Coping with Jumping Worms

Karen Randall, Ramsey County Master Gardener
January, 2022

Introduction

I found jumping worms in my compost pile in July 2021, then a few in random vegetable beds and woodchip paths throughout the summer. The initial dismay turned into heart-wrenching worry about the future of my beloved garden. My way of working through the feelings has been to dive into research, looking for data on what changes to expect and actions to take, especially connecting with other gardeners to find out about their experiences.

The bottom line in all the sources I've consulted is that we don't have great research-based answers yet for jumping worm control. While what we do know about worm biology provides some suggestions on things to try, there are a lot of unanswered questions. Observations from people with jumping worm infestations provide important clues.

Some of the reports are indeed alarming — a healthy bed of foxgloves collapsing with barely any roots, arborvitae leaning as soil mixed with worm castings isn't strong enough to hold the roots, and vegetable seedlings that don't thrive. Examples like these make me itch to do something, anything, to get the worms out of my yard.

Connecting with some gardeners who have long-term experience, though, I am realizing that managing jumping worms is a mindset adjustment as much as a set of actions to take. I texted with Olga, a three-year veteran of worm management who has found and destroyed thousands of worms in her Vermont woodland, seeking to slow forest floor changes and erosion. She started with a style focused on eradicating and now is leaning into co-existing with them and feeding the soil. Martha in suburban Chicago tells me her six-year jumping worm infestation seems to have declined. After the first explosion, she continues to have a successful garden by observing and addressing the needs of individual plants, with a focus on natives. Erin Buchholz from the Minnesota Landscape Arboretum shared that they have documented jumping worms on the property starting in 2018 and suspect they have been present for decades. They have been adapting cultural practices, such as limiting the use of bark mulch, and their flowers, fruits and vegetables continue to grow. The Arboretum is also hosting research with the University of Minnesota to study potential controls.

Influenced by these conversations, I'm reminded that gardening has always been a research project, each season trying out possibilities, making observations, and adjusting practice based on the results. Working through the addition of jumping worms is the next stage of the adventure.

For those who would like to contribute their experiences to the overall research underway, consider joining the University of Minnesota Jumping Worms Project or contributing to the Extension Jumping Worm Report.

Jumping Worms and Integrated Pest Management

One approach to jumping worms is through the lens of Integrated Pest Management (IPM). IPM is a decision-making process that layers biological, cultural, physical and chemical tools to identify, manage and reduce risk from pests.

Know Your Pest: Jumping Worm Biology	
Identification	• Backside darker than underside. • Milky white, smooth band (clitellum) wraps all the way around; clitellum located 14-15 segments from head; other species clitellum is 23-32 segments from head. • Body is not as flexible as other worms. • Drop tail when aggravated; other worms do not. • Poop is loose castings, coffee ground texture; others make little piles. • In infested potted plants, soil surface is granular texture.
Life cycle	• Can reproduce on their own without mating. • Deposit hardened egg capsules (cocoons), 2-5 mm in size, in soil August-September, then worms die with first freeze. • Cocoons survive winter to hatch in spring, or even later into following year. • Young take about 70 days to grow to a size where easily identified. • Temperatures above 104° F for several days kill jumping worm cocoons.
Behavior	• Eat organic matter like leaf litter and mulch, living just under mulch and within top 6 inches or so of soil. • Prefer moist, shaded habitat with cooler ground temperatures. • Less likely to be found in bare sunny places that heat up during the day. • University of Wisconsin/Madison Arboretum survey respondents reported jumping worms found in all kinds of habitats except prairies.
Impact	• Change soil composition, not as much leaf litter on forest floor. • Castings are loose, do not hold water, erosion is a problem. • Timing of soil nutrient availability is concerning, as worms consume and release nutrients in castings in a different cycle than plants may benefit from.
Cultural Controls to Try	
Reduce food sources and preferred habitat	• Balance meeting the needs of plants with providing food for worms; where possible, reduce the use of mulch and compost, in particular wood chips and chopped leaves since they are preferred food source. • Use compost or mulch from a source known to heat materials to 131° F, killing pests to avoid introducing additional worms. • No evidence for type of mulch that is less attractive to worms, research ongoing. • Step up watering and weeding if needed to compensate for bare soil. • Worms thrive in damp conditions, limit places that retain moisture.
Adapt plant choices and location	• Observe which plants are doing well; move or remove those that are not. • Consider species that are more tolerant to poor soil conditions, including natives (see The Best Plants for 30 Tough Sites). • Accept that worms will be there when conditions are right, so adjust landscaping choices, e.g., remove rock border that makes soil moist, cool; stabilize slopes. • Consider elevated container gardens or raised beds; note worms do move across pavement and up vertical surfaces.
Start new plantings early	• Start seeds indoors, then set out young plants before worms hatch and mature. • July-September direct seed planting less likely to succeed as worms grow.

