

Washington's Quagga and Zebra Mussel Prevention and Response Readiness



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The [Department of Fish and Wildlife] is the lead agency for managing invasive species of the animal kingdom statewide.

This lead responsibility excludes pests, domesticated animals, or livestock managed by the [Washington State Department of Agriculture] under Titles 15, 16, and 17 RCW, forest invasive insect and disease species managed by the [Washington State Department of Natural Resources] under Title 76 RCW, and mosquito and algae control and shellfish sanitation managed by the [Washington State Department of Health] under Titles 69, 70, and 90 RCW.

REVISED CODE OF WASHINGTON (RCW) 77.135.020 – INVASIVE SPECIES

Aquatic Invasive Species (AIS) Core functions

- Prevention
- Early detection
- Rapid response
- Infested site management
- Local and regional coordination
- Education and outreach
- Enforcement

**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 secure an Aquatic Invasive Species Prevention Permit - Infraction --- RCW 77.05.040

Possession of aquatic invasive species not meeting Clean Boat requirements - Infraction --- RCW 77.05.170

Non-compliance or possession of prohibited species --- up to class 1 felony --- RCW 77.13.040



Ballast Water and Biofouling Section



Implement Revised Code of Washington (RCW) 77.120 – Ballast Water [and Biofouling] Management



 : W. Carter / Public Domain



AIS Prevention Section

Implement Revised Code of Washington (RCW) 77.135 – Invasive Species

- Species Classification
- Decontamination
- Containment
- Permitting and Regulation
- Early Detection Monitoring
- Management Actions
- Education and Outreach



AIS Enforcement

Implement Revised Code of Washington (RCW) 77.135 – Invasive Species

- Mandatory Watercraft Inspection
- Decontamination Orders
- Possession, Release, Trafficking
- Education and Outreach



Cross-Departmental Collaboration

Cross Cutting Issue

- Legislative Affairs
 - State
 - Federal
- Tribal Affairs
- Communications and Public Engagement (CAPE)
 - Media and external relations
 - Outreach and education
- Capital Asset Management Program (CAMP)
- Habitat
- Wildlife
- Information Technology
- Budget and Human Resources

Invasive European green crab Washington Department of FISH & WILDLIFE

European green crabs threaten West Coast economies, environments, and public health

Federal funding request for Invasive Species

The European green crab is an invasive species. These crabs are voracious shellfish. They can eat a wide variety of shellfish that are part of the West Coast's shellfish industry. While digging for shellfish, they can destroy habitats that are important for other species. This could hinder shellfish harvest efforts, reduce shellfish health and resilience, and impact the West Coast's shellfish industry.

An invasive species

European green crabs have spread up the West Coast since they were first detected in Washington in 2016. Beginning in 2016, Washington state has been impacted by European green crabs in our state. As part of our response, several tribes and partners have been working to address the threats posed by European green crabs and partners to the Washington Department of Fish and Wildlife (WDFW), Native Americans, and partners.

With funding from the U.S. Department of the Interior, WDFW, Native Americans, and partners.

Yet federal funding is not sufficient to address the emergency as evidenced by the lack of federal recognition to conduct green crab management programs.

We request that Congress recognize the emergency nature and destructive potential of European green crabs, support Washington and other states' initiatives to combat this species, and act to minimize this destruction by implementing the following requests:

- Fund the reestablishment of the Office of Aquatic Invasive Species at NOAA headquarters to support state, tribal, and federal European green crab management programs.
- Appropriate \$5 million in fiscal year 2024 and future years to the Coastal Aquatic Invasive Species Mitigation Grant Program as authorized under the Frank LoBiondo Vessel Incidental Discharge Act of 2018.
- Provide funding for European green crab prevention, management, and data stewardship to:
 - o \$300,000 to U.S. Fish and Wildlife Service's Willapa National Wildlife Refuge and Dungeness National Wildlife Refuge
 - o \$750,000 to U.S. Geological Survey's Biological Threats and Invasive Species Research Program for its Western Fisheries Research Center and Alaska Science Center
 - o \$8 million to Bureau of Indian Affairs' Invasive Species Program for its Northwest Region
 - o Funding to U.S. Department of Agriculture's Animal and Plant Health Inspection Service for Washington's coastal shellfish growers who have been impacted by European green crabs.

European green crab federal funding request Washington Department of FISH & WILDLIFE

Request for federal funding and support for West Coast green crab response

We respectfully request that Congress recognize the emergency nature and destructive potential of European green crab, support Washington and other states' initiatives to combat this species, and act to minimize this destruction by implementing the following requests:

European green crab detections in Washington state 2016 – 2022

Green crab detections between 2016-2022

- No
- Yes

Rostral Bumps 1 2 3

Marginal Teeth 1 2 3 4 5

Up to 4"

