Galerucella Beetle Project for Purple Loosestrife Bio-control for 2012

Galerucella beetles are used as a bio-control method for the invasive wetland plant, purple loosestrife (*Lythrum salicaria*). The beetles themselves are an introduced species, but extended studies have found them to require purple loosestrife to complete their life cycle.

Beginning in late March 2012, Great Meadows and Assabet River National Wildlife Refuges partnered with a Student Conservation Association / National Park Service Fellow to raise *Galerucella* beetles for the members of the Sudbury- Assabet – Concord River's (SuAsCo) Cooperative Invasive Species Management Area (CISMA). The SuAsCo CISMA is a watershed wide collaboration for invasive plant management. The beetles can be purchased from suppliers and released directly into dense stands of purple loosestrife, but many conservation groups are turning towards rearing their own beetles as funds become more limited. Rearing the beetles allows partners to either purchase much smaller numbers of beetles from the supplier initially, or to collect beetles from existing wild populations in their area. Great Meadows and Assabet River took the latter approach, as they and other conservation partners have been releasing *Galerucella spp.* into local wetlands since 1998.

We housed our facility at the Assabet River National Wildlife Refuge visitor center and grew 37 loosestrife plants. Existing protocols recommend placing 10-15 beetles on each loosestrife plant, so we collected approximately 450 wild beetles from the Concord Impoundment property on the Great Meadows NWR and distributed them as evenly as possible among our potted plants. *Galerucella* beetles lay eggs over a three to five week window, which results in a significant overlap in their life stages. We observed the concurrent presence of mating, eggs, and larvae. Based upon the *Galerucella* life stage timeline, it is extremely likely that larvae were also pupating in the soil at this time, out of sight. Their sheer numbers alone make an accurate final count of new adults practically impossible. With the additional complication of overlapping life stages and unseen pupae, we have to estimate a range of how many new adults we were able to raise. We can conservatively estimate that each plant produced 500-1000 adults. Several of our pots did not appear to yield any adults, but may have had pupae present in the soil when we placed them in the wetlands. We therefore are estimating that we were able to rear between 17,000 and 33,000 beetles.

We distributed beetle-laden plants to a number of SuAsCo CISMA members: the Sudbury Valley Trustees, the town of Marlborough Conservation Department, the Concord Land Conservation Trust, and the Lincoln Land Conservation Trust. We are very excited with the success of this project, and hope to expand it to engage local

high school students in the future. If you are interested in more information about the project check out the blog here: http://www.suascorivers.blogspot.com

We will also have an extensive protocol, filled with notes and our lessons learned throughout the duration of the project, available to anyone who is interested in replicating the project themselves.