FIELD IDENTIFICATION OF NEOGALERUCELLA BEETLES: BIOLOGICAL CONTROL AGENTS OF PURPLE LOOSESTRIFE (*Lythrum salicaria L.*).

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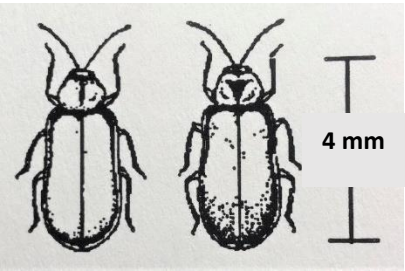
Two species of leaf-feeding beetles of the family Chrysomelidae, ***Neogalerucella calmariensis*** and ***N. pusilla*** (both formerly of the genus *Galerucella*) have been released for **purple loosestrife** biocontrol in North America. The beetles were first released in Canada in 1992 and are now naturalized in all Canadian provinces. As beetles, the are of the **Order Coleoptera**.




Adults mating and laying eggs

The biology of the two species is very similar. They overwinter as adults in the soil, emerging and becoming active in mid - late May, feeding on the leaves and new shoot growth of the host plant. The eggs are laid in small batches or masses on the basal parts of the stems, shoot axils and lower sides of the leaves in June and July. Each female is capable of producing about 500 eggs. The eggs hatch in about one week and the larvae feed on the leaves, moving from the top to the bottom of the plant. On completion of feeding, larvae pupate in the soil, emerging as adults. Egg to adult development takes about 6 weeks. After emerging from the soil, the adults will feed prior to returning to the soil to overwinter. There are 1 or 2 generations per year.


Larvae and window feeding

The best time to start monitoring for presence/absence and/or activity of the beetles is when the loosestrife plants are 8" to 1' (20-30 cm) high (generally late may to early June in southern Ontario). Look for plants with small holes in the leaves ("shot-hole" feeding damage). Closely examine any plant showing this damage for adult beetles. Without touching the plant, look closely for beetles on the foliage, particularly at the growing tips of the shoots. If beetles are not seen, gently pinch the tip of a stem and bend the stem over to reveal the undersides of the leaves.

Try to avoid handling the plants roughly as this will cause the beetles to fall off the plant. As the season progresses, look for "windowing" feeding damage. This damage is produced by the larvae as they eat the leaf tissue, leaving only a clear epidermal layer behind. If a plant is found with windowed leaves, look for larvae on the leaves of the plant. Towards the end of the summer (throughout August) adults produced from the summer generation(s) will be actively feeding. Look for feeding damage and adult beetles on the smaller, more tender plants or shoots at this time of year.

Egg masses and shot-hole feeding

The adult beetles are light brown and about 3-5 mm in length. Some individuals will be more lightly coloured along the middle of their back than at the edges of their elytra. The adults are slow moving and tend to fall off a plant when it is handled.

Egg masses could be difficult to find in the field. With the naked eye, they have a "salt and pepper" appearance caused by the frass put on the eggs during oviposition by the female. An egg mass usually consists of 2-10 eggs. The larvae look like tiny caterpillars with black heads and yellowish bodies. They are usually found on the underside of the leaves and are solitary feeders in their later instars.

Below, clockwise from upper left: Larvae, Pupae, Adults, Egg Masses

Adult and shot-hole feeding