

Invasive Mollusks: Wisconsin's Newest Inland Invaders

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Overview

- Biology
- Impacts
- Challenges
- US and WI Distribution



New Zealand Mudsnail

Potamopyrgus antipodarum

New Zealand Mudsnail

- Native to New Zealand streams and lakes
- Spreading in North America since 1987
 - Ballast water
 - Recreational equipment



New Zealand Mudsnail

- 1/10 to 1/4 inch long
- Light brown to black
- 4-6 whorls
- Operculate– right handed

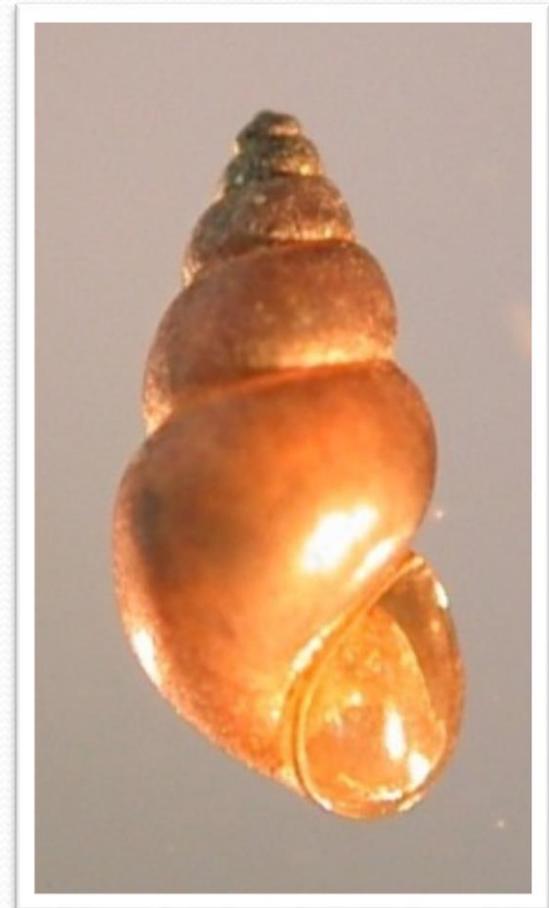


Photo: <http://nas.er.usgs.gov/taxgroup/mollusks/>

New Zealand Mudsnail

- Streams, lakes, ditches
- Wide range of environmental tolerances
- Grazer-scrapers
 - Algae
 - Detritus
 - Plant particles



Photo: R. Draheim

New Zealand Mudsnail

- Asexual reproduction
 - IT ONLY TAKES ONE!
 - In US, ~ all females
 - Live birth (not eggs)
 - Born with embryo clones
 - Up to 230 young/year

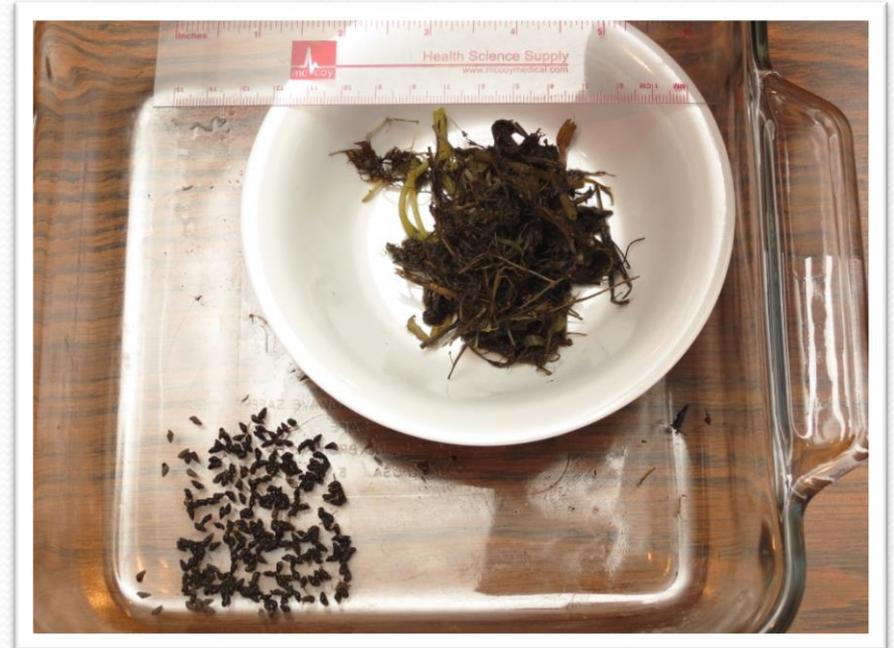


Photo: Paul Skawinski

New Zealand Mudsnail

- May endanger native snails
- May outcompete mayflies, stoneflies, caddisflies, etc.
- NZM pass undigested through fish digestive tract.
 - Offer little nutritional value