Physical Controls to Try	
Hand pick and kill	• Any worm removed is one that won't be there to deposit cocoons. • Find worms by hand hoeing or otherwise disturbing mulch, soil surface. • Conduct a Mustard Pour (⅓ cup mustard powder mixed with one gallon water poured on 1 sq ft of soil, irritating worms causing them to surface). • Trap by covering moist area with board or mulch to attract worms, check beneath. • To kill worms, seal in plastic bag, place in trash; can also spray or drown with vinegar before disposal.
Avoid further spread	• Clean tools and shoes to avoid transporting cocoons; Minnesota Landscape Arboretum has boot brush stations. • Have designated shoes that don't leave property. • Do not share plants off-site; wash plant roots thoroughly back into planting hole if dividing and transplanting within the property from a known infested area.
Remove infested material	• Reduce population by removing leaves and wood chips where jumping worms have been found, mainly practical for small areas. • Disposal from infested sites is a challenge; illegal in Minnesota to put yard waste in trash, this also spreads worms. • Any off-site disposal needs to be at a facility that processes yard waste to at least 131° F; call local yard waste disposal site to confirm. • Fire is option if community allows burning of yard waste.
Apply heat through solarization	• Seal moistened compost or mulch in clear plastic bags, in thin layer; leave in sun for 1-2 weeks to heat enough to kill worms and cocoons—at least 104° F. • Solarize bare soil with clear plastic; may be more effective where area is bound by pavement or lawn.
Biological and Chemical Controls: Research Underway	
Predators	• Jumping worms are invasive species, in Minnesota not known to have natural enemies to help manage numbers. • Reports of salamanders, snakes, moles, chipmunks, turkeys eating worms. • University of Minnesota study investigating fungal spore application that infects certain insects and worms, not currently labeled for home use.
Chemical and physical agents	• Challenge of treatments is the potential impact on desired organisms, none are currently labeled for jumping worm application, use for this purpose is illegal. • U of MN study investigating several possible controls, with consideration for overall ecosystem.

For More Information

Extension.umn.edu/identify-invasive-species/jumping-worms
Www.dnr.state.mn.us/invasives/terrestrialanimals/jumping-worm/index.html
Connecticut Agricultural Experiment Station *Jumping Worm Fact Sheet* https://portal.ct.gov/-/media/CAES/DOCUMENTS/Publications/Fact_Sheets/Entomology/Jumping-worms-in-Connecticut.pdf?fbclid=IwAR35NjLck6SWsjEyRxSL-V7tHw3UXxsRGw9PaAJ4e_jbUxI42GBzU7D4_ps
University Place: Invasive Jumping Worms, Brad Herrick, University of Wisconsin-Madison Arboretum
https://video.pbswisconsin.org/video/invasive-jumping-worms-mj8j7h/

Thank you to

Angela S. Gupta, Forestry Extension Professor and Educator
Erin Buchholz, Minnesota Landscape Arboretum
Laura Van Riper, Terrestrial Invasive Species Program Coordinator, Ecological and Water Resources Division, Minnesota Department of Natural Resources
Lee E. Frelich Director, University of Minnesota Center for Forest Ecology
Olga, Martha, and others, Facebook Jumping Worm Support Group