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NOTE

The first record of face flies (Diptera: Muscidae) in Newfoundland, Canada

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The face fly (*Musca autumnalis* De Geer) (Diptera: Muscidae) is one of only two *Musca* species currently present in North America. It was first recorded in North America in 1952 in Middleton, Nova Scotia and has since spread throughout nine Canadian provinces. Most North American occurrences are between 33°N and 53°N (Krafsur and Moon 1997; Fowler et al. 2015), but it has been reported as far north as Kugluktuk, Nunavut (61.8°N) and as far south as Homestead, Florida (25.4°N) (GBIF.org 2023) (Figure 1).

Trout Fryxell et al. (2021) provide a description of the life stages and life history of face flies which is summarized here; adult face flies are 6-10mm long and both sexes have a strongly curved M1 wing vein. The female adults, like many flies, have the compound eyes spaced apart at the vertex. Its thorax is grey with four longitudinal black stripes and the abdomen mottled grey-black with the last tergites having lateral yellow patches. Male flies have the compound eyes converging at the vertex of the head. The male thorax is black, without stripes, but the abdominal tergites have a black stripe down the middle and yellow marking on the sides. The adult flies are active in the early spring when they mate, and eggs are laid in crevices of fresh bovine dung (Krafsur and Moon 1997). The larvae filter-feed on microorganisms (bacteria and fungi) and organic matter from the dung fluid (Trout Fryxell et al. 2021). At maturity, the 3rd instar larvae leave the dung and burrow in the surrounding soil where pupation occurs in puparia (Trout Fryxell et al. 2021). There are 3 to 4 generations in its northern limit and 12 in the southern limit of its range (Fowler et al. 2015; Trout Fryxell et al. 2021). The adult flies generally feed around the eyes of cattle and horses where their rasping mouthparts increase tear production (Broce and Elzinga 1984). They are also known to feed on other animal secretions like mucus, saliva, amniotic fluid, vaginal discharges, milk, and blood (Teskey 1969). The feeding around the eyes can cause irritation to the membranes of the eye which can lead to pinkeye (infectious bovine keratoconjunctivitis) as well as transmit harmful eye worms (*Thelazia* spp.) (Broce and Elzinga 1984; Krafsur and Church 1985; Otranto and Traversa 2005). In addition, the evasive actions of cattle in response to the irritation can result in lower grazing time, which in turn, reduces milk flow, curtails weight gain, and can have other negative economic outcomes (Teskey 1969; Trout Fryxell et al. 2021; Smith et al. 2022).

On 16 August 2021, several male fly specimens were discovered resting on a wooden post in St. Andrew's, Codroy Valley, Newfoundland and Labrador (Figure 2). These were collected and upon closer examination, identified as *M. autumnalis*. Verification of the identification was conducted by Roger Moon (Department of Entomology, University of Minnesota, St. Paul, MN, USA) and voucher specimens were deposited in the University of Minnesota insect collection. This is the first record of face flies in Newfoundland and Labrador. The nearest known population is in Cape Breton Island, Nova Scotia. Since face flies pose a considerable health risk to both cattle and horses (Trout Fryxell et al. 2021), it is important to determine the range of these flies in Newfoundland and Labrador. Further monitoring should be initiated to ensure the health of the provinces livestock and whether intervention is warranted.

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Figure 1. North America distribution of *Musca autumnalis*, from GBIG.org (2023).

Figure 2. *Musca autumnalis* male adults resting on a fence in St. Andrew's, NL (a) and close-up of a male adult face fly (b). Photo credit: M. Lomond.

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