

Rocky Reach Fish Forum

Wednesday, 2 November 2016

1:00 – 4:00 p.m.

Chelan PUD First Floor Conference Room

Wenatchee, WA



Meeting called by Steve Hemstrom

Notes taken by Meaghan Connell

Chairperson, Tracy Hillman

Attending Representatives:

Hemstrom, Steve	Chelan PUD	(509) 661-4281	steven.hemstrom@chelanpud.org
Lewis, Steve	USFWS	(509) 665-3508 x14	stephen_lewis@fws.gov
Verhey, Patrick	WSFW	(509) 754-4624	patrick.verhey@dfw.wa.gov

Attending Participants:

Connell, Meaghan	Chelan PUD	(509) 661-4757	meaghan.connell@chelanpud.org
Hillman, Tracy	BioAnalysts	(208) 321-0363	tracy.hillman@bioanalysts.net
Keller, Lance	Chelan PUD	(509) 661-4181	lance.keller@chelanpud.org
Schultz, Jesse*	WDFW	(360) 902-2184	Jesse.schultz@dfw.wa.gov

* Joined via phone.

Meeting Minutes

I. Welcome and Introductions

Tracy Hillman welcomed everyone to the Rocky Reach Fish Forum (RRFF or Forum) meeting. Participants introduced themselves.

II. Agenda Review

The agenda was reviewed and approved with three additions. Steve Lewis added an Update on the Bull Trout Genetic Sampling, Steve Hemstrom added an Update on Pacific Lamprey Artificial Propagation Projects, and Tracy Hillman provided an update on a draft SOA that Bob Rose is preparing on Pacific Lamprey NNI.

Tracy Hillman announced that the Anadromous Fish Evaluation Program (AFEP) meeting will be held on 29-30 November in Portland, Oregon.

III. Approval of Meeting Minutes

The October meeting minutes were approved with one edit.

IV. Review Action Items

- RD will send out an updated version of the report, *Final Draft Rapid Assessment of Adult Pacific Lamprey Passage at Tumwater Dam*. **Ongoing**
- Alene Underwood will provide the RRFF with a revised copy of the Tumwater Dam Lamprey Passage Feasibility Study. **Ongoing**
- Steve Hemstrom will confirm and report the total number of recaptured white sturgeon sampled during monitoring in Rocky Reach Reservoir. **(Completed)**
- Tracy Hillman will add to the November agenda a discussion on identifying the upper value for calculating NNI for adult passage. **(Completed)**
- Steve Hemstrom will provide to the RRFF the travel time data for Pacific lamprey at Rocky Reach Dam. **(Ongoing)**
- Tracy Hillman will attach the Pacific Lamprey Subgroup Meeting Notes to the RRFF Meeting Minutes. **(Completed)**
- Steve Hemstrom will report on the installation of the PIT-tag arrays at Tumwater Dam and why the middle entrance was not included. **(Completed)**
- Steve Hemstrom will send out tag detections for the 170 lamprey released in August and September downstream from Tumwater Dam. **(Ongoing)**

V. Aquatic Invasive Species

Jesse Schultz, WDFW, gave a presentation on “Adding Shoreline Surveys for Zebra/Quagga Mussel Early Detection Monitoring” (see Attachment 1). Jesse summarized methods used to sample and detect Zebra and Quagga mussels. Monitoring includes the use of artificial substrates, vertical and horizontal plankton tows, shoreline sampling, and water quality monitoring. This work is conducted throughout the state including sampling within Rocky Reach Reservoir. He shared with the Forum some of the results from past monitoring across the state and described why shoreline surveys are important. He said shoreline sampling is a proven detection method, there is no cost for equipment or analyses, it takes about 10 minutes to conduct, and the methods are standardized. Jesse ended the presentation by showing pictures of some of the artificial substrates that invasive species colonize. These substrates are easy to identify during shoreline surveys.

