



2018 Zebra/Quagga Mussel Early Detection Monitoring Results

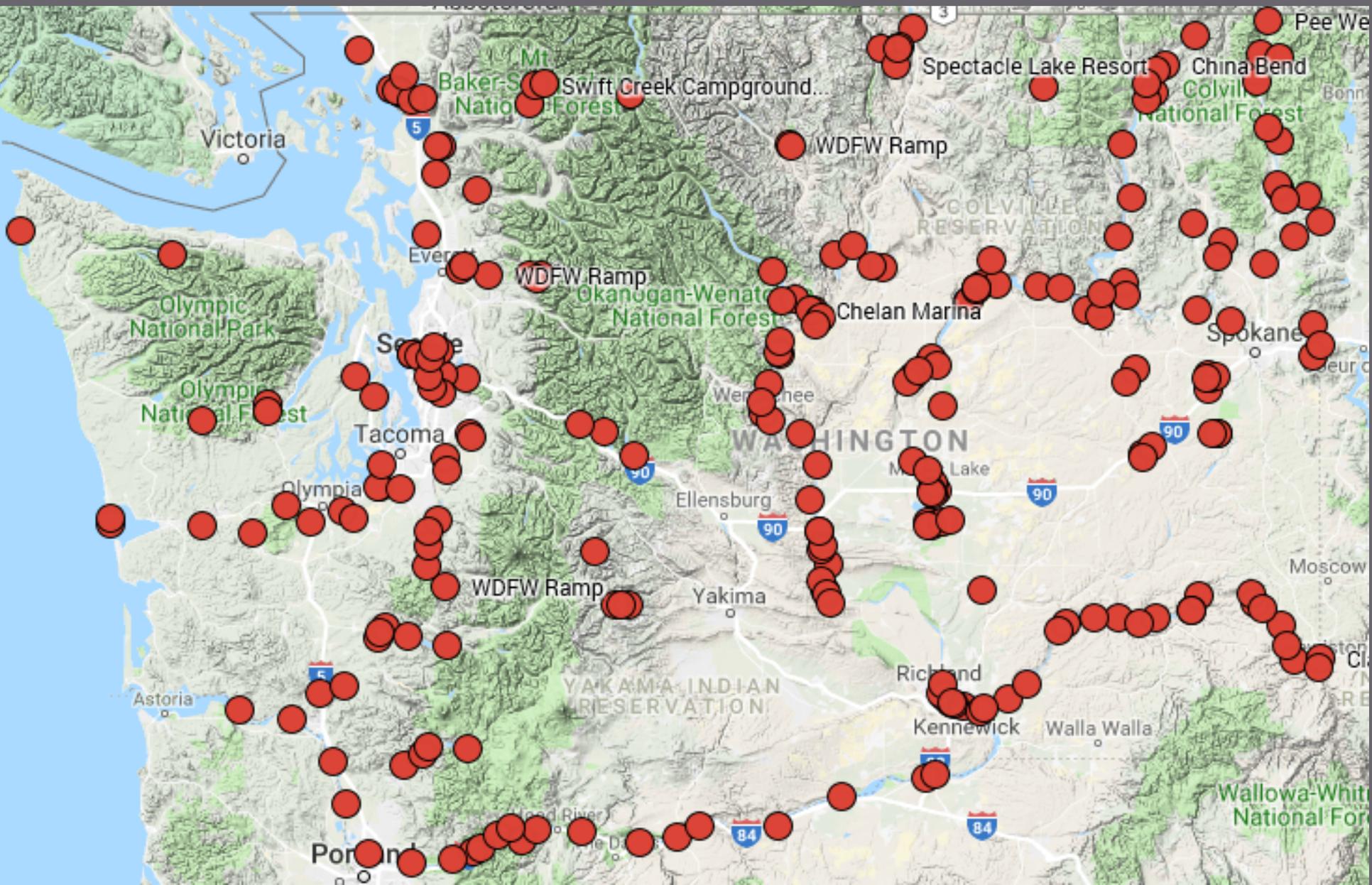
Columbia River Basin Team Meeting
Boise Idaho
December 4, 2018

Washington Department of Fish and Wildlife
Aquatic Invasive Species Unit
Jesse Schultz

Co-Partners

Sampler	Water Body	Reservoir
Chelan PUD	Columbia River	Rocky Reach/Entiat
Douglas PUD	Columbia River	Pateros
Grant PUD	Columbia River	Priest Rapids and Wanapum
National Park Service	Columbia River	Roosevelt
Spokane Tribe	Columbia River	Roosevelt
Snohomish PUD & City of Everett	Sultan River	Spada

