NEW RECORDS OF *CERIANA ABBREVIATA* LOEW (DIPTERA, SYRPHIDAE) IN GUELPH, ONTARIO AFTER 110 YEARS

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The northern wasp fly, *Ceriana abbreviata* Loew (Diptera: Syrphidae), is a rare species of flower fly occurring across a broad range in North America from the Northwest Territories, Canada to southern Arizona, USA. There are 107 physical specimens of *C. abbreviata* deposited between the Canadian National Collection of Insects, Arachnids and Nematodes (CNC; 53 specimens) and miscellaneous institutions as reflected in the CNC database (an additional 8 specimens deposited in the Smithsonian National Museum of Natural History; 4 specimens deposited in the American Museum of Natural History) and the Global Biodiversity Information Facility database (GBIF 2025; 42 specimens). Of these records, 26 are from Ontario. Collection records for Ontario show that the species' flight period is between May and July.

Nearctic *Ceriana* is easily distinguished from other Syrphidae in the region as it is the only genus in northeastern North America with a distinct antennifer, long antennae (scape three to four times as long as wide), each of which has a terminal stylus instead of an arista, and bare eyes (Figure 1) (Vockeroth and Thompson 1987). *Ceriana abbreviata* has a noted resemblance to Potter wasps (Hymenoptera: Vespidae: Eumeninae) (Metcalf 1913). This species is most likely to be confused with *C. mime* (Hull), a poorly defined relative in need of revision.

The larvae of this species are known to be saprophagous, with a single larva of *C. abbreviata* being reared from *Populus balsamifera* L. (Salicaceae) (Skevington et al. 2019; CNC_Diptera37864), and three larvae collected from sap-soaked detritus in a tree hole of *Liquidambar styraciflua* L. (Altingiaceae) (Maeir 1982; Rotheray et al. 1998). Curran (1925) suggests that the genus (therein referred to as *Cerioides* Rondani) is univoltine, likely overwintering as larvae on host plants. Maier and Waldbauer (1979) found that *C. abbreviata* adults are most active in mid-morning hours in response to floral anthesis and hygrothermal stress. Maier and Waldbauer (1979) also note that more *C. abbreviata* females were collected in proximity to flowers than males.

The first known record of *C. abbreviata* from Canada is a specimen (ROME90508) collected in June 1895 from Toronto, Ontario by William Brodie. The second record is a female specimen (CNC_Diptera37872) collected in June 1913 from Guelph, Ontario

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by Charles H. Curran. Curran later designated his Guelph specimen as the holotype of *Cerioides proxima* (1925), a short-lived junior synonym of *Ceriana abbreviata* (challenged by Shannon 1925, and finally synonymized *combinatio nova* by Vockeroth 1971).

Proliferation of community science reporting platforms like iNaturalist (www.inaturalist.org) has dramatically increased the number of records of rare syrphid fauna such as *C. abbreviata*. As of 26 February 2025, there have been 112 iNaturalist records of *C. abbreviata* in North America since 2009, of which 24 were from Ontario. Though records have been consistent throughout the province either through collection of physical specimens or through community science observations, there has been no confirmation of *C. abbreviata* in Guelph in over 100 years. The closest *C. abbreviata* specimen is a male specimen observed (iNaturalist 124043423) and collected by Sam Turner on 28 June 2022 in Brantford, Ontario near a *Quercus* L. sp. (Fagaceae) rot hole (CNC2123410).

