b3bbdebefbe2c9be351.pdf

Update on Quagga Mussels: State of Washington Prevention and Readiness



Justin Bush
Aquatic Invasive Species
Policy Coordinator



Economic Risk

- \$100 million annual hydroelectric mitigation and maintenance.
- Anticipated similar impacts to:
 - Fish Hatcheries
 - Fish Passage Infrastructure
 - Irrigation Systems
 - Drinking Water Systems
 - Legacy Data Centers



📷: U.S. Bureau of Reclamation



📷: Marrone Bio Innovations



Economic Risk



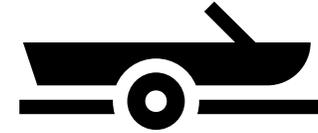
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> 75% irrigated
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(2024)

: Washington State Department of Agriculture



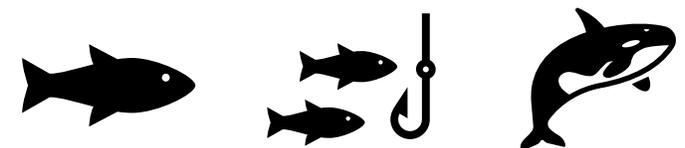
\$21.5 billion
annually spent on
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27% involving
public waters
(> \$5.0 B)
(2020)

: Washington Recreation and Conservation Office



\$35.5 million in
state boating
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: Washington Joint Legislative Audit and Review Committee



Environmental Risk

- Outcompete beneficial species
- Filter feeding impacts phytoplankton structures and increases bacteria
- Water quality changes including reduced oxygen levels, increases in water transparency and aquatic weeds
- Mussels bioaccumulate pollutants impacting the food chain through increased exposure
- Severe risk to cultural resources, threatened and endangered species, and human health



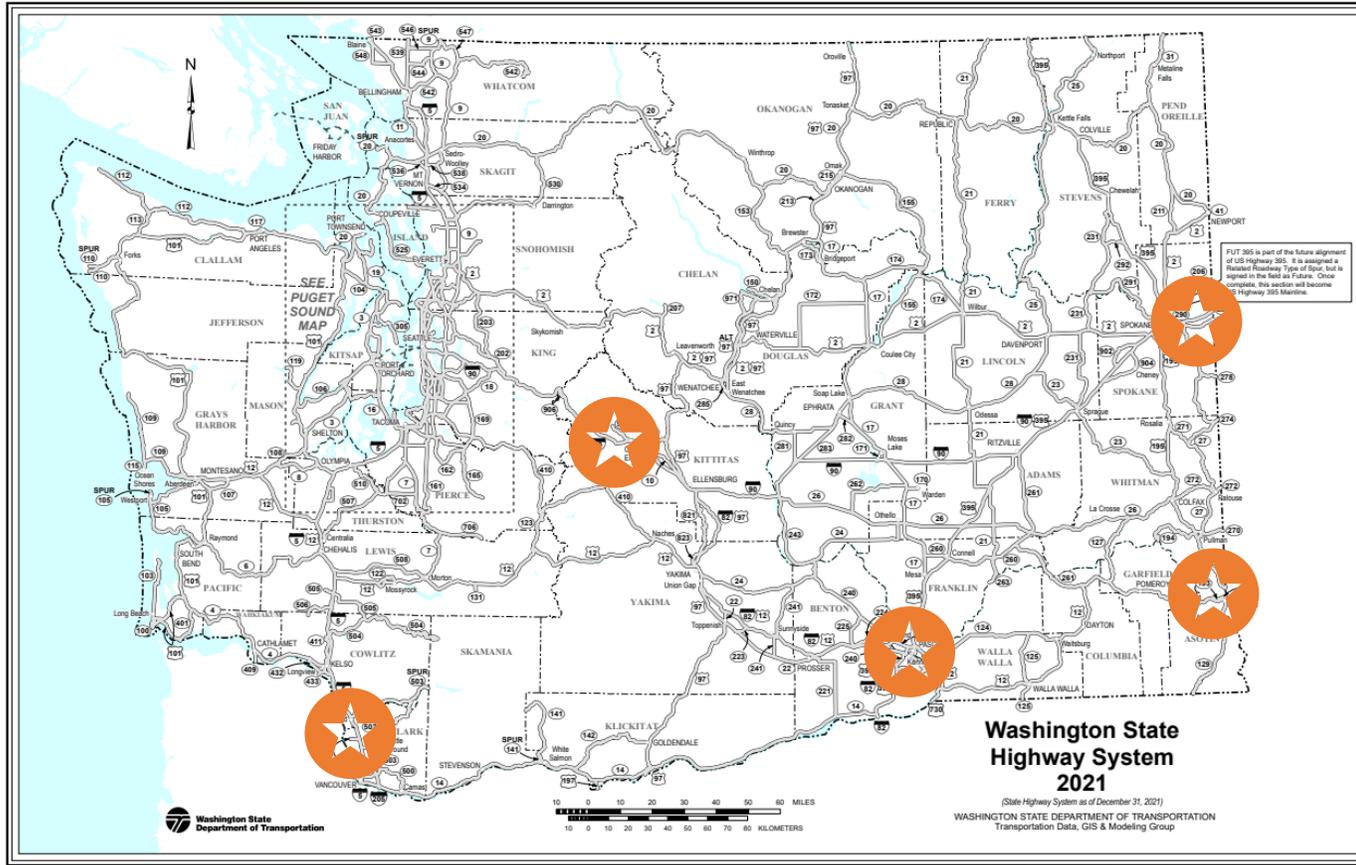
📷: U.S. Fish and Wildlife Service



📷: Headwaters Science Institute



Watercraft Inspections



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Operational Days	532	940	1,412	1,501	863
Watercraft Inspected	31,651	55,812	51,942	58,618	24,894
Mussel Fouled Watercraft	23	39	25	25	7

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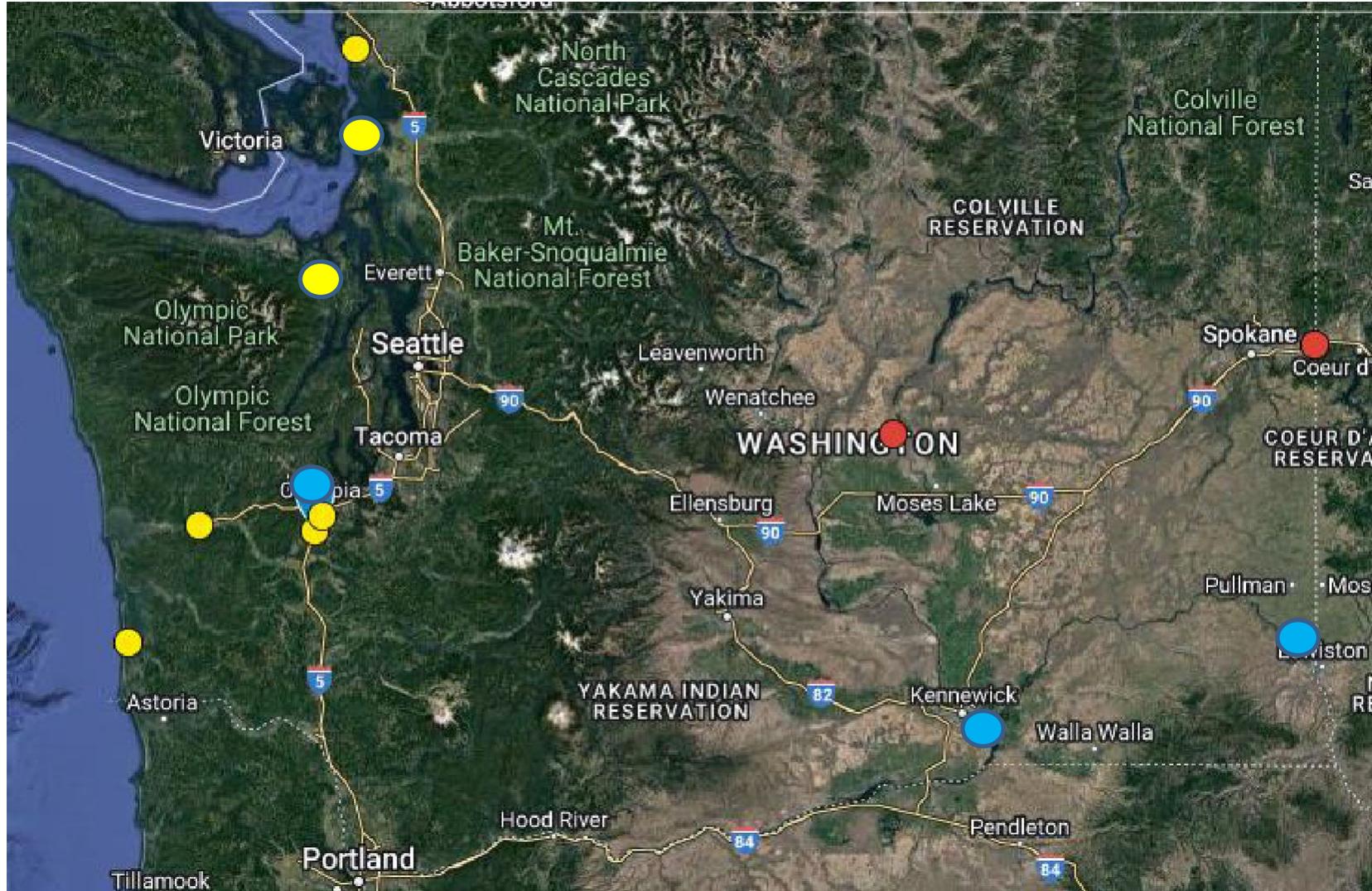