Wide to Narrow

Somewhat flattened

More information is available online at wdfw.wa.gov/greencrab May 2023



Statewide Invasive Species Priorities

Here

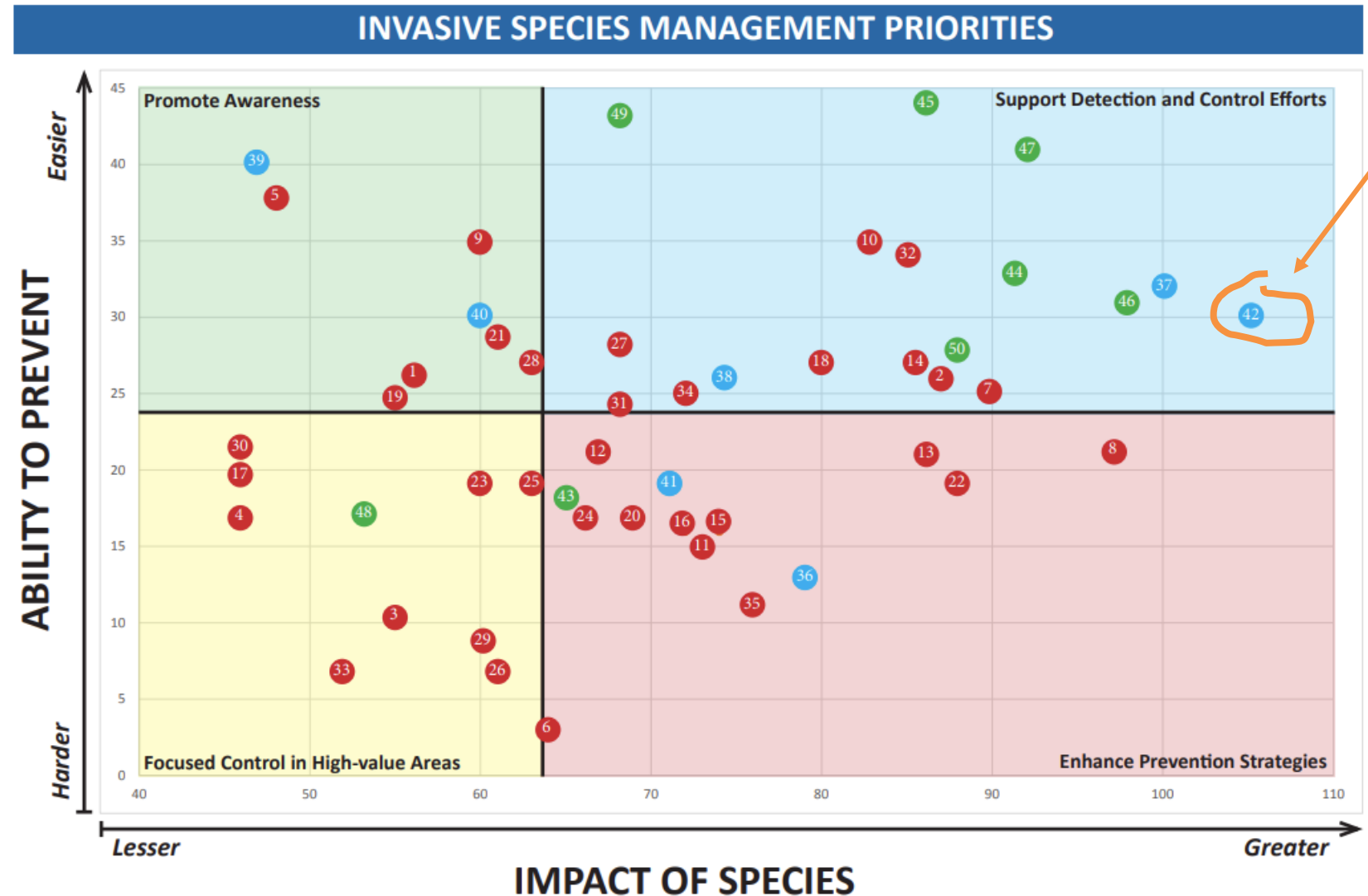
1. Apple maggot
2. Brazilian elodea
3. Brown marmorated stink bug
4. Butterfly bush
5. Common crupina
6. European chafer
7. Feral swine
8. Flowering rush
9. Garlic mustard
10. Hydrilla
11. Infectious amphibian diseases
12. Invasive frogs and crayfish
13. Invasive knapweeds
14. Invasive knotweeds
15. Invasive milfoils
16. Invasive tunicates
17. Invasive zooplankton
18. Leafy spurge
19. Mediterranean white snail
20. New Zealand mud snail
21. Northern pike
22. Nutria
23. Parrotfeather
24. Phragmites
25. Poison hemlock
26. Puncturevine
27. Purple loosestife
28. Rush skeletonweed
29. Scarlet lily beetle
30. Scotch broom
31. Scotch thistle
32. Spartina
33. Spotted wing drosophila
34. Tamarisk
35. White nose syndrome/Pd

Near

36. Caulerpa
37. Gypsy moths
38. Invasive crabs
39. Japanese beetle
40. Northern snakehead
41. Overbite clam
42. Zebra and quagga mussels

Far

43. Asian carp
44. Emerald ash borer
45. Infectious fish diseases
46. Invasive longhorned beetles
47. Kudzu
48. Onion leaf miner
49. Sirex woodwasp
50. Starry stonewort



Zebra and Quagga Mussels (freshwater)

(Dreissena Polmorpha and Dreissena Bugensis)


Classification: Prohibited

Status: Not detected in Washington waters (EVER)

Key Characteristic: Byssal threads

Native Range: Eastern Europe





**> \$100 MILLION ANNUAL
COST TO MITIGATE IMPACT TO
HYDROPOWER
INFRASTRUCTURE (2017)**



**WASHINGTON FISHERIES
PROVIDE 16,374 JOBS AND
\$540 MILLION IN PERSONAL
INCOME (2006).**



28 public utilities statewide,
14 of which provide
drinking water (2022)



\$5.2 billion in annual irrigated
crop production and animal production
and processing (2022)



Value of recreation
\$26.5 billion annually
(2020)



Impacts



Zebra mussels infest NY trout hatchery, some Adirondack waters will go unstocked

Updated: Feb. 28, 2020, 1:05 p.m. | Published: Feb. 28, 2020, 11:23 a.m.



WATER ACCESS CLOSURE

All public access to enter the water from Broken Bridge to Twin Falls Hydroelectric Dam is prohibited.



: U.S. National Oceanographic and Atmospheric Administration Fisheries, CNY News, Idaho State Department of Agriculture



