

Evolving New Zealand Mudsnail Management Priorities in the PNW

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The New Zealand Mudsnail

- Tiny
- Cryptic
- Tolerate drying
- Nearly in-digestible by fish
- High temperature tolerance
- High salinity tolerance
- Reproduce through cloning
- Populations densities in 100ks/sqm



Potamopyrgus antipodarum

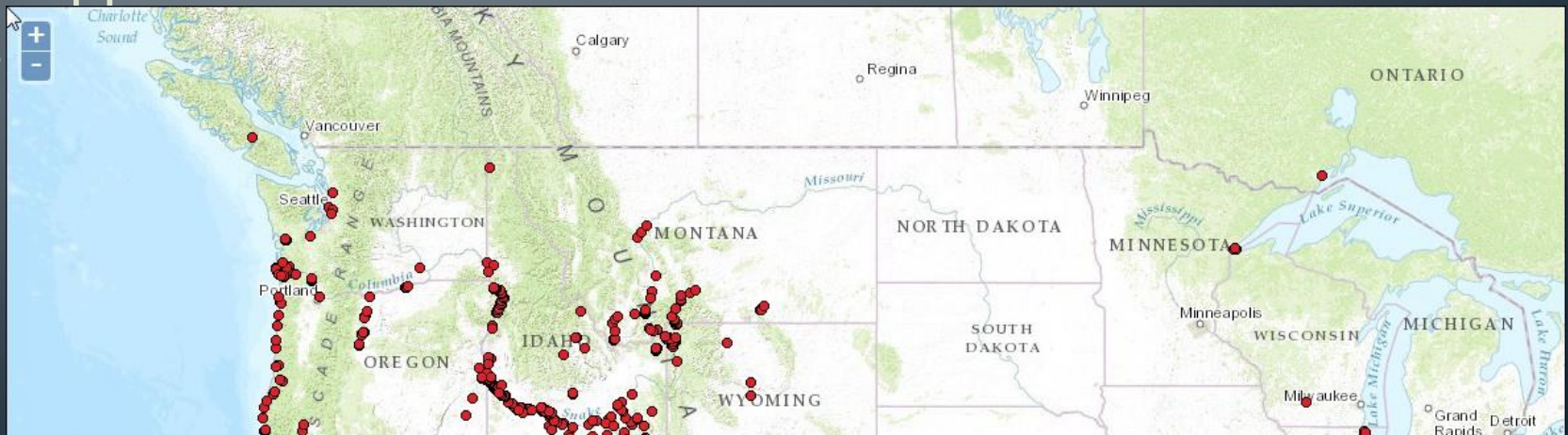
NZMS in Western North America

- 1987 Snake River
- 1995 Madison River
- 1996 Yellowstone National Park
- 2001 Oregon, California, Arizona
- 2003 9 of the 11 states west of the Rockies
- Today 10 western states and British Columbia



NZMS in the West

- First Annual Conference on New Zealand Mudsnails in the Western USA, 2001 (Bozeman, MT)
- NZ mudsnail Management and Control Plan Working Group established in 2002, began work in 2003
- National Management and Control Plan for the New Zealand Mudsnail (*Potamopyrgus antipodarum*) – approved 2007



Western Actions

- State Management Plans
- Prohibited or Listed Invasive Species
 - All Western States except New Mexico
- Quarantine or Fishing Access Closures
 - California
 - Colorado
 - Washington
- Awareness Campaigns



Awareness

STOP THE MUDSNAIL!

The New Zealand mudsnail is a serious threat to California's rivers, lakes and streams.

What can you do? ... You can help them from spreading.

- Check all the gear and boating equipment after each use.
- Use live water - if available, use fresh or spring water.
- Completely dry all gear, in the sun, or freeze overnight.
- Never reuse the live water plants from one body of water to another.

What is a New Zealand mudsnail? ... A New Zealand mudsnail is very small but, over time, it can clog the filters of stream filters. They have no other work to do, so they eat the water's plants.

Why are you concerned? ... Because New Zealand mudsnails:

- Choke out native snails and insects.
- Deplete fish of their main sources of food.
- Multiply rapidly.
- Average 100,000 can hatch from one.
- Move faster than 1000 other species in the same body of water and spread very quickly.
- Can live for 1 year.

Only YOU can STOP New Zealand mudsnails!

California Department of Fish and Game, California Department of Water Resources, California Department of Pesticide Regulation, California Department of Public Health, California Department of Transportation, California Department of Parks and Recreation, California Department of Conservation, California Department of Education, California Department of Forestry and Fire Protection, California Department of Industrial Relations, California Department of Public Safety, California Department of Social Services, California Department of State Water Resources Control, California Department of Toxic Substances and Hazardous Waste, California Department of Transportation, California Department of Public Health, California Department of Pesticide Regulation, California Department of Fish and Game, California Department of Water Resources, California Department of Parks and Recreation, California Department of Conservation, California Department of Education, California Department of Forestry and Fire Protection, California Department of Industrial Relations, California Department of Public Safety, California Department of Social Services, California Department of State Water Resources Control, California Department of Toxic Substances and Hazardous Waste.

