

## Note

### First record of Azalea Sawfly (*Euura lipovskyi*, Hymenoptera: Tenthredinidae) in Canada

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#### Abstract

Azalea Sawfly (*Euura lipovskyi*) larvae found feeding on foliage and flowers of cultivated Flame Azalea (*Rhododendron calendulaceum*) in Ottawa, Ontario, in late May 2021 are the first records of this sawfly in Canada. The native range of Azalea Sawfly includes the eastern United States, but the species has extended its distribution recently to the Pacific northwest of North America and Europe. Recorded foodplants include *Rhododendron calendulaceum*, *Rhododendron luteum*, *Rhododendron obtusum*, *Rhododendron occidentale*, *Rhododendron molle*, *Rhododendron viscosum*, and possibly Early Azalea (*Rhododendron prinophyllum*), all in *Rhododendron* section *Pentanthera*. The new combinations *Euura lipovskyi* and *Euura azaleae* are proposed.

Key words: Hymenoptera; Tenthredinidae; *Euura lipovskyi*; Azalea Sawfly; range extension; Ottawa; Canada; *Rhododendron calendulaceum*; Flame Azalea; invasive; pest

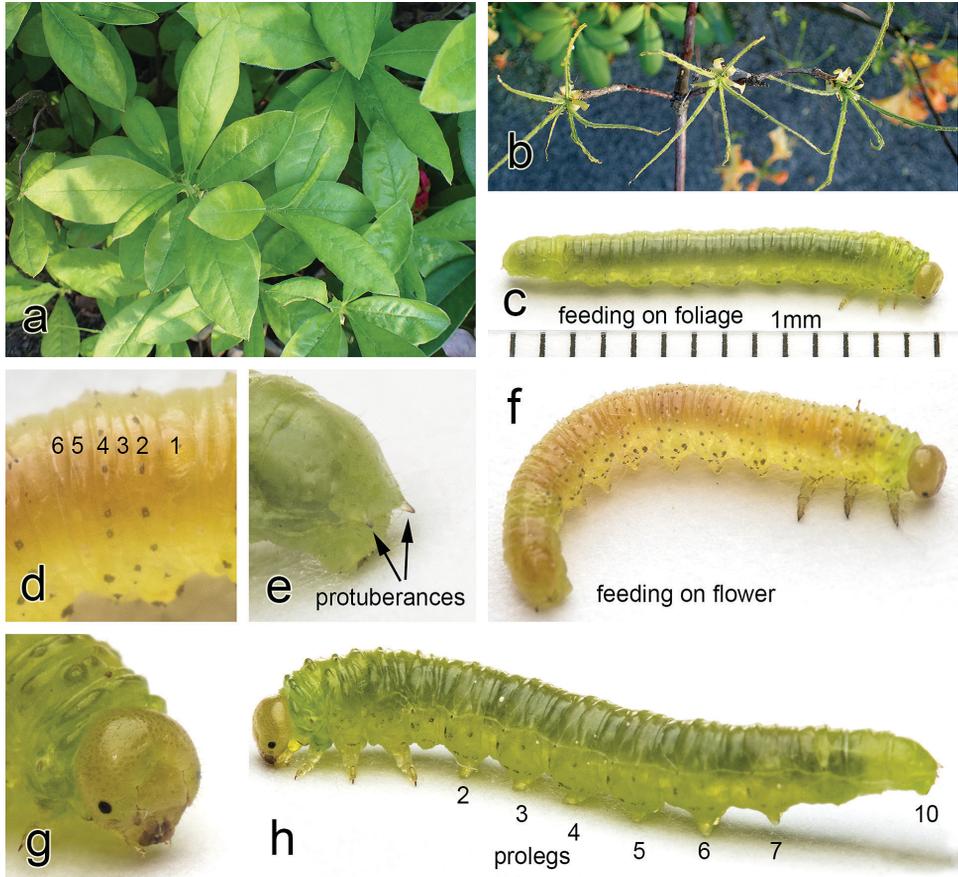
On 22–24 May 2021, we found Azalea Sawfly (*Euura lipovskyi* (Smith, 1974) comb. nov.) larvae on cultivated Flame Azalea (*Rhododendron calendulaceum* (Michaux) Torrey) in Ottawa, Ontario. This species is a new record for Canada based on a recently compiled list (Goulet and Bennett 2021). Azalea Sawfly has been described from the eastern United States (Smith 1974). It is a familiar species on ornamental deciduous rhododendrons (azaleas), such as Flame Azalea and Swamp Azalea (*Rhododendron viscosum* (L.) Torrey), both native to the eastern United States, and the introduced *Rhododendron molle* (Blume) G. Don from China and Japan (Macek and Šípek 2015). Azalea Sawfly has recently been reported as a new invasive species in Europe (Macek and Šípek 2015), where *Rhododendron luteum* Sweet and *Rhododendron obtusum* (Lindley) Planchon have been added to the list of its hosts. It has also been recorded recently as a range extension in Oregon and Washington (Collman and Bush 2016; Looney *et al.* 2016), where reported foodplants include Western Azalea (*Rhododendron occidentale* Torrey and A. Gray).

All of these hostplant species are in the *Rhododendron* section *Pentanthera* (Kron 1993), and there

are no members of this group in eastern Canada, as Early Azalea (*Rhododendron prinophyllum* (Small) Millais) was excluded from southern Quebec (Judd and Kron 2009). The native range of Flame Azalea extends from West Virginia south to Georgia in the Appalachian Mountains (McDonald 2001; Judd and Kron 2009). The section *Pentanthera* is very different from well-known, native eastern Canadian members of the genus (i.e., Rhodora [*Rhododendron canadense* (L.) Torrey] and Common Labrador Tea [*Rhododendron groenlandicum* (Oeder) Krom & Judd]), and thus Azalea Sawfly may not represent a threat to those species.

