

UVM Student Research Symposium Abstract
Changes in Opossum Shrimp (*Mysis diluviana*) Population Demographics in Lake
Champlain between 1975 and 2012

The omnivorous macroinvertebrate, *Mysis diluviana*, undergoes diel vertical migration and plays an important role in many aquatic systems. Although *Mysis* is native to Lake Champlain, little research has been conducted to evaluate its health and importance to the lake's food web. We repeated a 1975 *Mysis* study (Gutowski 1978) to assess possible changes in population demographics over 37 years. We hypothesized that *Mysis* densities decreased since 1975 because of negative relationships between invasive species and *Mysis* in other systems. Mean density (\pm 95% CI) in 2012 (82 ± 60 mysids/m²) was significantly lower than in 1975 (712 ± 168 mysids/m²) ($p < 0.0001$). Juveniles make up a proportionately larger amount of the population in 2012 compared to 1975. Recently compiled data from a long-term monitoring program from 1992 to 2008 indicate densities declined sharply in 1995 and have not recovered. Alewife, an invasive fish species, did not appear in Lake Champlain until 2003 and can be ruled out as a cause. The coincidence of the abrupt decline (1995) with zebra mussel invasion (1993) warrants further investigation. We hypothesize that predation by the invasive alewife will prevent *Mysis* from recovering to pre-1995 densities.