KEYHOLE RESERVOIR, WY

Virtual Response Primer

May 15, 2023

1:00-5:00pm Mountain Time

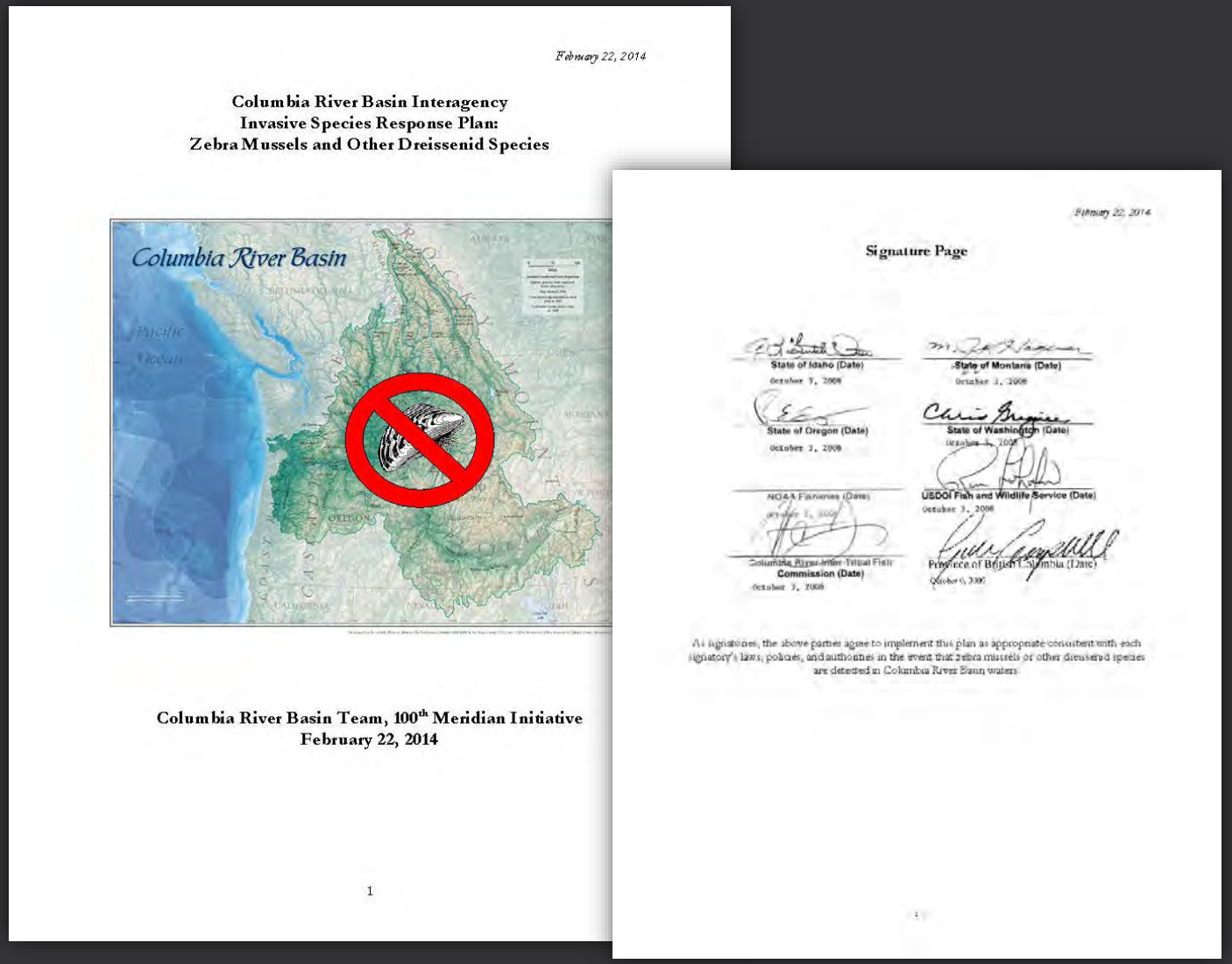
Introductions

Meeting Goal

- Become familiar with invasive dreissenid issues
- Gain understanding of potential management decision making and roles and responsibilities in dreissenid detection
- Build knowledge base for preparedness actions

Agenda

1:00pm-1:15pm	Welcome and Introductions
1:15pm-1:45pm	Overview of current AIS programming and regional dreissenid issues
1:45pm-2:15pm	Vulnerability of Keyhole Reservoir to dreissenids: biological factors, recreation patterns, and regional threats
2:15pm-2:45pm	Overview of current response plan for Keyhole Reservoir
2:45pm-3:00pm	Realistic scenarios for dreissenid mussel detection
3:00pm-3:10pm	BREAK
3:10pm-3:30pm	Roles and responsibilities for dreissenid response – statutory authorities
3:30pm-4:00pm	Communication associated with a response – contact list
4:00pm-4:15pm	Water body classifications – definitions 101 for dreissenid response
4:15pm-4:55pm	Rapid response steps
4:55pm-5:00pm	Summary and next steps



February 22, 2014

Columbia River Basin Interagency
Invasive Species Response Plan:
Zebra Mussels and Other Dreissenid Species

Columbia River Basin Team, 100th Meridian Initiative
February 22, 2014

1

February 22, 2014

Signature Page

State of Idaho (Date)
October 3, 2008

State of Montana (Date)
October 3, 2008

State of Oregon (Date)
October 3, 2008

State of Washington (Date)
October 3, 2008

NOAA Fisheries (Date)

USDOI Fish and Wildlife Service (Date)
October 3, 2008

Columbia River Inter-Tribal Fish Commission (Date)
October 3, 2008

Province of British Columbia (Date)

All signatories, the above parties agree to implement this plan as appropriate consistent with each signatory's laws, policies, and authorities in the event that zebra mussels or other dreissenid species are detected in Columbia River Basin waters.

- Developed in 2007
- Amended in 2014 & 2017
- Revised in 2019

Rapid Response Plan for Collaborative Action

Emergency management methods –verify, notifications, delineation, prevent spread, control / response options. Basin partner signatories.

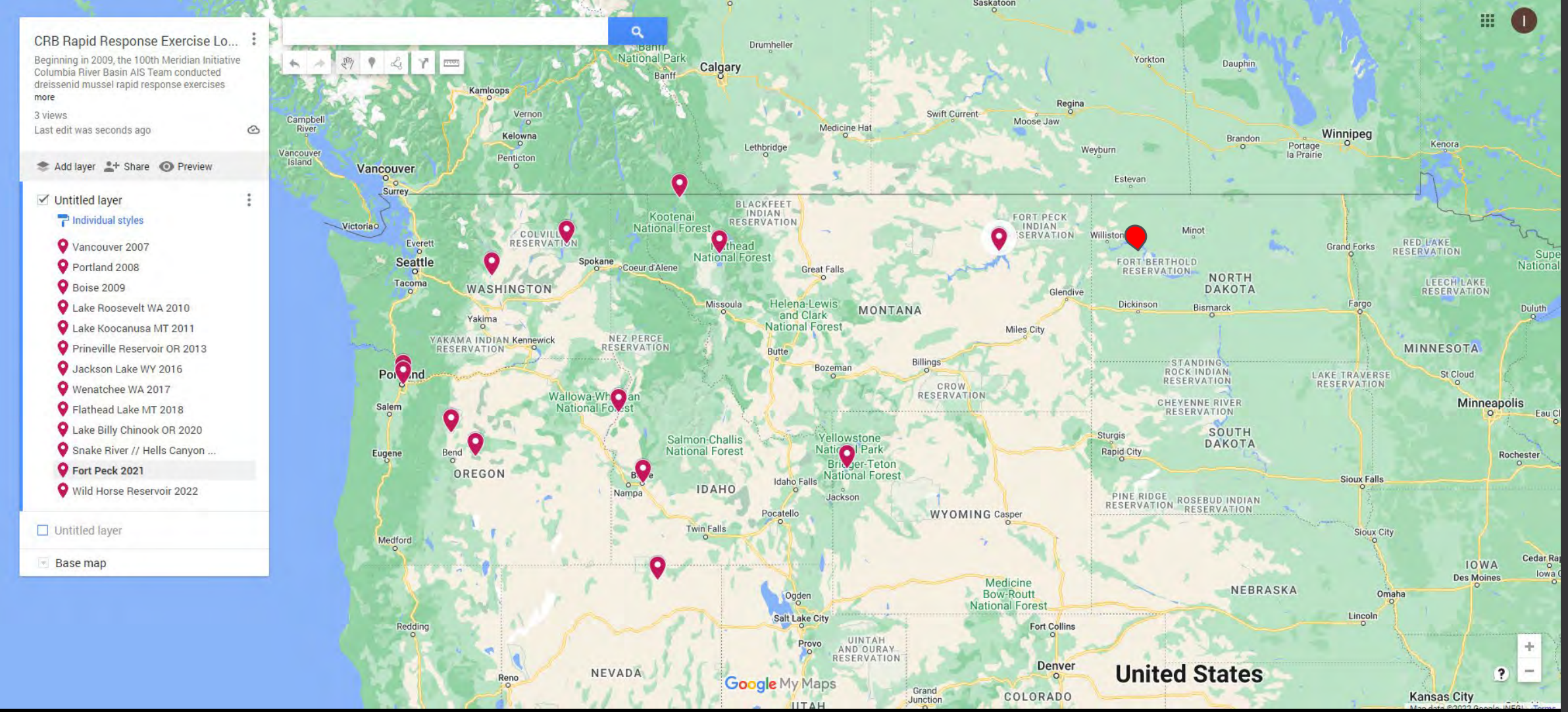
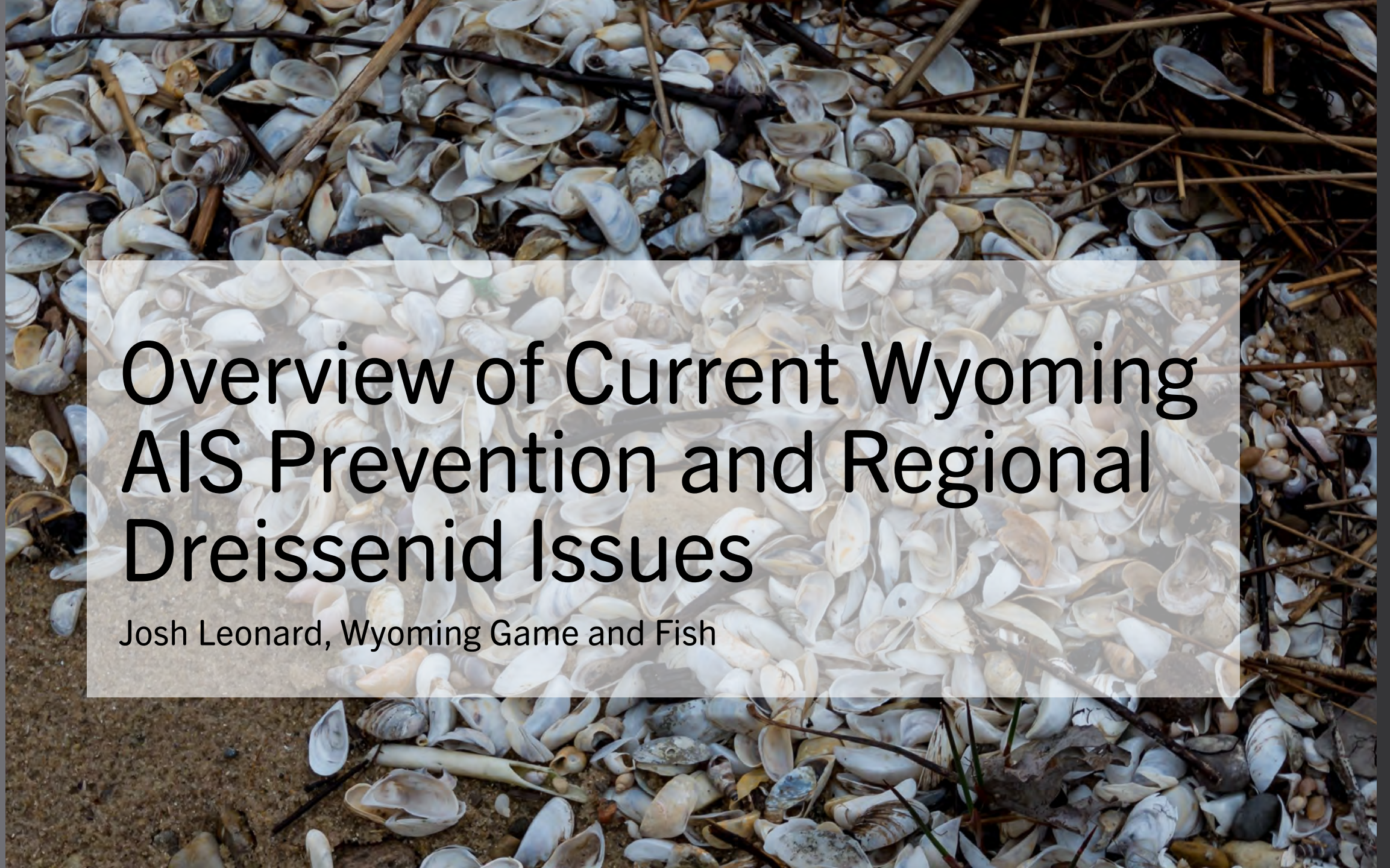


Table Top Exercises for Increased Preparedness

Multi-jurisdictions exercises to better understand roles, responsibilities and actions when faced with dreissenid discovery.

Realistic scenario driven



Overview of Current Wyoming AIS Prevention and Regional Dreissenid Issues

Josh Leonard, Wyoming Game and Fish

Overview of current AIS programming and regional dreissenid issues

Invasive Species

- Defined in Chapter 62 WGFD Regulation

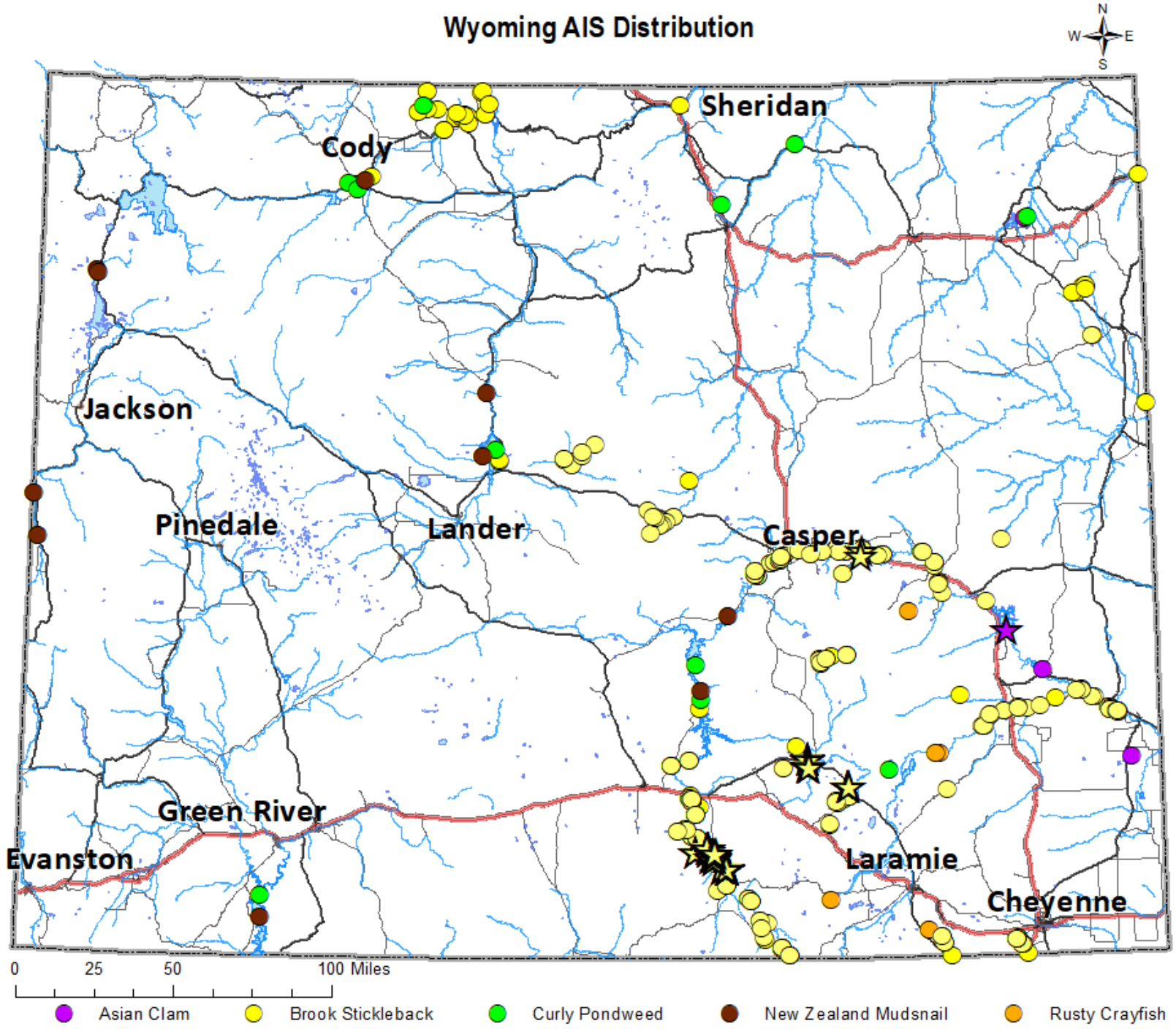
ANIMALS

- **Zebra/Quagga (Dreissena)**
- **Rusty Crayfish**
- **New Zealand Mudsnail**
- **Asian Clam**
- **Brook Stickleback**
- Asian Carp
- Snakehead

PLANTS

- **Curly Pondweed**
- Hydrilla
- Eurasian Watermilfoil

Wyoming AIS Distribution

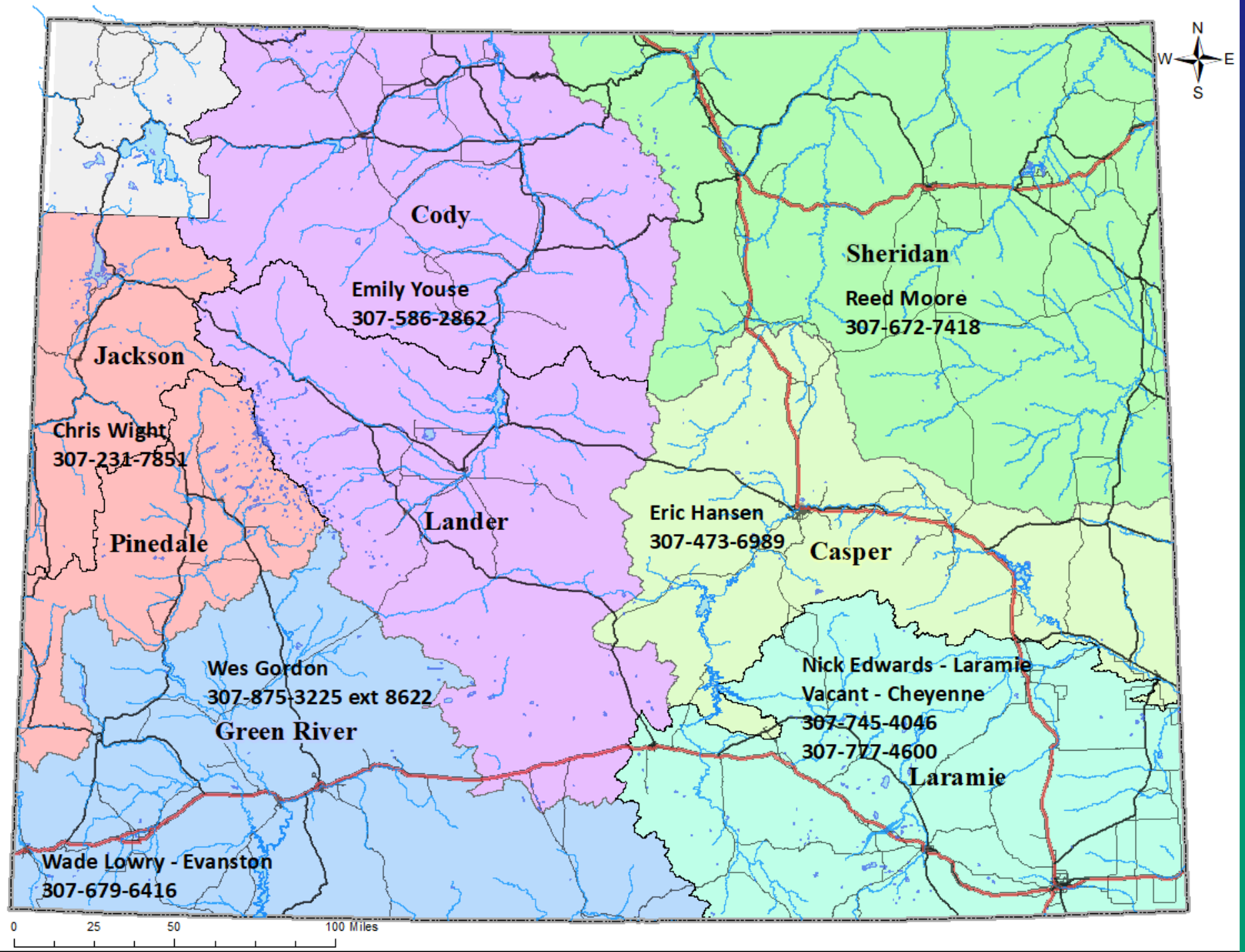


AIS Program Goal

To prevent the spread of AIS to and within Wyoming through ***public outreach***, ***watercraft inspections***, and ***monitoring***.

Personnel

- Program Coordinator - Laramie
- Regional AIS Specialists
  - Cheyenne, Sheridan, Casper, Green River, Cody, Laramie, Jackson, Evanston
- Technician inspectors (66)
  - 4 Lead Techs
  - 62 Technicians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W
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Cody
Emily Youse
307-586-2862
Sheridan
Reed Moore
307-672-7418
Jackson
Chris Wight
307-231-7851
Pinedale
Lander
Eric Hansen
307-473-6989
Casper
Wes Gordon
307-875-3225 ext 8622
Green River
Nick Edwards - Laramie
Vacant - Cheyenne
307-745-4046
307-777-4600
Laramie
Wade Lowry - Evanston
307-679-6416
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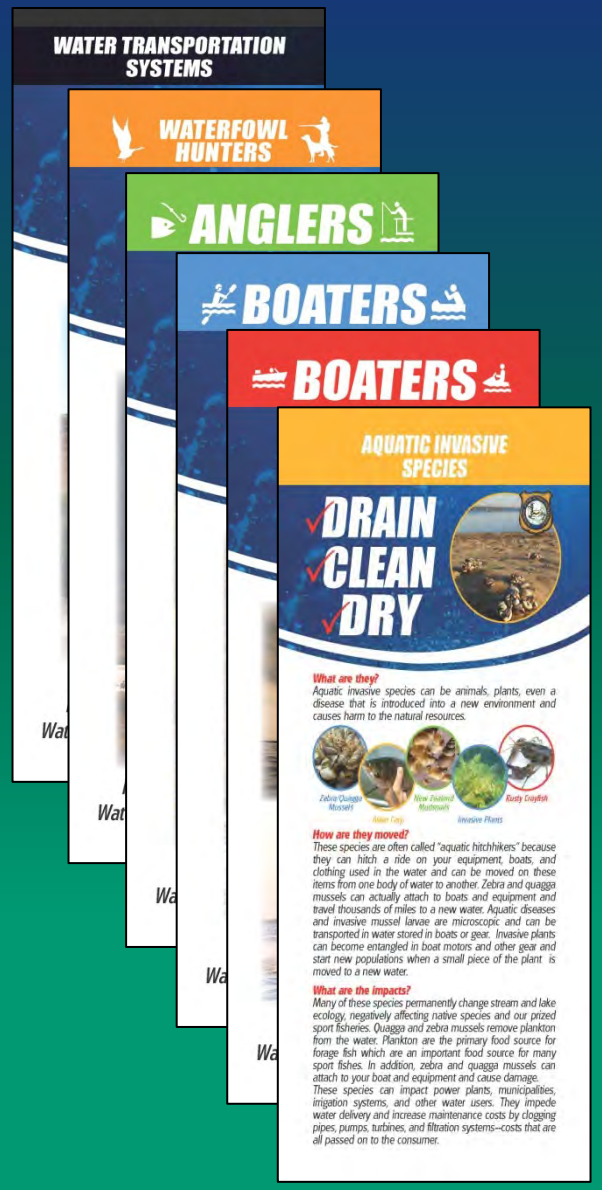
100 Miles

Outreach and Education

- Radio/Interviews/Presentations
- Mailings
- News Articles
- Website
- Outreach Material
  - Billboards
  - Brochures
  - Posters
- Watercraft Inspections
  - Over 350,000 contacts!



Inspector Training

22 courses offered in 2022

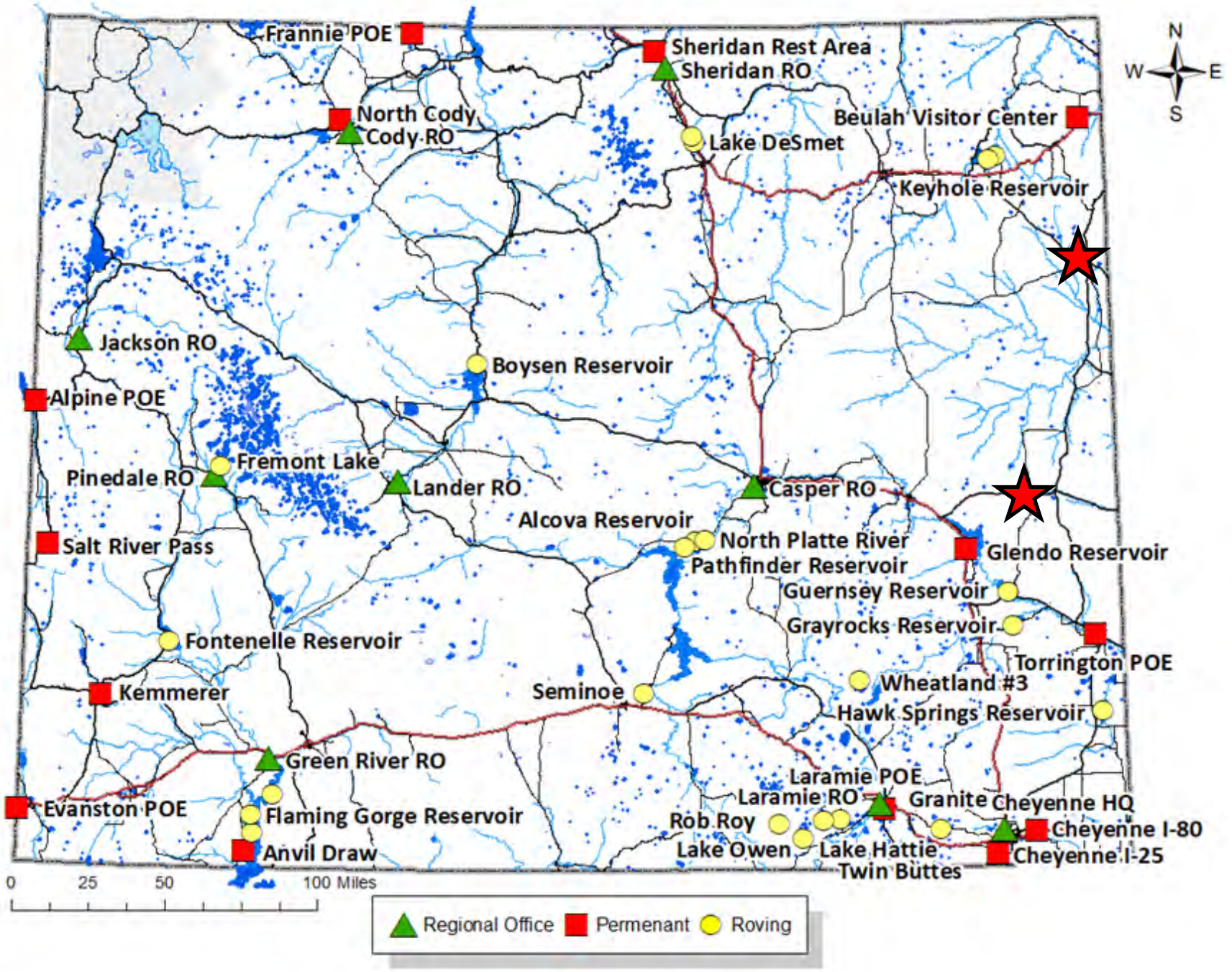
- 17 locations

- 482 certified inspectors in 2022; 181 new and 301 renewed
- Over 2,100 certified since 2010

Watercraft Inspections

Inspection Locations

- 16 border locations at ports of entry, rest areas, etc.
  - 2 new in 2023
  - Most operated 7 days a week
- Roving water check stations
- 9 WGFD offices
- Certified locations (businesses)
- Private authorized inspectors
  - Some listed on website
- Advertised on website, 511 info line, 877-WGFD-AIS


Frannie POE
Sheridan Rest Area
Sheridan RO
North Cody
Cody RO
Beulah Visitor Center
Lake DeSmet
Keyhole Reservoir
Jackson RO
Boysen Reservoir
Alpine POE
Fremont Lake
Pinedale RO
Lander RO
Casper RO
Alcova Reservoir
Salt River Pass
North Platte River
Pathfinder Reservoir
Glendo Reservoir
Guernsey Reservoir
Grayrocks Reservoir
Fontenelle Reservoir
Torrington POE
Wheatland #3
Kemmerer
Seminoe
Hawk Springs Reservoir
Green River RO
Laramie POE
Laramie RO
Granite
Cheyenne HQ
Evanston POE
Flaming Gorge Reservoir
Rob Roy
Cheyenne I-80
Anvil Draw
Lake Owen
Lake Hattie
Cheyenne I-25
Twin Buttes
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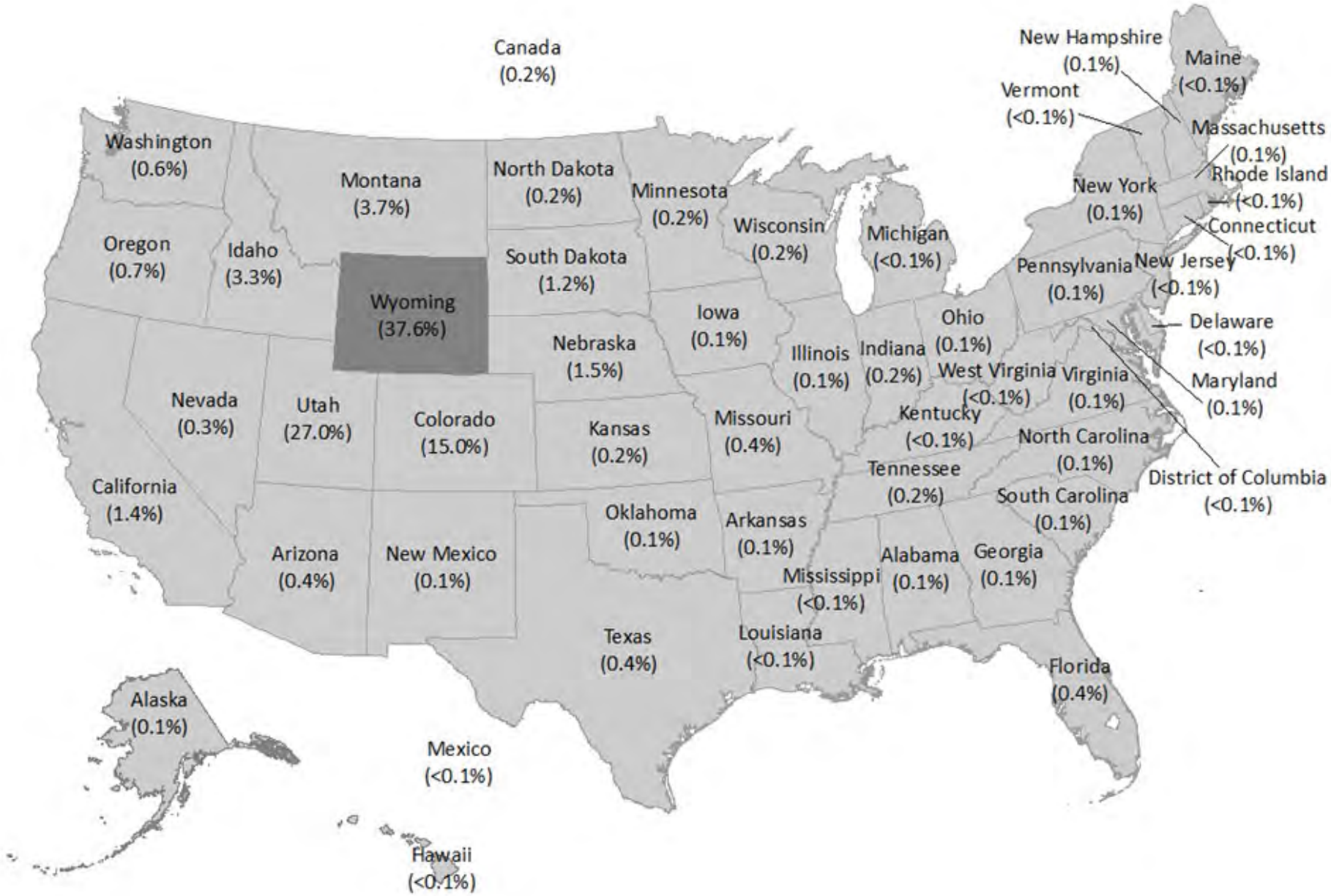
100 Miles
Regional Office
Permenant
Roving

2022 Watercraft Inspections

- Most check stations operated April - October
  - Glendo, Keyhole, and Beulah open longer
- 66,163 inspections statewide
  - Last used on 1,883 different waters
  - 4,789 high risk
  - 699 decontaminations
  - 58 mussel boats
  - 44,037 unique boater contacts
  - Most inspections at Evanston I-80 (20,424), Glendo Reservoir (8,221), and Cheyenne I-25 (4,783)


