

Zebra and Quagga Mussel Prevention and Readiness



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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



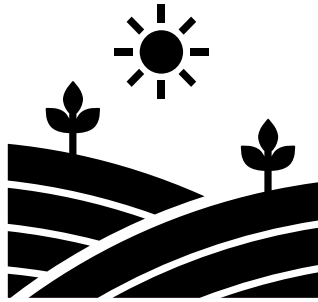
📷 : U.S. Bureau of Reclamation



📷 : Marrone Bio Innovations



Economic Risk



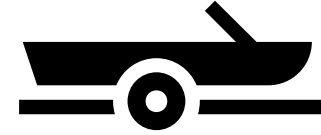
\$12.8 billion value
of agricultural
production
> 75% irrigated
agriculture
(> \$9.6 B)
(2024)

 : Washington State Department of Agriculture



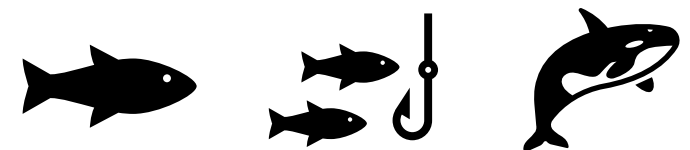
\$21.5 billion
annually spent on
outdoor recreation
27% involving
public waters
(> \$5.0 B)
(2020)

 : Washington Recreation and Conservation Office



\$35.5 million in
state boating
related revenue
annually
(2010)