Decontamination

January 1, 2024, to July 16, 2024: 678 decontaminations



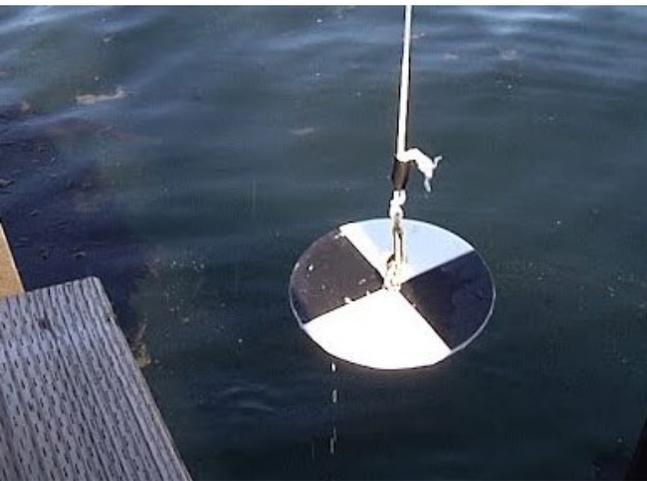
Decontamination



- Hand Pushed
- Station
- Trailered

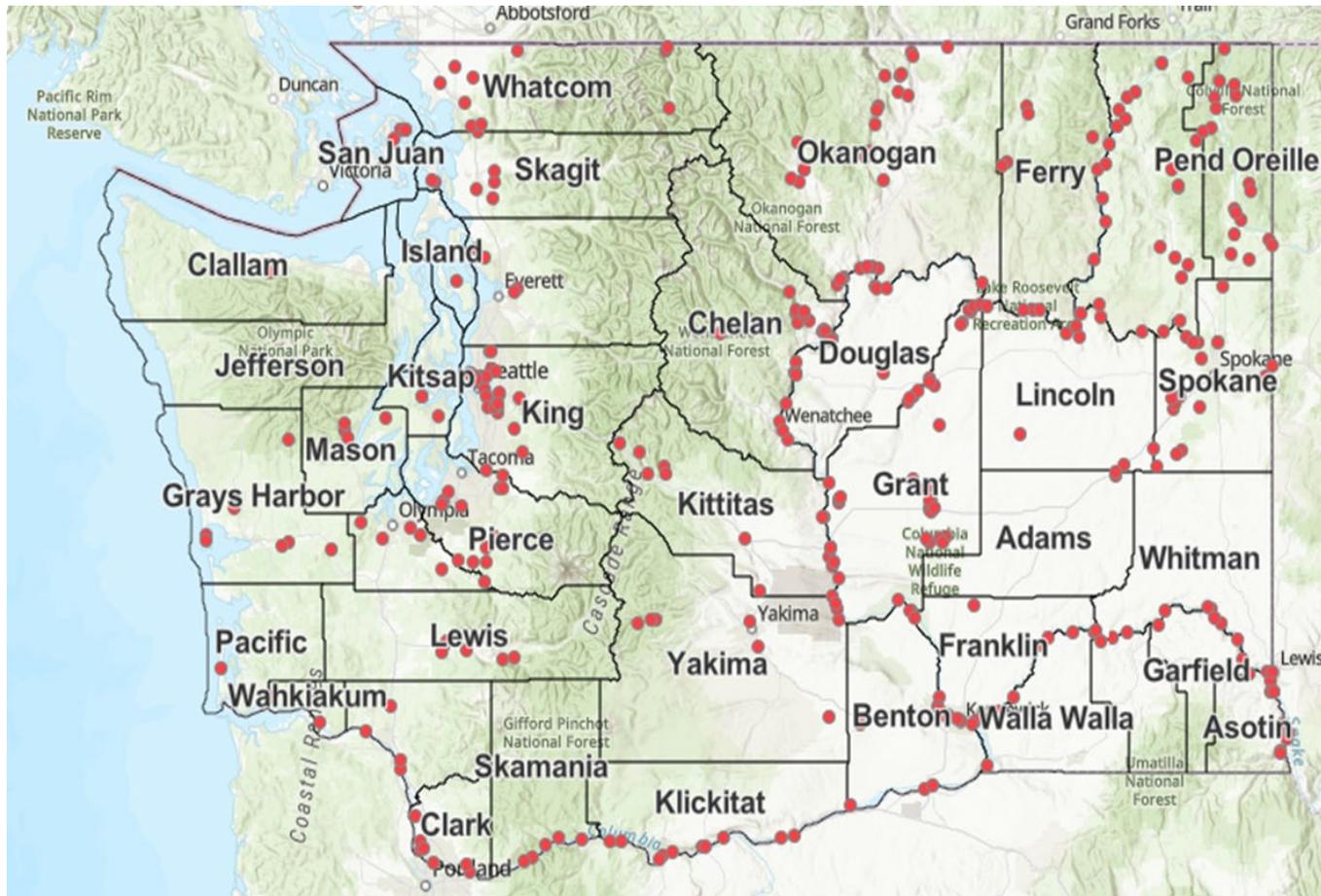


Early Detection Monitoring Methods



Early Detection Monitoring

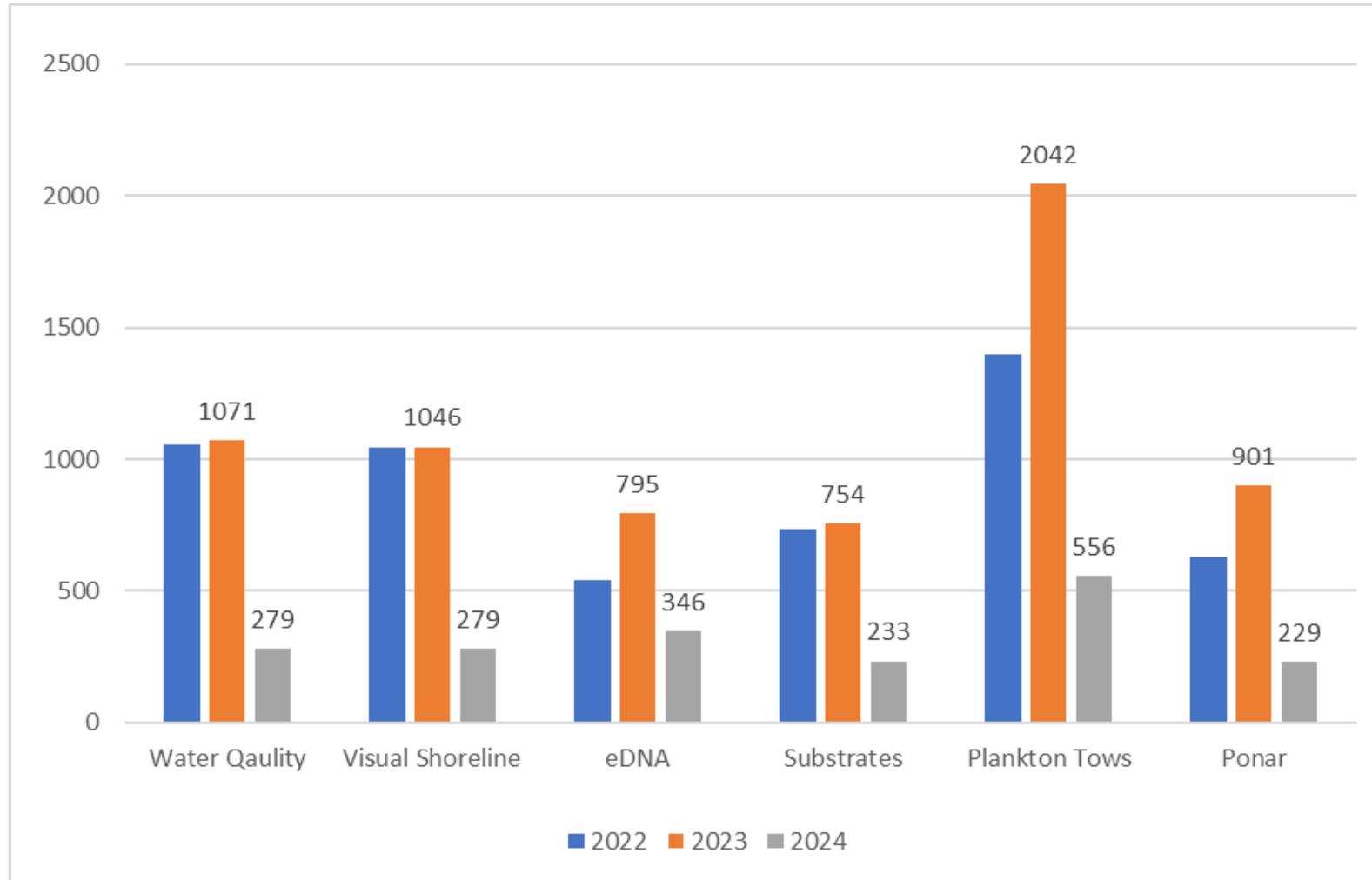
(124 water bodies and 304 sites)



Scoring	0 Point	1 Point	2 Point	3 Point	4 Point	
Establishment						
Dissolved Calcium (mg/L)	0-5 (no monitoring)	6-11	12-15	16-24	25 or more	
Salinity (ppt)	10 or more (no monitoring)					
Introduction						
Public	No (no monitoring)				Yes	
# Boat Ramps	0 (no monitoring)	1	2	3	4 or more	
Boat Ramp Paved	No				Yes	
Boat Ramp w/Dock	No	Yes				
Motorized Watercraft Allowed	No				Yes	
Speed Limit > 10mph	No				Yes	
Moorage	No				Yes	
Private Docks	No				Yes	
Access Year Around	No	Yes				
Ease of Access		Foot	Ferry	Gravel road	Paved road	
In Columbia River Basin	No	Yes				
Water Body Size		0-10	11-49	50-99	100 or more	
Fish Stocked	No	Yes				
Hatchery/Net Pens	No				Yes	
Fishing Tournaments	No	1-2	3-4	5-6	7 or more	
Motorized Watersports Tournaments	No				1 or more	
Boatyard	No				Yes	
Hydropower/Flood Control	No				Yes	
Irrigation	No				Yes	
Municipal Water	No				Yes	
Proximity to Source Population		No drainages west of continental divide	West of continental divide	Nearby, but may not be as easily assessable	Downstream, connected, or within easy drive	
Monitoring Frequency						
	0	1-20	21-34	35-39	40-49	50 or more
No monitoring		Once every 3 years	Once every 2 years	Once a year	Twice a year	Three a year



2022, 2023, and ongoing 2025 Early Detection Monitoring Results



NO zebra/quagga
mussels detected!



Early Detection Monitoring Partners

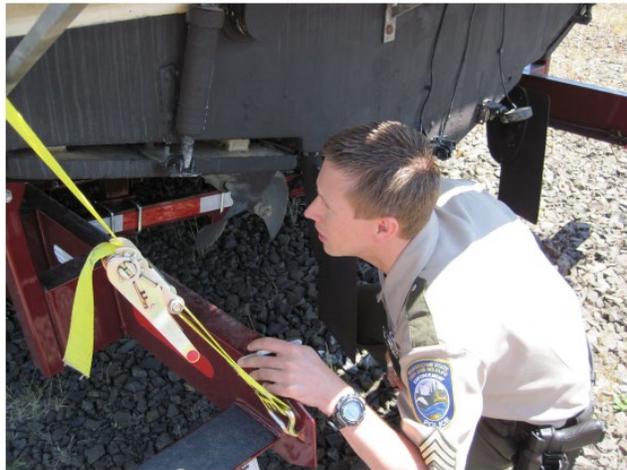
Partners	Water Body Common Name
Chelan County Public Utility District (PUD)	Lake Entiat
Confederated Tribes of the Colville Reservation	Lake Roosevelt, Rufus Woods Lake, and Kettle River
Douglas County PUD	Lake Pateros
Grant County PUD	Priest Rapids Lake and Wanapum Lake
Seattle City Light	Boundary Reservoir
Snohomish County PUD	Spada Lake
Spokane Tribe of Indians	Lake Roosevelt
U.S. Bureau of Reclamation	Lake Roosevelt

Developing new agreements with Kalispel Tribe of Indians and Nez Perce Tribe.



Response Readiness

WASHINGTON DREISSENID MUSSEL RAPID RESPONSE PLAN



Increased Prevention and Readiness



\$1,810,000 of the General Fund—State appropriation for fiscal year 2025 and \$1,810,000 of the general fund—federal appropriation are provided solely for monitoring and response efforts for invasive quagga mussels, which were discovered on the Snake river in Idaho in July 2023.



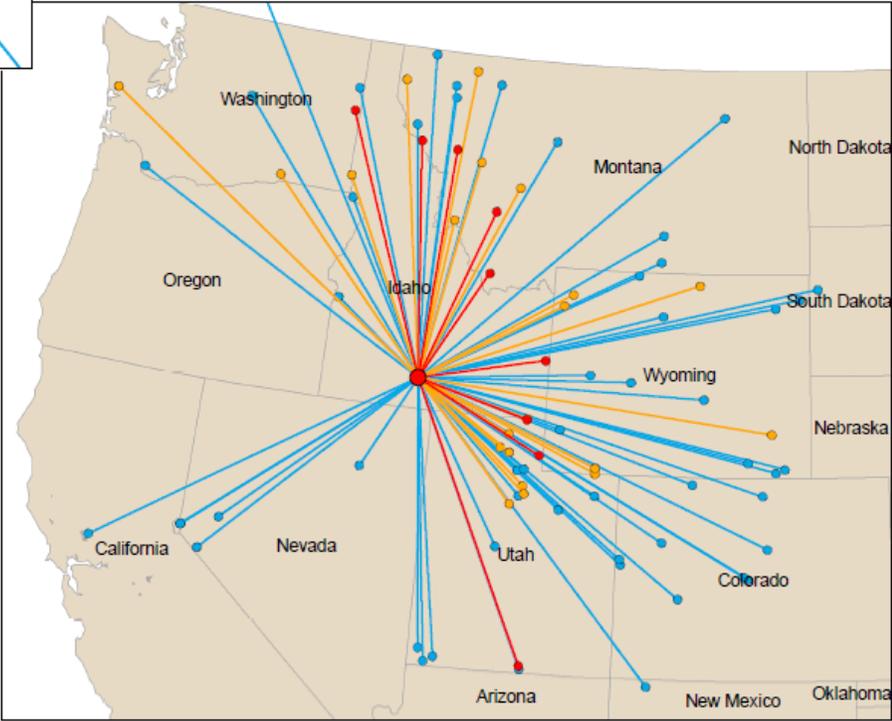
Multiple Threats and Pathways



Boat Inspections Where Snake River Was Last Water Visited: 2022 - 2023

- Snake River
- Number of Boats:**
- 1 - 9
- 10 - 49
- 50 - 279

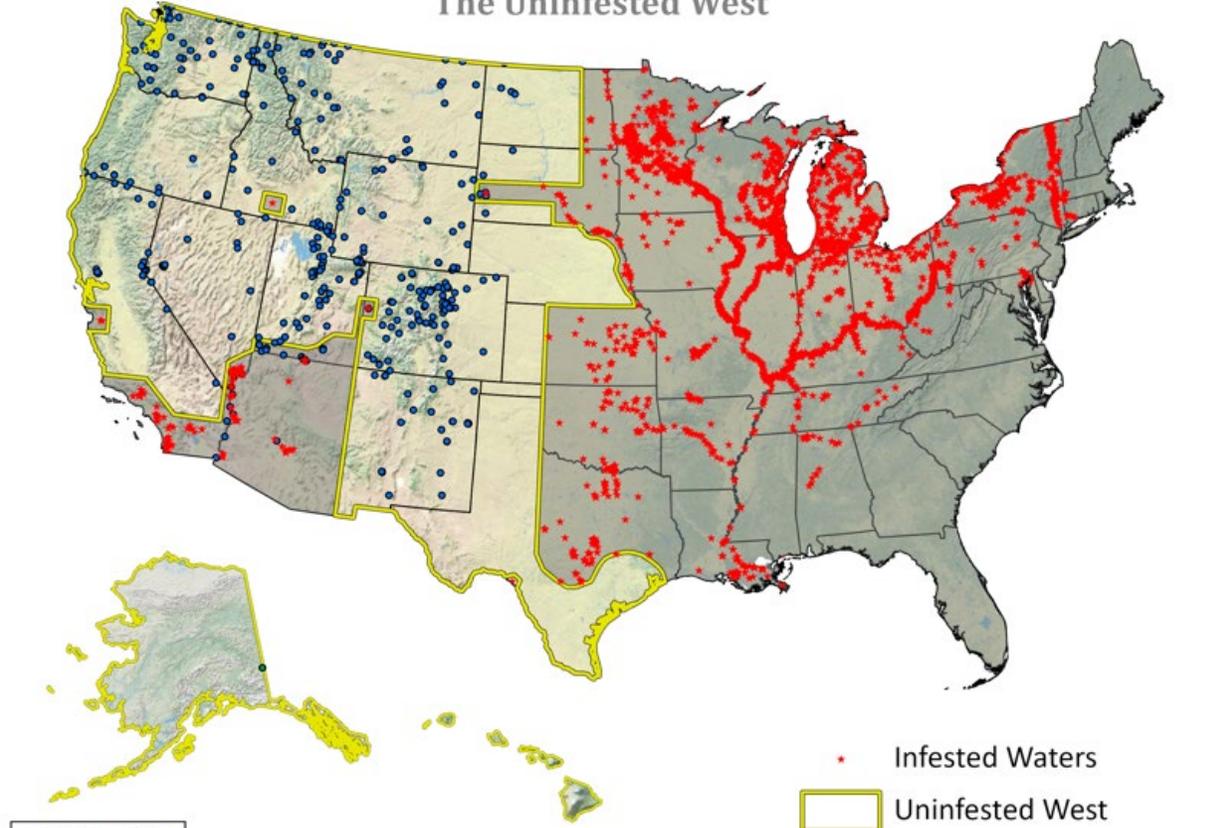
Location	State	Count
Dillon	MT	279
Evanston POE	WY	279
Hwy 89 Garden City	UT	161
Spokane	WA	104
Ravalli	MT	86
Anaconda	MT	83
Alpine POE	WY	66
Lake Powell	UT	60
St. Regis	MT	57
Sula	MT	46
Clearwater Junction	MT	43
Bear Lake	UT	40
Flaming Gorge	UT	36
Pasco	WA	35
Pineview Reservoir	UT	33
Grant	WY	28
Glacier National Park	MT	26
Troy Rest Area	MT	23
Bridge Bay	WY	21
Hwy 40 Daniels POE	UT	20
Clarkston	WA	17
Cle Elum Eastbound	WA	17
Helena Highway 12	MT	14
Hyrum Reservoir	UT	14
Utah Lake	UT	13
Jordanelle Reservoir	UT	12
Willard Bay	UT	12
Lewis Lake	WY	11
Sheridan Rest Area	WY	10
Anvil Draw	WY	10



