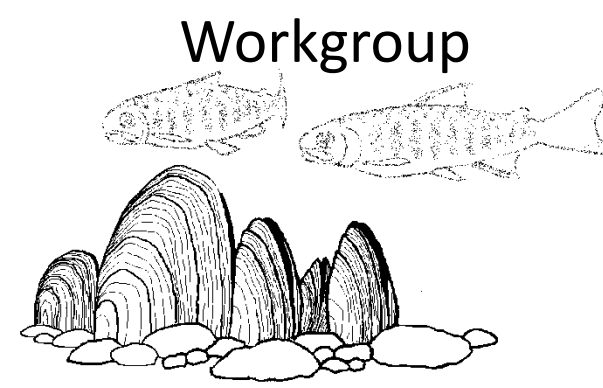


Pacific Northwest Native Freshwater Mussel Workgroup



Oregon Freshwater Mussel Distribution: A Focus on Data Management

Dean Walton, PhD, UO Science Library, University of Oregon, Eugene, OR; Shelly Miller, Oregon Department of Fish and Wildlife, Corvallis, OR



PROBLEM - DISPARATE DATA SOURCES

Management of native freshwater mussels depends on greater knowledge of their ecology. Data supporting locations and species populations come from many sources with different goals, target species, techniques, and levels of effort. This creates an unclear picture of the status of Oregon's freshwater mussels.

In Eastern Oregon we have point locations for mussel species but often lack information on population size and species observed.

- There are many intermittent streams;
- There are numerous barriers to fish that are the host of the parasitic mussel larva called glochidia.
- There has been a low level of survey effort in the region.
- However, there is one exception. The John Day River has received significant survey effort by the Confederated Tribes of the Umatilla (CTUIR) and has some of the most robust populations known in the state.

In Western Oregon there are better data related to survey effort and (perhaps) better habitat for some species. The PNW Freshwater Mussel Workgroup has coordinated activities with the Oregon Department of Fish and Wildlife's Western Oregon Rearing Project. This project monitors abundance and status of juvenile salmonids (e.g. coho salmon) through snorkel surveys. Regarding mussels, surveyors take notes of presence, abundance, and location. Shells are opportunistically collected and identified post-season.

In Portland, the Xerces Society has played an important role in bringing together mussel datasets and works to involve citizen scientists in survey work.

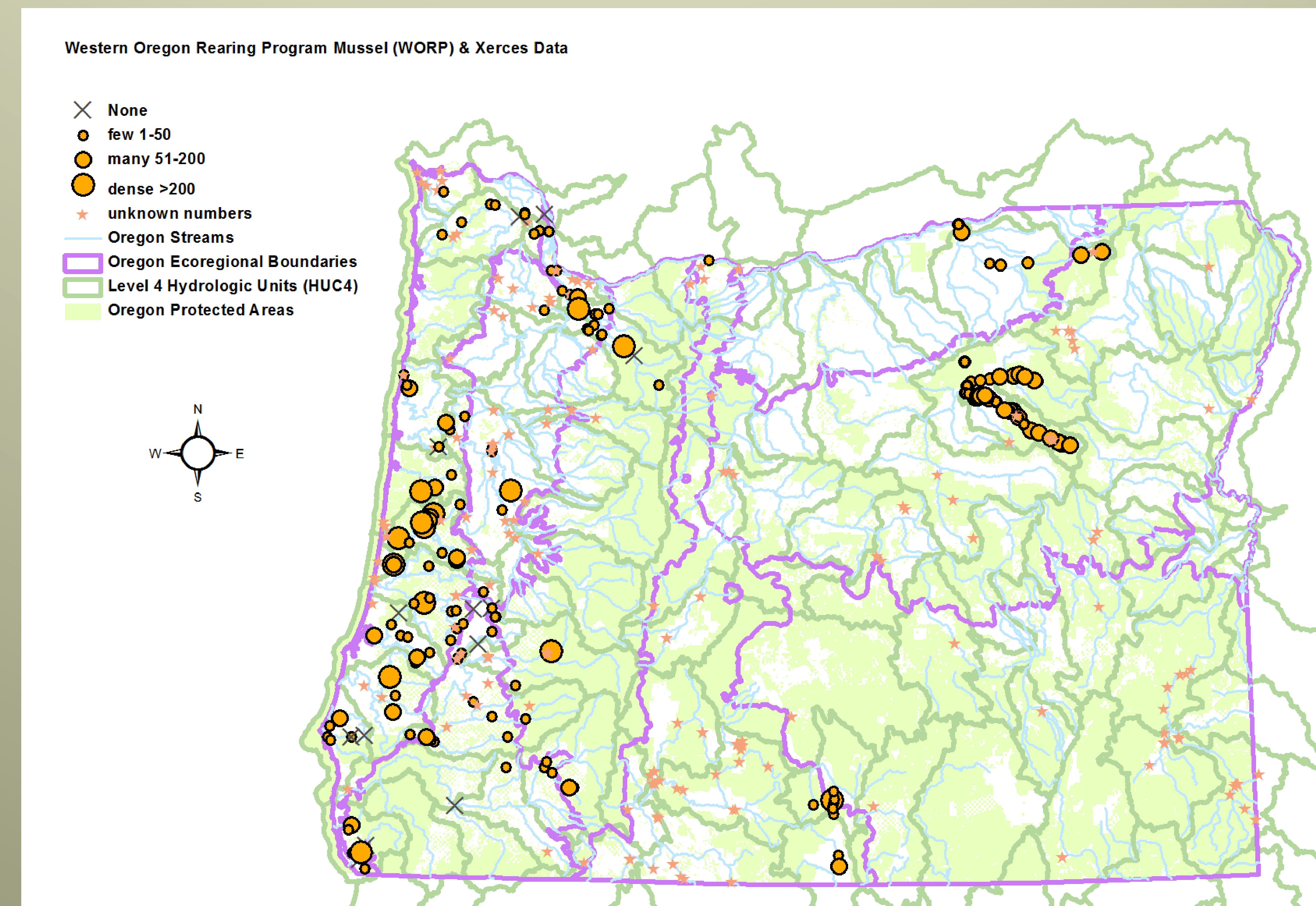
There are limited, systematic surveys on specific rivers like the Klamath (Davis et al., 2013).