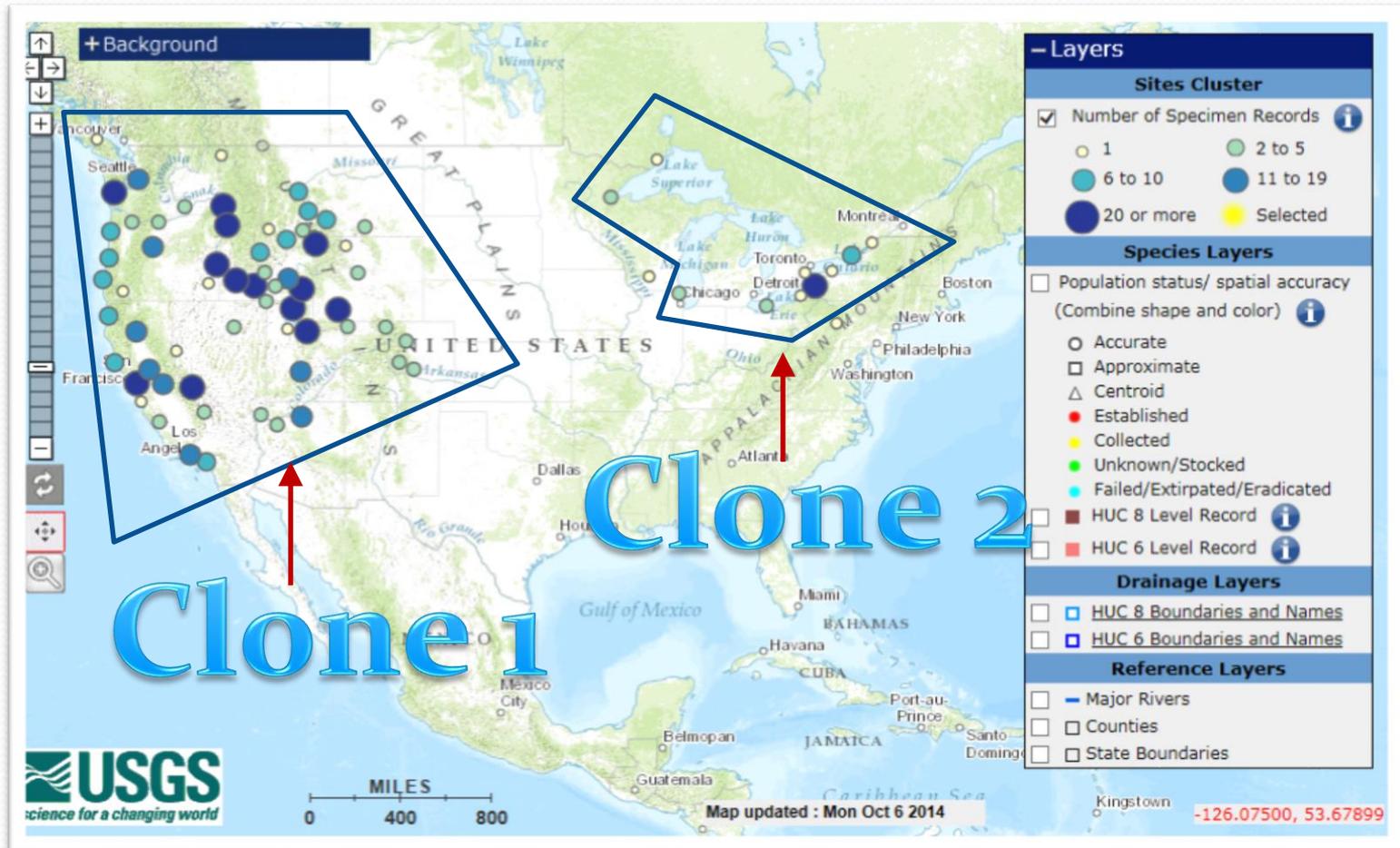
Photo: <http://fishbio.com/field-notes/wildlife-ecology/its-an-invasion>