Map Produced by CPW ANS Program 9/29/2023



The Uninfested West



- Infested Waters
 - Uninfested West
 - Established WID Stations
- *KS, ND, NE, and SD have roving patrols

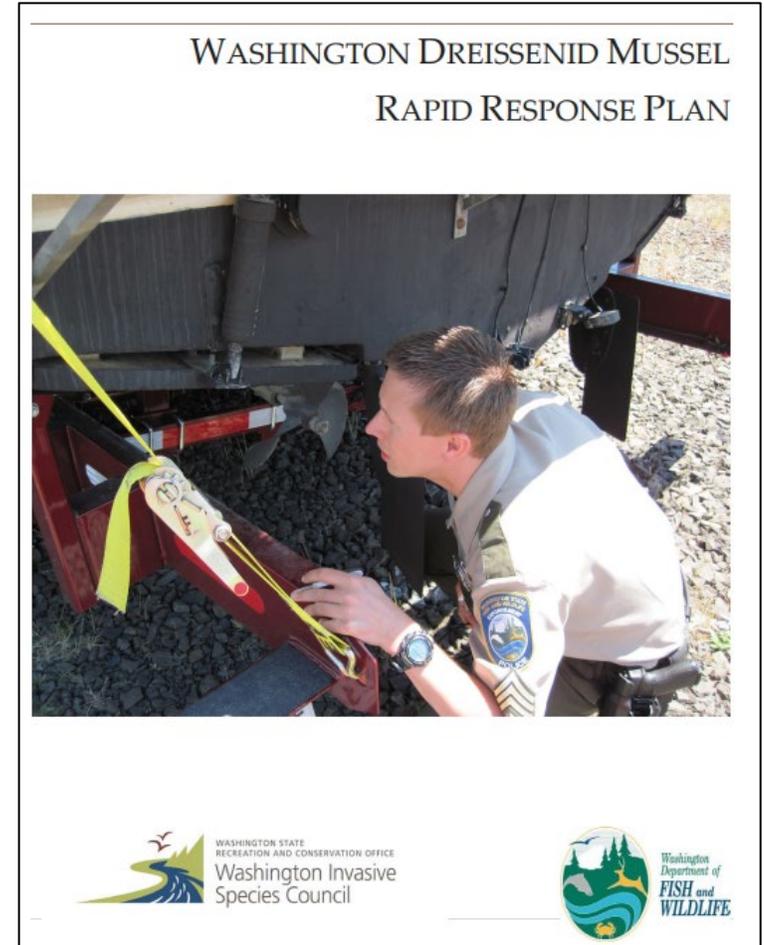


Map Produced by: Colorado Parks and Wildlife Invasive Species Program, 2/13/2024



Short Term Actions

1. Develop and deploy a long-term leadership, planning, and command structure that includes internal and external partners including tribal, federal, regional, state, and local governments.
2. Fully staff Southeast Region mandatory watercraft inspection and decontamination stations in Clarkston and Pasco.
3. Procure and deploy one additional invasive mussel detection canine to support Southeast Region check stations and early detection monitoring.
4. Perform intensive Snake River and Middle Columbia River early detection and monitoring to detect downstream quagga mussel establishment.



Short Term Actions

PERMIT #: _____


WASHINGTON DEPARTMENT OF FISH AND WILDLIFE
PO BOX 43150
OLYMPIA, WASHINGTON 98504-3150

FISH TRANSPORT APPLICATION/PERMIT
To Import, Export or Transfer, Live Fin Fish, Viable Eggs or Gametes
(Please print or type items 1-5 and return to address above)

1. Type of application: Import Export Transfer

2. Name of Applicant _____ Phone number(_____) _____
Mailing address _____ City _____ State _____ Zip _____
WDFW Aquatic Farm Registration # (for commercial aquaculture facilities only) _____

3. Species _____ Number (fish or eggs) _____

4. Destination (name of facility/receiving waters) _____
County _____ Sec. _____ Township _____ Rng _____

5. Source of fish/eggs: Facility name _____ Phone number (_____) _____
Physical Location _____ City _____ State _____ Zip _____
Mailing Address _____ City _____ State _____ Zip _____
WDFW Aquatic Farm Registration # (for commercial sources in Washington) _____

6. Applicant's Signature _____ Date _____

INSTRUCTIONS: Return this application to the address at the top of the form.
NOTE: It is unlawful to transport or stock fish without a permit issued by the Director or his/her designee. Failure to comply with any provisions of this permit or to perform any act not included in this permit shall be grounds for revocation of this permit and may constitute a gross misdemeanor.

INFORMATION BELOW TO BE COMPLETED BY WDFW PERSONNEL

Provisions _____

Expiration date _____

Additional provisions attached

Approved Not Approved Fish Health Manager _____ Date _____

Approved Not Approved Aquaculture Coordinator _____ Date _____

5. Strengthen prevention of quagga mussel importation from both recreational and commercial pathways by addressing pet trade, food fish aquaculture, and recreational transportation of live fish.
6. Expand state preparedness for containment and rapid response treatment for quagga mussels through procurement of equipment and training.
7. Understand risk to infrastructure such as irrigation systems or fish hatcheries and develop strategies to prevent and mitigate quagga mussel establishment and infrastructure impacts.
8. Increase communications and outreach capacity focused on invasive mussel prevention, response, and enforcement to grow awareness and support among decisionmakers, media, communities, and the public in the Snake and Columbia River basins.



Washington's Take-Aways



- September 18, 2023, First Detection in Columbia River Basin.
- 375 miles from Washington's waters
- > \$100 million economic risk, uncalculated environmental risk.
- Updating state response plan.
- Received \$1.81 M for short-term Actions between July 1, 2024 and June 30, 2024, to leverage \$1.8 M federal funds.
- Considering 2025-2027 biennium and ongoing needs and actions.



Questions

Justin Bush

Aquatic Invasive Species (AIS)

Policy Coordinator

Justin.Bush@dfw.wa.gov

564-669-9481

State of Washington

Department of Fish and Wildlife

wdfw.wa.gov/ais

1-888-WDFW-AIS

**Protect Your Waters
From Aquatic Invasive Species**

BEFORE and AFTER launching boat

CLEAN	DRAIN	DRY
Clean interior/exterior of boat, trailer, & vehicle of any organic matter such as aquatic plants & mud. Dispose organic matter & unused bait in trash.	Drain bilge, ballast, wells & buckets before you leave area. Keep bilge plug out during transport.	Dry equipment before launching watercraft into another body of water.

For information on FREE boat inspections, call 1-888-WDFW-AIS (933-9247) or visit wdfw.wa.gov/ais.

Before you launch a boat that is not registered in Washington, you MUST purchase an Aquatic Invasive Species Prevention Permit.

How to buy:

- Online at fishhunt.dfw.wa.gov
- Find a license dealer near you at wdfw.wa.gov/licenses/dealers

Funds from permit sales supports efforts to keep Washington's waters free of aquatic invasive species and manage infestations when prevention fails.

Avoid Citations or Fines

Failure to possess an Aquatic Invasive Species Prevention Permit - Infraction - RCW 77A.05.060
Possession of aquatic vegetation not meeting dump date requirements - Infraction - RCW 77A.05.190
Manufacture or possession of prohibited species - up to class C felony - RCW 77A.05.010



Update on Quagga Mussels: State of Washington Prevention and Readiness



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Aquatic Invasive Species
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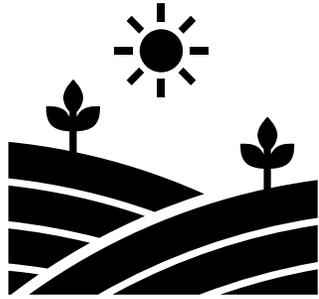
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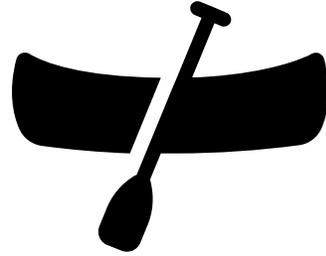


