



Integrating Jumping Worm Monitoring into FEMC's Forest Health Monitoring Protocol

- Forest Ecosystem Monitoring Cooperative | FEMC 2025

What are Jumping Worms

- Invasive *Amyntas* and *Metaphire* spp. from East Asia.
- Live in the top few centimeters of soil — rapidly consume leaf litter.
- Distinctive smooth, milky clitellum encircling the entire body.
- Active, thrashing movement when disturbed.

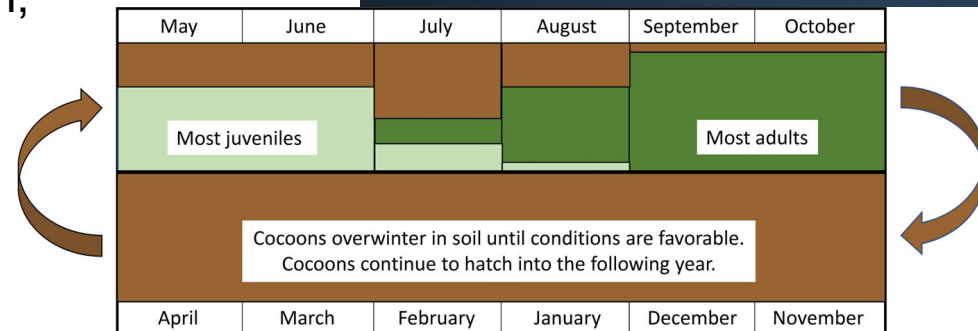
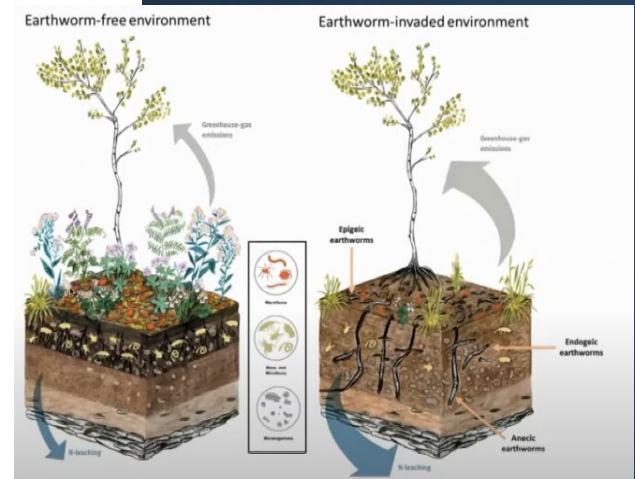


Photo credit:
David Degner



Why Jumping Worms Matter

- Remove forest floor organic matter within a single season.
- Leave bare, granular “coffee-ground” soil with poor structure.
- Reduce nutrient retention and disrupt mycorrhizal networks.
- Hinder seedling establishment — notably sugar maple and perennial forb declines
- Impacts nutrient cycling, regeneration, erosion
- Impacts microbial and mycorrhizal diversity



