

**NW Native Freshwater Mussel Workgroup
Quarterly Meeting
Thursday, March 18, 2021 at 9:00 Pacific Time**

Virtual meeting link: meet.google.com/bxy-qnmv-ver

Phone option: 1-484-403-0518 (PIN: 226 450 179#)

Attendees: Emilie Blevins (Xerces, workgroup chair), Wes Daniel (USGS), Dorene MacCoy (City of Boise Public Works), Steve Bollens (Washington State University), Lusha Tronstad (Wyoming Natural Diversity Database), Alyssa Bangs (USFWS), Ann Gannam (USFWS), Almeta Helmig (Great Basin Institute), RD Nelle (USFWS), Craig Haskell (USFWS), Jerry George (Kleinshmidt), Cynthia Tait (USFS retired), Celeste Serles Mazzacano (CASM Environmental), David Cowles (Walla Walla University), Denise Dammann (Dammann Consulting), Hope Rieden (Chehalis Tribe), James Barron (USFWS), James Kunz (USGS), Jen Poirer (USFWS), Joel Saunder (IDFG), Julie Campbell (USFWS), Kate Holcomb (UDWR), Kevin Aitkin, Kris Schaedel (HRSWCD), Liz Bockstiegel (WDFW), Martyne Reesman (ODFW), Michele Weaver (ODFW), Stephen Siddons (WGFD), Teal Waterstrat (USFWS), Miranda Plumb (USFWS), Laura Guderyahn (City of Portland), Rebecca Paradis (Lower Elwha Klallam Tribe)

1. Welcome and introduction (Emilie Blevins, workgroup chair/Xerces Society)

2. Zebra Mussels in Aquarium Products, USGS update (Wes Daniel, Nonindigenous Aquatic Species Database Coordinator, USGS)

Shared presentation: NAS Database, citizen science portal got report in late Feb from Petco. Photos reported upon request. Novel pathway, contacted WDFW AIS and went to local Petco on March 2, 2021. Moved to USFWS Law enforcement and USDA (regulated “plants”) Shipped from Ukraine and vector for many non-native organisms (flat worms diatoms, more). USDA does not regulate algae or screen for zebra mussels, USFWS taking the lead role now. Lots of screening with suitcase eDNA monitors.

What can we do? Be vigilant! Report. These vectors were likely going on for multiple months. This was a citizen science report, not agency. Help ID what else was in the algae balls.

Currently tracking ~1,300 NAS species.

Denise Dammann: are there multiple brand names?

Wes: yes lots of labels and often relabeled. Also sold dry.

Kevin Aitkin: zebra mussels also reported from this vector from nurseries, floral stores, pond stores, and internet commerce.

Kate Holcomb: The success of widespread sharing of the information about zebra mussels, How were you so successful?

Wes: Great networks and agency response. It was also a learning experience as we noted gaps in “authority” in agencies or where we are lacking communication and resources. Also identified new vectors for NAS.

Dorene MacCoy: Do you know David Pilliods work with eDNA on Stream gauges to ID all aquatic species.

Wes: Yes! and it is a great tool and a baseline for Aquatic monitoring. I did a detail in that office and work with USGS.

Wes: minimum data requirements for inclusion in USGS NAS database. Especially for eDNA reporting. eDNA reporting is the wave of the future!

Kevin Atkin: Some recommendations out there for zebra mussels to improve water filtration of Koi pond outlets.

Wes: Yikes. Will follow up.

3. City of Boise mussel project update (Dorene MacCoy, City of Boise Public Works)

Sharing presentation: “The search for FWM in the Lower Boise River”

Why is Boise interested in Mussels. Diversion dam splits the upper and lower river. Population in the area is exploding! It's an urban river with the challenges that come along with us. Lots of drainages, ditches, canals, and other diversions. “New York Canal” receives ~½ water in the Boise River in Summer. 2 renewal facilities that process ## million gallons of “dirty water” each year and expected to increase.

City needs to follow EPA clean water standards. Mussels found to be more sensitive than salmon fry to ammonia. 1995 - 2017 USGS collected benthic samples for WQ, but also included reports of FWM. but no mussels in the Boise River! So they started ad hoc mussel surveys in the area including dewatered areas for restoration and recreation projects (no luck!) Attended Xerces FWM training and read the materials!

Also looked at fry releases locations to help where mussels might be. Using those tools they found mussels and started understanding habitat specificity. Mussels not prolific in the lower Boise River. Side Channels had more abundant mussels than main stem (or at least more easily detected mussels).

Dave Hopper? (USFWS) provided local training. Smith Root loaned out some eDNA detectors for field testing USGS ran samples. Had several local river “ positive or control samples” for eDNA.

All set up for surveys on the Lower Boise! 28 sample/survey sites identified. Found mussels (MAFA) at 5 of 28 sites. Margaritifera only in physical (visual) surveys. BUT MAFA eDNA sampling detected them in 16 of 28 sites. BUT one visually detected site was negative for eDNA. (eDNA was taken in side channel, a physical mussel was found in the main stem).

No *Gonidea* (ridged) found. Light directions for upstream (just below diversion dam) no *Anodonta* found in physical surveys, but eDNA found them in 13/28 sites.

