

**FIRST RECORDS OF THE ORACHE LEAFMINER MOTH  
*CHRYSOESTHIA SEXGUTTELLA* (LEPIDOPTERA:  
GELECHIIDAE) AND AN ASSOCIATED PARASITOID WASP,  
*NEOTHLIPSIS CINCTA* (HYMENOPTERA: BRACONIDAE) IN  
MANITOBA**

Chris Friesen<sup>1</sup> and Greg Pohl<sup>2</sup>

<sup>1</sup>Manitoba Conservation Data Centre, Box 24, 200 Saulteaux Crescent, Winnipeg, Manitoba R3J 3W3, Canada. [chris.friesen@gov.mb.ca](mailto:chris.friesen@gov.mb.ca) ORCID 0000-0002-8180-8508

<sup>2</sup>Natural Resources Canada, Canadian Forest Service, 5320 - 122 Street, Edmonton, Alberta T6H 3S5. [gpohl@nrcan.gc.ca](mailto:gpohl@nrcan.gc.ca) ORCID 0000-0001-5468-7221

The Orache Leafminer Moth, *Chrysoesthia sexguttella* (Thunberg 1794; Figure 1), is a European species that has become widespread in eastern North America with scattered records further west (Eiseman 2021). Confirmed Canadian records include Ontario, Quebec, and Nova Scotia (Pohl *et al.* 2018). Recent records from Alberta and British Columbia are present in the Barcode of Life Database (BOLD; Ratnasingham and Hebert 2007; Index Number BOLD-AAD8505). This species appears to have been established in eastern Canada by the 1930's based on material at the Canadian National Collection of Insects, Arachnids and Nematodes (CNC). It is most easily observed in the larval stage due to their conspicuous leaf mines (Figure 2).



**Figure 1.** *Chrysoesthia sexguttella* adult, collected as a larva in a leaf mine, Warren, Manitoba, 18 June 202; emerged 7 July 2020.

Adults are minute moths with a wingspan of about 8 mm. The forewings are mottled grey and black, with a series of orange spots (Figure 1). Two large orange spots are on the trailing margin of the forewing, at one quarter and one half the distance from the wing base; in some specimens the proximal spot is not present. Additionally, a smaller orange spot is near the costal margin of the forewing at about four fifths the distance from the wing base, adjacent to a cream-coloured spot on the costal margin. The spots are variable in size, but their positions are consistent and distinctive, unlike any other Gelechiidae in North America. The upturned labial palps are dark with a white tip; the antennae have alternating rings of light and dark scales.

Larvae are translucent cream-coloured, with a dark thoracic shield, brown dorsal stripe, and two brown spots on each side of the abdominal segments. The larvae mine the leaves of various members of Amaranthaceae (Caryophyllales) (Eiseman 2021). Females lay eggs on the underside of leaves, and upon hatching the larvae form contorted linear mines that become large, transparent blotch mines with black frass deposited in a central clump (Figure 2; Eiseman 2021). Larvae exit the mine to pupate (Eiseman 2021). The species is bivoltine in North America (Eiseman 2021).



**Figure 2.** *Chrysoesthia sexguttella* larva in its mine on *Chenopodium album* leaf in Warren, Manitoba, 28 August 2019.

Several species of Eulophidae (Hymenoptera: Chalcidoidea) and Braconidae (Hymenoptera: Ichneumonoidea) have been recorded as parasitoids of *C. sexguttella* larvae in its native range (Yefremova *et al.* 2010; Doğanlar and Yiğit 2011; Yegorenkova and Yefremova 2012; Gadallah and Ghahari 2013; Yu *et al.* 2016). The native braconid wasp *Neothlipsis cincta* (Cresson 1873)

(Sharkey *et al.* 2011) has been recorded from hosts in several families of Lepidoptera, including *Chrysoesthia drurella* (Fabricius) (Krombein 1979; Pohl *et al.* 2018). Its distribution appears to be widespread, especially in eastern North America (Krombein 1979). In Canada, it has been collected in Alberta, Saskatchewan, Ontario, and Quebec (Yu *et al.* 2016).

Here we provide the first records of *C. sexguttella* and *N. cincta* in Manitoba. Additionally, this is the first record of *N. cincta* using the introduced species *C. sexguttella* as a host.

Lamb's quarters, *Chenopodium album* (Amaranthaceae), leaves with one or more active mines consistent with those of *C. sexguttella* were collected by CF in a residential yard in Warren, Manitoba (50.1304N, 97.54412W) in August 2019 and July 2020 (Table 1). Leaves were kept in containers, sometimes with a small amount of soil and wood chips. Larvae exited the mines within three days of collection (Table 1). The larvae chose pupation sites in substrate where it was provided, otherwise cocoons were attached to the sides of the rearing containers. Adult emergence occurred 15–16 and 11–33 days for moths and wasps, respectively, after larvae left their mines. In total, three adult moths and seven wasps were reared.

GP examined one of the adult moth specimens to confirm its identity, and identified the remaining two specimens from photographs. All wasps were sent to the CNC and identified by Jose Fernandez-Triana.

**Table 1.** Mine Collection and Adult Emergence Dates of *Chrysoesthia sexguttella* and its braconid parasitoid *Neothlipsis cincta*.

Leaf Mine Collection Date	Pupation Date	Adult Moth Emergence Date (Friesen Specimen ID)	Wasp Emergence Date (Friesen Specimen ID)
18.viii.2019	18.viii.2019	n/a	16.ix.2019
18.vi.2020	21.vi.2020	7.vii.2020 (2020-0008)	16.vii.2020 (2020-0030) 24.vii.2020 (2020-0022A)
25.vi.2020	unknown	31.vii.2020 (2020-0023)	13.vii.2020 (2020-0024)
30.vi.2020	1.vii.2020	16.vii.2020 (2020-0029)	n/a

*Chenopodium album* is a ubiquitous, weedy introduced annual in fields, gardens, and 'waste' places throughout Manitoba as far north as Churchill (Scoggan 1957). While the range of *C. sexguttella* in Manitoba may not extend as far north as *C. album*, it almost certainly occurs more broadly at least in the southern part of the province than the paucity of records suggests. As of

November 14, 2022, there was one confirmed iNaturalist report of this species in Manitoba: an adult observed in Winnipeg on 15.vii.2021 (<https://inaturalist.ca/observations/87216232>).

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