Biological Control of the Invasive Eurasian Watermilfoil Using Aquatic Weevils

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Eurasian water milfoil (EWM) is an invasive species of aquatic plant that grows in thick mats with stems that grow up to three meters long. The milfoil grows and spreads rapidly, crowding out native plants, interfering with recreational activity, and causing severe ecological damage. Since its accidental introduction into the United States in the 1940's, milfoil has been found in almost every state. Present methods of control include the use of dangerous chemical herbicides that cause mortality in non-target species such as native plants and aquatic vertebrates and invertebrates. I developed an approach to control EWM using small native aquatic insects that feed on it called milfoil weevils. Adult weevils lay their eggs on the stems of milfoil plants, and once hatched the larvae burrow into the stems destroying them. Milfoil was harvested from a local lake and grown in fish tanks. After four weeks exposure to the milfoil weevils I measured both the stem growth rate and overall biomass of the milfoil stems and roots. I found that the weevils were effectively able to control the growth of EWM dependent upon weevil stocking density significantly reducing milfoil growth by 54%. In addition, I compared the effect of weevils to the herbicide Diquat. Although efficacious, Diquat was toxic to non-target species and aquatic invertebrates. Therefore, I was able to demonstrate that biological control using milfoil weevils is a promising and environmentally-safe approach towards controlling the growth of this ecologically dangerous and economically threatening invasive species.

Awards Won: