

Earthworms on Long Island Lara Pomi, Stony Brook University

February 2005

(comments by Marilyn Jordan added)

Introduction

Very little is known about earthworms on Long Island, and the earthworms are a non-native species to Long Island (Edwards and Bohlen 1972). During the last glacial period, any earthworms that may have been present on the island were destroyed (Edwards and Bohlen 1972). Presently, earthworms may be doing great damage to local ecosystems through loss of nutrients to the soil. Earthworms may even root up shallowly rooted plants. The purpose of this project was to determine what species of earthworms are present on Long Island, where these species are located, and what type of environment they seem to prefer. All collections were done in the fall when the earthworms are sexually mature (Edwards and Bohlen 1972). This was necessary as the earthworms can be best identified when the clitellum is present during sexual maturity.

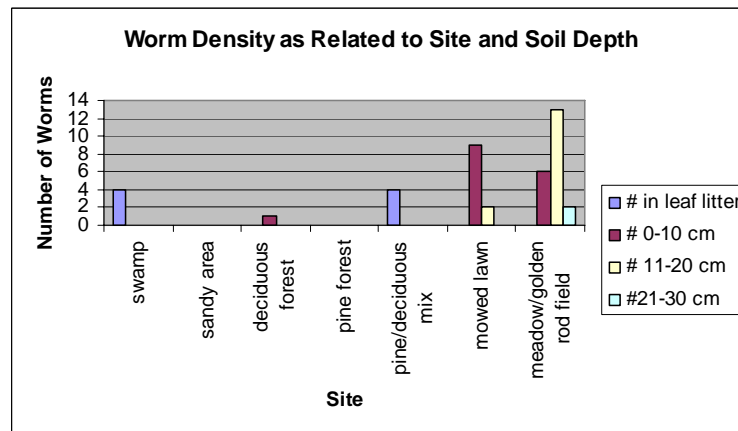
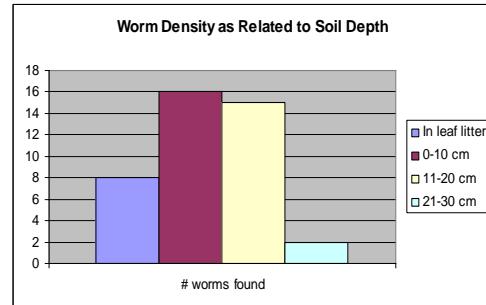
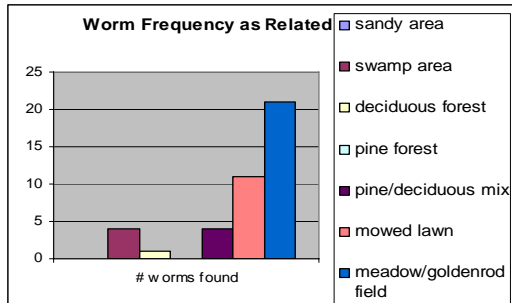
Methods

Nine sites in Suffolk County were sampled. These sites are Connetquot State Park, Caleb Smith State Park, Southaven County Park, Blydenburgh County Park, the David Weld Sanctuary, the Orr Preserve, St. John's Preserve, Calverton Ponds Preserve, and the Thorne Preserve. At each site, several locations were chosen for soil examination for the earthworms. Sites were initially marked on trail maps and using a GPS system and were subsequently plotted on topomaps. Holes were dug until a dry sandy layer was reached at each site. Worms were counted in the layers they were found in, mainly being the leaf litter, 0-15 cm and 15+ cm. Soil type and moisture was recorded as was the site type, general vegetation and predominant plants in the area. Pictures were taken of all sites and predominant plants for identification. Worms were collected and subsequently preserved in rubbing alcohol for later identification. Worm identification was performed using a dissecting microscope and the Minnesota Worm Watch website. The worms will have further identification confirmation performed at a later time.

Results

Worms were found in five different sites at different locations within the sites. Worms were found at Connetquot State Park, Caleb Smith State Park, Blydenburgh County Park, the David Wells Preserve and the Orr Preserve. *[No worms at Southaven County Park, St. John's Preserve, Calverton Ponds Preserve, and the Thorne Preserve, but additional searches may be warranted. For example, I found worms in wood chips immediately outside of St. John's Preserve, and landscaping at Southaven Co. Par may have introduced worms in areas Lara Pomi did not sample].* Worms found in the leaf litter were found in swampy areas and pine/deciduous mix areas. Most of the worms (75.61%) were found in goldenrod meadows and mowed lawns at the sites. No worms were found

in sandy areas. Six species of worm were tentatively identified, including *Allobophora chlorotica*, *Aporectodea icteria*, *Bimastos*, *Dendrodrilus rubidus*, *Lumbricus* and *Dendrobaena*. All species of *Bimastos* were found near a pond on a mowed lawn at Caleb Smith State Park. *Allobophora chlorotica* was found at two locations on Long Island one of which was found in leaf litter and the other found approximately 10 cm in the soil. *Aporectodea icteria* were found in swampy conditions in the leaf litter. Both *Dendrodrilus rubidus* and *Dendrobaena* were found 14-18 cm in the soil in a goldenrod field that was once a farmed area. All tentative *Lumbricus* identifications were found in the same area as well.



Analysis

During the course of the field work, it became apparent that many of Long Island's soils are sandy. [MJordan: *LI is formed from glacial moraine and outwash. Soils on outwash are usually coarse, sandy, well drained. Soils on moraine are variable and range from sands to silt loams and even some clay loam*] No worms were found in these soils, suggesting that perhaps the sandy soils are too abrasive or do not retain much water, as earth worms need moist areas since they have poor water retention (Edwards and Lofty 1972). It was apparent that the worms were in places that were either areas of farming, areas where topsoil was brought in, or fishing areas. [*worms on LI so far seem to be associated primarily with landscaping, gardening & cultivation, and introduction of fill/topsoil, rather than fishing*] Both mowed lawn sites that yielded worms were near ponds where fishing occurred [but sites had been landscaped]. The goldenrod meadow was near a pond as well and topsoil had been brought into the site. The goldenrod area in Caleb Smith State Park was an old planted field. This suggests that the worms were

added by farmers [*note: and/or added in landscaping materials. M. Jordan*]. The worms found in the leaf litter were primarily in swampy areas. This seems to be from too much water in the swampy areas. The worms may actually drown if there is too much water, so in the swampy areas they have taken to the leaf litter to get a good balance of moisture in the area (Lee 1985). The pine/deciduous forest that yielded worms was unusual in my findings. Since the worms were only found in the leaf litter, it is hard to determine why they were there since no other pine sites or pine/deciduous sites yielded worms. There are not enough results currently on the species of the worms to make any definite correlations with preferred habitat type.

Future Plans

Since much of this work can only be done in the fall because of the need for the worms to be sexually mature to identify them, I plan on experimenting with earthworms and soil/moisture preferences in the spring through controlled terrariums. I hope to gain a better understanding of the influence of soil type on worm habitats as well as the effect of moisture on worm habitats.

References

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2. Edwards, C. A., Lofty, J. R. Biology of Earthworms. London: Chapman & Hall, 1972.
3. Lee, K. E. Earthworms: Their Ecology and Relationships with Soils and Land Use. Australia: Academic Press, 1985.
4. Hale, Cindy. Minnesota Worm Watch. 1 Dec 2004.
<http://www.nrri.umn.edu/worms/default.htm>.