Patrick Verhey asked about the wide range in number of samples taken per site across the state. Jesse responded that more samples are collected at high-risk sites. He added that water quality and human usage at a site determines its risk status. Jesse said there are over 300 high-risk sites in Washington State. WDFW tries to sample each high-risk site at least once per year and larger water bodies require more sample sites. He also noted that Eastern Washington is sampled more intensively than Western Washington because there is more dedicated funding in Eastern Washington.

Steve Hemstrom asked if there was a correlation between pH and the growth or attachment of invasive species. Jesse said pH levels may vary where there is an occurrence; however, calcium levels are very important for reproduction and growth.

Steve Hemstrom asked if Zebra/Quagga mussels prefer a stable water-surface elevation or can they withstand water-level fluctuations. Jesse answered that Zebra/Quagga mussels can withstand slow or fast moving water and depending on temperature, they can live out of water for up to 30 days.

Steve Lewis asked if boats are examined at boat docks during shoreline surveys. Jesse said that boats are not examined during shoreline surveys. He said WDFW has mandatory watercraft check stations where boats are inspected for invasive species.

The RRF thanked Jesse for the presentation and recommended that Chelan PUD add shoreline surveys to their AIS surveys.

Action Item:

- **Steve Hemstrom will talk to Marcie Clement about adding shoreline surveys to their Aquatic Invasive Species Prevention work.**

VI. White Sturgeon

Juvenile Rearing

Lance Keller reported that because of complications resulting from transporting fish from Marion Drain to Chelan Hatchery and getting fish on feed, the number of juvenile sturgeon on station was lower than the target number of 2,250 fish to be released in 2017. As noted during a previous Forum meeting, Wells Hatchery has a surplus of juvenile sturgeon from larval collections. WDFW decided to use surplus production from the larval collections to backfill the shortage at Chelan Hatchery. These fish have not yet been transferred to the Chelan Hatchery. Managers are still waiting on the results of disease testing.

Tracy Hillman asked about the health, survival, and condition of juvenile sturgeon on station at Chelan Hatchery. Lance Keller responded that the fish are doing well. Lance also reported that there will be a lower density of sturgeon rearing at Chelan Hatchery (because of the reduced release number). This will give fish more space to rear and growth within the hatchery.

Update on Adult Monitoring

Lance Keller reported that Chelan PUD completed its 2016 monitoring and indexing work for the year. Five sessions were completed from 29 August to 28 October with 1,353 sturgeon sampled under a systematic sampling approach with set-lines. The number of fish caught was an increase from previous efforts and likely resulted because of standardized sampling methods and gear.

Lance reported on some of the results obtained from Blue Leaf on the monitoring and indexing work in 2016. He indicated that 45 sturgeon were caught from the 2011 release group; 10 sturgeon from the 2012 release; 749 from the 2013 release; 239 from the 2014 release; 194 from the 2015 release; and 32 from the 2016 release group. Lance noted that 84 PIT-tagged sturgeon of unknown origin were caught. It is likely that the unknown-origin fish were tagged by Douglas PUD, released into Wells pool, and entrained into Rocky Reach pool. Lance noted that 255 of the 1,353 sturgeon were recaptures. A total of 982 sturgeon were captured that had never been sampled. Lance hopes to have additional information for the December meeting.

Lance noted that the third round of diet analysis has been completed. Diet analyses occur seasonally to see if the diet of sturgeon changes throughout the year. Lance noted that they found salmon eggs and portions of a salmon carcass within sturgeon during the last survey. Stomach contents have been sent to a lab for detailed analysis. It was asked if any lamprey ammocoetes were found in the stomachs of sturgeon. Lance indicated thus far they have not seen any lamprey in the stomachs of sturgeon sampled in Rocky Reach Reservoir. The fourth round of diet surveys will be completed between January and February 2017.

Update on Success of Sturgeon Fishery in the Priest Rapids Project Area

Chad Jackson was unable to attend the Forum meeting. Based on an email from WDFW, Tracy Hillman reported the sturgeon fishery in the Priest Rapids Project Area has slowed, likely because anglers have switched their attention to fall Chinook. The sturgeon fishery will continue into November.

As a final note, Lance Keller informed the RRF that there will be an Upper Columbia White Sturgeon Initiative Recovery Meeting in Spokane on 16-17 November.

