

Idaho's Statewide Monitoring Guidelines for *Galerucella* spp. and Purple Loosestrife:



Overview:

A critical part of successful weed biological control programs is a monitoring process to measure populations of biological control agents and the impact that they are having on the target weed. Monitoring should be conducted on an annual basis for a number of years. The Idaho State Department of Agriculture, in conjunction with the University of Idaho, Nez Perce Biocontrol Center, and federal land management agencies, has developed the monitoring protocol below to enable land managers to take a more active role in monitoring the progress and

weed control ability of the loosestrife beetles, *Galerucella* spp. (GA) in efforts to control purple loosestrife, *Lythrum salicaria*. This monitoring protocol was designed to be implemented by land managers in a timely manner while providing data which will enable researchers to better quantify the impact of GA on purple loosestrife throughout the state.

Purple Loosestrife:

Purple loosestrife is an herbaceous perennial wetland weed capable of growing up to 11 feet tall. It is characterized by multiple, semi-woody, four to six-sided stems with smooth margined, lance shaped leaves arranged in whorls or an opposite pattern. Purple loosestrife flowers are showy with five to six rose-purple petals arranged in long, spike-shaped inflorescences. Purple loosestrife reproduces primarily by seed, with average plants producing more than two million seeds. Small, oval seeds develop in capsules that burst when mature. The plant may sprout from cut stems and re-generate from fragmented roots. Marshy areas, streams, ponds, irrigation canals, freshwater tidal flats, and ditches support the worst infestations. Purple loosestrife is capable of displacing resident plant communities, degrading and reducing the amount of wildlife habitat, and decreasing water flow in irrigation canals and ditches. Purple loosestrife is widely distributed throughout the United States.

Loosestrife Beetles (GA):

Adult GA may overwinter in the soil and surrounding vegetation. Adults typically emerge from hibernation, mate, and lay eggs from April through June. GA are capable of producing two generations per year with





new adults emerging and dispersing to additional locations in July and August. Female adults lay eggs from May to June and again from August to September. Each females can produce 300 to 400 eggs, laying up to 10 eggs per day in groups of three to six on stems, leaves, and leaf axils. GA larvae and adults feed upon young buds and leaves, riddling leaves with shotgun like holes (see left) or reducing leaves to midribs and veins.

Monitoring:

The Statewide Biological Control monitoring protocol is based upon a permanent 20 meter vegetation sampling transect randomly placed in a suitable (at least 1 acre) infestation of purple loosestrife and sweep net samples of GA adults. Annual vegetation sampling will allow researchers to characterize the plant community and the abundance and vigor of PLS. Swweep net samples of GA adults will provide researchers with an estimate of GA population levels.

Permanent Site Set-up:

To set up the vegetation monitoring transect, you will need: 1) a 25 x 50 cm Daubenmire frame made from PVC (preferred) or rebar, 2) a 20 m tape measure for the transect and plant height, 3) 10 permanent markers (road whiskers and 16 penny nails – see picture below), 4) a post (stake or piece of rebar) to monument the site (see pictures for examples of field equipment), and 5) 30-45 minutes at the site during the **second week of May**. To set up the transect, place the 20 m tape randomly within the infestation. Mark the beginning of the transect with a post. Place permanent markers every 2 m (for a total of 10 markers) beginning at the 2 m mark and ending with the 20 m mark on the tape measure. Place the Daubenmire frame parallel to the tape on the 50 cm side with the permanent marker in the upper left corner starting at 2 m (see pictures). **Refer to the “sweep” data sheet for how to conduct monitoring.** Repeat the frame placement at 2 m intervals for a total of 10 measurements (one at each permanent marker).

