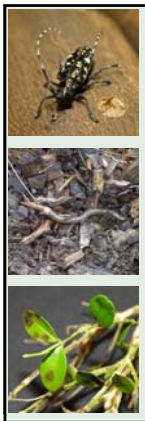


ILLINOIS FIRST DETECTOR

JUMPING WORMS

NEW TO ILLINOIS 2015

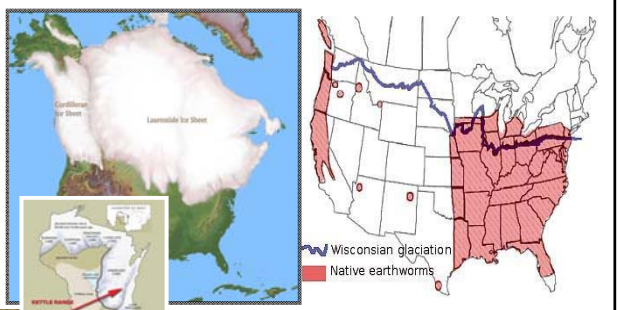
Chris Evans, University of Illinois NRES

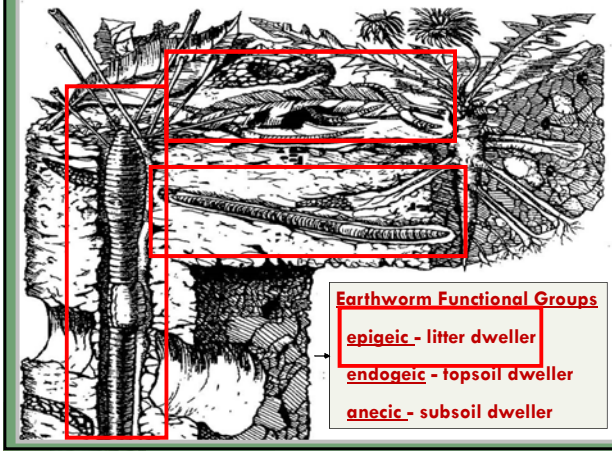
Outline*

- Earthworm Ecology
- Jumping Worm Ecology and Identification
- Impacts from invasion
- New Finds in Illinois
- Be on the lookout for jumping worms - Reporting

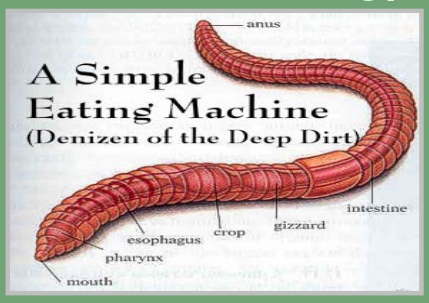
*Information, pictures, and many slides courtesy of Wisconsin DNR

Few native earthworms exist in the northern-most reaches of the continental United States. Most species were forced south in the last major glaciation, which ended 10,000 years ago





Earthworm Ecology



Worms eat dirt. They are detritivorous where they feed on decaying organic matter (leaf litter) and geophageous (dirt) and feed mainly in the soil layers.

Earthworms in Illinois

- 38 species*
- 18 genera and 6 families

*20 species in Illinois are considering introduced

*Four species only found in greenhouses

- Reynolds and Wetzel (2011)

Jumping worms - Amynthas sp.

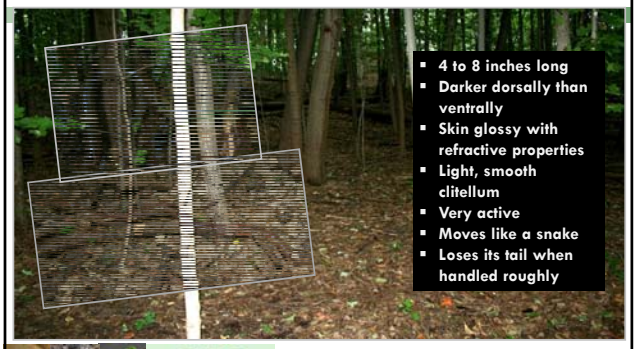
Jumping Worms

- *Amynthas genus* (all species in the genus have invasive potential, though A. agrestis is focal species)
- Crazy worms, Alabama jumpers, snake worms
- Native to Asia
- Currently considered invasive in New England, southern Appalachians, and Wisconsin

