

New Zealand Mud Snails

RESOURCE BRIEF

Importance

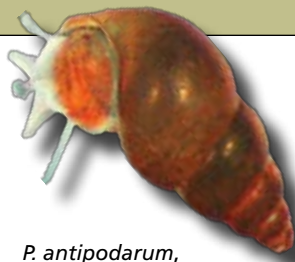
An invasive species native to New Zealand, *Potamopyrgus antipodarum* has become established at many sites in the western United States since the 1980s. In suitable aquatic habitat, especially in geothermal streams with high primary production, it can form dense colonies that crowd out the insect communities needed by immature trout and other native species. Its overall impact on algal resources is likely to affect entire stream food webs. With its protective shell, the mud snail provides little if any nutrition as prey and may pass through a fish alive. Scarcely a quarter-inch long, mud snails may cling to boats, waders, and other fishing gear by which they are inadvertently transferred to another watershed. Because the species can reproduce asexually, a single mud snail is all that is required to establish a new colony.



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Status

First recorded in Yellowstone in 1994, within nine years mud snails had been observed in all of the park's major river drainages (Fig.1). It has reached far higher densities (approaching 750,000/m²) in certain geothermally influenced waters than in the species' native range, where it rarely exceeds 1,000/m²). Mud snails are also present in the Snake River and Polecat Creek, a geothermal spring, within the John D. Rockefeller, Jr., Memorial Parkway. Their distribution completely overlaps that of the Jackson Lake spring snail (*Pyrgulopsis robusta*), whose current known range is limited to Polecat Creek and an unnamed tributary. Since monitoring began in 2001, the relative abundance of the two species has varied widely without emergence of a consistent trend. Although the mud snail is abundant in several streams, it remains absent or uncommon in other Greater Yellowstone streams, suggesting that its upstream population density and distribution is limited by colder temperatures, low productivity, and unstable substrates associated with spring runoff.



P. antipodarum, shown much larger than life size.

ulations is not feasible with any known method. A primary goal of mud snail research in Greater Yellowstone is to determine the species' impacts on other aquatic organisms and stream ecology. A study of the Gibbon and Madison rivers found that 25–50% of the macroinvertebrates were mud snails, and the areas they occupied had fewer native mayflies, stoneflies, and caddisflies—insects important in the diet of salmonids and several bird species. As their colonies grow to comprise most of the biomass in a stream reach, mud snails consume most of the primary production. No impacts by mudsnails on wild trout have been quantified. In 2005, University of New Mexico researchers began surveying sites along the Snake River and Polecat Creek in Grand Teton and the parkway for snails and parasites to assess potential parasitic control of mud snails.

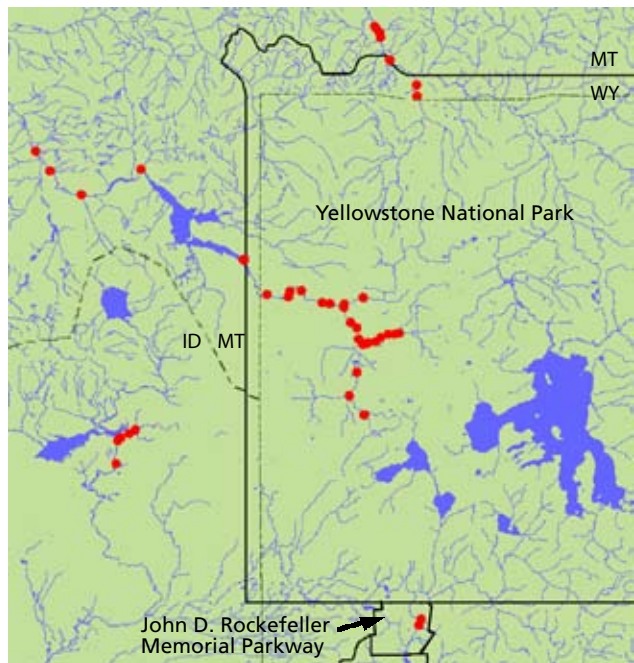


Figure 1. Known New Zealand mud snail occurrence in and around Yellowstone National Park.

Discussion

Once mud snail colonies become established in a stream, removing them without disrupting native invertebrate pop-