Canada
(0.2%)
Washington
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Oregon
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Idaho
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Montana
(3.7%)
Wyoming
(37.6%)
North Dakota
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South Dakota
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Nebraska
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Minnesota
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Iowa
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District of Columbia
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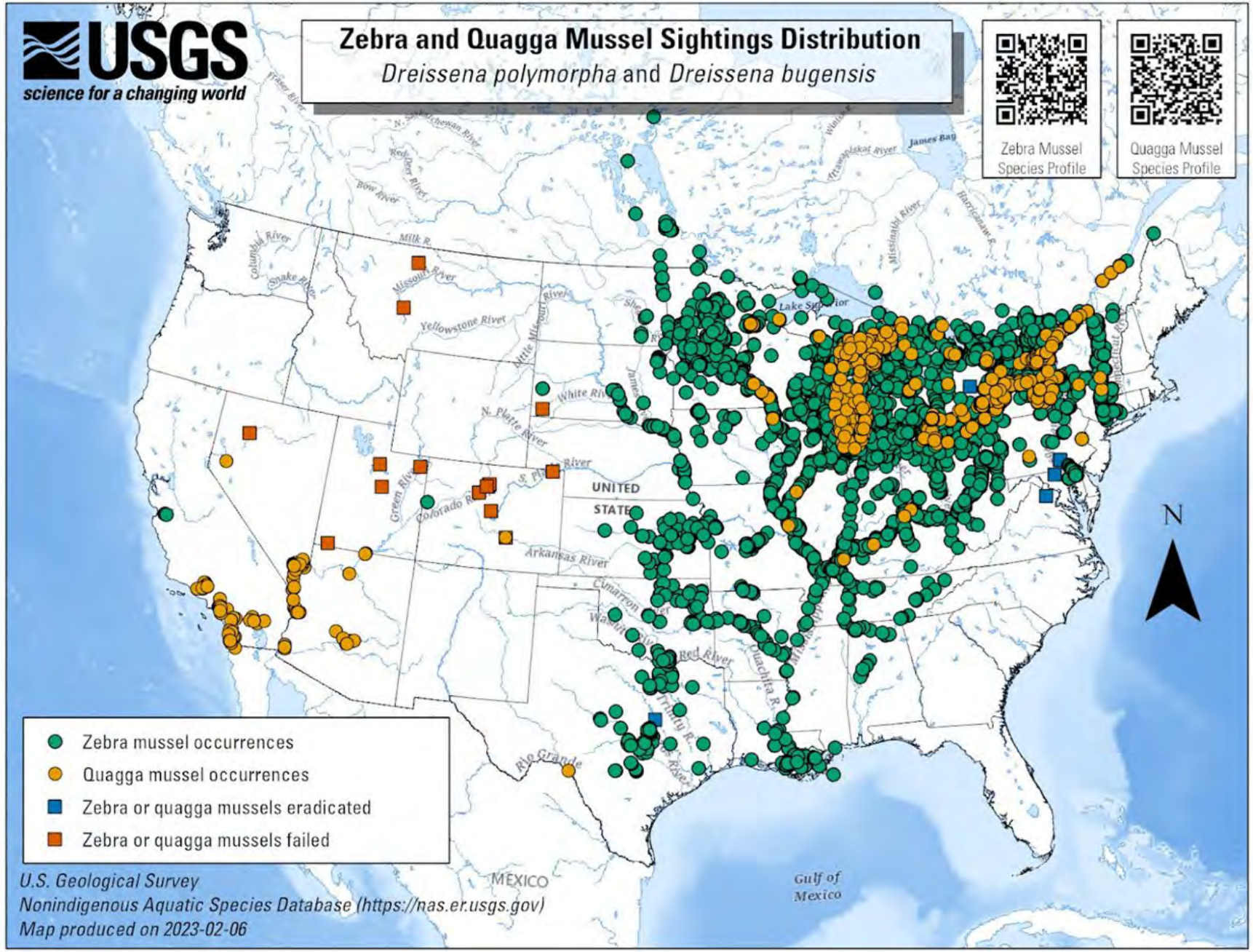
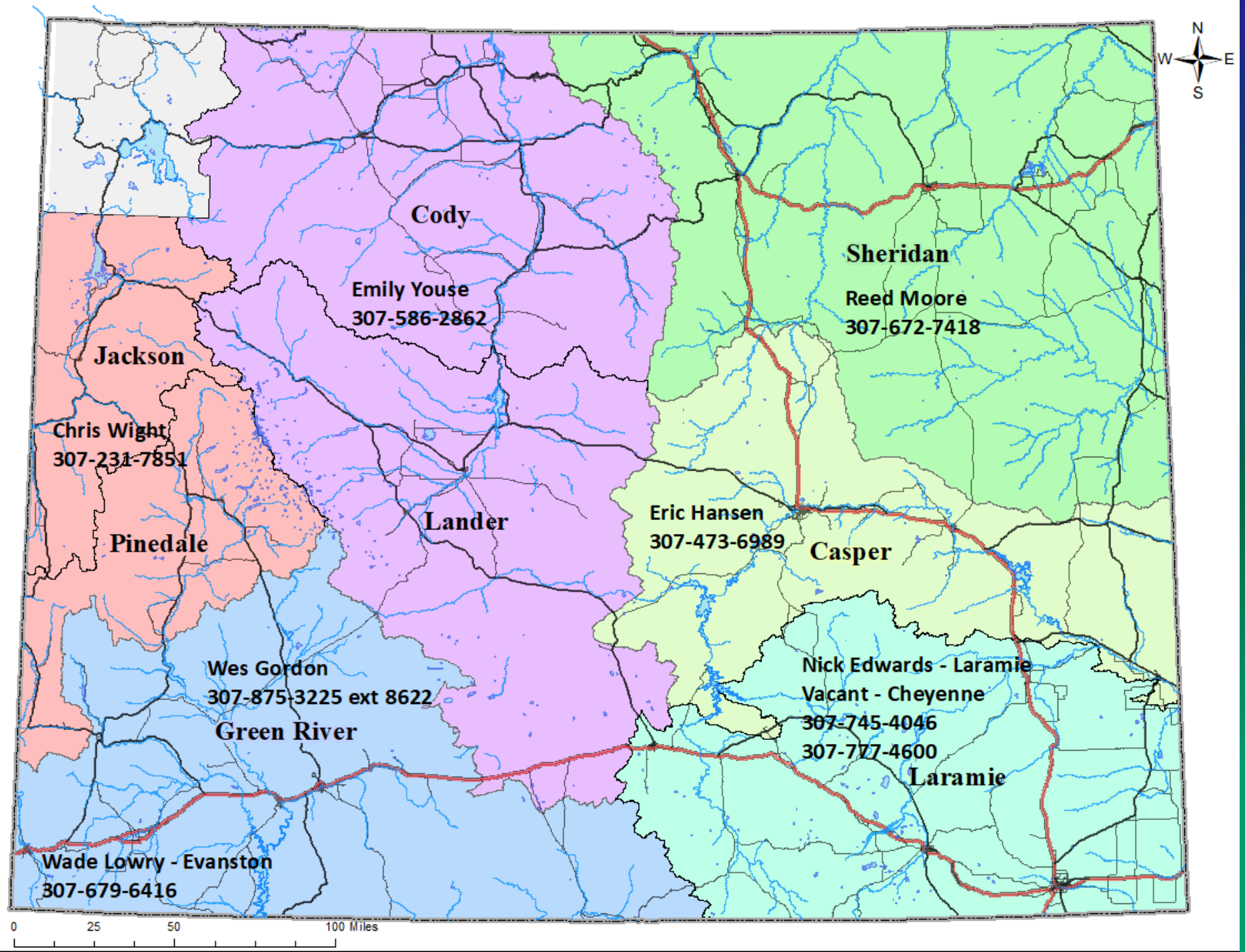
Regional Dreissenid Issues

Wyoming has never had a classified water

- Increased risk every year


USGS
science for a changing world
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 2023-02-06
N
UNITED STATES
MEXICO
Gulf of Mexico
James Bay
Lake Superior
Missouri River
Yellowstone River
Arkansas River
Red River
Rio Grande
Columbia River
Snake River
Milk R.
White Riv
N. Platte River
Green River
Colorado R.
Cimarron
Ouachita R.
Trinity R.
Bow River
Red Deer River
Missinaibi River
Harricanaw R.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Green River
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Vacant - Cheyenne
307-745-4046
307-777-4600
Laramie
Wade Lowry - Evanston
307-679-6416
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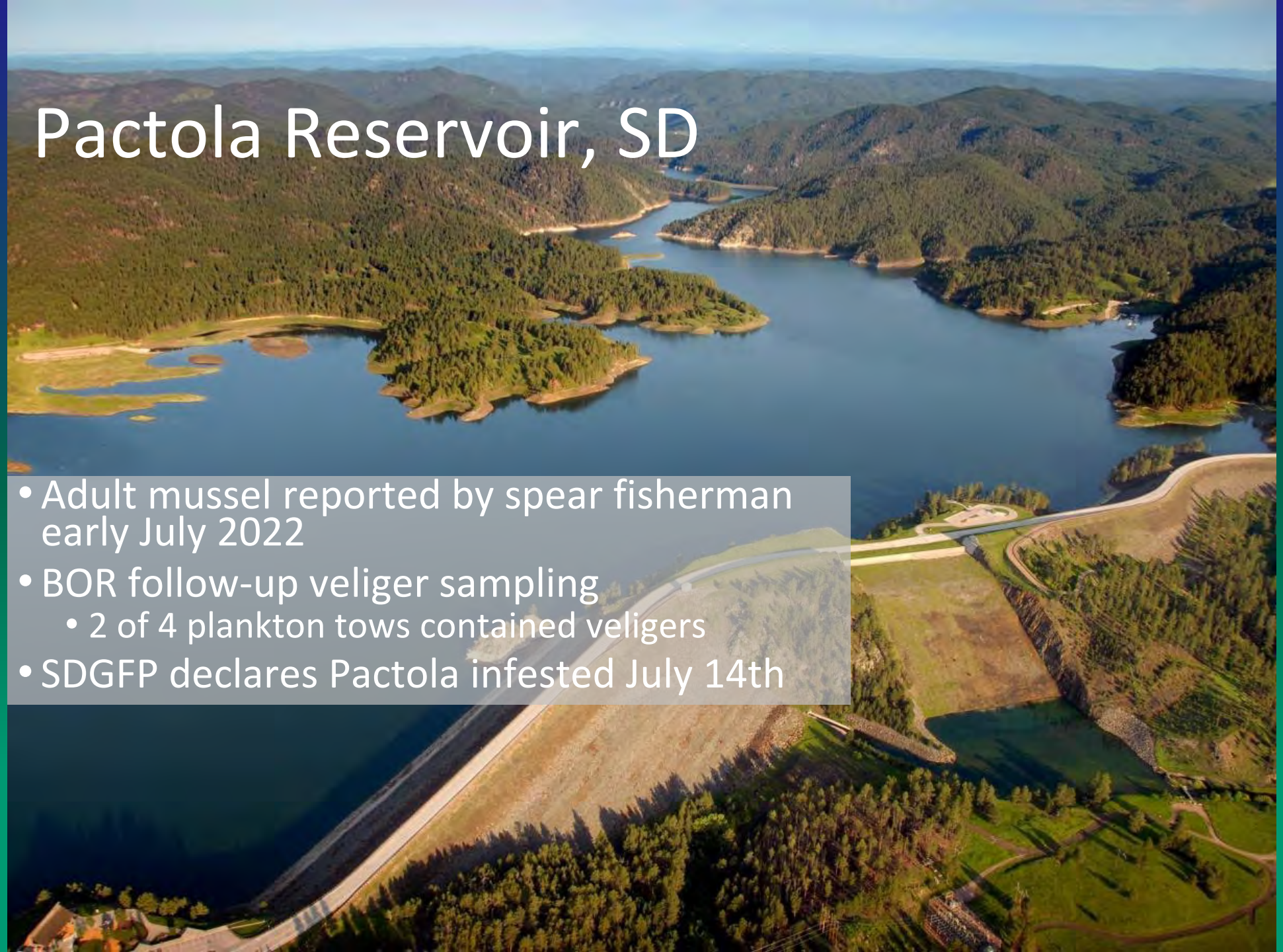
100 Miles

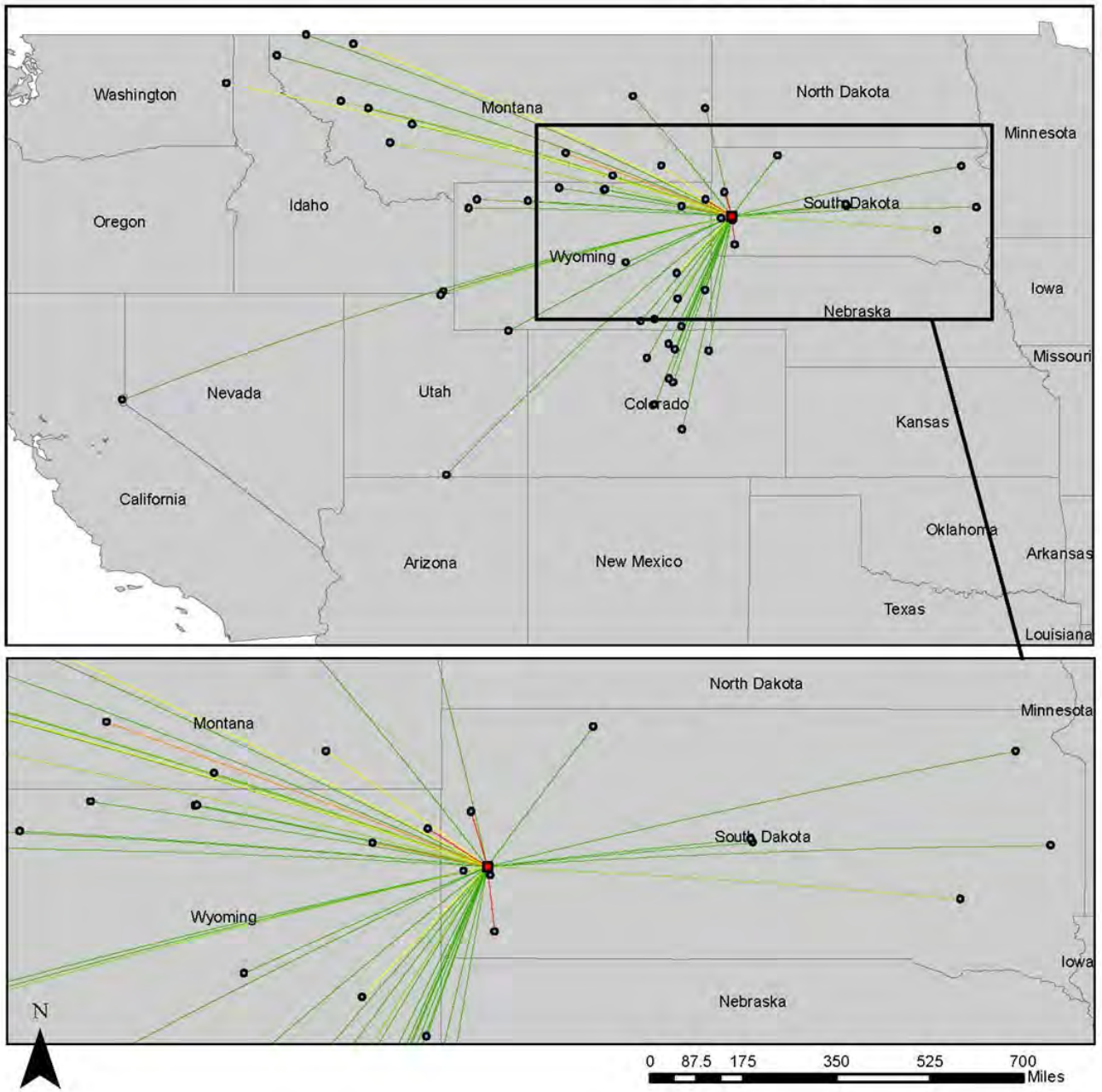
Pactola Reservoir, SD



- Adult mussel reported by spear fisherman early July 2022
- BOR follow-up veliger sampling
  - 2 of 4 plankton tows contained veligers
- SDGFP declares Pactola infested July 14th

Boat Inspections Where Pactola Reservoir Was Last Water Visited

2021 - 2022



Legend

- Pactola Reservoir
- WID Locations

Boats That Report Pactola As A Last Water Visited

- 1 - 4 (35)
- 5 - 9 (5)
- 10 - 25 (5)
- 26 - 49 (5)
- 50+ (5)

Inspection Location	Boats
Pactola Reservoir	1878
Angostura Reservoir	453
Sheridan Lake	200
Belle Fourche - Rocky Point RA	132
Beulah Visitor Center	99
Belle Fourche Reservoir (Orman Dam)	44
Lake Sheridan	42
Hardin	36
Keyhole Reservoir	29
Deerfield Reservior	23
Glacier National Park	16
Spokane	16
Broadus	14
Glendo Reservoir	10
Mitchell Motor Carrier	8
Grant	6
Hwy 89 Garden City	6
Ravalli	6
Anaconda	5
Shadehill Reservoir	4
Tongue River Reservoir State Park	4
Bear Lake	3
Cheyenne I-25 POE	3
Clearwater Junction	3
Helena - Highway 12	3

Since January 2020, Wyoming has inspected 174 boats last used on Pactola Reservoir, 136 were destined for Wyoming waters

Water	Number of Boats
Keyhole Reservoir	75
Glendo Reservoir	16
Desmet Lake	6
Cook Lake	3
Meadowlark Lake	3
Flaming Gorge Reservoir	2
Fremont Lake	2
Lake Hattie	2
Yellowstone Lake	2
Bighorn Lake	2
Alcova Reservoir	1
Gray Reef Reservoir	1
Guernsey Reservoir	1
Jenny Lake	1
North Platte River	1
Park Reservoir	1
Snake River	1
Ten Sleep Lake	1
Tie Hack Reservoir	1
Tongue River	1
West Tensleep Lake	1
Yellowstone River	1

Wyoming's Response

- Increased AIS sampling at Keyhole and LAK Reservoirs
- Increased staffing and hours at Beulah and Keyhole check stations
- Inspection protocol change addressing boats last used in South Dakota, all boats decontaminated if used within 30 days in SD
    - Anticipate more waters in Black Hills to become positive very soon
    - 5-6 times increase from previous years, anticipate 500-700 decons at Beulah in 2023
- Prohibition of all watercraft at LAK Reservoir from 2022 starting August 1st
- Increased outreach and education statewide and locally
- Coordination calls with MTFWP, SDGFP, BOR and USFS
- Added 2 new check stations in 2023
- Increased personnel by 20% for the program
- Increased program budget ~50%

What next?

- Continue to prioritize prevention with border approach
- Prepare for the reality of possible detection in Wyoming
- Re-engage in rapid response plans and adjust accordingly with new lens

Vulnerabilities of Keyhole Reservoir to Dreissenids

Reed Moore, Wyoming Game and Fish

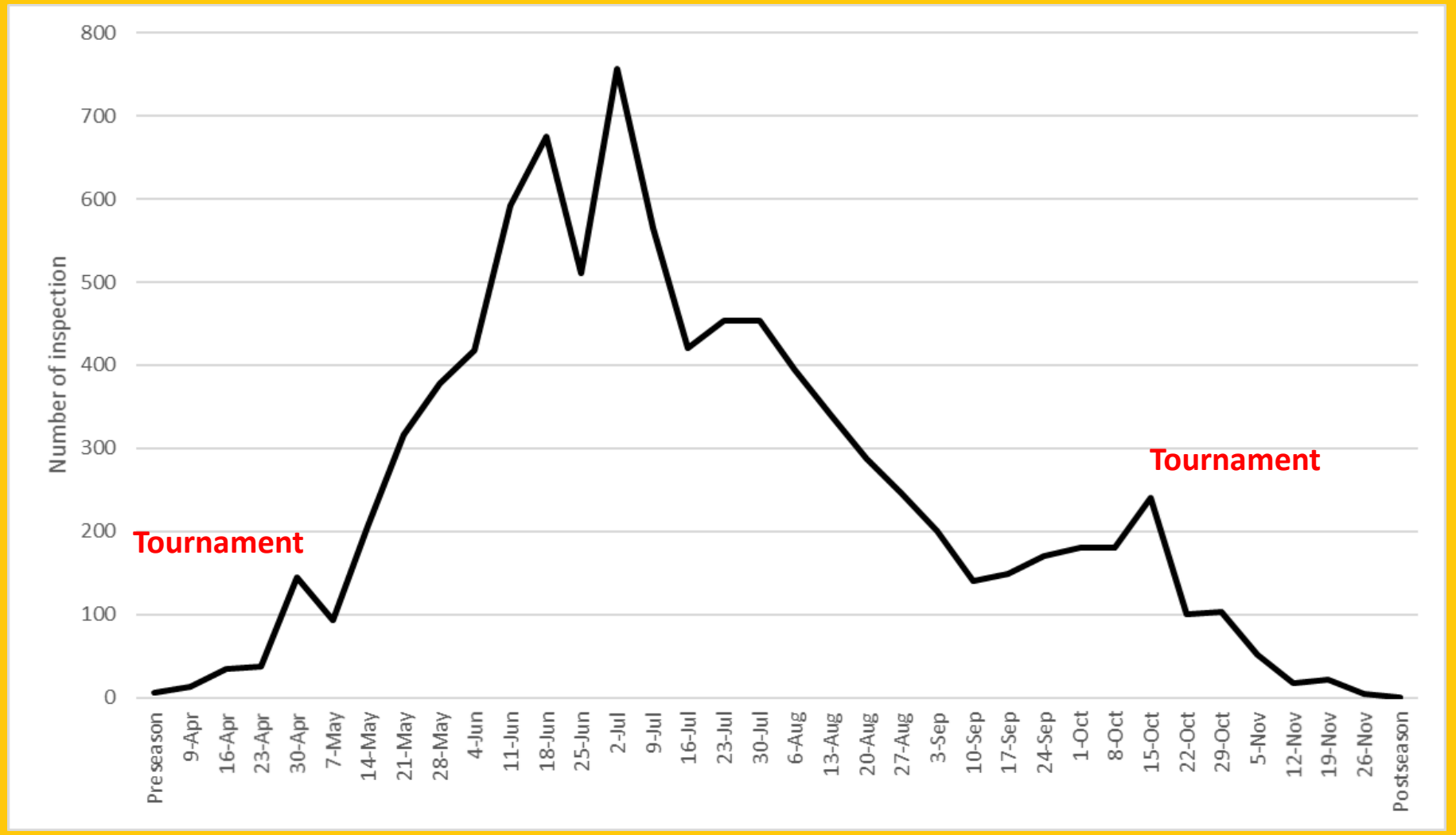
Vulnerability of Keyhole Reservoir to Dreissenid Mussels