Action Item:

- **Lance Keller will provide an update on the total number of juvenile sturgeon on station at Chelan Hatchery.**

VII. PACIFIC LAMPREY

Pacific Lamprey NNI Criteria

Tracy Hillman reviewed the discussion from the October RRF meeting regarding Pacific lamprey NNI. He reminded the Forum that the Pacific Lamprey Subgroup was unable to define NNI in terms of passage success. That is, the Subgroup was unable to determine if NNI would be calculated using an upper passage success target of 100%, or something less than 100%, assuming some level of natural mortality – like predation – occurs under natural conditions. Tracy noted that during the October meeting, the RRF asked to revisit this issue during the November meeting. Tracy asked the Forum if they want to resolve this issue now or ask the Subgroup to work on it. If the Forum decides to have the Subgroup address the issue, what information can the Forum provide the Subgroup to better guide their discussions.

Patrick Verhey indicated that to measure the passage efficiency from entrance to exit with the inclusion of a level of natural mortality would be a best guess at this time. Patrick suggested doing a literature search to find reasonable mortality rates for adult lamprey. Tracy Hillman noted that one way to calculate an upper limit would be to measure the survival rate of adult lamprey migrating through a natural (undammed) stretch of river and standardizing it based on distance traveled. Steve Lewis suggested that it may not be possible to come up with a survival rate based on the biology of the fish, but perhaps a passage rate of 85% could be offered as a starting point. This could then be negotiated.

Tracy Hillman noted that if this is assigned to the Subgroup, it would be good to have the Forum offer guidance on things to consider as the Subgroup wrestles with this issue. Another option, as discussed during the October meeting, would be to elevate this to the Policy Committee for their consideration. The Forum agreed that more effort should be spent on determining NNI before it goes to the Policy Committee. In addition, the Forum agreed to convene the Subgroup to address this issue.

Steve Hemstrom suggested looking to surrogacy models for information about this. Steve reported that if the dam was not present, the survival measurement would be applied to about 100 yards of river. He said the natural mortality rate in that distance would be quite small. Tracy asked if there are tag data available for adult lamprey migrating through natural reaches such as the Hanford Reach, portions of the Snake or Clearwater rivers, or in undammed systems such as rivers in Canada or along coastal streams. Tracy recommended that the Subgroup examine the literature, as suggested by Patrick, and compile any tag data on adult lamprey migrating in undammed systems.

Steve Hemstrom suggested looking at waterways that have sturgeon given that sturgeon may affect

adult lamprey passage and natural mortality rates. Tracy recalled a recent paper that looked at the distribution of lamprey in coastal streams. The paper indicated that lamprey occur primarily in larger watersheds. Sturgeon may also use these larger watersheds. Steve Hemstrom recommended that the Forum contact Dick Beamish or Joy Wade to get additional information on natural mortality rates of adult lamprey migrating through undammed systems.

Tracy Hillman reported that the Subgroup will meet during early 2017. Because the Priest Rapids Fish Forum is also discussing this issue, he will schedule a joint Subgroup meeting in 2017.

Action Item:

- **Steve Hemstrom will contact Joy Wade and Dick Beamish to see if there are natural mortality rates for adult lamprey migrating through undammed rivers.**

As a final note, Tracy reported that Bob Rose will be reaching out to RRFF members to gather feedback on an SOA he is preparing for the Forum that addresses lamprey NNI. Bob told Tracy that he intends to present the SOA to the RRFF in December.

Update on Adult Lamprey Tagging and Tributary Escapement

Steve Hemstrom reported on results from additional data received on 25 October regarding PIT-tag detections of adult lamprey that were released at Kirby Billingsley Hydro Park (KBHP) in August. The total number of adult lamprey released was 211 fish. Of those, 81.1% have been detected somewhere. The breakdown by release location is as follows: of the 21 fish released along the left bank, 90.5% have been detected; of the 190 fish released along the right bank, 78.9% have been detected (Table 1).