Comparison to Native Mussels

Invasive



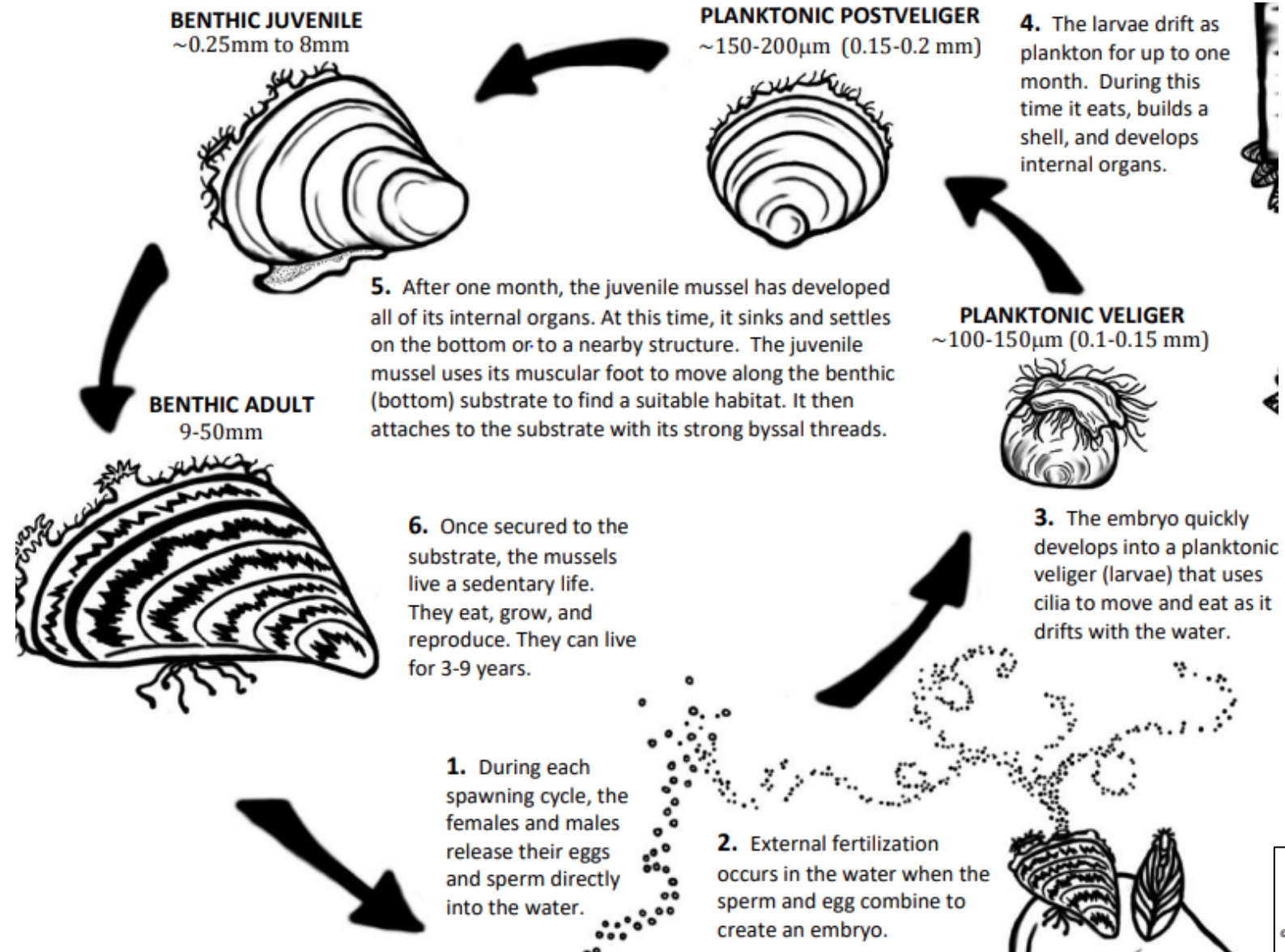
Native



Key characteristic: No byssal threads



Life Cycle



Introduction

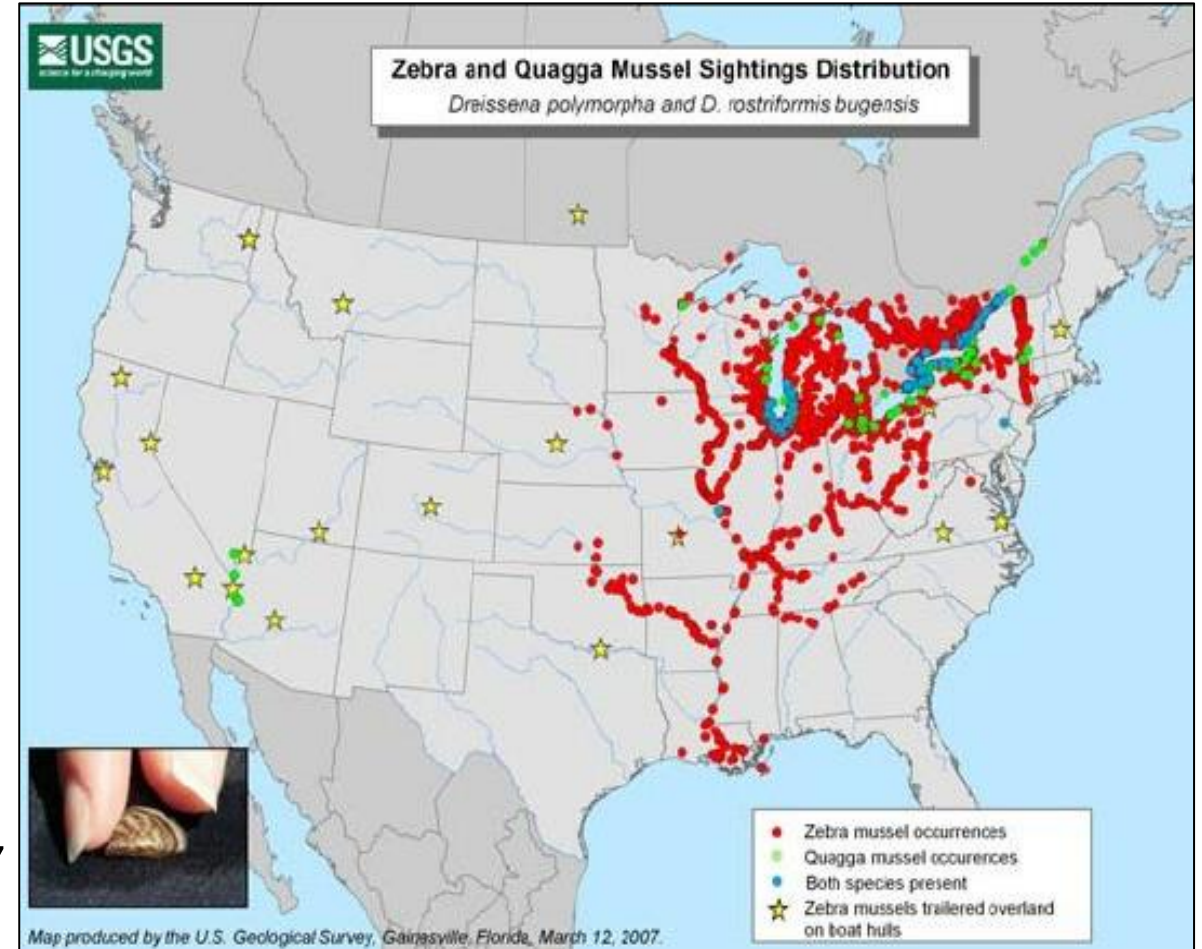


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First Detection: Lake St. Clair, Michigan 1988