Rapid Response Plan Primer Exercise

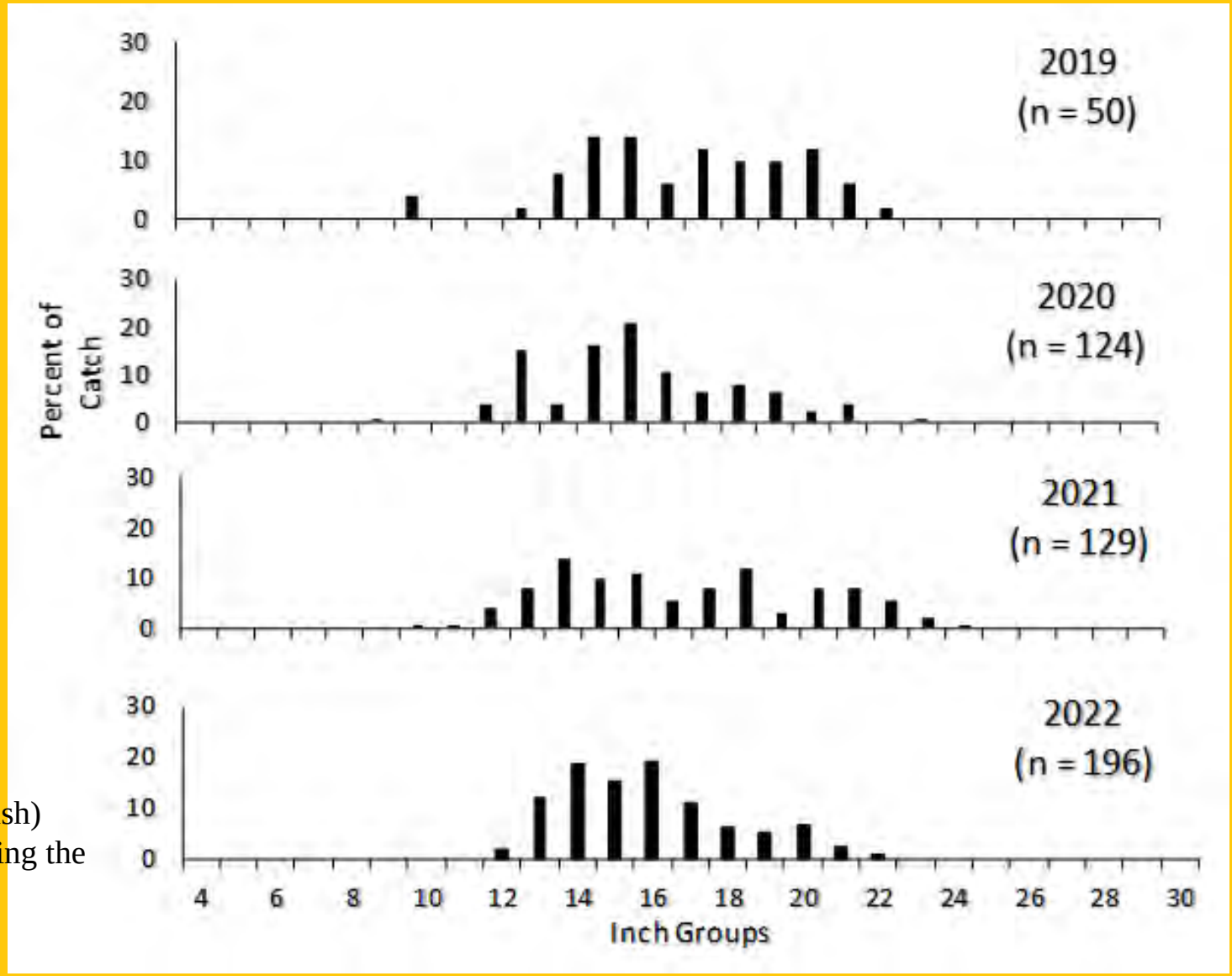
Watercraft Motor Type

Outboard I/O Inboard PWC Jet NM

Sheridan Region Inspections by Week in 2022

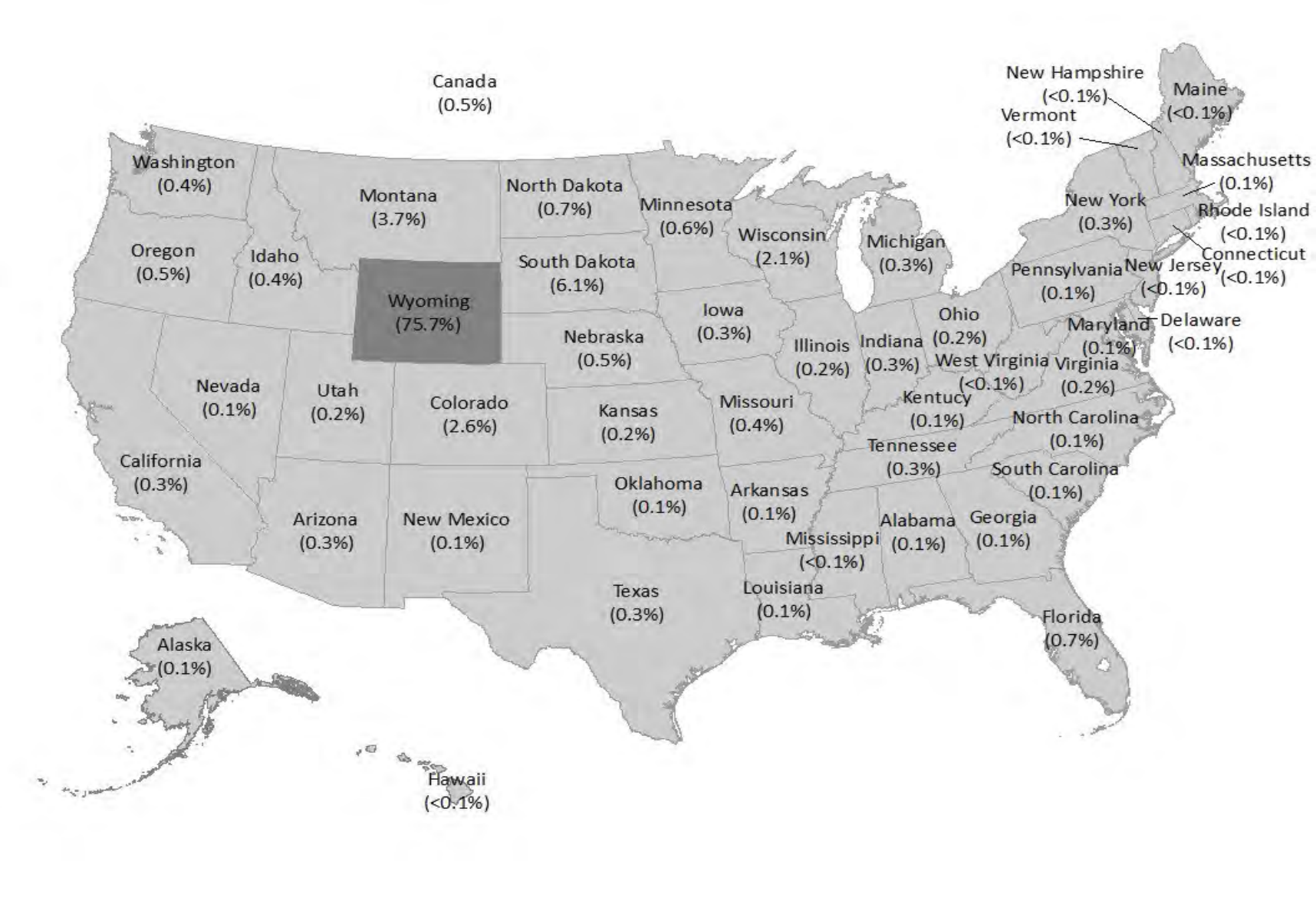


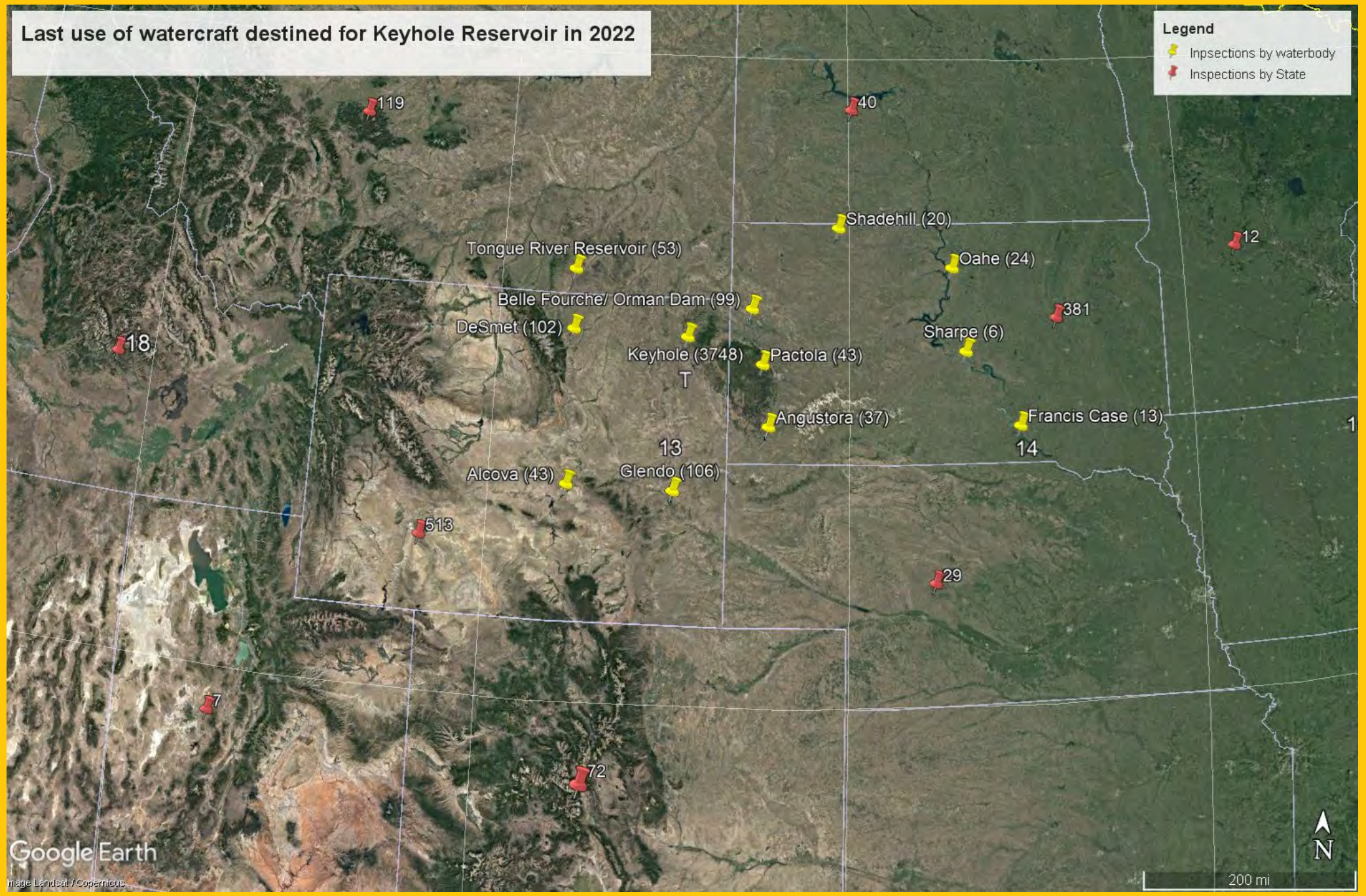
Walleye Fishery



Length frequencies (percent of fish) for WAE sampled in all gear during the spring, 2019 through 2022

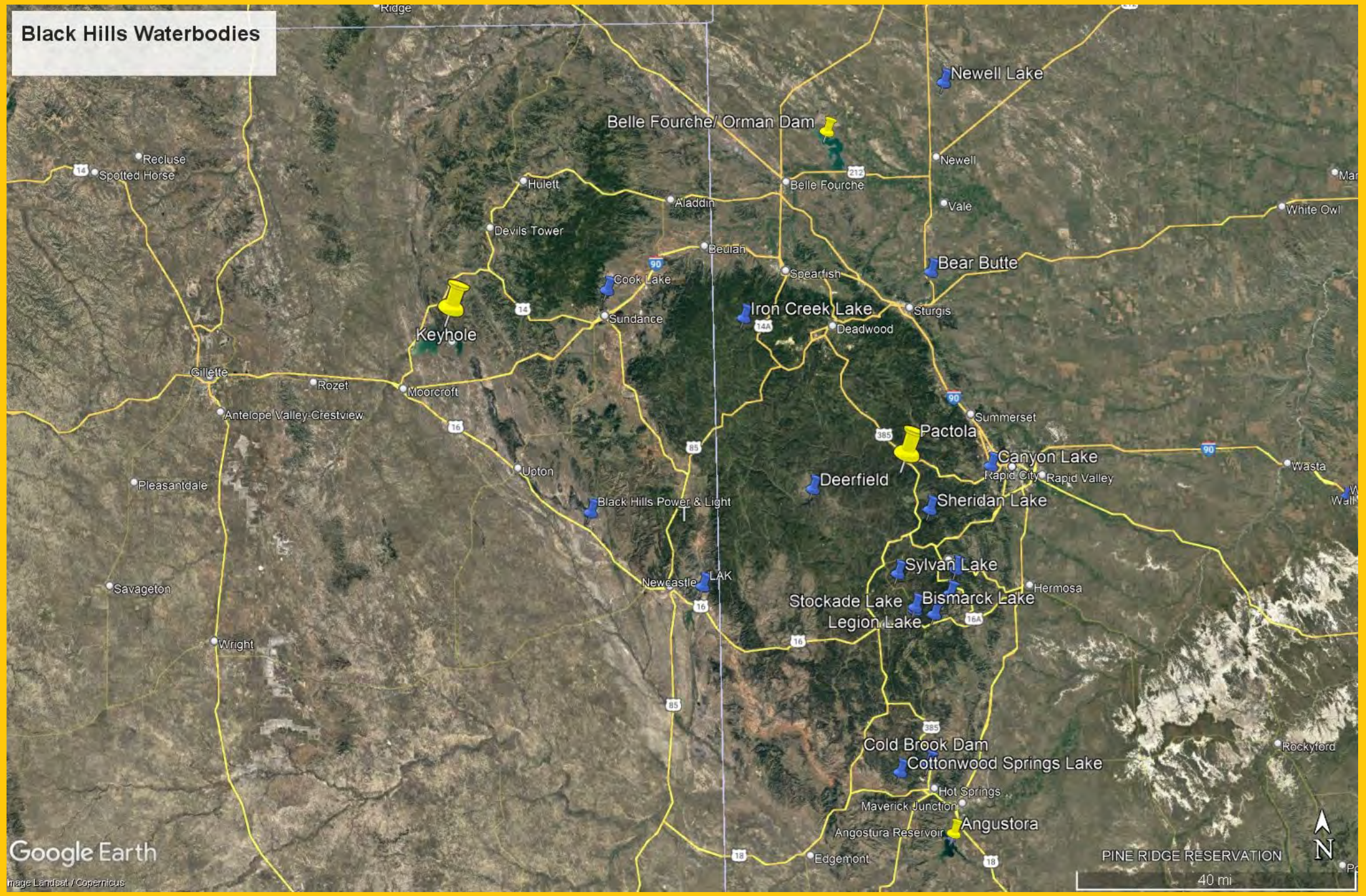
Registration of Watercraft Inspected in the Sheridan Region



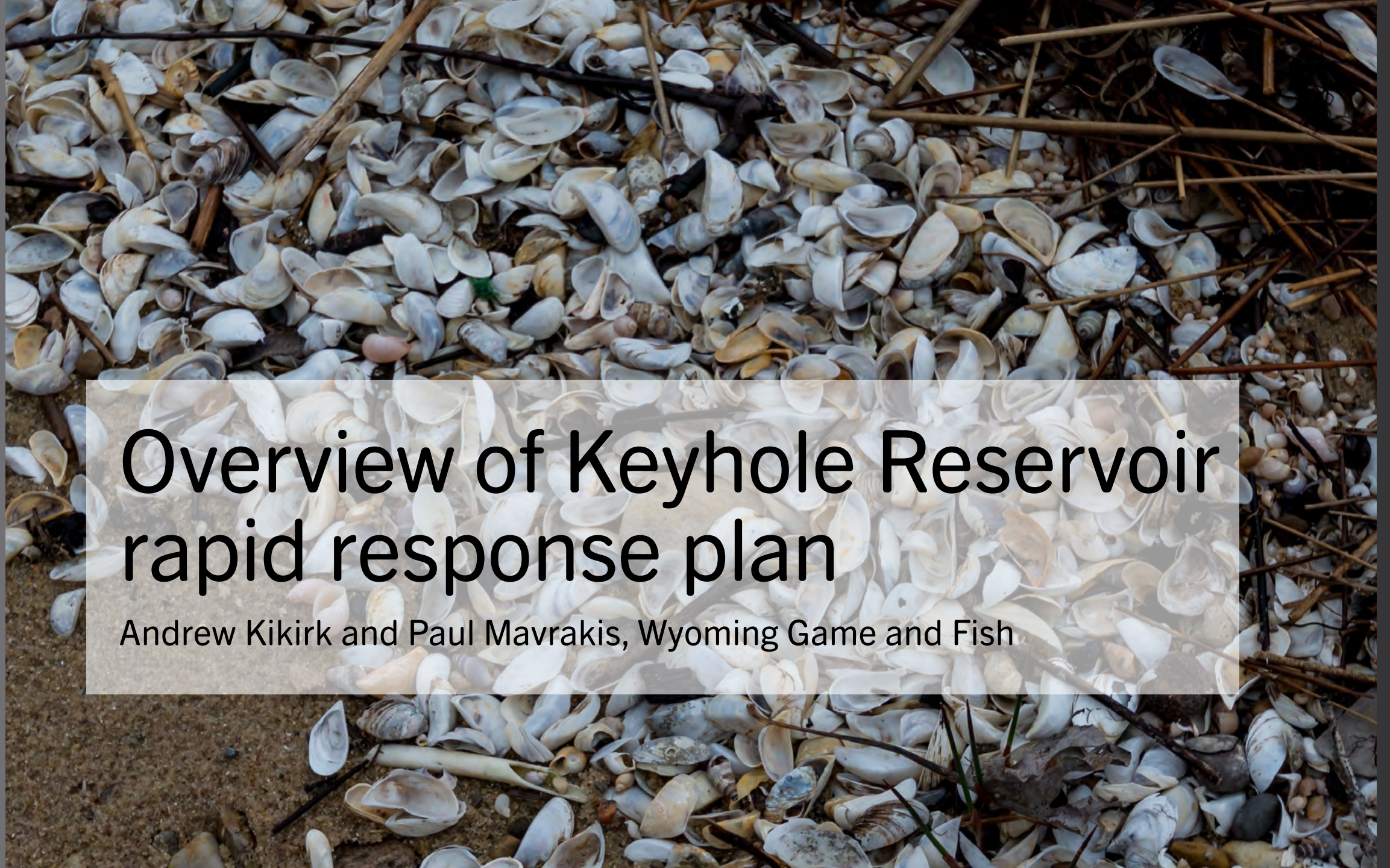

Last use of watercraft destined for Keyhole Reservoir in 2022
Legend
Inpsections by waterbody
Inspections by State
119
40
Shadehill (20)
12
Tongue River Reservoir (53)
Oahe (24)
Belle Fourche/ Orman Dam (99)
381
DeSmet (102)
Sharpe (6)
18
Keyhole (3748)
Pactola (43)
T
Angustora (37)
Francis Case (13)
13
14
Alcova (43)
Glendo (106)
513
29
7
72
Google Earth
Image Landsat / Copernicus
N
200 mi

