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Assembly of a *Phragmites*-associated Chloropidae (Diptera) fauna in North America: the Palearctic genus *Cryptonevra* Lioy in the Nearctic, and the genus *Lipara* Meigen in Canada

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A diverse Diptera assemblage, dominated by the family Chloropidae, is associated with common reed (*Phragmites australis* (Cav.) Trin. ex Steudel, Poaceae) in the Palearctic region (Tewksbury *et al.* 2002). Although *P. australis* has long been present in North America, many of its associated Chloropidae have remained restricted to the Palearctic.

The best-known chloropid associates of *Phragmites* are species of the genus *Lipara* Meigen, whose larvae form galls on *P. australis*. *Lipara similis* Schiner was accidentally introduced to North America in a shipment containing *Phragmites* as packing material (Sabrosky 1958) and three species of *Lipara* (*L. similis*, *L. rufitarsis* Loew, *L. pullitarsis* Doskočil & Chvála) are now established in the northeastern United States (Tewksbury *et al.* 2002). A fourth species, *L. lucens* Meigen, was collected in Connecticut in 1931 (Sabrosky 1958) but its establishment in North America has been considered doubtful (Tewksbury *et al.* 2002). The genus *Calamoncosis* Enderlein, which includes some species associated with *P. australis*, has recently been recorded in the Nearctic, with five described species (3 Nearctic, 2 Holarctic) present in the region (Eichiner *et al.* 2011, Grégoire Taillefer & Wheeler, 2011).

The chloropid genus *Cryptonevra* Lioy contains nine described species, all Palearctic (Ismay 1994). The larvae are associated with grasses (including *Phragmites*), either as primary herbivores, or as inquilines in *Lipara* galls on *Phragmites* (Ismay 1994, Grochowska 2007). In this paper, we document the first Nearctic record of a described species of *Cryptonevra*, and the first Canadian record of *Lipara*, based on specimens from a suburban park near Montreal, Quebec.

Cryptonevra diadema (Meigen)

One female specimen of *Cryptonevra* was collected in 2011 in an old field habitat in a suburban park (CANADA: Quebec: Pointe-Claire, Terra Cotta Natural Park, 45.4516° -73.8103°, 30.vi–07.vii.2011, C. Barrie, yellow pan, old field). Subsequent focused collecting with a sweep net in 2013 near a stand of *P. australis* at the same site yielded 14 more specimens (Pointe-Claire, Terra Cotta Natural Park, 45.4514°, -73.8099°, 11.vii.2013, C. Barrie, sweep, old field, 3 ♂, 11 ♀). Two female specimens were DNA barcoded (658 bp of the mitochondrial CO1 gene) at the Canadian Centre for DNA Barcoding (University of Guelph, ON, Canada) (BOLD SampleID: CCDB-21329-B04, CCDB-21329-B05; boldsystems.org). All specimens collected in this study are deposited in the Lyman Entomological Museum, McGill University, Ste-Anne-de-Bellevue, QC, Canada (LEM).

The specimens were identified as *Cryptonevra diadema* (Meigen) (Fig. 1) based on keys and illustrations in Ismay (1994) and Grochowska (2007). *Cryptonevra diadema* is a widespread Palearctic species whose larvae are associated with *P. australis*, as inquilines in *Lipara* galls (Ismay 1994, Grochowska 2007). Like *Lipara* and some species of *Calamoncosis*, *Cryptonevra diadema* was likely introduced to North America accidentally.

Cryptonevra diadema is one of the few Nearctic species of the chloropid subfamily Chloropinae with an entirely black thorax and abdomen. Most species of *Epichlorops* Becker, *Cetema* Hendel or *Thaumatomyia* Zenker with a completely black scutum have at least some yellow on the scutellum or thoracic pleurites. In Sabrosky's (1987) key to Nearctic chloropid genera, *C. diadema* keys to couplet 55 (*Cetema* and *Epichlorops*), although the scutum is not as distinctly tuberculate as in those two genera. *Cryptonevra diadema* can be accommodated in the Nearctic key to genera by the following modifications to couplet 54:

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