



Project:
New Zealand Mud Snail

Lead Investigator: Kristina Wynne, MA Thesis, CU-Boulder Geography Department, 2006

The New Zealand mud snail (*Potamopyrgus antipodarum*) is a very small (1-3 mm) bottom dwelling mollusk that was unintentionally introduced into Boulder Creek in 2005 (Fig. 1). Concerns that the mud snail would spread to other streams prompted the Colorado Division of Wildlife (CDW) to close a 10-km segment of Boulder Creek in 2005. Subsequently, we initiated field studies to investigate the effects of high flows and sediment transport on the distribution of the New Zealand mud snail in Boulder Creek. We established five study sites located upstream, within and downstream of the affected areas of Boulder Creek. At each site we made measurements to model changes in the spatial pattern of boundary shear stress and sediment transport to try to document the snails' response to streambed disturbance. We made extensive measurements of bed material, as well as the distribution of mud snails before and after the peak of spring runoff (Wynne, 2006).



Figure 1. Clusters of New Zealand mud snail in Boulder Creek, CO (Wynne, 2006)

The results of the field study indicate that peak stream flows in 2005 were sufficiently high to mobilize much of the bed material in the study reaches. However, it was not clear that the bed disturbance caused by sediment transport had a measurable effect on the distribution of the NZMS. Figure 2 shows that the majority of snails were found on rocks greater than 64 mm in size. These sizes are larger than the median grain size in the reach, thus they have a relatively low probability of moving, except at very high flows. If the snails do use large rocks as refugia, only flows that completely mobilize the bed (shear stresses > 1.5 the critical shear stress) may reduce the NZMS population in Boulder Creek. Such flows occur one to two days/year at sites

where the snails are present, but it seems likely that sustained higher flows would be needed to eradicate them naturally.

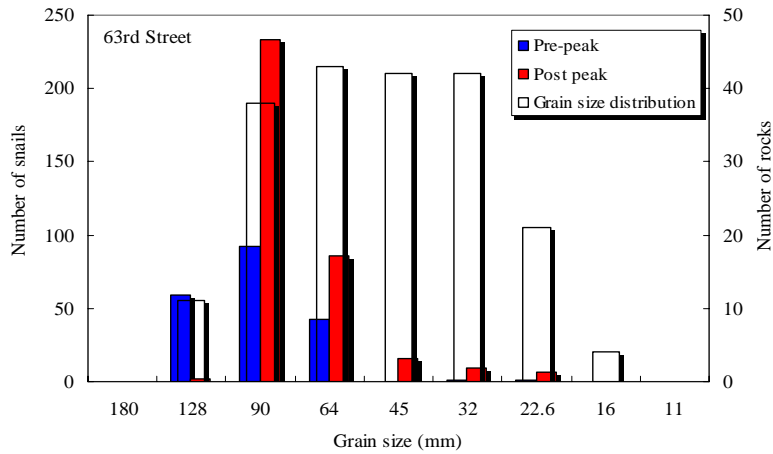


Figure 2. Distribution of NZMS and grain sizes at the study site near 63rd Street. The median grain size, D_{50} , is 42 mm [Wynne, 2006].

Publications Related to this Work:

Wynne, K.K., 2006, Effects of sediment transport on the New Zealand mud snail in Boulder Creek, Colorado, unpublished MA thesis, Geography Department, University of Colorado, 66 pp.