Table 1. Chelan PUD’s 2016 PIT-tagged Pacific lamprey release numbers, locations, and detection rate of fish released at Kirby Billingsley Hydro Park.

Release Location	Release Count	Detection Rate
Left Bank	21	90.5%
Right Bank	190	78.9%
TOTAL	211	81.1%

Steve reported that five adult lamprey were detected in the lower Wenatchee River. The distance from KBHP to the Wenatchee detection point is 13.8 kilometers. Steve reported that the median travel time of those five fish was 13.5 hours and the average was 118.5 hours, with a standard deviation (1SD) of 148.7 hours.

Steve indicated that the distance from KBHP to Rocky Reach Dam is 19.5 kilometers. The minimum travel time for adult lamprey from release to Rocky Reach was 19.5 hours; the maximum travel time was 518.9 hours.

Steve reported on the median and average travel time to first detection in the Rocky Reach fishway for

fish released along the left and right banks at KBHP. The median travel time of the 21 adult lamprey released along the left bank was 43.5 hours with an average travel time of 105.4 hours. The median travel time for the 190 fish released along the right bank was 87.6 hours with an average travel time of 134.5 hours.

Steve said one of the tagged adult lamprey released at KBHP was detected at Wells Dam. That fish traveled 86.8 kilometers in 443.4 hours. That fish was later detected in the lower Methow River (travel time of 586.8 hours) and then in the Chewuch River (travel time of 782 hours). This lamprey traveled 179.8 kilometers.

Steve reported that as of 25 October, 163 fish have been detected at the lower weir antenna at Rocky Reach Dam, 160 at the next upper weir, and 163 at the upper exit PIT-tag antenna. Steve noted that 162 of the 163 fish were last detected at the exit antenna indicating a passage rate of 99.4%.

Steve reported on the status of adult lamprey released by Grant PUD at Vantage Bridge, Wanapum Dam Upstream Boat Launch, and Desert Aire Boat Lunch that have been detected at Rocky Reach Dam. Of those fish, 24 fish have been detected at the lower weir antenna, 24 at the upper weir antenna, and 23 at the trap antenna. Steve indicated that there may be detection efficiency issues with the upper weir antenna. Of the fish released at Vantage Bridge that traveled to Rocky Reach Dam and were detected at the fishway exit, the minimum travel time was 75.4 hours, a maximum travel time of 264.9 hours, and an average travel time of 116.7 hours. Of the fish released at Wanapum Dam Upstream Boat Launch that traveled to Rocky Reach Dam, the minimum travel time was 32.2 hours, a maximum travel time of 235.2 hours, and an average travel time of 104.2 hours. Of the fish released at Desert Aire Boat Launch that traveled to Rocky Reach Dam, the minimum travel time was 65.1 hours, a maximum travel time of 291.7 hours, and an average travel time of 134.0 hours. Steve said when he combined the 24 fish released by Grant PUD that made it to Rocky Reach Dam with the 163 fish released by Chelan PUD that made it to the dam, he estimated a passage rate of 98.5% at Rocky Reach Dam.

Steve Hemstrom was asked if the adult lamprey that Grant PUD provided Chelan PUD may have affected the results of the study. Steve responded that it is unknown if the fish they received from collections at Priest Rapids may have affected passage rates. Clearly some fish demonstrated movement. Others may be holding and will move at some later date. Lance Keller indicated that tagged fish that have not been detected recently may be detected next year. He said this sit-and-wait behavior has been observed in the past.

It was noted that of the 196 total PIT-tagged lamprey detected at Rocky Reach Dam in 2016, 193 met the passage definition, meaning they were last detected at the last antenna in the fishway exit. This results in a passage rate of 98.6%.

Action Item:

- **Steve Hemstrom will email the data summary for the adult lamprey tagging, dam passage, and tributary escapement to Meaghan Connell.**

Conversion Rates and PIT-Tag Passage Rates

Steve Hemstrom reported that as of 31 October, the count of adult lamprey at Rock Island Dam was 3,929 fish. The adult lamprey count at Rocky Reach Dam on October 31 was 3,551. For the purpose of doing a conversion analysis at Rocky Reach Dam, Steve added the 211 fish released at KBHP to the Rock Island total count of 3,939 making the number available to pass Rocky Reach 4,140 lampreys. This results in a conversion rate of 85.5%.