Last Water by State

Wyoming (not Keyhole)	513
South Dakota	381
Montana	119
Colorado	72
North Dakota	40
Nebraska	29
Idaho	18
Minnesota	12
Utah	7
California	6
Texas	5


Black Hills Waterbodies
Newell Lake
Belle Fourche/ Orman Dam
Recluse
Spotted Horse
Hulett
Aladdin
Belle Fourche
Newell
Vale
White Owl
Devils Tower
Beulah
Bear Butte
Cook Lake
Spearfish
Iron Creek Lake
Sturgis
Keyhole
Sundance
Deadwood
Gillette
Rozet
Moorcroft
Antelope Valley-Crestview
Summerset
Pactola
Canyon Lake
Rapid City
Rapid Valley
Wasta
Upton
Deerfield
Pleasantdale
Black Hills Power & Light
Sheridan Lake
Sylvan Lake
Savageton
Newcastle
LAK
Hermosa
Stockade Lake
Bismarck Lake
Legion Lake
Wright
Cold Brook Dam
Cottonwood Springs Lake
Rockyford
Hot Springs
Maverick Junction
Angostura Reservoir
Angustora
Edgemont
PINE RIDGE RESERVATION
N
40 mi
Google Earth
Image Landsat / Copernicus

TAKE A 10-MINUTE BREAK



Overview of Keyhole Reservoir rapid response plan

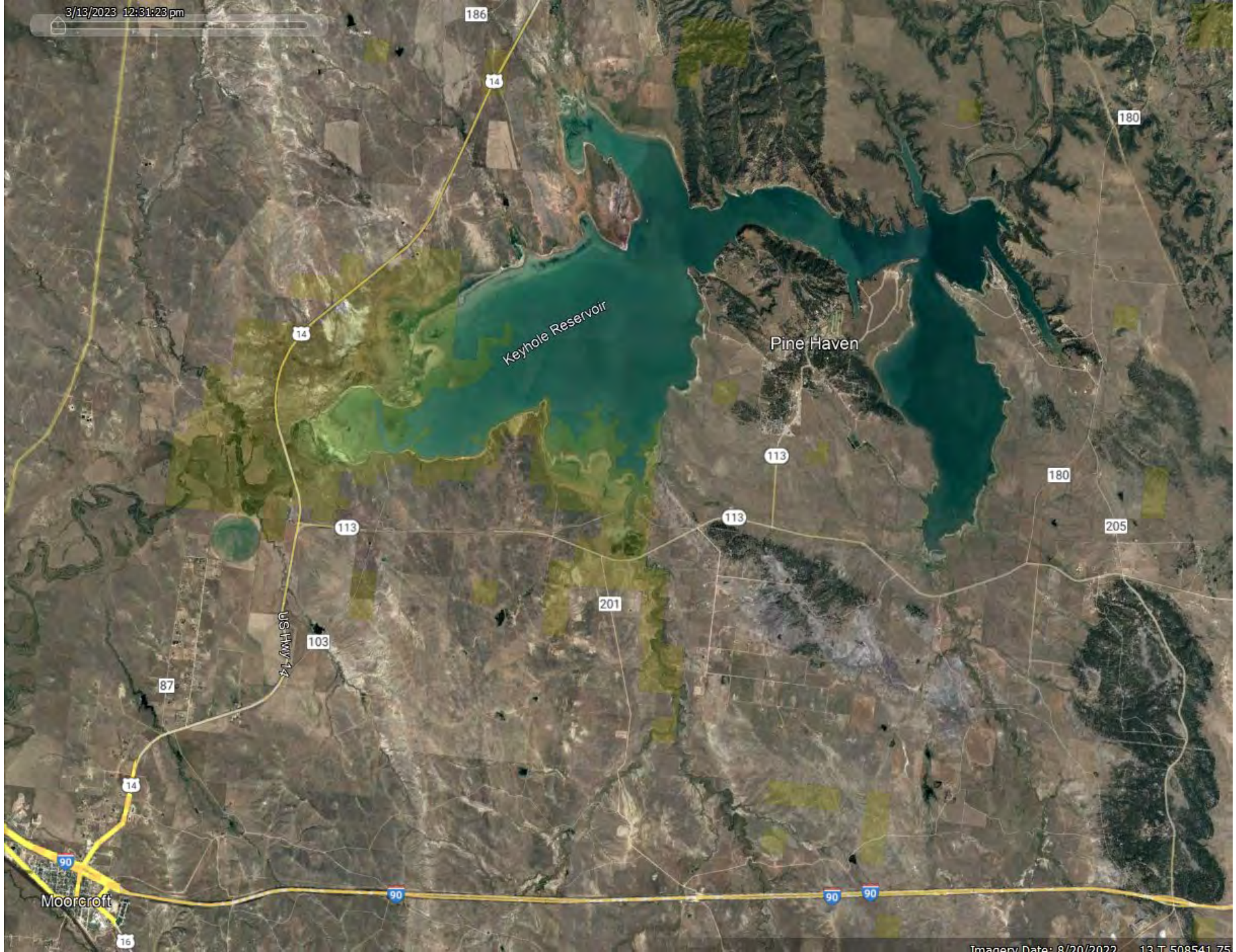
Andrew Kikirk and Paul Mavrakis, Wyoming Game and Fish

Keyhole Reservoir: Rapid Response Plan

- Flood Control Act of 1944
- Construction began in 1950; impoundment 1952
- 14,720 acre Keyhole State Park; 12 miles north of Moorcroft, WY
- 9,411 surface acres (at full pool); 194,668 acre-ft
- Historical Averages; 95,360 acre-ft and 5,423 sa (57% of capacity)
- Has only reached full pool six times (78, 99, 12, 15, 19 twice)
- Provides irrigation water to 60,000 acres (SD-90%, WY-10%)

Boating Season

- Generally runs from ice-off in mid-March to ice-on in Nov-Dec
- Anglers make up the majority of boating traffic
- As summer progresses boating traffic shifts to recreationists
  - Jet skis, wake boarders, paddle boards etc.


3/13/2023 12:31:23 pm
186
14
180
Keyhole Reservoir
Pine Haven
14
113
180
113
113
205
201
US Hwy 14
103
87
14
90
Moorcroft
90
90
90
16
Imagery Date: 8/20/2022 13 T 508541 75

Residency and Watercraft Used

- In 2022 we conducted 4,439 inspections
  - 75 were High Risk
  - 20 decontaminations
- Majority of boater use from WY residents (85%)
  - Nearby communities of Gillette, Moorcroft, Pine Haven, and Sundance
- Majority of nonresident use from SD (60%), MT & CO (13%), ND & NE (7%)

Access

- Three public entrances to Keyhole State Park leading to 5 public boat ramps
- Handful of private docks, but no private boat ramps
- No public access on the north side of the reservoir
- Smaller watercraft (e.g., float tubes, canoes) can launch wherever the user can carry their vessel


Wind Creek Ramp
Coulter/Bearclaw Ramp
Marina Ramp
Pat's Point Ramp
Tatanka Ramp
Pine Haven

Check Stations

- Access roads into Keyhole provide good “pinch points” to inspect all boats
- West side: Paradise Foods Grocery Store
- East side: State Park Headquarters


3/13/2023 12:31:23 pm
Wind Creek Ramp
Coulter/Bearclaw Ramp
Marina Ramp
Pat's Point Ramp
Tatanka Ramp
East Side Check Station
Pine Haven
Paradise Foods Check Station
1985
Imagery Date: 8/20/2022 13 T 516451.44 m E 4911298.70 m

Short-Term Suspect Status

- Initial detection of veligers or adults
- Follow up sampling required (up to six weeks)
- Clean, Drained, Dry Exit Inspections
  - Decontamination of undrainable areas (i.e., ballast tanks)
- May require short-term closure of boating so that we can mobilize personnel and equipment. Regional personnel likely operating check stations until additional personnel are hired.

Short-Term Suspect Status Cont.

- Communication Plan
  - Communication chain initiated (wardens, key stakeholders etc.)
- Closures
  - Shore launching on east side of Cottonwood Bay (only area that wouldn't come across a check station)
  - Night closure of boat ramps (ensures every vessel leaving receives an exit inspection; park personnel are making gates)
  - Boat ramps open ½ hour before sunrise and close ½ hour after sunset


3/13/2023 12:31:23 pm
Coulter/Bearclaw Ramp
Marina Ramp
Pat's Point Ramp
Tatanka Ramp
East Side Check Station

What's Next?

- Follow up sampling confirmed = Positive Status
- Follow up sampling not confirmed = Long-Term Suspect Status

Long-Term Suspect Status

- Monthly monitoring
  - No confirmation in 3 years, reverts back to Negative status
  - Two confirmations within 12 months enters Positive status
- Clean, Drain, Dry Exit Inspections
  - Decontamination of undrainable areas (i.e., ballast tanks) and motor flushes

Long-Term Suspect Status Cont.

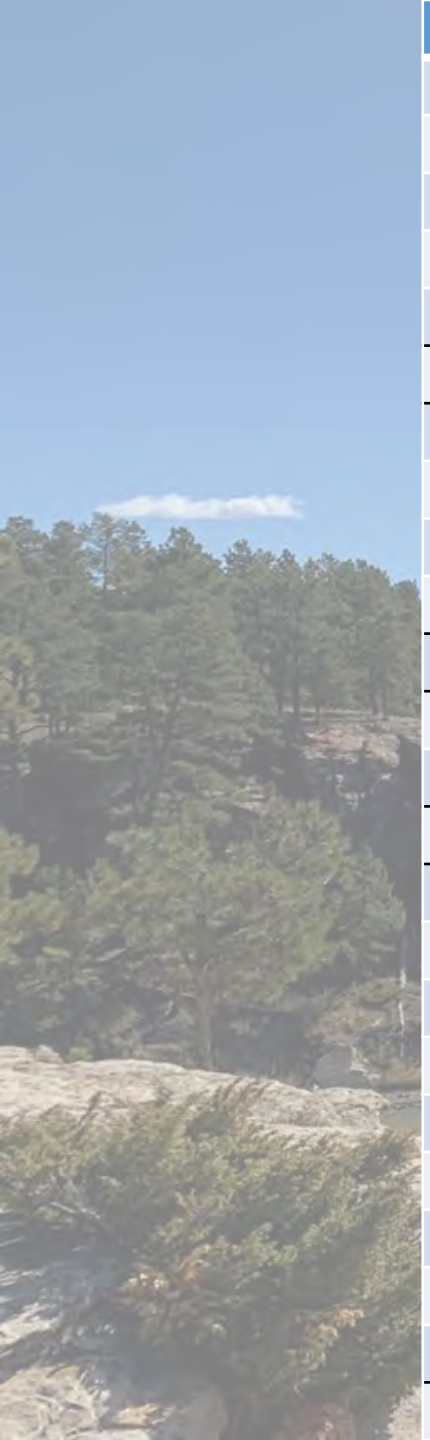
- Closures
  - Shore launching on east side of Cottonwood Bay (only area that wouldn't come across a check station)
  - Night closure of boat ramps (ensures every vessel leaving receives an exit inspection)
  - Boat ramps open ½ hour before sunrise and close ½ hour after sunset
  - East side boat ramps will be closed in April and November (minimizes personnel during low boating use time). Ramps will reopen May 1.

Long-Term Suspect Status Cont.

- Staffing Plan
  - Several technicians and one Contract Biologist to coordinate and supervise
  - Technicians will vary from 2 to 14 depending on time of year

Month	Day Length	Days/Month	Techs Needed	Total Hours	Total Techs Needed
April	15	30	1 (PF only)	450	3
May 1-15	15	15	2 (PF-1, ES-1)	450	3
May 16-31	16	16	4 (PF-2, ES-2)	1024	6
June	16	30	4 (PF-2, ES-2)	1920	12
July	16	31	5 (PF-3, ES-2)	2480	14
August	15	31	5 (PF-3, ES-2)	2325	14
Sept 1-15	14	15	4 (PF-2, ES-2)	840	5
Sept 16-31	13	16	2 (PF-1, ES-1)	416	3
October	12	31	2 (PF-1, ES-1)	744	5
November	11	30	1 (PF only)	330	2

(Day length) X (Days) X (Technicians) = Total Hours needed
PF = Paradise Foods Check Station; ES = East Side Check Station
(Total Hours) ÷ (40 hours/week) ÷ (4.33 weeks/month) = Total Technicians needed



Personnel	Description	# of Months	Cost/Month	Total Cost
	Contract Bio	8	$4,543	$36,344
	Techs; 2 @ 8 months	16	$2,863	$45,808
	Techs; 5 @ 6 months	30	$2,863	$85,890
	Techs; 7 @ 4 months	28	$2,863	$80,164
	Subtotal			**$248,206**
Vehicle	**Description**	**# of Months**	**Cost/Month**	**Total Cost**
	Purchase ¾ ton p/u	1	$33,000	$33,000
	Rental	8	$500	$4,000
	Rental	6	$500	$3,000
	Subtotal			**$40,000**
Travel	**Description**	**# of Days**	**Cost/Day**	**Total Cost**
	Camp Groceries (person days)	1,544	$45	$69,480
	Subtotal			**$69,480**
Supplies	**Description**			**Total Cost**
	Camp Trailers	2	$20,000	$40,000
	Office Trailers	2	$20,000	$40,000
	2-pack 2000W generators	2	$1,900	$3,800
	16ft 10,000lb capacity trailer	1	$4,000	$4,000
	Signs (one-time expense)	2	$500	$1,000
	Decontamination Units	3	$12,500	$37,500
	Trailer slip rental (nights)	92	$45	$4,140
	Subtotal			**$130,440**
	Total			**$488,126**

Positive and Infested Status

- Plan remains the same
- Clean, Drain, Dry Exit Inspections
  - Decontamination of undrainable areas (i.e., ballast tanks) and motor flushes
- Budgets
  - Approximately $300,000 annually (tech salaries, camp groceries)
  - Assumes that all major equipment has already been purchased

Local Boater Program

- Keyhole Reservoir only boats, i.e., they don't recreate at any other water
- Identified with stickers on boat and trailer
- Would launch on Pine Haven side of reservoir
- Minimizes the total number of decontaminations and wear and tear on equipment

Local Boater Program Cont.

- Lessen the amount of technicians needed
  - One or two techs ensuring that the boaters launching are enrolled in the program
- Boaters not enrolled would launch on the east side of reservoir

Other Considerations

- We need a way to identify boats that did not get an exit inspection
  - Check station overwhelmed, under staffed, equipment malfunction
- A boating season should be considered (e.g., April 15 to Nov 15)
  - Ice coverage is highly variable, ensures that staffing is in place
- Boat ramp hours should be considered for closing earlier
  - Minimizes the number of decontaminations done in the dark

Realistic Scenarios for Dreissenid Mussel Detection

Josh Leonard, WY Game and Fish

TAKE A 10-MINUTE BREAK

Roles and Responsibilities

Lisa DeBruyckere, Creative Resource Strategies, LLC

Agencies and Authorities

- **Bureau of Reclamation** – management of reservoir (drawdowns)
  - Closure of water body must adhere to 43 CFR Part 423 – 423.12 gives BOR authority to close all portions of BOR facilities, lands, or water bodies without advance public notice for emergency sit that would result in significant and immediate risks to public safety, security, or other public concerns.
  - Partial closures/ramp restrictions.

- **US Fish and Wildlife Service** – ESA Consultation

- **Environmental Protection Agency** – Emergency Exemption – Section 18 of Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) – for unregistered use of pesticides to address emergency conditions.
  - *Example from Maryland* - "EPA authorized the use of potassium chloride in a quarry in Carroll County to eradicate the invasive zebra mussel. Effective May 13, 2019 to May 13, 2022. Since this request proposed a use for a new chemical which has not been registered by EPA as a pesticide, in accordance with the requirements at 40 CFR 166.24, a notice of receipt published in the Federal Register on March 25, 2019 (84 FR 11086) (FRL-9990-83) with the public comment period closing on April 9, 2019."

Agencies and Authorities (continued)

- **Wyoming Game and Fish Department** – management of fisheries
  - Title 23, Chapters 4 and 62
    - Conveyances subject to inspection upon encountering a mandatory AIS check station – authorized inspectors may inspect any conveyance and perform decontaminations, then seal
    - Impoundment and quarantine authority
    - Section 5c – authority to institute temporary or permanent closures on lands owned or administered by the Commission.
- **Wyoming State Parks and Cultural Resources/private landowners** – land adjacent to reservoir
  - Title 23, Game and Fish 23-4-203: The commission, in consultation with the department of state parks and cultural resources, may restrict watercraft usage on waters of the state as provided in W.S. 41-13-211(b) upon a finding that a specific body of water is threatened with the imminent introduction of an aquatic invasive species or an aquatic invasive species has been introduced to the specific body of water.
    - E.g., 2022 mandate to inspect all watercraft prior to launching/restricted boat ramp use; closure of boat ramps; prohibition of shoreline launching
- **Wyoming Department of Agriculture** – Compliance assistance with EPA rules and regulations, Section 18 of FIFRA (Emergency Exemption)
  - Wyoming Environmental Pesticide Control Act of 1973, 35-7-350 – regulates the labeling, distribution, storage, transportation, disposal, use and application of pesticides to control pests
- **Wyoming Department of Environmental Quality** – Pesticide General Permit (PGP) for Major Pesticide Discharges – Chapters 1, 2, and 4 of Wyoming Water Quality Rules and Regulations – for discharge to, over, in, or at water's edge – biological or chemical pesticides – pesticide applications cannot violate FIFRA requirements; apply for permit online: http://deq.wyoming.gov/wqd/pesticides-permitting/resources/general-permits/.