 : 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





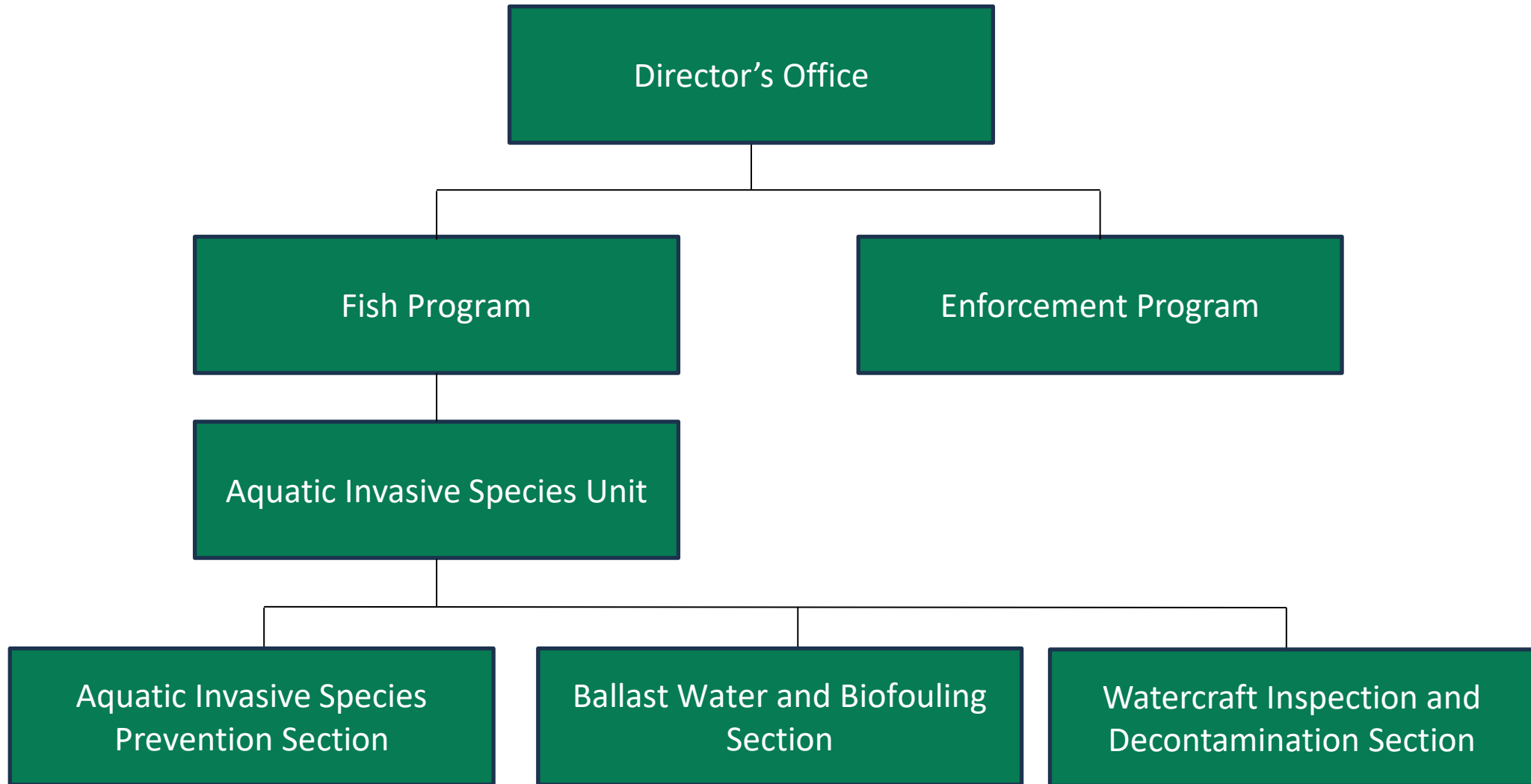
State Fiscal Year (SFY) 2025 Proviso

SFY 2025 Proviso

\$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.