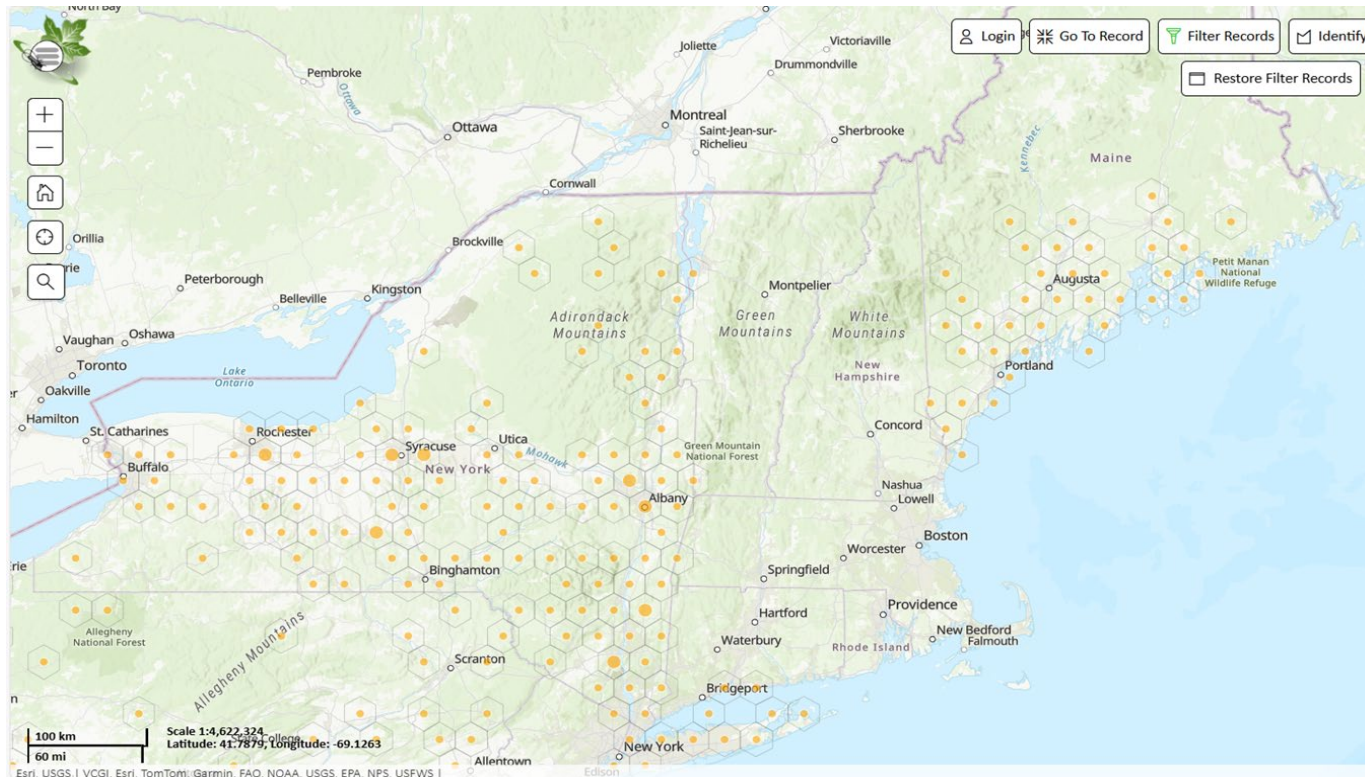
Know Your Jumping Worms



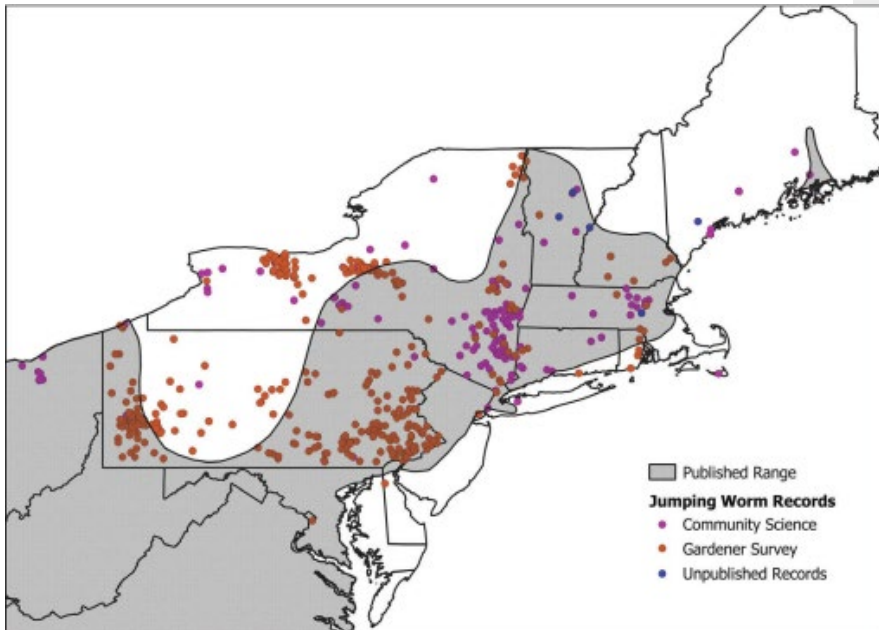
Chang et al. (2021)