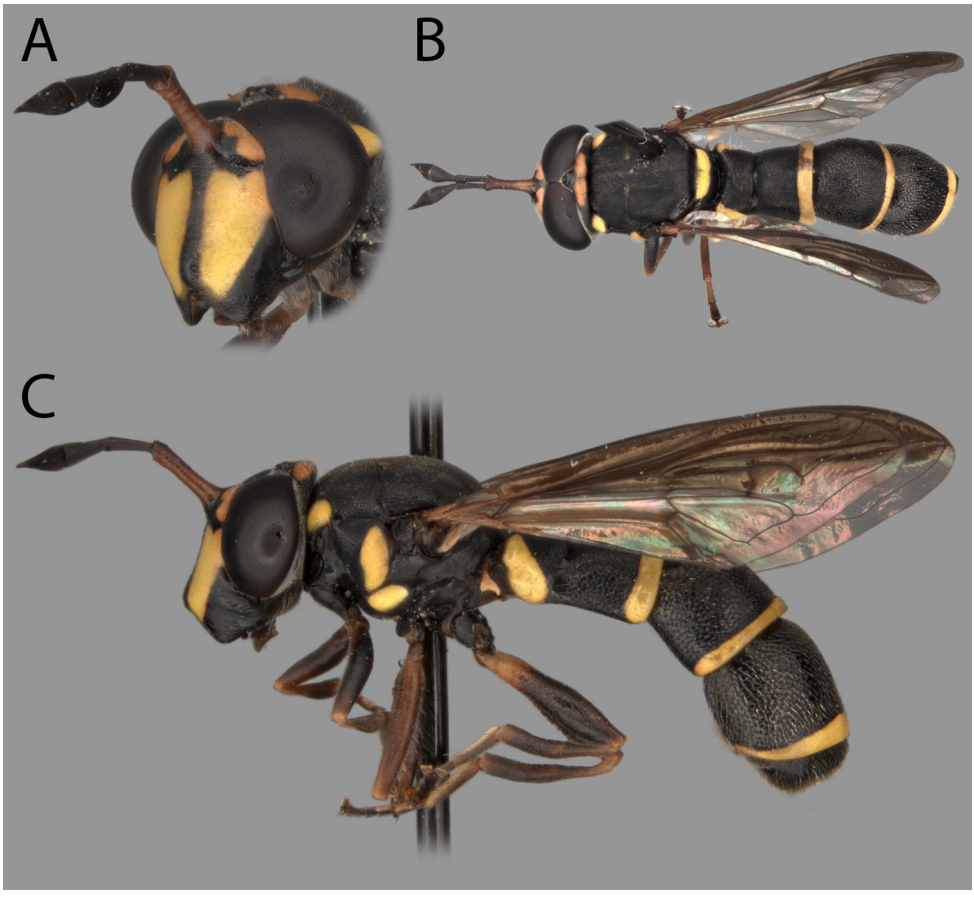


FIGURE 1. Male *Ceriana abbeviata* from the University of Guelph Arboretum (CNC2095301). (A) Head in anterolateral view; (B) dorsal habitus; (C) lateral habitus.

Three physical specimens of *C. abbreviata* were collected in Guelph between May and June of 2024. On 24 May and 06 June 2024, Alice Dabrowski and Katherine Norman hand-netted two male *C. abbreviata* perching on leaves at two sites in the University of Guelph Arboretum (CNC2095301, CNC2095302). On 28 June 2024, authors AD and KN hand-netted a single male perched on an upper leaf of *Populus balsamifera* in Preservation Park Field (CNC20953303). All collections are notably in proximity to the forest edge of mature *Populus* L. (Salicaceae) stands (*P. tremuloides* Michx (Salicaceae) and *P. balsamifera*).

The City of Guelph has approximately 1900 hectares of natural spaces, and almost 22% of the City's total land area includes "significant natural areas," such as portions of the University of Guelph Arboretum and Preservation Park (City of Guelph, 2018). The University of Guelph Arboretum is a 400-acre property established in 1970 that supports both cultivated and naturalized green spaces. The property was primarily used as university-affiliated pasturelands prior to its conversion to a publicly accessible arboretum. The two arboretum collection sites (specimens CNC2095301 and CNC2095302) are approximately 0.6 kilometers apart, separated by deciduous forest, mowed lawn, and meadow habitat. The collection site of CNC2095301 (Site 1) hosts a stand (approximately 1.8 km^2) of mixed *P. tremuloides* and *P. grandidentata* Michx. (Salicaceae) in the center of a meadow habitat (see Table 1 for a list of plant species). The collection site of CNC2095302 (Site 2) is adjacent to a major four-lane road (Stone Road West, Guelph, ON) and surrounded by mixed *Populus*-deciduous wood forest and meadow habitat (see Table 1 for a list of plant species). The collection site of CNC2095303 in Preservation Park is also notably along the margin of a *P. tremuloides* and *P. balsamifera* stand (just under 3 km^2) near the meadow habitat. All collection sites could be considered edge habitats as specimens were found along *Populus*-to-meadow margins.