Update on Tumwater Dam PIT-Tag Arrays and Feasibility Study

Steve Hemstrom reported that a PIT-tagged lamprey released downstream from Tumwater Dam was detected at weir 15. There are no other updates at this time.

During the October meeting members asked why Chelan PUD was planning to place PIT-tag arrays at the upper- and lower-water fishway entrances but not at the middle entrance at Tumwater Dam. Steve researched the issue and found out that the lower entrance covers the middle entrance at all river flows and therefore the middle entrance is closed most of the time.

Steve reported that he met with CH2M HILL and the engineers about Chelan PUD's lamprey passage feasibility study. He said they are not yet ready to distribute the plan because of pending questions. Steve indicated that he asked Mark Nelson (USFWS) for data and literature on when lamprey may be present at Tumwater Dam. This information is not critical, but it would be good information for the evaluation of alternatives and hydraulic options being discussed. Steve stated that Mark provided him with average flows at Tumwater. Chelan PUD is assuming that adult lamprey do not move through Tumwater Canyon during highest flows in May and June.

Steve Lewis asked if a subgroup could meet to go over the recommendations in the feasibility report and provide feedback and comments. This would not be a meeting of the RRF Subgroup, but would be for those interested in providing comment.

Artificial Propagation

Steve Hemstrom reported that Chelan PUD is receiving invoices from all three parties doing the artificial propagation work (USFWS, NOAA Fisheries, and the Yakama Nation) under contract with Chelan PUD. Currently, there is not much scientific information to report. However, he said Chelan PUD is having some contracting issues with the USFWS. He noted that the USFWS has apparently exceeded their 2016 budget by \$10,000, there are issues with their invoicing not being compliant with the contract, and they may have misinterpreted the contract, which was amended to include an additional year of work but still has tasks with specific dates and available budget for each task with dates. Chelan PUD is currently trying to work with the USFWS to clarify the contract and expenditures allowed. Steve Hemstrom said that he will report back to the Forum as soon as he has additional information. Steve Lewis stated that he would help Steve Hemstrom address the contracting issues with the USFWS.

Action Items:

- **Steve Hemstrom will provide the dates when technical reports are due to the PUD.**

- **Steve Hemstrom will correspond with Steve Lewis for assistance regarding the contract with the USFWS.**

VIII. Bull Trout Genetics

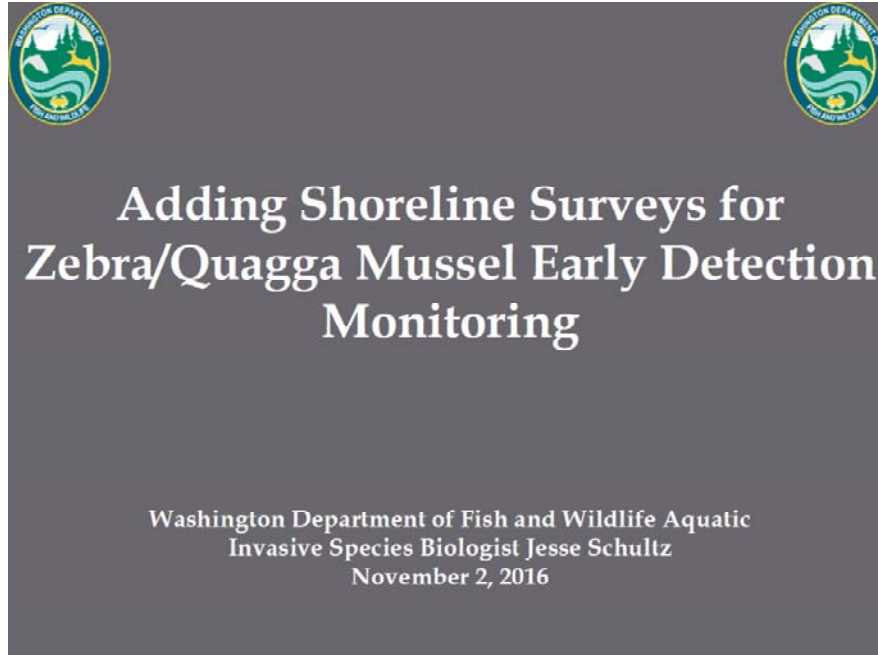
Steve Lewis reported that Andrew Murdoch (WDFW) is going to check with the WDFW genetics lab to see if they can analyze the bull trout samples. He noted that there will be a phone call with Judy Neibauer (USFWS) to identify all samples.