Knowledge Gaps in the Region

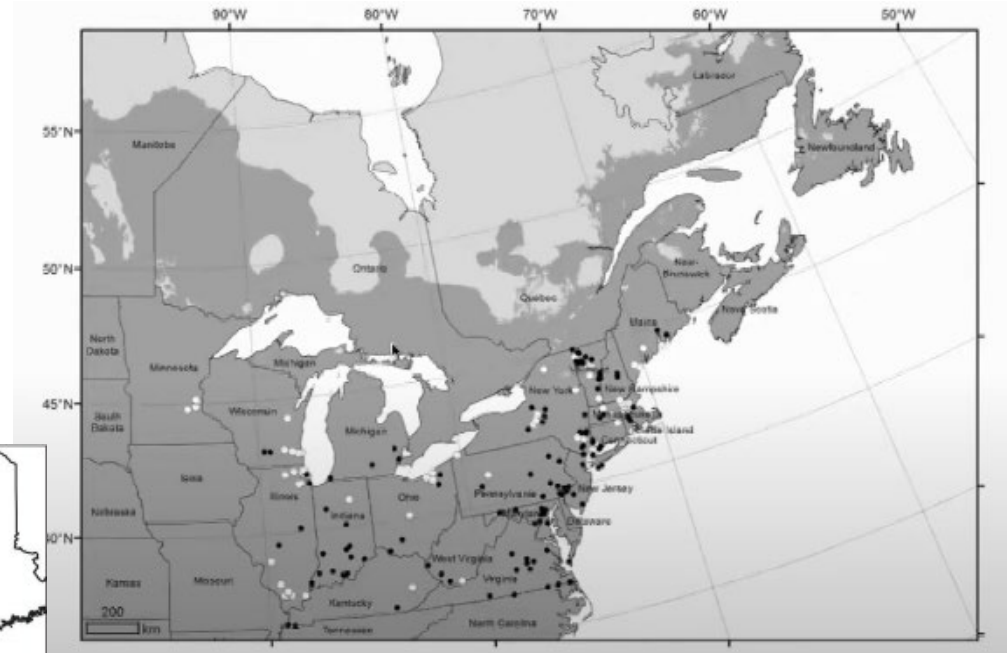
- Few systematic forest-based surveys in the Northeast.
- Limited data linking worm presence to forest health metrics.
- Unclear northern range limit and habitat preferences.
- Reports largely from residential or disturbed areas (via iMapInvasives) not forests.