In addition, there are data collected throughout the state from a variety of sources including:

- USFWS refuge surveys or reintroductions
- Current data collection by the authors
- Mussel sightings by interested parties (fishermen, boaters, naturalists, etc.)
- Museum Records

INTRODUCTION

There are 3 genera of freshwater mussels in Oregon. Two are represented by a single species each in Oregon (*Gonidea angulata* & *Margaritifera falcata*). Previous taxonomic classification of the third genus, *Anodonta*, included 4 species in Oregon. However, current genetic analysis supports the concept of two clades or general groups potentially representing two or more species. All native freshwater mussels in Oregon are thought to be in decline, and unfortunately only a relatively small amount of survey effort is placed on these mussels in the West. Likewise, there are few researchers or biologists dedicated to Pacific Northwest mussels professionally.



A map of known mussel populations in Oregon covering all three genera. The populations are indicated by size class and the State is divided into ecoregions and hydrologic units (HUC Level 4). Additionally, protected areas are shown in green.



Anodonta habitat on the McKenzie River supporting the two clades, a first report of either group on the river system.



A new discovery of Anodonta species on the McKenzie River including the putative 2 clades (all except upper right - Clade 1) (top row right - Clade 2). All appeared to have recently died after pool-dry out.

POSSIBLE SOLUTIONS

1. Create associated metadata files for surveyed data
2. Convert variously projected GPS point locations to decimal degree data and add location data as possible
3. Work to improve data recording protocols and standardization of classes, location data, and nomenclature.

CONCLUSIONS

1. Not understanding the level of effort and geographic scope could skew the interpretation of mussel population status and distribution. Areas with little effort may be interpreted as areas with low diversity and/or population sizes.
2. Not understanding the intent of the survey (target species, etc.) could give a higher level of certainty when not warranted. Such as, ODFW snorkelers never observed mussels at a site they visited three years in a row. Surveyors may not have a good "picture" or search image for mussels.

NEXT STEPS USING UPDATED DATASET

1. Based on new populations discovered create and/or update GIS models predicting mussel habitat
2. Utilize remotely sensed river data at low flow periods to identify habitat used by each freshwater mussel species
3. Examine the relationship between robust populations and public land
4. Produce a better evaluation of mussel status and needs for listing

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ACKNOWLEDGMENTS

University of Oregon Libraries with special thanks for funding this presentation
 Oregon Department of Fish and Wildlife
 Xerces Society
 Mark Currey - UO Institute of Ecology and Evolution (IE²)