100th Meridian Line: Lake Mead, Nevada 2007

2007 Distribution



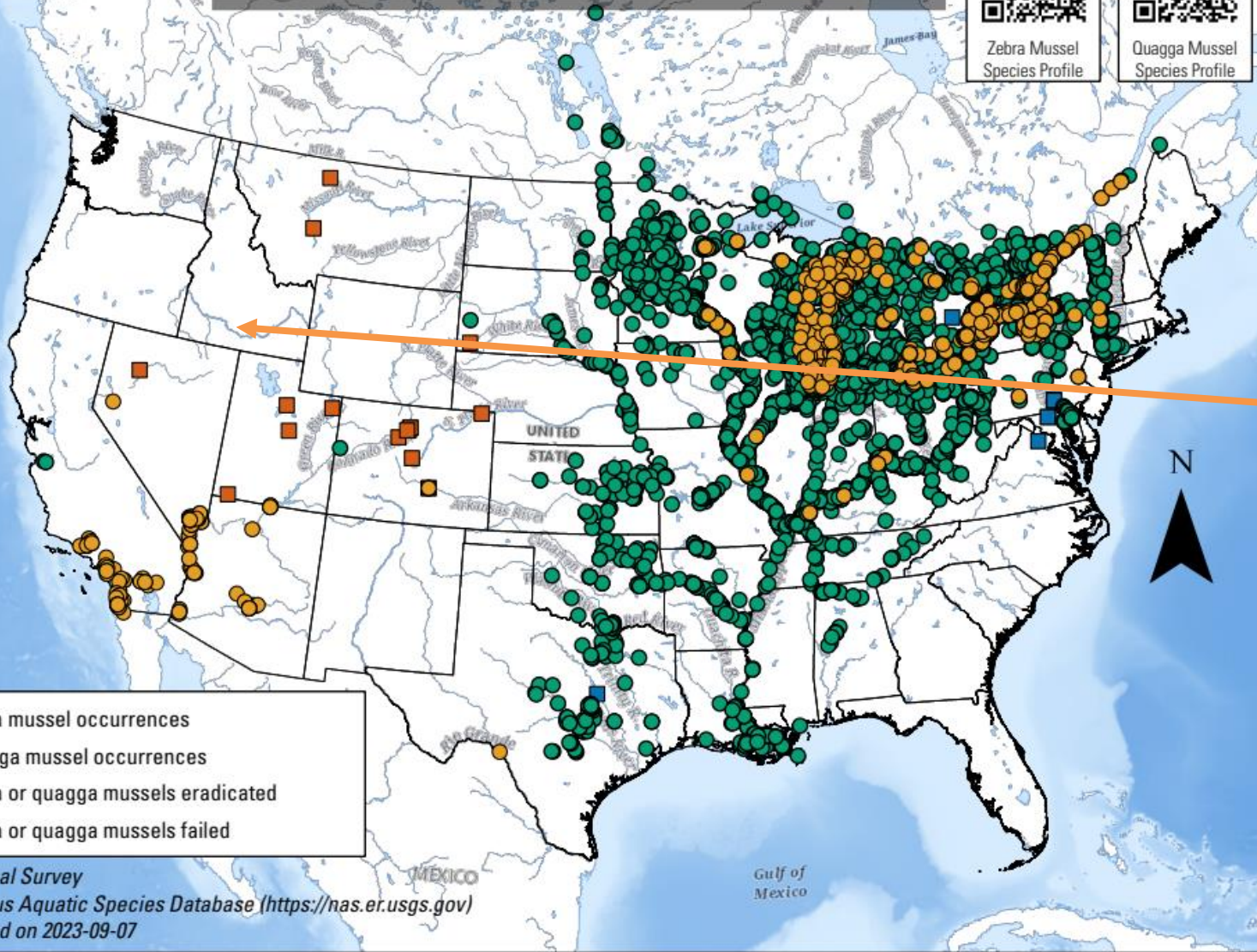
Zebra and Quagga Mussel Sightings Distribution
Dreissena polymorpha and *Dreissena bugensis*



Zebra Mussel
Species Profile



Quagga Mussel
Species Profile



- Zebra mussel occurrences
- Quagga mussel occurrences
- Zebra or quagga mussels eradicated
- Zebra or quagga mussels failed

U.S. Geological Survey
Nonindigenous Aquatic Species Database (<https://nas.er.usgs.gov>)
Map produced on 2023-09-07