Economic Risk



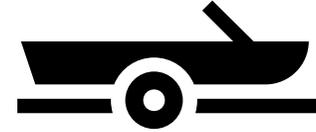
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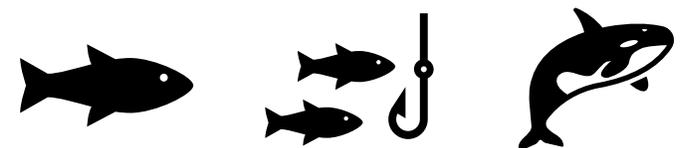
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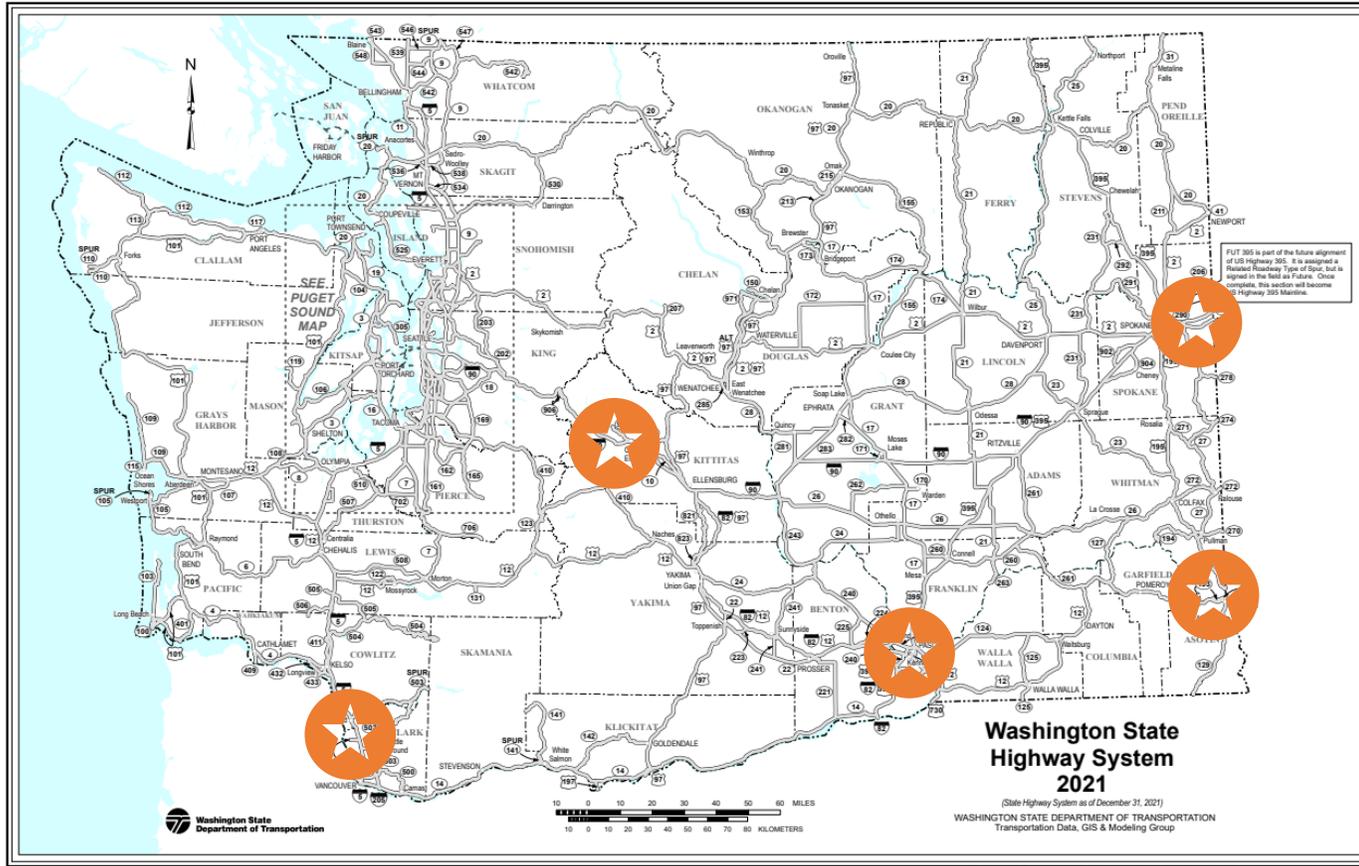
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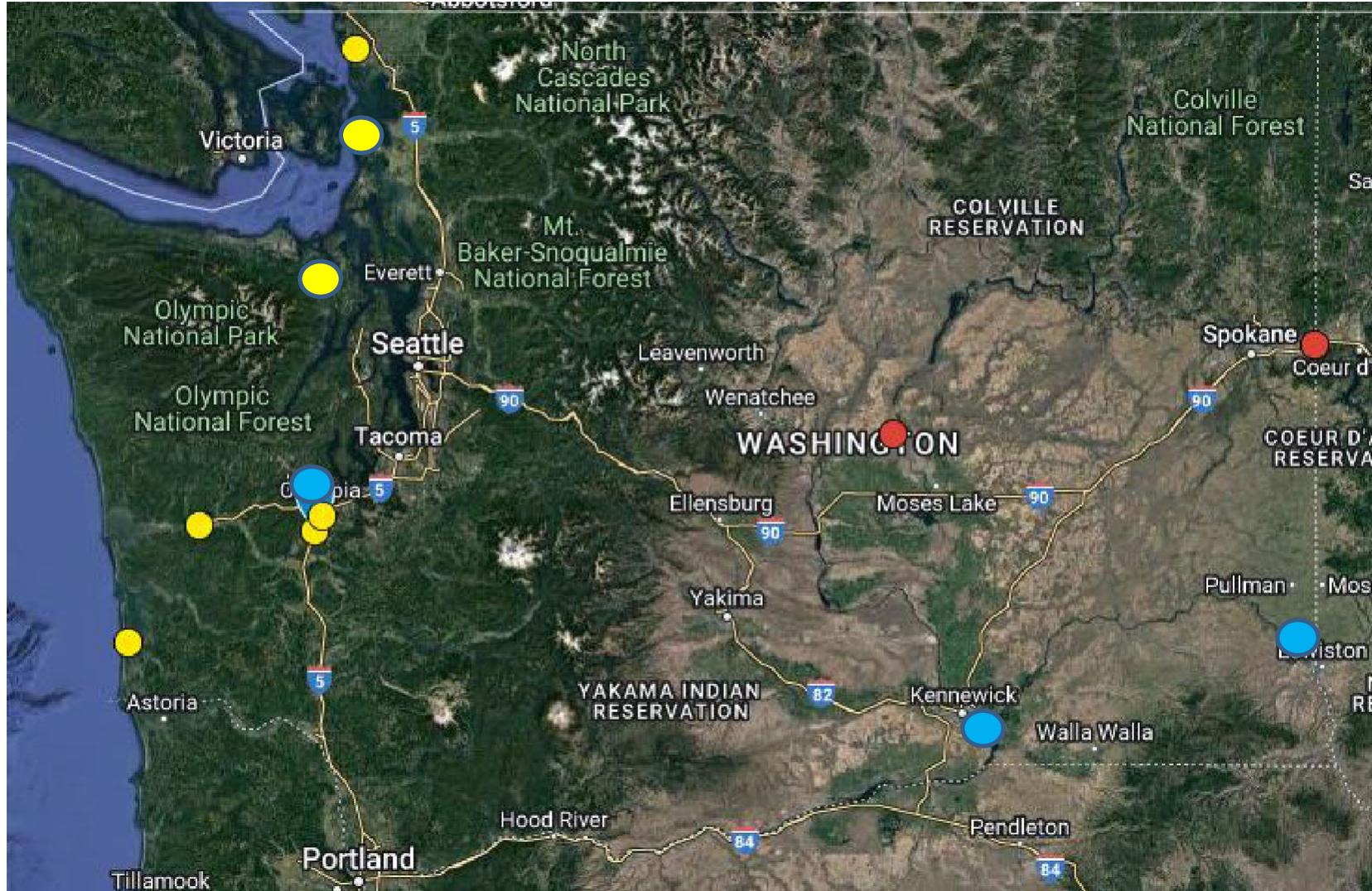


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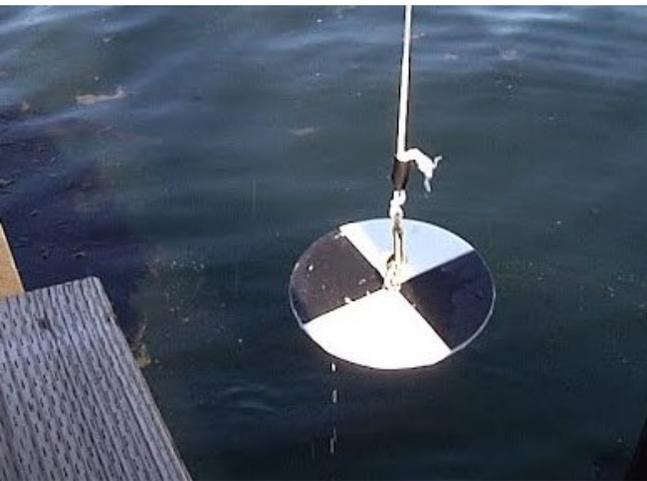
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- Station
- Trailered

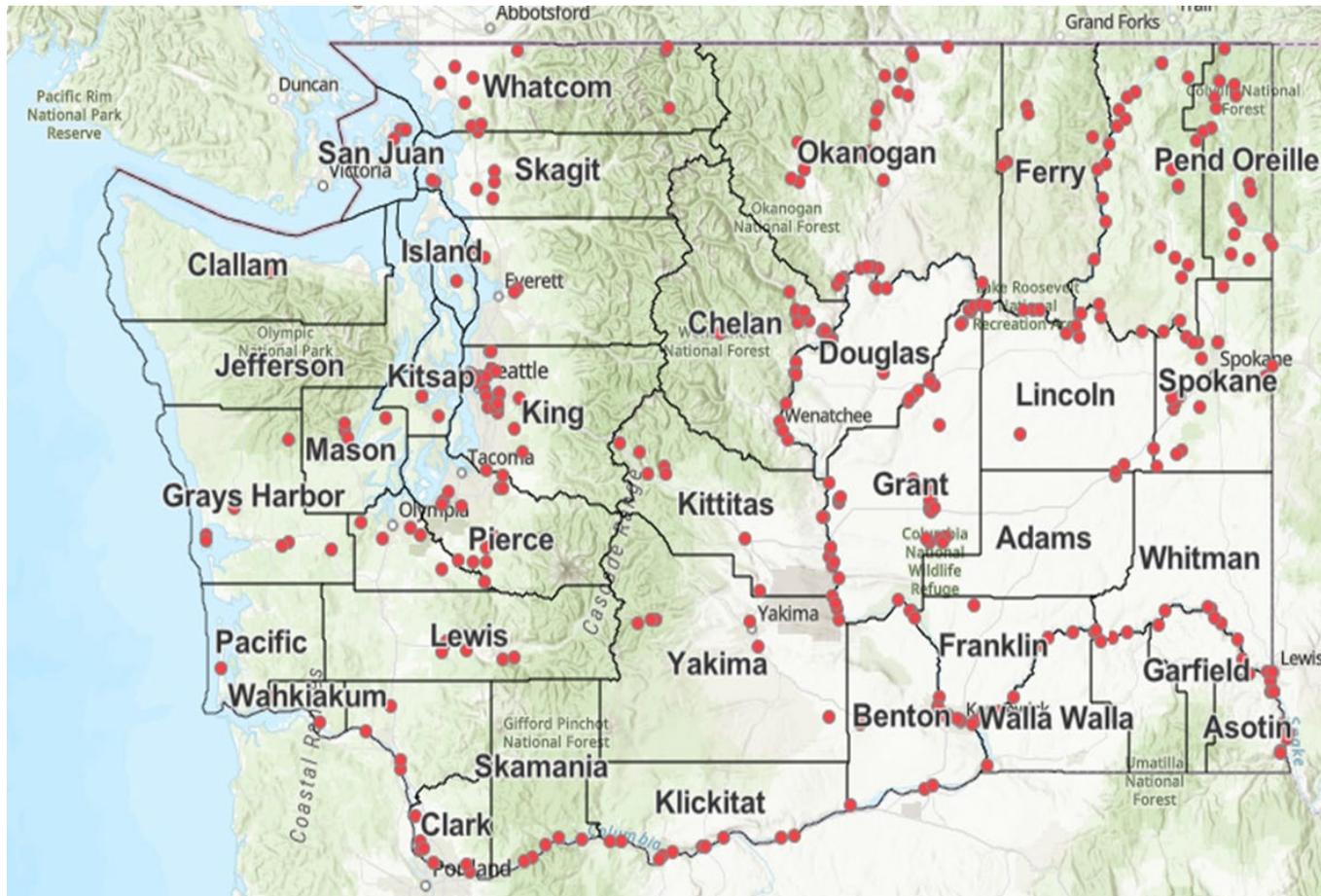


Early Detection Monitoring Methods



Early Detection Monitoring

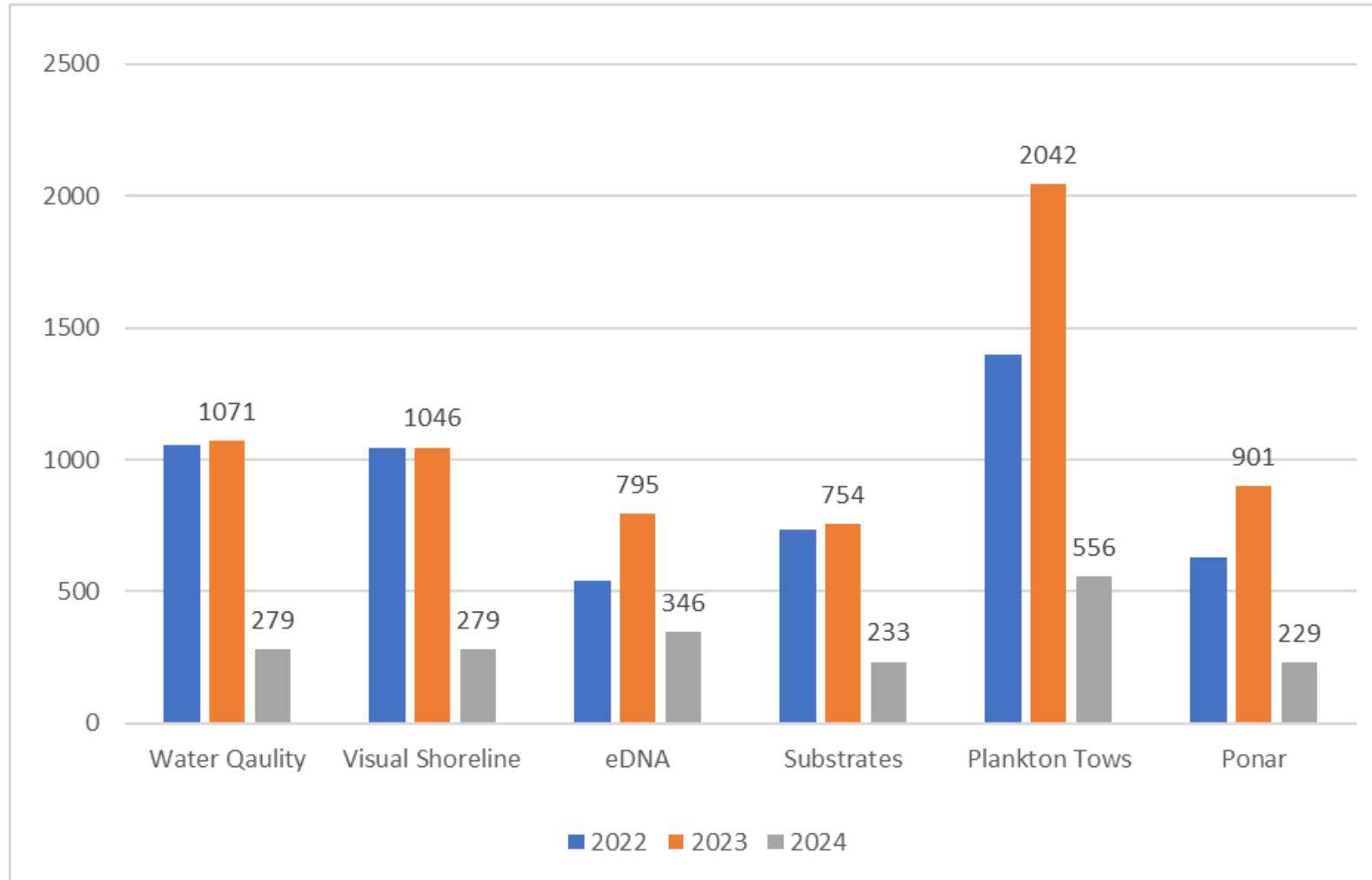
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Monitoring Frequency						
	0	1-20	21-34	35-39	40-49	50 or more
No monitoring		Once every 3 years	Once every 2 years	Once a year	Twice a year	Three a year



2022, 2023, and ongoing 2025 Early Detection Monitoring Results



NO zebra/quagga
mussels detected!