IX. Meeting

The next regular meeting of the RRFF is scheduled for Wednesday, 7 December 2016 from 1:00 to 4:00 p.m. in the Chelan PUD Second Floor Conference Room.

Attachment 1

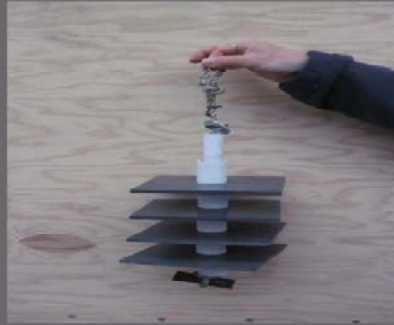
Presentation by Jesse Schultz on Shoreline Surveys



Early Detection Zebra/Quagga Mussel Monitoring

- Artificial substrates
- Vertical and horizontal plankton tows
- Shoreline
- Water quality

Artificial Substrate



- Year around
- For post-settled juveniles and adults
 - 1 per site

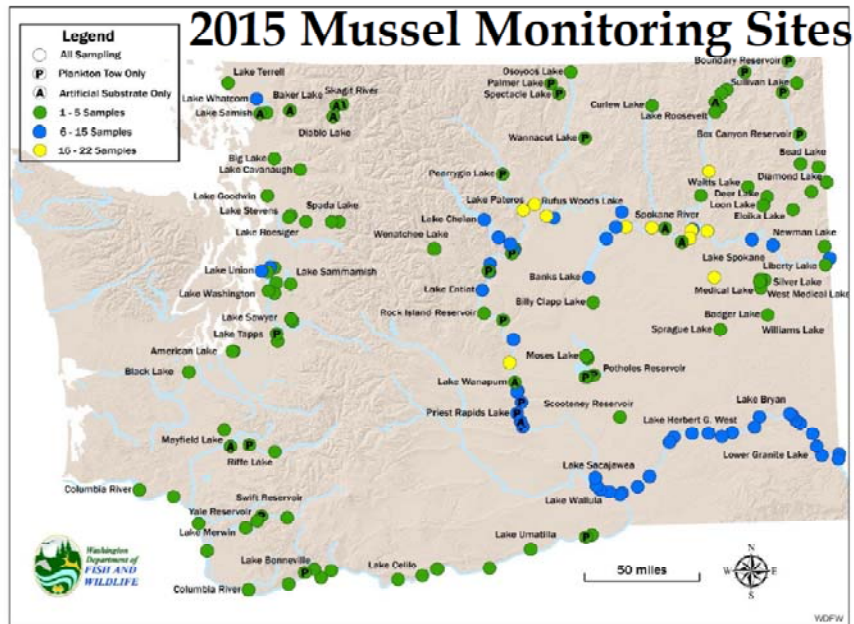
Plankton Tow

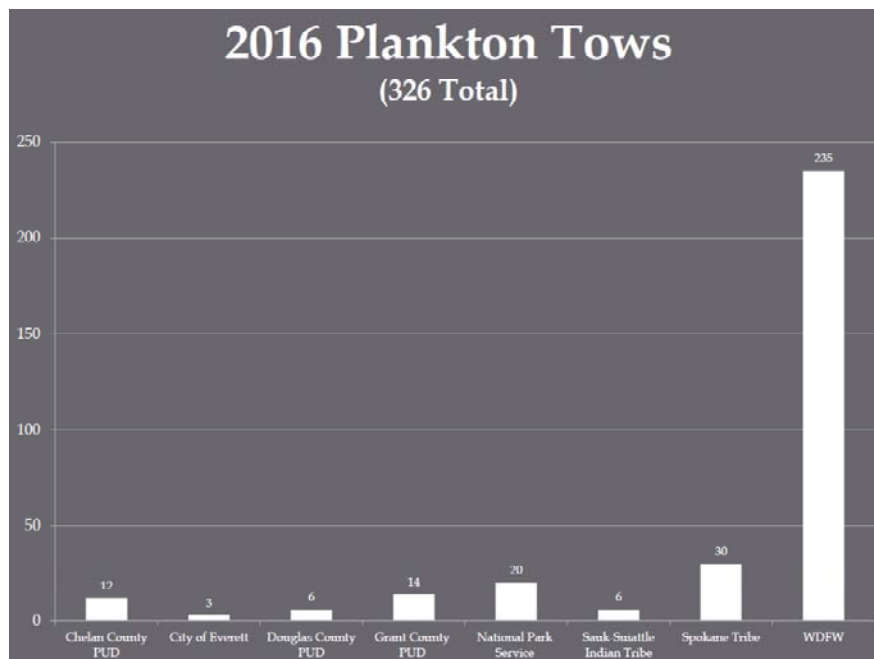
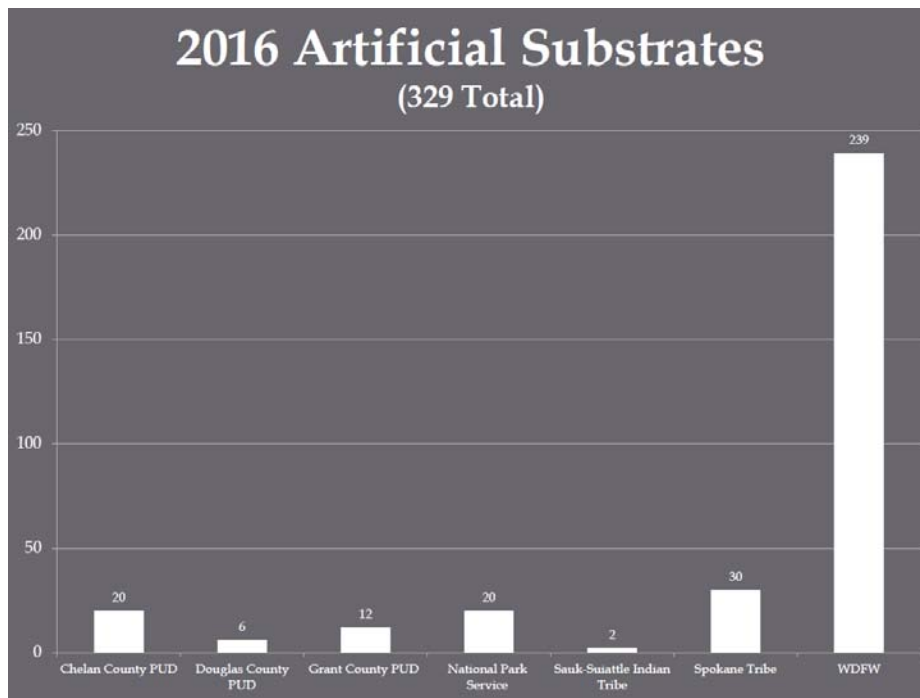


- Water temperatures greater than 12 C (spawning)
 - For juveniles/veligers
- Horizontal and vertical tows for 1 composite sample
 - 1 sample per site

