



Native freshwater mussel surveys in Wyoming

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Wyoming Natural Diversity Database**

Freshwater mussel overview

- **Declining worldwide due to anthropogenic factors**
 - **Damming and channelizing, pollution, invasive species, overharvest, etc.**
- **Good indicator species due to sensitivity**
- **N. America has greatest taxa diversity with 302¹**
- **89 are threatened or endangered under ESA**
- **Wyoming has 7 native species**

¹Graf and Cummins 2007

Wyoming Mussel Species

☐ Margaritiferidae

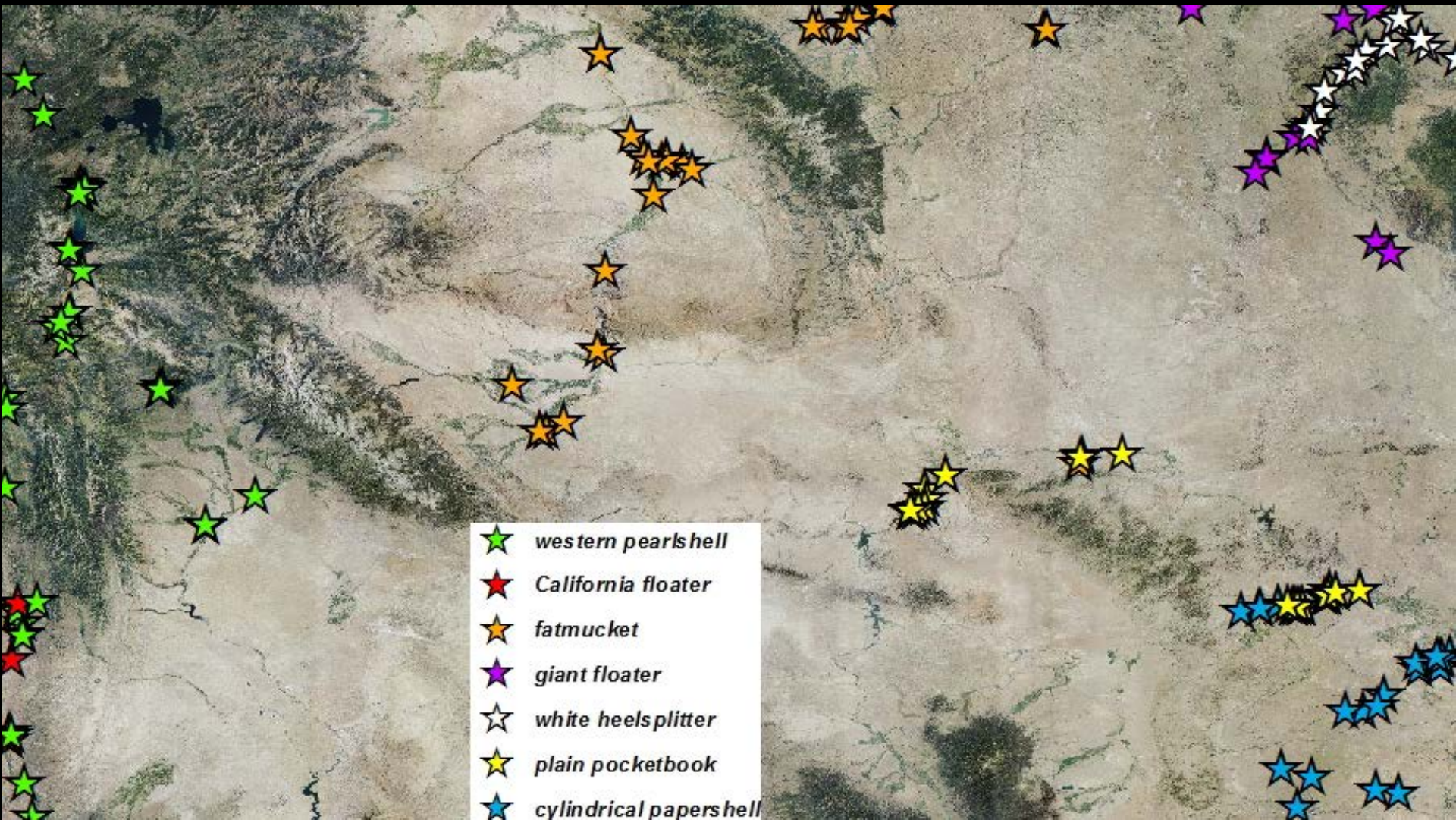
- ***Margaritifera falcata*- western pearlshell**