2018 Sites

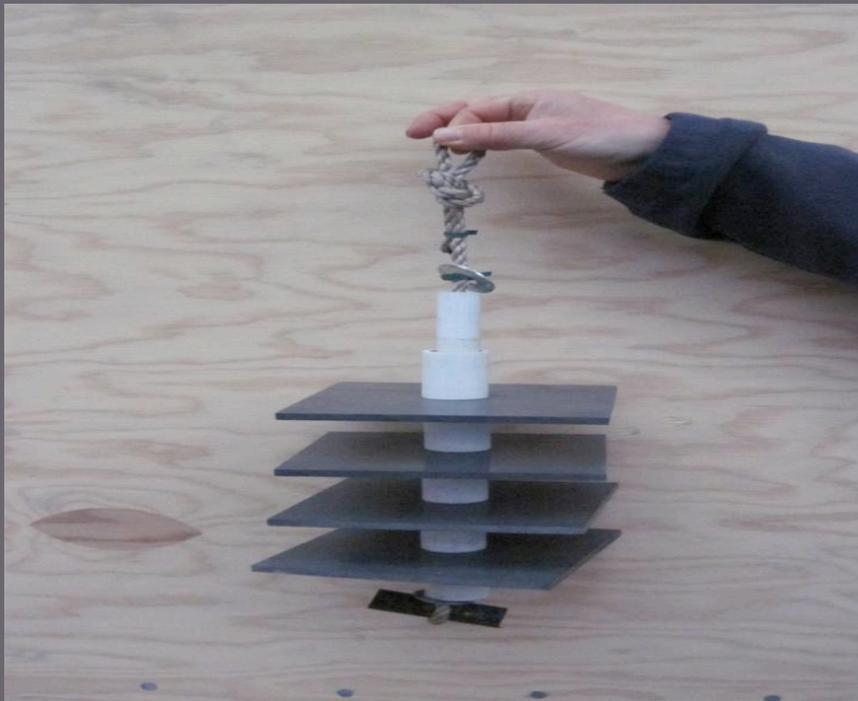


Vertical and Horizontal Plankton Net Tows



- 2018, 514 vertical and 514 horizontal for a total of 1,028 at 225 sites
- 2019, goal of 550 vertical and 550 horizontal for a total of 1,100 at 250 sites
- Analysis conducted by private consultants Cameron Lange and Steve Wells

Artificial Substrates/Collection Plates



- 2018, 620 monitored at 219 sites
- 2019, goal of 750 monitor at 250 sites

Visual Shoreline

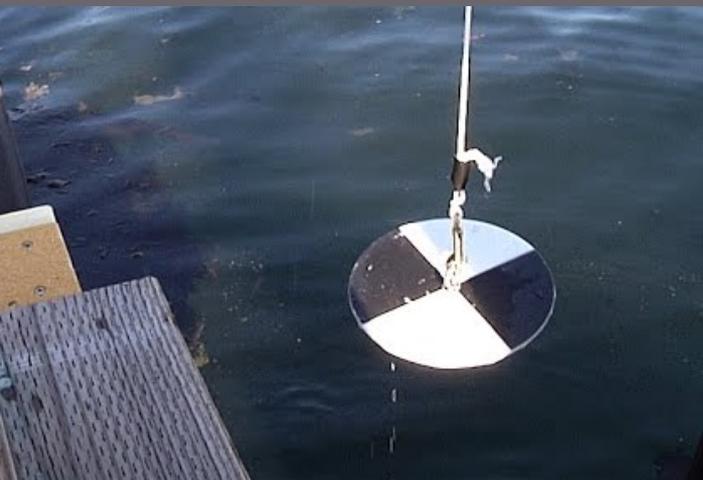


- 2018, 706 conducted at 230 sites
- 2019, goal of 750 conduct at 250 sites

Water Quality

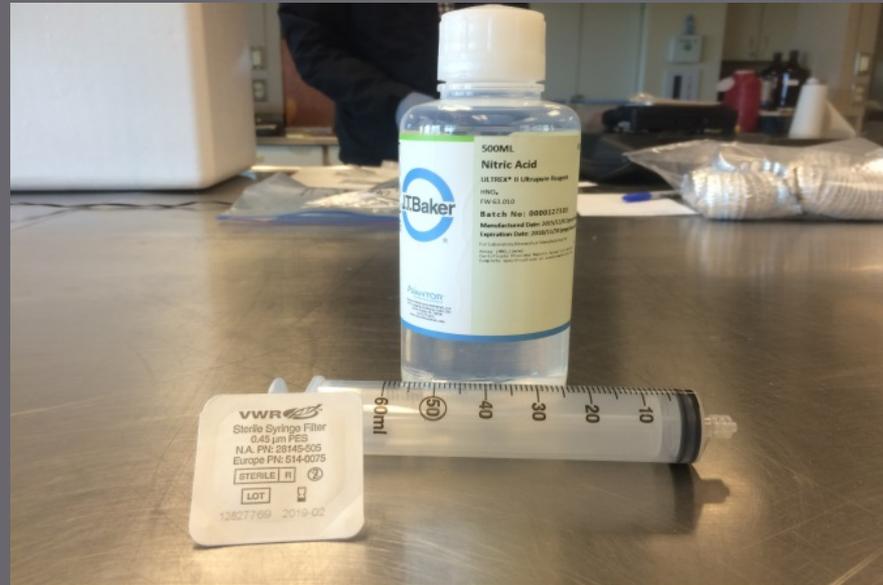


- Salinity
- pH
- Temperature
- Dissolved Oxygen
- Visibility



- 2018, 645 sets measured at 233 sites
- 2019, goal of 750 sets measured at 250 sites