The sawfly larvae were found on cultivated Flame Azalea in two locations: an urban garden south of Agriculture and Agri-Food Canada's Central Experimental Farm (CEF) and in the CEF Arboretum, 2.1 km to the north (see vouchers below). Larvae were 1–2 cm long and solitary or in groups of two or three. Defoliation, involving the reduction of leaves to a midvein, was characteristic (Figure 1a,b). Defoliation was complete on parts of the shrub, but larvae appeared to have difficulty reaching flowers, perhaps because of glandular hair on the flower stalks

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**FIGURE 1.** Leaves of Flame Azalea (*Rhododendron calendulaceum*) and Azalea Sawfly (*Euura lipovskyi*) larvae at Ottawa, Ontario, 24 May 2021. a. Normal leaves. b. Leaves consumed by Azalea Sawfly leaving only the midrib. c. Near fully grown larva that fed on leaves. d. Oblique view showing annulets. e. Abdominal segment 10 with protuberances. f. Near fully grown larva that fed on flowers. g. Frontal view showing occiput. h. Lateral view showing abdominal prolegs. Photos a and b: P.M. Catling and B. Kostiuk. Photos c–h: H. Goulet.

and the floral tube. Larvae switched to flowers, as buds opened when defoliation was more or less complete. We counted up to 100 larvae on a shrub. These were isolated plantings and no others are known in the vicinity. We found sawfly larvae feeding on yellow, orange, and red colour variants of this variable species (Hyatt and McLellan 2006).

Only a few decades ago, the only rhododendron able to be grown in Ottawa was the most cold-hardy PJM cultivar series of hybrids (*R. carolinianum* × *sempervirens* cross). More recently, various hard- and soft-leaved species can be grown and other shrubs previously confined to more southern regions such as Eastern Redbud (*Cercis canadensis* L.) are also grown in Ottawa. Many gardeners attribute this northern movement of hardiness zones to climate warming. Azalea Sawfly may have moved north due to climate

warming either independently or transported in soils accompanying shrubs from further south sold in local garden centres. There is no definite evidence for the nursery trade serving as a vector because the sawflies have not been seen at nurseries in Ottawa in May when the plants are sold. Regardless of how Azalea Sawfly arrived, it does seem to be a result of climate warming. Because it already occurs in Wisconsin, New York, and New England (Macek and Šípek 2015), its occurrence in southern Canada is not surprising.

The larvae of this sawfly, up to 2 cm long, with a pale brown greyish head, are mainly pale to dark green when feeding on leaves (Figures 1c) or mostly light orange when feeding on orange flowers (Figure 1f). For a more detailed description, see Macek and Šípek (2015).

Smith (1974) recorded three species of sawflies

feeding on azaleas. They consist of one species of Argidae, *Arge azaleae* Smith, under the name *Arge clavicornis* (Fabricius) in Smith (1974), and two species of Tenthredinidae, *Euura azaleae* (Marlatt) Goulet comb. nov. (see Prous *et al.* 2014 and Taeger *et al.* 2018), under the name *Amauronematus azaleae* (Marlatt), and *Euura lipovskyi* (Smith) Goulet comb. nov. (see Prous *et al.* 2014 and Taeger *et al.* 2018) under the name *Nematus lipovskyi* Smith. Smith (1974, 1989) characterized adults, but larvae are more frequently encountered and seen causing damage. The presence of only three annulets, a broad longitudinal stripe from occiput to clypeus, and lack of caudal protuberances on the abdominal segment 10 (Smith 1989, under the name *A. azaleae*) quickly characterize the larvae of *E. azaleae*. The tenthredinid larvae of *E. lipovskyi* and *E. azaleae* share the presence of a pair of short caudal protuberances (Figure 1e), the lack of a pair of prolegs on abdominal segment 8 (Figure 1h), and six annulets or abdominal folds (folds easily seen in dorsal view; Figure 1d). Larvae of *E. lipovskyi* have small setae on annulets 2 and 4 (Figure 1d), while those of *E. azaleae* have small setae on annulets 2 and 3.

The only lepidopteran larva likely to be confused with Azalea Sawfly is that of Oblique Banded Leafroller (*Choristoneura rosaceana* (Harris)), in Tortricidae. It is roughly the same size, usually has a pale green body, but differs in having a brown or black prothoracic shield and it rolls and ties leaves together so that the damage is not at all similar. Many other Lepidoptera larvae feed on azalea foliage but are distinctive in colour, size, and behaviour. Regardless, sawfly larvae are easily distinguished from Lepidoptera larvae, which have four pairs of prolegs and 4–6 ocelli on each side of the head. Sawflies have 6–7 pairs of abdominal prolegs (Figure 1h) and a single ocellus on each side of the head (Figure 1g,h).

We have received a report of a sawfly on the “Northern Lights” azalea cultivar from Toronto, Ontario. If this was *E. lipovskyi*, its range would be extended within Canada, and a complex hybrid involving Early Azalea would be added to the list of hosts.

#### Voucher specimens

CANADA, ONTARIO: Ottawa, Sanford Avenue, 45.3722°N, 75.7102°W, 22 May 2021, *H. Goulet*, *P.M. Catling*, *B. Kostiuik*, Canadian National Collection of Insects (CNC HG 001); Ottawa, Central Experimental Farm Arboretum, 45.3911°N, 75.7046°W, 24 May 2021, *P.M.C.*, *B.K.* (CNC PMC 001).

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