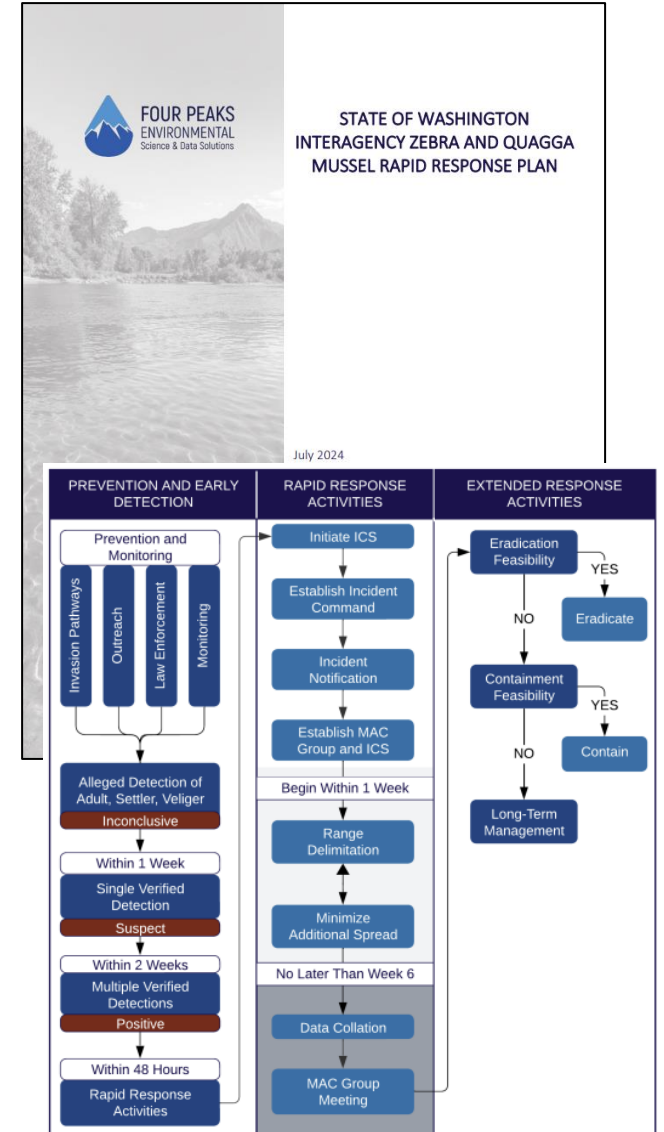


Optimized Organization Structure




Short Term Actions

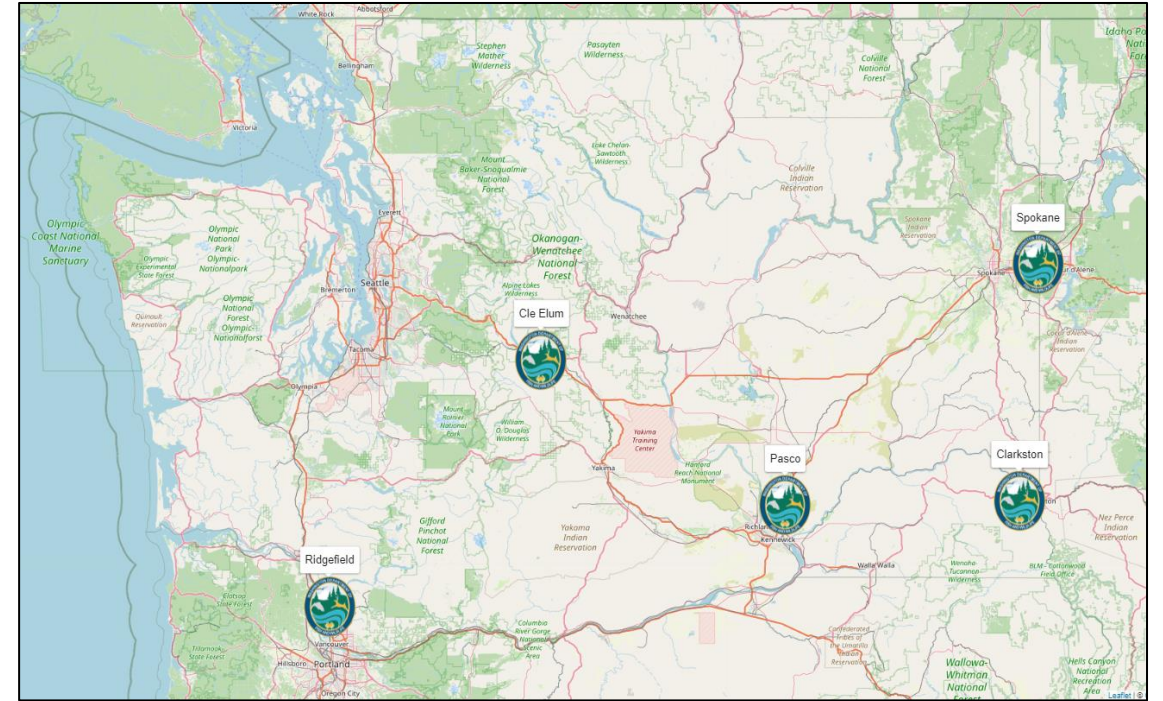
1. Develop and deploy a long-term leadership, planning, and command structure that includes internal and external partners including tribal, federal, regional, state, and local governments.
2. Fully staff Southeast Region mandatory watercraft inspection and decontamination stations in Clarkston and Pasco.
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.



Watercraft Inspections



 : Mussel Dogs
Gifford Campground Boat Launch, Lake Roosevelt National Recreation Area



| | 2020 | 2021 | 2022 | 2023 | 2024* |
|--------------------------|--------|--------|--------|--------|--------|
| Watercraft Inspected | 31,651 | 55,812 | 51,942 | 58,618 | 43,134 |
| Mussel Fouled Watercraft | 23 | 39 | 25 | 25 | 8 |

*January 1, 2024, to August 31, 2024



Short Term Actions

- 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.**






Marimo Moss Ball Zebra Mussel Incident 2024

August 5-8, 2024

- 8-05-2024 8:28 am – Washington Department of Fish and Wildlife (WDFW) public report with photo from a Renton-based fish wholesaler.
- 8-05-2024 11:32 am – Zebra and quagga mussel early detection and monitoring team arrival.
- 8-6-2024: WDFW visually verifies zebra mussels.
- 8-7-2024: WDFW Genetics Lab confirms contaminants as zebra mussels, a prohibited level 1 aquatic invasive species.
- 8-8-2025: WDFW issues press release.



