

## *Minoa murinata* (Scop.)

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

**TYPE OF AGENT:** Foliar feeding moth

**COLLECTABILITY:** Not established

**ORIGIN:** Austria

### DESCRIPTION AND LIFE CYCLE

#### Adult:

*Minoa murinata* adults are delicate grey-brown coloured moths with fringed wings. The females' wingspan is 19.8 mm and the males are slightly smaller. Overall body length is 5.7 to 6.5 mm, with males again on the smaller side. Adults appear in May and June and are active during the day and readily taking flights with short frequent rests. They mate and begin oviposition one day after emergence. Females will oviposit an average of 57 eggs that they lay in groups of 9-10 on the underside of the leaves. The adult life span is 15 days at 12°C. The summer generation appears from mid-July to mid-August. Only one generation per year is expected in Canada. The male/female ratio is 1:1. The development of egg to adult takes 33 days. Adults seek honey-like nectar from within the plant community.



Fig. 1. *M. murinata* adult (credit Petley-Jones, UKmoths.org). See notes.

#### Egg:

The creamy white eggs, 0.55 x 0.41 x 0.26 mm in size, incubate for 3-4 days.

#### Larva:

Newly hatched larvae are white with a dark head. They are covered with hairs which may provide protection against ants. By the final instar they turn pinkish coloured with dark brown marks along their back and sides. There are four larval instars which are identified by head capsule measurements. The entire larvae stage feeds from the underside of the leaf. They prefer feeding on the tender expanding leaves and floral parts and only feed on mature foliage when sources run low. They can tolerate prolonged periods at 4°C. In 13-20 days, mature larvae move to the soil and prepare to pupate.

#### Pupa:

Pupation takes 16-57 days, depending on climate and temperature. In cold years the larvae can remain in the pupae stage for two years.

#### Overwintering stage:

Pupae overwinter in the soil.

### EFFECTIVENESS ON HOST PLANT

*M. murinata* is strictly a foliar feeder in the larvae stage. During this time it will consume floral buds and foliage. In sufficient populations complete defoliation can occur.

### HABITAT AND DISTRIBUTION

#### Native:

*M. murinata*'s general geographic range is from southern Europe east to Siberia. Its presence in England extends as far north as York. It is commonly found on sunny plains and highlands where spurge grows on dry chalk soils or in dry to moist forested areas. In the warm Mediterranean climates, it is often restricted to mountainous regions. It is the most common species found attacking cypress spurge between latitudes 40° to 60°N in Western Europe.

#### North America:

In Alta., *M. murinata* initially established in field cages where the plants grew 1 m tall, but long term establishment did not occur. It tolerates shaded sites which are generally less favoured by other spurge biocontrol agents. *M. murinata* is not suited for locations with high summer temperatures.

### British Columbia:

*M. murinata* was released into the Ponderosa pine biogeoclimatic zone, but no establishment has been found. Survival in Alta. may indicate that the moth prefers a cooler climate.

## BRITISH COLUMBIA RECORD

### Origin:

The *M. murinata* population released in B.C. originated from Austria.

### History:

In 1994, a single attempt was made to establish *M. murinata* with 500 larvae released in the Barnhartvale area near Kamloops. The release was made near a right-of-way that was repeatedly treated with herbicide. In 2007/08 the right-of-way and much of the leafy spurge infestation was logged to remove dead pine trees. To date no establishment has been found.

### Field results:

The *M. murinata* site has been revisited many times. The site was checked during the moths' predicted lifecycle stages. When no evidence was found, the monitoring time was adjusted to determine if the agents' cycle was uniquely different in B.C., but no evidence has been confirmed at this time. It is not known if the herbicide applications affected its survival or if the site may be too warm. Monitoring at the site and in the general release area is ongoing.

## NOTES

- Yearly recoveries have been found at caged releases in Alta. In the cages, the females oviposited in September, indicating a second generation had started, but it is unknown if they continued to develop or overwintered. After three years the population within the study tent showed earlier emergences, higher numbers and significant larvae feeding.
- Failed open field releases in Alta. were determined to be a result of dispersal or predation.
- *M. murinata* develops at lower temperatures than *Hyles euphorbiae* and *Lobesia euphorbiana*.
- It is often referred to as 'drab-moth', referring to the plain colour.
- Figure 1 has been cited according to the contributor's specified requirements as of 2015-03-04.

## REFERENCES

1. Harris, P. undated. *Minoa murinata* (Scop.), (Lepidoptera: Geometridae) a candidate for the biocontrol of leafy spurge (*Euphorbia esula-virgata* complex) and cypress spurge in Canada. Ag. Canada Res. Stn.
2. Kimber, I. Undated. Drab looper *Minoa Murinata*. Uk Moths. <http://ukmoths.org.uk/show.php?id=614> (Accessed April 9, 2015)
3. McClay, A.S., D.E. Cole, P. Harris, C. J. Richardson. 1995. Biological control of leafy spurge in Alberta: progress and prospects. AB Environmental Centre, Vegreville, AB.
4. Powell, G.W., A. Sturko, B. Wikeem and P. Harris. 1994. Field guide to the biological control of weeds in British Columbia. Min. For. Res. Program.