Jumping Worms

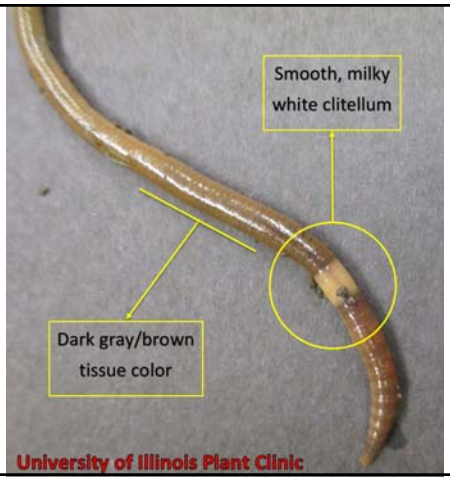
- Population densities 10x other worm species
- Live primarily in upper layer of soil
- Parthenogenic (reproduce without mating)
- Sheds microscopic 'cocoons'
  - Method of overwintering
- Adults most often seen starting mid-late summer

Jumping worms



- 4 to 8 inches long
- Darker dorsally than ventrally
- Skin glossy with refractive properties
- Light, smooth clitellum
- Very active
- Moves like a snake
- Loses its tail when handled roughly

- Milky white clitellum
- Not raised



Jumping worms are surface-dwelling consumers of leaf litter that may turn up everywhere from suburban backyards to the forest.

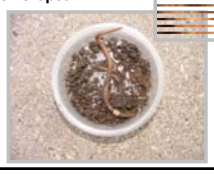
They are known for flipping wildly when disturbed (hence the common name – crazy worm) to the point where they can jump out of your hand with ease. These unique traits often make these worms familiar to those gardeners and composters who have encountered them.

Timing

- All adults die in winter in cold climates and populations survive through overwinter cocoons
- Worms are often not encountered until later in the year, when populations have grown large
- Look for jumping worms July-October

Biology & Ecology

- Reaches maturity in 60 days much faster than Lumbricidae species at 120 days – thus allowing for 2 hatches a season.
- Voracious appetites
- Highly adaptive to temperature changes
- Cocoons winter over
- Adaptive, non-particular to habitat types
- Outcompetes and pushes out non-native European species of earthworm
- Produces a unique soil signature

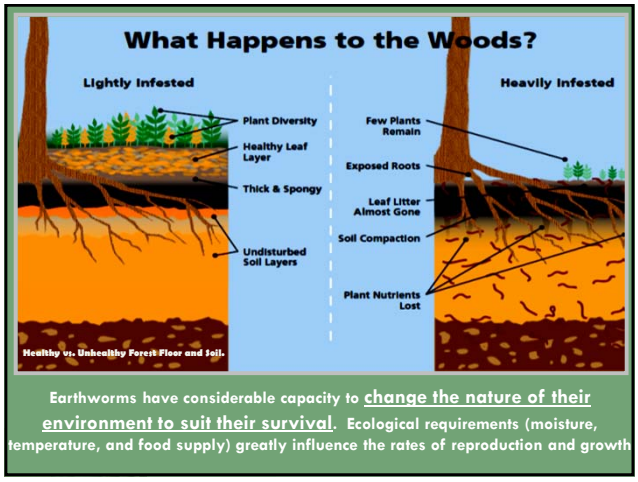


Identification Summary

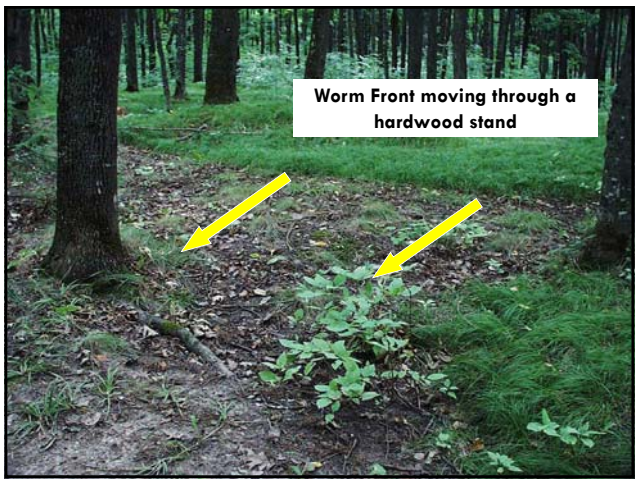
- July-October
- In top 4-inches of soil
- Big worm (4-8 inches long)
- Smooth, milky white band (not raised)
- Frantic behavior, potentially shedding tail
- Coffee ground soil structure