 : Public Report





[Newsroom](#) / [Invasive zebra mussels detected on aquarium Marimo moss balls](#)

Invasive zebra mussels detected on aquarium Marimo moss balls

News release *Aug. 8, 2024*

Contact: [Justin Bush](#), 564-669-9486

Media Contact: [Becky Elder](#), 360-701-7026; [media files available](#)

OLYMPIA — On Monday, Aug. 5, the Washington Department of Fish and Wildlife (WDFW) received notification from a local wholesale aquarium company in Renton of possible invasive freshwater mussels on a shipment of Marimo moss balls (*Aegagropila linnaei*). Moss balls are a commonly used decorative algae in aquariums and water gardens.

Within minutes, WDFW dispatched an Aquatic Invasive Species (AIS) early detection monitoring team, who were in the vicinity monitoring for zebra and quagga mussels at American Lake in Lakewood. The team collected visible adult mussels, contaminated moss balls, and took water samples for DNA and microscopic analysis.

Lab testing confirmed the mussels were zebra mussels (*Dreissena polymorpha*), a prohibited aquatic invasive species in Washington that, if established in local waters, would be capable of causing significant infrastructure and environmental damage. Zebra mussels and a close relative, the quagga mussel, are not known to be established in Washington.

"I would like to commend our industry partner for being vigilant and quickly alerting us to this occurrence," said Kelly Susewind, WDFW director. "We are rapidly working alongside industry, tribal, state, and federal partners to address this incident. Thank you to all the partners that are working together to keep Washington's waters free from invasive species."

Photos

Click to display full size or right-click to save to your device.



Photo by WDFW

Moss ball with invasive zebra mussel taken August 12, 2024.



State Response

August 14, 2024: WDFW and Washington State Department of Agriculture (WSDA) request a voluntary recall from Renton-based wholesaler and trace forward information.

- Voluntary recall initiated offering store credit for returned or destroyed moss balls.
- WDFW and WSDA receive a list of 27 retailers who may have received contaminated products.
 - Phone contact complete.
 - Joint agency compliance visits ongoing.



