



New Zealand Mud Snail

Alberta Regulation:
Fisheries (Alberta) Act

Last Updated: January 2025

Potamopyrgus antipodarum

syn. *Potamopyrgus jenkinsi*, *Hydrobia jenkinsi*



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Overview:

Native to New Zealand and surrounding islands, New Zealand Mud Snails (NZMS) were likely introduced to Europe, Asia, Australia, and North America through ballast water.^{1,3} Inland spread, in lakes and streams, is primarily facilitated by individuals clinging to recreational fishing gear, boats and trailers, or other watersport gear. NZMS are quite small, and have a sealed operculum which allows them to survive out of water for up to 24 hours in dry conditions, or up to 50 days in damp environments, making it easy for them to be unknowingly transported. The aquarium trade also presents a potential source of introduction of NZMS, evinced by recent discoveries in Marimo moss balls,⁴ triggering recalls of this product. NZMS range has steadily expanded in North America after initial introduction to Idaho's Snake River in 1987.¹ Now they are present in many western US states, British Columbia, and Ontario.³

Once established, NZMS are known to dominate systems with populations from 500,000 to 800,000 individuals per square meter.² Males are rare outside of native populations as females are capable of asexual reproduction, producing billions of eggs in their lifespan constituting up to 97% of invert-

brate populations. The eggs can survive the digestive tracts of waterfowl adding another potential vector for spread. They have low nutritional value as a prey species and, when introduced to non-native locations, they lack predators and parasites that normally keep their populations in check. NZMS quickly out-compete native species by rapidly reproducing, and consuming resources, thereby disrupting the food chain and the overall balance of aquatic ecosystems. NZMS may also clog water intake pipes, infest water supplies and other submerged equipment.

Habitat:

NZMS inhabit slow-moving freshwater and saltwater habitats, including lakes, rivers, channels, and open ocean.^{2,3} They burrow into mud and sand but are also found on rocks, aquatic vegetation, and debris. Thrive in a wide range of environmental conditions including temperature ranges from 0-34°C and depths of up to 60m.³

Identification:

Elongated dark gray to brown shells are cone-shaped with 5-8 deep whorls; range in size from 4-8 mm long, usually 6 mm.^{2,3}

Ecology:

NZMS graze at night, feeding on animal detritus, algae, and microorganisms (such as diatoms). Since NZMS can survive the digestive tracts of fish and birds it does not contribute positively to the food web, especially when it displaces more edible invertebrates in an ecosystem. Non-native populations are mostly comprised of triploid female snails, which cannot reproduce sexually with males but can reproduce asexually, yield around 230 offspring per year,² mostly in the spring and summer. In some cases, they have reached the highest population densities ever recorded in stream invertebrates.

NZMS is an intermediate host for up to 12 parasites in their native range, some of which can infect native molluscs and fish, which could contribute to serious problems in hatcheries.¹

Economic Impacts:

NZMS have substantial negative effects on aquatic ecosystem health, specifically the growth and production of fish populations by reducing the diversity of available food, which may impact sportfishing and aquatic recreation that are valued at \$597 million per year.¹



New Zealand Mud Snail *(continued)*

Environmental Impacts:

Unchecked population growth results in the consumption of large amounts of primary production, altering food chain dynamics, displace native invertebrate species, and negatively influence species at higher trophic levels.² NZMS not only displaces more nutritious food sources but is also thought to harm rainbow and brown trout fish health and reduce their survival rates, as evidenced by the significantly poorer condition of fish with NZMS in their digestive system.^{2,3} These impacts could threaten fisheries in locations where it has established.

As well, NZMS presence in diverse aquatic environments, highlights their adaptability and the advantage of possessing generalist traits that enable them to invade a wide variety of habitats.³

Sociological Impacts:

The transformation of native aquatic communities results in loss of natural capital and diminished recreational opportunities. In the US, many lakes and streams have had to be closed for recreation to prevent or contain the spread of NZMS. Problems with irrigation and water intake pipes are common for municipalities with infestations of NZMS.¹

Prevention:

Learn how to identify NZMS and how to prevent the spread. Do not purchase or keep this snail, as possession is prohibited by law. Never empty your aquarium into natural water bodies - Don't Let It Loose! NZMS can attach to boat hulls, trailers, bait buckets and other water equipment or be passively transported via aquatic ornamental plants. Aquatic invasive species are often likely to occur at boat launches. Clean, Drain, Dry - all aquatic recreational and fishing equipment should be inspected after use and all mud and plant material should be removed, gear

should be cleaned and disinfected or frozen prior to next use. Motors should be drained and live well and bait well plugs pulled. All equipment and gear that comes in contact with water (watercraft, waders, etc.) should be thoroughly washed and dried.

Aquatic invasive species must be reported in accordance with Section 6.2 of the Fisheries (Ministerial) Regulation. Reports can be submitted through the Aquatic Invasive Species Hotline (1-855-336-2628), emailed to epa.ais@gov.ab.ca, or through the free EDDMapS app.

Control:

Effective measures to control or eradicate NZMS are extremely limited. Some molluscicide chemicals exist but use in major waterbodies is implausible. There has been limited research into candidate biocontrol agents for NZMS, and none have been approved for use in Canada.



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