New Zealand Mudsnail

- No known predators in US
- Resist desiccation (operculum)
- Resistant to ethanol and bleach
- Virkon, hot water and freezing



New Zealand Mudsnail



New Zealand Mudsnail



Faucet Snail

Bithynia tentaculata

Faucet Snail

- Native to Europe
- Introduced to United States in 1870s
 - Ballast water
 - Attached to vegetation



Faucet Snail

- Up to ½ inch
- 4-6 whorls
- Pale to dark brown
- Operculate – right handed
 - Adults – concentric
 - Juveniles - spiral
- Pointed tentacles



http://bioweb.uwlax.edu/bio203/2010/schmidt_ama3/

Faucet Snail

- Found in slow moving calcium rich water
- Adheres to underside of rocks, substrates (cool months) and macrophytes (warm months)
- Grazer and filter feeder
 - Algae
 - Insect larvae



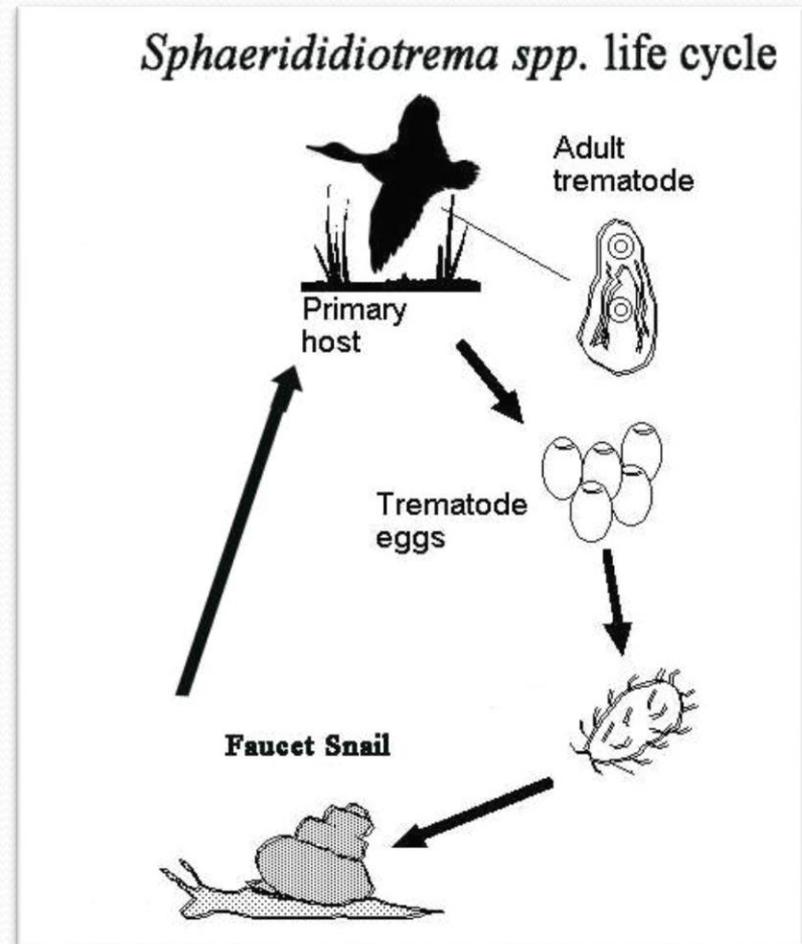
Faucet Snail

- Sexual reproduction
- Lays up to 77 eggs at a time in masses
- Temperature dependent
- High mortality rate due to predation and parasitism
- 10% survival



Faucet Snail

- Intermediate host of parasitic trematode
 - Lethal to waterfowl (scaup and coot)
 - Hemorrhage
- Competes with native snails
- Biofouling



