UCONN
UNIVERSITY OF CONNECTICUT
EXTENSION

JUMPING WORMS

(CRAZY WORMS, SNAKE WORMS, ASIAN JUMPING WORMS)

Amynthas agrestis, A. tokioensis, and Metaphire hilgendorfi (family Megascolecidae)

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Overview:

While most earthworms are not native to the U.S., many earthworm species provide benefits to urban soils by helping to improve soil porosity, drainage, and aeration. Concern has grown over the last decade over several worm species, predominantly of the *Amynthas* spp., that are reported to cause damage to the soils of landscapes, lawns, and forests. These species, known as jumping worms (the common name for several similar-looking species), may significantly change the texture and composition of surface soils.

Figure 1. Adult jumping worm, with smooth, creamy clitellum. Photo by Alyssa Siegel-Miles

Identification:

- **Snake-like thrashing or "jumping" movement** when disturbed.
- **High density of visible, very active adult worms near the soil surface from late June to mid-October.**
- **Smooth, metallic sheen, often darkly pigmented** (glossy dark gray/brown); **uniformly colored**. 1.5-8" long. Sleek, dry, smooth, and firm body; less slimy to the touch than other earthworms (e.g., nightcrawlers).
- **Cloudy-white to gray clitellum (band) encircles the body of adult worms**; is **smooth, not raised**, and is located **nearer to the front portion of the body** (Figure 1).
- **May shed "tail"**/posterior portion if picked up or disturbed. ***Note*: Before the clitellum is visible**, juveniles can be identified by their active squirming, snake-like movements, and this ability to drop their tails.
- **Castings (feces) are similar to the appearance and feel of coffee grounds** or ground beef and are **evident at the soil surface**, often in a uniform and deep layer (Figure 4, opposite side).

Life Cycle/Reproduction:

- **Annual** species with 1-2 generations per year.
- **Parthenogenic** (each worm can self-fertilize and reproduce on its own without mating).
- **In the fall, adult worms produce small cocoons** (2-4 mm wide hardened egg capsules, no larger than the size of peppercorns). Adults are sensitive to cold temperatures and die with the first frost.
- **The cocoons overwinter and survive** in the soil, then hatch continually the following spring and summer, beginning once soil temperatures rise above 50° F.

Figure 2. European earthworm with raised, pink-red clitellum. Photo by Andy Birkey; source: UMN

European Worm Identification:

European earthworms (e.g., nightcrawlers) can live up to 8 years and are active in the spring and fall. Their bodies are **reddish-pink,** thick, slimy, and floppy. **The anterior portion is usually darker in color compared to the rest of the body** (Figure 2). **The raised, pink-red clitellum is more central along the body and only partially encircles the body** (Figure 3). When disturbed, the worms slowly wiggle and stretch.

European earthworm clitellum with gap visible on the underside of the body. Photo by Alyssa Siegel-Miles.

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Habitat:

Jumping worms are increasingly observed in urban, managed, and natural landscapes. They live in the topmost layer of the soil, in debris and leaf litter. They thrive in forests, home yards, parks, compost piles, and roadsides.

Distribution and Background:

Originating from Korea and Japan, jumping worms have been observed in the United States since the late 19th century. They are now widespread in the northeast, southeast, and midwestern parts of the U.S. Worms and cocoons are often distributed by human activity, including movement of potted plants, mulch, bagged leaves, compost, and other landscape materials.

Ecological Threat:

Jumping worms voraciously consume organic matter from the soil surface, present little benefit to the soil, and dramatically accelerate the normal process of decay and subsequent nutrient release in the soil. Whereas European earthworms distribute their high nutrient-value castings throughout the soil, jumping worms deposit castings on the soil surface (Figure 4), where the nutrients are unavailable to plants. The castings are hardened by the worms' mucus and frequently erode away during rain events.

The combination of their castings and aggressive churning of the soil forms a coarse, granular soil structure with large air pockets, which can **impact the ability of plants to produce and anchor roots, absorb water, and extract nutrients**. When introduced to a property, they can destroy healthy woodland edges, landscape beds, and turfgrass areas (Figure 5), resulting in nutrient leaching, root desiccation, soil erosion, destruction of the soil microbial food web, and plant death.


Figure 4.

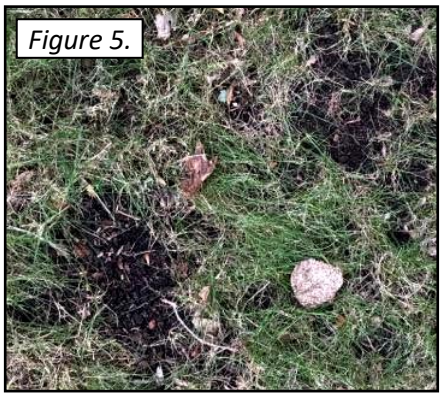
Figure 5.

Figure 4. Jumping worm castings. Photo by Alyssa Siegel-Miles. Figure 5. Erosion of soil where jumping worms have invaded a home lawn area (Photo by Lindsay Branscombe).

Upload jumping worm observations to iMapInvasives.org to help researchers develop best practices to prevent their spread.

Management:

Prevention tactics to limit the introduction of jumping worms and cocoons are currently the best methods to manage the spread of these invasive worm populations:

- **Use only reputably-sourced soil**, as well as **heat-treated compost and mulch**. High temperatures (>105°) can kill worms and cocoons.
- **Plant bare-root trees or inspect the rootball, soil and mulch of all plants before planting.**
- **Clean tools, equipment, or shoes** after laboring in landscaped areas.

To date, there are no documented effective treatments to control or eradicate existing jumping worm populations. Research is ongoing. **Precautions to avoid unintentionally moving jumping worms from one area of a property to another are critical.** For small infestations or at smaller sites, hand-collecting worms may, over time, help reduce the number of egg-carrying cocoons at the site. Worms may be drowned in water or sealed in a plastic bag, frozen, and disposed of in trash.

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SOURCES: conngardener.com; The Atlantic Magazine; Wisconsin DNR; UVM.edu; JWORM Working Group; MNLA

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