European Frogbit (Hydrocharis morsus-ranae L.) is an invasive aquatic plant from Europe. First introduced to Canada in 1952, it has since spread southward into the Finger Lakes region. Its presence can have detrimental effects on the biological community as well as become a nuisance to humans. Due to its economic and ecological impacts, management strategies have been devised to control its spread. Hand pulling and shading are two such techniques studied on Oneida Lake. Here we report on the impact of each control method on native crustacean zooplankton and rotifer abundance. Abundance and diversity show no significant trends among treatments. This indicates that either control method may be a viable option for controlling the future spread of European Frogbit without impacting the native plankton community.

**Methods**

Our studies were conducted in Oneida Lake, which was invaded by European Frogbit in 2001. Our objectives were to (1) gauge the effectiveness of two direct control methods (hand pulling and shading) and (2) assess the impact of each control method on a number of parameters. Here we report on the impact of hand pulling and shading—two proposed control strategies—on the native zooplankton community in Oneida Lake. In aquatic communities, zooplankton are the critical link between primary producers at the base of the food web and invertebrate and vertebrate predators at the top of the food web. The abundance and diversity of zooplankton is important indicator of ecosystem health.

**Field Experiment**

Twelve 1 m² experimental plots were constructed. There were two treatments (hand pulling and shading) and two controls (open water and plant), each with three replicate plots. Shaded sites were covered with water-permeable black garden cloth. Three replicate plots were randomly designated as hand pulling sites. Plant control sites were similar to hand pulling. Open water and shaded plots were compared in terms of plant diversity and initial abundance of European frogbit. Open water control plots were in the middle of the channel and had decreased macrophyte growth. Each plot was sampled on a biweekly basis over a fourteen week period. The study area was well isolated from wind, waves, and human activity. Sites were littoral, generally having a depth of no more than 1 m.

**Results and Discussion**

The results of this study indicate that neither management technique (hand pulling or shading) degraded water quality. Zooplankton and rotifer trends can be attributed to seasonal variation and not a result of the treatments. Both management methods reduced the amount of European frogbit without impairing water quality, either management technique is a viable option for controlling this aquatic invasive. Hand pulling may be the best management technique for small areas where little manual labor is required, while shading may prove more cost and time effective for larger areas.

**References**