Faucet Snail

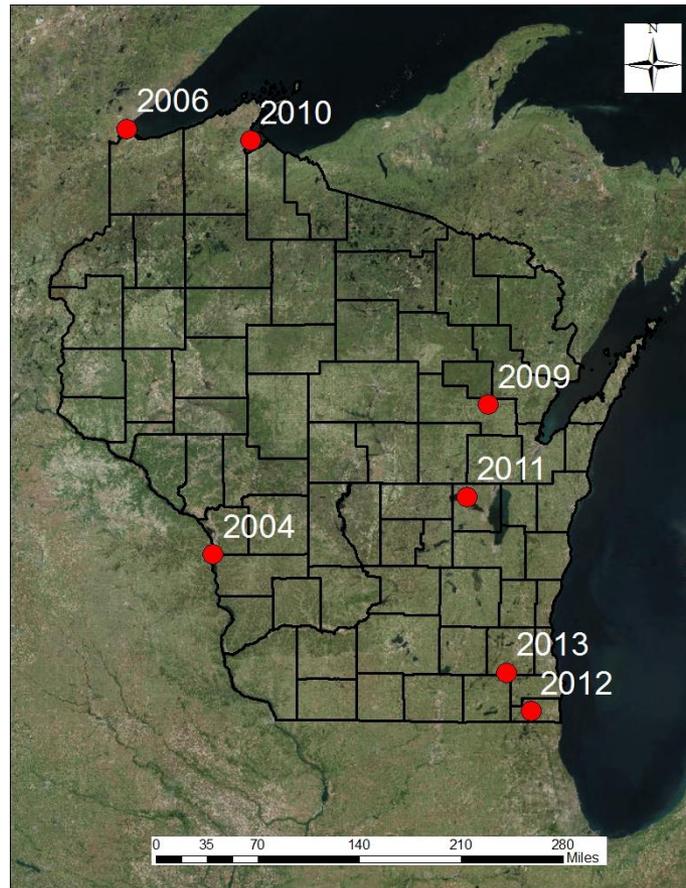
- Prey of common carp, waterfowl, crayfish and leeches
- Parasitism can cause sterilization
- Resistant to ethanol, bleach and Virkon
- Resist desiccation (operculum)
- Hot water



Faucet Snail



Faucet Snail



Asian Clam

Corbicula fluminea

Asian Clam

- Native to Asia, Africa and Australia
- Spreading in North America since 1938
 - Food item



Asian Clam

- 1-2 inches
- Yellow to brown
- Concentric raised growth rings
- Finely serrated lateral teeth



Asian Clam

- Highly oxygenated water
 - Low tolerance for temperature extremes
- Filter feeder
 - Phytoplankton



Photo: <http://www.hydra-institute.com/ifah/neozen.htm>

Asian Clam

- Hermaphroditic
- Capable of cross and self-fertilization
 - It only takes one!
- Up to 70,000 young/year
 - High mortality
 - Larval young
- Dramatic population fluctuations



Photo: <http://www.adkwatershed.org/invasive-species/invasive-species-information/asian-clam>

Asian Clam

- Biofoul electrical and nuclear power plants
- Release high levels of nutrients in excrement leading to algal blooms
- Alter substrate
- Compete with native species



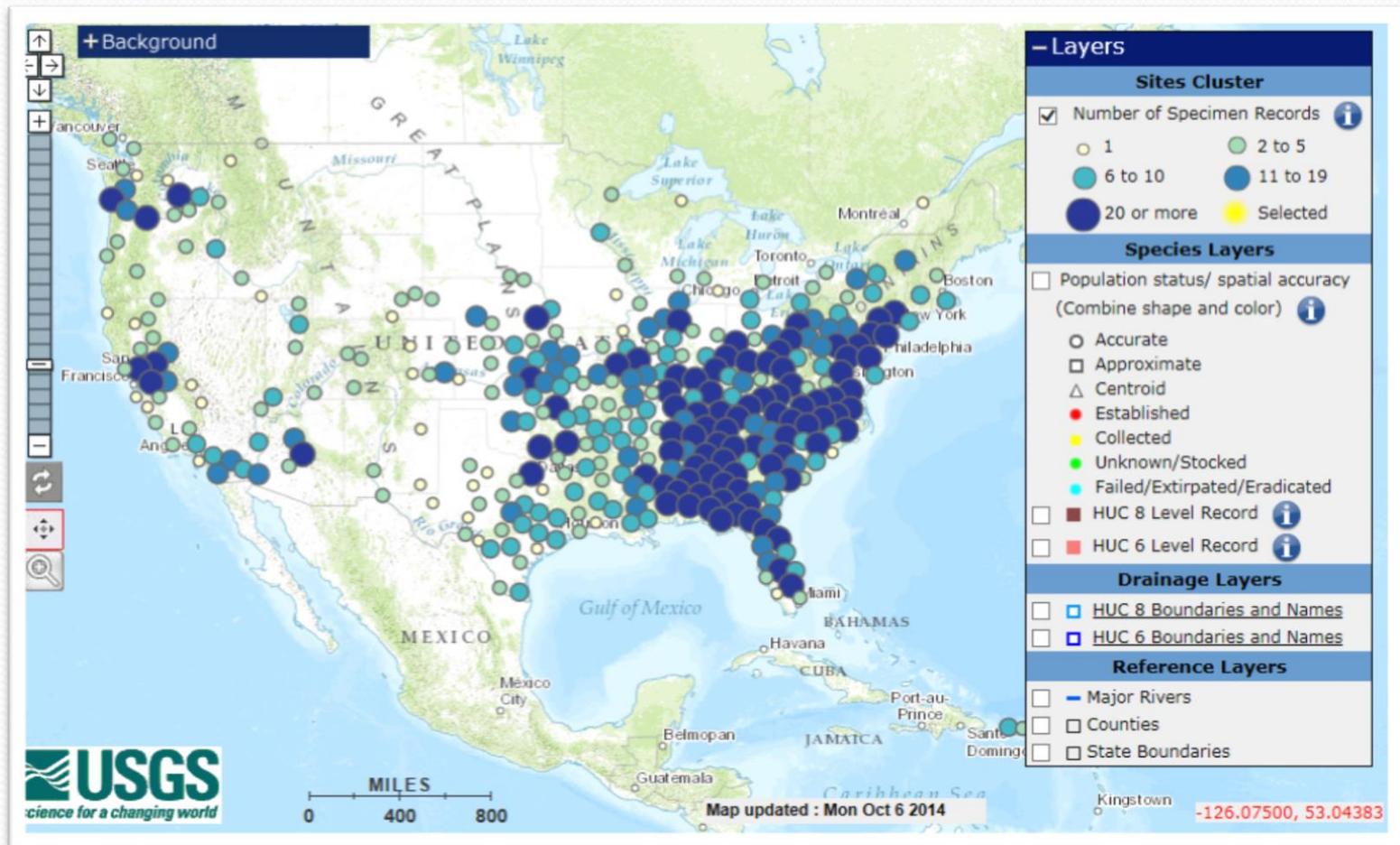
Photo: <https://fieldbio.wikispaces.com/Asian+Clam-+Jamie>