Title 23. Game and Fish 23-4-203

(a) In order to prevent, control, contain, monitor and whenever possible eradicate aquatic invasive species from the waters of this state, **the commission and the department of state parks and cultural resources shall promulgate rules and regulations to administer and enforce the provisions of this article and to establish, operate and maintain aquatic invasive species check stations in order to inspect conveyances.**

(b) **Every conveyance shall stop at authorized mandatory aquatic invasive species check stations** in accordance with rules established by the commission and the department of state parks and cultural resources. Upon probable cause that an aquatic invasive species may be present, a peace officer may:

(i) **Require the owner of a conveyance to decontaminate** the conveyance; or

(ii) **Decontaminate or impound and quarantine** the conveyance as provided in this section.

(c) The commission, in consultation with the department of state parks and cultural resources, **may restrict watercraft usage on waters of the state as provided in W.S. 41-13-211(b) upon a finding that a specific body of water is threatened with the imminent introduction of an aquatic invasive species or an aquatic invasive species has been introduced to the specific body of water.**

(d) **Any peace officer is authorized to stop and inspect for the presence of aquatic invasive species** or for proof of required inspection any conveyance:

(i) **Immediately prior to a boat, vessel or watercraft being launched** into waters of the state;

(ii) **Prior to departing from the waters of this state** or a boat, vessel or watercraft staging area;

(iii) **That is visibly transporting any aquatic plant material**; or

(iv) **Upon a reasonable suspicion that an aquatic invasive species may be present.**

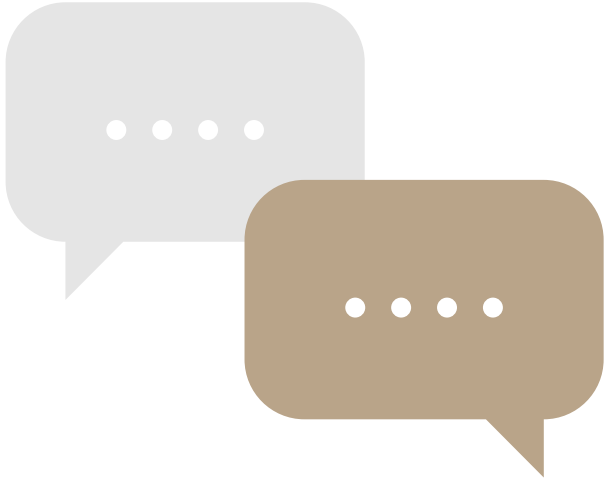
(e) **A peace officer may order the decontamination of a conveyance** upon a determination that an aquatic invasive species is present after conducting an inspection as provided in this section.

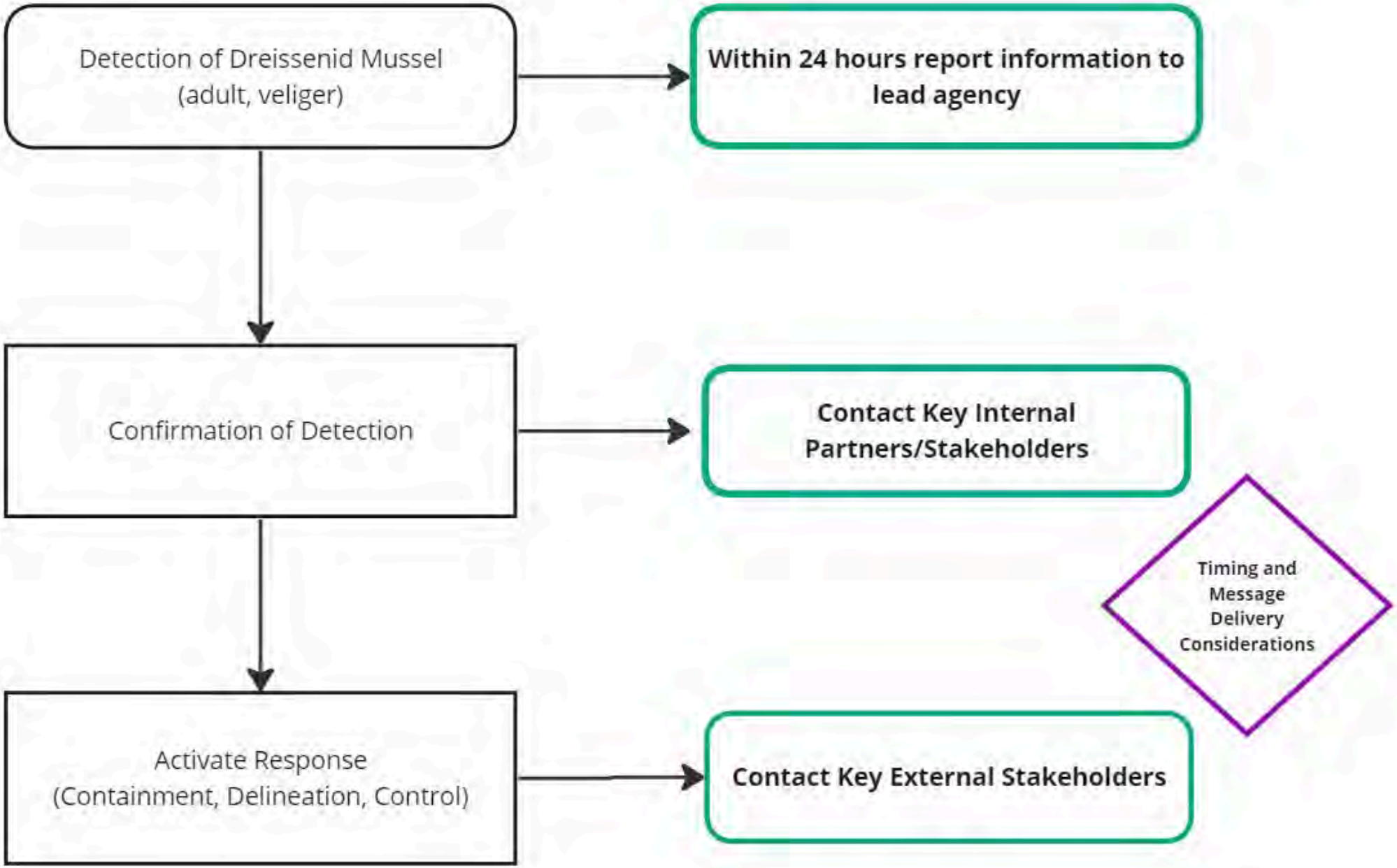
(f) **A peace officer may impound and quarantine** a conveyance . . .

(j) The commission, in coordination with the department of transportation, the department of state parks and cultural resources and the department of agriculture, is **authorized to establish and inspect conveyances at mandatory aquatic invasive species check stations at ports of entry, other department of transportation facilities located near the borders of this state** that meet established state and national safety and commerce requirements for the traveling public or other appropriate facilities.

Communication

Leah Elwell, Conservation Collaborations



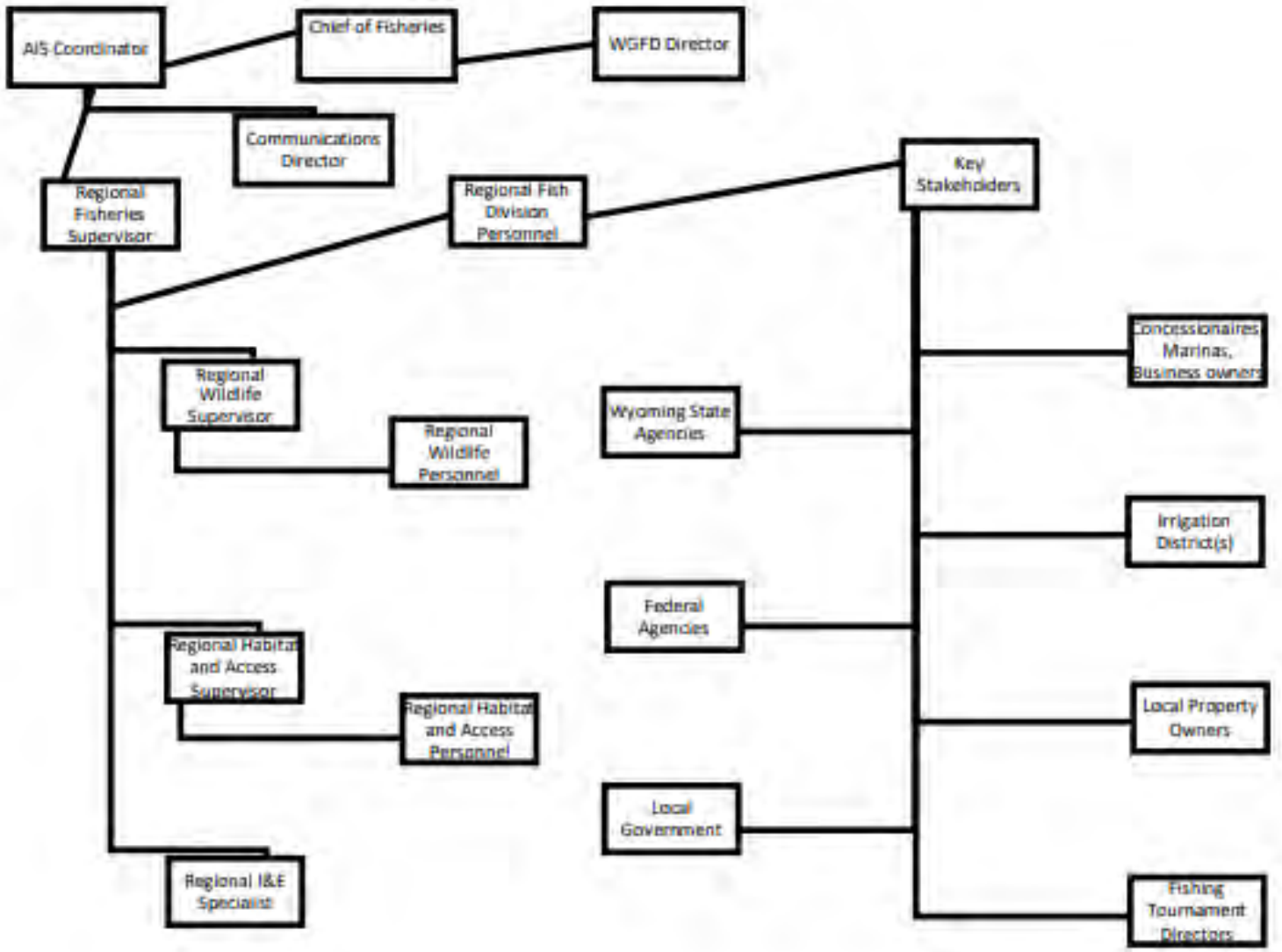

Detection of Dreissenid Mussel
(adult, veliger)
Within 24 hours report information to lead agency
Confirmation of Detection
Contact Key Internal Partners/Stakeholders
Timing and Message Delivery Considerations
Activate Response
(Containment, Delineation, Control)
Contact Key External Stakeholders

Internal Communications

- Identification of key entities for information
  - State and Federal Agencies
  - Municipal
  - Tribal

External Communication

- Identification of key entities for information For Stakeholders
  - Concessionaires
  - Marina Owners
  - Business Owners
  - Irrigation District
  - Land Owners
  - Fishing Tournament Directors
- Draft Press Release


AIS Coordinator
Chief of Fisheries
WGFD Director
Communications Director
Regional Fisheries Supervisor
Regional Fish Division Personnel
Key Stakeholders
Concessionaires Marinas, Business owners
Regional Wildlife Supervisor
Regional Wildlife Personnel
Wyoming State Agencies
Irrigation District(s)
Federal Agencies
Regional Habitat and Access Supervisor
Regional Habitat and Access Personnel
Local Property Owners
Local Government
Regional I&E Specialist
Fishing Tournament Directors

Internal & External Communications

Communication Hub 1	Communication Hub 2	Communication Hub 3
Type of information shared: Initial confirmed detection Milestones	**Type of information shared**: Waterbody status Management actions	**Type of information shared**: Prevention requirements Closures Decontamination requirements and location
Method of Communication: Phone Briefing documents	**Method of Communication:** Online meetings Email briefings	**Method of Communication**: Social media, website, press releases
Frequency: Upon confirmed detection Weekly progress updates As needed with key decision points	**Frequency**: Weekly	**Frequency**: As new requirements are required
Primary Entities: Governor staff County officials State legislators	**Primary Entities**: Surrounding county managers Surrounding state AIS managers	**Primary Entities**: Local businesses Boaters Recreationists Homeowners Area residents

WATER BODY CLASSIFICATIONS

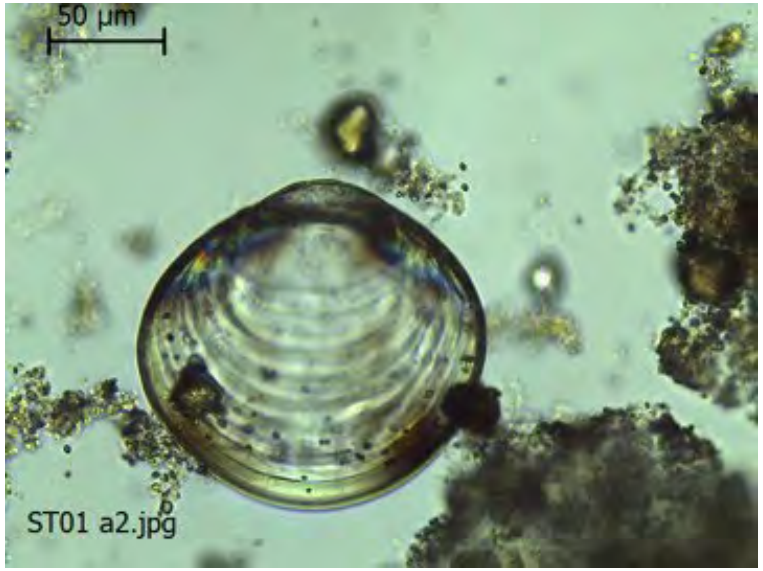
- **Not Sampled**—Waters that have not been monitored.
- **Undetected/Negative**—Sampling/testing is ongoing and nothing has been detected or nothing has been detected within the time frames for delisting.
- **Inconclusive** (temporary status)—Water body has not met the minimum criteria for detection.
- **Suspect**—Water body that has met the minimum criteria for detection.
- **ONLY WYGF CAN DETERMINE WATERBODY CLASSIFICATION**

TRIGGER FOR MANAGEMENT ACTION

- **Positive**—A minimum of one subsequent sampling event that meets the minimum criteria for detection. Positive must include the initial detection plus at least one subsequent detection for a total of 2 verified detections.
- Infested—A water body that has an established (recruiting or reproducing) population of ANS.

Elements of Rapid Response

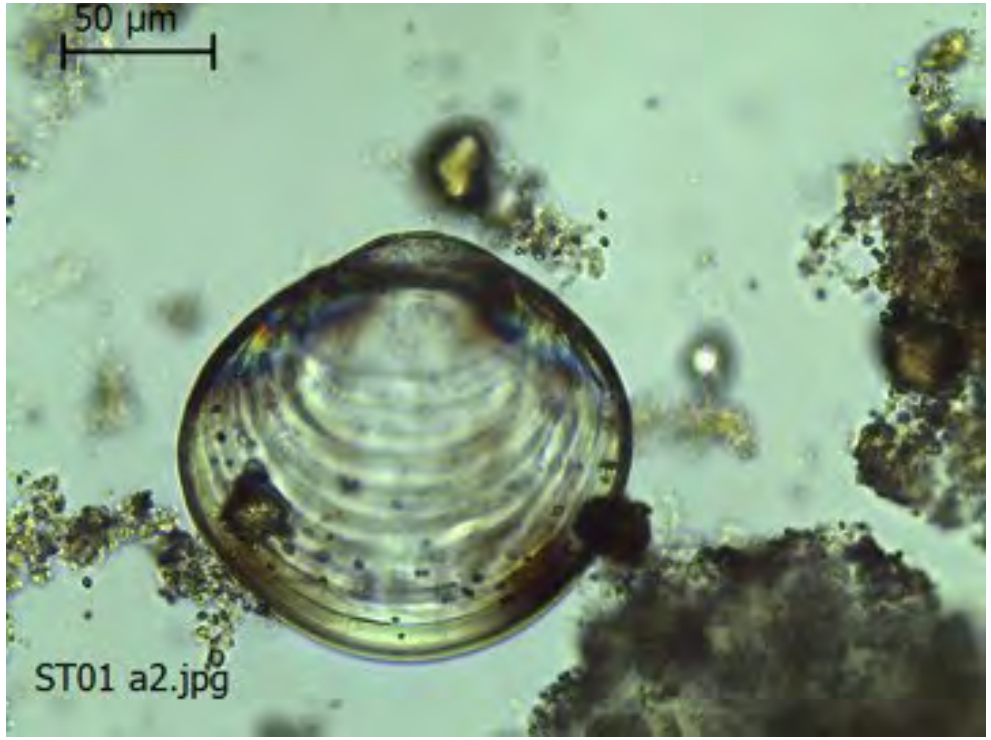
Confirmation



Confirmation

- Minimum criteria for detection of dreissenid mussels, an adult or juvenile
  - specimen must be verified by two independent experts and confirmed by DNA,
  - veliger must be identified and verified using cross-polarized light microscopy by two independent experts and confirmed by DNA analysis (PCR and gene sequencing).

