

JUMPING WORM

An Invasive Species Threatening Soil Habitats in Canada



Image: Adult jumping worm present in soil, Dr. Michael McTavish, University of Toronto

What is it?

Jumping worms (earthworms belonging to several pheretimoid general including *Amyntas*, *Metaphire*, and *Pheretima*) are invasive worms that consume the upper organic layer of soil, outcompete other earthworms, and leave behind castings (manure) that can cause soil conditions to deteriorate substantially. These worms increase susceptibility to erosion by making it difficult for plants to remain rooted, washing away important nutrients. Furthermore, they can change the soil structure by diminishing its fertility and water-holding capacity, making soil inhospitable and destroying the habitats of native plants, insects, birds, and other small animals.

Where is it?

Jumping worms were unintentionally introduced to North America in the late 1800s from East Asia via ornamental plants, soil, compost, and horticultural materials. These invasive worms have continued to spread across the northeast, southeast, and midwestern parts of the United States through human activity. There are now about 17 species of jumping worms found in the United States, with sightings as far west as Oregon. In Canada, jumping worms were first reported in 2014 in Essex County, Ontario, but have since been observed elsewhere in areas such as Wheatly, Hamilton, and the Toronto region.

Impacts:

- Rapid destruction of the organic layer of soil. These worms quickly devour leaves, decaying matter, and other nutrient sources that native species require to survive. The consumption and output of carbon from leaf litter may also contribute to the release of carbon dioxide into the atmosphere.
- Disruption of plant root systems and mycelium, halting nutrient exchange and causing die off.
- Increased erosion by destroying habitats, diminishing soil's water-holding capacity, and altering soil composition leading to nutrient loss and further habitat loss.
- Increased soil nitrogen, altering the species composition of soil bacteria and fungal communities.
- Decreased aesthetic property value by making lawns and gardens inhospitable for plants.
- Highly invasive and destructive in hardwood forests, with potential to threaten the forestry industry among other natural resources.

What to look for:



Photo: Mary Welz, Pollinator Partnership, Bugwood.org

Jumping worms can be distinguished from other invasive earthworms by the presence of a smooth white to grey clitellum (collar-like light band) about 14-16 segments away from the head. This band fully encircles the body and lays flat against their skin. Adults can reach a length of 10-13 cm and have characteristically large mouths. Jumping worms are named after their erratic movements and tendency to cast off their tail segments to escape when disturbed.

Signs/Symptoms:

- Presence of adult worms in topsoil thrashing around when disturbed.
- Excessive worm castings on the surface of soil. Soil with coffee-ground-like crumbling consistency 1-10+cm deep.
- Dry granular compost, absence of leaf litter, and rapid loss of mulch.
- Mulch, compost, nursery stocks, or potting mixes may contain egg-filled cocoons.



Image: Soil surface disturbed by excessive crumbling worm castings, Dr. Michael McTavish, University of Toronto

Management

- Prevention and early detection allow for rapid response and treatment. Given their relatively recent spread into Ontario, early detection and rapid response (EDRR) is critical to managing the Canadian jumping worm population.
- Monitor for symptoms of jumping worms throughout the season with special focus on compost and mulch. Monitor the soil and roots of potted plants and trees before planting.
- Avoid buying mulch, compost, nursery stocks, or potting mixes from areas with established jumping worm infestations, as these may contain egg-filled cocoons which are difficult to distinguish from the surrounding soil or debris.
- Never dispose of unused live worms or baitworms into the environment.
- If jumping worms are found at or near your property, minimize the risk of spread by avoiding moving or sharing soil or plants. If plants must be moved, wash roots removing all soil present and place straining run off in a plastic bag in the sun or freezer before disposing of it. Clean all footwear and tools when walking through or working in an infested area.
- Any jumping worm discovered should be killed and disposed of. Place worms and all contaminated soil and castings in a dark plastic bag and kill them by solarizing it in the sun aiming to achieve at least 40°C for 3 days. Worms may also be euthanized by placing them in isopropyl alcohol.

If you see signs and symptoms of jumping worms, report the sightings to:

- EDDMapS: www.eddmaps.org

For more information on jumping worms visit:

- <https://www.invasivespeciescentre.ca>

Life Cycle:

Jumping worms reproduce in an annual life cycle.

April to May:	Young worms hatch from egg-filled cocoons that resemble seeds
June to July:	Worms feed and mature, becoming adults over the course of 60 days
August to September:	Adults reproduce, depositing eggs into the soil. Jumping worms can reproduce sexually and asexually, making them particularly effective at colonizing new habitats
October to November:	Adults typically die as the first freeze hits
November to April:	Eggs are protected in drought and freeze resistant cocoons allowing them to overwinter and emerge the following spring



Photo: Juvenile jumping worm
Photo Credit: Marie Johnston,
UW-Madison Arboretum

Photo: Different egg-cocoon sizes of jumping worm species,
Marie Johnston, UW-Madison
Department of Soil Science and
Arboretum