

Capitol Lake Update - New Zealand Mudsail (NZMS)

by Bert Bartleson



As many of you know, I discovered an infestation of NZMS's, *Potamopyrgus antipodarum* (Gray, 1843), at Capitol Lake in Olympia on October 22, 2009. This initial discovery was described in *The Dredgings* (Vol. 50 No. 1) published in January of 2010. Since that time there have been many activities by various parties to further identify the scope of the problem and to try to control any further spread of the snails. NZMS's are a highly invasive species. The snails present in the U.S.A. are all females which reproduce asexually and are all exact clones of one another. Therefore, a single snail can quickly reproduce into a huge number within a few years. In their native New Zealand, they can reproduce both sexually and asexually, but their numbers are kept under control by various parasites which infect the snails and cause them to die or fail to reproduce. Unfortunately, in the U.S.A., we are without any of these parasites to control the population. They are not controlled by fish either, since they pass right through the fish's gut alive and provide no nutrition to the fishes, so are seldom eaten. When the snails reach high population numbers [as great as 800,000 per square meter], they will consume much of the plant life, organic debris and algae in a water body and can cause the entire aquatic food web to possibly collapse.

NZMS's were first discovered in the U.S.A. in 1987 in Idaho's Snake River. They arrived accidentally in this country, possibly with trout imported from New Zealand. These snails are also invading Australia and Europe. They have since been found in ten western States [WA, OR, CA, NV, ID, WY, MT, UT, CO and AZ] and recently in 2010, they were discovered in Port Alberni, British Columbia, Canada. In addition, they were discovered in five Eastern states and one eastern Canadian province.

When the infestation was first recognized, an intergovernmental committee of interested agency people [U.S. Fish & Wildlife (FWS), Washington Department Fish & Wildlife (WDFW), The Washington Invasive Species Council, and Washington General Administration (GA)] began working on the problem. Within days of the verification of my discovery, the shores of Capitol Lake were posted as closed to all water contact, some parts were fenced off, and numerous articles appeared in the news. It is very important to prevent dogs and people from walking in the mud of the lakeshore. One WDFW employee sampled the mud from his boots [2] and found 122 live NZMS's in the mud in crevices of his boots. NZMS's can survive in a damp environment for several days, so the potential for them to spread from one aquatic location to another is significant.



One possible control strategy was to lower the lake level during a prolonged cold spell and try to freeze the snails. This method was discussed, and from December 9th through 14th, 2009, the weather cooperated and the lake level was lowered. During this time the daily low temperature ranged from 7-18° F (-8 to -14° C) and never exceeded 36° F (2° C). Samples were collected from the former shoreline and at ten meter intervals along transects of the uncovered lake bottom. Ed Johannes worked with members of WDFW to carefully collect snails at the beginning of the drawdown and again after one and four days of exposure to see what effect, if any, cold weather would have on the NZMS's survival. After exposure to four days of very cold temperatures only about 2 % of the NZMS's survived. Of course, some of the NZMS's will hunker down under the mud and will survive to repopulate the lake when the water levels are raised and warmer temperatures occur. But cold weather may be useful to help control this infestation.

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THE STATE OPTS FOR THE
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CAPITOL LAKE'S SNAIL
INFESTATION



During the summer of 2010, Ed Johannes was hired by the Washington Invasive Species Council to survey other water bodies within a five-mile radius of the original NZMS infestation located at Capitol Lake. A total of 85 other locations [lakes, ponds, swamps, rivers and streams] were surveyed. The good news is that no additional infestations were uncovered. Special attention was made to sample public access sites on lakes used by fishers. Ed and I plan to sample additional sites during 2011. See Ed's article, Vol. 50 No. 6, of *The Dredgings* for further information about what was discovered. Two previously undescribed gastropods [*Aminicola* sp. and *Valvata* sp.] were discovered during this survey.

REF:

Aquatic Invasions (2011), Vol. 6 (1) "A quantitative evaluation of the effect of freezing temperatures on the survival of New Zealand Mudsnails (*Potamopyrgus antipodarum* Gray, 1843), in Olympia, Washington's Capitol Lake". Y. K. Cheng and L.L. LeClair.

Survey for *Potamopyrgus antipodarum* (New Zealand Mudsnaill) within a five-mile radius of Capitol Lake, Thurston County, Washington. Deixis Consultants, Edward Johannes, November 8, 2010.