Existing data on distribution



Johnson et al 2021

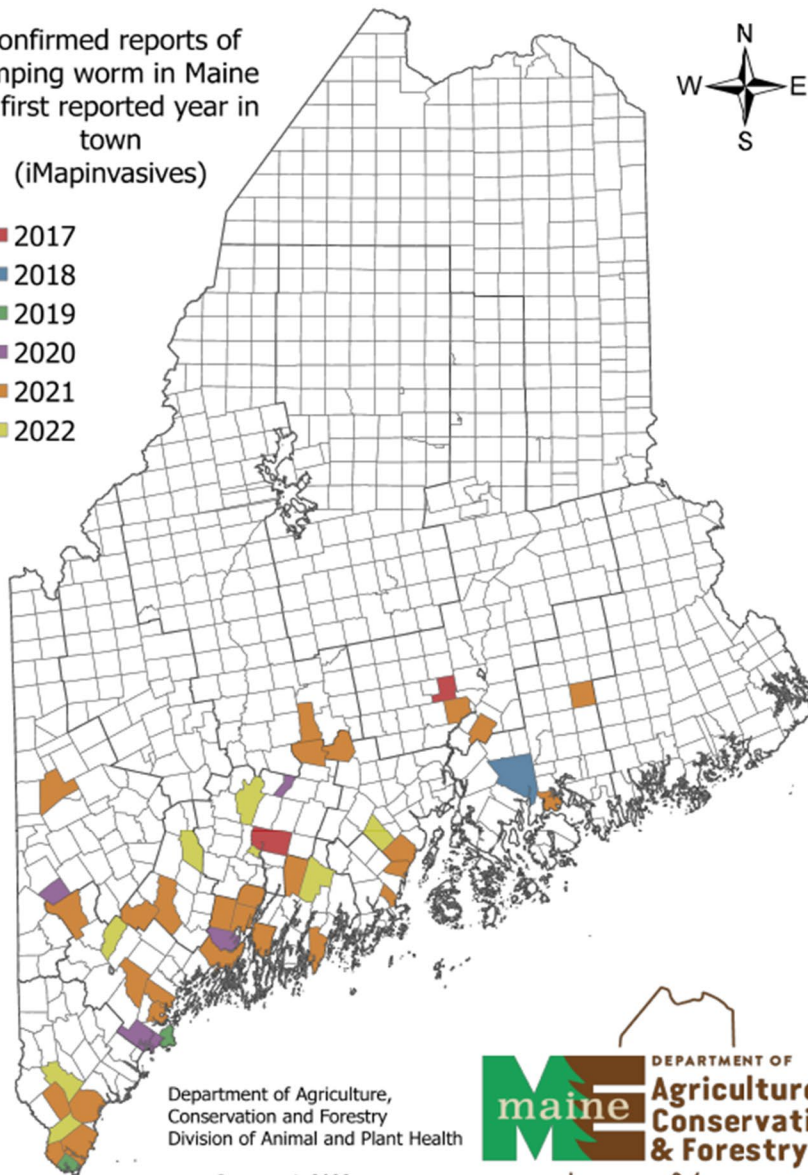


Moore et al 2018

Confirmed reports of
jumping worm in Maine
by first reported year in
town
(iMapinvasives)



- 2017
- 2018
- 2019
- 2020
- 2021
- 2022



Department of Agriculture,
Conservation and Forestry
Division of Animal and Plant Health



January 4, 2023



Jeff.Harriman Path: O:\MFS\FHM\Assin jumping Worm\Amyntes Worms in Maine.aprx

Long-term Monitoring

FHM Program



196 plots
throughout New
England and NY



12 Seasonal
Technicians



Browse, invasive
plants, regeneration,
crown health metrics,
pests/pathogens/
special damages.