Calcium



- 2018, 642 samples at 233 sites
- 2019, 950 samples at 250 sites
- Conducted during the summer when calcium is at “highest” and spring when at “lowest”
- Analysis conducted by Eastern Washington University Carmen Nezat

eDNA



- 2018, 222 samples and 222 negatives at 222 sites for zebra, quagga, and NZMS
- 2019, 250 samples and 250 negatives at 250 sites for zebra, quagga, NZMS, and northern pike
- Smith Root Inc. ANDe backpack filter
- Analysis conducted by WDFW Genetics Lab Sarah Brown

eDNA

- Developed by Sarah Brown (1 of 5 smart people for WDFW)
- Developed from the Asian Carp Monitoring program's Quality Assurance Project Plan (USFWS 2015)
- Each filter sample will be qPCR'd in triplicate.
- Samples considered positive for detection when two out of three qPCR triplicates result in a positive amplification
- Should any samples test positive (determined not to be due to contamination), the WDFW AIS Coordinator will be informed first and immediately
- If a sample results in a positive qPCR, the following samples will also be processed: 1) the original sample that was presumed positive, 2) the 2nd half of the filter, freshly extracted for DNA, and 3) the paired equipment blank, freshly extracted for DNA
- If a second positive detection is found with the presumptive sample and the 2nd half of the filter, and no detection is found in the equipment blank (i.e., no equipment or laboratory contamination), the sample will be deemed a true positive

Ponar Grab Sampler



- Starting in 2019, goal of 750 conduct at 250 sites

Site Risk Assessment

Selection

Boatyard on water body, receives many
z/q infested boats

Ownership

Public/Private

Boat Ramp

Gravel/Concrete

Dock at Boat Ramp

Present

Ramp Fee

Yes

Ramp Public

Yes

Availability

Year around

Watercraft Restrictions

No gas engines

Marina

Present

Campground

Present

Park

Present

Fishing Tournaments

Yes

Watersport Events

Yes

Boating Effort

High

In Columbia River Basin

Yes

Water Body Acreage

100,000

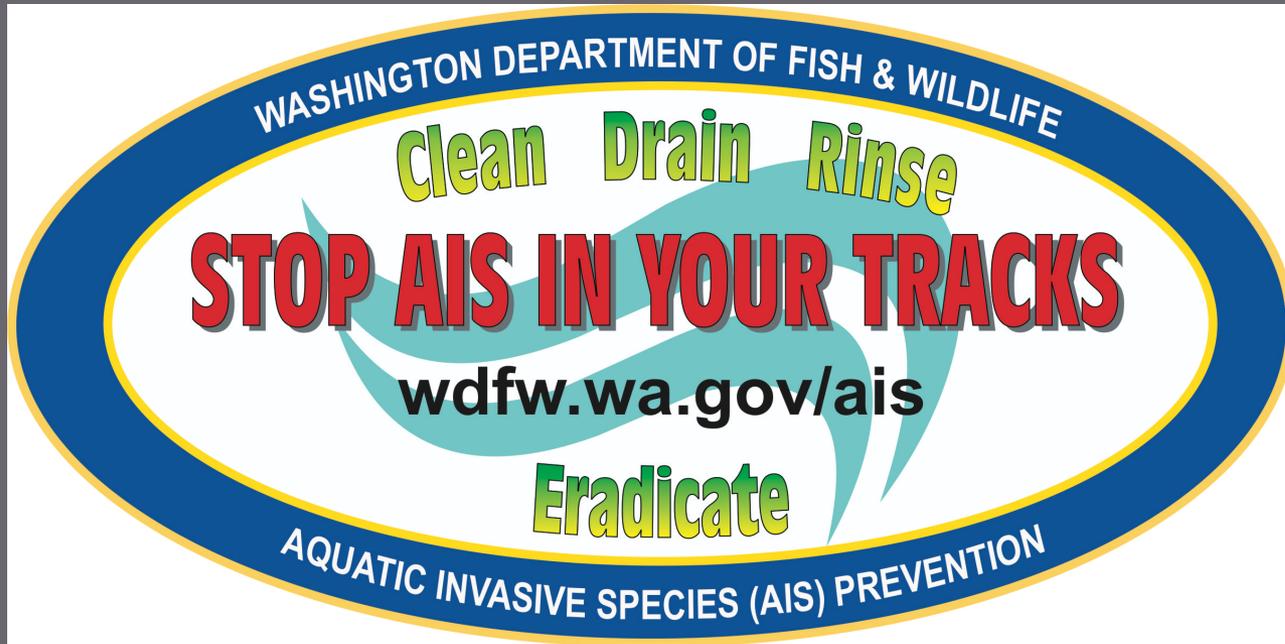
Water Body Elevation

500

Calcium

44

Thanks



WDFW AIS Unit

Jesse Schultz (360) 480-2105

Jesse.Schultz@dfw.wa.gov