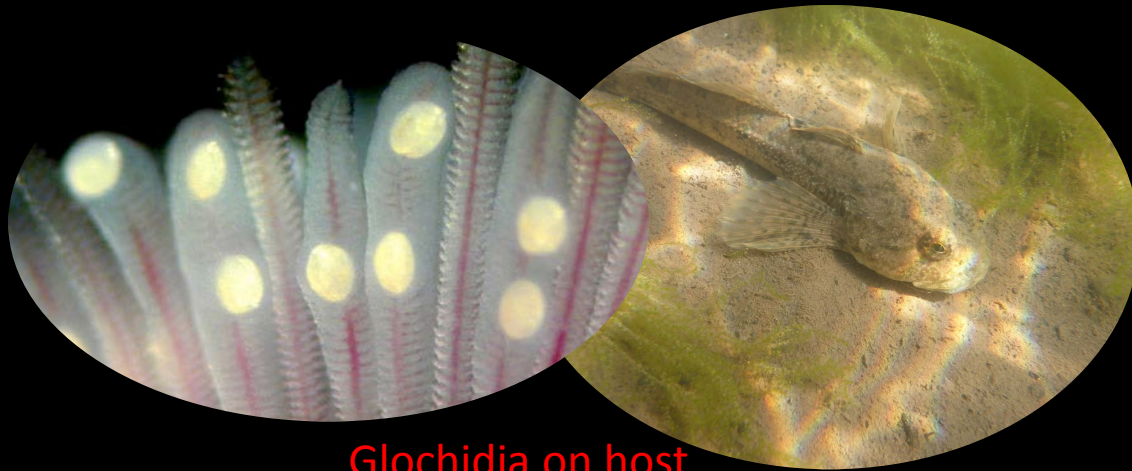
☐ Unionidae

- ***Anodonta californiensis*- California floater**
- ***Anadontoides ferrusacianus*- cylindrical papershell**
- ***Lampsilis siliquoidea*- fatmucket**
- ***Lampsilis cardium*- plain pocketbook**
- ***Lasmigona complanata*- white heelsplitter**
- ***Pygonadon grandis*- giant floater**
- ***Ligumia recta*- black sandshell***
- ***Potamilus ohioensis*- pink papershell***

* Known only from shells

Mussel species distributions





Glochidia on host

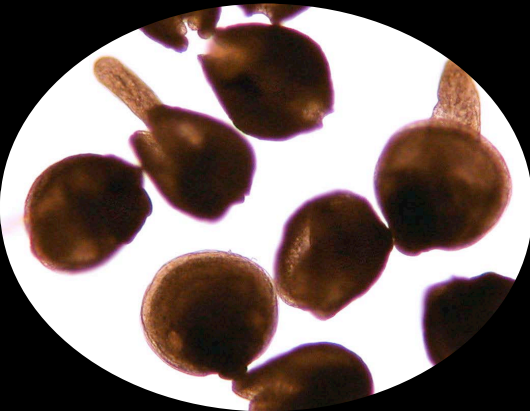
Glochidia



Adult



Juvenile



Freshwater mussel life history



Summer 2016 objectives

- 1. Better document mussel distribution in western Wyoming**
- 2. Conduct population assessments**
- 3. Determine which mussels are most imperiled**

Methods

View Buckets



Snorkeling



Methods cont.