First documentation of mussels.... Now what?

2 focus surveys in side channels to do “probability of direction” surveys with USGS. Working with USFWS to pit tag mussels to do long term assessments. Visual and eDNA surveys at 25 sites. Host fish work (IDFG and USGS).

David Cowles: Lake sampling.

Lusha Tronstad: done for amphibians

Kate Holcomb have you looked for host fish and glochidia on fish?

Dorene: We have not done that. It's a big busy river with lots of priorities.

Short side conversation about eDNA sampling in lentic and lotic habitat.

4. *Corbicula fluminea* and other AIS research at the Aquatic Ecology Laboratory, Washington State University (Steve Bollens, Washington State University)

Dr. Bollens at School of environment and science. Director of Myers point research station,

AND co-director of aquatic ecology lab at WSU Vancouver (WA) with Gretchen

Rollwagen-Bollens: we do Microbes to Fish.: <https://labs.wsu.edu/aquatic-ecology/>

New emphasis: harmful algal blooms and AIS. Planktonic invaders. *Corbicula veligiers* dominated summer water columns. Started looking at adults (growth rates, habitat associations of lower Columbia, competitive interactions (*corbicula* vs FWM). Planning on collaborating with CTUIR, USGS research lab, Xerces.) Steve welcomes future collaboration with him and the workgroup.

Thanks workgroup for the inclusion (and the workgroup thanks Steve!)

Dorene: got any students interested in working in Boise River.

Steve: We are very interested in supporting graduate students.

Emilie Blevins: could *corbicula* be a vector for freshwater mussel disease?

Steve: a little out of our scope, but very interesting. *Corbicula* is widespread and abundant, but can't speak to the vector.

5. Bear River, Wyoming mussel eDNA study update (Lusha Tronstad, Wyoming Natural Diversity Database)

Distribution of MAFA and ANCA in Bear River Wyoming. How far can we detect with eDNA. Main focus is California Floaters. Hard to see because of the turbid river, Using Torrey Rodgers multi

spp primers. Black (negative controls) all came back negative. Water chemistry didn't explain FWM distribution. eDNA does not seem to be traveling far in the bear river. Thick Biofilm in the streams. Only found adult mussel shells. Concerned about reproduction. Want to follow up in areas with CA floater to find information about age and reproduction.

Almeta Helmig: How did you determine frequency of eDNA sampling

Lusha: Tried for every 500m, but limited by private land access to site

Dorene MacCoy: Is poster available? Did you do visual surveys?

Lusha: yes (Emilie will distribute to the workgroup). We did visual surveys in the past but one outcome of this project is to guide future surveys

Dorene: How deep do these things go? Are we just missing them? The photic zone doesn't seem to monitor them. Thinking about sonar surveys.

Lusha: they are as deep as they can go.

Celeste: on Willamette we excavated mussels 20cm under the substrate. They can be really deep in areas where oxygen is available.

Emile: Doug Nemath (USFWS) found mussels ~1 foot into substrate.

6. Joel Sauder: Idaho eDNA

End of year funding allowed for eDNA sampling. Mining already collected data at USGS Rocky Mountain Research Station (noted above). Targeting Ridged mussel, but using Torrey Rodgers multiplex. Laying groundwork for sampling in 2022.

Dorene MacCoy: USGS gauge eDNA samples and BOR eDNA samples are out there to be mined if allowed. Might be regulatory.

Discussion of open eDNA atlas and regulatory/hidden/protected datasets. How we can capitalize and who to contact.

Joel: Right now we are trying to put dots on a map.

Xerces Society mussel program update (Emilie Blevins)

-Posted seasonal FWM surveyors positions for 2021. Please spread the word!

<https://recruiting.paylocity.com/Recruiting/Jobs/Details/493595>

-please remember to disinfect: [VIRKON](#) Disease work has been delayed due to Covid and no real updates. Also in BMPs.

River Democracy Act: <https://oregonwild.org/celebrate-river-democracy-act-2021> Williamson River included here at Xerces nomination.

Xerces has funds to assist in pre-project surveys and restoration planning in Oregon. Please reach out to Emilie if you have a project.

OPB Article looking at pesticides in Oregon waters featuring mussels:

<https://www.opb.org/article/2021/03/17/forest-pesticides-found-downstream-in-coastal-oregon-waters/>

7. Other business

Reminder about the FMCS virtual symposium

FMCS meeting coming up 10 members presenting and ~12 western mollusk presentations.

https://molluskconservation.org/EVENTS/2021SYMPOSIUM/2021_FMCS-SYMPOSIUM.html

Other information from workgroup members

Kate Holcomb: we have one good river with MAFA in Utah. But a researcher found a new site/population/individual when snorkeling for fish in a beaver restoration project. More to come.

James Barron (USFWS Abernathy Tech center) MAFA. A number of MAFA held at the facility (group of 10) released glochidia in late Feb. The water was barely over 8 C. Propagated new MAFA cohort on steelhead (*O. mykiss*) with light inoculation (couple hundred per fish) Surprised at early date of conglutante response. Have 1-year old MAFA, and 3 groups of brood stock (~60 adult mussels).