Early Detection Monitoring Partners

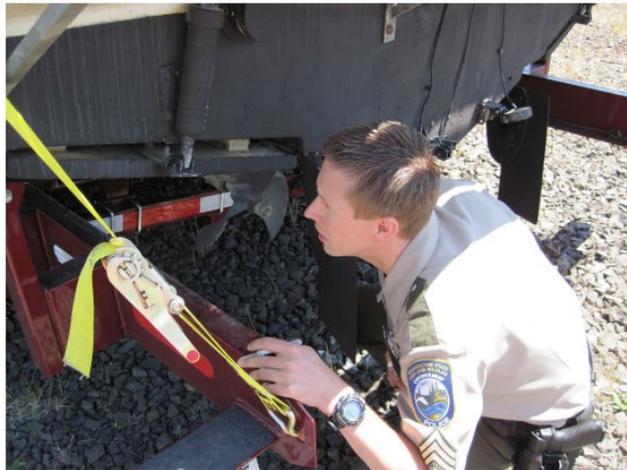
Partners	Water Body Common Name
Chelan County Public Utility District (PUD)	Lake Entiat
Confederated Tribes of the Colville Reservation	Lake Roosevelt, Rufus Woods Lake, and Kettle River
Douglas County PUD	Lake Pateros
Grant County PUD	Priest Rapids Lake and Wanapum Lake
Seattle City Light	Boundary Reservoir
Snohomish County PUD	Spada Lake
Spokane Tribe of Indians	Lake Roosevelt
U.S. Bureau of Reclamation	Lake Roosevelt

Developing new agreements with Kalispel Tribe of Indians and Nez Perce Tribe.



Response Readiness

WASHINGTON DREISSENID MUSSEL RAPID RESPONSE PLAN



Increased Prevention and Readiness



\$1,810,000 of the General Fund—State appropriation for fiscal year 2025 and \$1,810,000 of the general fund—federal appropriation are provided solely for monitoring and response efforts for invasive quagga mussels, which were discovered on the Snake river in Idaho in July 2023.



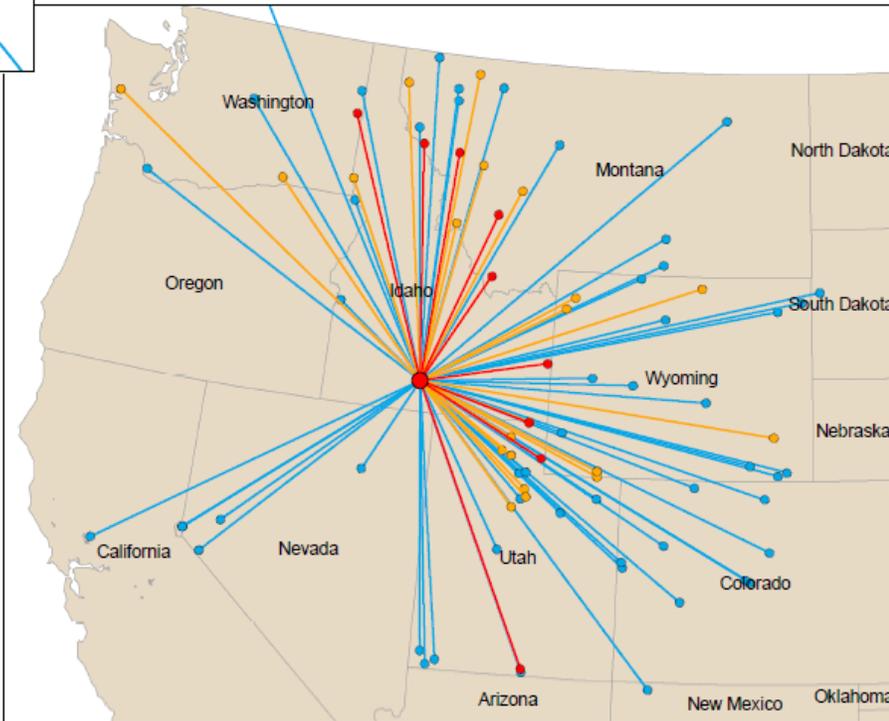
Multiple Threats and Pathways



Boat Inspections Where Snake River Was Last Water Visited: 2022 - 2023

- Snake River
- Number of Boats:**
- 1 - 9
- 10 - 49
- 50 - 279

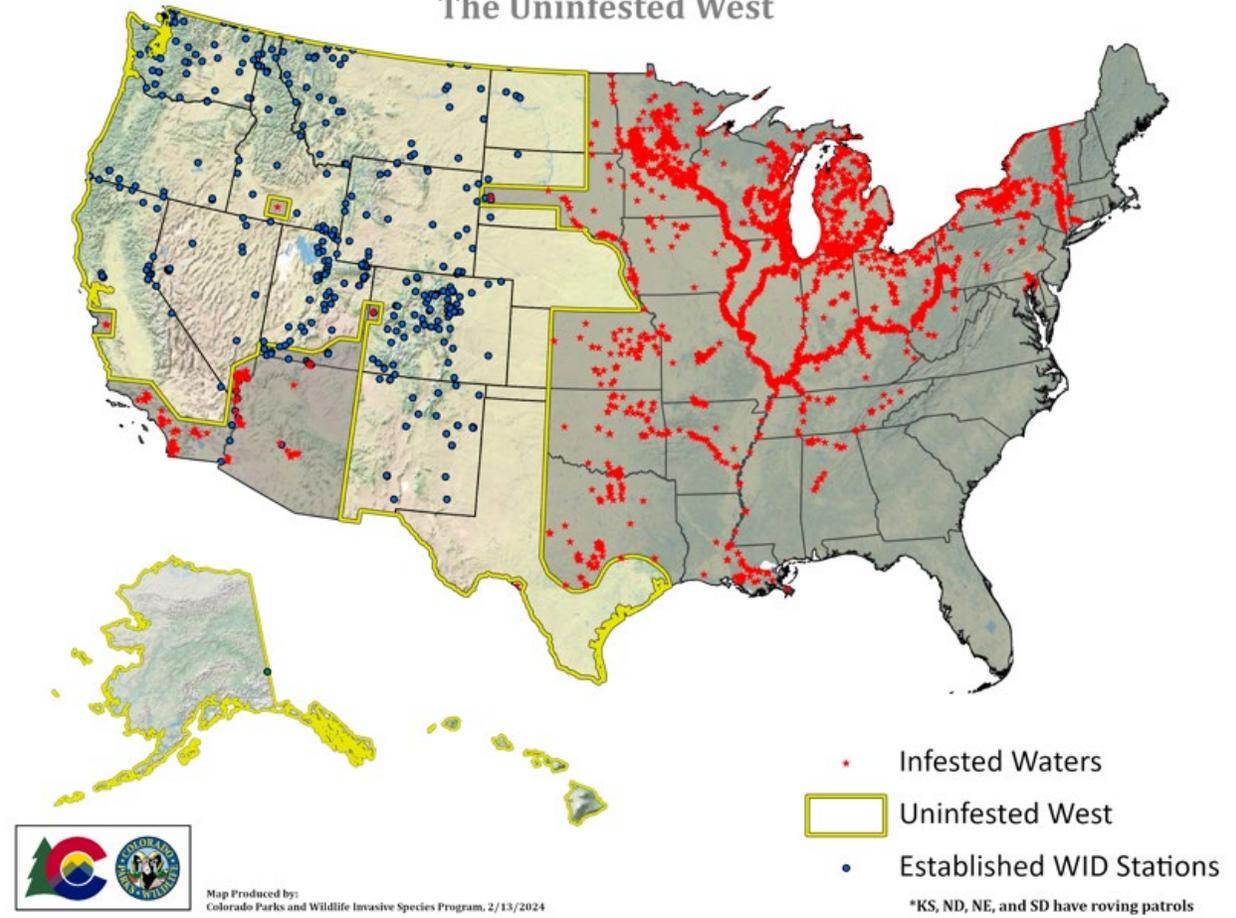
Location	State	Count
Dillon	MT	279
Evanston POE	WY	279
Hwy 89 Garden City	UT	161
Spokane	WA	104
Ravalli	MT	86
Anaconda	MT	83
Alpine POE	WY	66
Lake Powell	UT	60
St. Regis	MT	57
Sula	MT	46
Clearwater Junction	MT	43
Bear Lake	UT	40
Flaming Gorge	UT	36
Pasco	WA	35
Pineview Reservoir	UT	33
Grant	WY	28
Glacier National Park	MT	26
Troy Rest Area	MT	23
Bridge Bay	WY	21
Hwy 40 Daniels POE	UT	20
Clarkston	WA	17
Cle Elum Eastbound	WA	17
Helena Highway 12	MT	14
Hyrum Reservoir	UT	14
Utah Lake	UT	13
Jordanelle Reservoir	UT	12
Willard Bay	UT	12
Lewis Lake	WY	11
Sheridan Rest Area	WY	10
Anvil Draw	WY	10



Map Produced by CPW ANS Program
9/29/2023



The Uninfested West



- Infested Waters
 - Uninfested West
 - Established WID Stations
- *KS, ND, NE, and SD have roving patrols



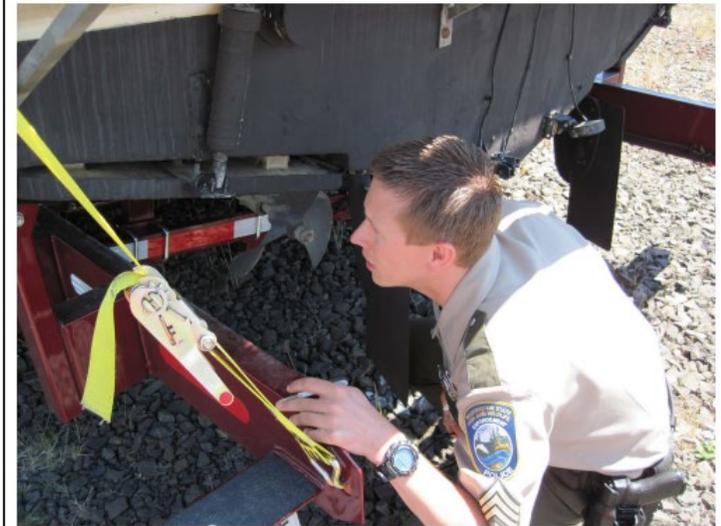
Map Produced by:
Colorado Parks and Wildlife Invasive Species Program, 2/13/2024



Short Term Actions

1. Develop and deploy a long-term leadership, planning, and command structure that includes internal and external partners including tribal, federal, regional, state, and local governments.
2. Fully staff Southeast Region mandatory watercraft inspection and decontamination stations in Clarkston and Pasco.
3. Procure and deploy one additional invasive mussel detection canine to support Southeast Region check stations and early detection monitoring.
4. Perform intensive Snake River and Middle Columbia River early detection and monitoring to detect downstream quagga mussel establishment.

WASHINGTON DREISSENID MUSSEL RAPID RESPONSE PLAN



Short Term Actions

PERMIT #: _____



WASHINGTON DEPARTMENT OF FISH AND WILDLIFE
PO BOX 43150
OLYMPIA, WASHINGTON 98504-3150

FISH TRANSPORT APPLICATION/PERMIT
To Import, Export or Transfer, Live Fin Fish, Viable Eggs or Gametes
(Please print or type items 1-5 and return to address above)

1. Type of application: Import Export Transfer

2. Name of Applicant _____ Phone number(_____) _____
Mailing address _____ City _____ State _____ Zip _____
WDFW Aquatic Farm Registration # (for commercial aquaculture facilities only) _____

3. Species _____ Number (fish or eggs) _____

4. Destination (name of facility/receiving waters) _____
County _____ Sec. _____ Township _____ Rng _____

5. Source of fish/eggs: Facility name _____ Phone number (_____) _____
Physical Location _____ City _____ State _____ Zip _____
Mailing Address _____ City _____ State _____ Zip _____
WDFW Aquatic Farm Registration # (for commercial sources in Washington) _____

6. Applicant's Signature _____ Date _____

INSTRUCTIONS: Return this application to the address at the top of the form.

NOTE: It is unlawful to transport or stock fish without a permit issued by the Director or his/her designee. Failure to comply with any provisions of this permit or to perform any act not included in this permit shall be grounds for revocation of this permit and may constitute a gross misdemeanor.

INFORMATION BELOW TO BE COMPLETED BY WDFW PERSONNEL

Provisions _____

Expiration date _____

Additional provisions attached

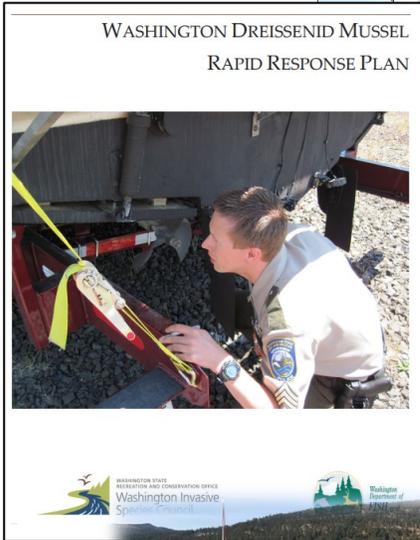
Approved Not Approved Fish Health Manager _____ Date _____

Approved Not Approved Aquaculture Coordinator _____ Date _____

5. Strengthen prevention of quagga mussel importation from both recreational and commercial pathways by addressing pet trade, food fish aquaculture, and recreational transportation of live fish.
6. Expand state preparedness for containment and rapid response treatment for quagga mussels through procurement of equipment and training.
7. Understand risk to infrastructure such as irrigation systems or fish hatcheries and develop strategies to prevent and mitigate quagga mussel establishment and infrastructure impacts.
8. Increase communications and outreach capacity focused on invasive mussel prevention, response, and enforcement to grow awareness and support among decisionmakers, media, communities, and the public in the Snake and Columbia River basins.