- Time-based surveys
- $\text{CPUE} = \frac{\# \text{ mussels}}{\# \text{ surveyors} \times \text{time}}$
- Collected and measured total length (TL) of live mussels
- Returned mussels to approximate location
- Recorded empty shell #

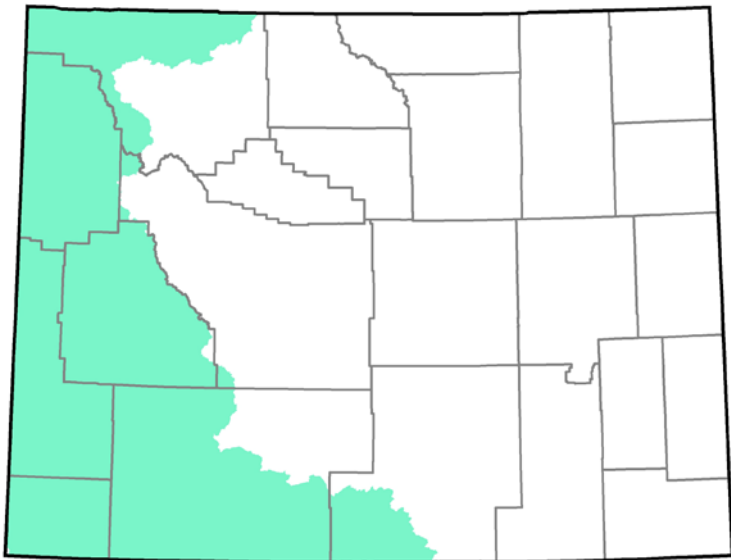


Methods cont.

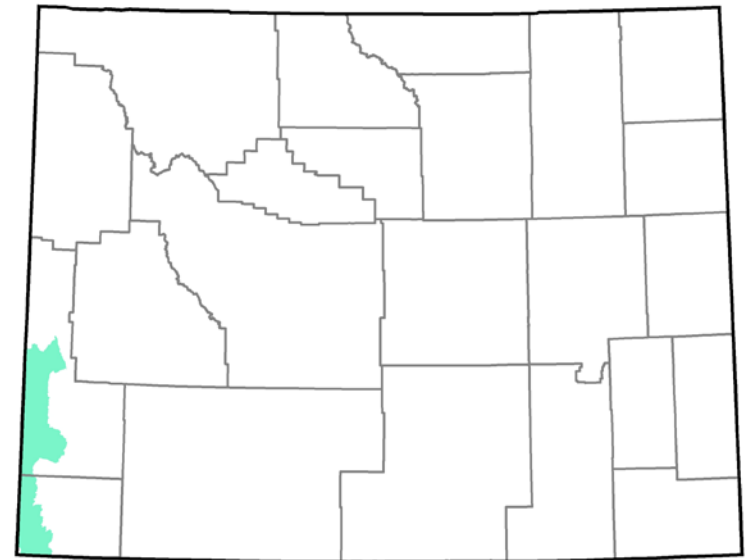
- Reach < Site < Drainage
- Measured environmental variables at each site
 - Flow, Temperature, Dissolved O₂, pH, etc.



western pearlshell
(*M. falcata*)



California floater
(*A. californiensis*)