Caution!
Don't Spread
New Zealand Mudsnails

Snails range in size from a grain of sand to 1/8 inch in length and are black or brown in color.

The Threat

- Rapid reproduction of this invader can lead to densities of 1 million per square yard. A single snail could result in the production of more than 40 million snails in one year.
- They outcompete and replace native invertebrates that are the preferred foods of fish.
- They can cause drastic, harmful changes in the native plant and animal food web of streams and lakes.

What You Can Do

- If you wade, freeze waders and other gear overnight (at least 6 hours).
- Have extra waders and boots that are used only in infested waters. Store them separately.
- After leaving the water, inspect waders, boots, float tubes, boats/trailers-any gear used in the water. Remove visible snails with a stiff brush and follow with rinsing. If possible, freeze or completely dry out any wet gear.
- Never transport live fish or other aquatic animals or plants from one water to another.

California Dept. of Fish and Game
www.dfg.ca.gov

FEDERATION OF FLY FISHERS™

TRAIL

MOST UNWANTED

ALERT! Dangerous Invader... the New Zealand Mudsnail!

MUDSNAILS AND THEIR THREAT

The tiny New Zealand mudsnail is an invasive species discovered in Idaho in the 1980s. It is not yet known to be in Alaska, but is spreading among rivers in the Lower 48—especially trout streams!

WHAT TO KNOW AND DO

New Zealand mudsnails can survive for more than a week out of water attached to damp boots, waders, trailer pads, or other fishing and boating gear.

Facts about New Zealand mudsnails:

- Average 1.5" inch long, but can be smaller.
- Live in all types of water, from warm to freezing, from heavily silted to crystal clear.
- Reproduce asexually (it only takes one) and resist desiccates over half a million per square yard.
- Eat the food that would otherwise go to insects and larvae that trout and juvenile salmon eat.
- Will pass through a trout's gut and survive.

Prevent the spread of New Zealand mudsnails:

- Clean all mud and weeds from all gear, AND
- Immerse in hot (120°F) water for 5 minutes or immerse, or thoroughly soak, in disinfectant for at least 5 minutes.
- or you can —
- Rinse well with high pressure sprayer, AND
- Let all equipment dry for several days or freeze gear for several hours.

Taking these precautions will help stop the spread of other aquatic invaders as well!

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20 years later

- Limited evidence of ecosystem level impacts
- No cascading ecological effects
- Unexplained population crashes
- What's next?



Western Mudsnail Meeting June 2015

- Seattle
 - ~ low number of NZMS sites, high number of recent discoveries, active awareness program, control efforts, municipal, county and state efforts
- 2007 National NZMS Management Plan
 - prognosis?
 - other management needs?
- Regional Guidance
 - => Reframe mudsnail management objectives to acknowledge value-added nature of NZMS prevention and awareness efforts without being disingenuous about impacts

Value-added efforts

STOP THE MUDSNAIL!

The New Zealand mudsnail is a serious threat to California's rivers, lakes and streams.

What can you do? ... You can stop them from spreading.

- Clean all fishing gear and boating equipment after each use.
- Use hot water, if possible, and brush or scrub stealer.
- Do not stay dry (if you're in the boat, or these items fit).
- Never leave the fishing piers from the body of water to another.

What is a New Zealand mudsnail? ... A New Zealand mudsnail is very small but, greenish, it can clog the bottom of streams and rivers. They have no natural enemies and it's hard to see them in a stream.

Why are you concerned? ... Because New Zealand mudsnails:

- Clog and reduce water and streams
- Deplete fish and other aquatic life
- Multiply rapidly
- Overage fisheries and native wildlife
- Mudsnails were first detected in the Snake River in 1981 and are spreading rapidly into California.

Only YOU can STOP New Zealand mudsnails!

For more information on how to prevent mudsnails and other invasive species, please visit www.invasivespeciesidaho.gov. For more information on how to prevent mudsnails, please visit www.mudsnail.org. For more information on how to prevent mudsnails, please visit www.invasivespeciesidaho.gov.

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STOP THE SPREAD OF INVASIVE SPECIES.

STOP AQUATIC HITCHHIKERS!

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PHOTO BY MELODY HIRTH

Regional Mudsnaail Action Plan

- Goal: To build on the momentum of regional NZMS efforts and expand existing tools for a broader ANS focus.



Summary Actions

- Develop **consistent messaging** for education and outreach (issue awareness)
- Encourage **regional data sharing**
- Expand opportunistic sampling, **early detection of priority ANS** (by agencies, researchers, citizen scientists)
- Develop **model contract and standards language**
- Develop protocols/ **best practices for prevention** across taxa (i.e. spread, introduction, establishment)
- Expand technical education
- Stay up-to-date and **share information** on population dynamics, impacts, status and trends, etc. (on NZMS and parallel priority ANS)
- **Communicate with decision makers** (short, reliable, impactful information)
- Rapid response planning: Develop a **template for decision-response** matrix and response plans

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