None of the collected specimens were netted while visiting flowers; all were perching males. Assuming Maier's (1979; 1982) claims are acccurate, this could reflect mate-seeking behaviour by males in search of females close to potential larval habitat. While the genus *Ceriana* seems to have a noted association with sap runs and rot holes, we did not observe any obvious signs of these features in any of the three separate *Populus* groves. Additional surveying of these sites during periods of elevated sap flow and outside the flight period of *C. abbreviata* may reveal active larvae, specifically from March to May and July to September (Hogg & Hurdle 1996).

Before 2024, the last *C. abbreviata* specimen observed within the Guelph area was over 110 years ago. While the landscape may have changed considerably since then, protected habitats are gradually reaching mature and old-growth status. Other areas of the University of Guelph Arboretum, such as the Nature Reserve, support similar mature *Populus* habitats and may be ideal sites for additional *C. abbreviata* survey efforts, including larval collections. Despite having larval records associated with the sap of various tree species, there appears to be a potential habitat association with the genus *Populus*. Future *C. abbreviata* larval collections should prioritize sampling of bacterial microbiota present within the sap. Mature habitats can support specialist species, including rare species like *C. abbreviata*, even within urban landscapes. Our new records demonstrate the value of continuous ecological monitoring efforts as urban green spaces are allowed to mature into habitats supporting rare native species.

TABLE 1. Plant species surrounding *C. abbreviata* collection sites in the University of Guelph Arboretum.

Site	Scientific Name (Authority)	Plant Family
Site 1	*Populus tremuloides* Michaux	Salicaceae
Site 1	*Populus grandidentata* Michaux	Salicaceae
Site 1	*Picea glauca** (Moench) Voss	Pinaceae
Site 1	*Securigera varia* Lassen	Fabaceae
Site 1	*Solidago sp.* Linnaeus	Asteraceae
Site 1	*Daucus carota* Linnaeus	Apiaceae
Site 1	*Sonchus oleraceus* Linnaeus	Asteraceae
Site 1	*Juniperus virginiana* Linnaeus	Cupressaceae
Site 1	*Aster sp.* Linnaeus	Asteraceae
Site 1	*Convolvulus sp.* Linnaeus	Convolvulaceae
Site 1	*Lotus corniculatus* Linnaeus	Fabaceae
Site 1	*Cornus sp.* Linnaeus	Cornaceae
Site 1	*Rhamnus cathartica* Linnaeus	Rhamnaceae
Site 1	*Fraxinus sp.* Linnaeus	Oleaceae
Site 2	*Populus tremuloides* Michaux	Salicaceae
Site 2	*Populus balsamifera* Linnaeus	Salicaceae
Site 2	*Leucanthemum vulgare* Lamarck	Asteraceae
Site 2	*Betula sp.* Linnaeus	Betulaceae
Site 2	*Coronilla varia* Linnaeus	Fabaceae
Site 2	*Solidago sp.* Linnaeus	Asteraceae
Site 2	*Cornus sp.* Linnaeus	Cornaceae
Site 2	*Aster sp.* Linnaeus	Asteraceae
Site 2	*Vitis sp.* Linnaeus	Vitaceae
Site 2	*Daucus carota* Linnaeus	Apiaceae
Site 2	*Erigeron sp.* Linnaeus	Asteraceae
Site 2	*Echium vulgare* Linnaeus	Boraginaceae
Site 2	*Asclepias syriaca* Linnaeus	Apocynaceae
Site 2	*Pinus strobus** Linnaeus	Pinaceae
Site 2	*Rhamnus cathartica* Linnaeus	Rhamnaceae
Site 2	*Elaegnus umbellata* Thunberg	Elaeagnaceae

*Saplings

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