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First Record of *Chrysomya rufifacies* (Diptera: Calliphoridae) in Wisconsin

Jordan D. Marché II

**Abstract**

The Hairy Maggot Blow Fly, *Chrysomya rufifacies* (Macquart) (Diptera: Calliphoridae) is recorded for the first time from Wisconsin. Not a record of establishment, the occurrence of this species is that of a seasonal migrant which nonetheless confirms its expected distribution during late summer and early fall in the western Great Lakes region.

Female and male specimens of the Hairy Maggot Blow Fly, *Chrysomya rufifacies* (Macquart) (Diptera: Calliphoridae), were collected on successive days, 2 and 3 October 2012, respectively, at the Town of Oregon Park, Dane County, Wisconsin (approximate coordinates: +42° 54' 10", –89° 25' 16.5"), near the author’s home. This finding represents a new state record for the species. Both individuals were collected with a standard aerial net on late blooms of goldenrod (*Solidago* spp.) and were presumably attracted by the plant’s abundant pollen. However, no additional specimens were seen or collected, despite further searches over the next few weeks, nor were any found upon groups of asters (*Aster* spp.) that were blooming concurrently, perhaps because of their much-reduced levels of pollen. No nearby sources of carrion, on which the flies must have developed, were found, either. Specimens were identified according to the keys given in the online Canadian Journal of Arthropod Identification (CJAI 2011). *C. rufifacies* also possesses a prominent whitish anterior thoracic spiracle. Close-up photographs were then submitted to Phil Pellitteri, Insect Diagnostic Laboratory, Department of Entomology, University of Wisconsin-Madison, who tentatively confirmed the identifications and verified that no previous records or specimens were held in the Wisconsin Insect Research Collection (IRC). The two voucher specimens are housed in the author’s private collection (JDMC).

The township park where the specimens were collected consists of a moderate-sized grassy area, including a small playground, that is surrounded by much larger untended fields that support abundant native plants such as milkweed (*Asclepias* spp.) and goldenrod. On the south side, there is an adjoining woodland (with paved and unpaved trails), while on the north and east sides it borders agricultural row crops. Its western side is terminated by housing developments. Other calliphorid and macro-dipteran species found on goldenrod at this site (either before or after the appearance of *C. rufifacies*) include the Calliphorinae (*Cynomya cadaverina* Robineau-Desvoidy); Luciliinae (*Lucilia sericata* (Meigen) and *L. silvarum* (Meigen)); Polleniiinae (*Pollenia* sp. cf. *rudis* (Fabricius)); and Chrysomyinae (*Cochliomyia macellaria* (Fabricius)); along with Muscidae (*Musca autumnalis* De Geer) and Tachinidae (*Archytas apicifer* (Walker)). This list is not exhaustive, however.

*Chrysomya rufifacies* is a non-indigenous calliphorid that is native to Australia and southeastern Asia. Accidentally introduced into Central America in the 1970s, the fly was first recorded in the southern U.S. (Texas) in 1982.

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Over the years, it has spread progressively northward, becoming established in the Knoxville, Tennessee area by 1998 (Shahid et al. 2000). By 2007, abundant specimens had been collected as far north as Indiana (Slone and Gruner 2007), although notably fewer individuals had been taken in southern Ontario (Rosati and VanLaerhoven 2007). Belonging to the old-world screwworm flies (subfamily Chrysomyinae), C. rufifacies can be a vector of myiasis in livestock, although it is principally a carrion feeder. It has been found increasingly useful in forensic entomology, where its well-studied lifecycle depends mainly upon the ambient temperature. But if present in sufficient numbers, larval aggregations may produce metabolic heat in excess of ambient temperatures and thus strive to optimize their thermal environment (Slone and Gruner 2007). Adults may live up to 30 days after eclosion (Baumgartner 1993).

Previous research has shown that larvae of C. rufifacies are oftentimes dominant competitors to native calliphorid species, especially the Secondary Screwworm Fly, Cochliomyia macellaria (Fabricius) (Baumgartner 1993). Concerns have been raised that the continued spread of C. rufifacies in North America may threaten not only the viability of C. macellaria, but also disrupt the carrion-insect community as a whole (Rosati and VanLaerhoven 2007).

Reflecting its tropical origins, C. rufifacies cannot successfully reproduce when temperatures drop into the range of 9–15 °C (Rosati and VanLaerhoven, 2007). As a result, this species cannot overwinter in the northern regions of the U.S. and southern Canada. It must be noted, however, that larvae and adults of C. rufifacies have been obtained from pigs in almost every year since 1998 as part of the collections made for the Forensic Entomology class taught at Michigan State University (R. W. Merritt, personal communication). But this regular occurrence, like that observed in Indiana, appears more likely due to an annual influx of the species into the Great Lakes region from established populations occurring within the southern states. At this time, the species does not appear to be established in Wisconsin and can be nothing more than a seasonal migrant. This conclusion is supported by the fact that specimens of C. rufifacies have not been collected at these latitudes during the spring or early summer months (Rosati and VanLaerhoven 2007). Instead, they have only been taken during late summer and early fall, after successive generations of flies have spread northward.

Appearance of these flies might be attributed to the prolonged period of unusually warm and dry weather experienced across the upper Midwest during the spring and summer of 2012. However, the current distributional range of C. rufifacies was expected to include most/all of southern Wisconsin (Fig. 1a, Rosati and VanLaerhoven 2007). Capture of the two Wisconsin specimens thus confirms the expected range of C. rufifacies, and may bolster projections of its future distribution under the assumption of anticipated global warming (Fig. 1b, Rosati and VanLaerhoven 2007). The latter implies both a northward increase of the zone of its permanent establishment in the southern U.S., along with its seasonal migration into the northern U.S. and southern Canada.

Acknowledgments

I wish to thank Phil Pellitteri, Insect Diagnostic Laboratory, Department of Entomology, University of Wisconsin-Madison, for tentatively confirming my identifications and verifying that no previous records or specimens of C. rufifacies were known from the state. Richard W. Merritt, the referee, shared unpublished data concerning the occurrence of C. rufifacies in the East Lansing, Michigan area and furnished additional key references.