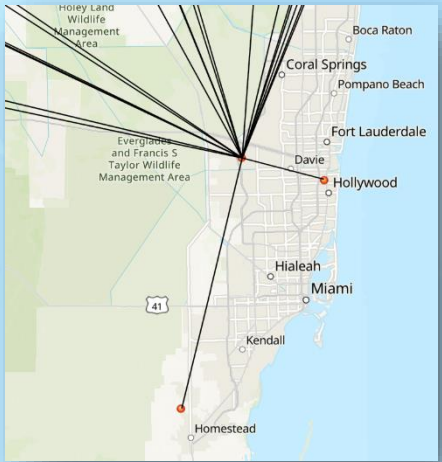
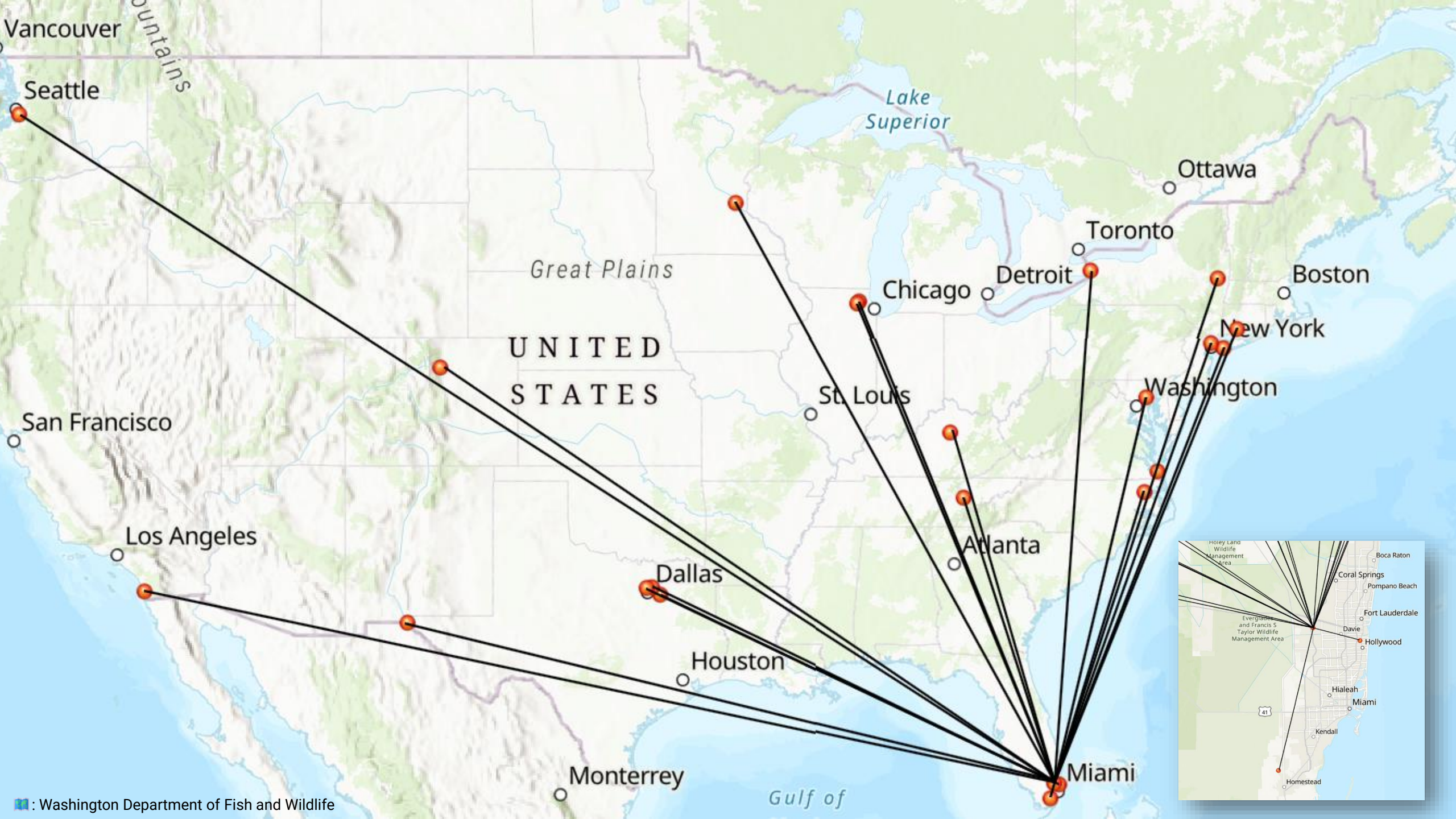
Joint state agency retailer letter with attachments



Federal Response

- August 26, 2024: U.S. Fish and Wildlife Service shares information on shipments from the Florida-based importer and list of 22 wholesalers and distributors nationally that may have received contaminated products.
- August 26, 2024: WDFW and WSDA briefed by U.S. Department of Agriculture (USDA) on national response and requested to partner in Washington attaching Smuggling Interdiction and Trade Compliance agents to state teams.
- September 4, 2024: USDA shares detailed information with state regulatory agencies on national trace forward and potentially contaminated shipments.
 - 181 shipments, 26,711 potentially contaminated products.