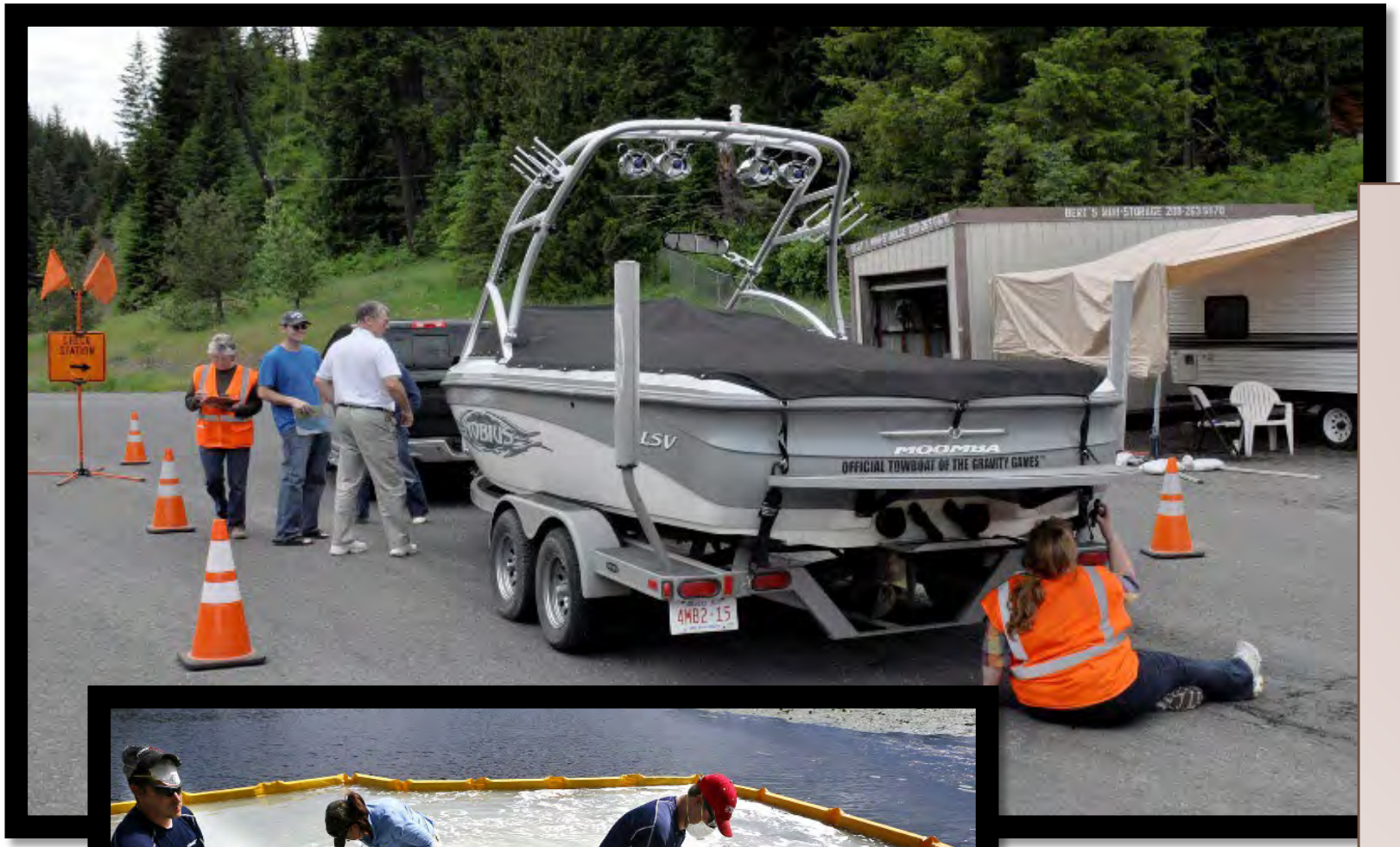
- After the initial detection, follow-up sampling will occur and results will take approximately six weeks to be reported



Declaration of Emergency

Draft press release should be developed for Wyoming's toolkit in preparation for an introduction of dreissenids (reviewed and approved by Governor's office PIO).

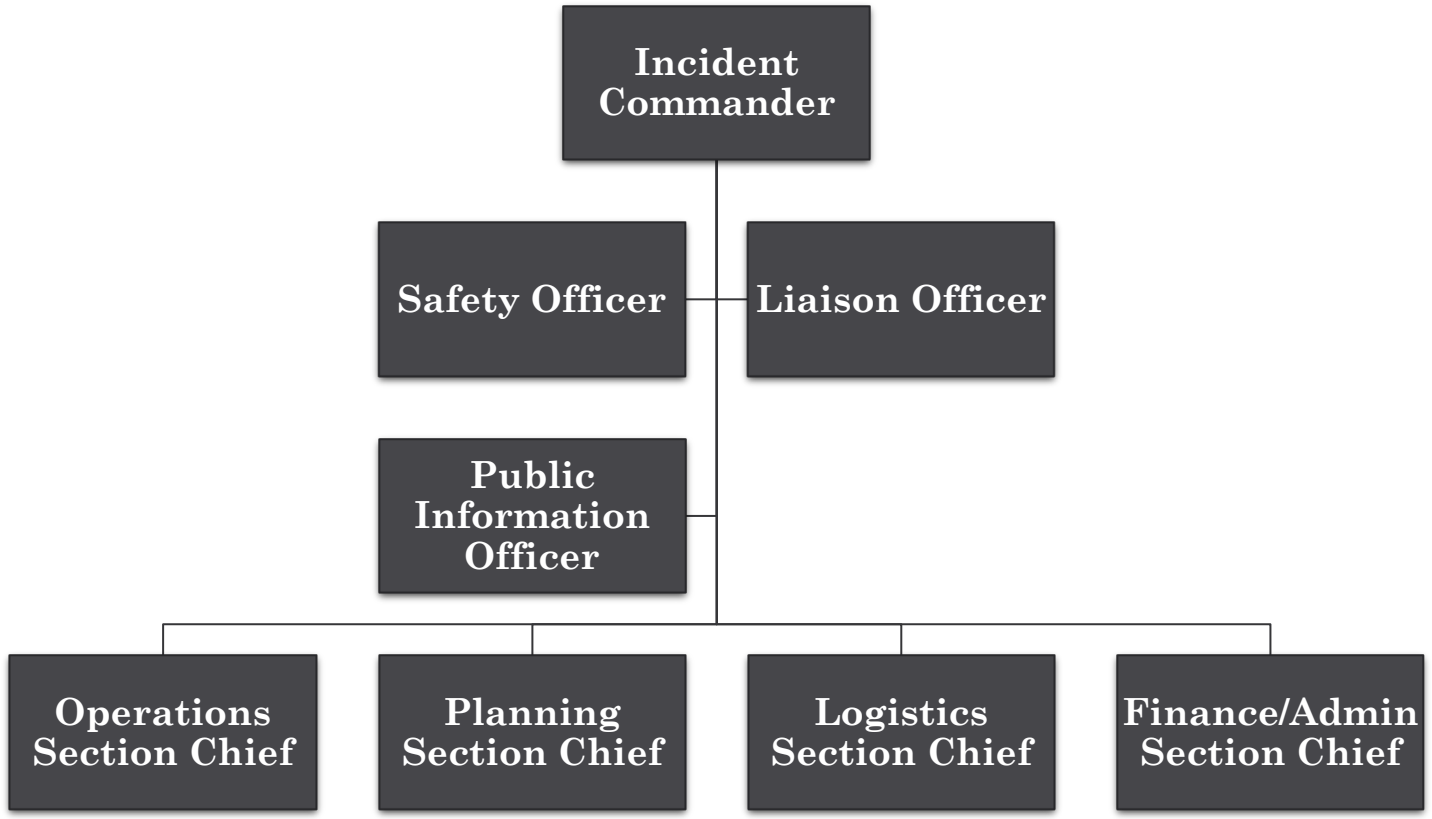
Photo credit: CC BY-SA 4.0



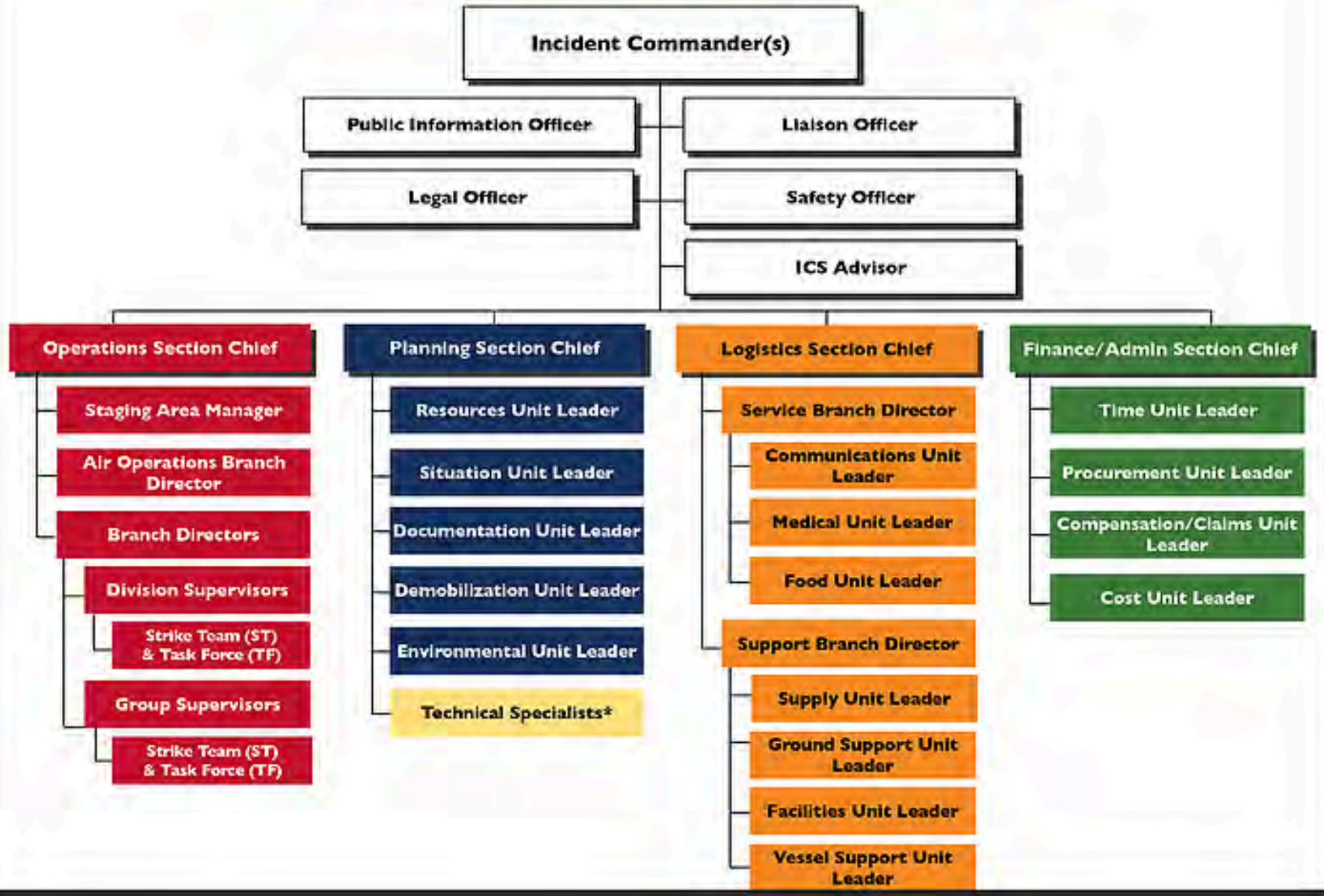
NEXT STEPS

- Initiate ICS
- Contain
- Delineate and Continual Assessment (Monitor)
- Prep for Control / Eradicate
- Control/Eradicate

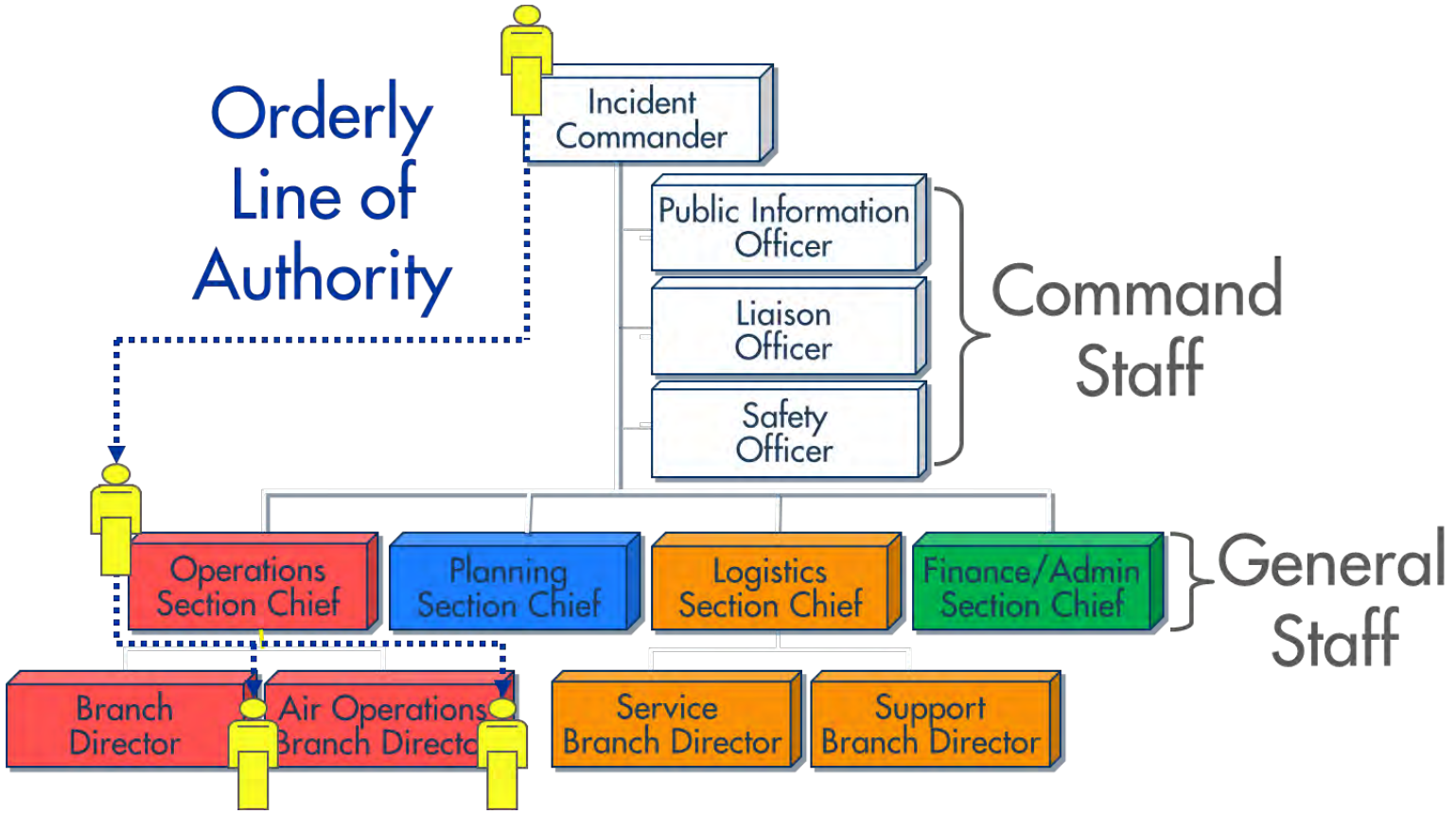
Activation of Response Teams / Incident Command System (ICS)



INCIDENT COMMAND SYSTEM ORGANIZATION CHART



Chain of Command



Containment


Cottonwood Campground
Marina Ramp
Coulter/Bearclaw Ramp
Wind Creek Boat Ramp
Pat's Point Ramp
Cottonwood Ramp
Tatanka Campground
East Side Check Station
Pine Haven
Paradise Foods Check Station
Arch Rock, Keyhole State park

Containment Considerations

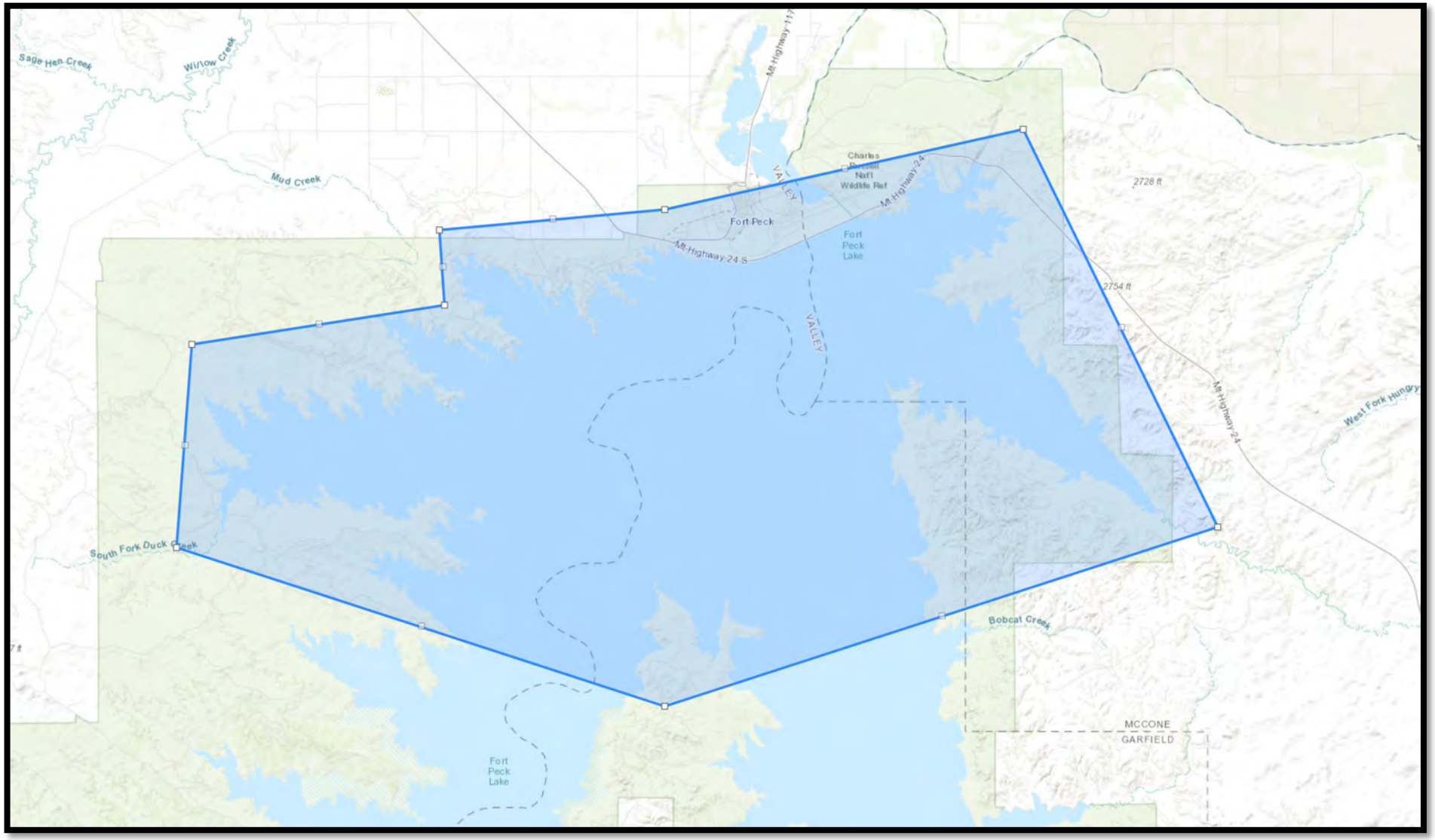
- Temporary closure of the lake to all motorized, non-motorized activity
- Installation of temporary signage and barriers
- Mandatory decontamination of all exiting watercraft (ensure decon units are available at key points exiting water body)
- Moratorium on all current and future fishing tournaments until appropriate containment protocols can be established
- Assess likely movement of boats and other watercraft that recently used mussel-detected water body to identify inspection needs in other waters
- Develop and implement HACCP plans to ensure response personnel do not further spread of dreissenids (5 steps to HACCP planning)
- Quarantine any operations likely to spread dreissenids outside of Keyhole
- Work in partnership with water purveyors to stop or slow water release to potentially uninfested sites – Belle Fourche River Compact entities

AIS watercraft inspection station in Wyoming. Photo credit: WGFD.

