

Biological Control Agents for Weeds



Adult *Omphalapion hookeri*



Scentless chamomile seed head damaged by *O. hookeri*



Close-up of adult *O. hookeri* ready to emerge from seed head

The scentless chamomile seed weevil

Omphalapion hookeri

Life cycle

Omphalapion hookeri (formerly known as *Apion hookeri*) is a small black weevil about 2 mm in length. The adult females emerge from their overwintering sites in the spring and lay their eggs into scentless chamomile flower buds as they open. The larvae that hatch from these eggs are small, creamy white, legless, C-shaped grubs. They feed inside the flower heads, destroying the seeds as they develop. Each larva will eat about 11 scentless chamomile seeds before pupating. The adults emerge from the ripe seed heads in late summer, feeding on scentless chamomile foliage before overwintering in the soil or litter. There is one generation per year.

Omphalapion hookeri is native to Europe, which is also where scentless chamomile originated. It feeds only on scentless chamomile.

Release method

Omphalapion hookeri can be released either in fall, or when scentless chamomile begins to come into bud in early summer. In either case, the entire lot of 100 weevils should be released as a group on a single point in the weed stand. Keep the weevils in a cool place and release as soon as possible after receiving them.

Release sites should be selected in advance, in areas with vigorous populations of scentless chamomile producing plenty of flowers. Select a site that can be left unsprayed and uncultivated to allow the insect population a chance to establish. Creek banks and slough margins make suitable release areas. The patch does not have to be very large; however, there should be other patches of scentless chamomile in the area to allow emerging weevils to disperse.

Mark the release point with a sign or stake so that you can locate it later for monitoring.

Monitoring

You can monitor your releases of *O. hookeri* in two ways.

1. Look for adult weevils on the plants in early summer, the year after release, when the scentless chamomile is beginning to come into flower. Adults tend to sit up on the flower buds or shoot tips of the scentless chamomile plants and are quite easy to see. They are about 2 mm in length, black (sometimes with a slight green or violet sheen in a strong light), and teardrop shaped (pointed at the front and round at the back).

2. Collect ripe seed heads in late summer (mid-August is a good time). The heads should be brown and contain almost-mature seed, but not so ripe that the seed is falling off. Pick each seed head apart gently with your fingers or a pocketknife and look for the little black weevils inside. If the adults have already emerged, you may be able to see the hollow chambers among the seeds in which they developed. In the early stages of establishment you may have to check quite large numbers of heads (50 or 100) to find any weevils. By recording the numbers found per 50 or 100 heads at each site every year, you will be able to estimate whether the population is increasing.

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Results

Omphalapion hookeri is now well established at many sites in Alberta and the other Canadian prairie provinces. At several sites in Alberta over 25 per cent of seed heads are being attacked, while at some sites in Saskatchewan up to 95 per cent of seed heads are attacked. *Omphalapion hookeri* tends to disperse quite rapidly from the release point, so that the population at first becomes spread thinly over a large area. At Vegreville, *O. hookeri* has spread from one release site at a rate of almost 3 kilometres per year.

Successful release of this insect will establish a population of the biological control agent that will spread and increase in density over the next several years, which will gradually reduce seed productions and slow the spread of the plant population. Most biological control agents do not kill plants outright or immediately.

How to obtain it

Omphalapion hookeri can be ordered from McClay Ecoscience in Sherwood Park, Alberta, for release in early summer. Orders should be placed as early in the season as possible to ensure availability.