

Instructions for FORM 2: Purple Loosestrife Biocontrol Monitoring – Insect Monitoring

Materials needed: 1.0 m² quadrat frame, data sheets, stopwatch, pencils, clipboard.

General: The purpose of this activity is to estimate the abundance of biocontrol insects at the site. Conduct the monitoring in late spring/early summer, about a month after *Galerucella* adults appear after overwintering at your site. Monitoring is easier with two people, one to make the observations and the other to record data.

1) Site information: Fill out the site information at the top of the form.

2) Position the quadrat: Carefully approach the quadrat and watch for adults of all three species when you slide the quadrat frame into position. *Hylobius* and *Nanophyes* adults often drop from the vegetation once you touch stems (or even as you approach the quadrat).

3) Beetle counting: Use a 1 minute total search time for each insect species released and for each life stage that can be observed. At a site where only *Galerucella* was released, 3 minutes total will be spent searching for eggs, larvae, and adults (one minute for eggs, one for larvae, and one for adults). At a site where only *Hylobius* or *Nanophyes* were released, count only the adults for one minute. At sites with two or three species, count each species separately. Use Chart A to record the category of abundance (I-V).

4) Estimate feeding damage: Examine the purple loosestrife for any damage to the leaves or shoots, such as the ‘shothole’ feeding pattern of the *Galerucella* beetles. Estimate the percent leaf area removed by insect feeding over the entire quadrat, using Chart B to determine the category (A-G) of damage. Practice estimating the amount of leaf damage with an experienced observer. Initially after release, the amount of leaf damage will be low or non-existent. As *Galerucella* density increases, so will the amount of leaf damage, which can be very high (> 50%) at high beetle density.

5) Measuring vegetation: After you have completed the insect counts, stand over the quadrat and visually estimate how much of the quadrat is covered by purple loosestrife and how much is covered by cattail (use cover estimates in Chart B). Cattail (*Typha* sp.) is the most common plant associated with wetlands across North America. If you do not have cattail, leave this category blank or substitute with the most common species at your site. Then, count the number of purple loosestrife (> 20 cm tall) and cattail stems. Be careful to distinguish between a stem and a branch; only stems are counted.

6) Other observations: Record any general observations or useful information; disturbances, flooding, fire, bird nests, etc., for the sample quadrat or the site in general.