

## *Aphthona lacertosa* (Rosh.)

**INVASIVE SPECIES ATTACKED:** Leafy spurge (*Euphorbia esula* L.)  
Cypress spurge (*E. cyparissias* L.)

**TYPE OF AGENT:** Root feeding flea beetle

**COLLECTABILITY:** Not available for general distribution

**ORIGIN:** Hungary

### DESCRIPTION AND LIFE CYCLE

#### Adult:

*Aphthona lacertosa* bodies are black, 2.5 to 3.4 mm long and are equally tapered throughout. The upper portion of their rear legs is brown, making it only slightly different than *A. czwalinae* and difficult to tell them apart. Emerging adults begin to appear in early June, usually 10 days before *A. czwalinae*, and continue into mid-August. Females lay eggs in small batches at the base of leafy spurge stems. Each female lays 200-300 eggs during their six to eight week oviposition period. As with all flea-beetles, it too is capable of jumping great distances and does so readily. *A. lacertosa* is considered the most active of all the *Aphthona* species. Adults adjust to temperature by seeking sun on cold days and moving to shade or onto lower plant leaves during hot days. Some populations have short wings, while others do not; there is no explanation for this. Adults can live up to two months.

#### Egg:

Eggs are pale yellow and measure 0.7 x 0.4 mm.

#### Larva:

Larvae are white and slender with brown heads and often found in a comma-like position. The first instar begins to mine latex-free fibrous roots and later instars move onto the outside layer of older roots. Once the larvae have finished feeding, they leave the roots and move into the soil to prepare to pupal cell. Mature larvae require a 4-month cold period to initiate further development. Late hatchings that encounter the cold temperatures before they feed sufficiently will survive the winter, but will not go on to reproduce.

#### Pupa:

Pupation occurs the following year and is completed by the end of spring or early summer.

#### Overwintering stage:

Mature larvae overwinter in a pupal cell in the soil.



Fig 1. *A. lacertosa* adult (credit Powell et al.)

### EFFECTIVENESS ON HOST PLANT

Larvae feed on fibrous roots before moving onto the mature roots. The larvae appear to concentrate on specific plants resulting in plant death and reducing the plant density as opposed to retarding the plant vigour. High concentrations can cause what is called a 'hole in the spurge', where the plants become noticeably reduced.

Adults feed on leaves, terminals, margins and shoots. In dense populations, adult feeding is quite impressive and can defoliate the plants significantly, therefore, reducing the plant's ability to photosynthesize and further reducing the plant's nutrients required for healthy growth and reproduction.

### HABITAT AND DISTRIBUTION

#### Native:

*A. lacertosa* is present in Austria, Italy, eastern Hungary, and the former Yugoslavia. In Europe, it has shown a preference for open or lightly shaded sites with clay loam soils, establishing on heavier soils than *A. nigriscutis* and *A. cyparissiae*. They have a wide adaptation to climatic conditions, accepting mesic-dry to moist areas, avoiding very dry sites.

### North America:

*A. lacertosa* have established in the Pacific Northwest U.S.A., including Mont., N. Dak., Oreg., and Wash. In Canada, *A. lacertosa* have established in B.C., Alta., Sask., and Man. Similarly to *A. czwalinae*, they too prefer sites with well-developed mixed vegetation surrounding shorter host plants. They are capable of filling a niche in areas the other species do not. A climate with a 4-month period of temperatures of 10°C or less is required for complete development. Like all *Aphthona* species, they too compete poorly where ant populations are present.

### British Columbia:

Limited releases have been made into the Bunchgrass, Interior Douglas-fir and Ponderosa pine biogeoclimatic zones. They have established in the Interior Douglas-fir and Ponderosa pine zones. It is believed that the plants at the site in the Bunchgrass zone occur at a density that is less desired by the flea-beetles.

## BRITISH COLUMBIA RECORD

### Origin:

The origin of *A. lacertosa* populations released in B.C. is N. Dak., U.S.A., reared from Hungarian stock. They arrived in a mixed population with up to 80% *A. czwalinae*.

### History:

*A. lacertosa* was first introduced to B.C. in 1995 in a mixed population with *A. czwalinae*. They were released at two locations, one in the north Okanagan near Spallumcheen and the other in the south Cariboo northwest of Clinton. Only a few releases were made from imported populations between 1995 and 1997. In 2000, the first small field collection was made from the north Okanagan which has proven to be the only collection site in B.C.

### Field results:

The narrow adult emergence window requires frequent site visits to avoid missing the agents' peak period. In the southern interior this stage appears to last only one month. In 2000, the first field collection was made from a site in the north Okanagan. Since this time, small collections have continued from here and have been used to supplement a previous release site and to establish a new site near Kamloops. The earliest adult sightings have been made in late May at the Okanagan site. Despite the possibility that early emerging adults have high mortality rates, a collection and treatment made in May 2005 resulted in survival through to the following year. In 2012, sampling carried out in the Okanagan showed very little dispersal occurring, as the flea beetle was found no further than approximately 270 meters from the original point of release. It is not known if the agent prefers to not disperse or if the patchiness of the plant is the reason it was not found dispersed at greater distances. Dispersal sampling for *A. lacertosa* will continue in suitable habitats near the vicinity of established release sites. A small collection of flea beetles collected from the site in the north Okanagan were all identified to be *A. lacertosa*. No further efforts have been made yet to determine which *Aphthona* species have dominated at any of the established locations following release of the mixed populations.

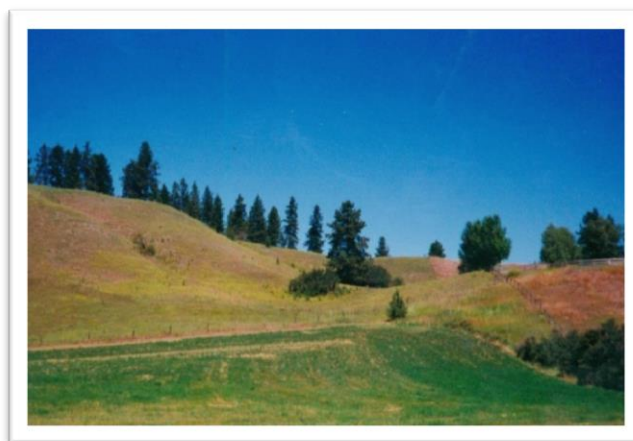


Fig 2. *A. czwalinae* release site in North Okanagan at Spallumcheen (Interior Douglas-fir zone)

## NOTES

- There can be high mortality in the larvae stage caused by the parasitic protozoan *Nosema spp.*
- All *Aphthona* species have narrow habitat requirements and will not attack spurge growing in unsuitable microhabitats.
- It may be desirable to combine the efforts of *A. nigriscutis* and *A. lacertosa* over rolling sites which may have pockets of habitat requirements for both.

## REFERENCES

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