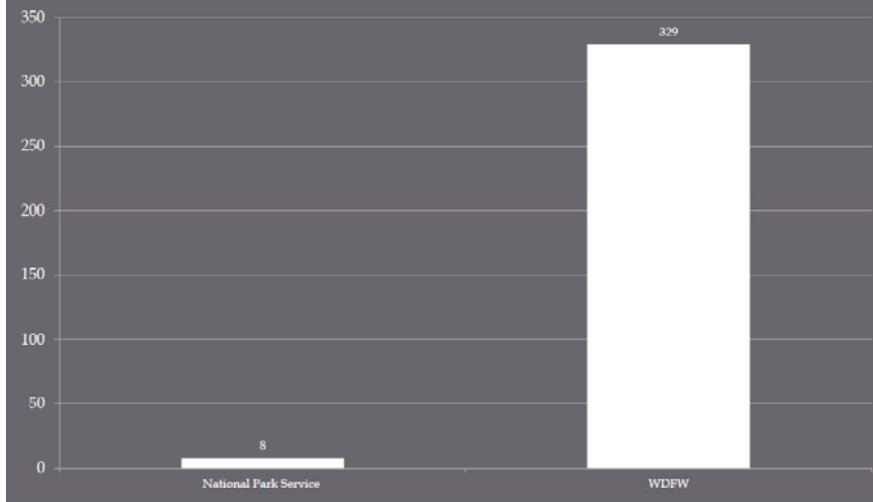
Water Quality

- Visibility
- Calcium
- Salinity
- pH
- Temperature
- Dissolved Oxygen





2016 Shoreline (337 Total)



2016 Calcium

144 Total - WDFW

Why Add More Work with Shoreline Surveys?

- Proven to be effective first detection method
- No cost for equipment or analysis
- Only 10 minutes extra at each site
- Standardize sampling methodology throughout the Region as part of the Columbia River Basin Team comprised of WA, OR, MT, ID, WY, and British Columbia.

Datasheet

Zebra/Quagga Mussel Artificial Substrate & Shoreline Survey

Date (M/D/Y): _____ Site #: _____ Sampler (s): _____
Water Body: _____ Reservoir: _____
Site Location: _____ Substrate Attached To: _____
GPS (WGS 84, Decimal Degrees 00.000): N _____ W _____
Substrate Depth (m): _____ Total Water Depth (m): _____ Secchi Depth (m): _____
Salinity: _____ pH: _____ Temperature (°): _____ D.O.: _____

Artificial Substrate

1) Present Absent 2) Intact Damaged Out of the water 3) Redeployed: Yes No
4) Zebra/Quagga Mussels: Present Absent If present, contact WDFW IMMEDIATELY
5) Other Organisms Present: Algae Algae Blue Green Algae Brown Algae Green Algae Red
Bryozoans Chironomids Limpets Periphytons Snails Physid Snails Unknown Sponges
Other: _____

Shoreline
(Conduct 10 minute visual survey of existing structure)

1) Surveyed: Dock Boat Ramp Shoreline Concrete Structures LWD Dock/Mooring Lines
Other: _____

2) Zebra/Quagga Mussels: Present Absent If present, contact WDFW IMMEDIATELY
3) Other AIS Present: Asian Clams Chines Mystery Snail New Zealand Mudsnails Crayfish Nonnative
Other: _____

Comments: _____

2016 Chelan County PUD Sites and Dates

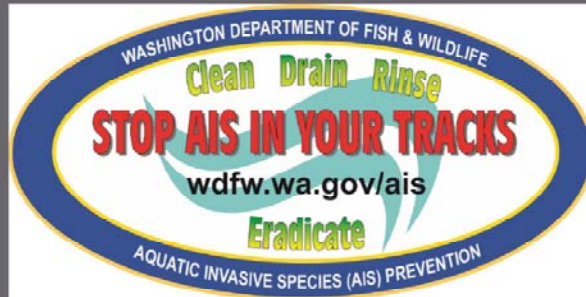
- Beebe Bridge Park
 - Chelan Falls Park
 - Daroga State Park
 - Entiat City Park
 - Lincoln Rock State Park
- August 29
 - August 30
 - September 2
 - September 23

# of Sites	# of Times Sampled per Year	Extra Time per Sampling Date (min)	Extra Time per Year (min)
5	4	50	200





Thanks



WDFW AIS Biologist

Jesse Schultz- (360) 902-2184

Jesse.Schultz@dfw.wa.gov