Washington's Take-Aways



- September 18, 2023, First Detection in Columbia River Basin.
- 375 miles from Washington's waters
- > \$100 million economic risk, uncalculated environmental risk.
- Updating state response plan.
- Received \$1.81 M for short-term Actions between July 1, 2024 and June 30, 2024, to leverage \$1.8 M federal funds.
- Considering 2025-2027 biennium and ongoing needs and actions.



Questions

Justin Bush

Aquatic Invasive Species (AIS)

Policy Coordinator

Justin.Bush@dfw.wa.gov

564-669-9481

State of Washington

Department of Fish and Wildlife

wdfw.wa.gov/ais

1-888-WDFW-AIS

**Protect Your Waters
From Aquatic Invasive Species**

BEFORE and AFTER launching boat

CLEAN
Clean interior/exterior of boat, trailer, & vehicle of any organic matter such as aquatic plants & mud. Dispose organic matter & unused bait in trash.

DRAIN
Drain bilge, ballast, wells & buckets before you leave area. Keep bilge plug out during transport.

DRY
Dry equipment before launching watercraft into another body of water.

Labels in diagram: Ancho/hupe, Trailer, Live well, Ballast, Engine, Bilge, Min tabs.

For information on FREE boat inspections, call 1-888-WDFW-AIS (933-9247) or visit wdfw.wa.gov/ais.

Before you launch a boat that is not registered in Washington, you MUST purchase an Aquatic Invasive Species Prevention Permit.

How to buy:

- Online at fishhunt.dfw.wa.gov
- Find a license dealer near you at wdfw.wa.gov/licenses/dealers

Funds from permit sales supports efforts to keep Washington's waters free of aquatic invasive species and manage infestations when prevention fails.

Avoid Citations or Fines
Failure to possess an Aquatic Invasive Species Prevention Permit - Infraction - RCW 77A.05.060
Possession of aquatic vegetation not meeting depth double requirement - Infraction - RCW 77A.05.190
Introduction or possession of prohibited species - up to class C felony - RCW 77A.05.010

Logos: Department of Fish and Wildlife, WDFW, STOP AQUATIC INVASIVE SPECIES



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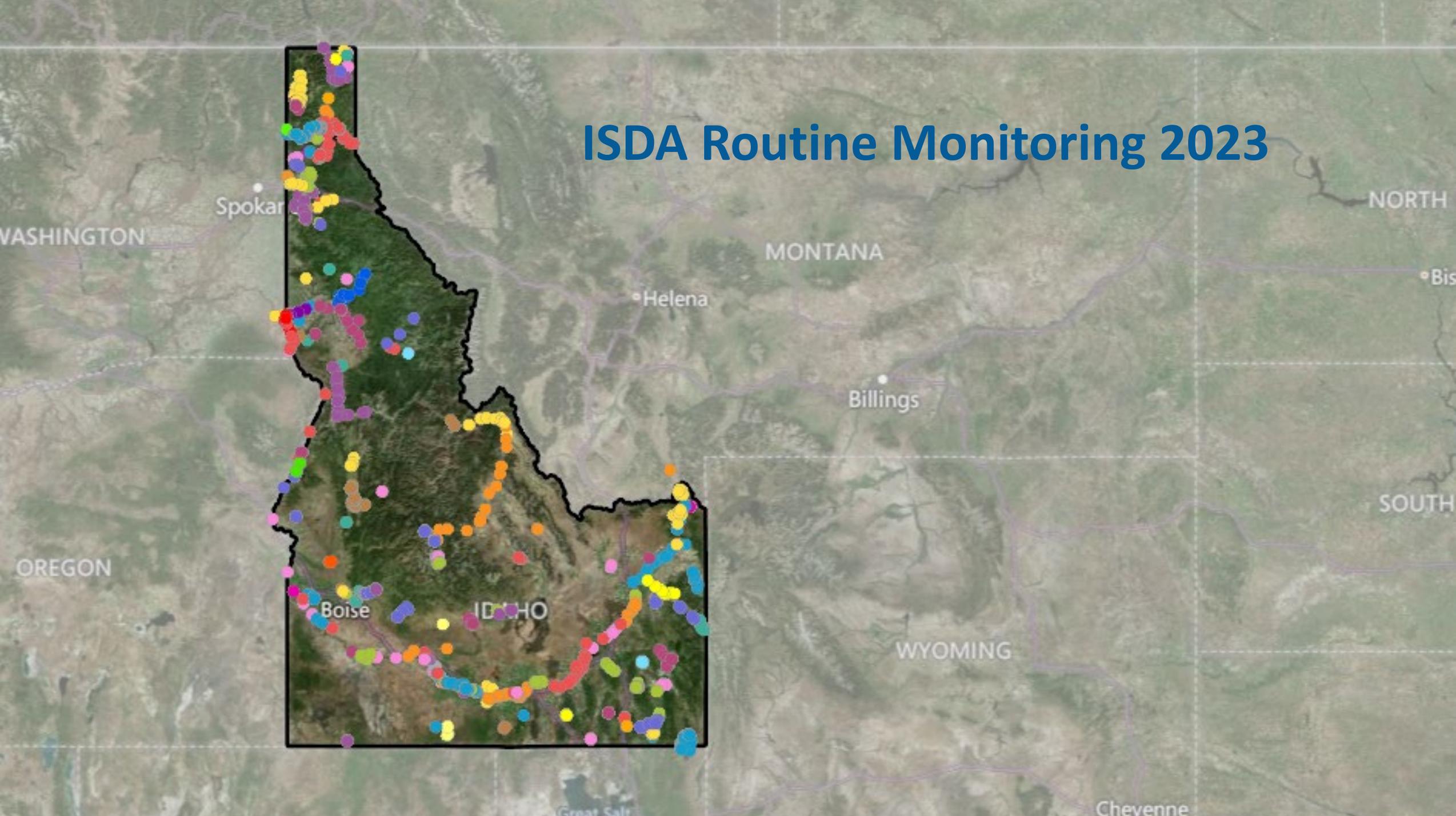


**STATE DEPARTMENT
OF AGRICULTURE**



Mid-Snake River Idaho Quagga Response

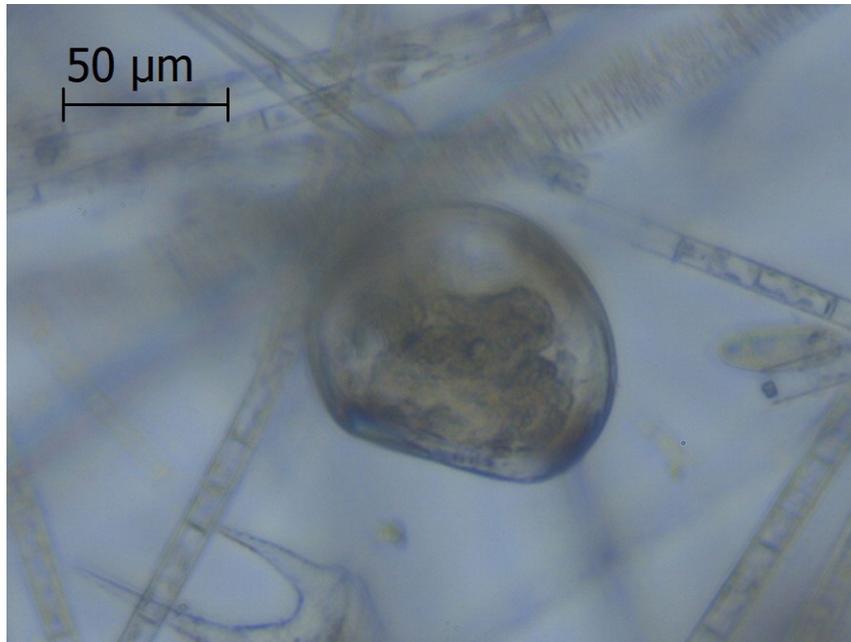
ISDA Routine Monitoring 2023



Detection Verification

Sept 18th Quagga Mussel veligers verified

- Multiple sample events
- Multiple specimens per sample
- qPCR genetic verification



ISDA's Rapid Response Plan

Detection Verification- September 18

Notify impacted entities.

Implement containment measures.

Conduct delimiting surveys.

Explore treatment options.



Notify Impacted Entities

- Establish communications team
- Media releases
- Create webpage
- IS Hotline

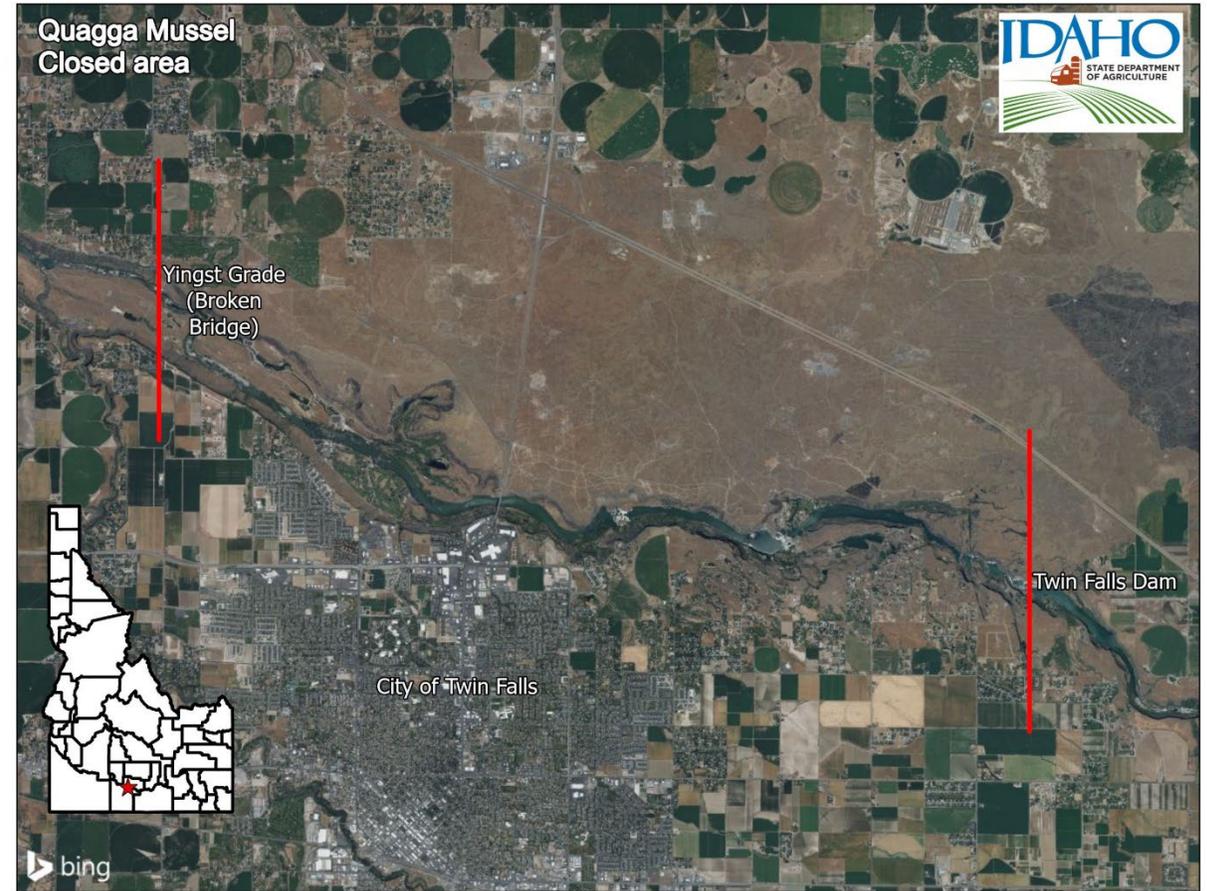


MEDIA ADVISORY – Press Conference Tuesday September 19, 2023 at 1:00 p.m.

Governor Brad Little and Idaho State Department of Agriculture Director Chanel Tewalt will be addressing the confirmed presence of quagga mussel veligers in the Centennial Waterfront Park area of the Snake River near Twin Falls. The press conference will provide more details on ISDA's rapid response plan to the aquatic invasive species.

