

## First Report of *Cactodera estonica* in Canada

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**Abstract:** A population of cyst nematode with terminal protuberance was found in soil samples associated with and on the roots of *Polygonum aviculare* L. at N45°23.480', W75°40.463' in South Ottawa, Ontario. Both J2 and cysts were found. It was subsequently confirmed with morphological and molecular methods as *Cactodera estonica* Krall and Krall, 1978 (Krall and Krall, 1978). The cysts are dark brown, elongated with length/breadth ratio more than 2, and vulval fenestra circumfenestrated  $33 \pm 4.1$  (20–48)  $\mu\text{m}$  in diameter. Vulval slit is short  $16 \pm 2.7$  (13–20)  $\mu\text{m}$ . Not all cysts have bullae or underbridge, when present a few bullae scattered on the ventral side of the cyst wall and the underbridge is thin; vulval denticles were found in one specimen. Male not found. J2 measurements are body length at  $505 \pm 45$  (420–630)  $\mu\text{m}$ , stylet  $25 \pm 4.4$  (22–29)  $\mu\text{m}$  long, and tail  $36 \pm 3.1$  (34–38)  $\mu\text{m}$  with a short hyaline portion  $14 \pm 3.0$  (12–19)  $\mu\text{m}$ . Lateral fields with four incisures. Tail end is round. All of these are consistent with those of *C. estonica*, for which the elongated cyst and short hyaline in J2 are characteristic for the species. Ribosomal DNA of the ITS, 18S, and D2/D3 of 28S regions were PCR amplified from cysts and J2s using primers 18S (5'-TTGATTACGTCCCTGCCCTT-3') and 26S (5'-TTTCACTCGCCGT-TACTAAGG-3') (Vrain et al., 1992), D2A (5'-ACAAGTACCGTGAGGGAAAGT-3') (Nunn, 1992) and D3B (5'-GACCCGTCTT-GAAACACGGA-3') (De Ley et al., 1999), and sequenced. The sequences of the ITS and D2/D3 regions of 1,480 and 1,363 bps, respectively, were deposited in Genbank with accession numbers MF774482 and MF774483. When blasted in to the NCBI database (August 2017), the ITS sequence was 99% similar to sequences of AF274417, a population of *C. estonica* from Belgium and of KX579922 from Turkey, and the D2/D3 sequence was 99% similar to sequences of HM560797 and HM560796, populations of *C. estonica* from China. This is the first reported case of this nematode species in Canada and the second for the western hemisphere (Norgren and Golden, 1986).

**Key words:** Canada, *Cactodera estonica*, detection, first report.

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