FEMC Forest Health Monitoring Network Species Composition

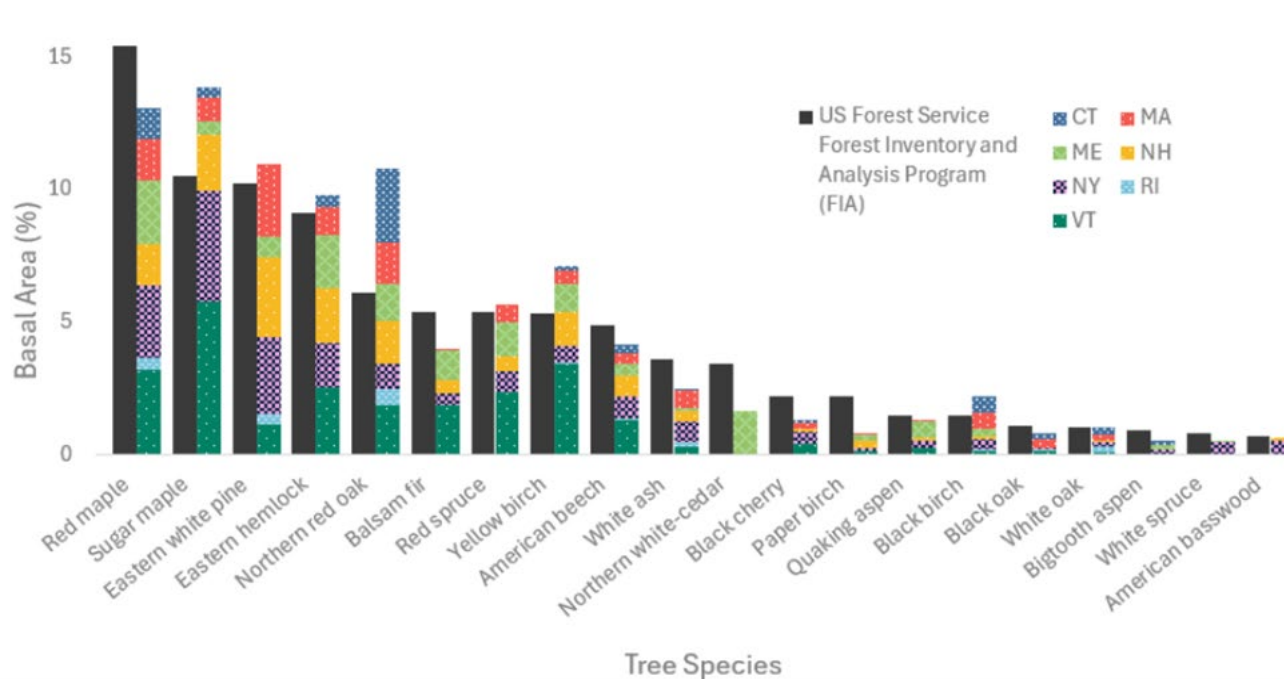
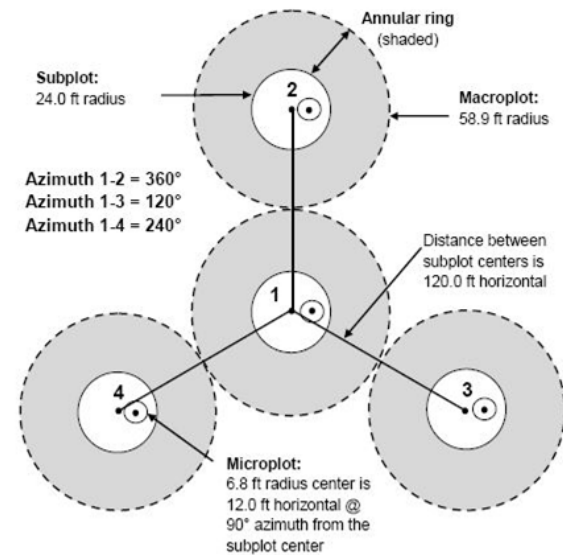
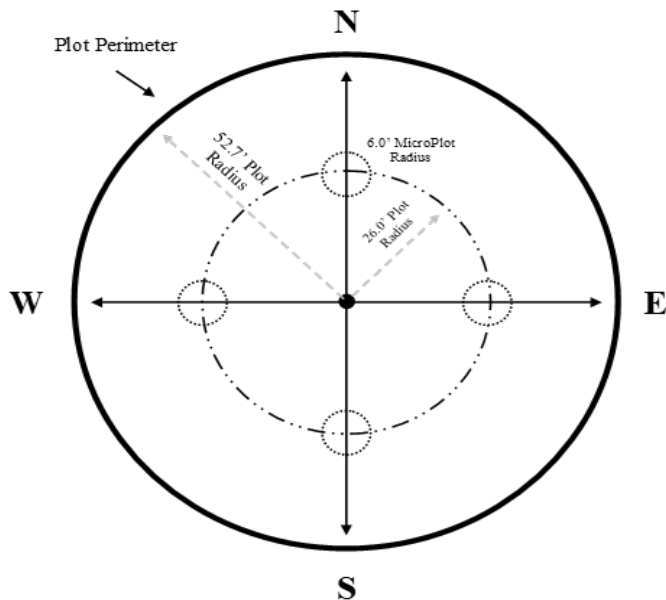


Figure 2. A comparative analysis between FEMC FHM and the USFS FIA species compositions, showing percent live species composition by basal area for CT, MA, ME, NH, NY, RI, and VT from both the FHM 2024 season and the FIA 2022 season (USFS 2022) (only trees with ≥ 5 inch DBH were included).

- Biased towards unmanaged forests
- Possible over representation of red oak and sugar maple forests
- Fairly close match with FIA

Field Protocol Overview

- Plot layout
- Methods: visual survey
- Data collected: presence/absence
- Minimal added time to FEMC routine sampling.