Bear River Drainages

- New populations of western pearlshell
- No verification of recruitment

Live Mussels	10
Shells	9
Total Reaches	10
Positive	2
Negative	8



Snake River Drainages

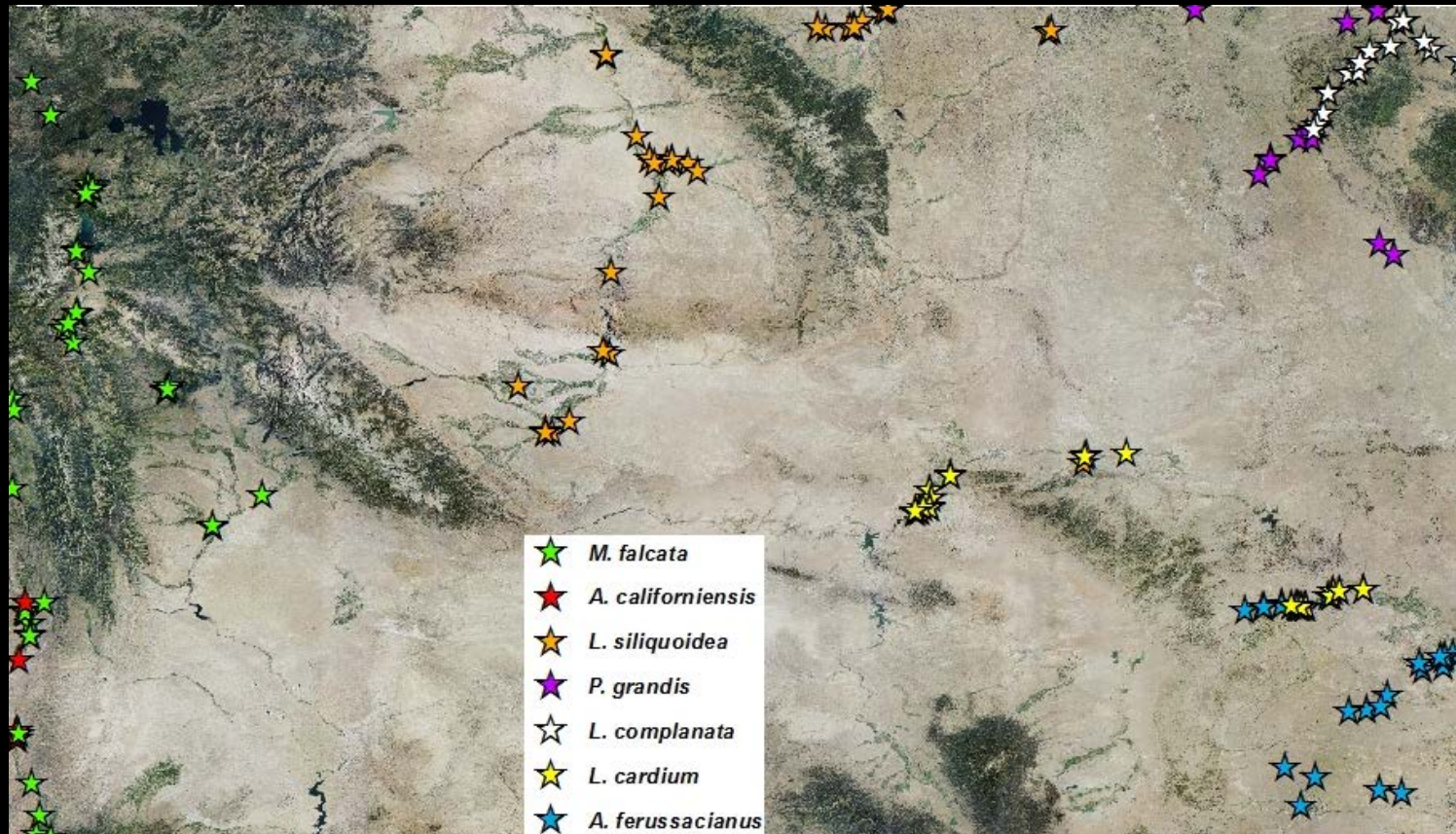
- New populations of western pearlshell
- Evidence of recruitment
- Very high local abundances (>150ind./reach)

