PennState Extension

Look Out for Jumping Earthworms!

An aggressive, introduced earthworm is negatively impacting our gardens and ecosystem. Find out how to recognize this invasive species and help limit its spread.

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Jumping Earthworm (Amynthas spp.) Photo credit: Nancy Knauss

Jumping worms, also called crazy worms, are a relatively new invasive species from Asia but are rapidly spreading across the United States. They can be found in the Southeast, along the Eastern Seaboard, and in the mid-Atlantic, Midwest, and some Northwestern states.

There are still native species of earthworms in a few areas of North America, but in states where glaciation occurred, the native species were wiped out. Forests developed without them, but in time European earthworms appeared and began to burrow through the soil. As the tunnels were created, the earthworms mixed soil components and improved air and water movement. Unfortunately, both native earthworms and European nightcrawlers are now being displaced by the destructive jumping worms.

These invasive worms are members of the genera *Metaphire* and *Amynthas*. They live in the organic matter or the topmost layer of soil. This upper layer of organic matter protects the soil from erosion. Many of the tree roots establish in this duff layer of the forest floor, and wildflowers grow. Jumping worms are ravenous feeders that quickly consume the organic matter and degrade the soil. Nutrients from their castings are rapidly released, with a small amount actually reaching the roots of plants. During heavy rainstorms, the nutrients are quickly lost, and the soil may be unable to support plant growth. There is only bare soil where there was once lush vegetation and wildflowers. When such a disturbance happens, it provides an opportunity for an invasive plant species, such as garlic mustard or stiltgrass, to move in. The structure of the soil is also damaged, and often, there will be voids under tree roots that are near the surface of the soil.

Jumping worms are an annual species—the adults die after the first freeze. The cocoons, which are about the size of a mustard seed, will survive the winter and hatch in mid-April after temperatures reach 50°F for a consistent period. One worm can produce many cocoons without mating. While the cocoons can survive winter temperatures, the hatchlings cannot survive freezing temperatures.

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Jumping earthworm hatchlings. Photo credit: Penn State Master Gardener Program

How do you know if you have Asian earthworms?

One telltale sign of an infestation is a very uniform, granular soil created from worm castings, the nutrient-rich soil that the worms leave behind. The texture of this soil is often compared to coffee grounds.

When you scratch the top layer of soil, you will see the worms thrashing about with an erratic, snakelike movement. These worms, which can reach 6 inches in length, are much more active than European nightcrawlers.

If you examine a worm close-up, you will notice the prominent band around the body of the worm called the clitellum, where cocoons are produced. On a jumping worm, the band completely encircles the body, is milky white to light gray, and is flush with the body. On European nightcrawlers, the clitellum is raised and reddish-brown in color and does not wrap entirely around the body.

How can you prevent jumping worms from invading our forests and landscapes?

It is very difficult to remove an invasive species once it is well established in an ecosystem, so the focus must be on preventing the spread of jumping earthworms. The cocoons, which are very small and difficult to see, can be easily introduced to your garden in compost, bark, or leaf mulch or when swapping plants with friends.

Consider reducing the amount of organic matter that you add to your garden each year. Most importantly, when purchasing bulk mulch or compost, use a reputable producer that has heat-treated the material to a temperature of 130°F for at least three days to destroy the cocoons. The other option is to purchase bagged mulch.

Check any plants that you bring into your garden for the distinctive coffee ground-like soil. If present, throw out the plant, or remove all soil and rinse the roots thoroughly before bringing the plant into your garden.

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Coffee ground-like soil left behind by jumping worms. Photo credit: Penn State Extension Master Gardener Program

What to do to control jumping worms?

Research is currently being conducted on invasive worms at the University of Wisconsin, the University of Minnesota, and Cornell University. Several practices do show some promise of control. Once you have identified jumping worms in your landscape, you will need to eliminate both the cocoons and the worms.

If you have a small population of jumping worms, handpick and destroy adult worms by bagging them and throwing them in the trash. Brad Herrick, an ecologist, and researcher at the University of Wisconsin Arboretum recommends making a mustard solution of one-third cup of dry mustard in one gallon of water and drenching the area. The solution will irritate the worms and bring them to the soil surface, where you can easily remove them.

While research is ongoing, abrasive materials such as biochar (ground-up charcoal) and diatomaceous earth (fossilized diatoms) may show some promise in killing adult jumping worms. Incorporate one of these products into the infested soil to the depth where the worms are located. Worms that come in contact with the materials will be adversely affected.

It is important to also destroy jumping worm cocoons. The cocoons are sensitive to heat and can be destroyed with clear plastic solarization. In late spring or summer, cover moistened soil with a sheet of transparent polyethylene for two to three weeks or until the soil temperature exceeds 104°F for at least three days.

Diligence in following the preventive measures and implementing control methods for both the cocoons and adult worms can impact the health of your soil by eliminating these destructive invasive worms.

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