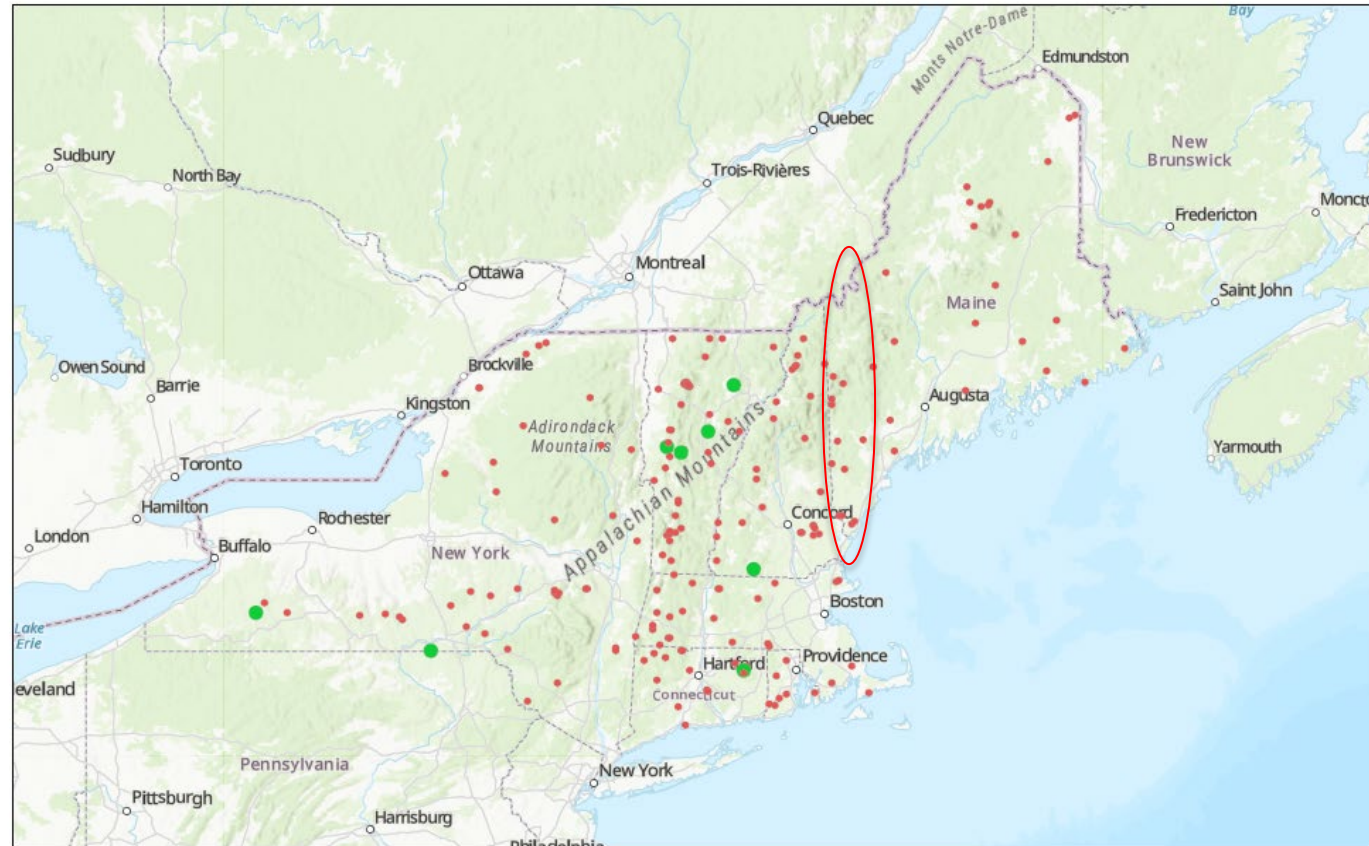


Project Goals

- Assess distribution and prevalence of jumping worms in forested areas
- Provide baseline for management and future monitoring
- A description of the estimated distribution of jumping worms based on the plot monitoring data
- Make recommendations for a wider jumping worm detection effort

Preliminary Findings

FHM2025 Jumping Worms Presence/Absence

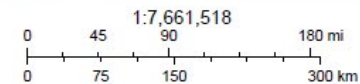


10/14/2025

FHM 2025 Jumping Worms

- Present
- Absent

World_Hillshade



Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Esri, USGS

- 8 out of 171* plots had jumping worms present.
- *only 10 of 35 plots in Maine were surveyed in 2025

Interpretation & Implications

- Variety of forest types and locations. Some plots in VT far from roads
- Possible spread pathways (runoff, recreation, machinery, etc.)
- Environmental correlates: soil type, moisture, forest type, adjacent to agriculture?
 - ******(if we have time to do some of this analysis)
- Potential forest impacts: regeneration, nutrient cycling, biodiversity

Next Steps

- Continue annual monitoring at FEMC sites
 - Suggestions on how to expand?
- Expand collaboration with partners and citizen scientists
- Analyze long-term trends and ecological correlates
 - Will we find them in the same plots year to year?
- Share data and findings through FEMC's network

Questions