Implement Containment Measures

- Waterbody closures
- Signage
- Mandatory decontamination for exiting watercraft
- Public outreach for watercraft recently visiting Mid-Snake area in previous 30 days

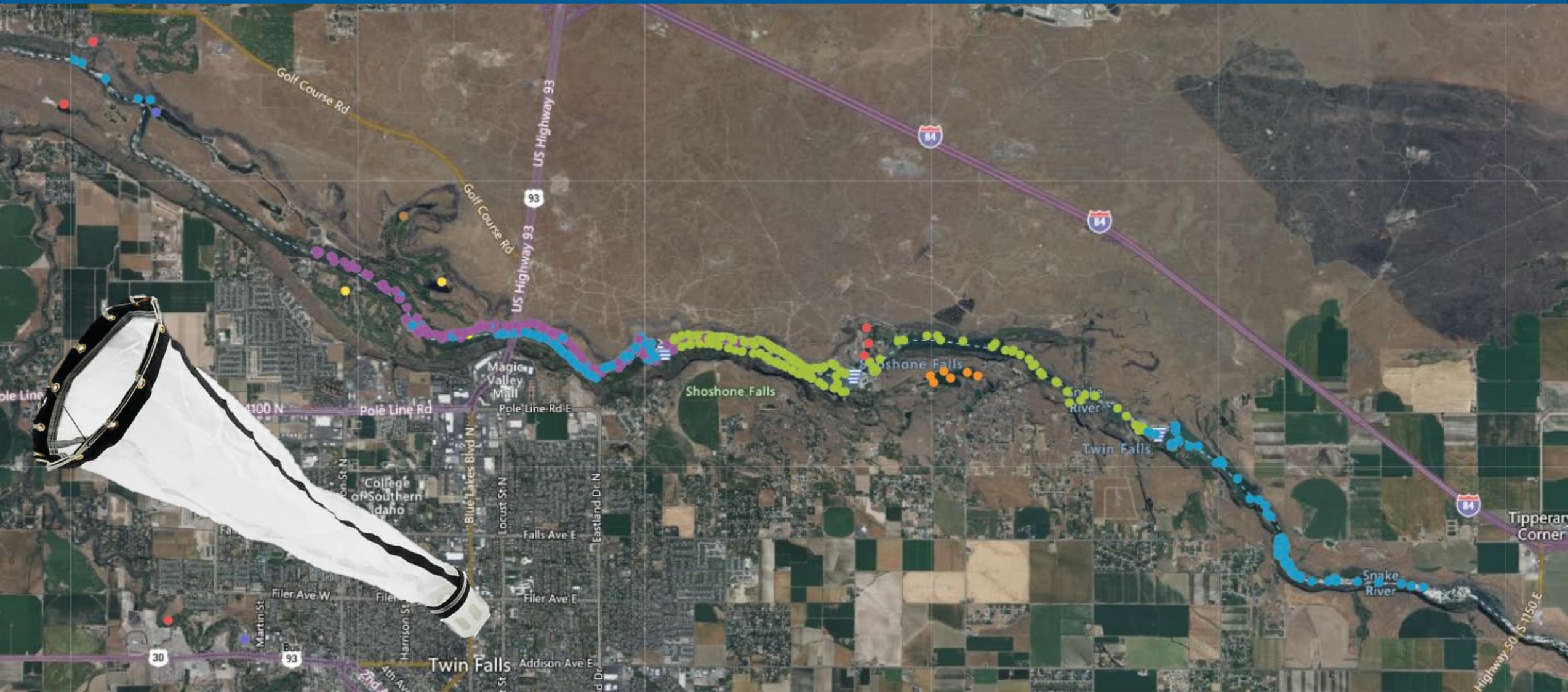


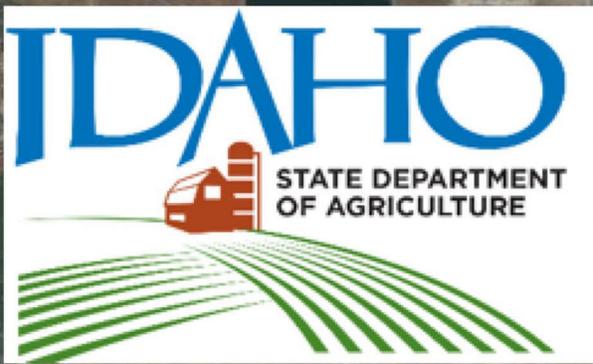


Conduct Delimiting Surveys

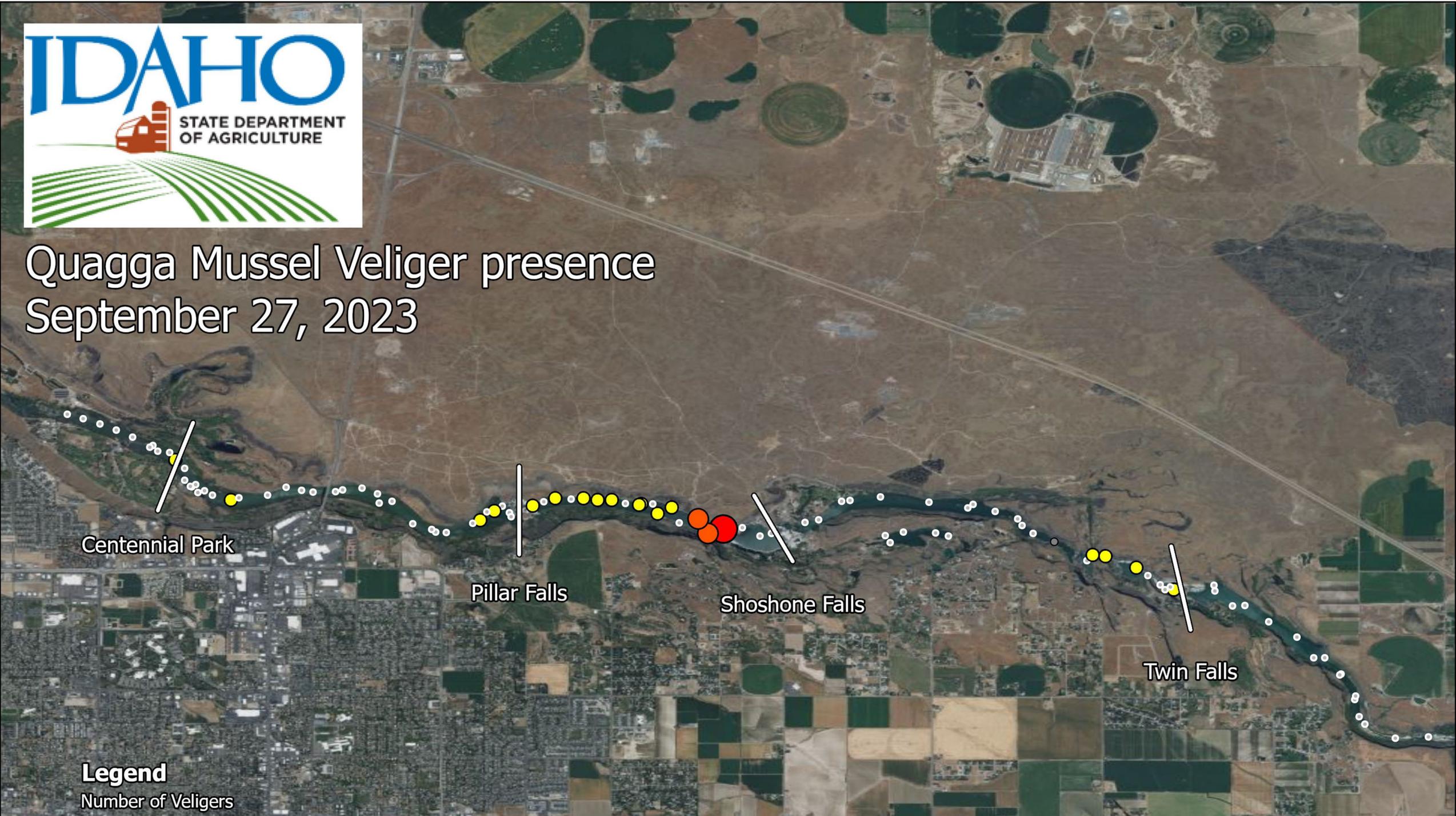
- Initial veliger plankton tow delimit from Twin Falls Reservoir to Centennial Park
 - Start upstream, new net, tow across flow
- Extended delimit upstream to American Falls
 - Is there anything upstream?
- Extended delimit downstream to CJ Strike
 - Downstream movement?







Quagga Mussel Veliger presence September 27, 2023



Legend
Number of Veligers

Product Selection

- **Natrix (Chelated Copper)**
 - Labeled for use site
 - Registered for use in Idaho
 - Product manufacturing was available for the quantity needed
 - Target rate 1ppm for 96hr treatment
- **Additional site-specific data needed**
 - Depth profile, bathymetry
 - Flow rate (CFS)
 - Water chemistry (PH, Ca)
 - River Flow characteristics and access



Natrix®

For the control of mollusks in still or flowing aquatic sites including: golf course ponds, ornamental ponds, fish ponds, irrigation and fire ponds and aquaculture including fish and shrimp; fresh water lakes, ponds, and fish hatcheries; potable water reservoirs; and cropland non-crop irrigation and drainage systems (canals, laterals and ditches) and chemical systems.

Active Ingredient

Copper Ethanolamine Complex† (Mixed CAS#'s 82027-59-6 & 14215-52-2).....28.2%

Other Ingredients.....71.8%

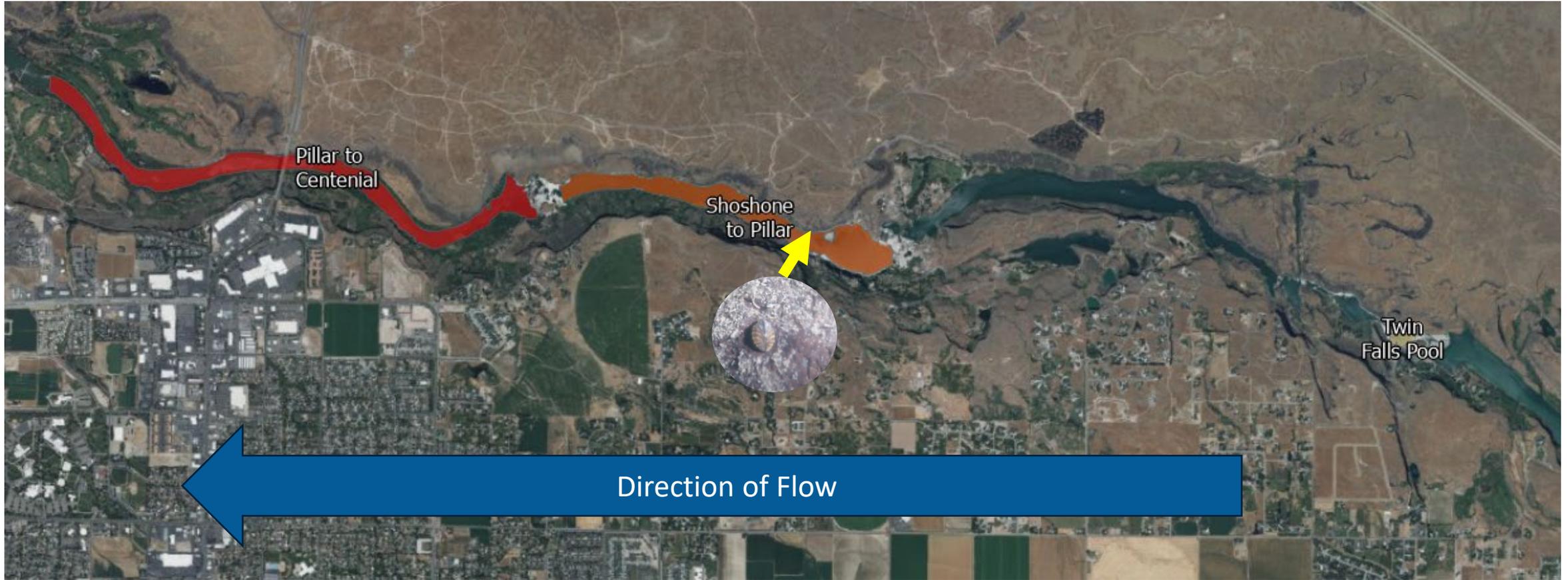
TOTAL.....100.0%

†Metallic copper equivalent = 9.1%

KEEP OUT OF REACH OF CHILDREN

WARNING / AVISO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (do not understand the label, find someone to explain it to you in detail.)



Treatment Plan

Each section evaluated for average CFS, PH, and average depth.

Downstream movement to distribute molluscicide throughout target area for the full duration of 96-hours.



Metered gravity boxes placed at key mix points to deliver molluscicide to the Snake River.

CFS X 1 ppm = quarts per hour

Treatment Notifications

- Worker Protection Standard bilingual warning signage
- Message boards
- Paid advertisements (radio, Facebook, Instagram and Nextdoor)
- Coordination with HOAs with private docks
- Door-knocking to stakeholders with water-front access
- Public Treatment Town Hall Briefing



Perform Treatment

- Treatment Started on October 3
- Treatment continuous for 192 hours
- Treatment ended on October 13
- 46,475 Gallons of Natrix® applied
- Copper actively monitored until recorded as back to base levels on October 18, 2023



Post-Treatment Monitoring

- Treatment did impact the adult mussel and sentinel species
- Preliminary sample results indicating that treatment has impacted veliger populations
- Veliger sampling until water gets below 10° C.