**Quagga Mussels discovered in Twin Falls County:
Centennial Park and Wilson Lake closed until
further notice**

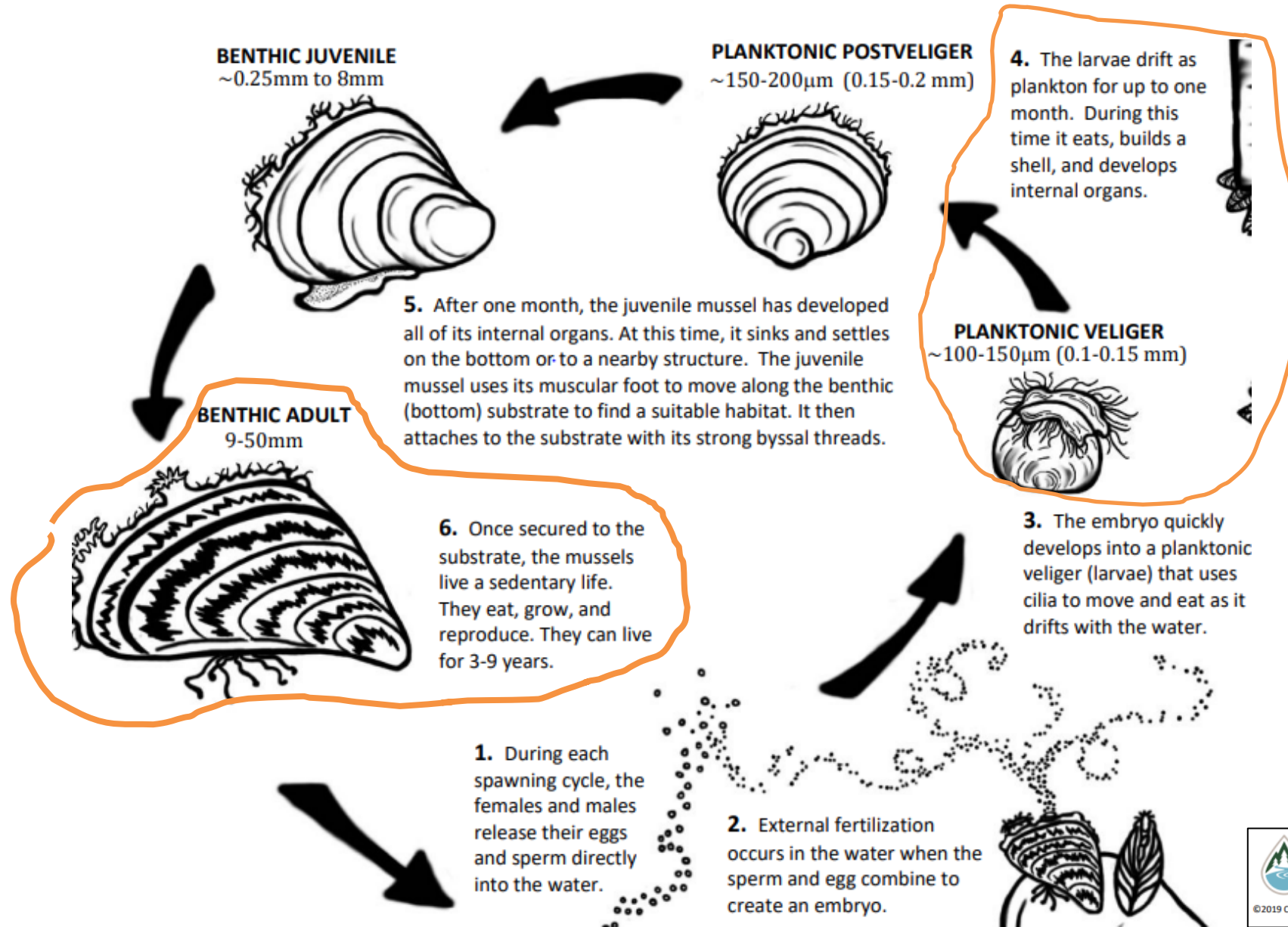
Updated: Sep. 19, 2023 at 5:53 PM PDT



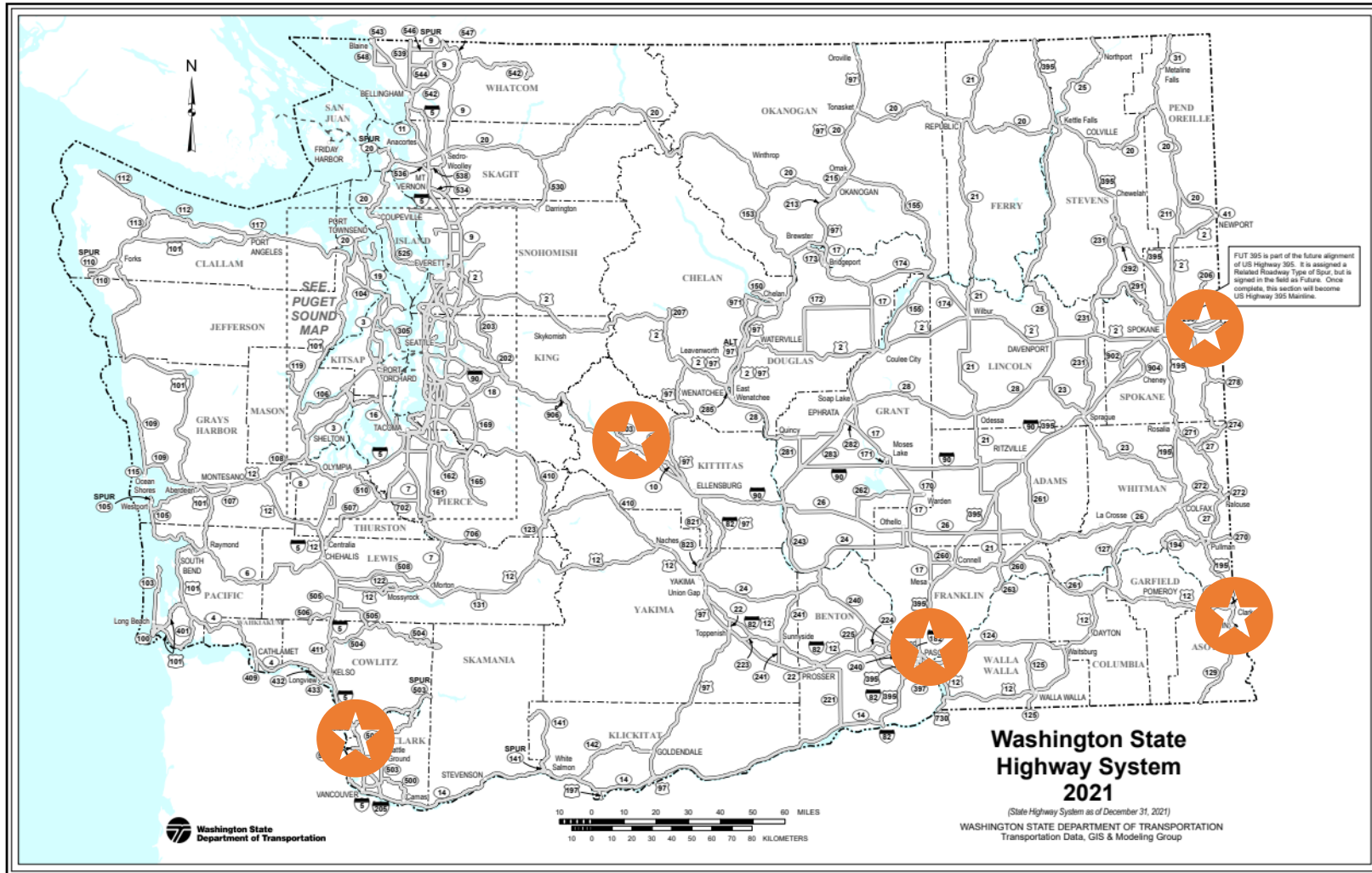
Idaho Governor Brad Little initial press conference.
📷: KMTV News



Life Cycle



Watercraft Inspections



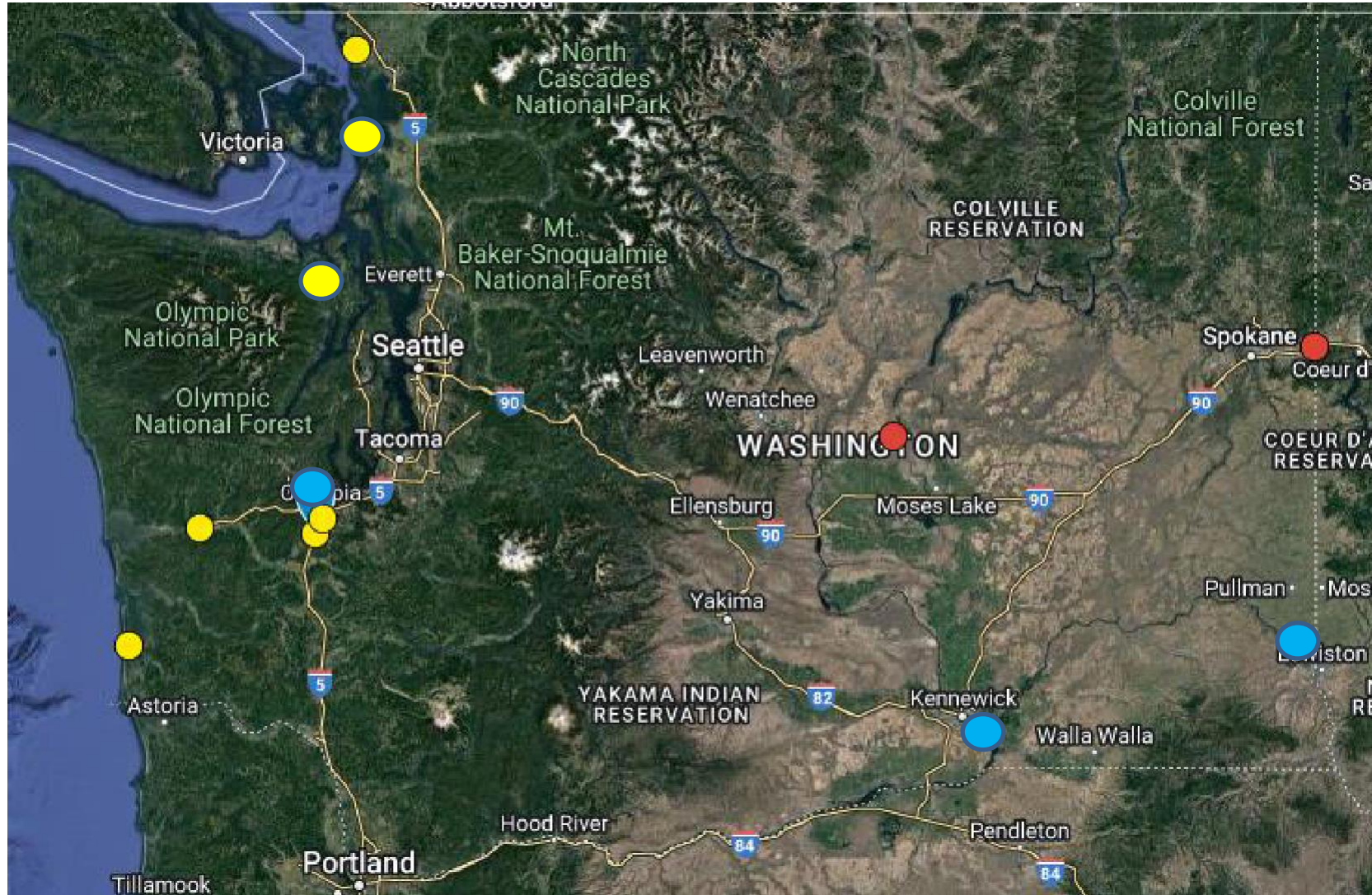
	2020	2021	2022
Operational Days	532	940	1,412
Watercraft Inspected	31,651	55,812	51,942
Mussel Fouled Watercraft	23	39	25