Asian Clam

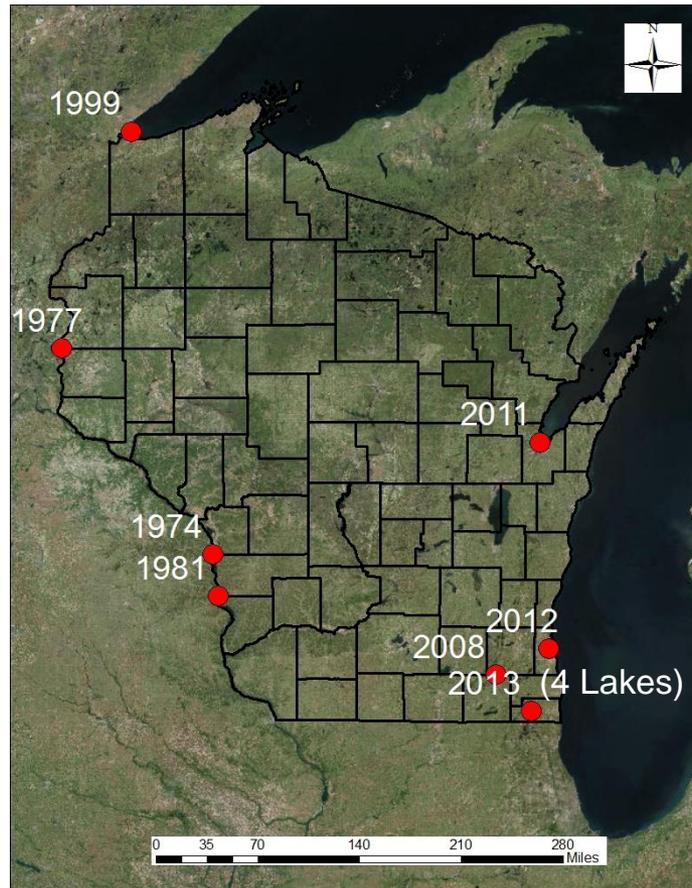
- Prey of fish and crayfish
- Susceptible to environmental changes
- Screens and traps used in water intakes
- Heat, chlorine and bromine are effective but more research is needed



Asian Clam



Asian Clam



Take-Home Message

- New species – shifting ranges
- Prevention is key
- Challenges to prevention
 - Manual code revisions
 - Resistance to traditional decontamination
 - Operculum
 - Small size
 - Fecundity

Questions?



<http://www.createwebquest.com/mirabira/invasive-species>



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