Invasive Earthworm Impacts

- Forests
  - Most of what we know is from European earthworms
  - Jumping worms seem to be able to outcompete European earthworms
- Homeowner/Landscaping



Earthworms have considerable capacity to change the nature of their environment to suit their survival. Ecological requirements (moisture, temperature, and food supply) greatly influence the rates of reproduction and growth


Worm Front moving through a hardwood stand


Earthworm presence changes carbon, phosphorus, and nitrogen cycling
Invasive earthworms have been shown to affect forest floor dynamics by changing understory plant and faunal communities.

Earthworm infestations/presence increase the severity of invasive species

Interestingly, the most dramatic effects of invasive earthworms on soil processes have not been reported from areas inhabited by native earthworms, particularly where soils and vegetation are undisturbed.

Jumping Worm Impacts

- Reduction in native millipede survivorship
- Impacts other earthworms
- Changes soil structure
- Big impacts to landscaping/gardening and nursery industry
  - Reduction in fertility of soil
  - Impacts to growth and survival of landscape plants

JumpingWorm Management

- Little options available to control existing invasions
- Focus on spread prevention practices

Crazy Worm Spread

- Cocoons hard to detect
- Adults not seen until later in the growing season
- Spread via soil, compost, mulch, potted plants, contaminated equipment, etc.

Prevention of local invasions and restoration of earthworm invaded sites receive little attention or merit as activities of earthworms are often considered beneficial in agricultural soils, and there is little incentive to eradicate them.

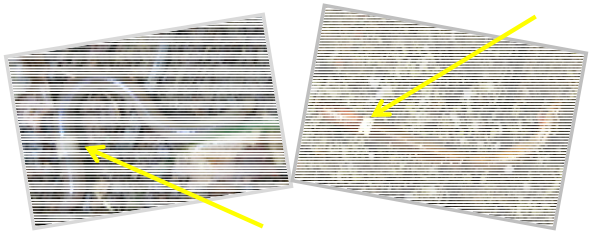
Therefore the focus should be on preventing new invasions/introductions to ecosystems where they will have adverse impacts.

Best Management Practices

- Arrive clean, leave clean. Clean soil and debris from vehicles, equipment, gardening tools and personal gear before moving to and from a work or recreational area.
- Watch for jumping worms and signs of their presence. If you find them, report them
- Educate yourself and others to recognize jumping worms.
- Only use, sell, plant, purchase or trade landscape and gardening materials and plants that appear to be free of jumping worms.
- Only sell, purchase or trade compost that was heated to appropriate temperatures and duration following protocols for reduction in pathogens

Jumping Worms in the Midwest

The first population was identified in Wisconsin in 2013



Historic records of Jumping worms in Illinois

- Three species
- A. diffringens*
- A. hawayensis*
- A. hupeiensis

* - found only in greenhouses and not in the wild

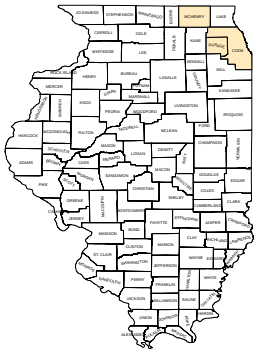
Amynthas hupeiensis

- Population 'well established' in the Champaign-Urbana area*

- Zaborksi and Gittenger

Jumping Worm

- First reported in late July, 2015 in DuPage County
- 3 counties (7 populations) confirmed in IL in 2015



Long term questions

- Do crazy worms affect the long-term canopy structure?
- Where can we expect them to go?
- Where do we think they are?
- What is their phenology and physical constraints?
- Are there any control agents?
- Can we restore forest vegetation without addressing earthworm invasions?

Short term response

- Change practices
- Limit movement
- Educate
- Report

Crazy Worm Reporting

- Please report any suspect infestations to
  - University of Illinois Plant Clinic (plantclinic@Illinois.edu)
  - IDOA (scott.schirmer@Illinois.gov)
  - University of Illinois (cwevans@Illinois.edu)