Decontamination



Decontamination

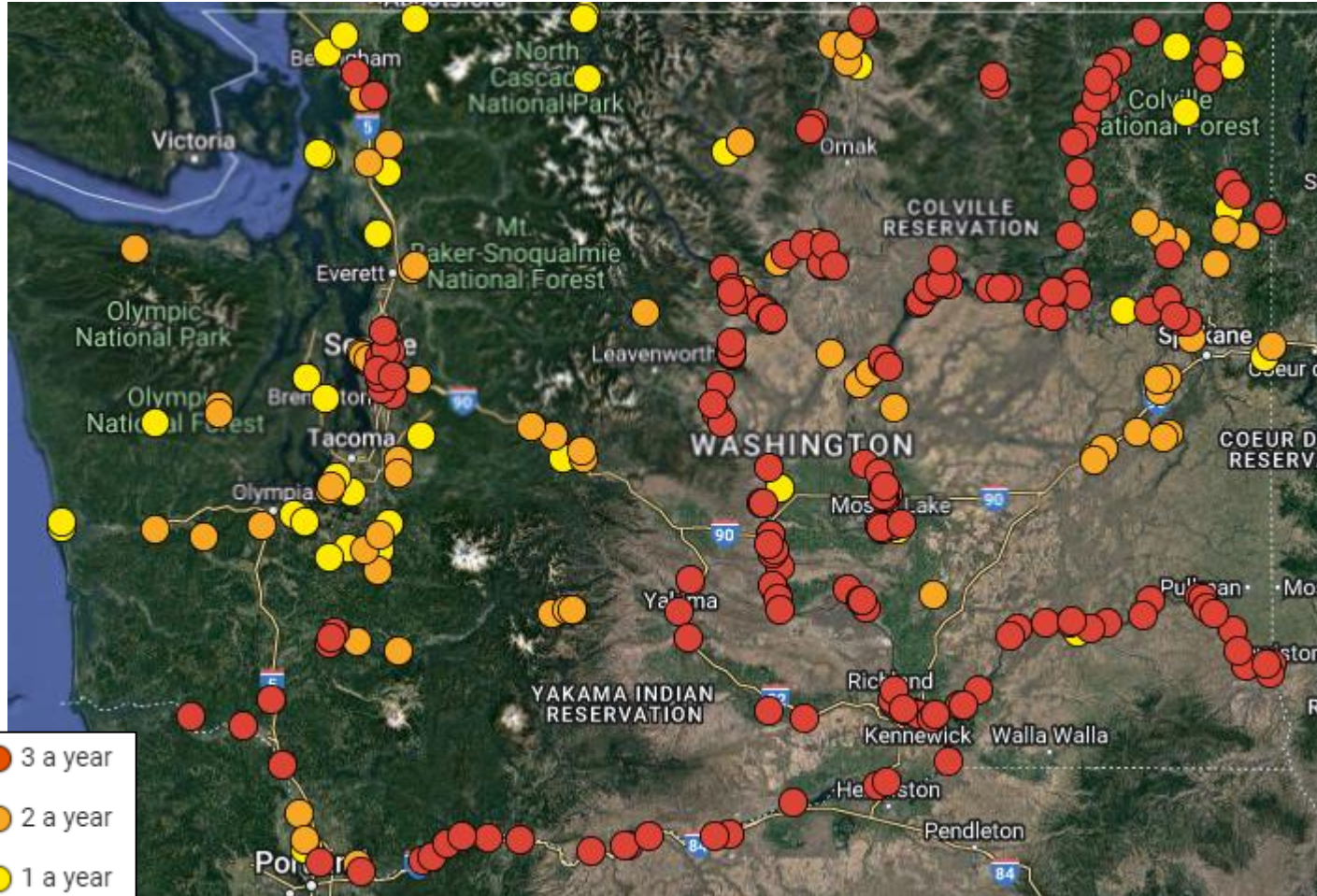


- Hand Pushed
- Station
- Trailered



Early Detection Monitoring

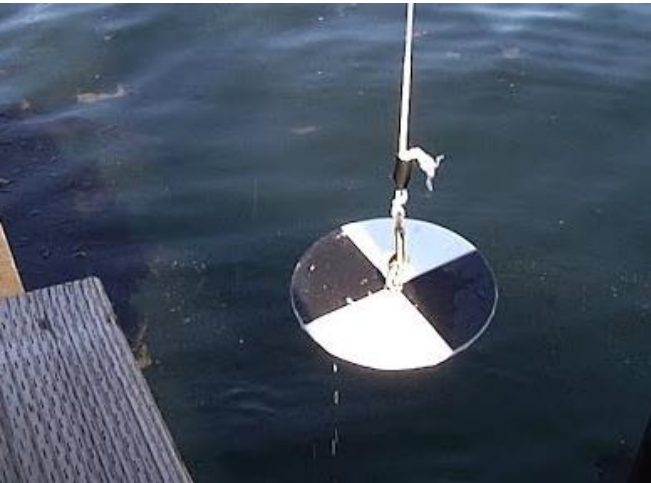
(124 water bodies and 304 sites)