Increasing Awareness and Engagement

Invasive freshwater mussel monitoring ramping up in Washington waters

Beginning July 1, \$3.62 million in additional funding from the Washington State Legislature and federal partners will allow WDFW to increase monitoring for harmful quagga and zebra mussels in the Snake and Columbia rivers, and across our state.

 The Washington Department of Fish and Wildlife · Follow
6 min read · Jun 25, 2024

 2    



Clean

plants, animals, and mud
from boat and gear



Drain

all water from boat
and gear onto land



Dry

all parts of your boat
and gear completely

The Clean/Drain/Dry method applies to all watercraft and gear including paddles, waders, shoes, life vests, nets, buckets, and trailers. If transporting your watercraft, pull the bilge plug during transit.

<https://wdfw.medium.com/invasive-freshwater-mussel-monitoring-ramping-up-in-washington-waters-139cd1198b99>





2025-2027 QZ – Quagga and Zebra Mussel Prevention

2025-27 Biennium Budget Decision Package

QZ - Quagga and Zebra Mussel Prevention



Building on a Fiscal Year 2025 quagga mussel proviso of \$1.81 million in state general funds and leveraging \$1.81 million in federal funds, Washington Department of Fish and Wildlife (WDFW) will expand mussel activities including detection monitoring, implementing protections for habitat and infrastructure, and reducing impacts to our economy, environment, and species, including salmon and steelhead.

WDFW will increase prevention activities, response readiness, public awareness and action, regulatory compliance, and preparation for extended management and mitigation. Through this ongoing investment, WDFW will address the greater than \$100 million annual quagga and zebra mussel threat on the state's doorstep for the benefit of protecting and perpetuating Washington's resources.



2025-27 Biennium Budget Decision Package

QZ - Quagga and Zebra Mussel Prevention



1. **Continue a long-term leadership, planning, and command structure** that includes internal and external partners including tribal, federal, regional, state, and local governments.
2. **Continue coordination and capacity building efforts for long-term, local-led management** with Department oversight in partnership with the Columbia River Inter-Tribal Fish Commission, Upper Columbia United Tribes, and tribal nations statewide.
3. **Fully staff mandatory watercraft inspection and decontamination stations** in Clarkston, Pasco, Ridgefield, and Spokane.
4. **Maintain and support two invasive mussel detection canines and handlers** to support Columbia River and Southeast Region check stations and early detection monitoring.
5. **Perform intensive Snake River and Columbia River early detection and monitoring activities and statewide early detection monitoring** to detect downstream quagga mussel establishment through Clarkston, Ephrata, and Olympia-based teams.
6. **Maintain and enhance prevention of quagga and zebra mussel importation from both recreational and commercial pathways** by addressing pet trade, food fish aquaculture, recreational transportation of live fish, and movement of aquatic invasive species on navigable waterways through ballast water and biofouling.
7. **Continually increase state preparedness for containment and rapid response management actions** for quagga and zebra mussels through procurement of equipment and training drills.
8. **Understand and minimize risk to infrastructure such as irrigation systems or fish hatcheries and deploy strategies and equipment** to prevent and mitigate quagga mussel establishment and infrastructure impacts.
9. **Continue and enhance communications and outreach focused on invasive mussel prevention, response, and enforcement** to grow awareness and support among decision makers, media, communities, and the public statewide, with emphasis on the Snake and Columbia River basins.



Questions

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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.

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 purchase an Aquatic Invasive Species Prevention Permit - Infraction --- RCW 77A.05.040
Possession of aquatic invasive species meeting depth discharge requirements - Infraction --- RCW 77A.05.100
Non-compliance in possession of prohibited species --- RCW 77A.05.110
Baiting --- RCW 77A.05.020

STOP
INVASIVE SPECIES
CLEAN, DRAIN AND DRY
YOUR BOAT