Live Mussels	256
Shells	713
Total Reaches	48
Positive	8
Negative	40

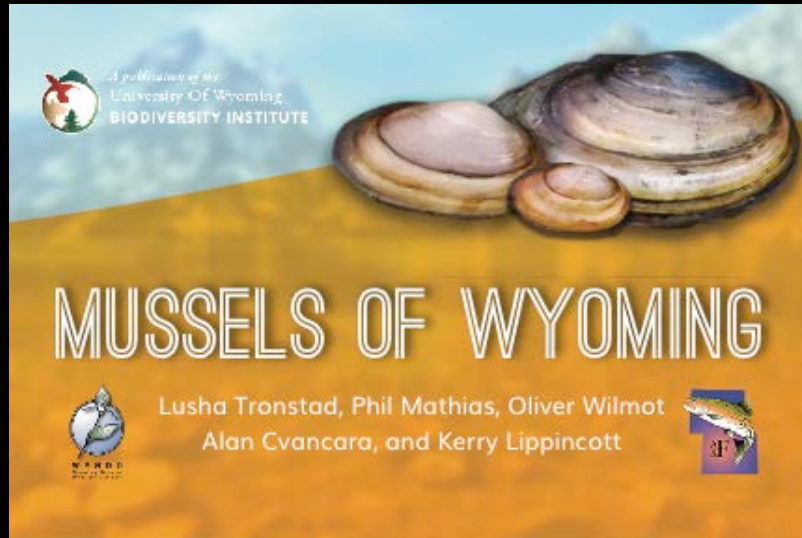


Future Directions

- 2017-2018 surveys in eastern Wyoming
- Focusing on giant floater and plain pocketbook
- eDNA techniques



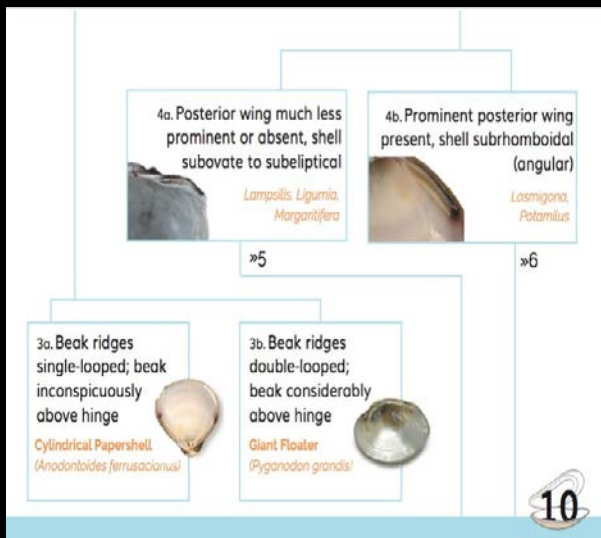
Coming soon, Field Guide to Mussels of Wyoming



NATIVE FRESHWATER MUSSELS

Three hundred species of mussels (families Unionidae and Margaritiferidae) live in North America, of which over 70% are at risk of extinction locally or nationally. Nine species of mussels have been discovered in Wyoming; seven species were discovered live in Wyoming and only the shells of two additional species have been found. We also include information on the native clams that are abundant in Wyoming and the non-native mollusks that are making their way across the United States.

This guide contains photos, shell descriptions, an identification key and information about all bivalves found in Wyoming to help you identify and learn more about these interesting members of Wyoming's aquatic ecosystems.



WESTERN PEARLSHELL



WESTERN PEARLSHELL (*Margaritifera falcata*)

Key characteristics: Elongate shell that thickens over its lifespan

Shell length: ≤5 in (13 cm; smaller compared to the rest of its range)

Shell color: Dark brown to black

Nacre color: Purple, salmon, pink or white (lightens with age)

Sexual dimorphism: None

Habitat: Trout streams; small to large, cold, clear streams and rivers

Substrate: Sand, gravel and cobble substrate

Life span: >100 years

Host Fish: Native: Cutthroat Trout, Speckled Dace, Lahontan Redside, and Tahoe Sucker **Introduced:** Chinook, Coho and Sockeye Salmon, and Brown, Rainbow and Brook Trout

Natural History Note: Wyoming's longest lived animal! Only hermaphroditic mussel in Wyoming.





**If you find mussel shells please send them to us with
coordinates and any helpful info at:**

**WYNDD- Invertebrate Zoology
1000 E University Ave.
Laramie, WY 82071**

Acknowledgements



Wyoming Game and Fish
Department

US Fish and Wildlife Service



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An underwater photograph of a riverbed. The scene shows a sandy bottom with several large, light-colored rocks and pieces of driftwood. The water is slightly turbid, and the lighting is natural, coming from above. The word "Questions?" is overlaid in yellow text in the upper center of the image.

Questions?

Please contact us with any questions about Wyoming invertebrates-

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