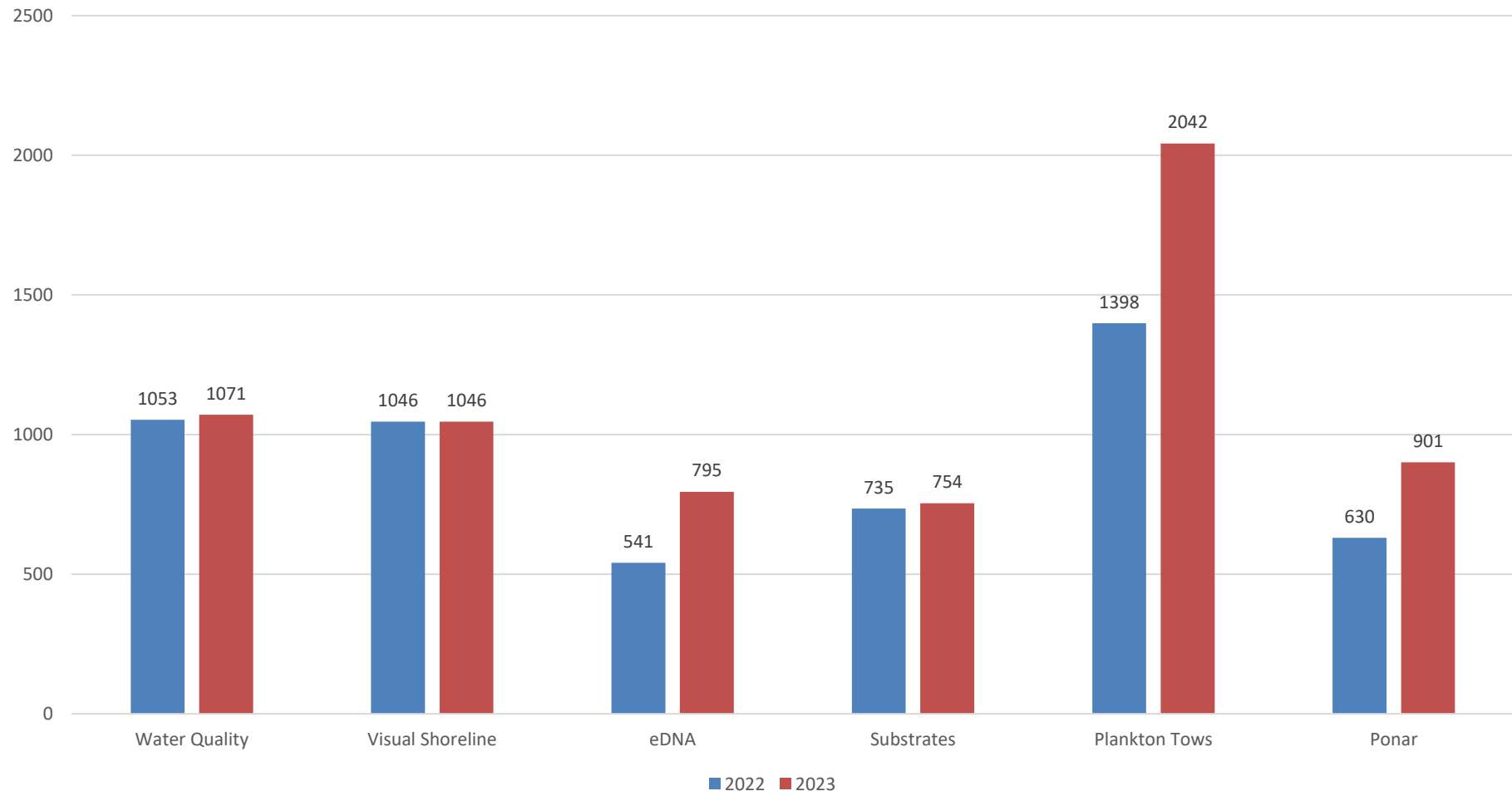
Scoring	0 Point	1 Point	2 Point	3 Point	4 Point	
Establishment						
Dissolved Calcium (mg/L)	0-5 (no monitoring)	6-11	12-15	16-24	25 or more	
Salinity (ppt)	10 or more (no monitoring)					
Introduction						
Public	No (no monitoring)				Yes	
# Boat Ramps	0 (no monitoring)	1	2	3	4 or more	
Boat Ramp 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



Monitoring Methods



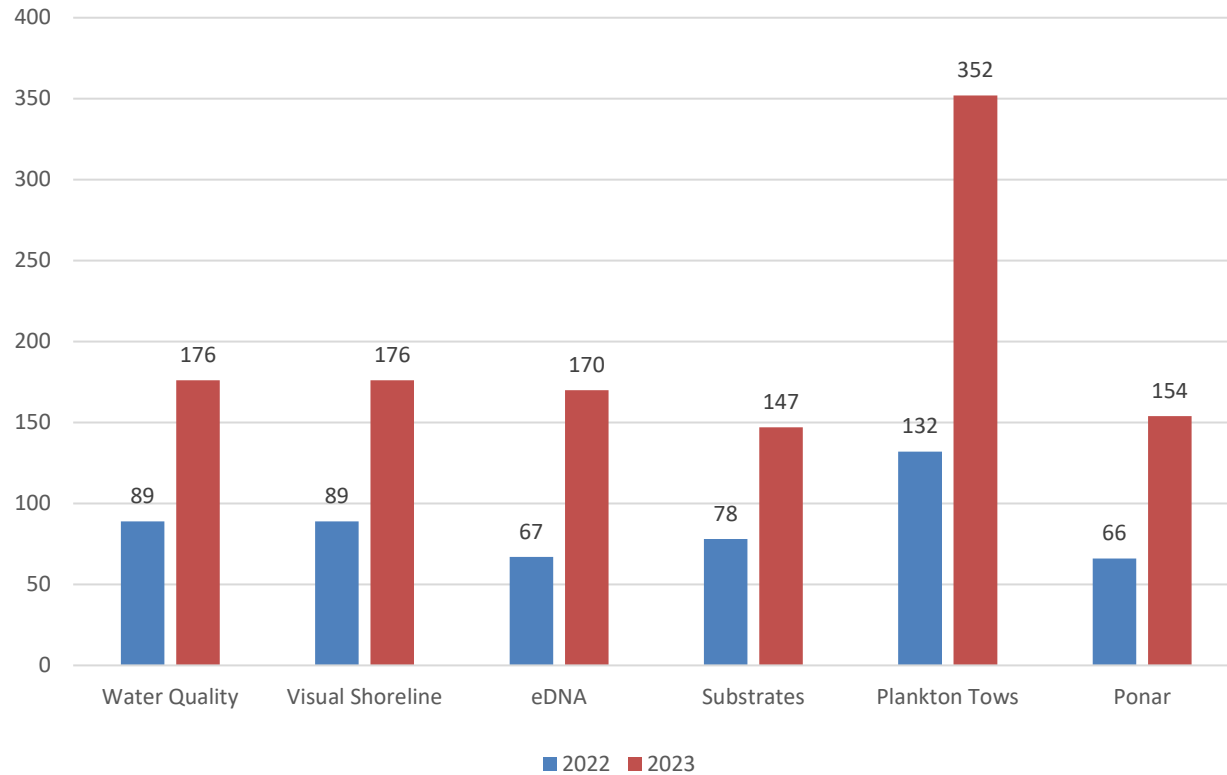
2022 Results and 2023 Preliminary Monitoring Results



NO zebra/quagga mussels detected



2023 Preliminary Results Snake River (NO zebra/quagga mussels detected)



- 23 sites prior to Idaho detection
- Added 8 sites from Swallows Park in Clarkston to WA, OR, ID border
- Total of 31 sites