Future Efforts Moving Forward

- Program shift from prevention state to prevention/containment state
- Mandatory inspection and decontamination for the Mid-Snake
 - Centennial Park (Open, decontamination open when park is open)
 - Shoshone Falls (Closure in effect)
- Mandatory Inspection for Out of State Watercraft
- “Pull the Plug” law
- Budget enhancement
- 2 additional FTE staff for Invasive Species

2024 Early Detection Monitoring

Double Monitoring Efforts Statewide

Veliger Monitoring (microscopy)

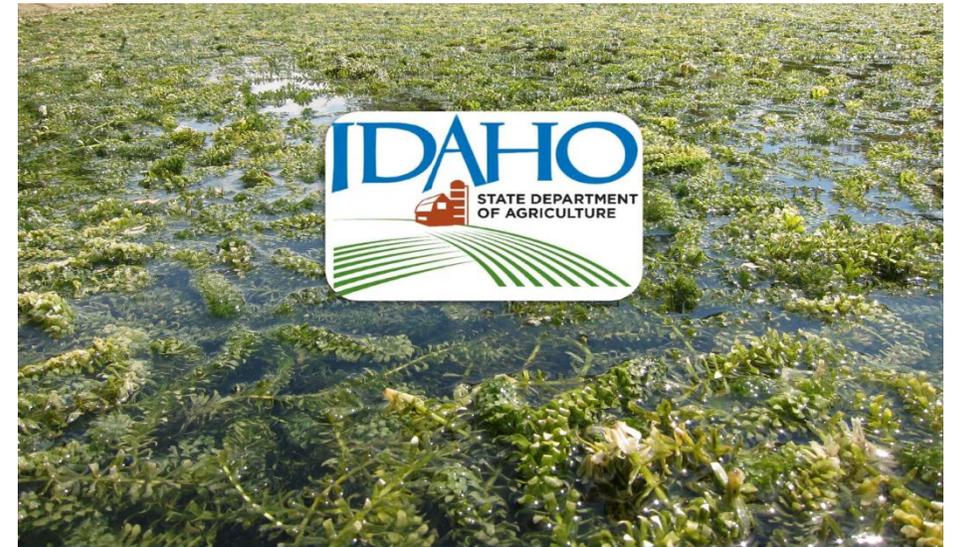
- ~ 3,000 plankton samples collected from 80 waterbodies)
 - Multiple sample events, bi-weekly, per waterbody
 - Priority overnight shipment
 - 2 week turnaround for lab analysis

Adult Monitoring (visual)

- ~ 3,000 surveys conducted
- SCUBA, Reservoir drawdown, substrate and benthic grab sampling

Exploring other monitoring methods

- eDNA



Idaho Waterways Survey
A Standard Operating Procedure for Aquatic Plants & Invasive Species



7 days 30 days 1 year

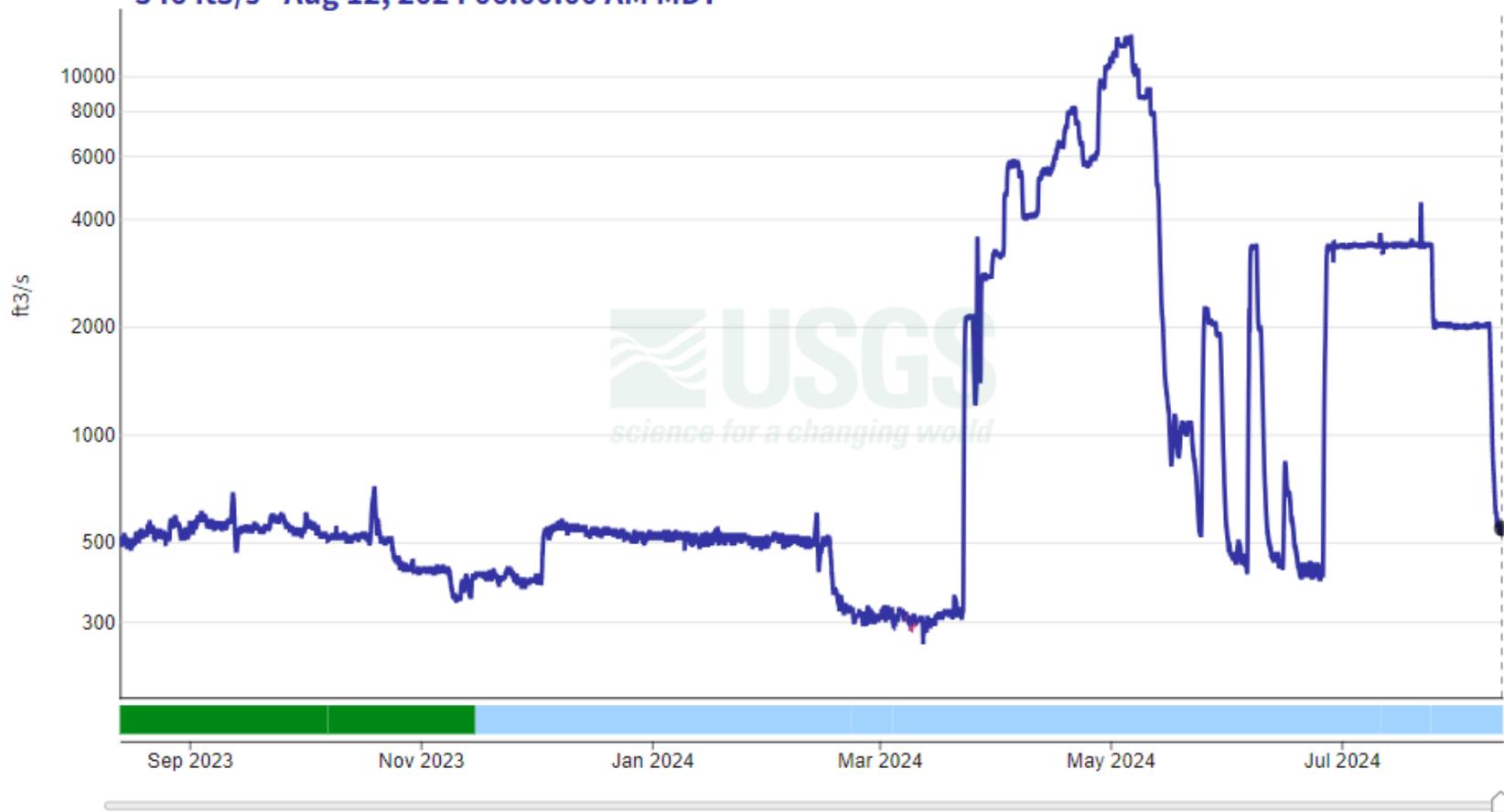
Scale

Snake River NR Twin Falls ID - 13090500

August 13, 2023 - August 12, 2024

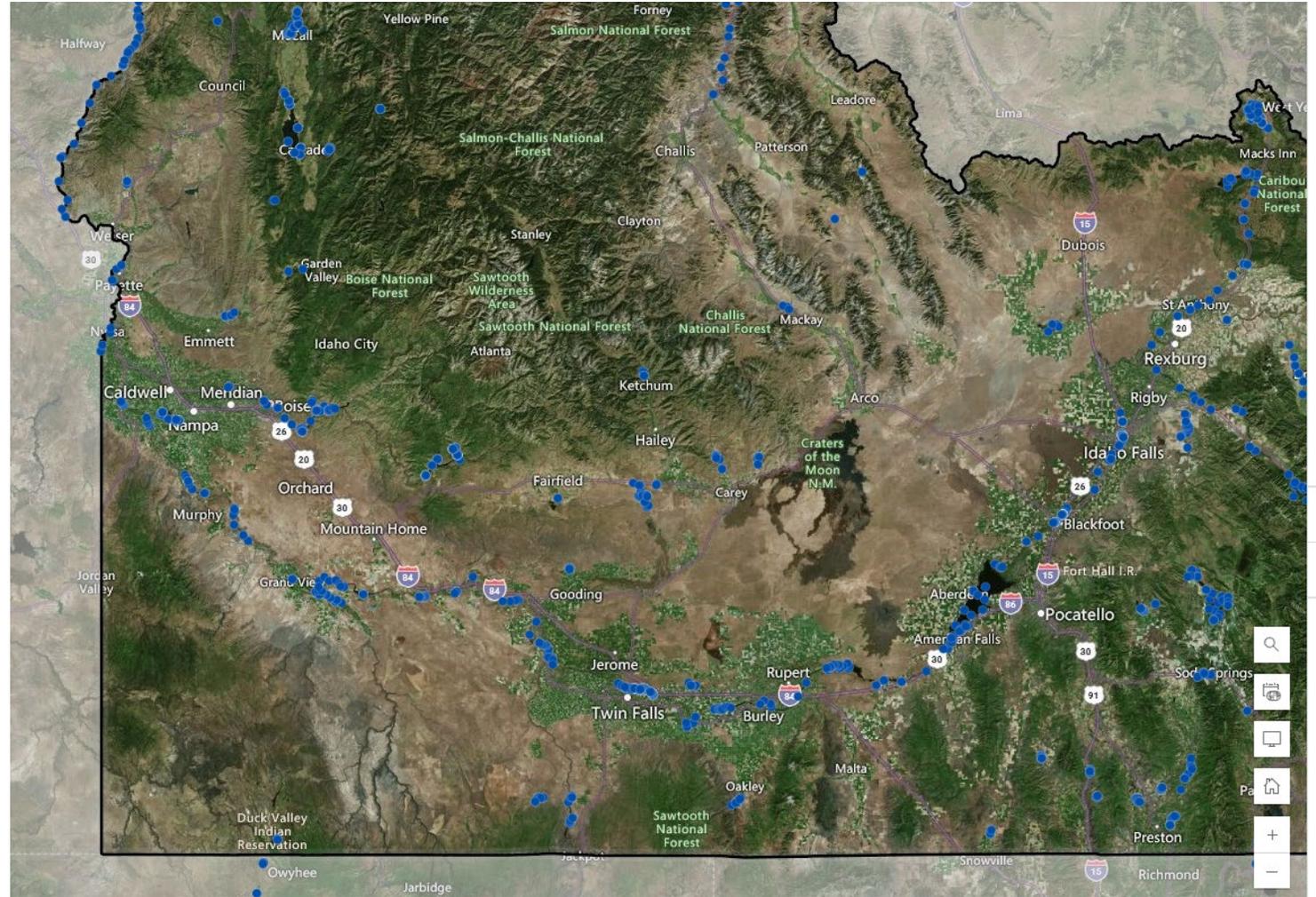
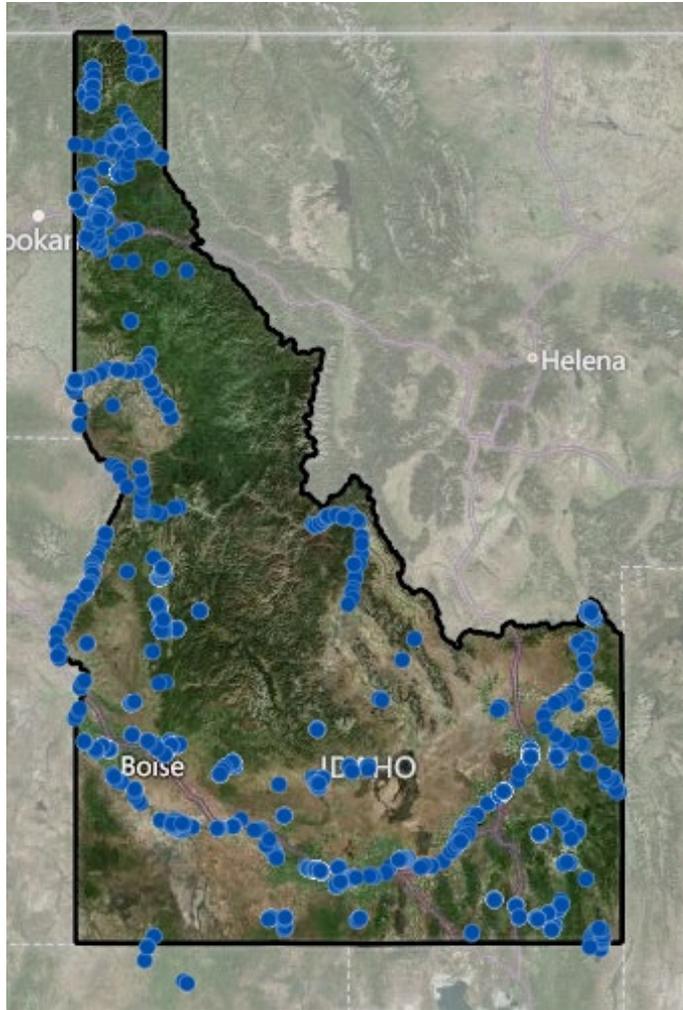
Discharge, cubic feet per second

546 ft³/s - Aug 12, 2024 06:00:00 AM MDT



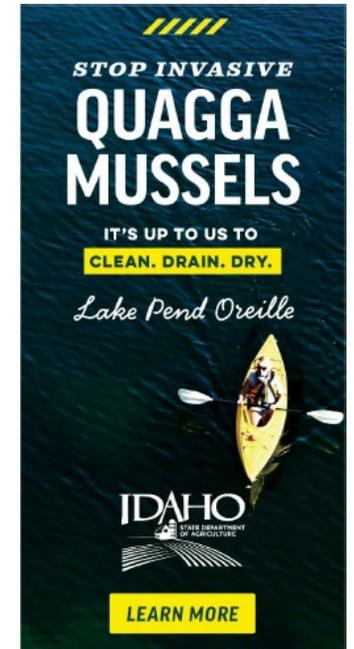
IMPORTANT Data may be [provisional](#)

2024 Monitoring Locations



Education Campaign- Clean Drain Dry

- Revamp Website
- Revamp entire Clean, Drain, Dry campaign
 - Video
 - Radio
 - Social Media
 - Digital Display
 - Promotional Items
 - Outdoor Display
 - Billboard
 - Marina
 - Gas stations

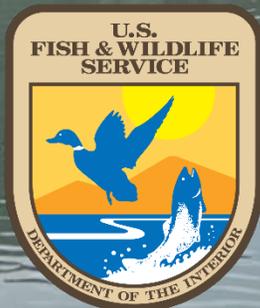




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STATE DEPARTMENT OF AGRICULTURE



US Army Corps of Engineers®



BUREAU OF RECLAMATION

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