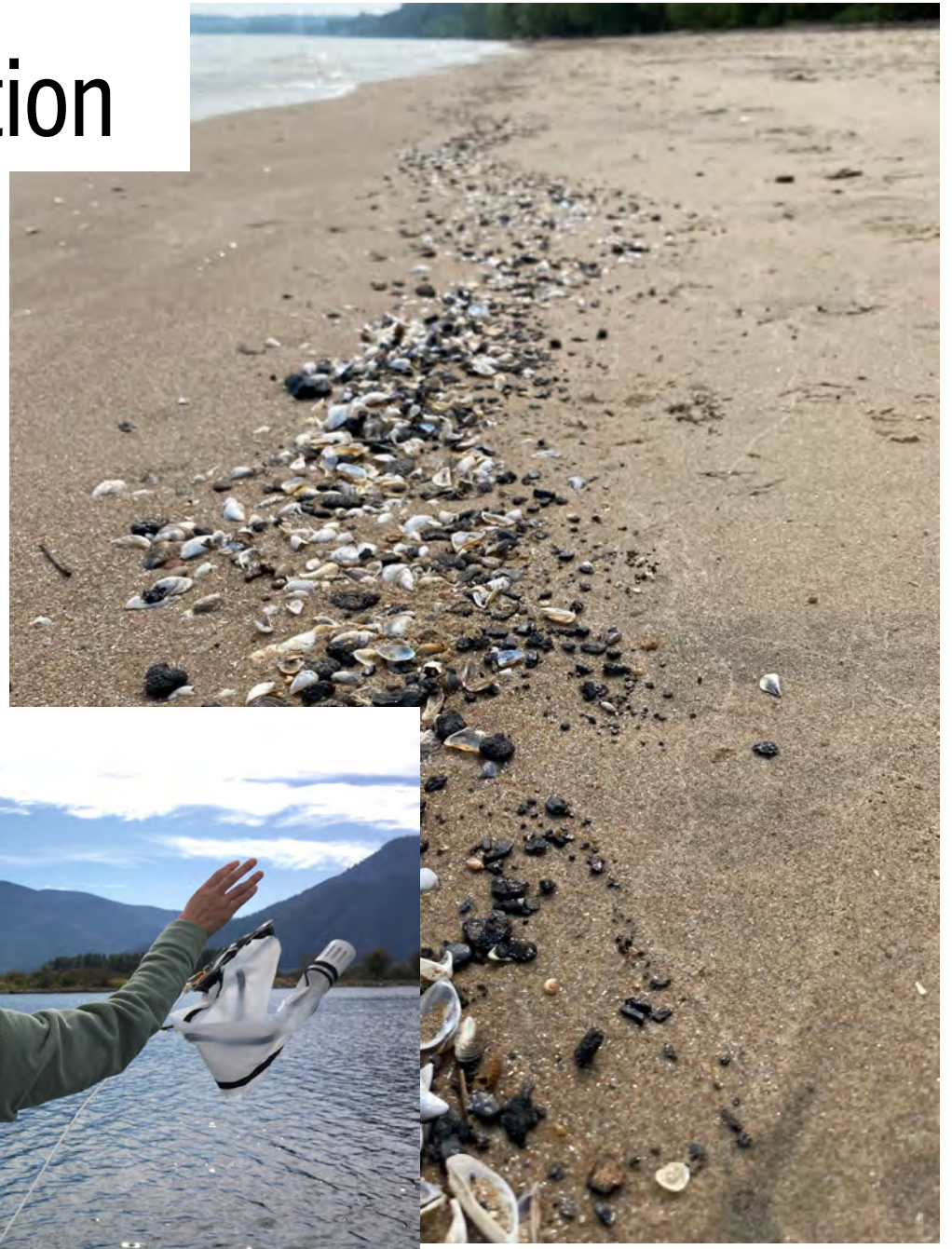
Signage at closed boat ramp. Photo credit: Montana Fish, Wildlife, and Parks.

Delineate and Monitor

Delineation



Delineation



Delineation

- Suite of tools that may be considered
  - Exhaustive plankton tow
  - Sniffing dogs
  - Shoreline walking
  - Dive team
  - eDNA
- Nearby waterbodies

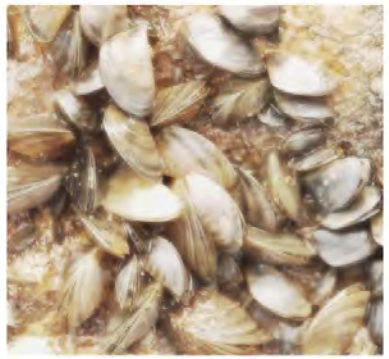
Prep for Control or No Control

COLUMBIA RIVER BASIN DREISSENID INCIDENT RESPONSE TOOLKIT

A resource to facilitate a response to an introduction of dreissenids in the Columbia River Basin

Introduction

Since their introduction to the Great Lakes region of North America in the 1980s, invasive dreissenid mussels (zebra mussels (*Dreissena polymorpha*) and quagga mussels (*Dreissena rostriformis bugensis*)) have expanded their distribution across North America. From 2012–2018, the states of Washington, Oregon, Idaho, and Montana intercepted a total of 394 dreissenid-fouled watercraft that originated from throughout North America. In 2016, invasive mussel larvae were discovered in Tiber and Canyon Ferry Reservoirs in Montana—this was the first documented detection of dreissenids near the perimeter of the Columbia River Basin (CRB). The westward expansion of dreissenids, primarily via watercraft vectors, precipitates the need for contingency plans and other planning efforts to prepare entities for an introduction of dreissenids by facilitating a rapid response.



Toolkit Purpose

This toolkit provides resource managers with the tools and information to effectively implement a response to a dreissenid introduction. The toolkit includes information on Columbia River Basin geography; entities; dreissenid biology and distribution; environmental, economic, and cultural effects of dreissenids; use of the Incident Management System; response resources; and environmental compliance, including Endangered Species Act (ESA) consultation steps.

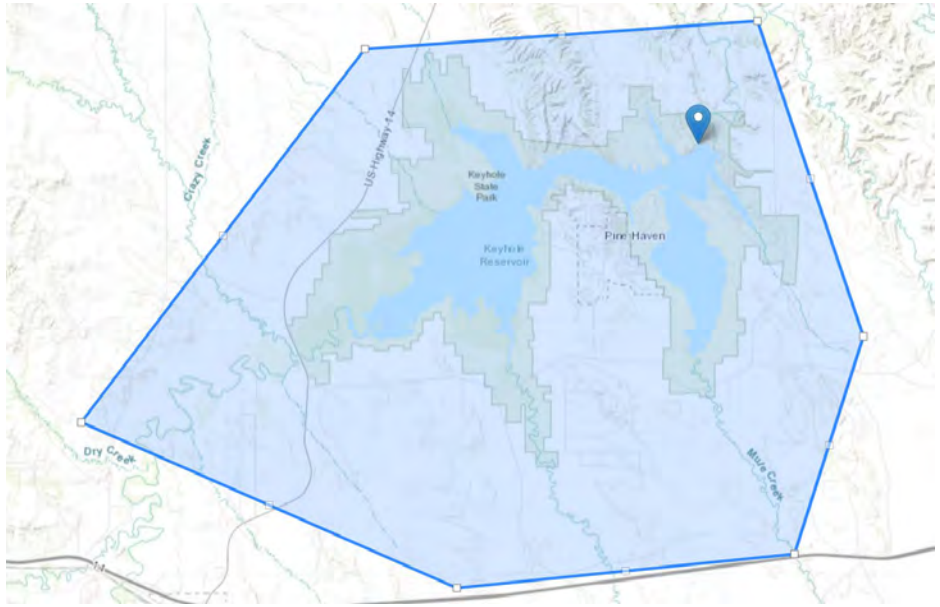
To use this site, click on the menu tabs at the top of the site to navigate to the different themes. The Columbia River Basin, Dreissenids, and Reference Materials tabs provide background information; Incident Response and ESA Consultation tabs provide information integral to taking action.

Consequences of No Action

This toolkit has been prepared to facilitate a rapid response to an introduction of dreissenids. The anticipated consequences of taking no action would include long-lasting, significant, and detrimental economic, environmental, and social/cultural effects that would alter ecosystem function and processes throughout the CRB and affect quality of life for people who live in the basin. There are many factors influencing whether or not attempts to eradicate dreissenids in any CRB waterbody will be successful. And the potential effects of response actions to listed species and critical habitats are never fully known prior to control actions. Thus, at the time of an actual response, it is prudent to weigh the short-term and long-term economic and environmental costs of eradication attempts with the likely long-term costs of established populations of dreissenids.

USFWS Consultation

- Define potential control and action area (incl. upstream and downstream of water body) – polygon
- Include likely staging areas



EMERGENCY CONSULTATION PROCESS

START

A dreissenid species is detected in a Columbia River Basin waterbody, and eradication is deemed possible.

The action is deemed an emergency that warrants rapid response and may affect listed species or critical habitat.

The action agency calls the USFWS for advice on measures for minimizing effects during response.

The response action is taken in the waterbody.

The action agency initiates formal consultation after the response action is taken.

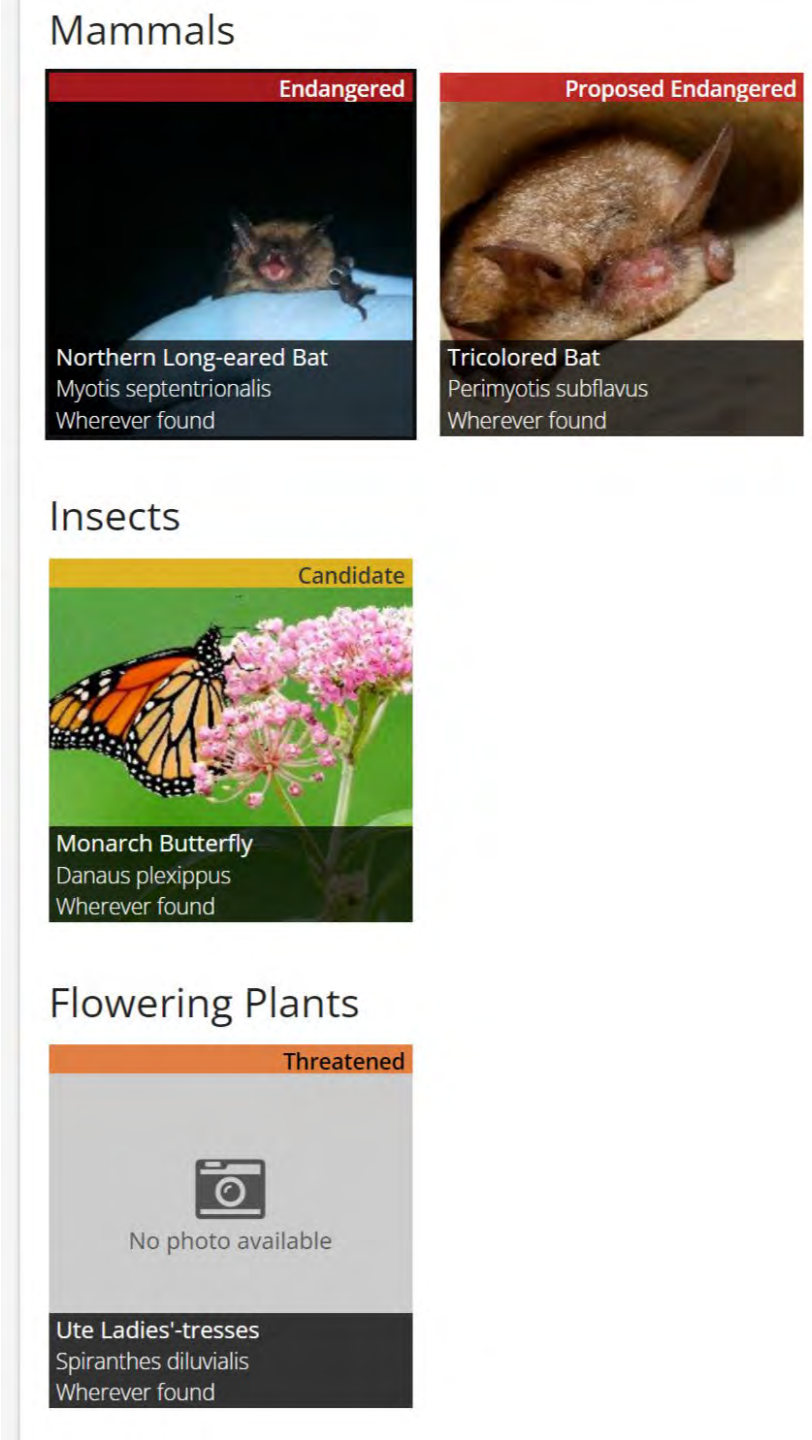
The USFWS provides an after-the-fact opinion that documents the effects of the emergency response on listed species and/or designated critical habitats.

The Columbia River Basin waterbodies are protected for human health and welfare as well as listed species and critical habitats.

All appropriate measures were taken to avoid and minimize take for listed species and critical habitats.

USFWS Consultation

- Listed species and critical habitats
  - No critical habitats within action area
  - Endangered species
- Describe potential response actions based on delineation of infestation and listed species and critical habitats within proposed action area (www.crbdirt.com)
  - Chemical/mechanical response options
  - Archeologist on site throughout project
  - Barriers and staging areas
  - Limit public access
  - Establish treatment and staging areas, incl. closures
  - Rhodamine dye and flow monitoring at treatment sites
  - Bioassays throughout treatment
  - Guidelines for timing of in-water work windows
  - BMPs



Control

Control

- Sourcing materials
  - Containment booms/silt curtains
  - Potash, Earth Tech QZ
- Application of Materials
- Bioassay for treatment efficacy
- Temporary closure
- Communications/Signage

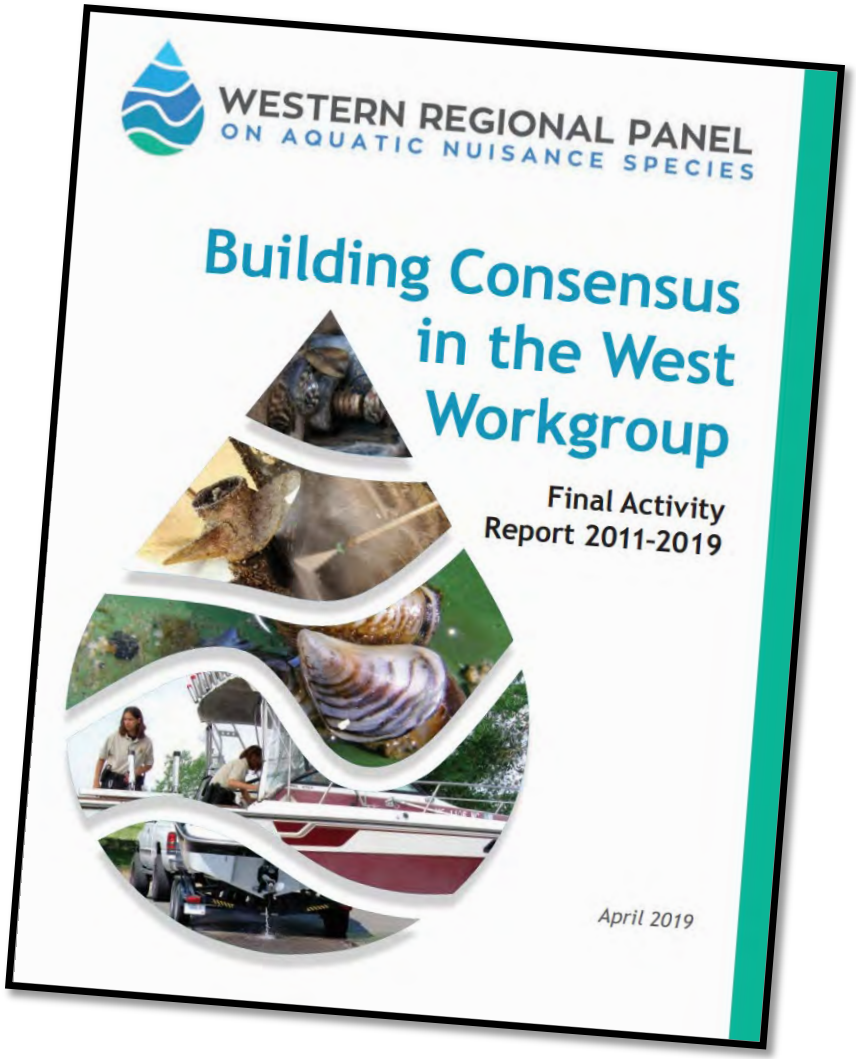
Delisting a water body

- **Inconclusive** —1 year of negative testing including at least one sample taken in the same month of subsequent year as the positive sample (accounting for seasonal environment variability) to get to undetected/negative.

- **Suspect**— 3 years of negative testing to get to undetected/negative.

- **Positive** — 5 years of negative testing to get to undetected/negative.

- **Infested**— following a successful eradication or extirpation event including a minimum of 5 years post-event testing and monitoring with negative results.



https://westernregionalpanel.org/wp-content/uploads/2019/11/WRP-BC-Activity-Report-FINAL.pdf

No Control - Containment

Resources

- FEMA Trainings
  - IC-100
  - IC-700
  - https://training.fema.gov/emi.aspx
- APHIS Trainings
  - https://aphis.usda.gov/aphis/ourfocus/animalhealth/training-and-development
- Emergency Management Services International http://www.emsics.com/
- Westernais.org
  - Original CRB Rapid Response Plan document
  - Past exercises
  - After action reports
- CRBDirt.com
  - New improved interface for dreissenid rapid response

SUMMARY AND NEXT STEPS

OPTIONS FOR NEXT STEPS

- Table top exercise
- Statutory changes
- Plan revision
- ....