403 dissolved calcium samples 2016-2022 average is 19 mg/L



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



Response Readiness



- US Coast Guard Safety Zone
- K-9 Surveys
- Monitoring Sites
- SCUBA Dive Team Survey
- Watercraft and equipment decontamination
- Containment boom curtain and mock treatment area
- Mandatory Boat Inspections
- Incident Command Post and Joint Information Center



Response Readiness

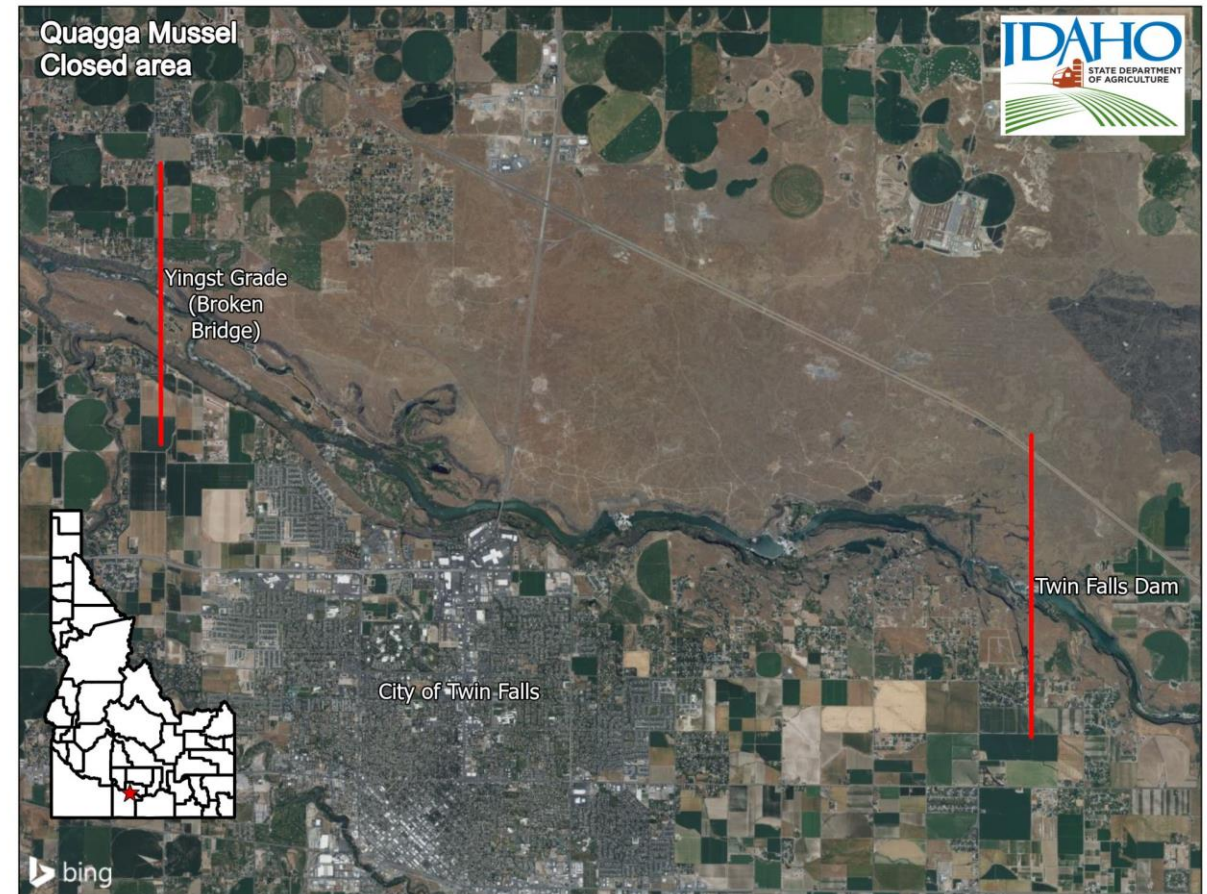


Response Readiness



Idaho Rapid Response

- Announced detection September 18, 2023
- Executed Rapid Response Plan
 - Notified impacted entities
 - Implemented containment measures
 - Conducted delimiting surveys
 - Evaluated treatment options
 - Held public meetings
 - Initiated treatment
- 1st treatment started October 3, 2023 using chelated copper at 1 ppm for a contact time of 96 hours
- 2nd treatment conducted October 9, 2023 using chelated copper at 1 ppm for a contact time of 96 hours



<https://agri.idaho.gov/main/plants/snake-river-quagga-mussel-veligers/>



Idaho Rapid Response Observations



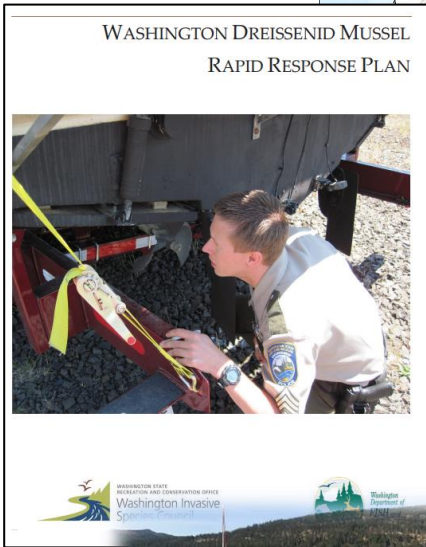
Washington's Quagga Mussel Readiness



- Idaho quagga mussels approximately 375 river miles from Washington, and approximately 185 river miles from Oregon waters.
- \$259,057 request to the U.S. Fish and Wildlife Service's new Rapid Response to Aquatic Invasive Species funding opportunity.
 - Dedicated monitoring team
 - WA/OR shared water response plan
- U.S. Bureau of Reclamation:
 - \$ 112,500 - develop and deploy prevention and decontamination training curriculum.
 - \$155,000 to increase transboundary mussel preparedness.
 - \$ 429,806 to fully fund Cle Elum mandatory watercraft check station.
- WDFW determining full short- and long-term actions, needs, and costs.



Washington's Take-Aways



- Sept. 18, 2023, First Detection in Columbia River Basin
- 375 miles from Washington's waters
- > \$100 million economic risk, uncalculated environmental risk
- Seeking federal financial assistance
- Considering additional needs and actions
- Seeking to partners to assist with early detection monitoring
 - Chelan County
 - City of Bellingham



Questions

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State of Washington

Department of Fish and Wildlife

wdfw.wa.gov/ais

1-888-WDFW-AIS



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Avoid Citations or Fines

Failure to possess an Aquatic Invasive Species Prevention Permit - Citation - \$277.00
Possession of aquatic invasive species without valid State Department of Fish and Wildlife permit - Citation - \$277.00
Use, sale, or possession of prohibited species - \$100.00
Fines - \$100.00