

Chautauqua Watershed Notes
From the Chautauqua Watershed Conservancy
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Earthworms may benefit your garden but not our forests
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For the Chautauqua Watershed Conservancy



A shovel full of soil reveals dozens of earthworms, which were introduced to New York from Europe and Asia. (Photo by Priscilla Titus)

Summer is here and many of us think of improving our soil at this time. I just processed my compost pile and I now have a barrel of nutrient- and humus-rich soil to squeeze in around my plantings throughout the yard and vegetable garden. Anytime I dig, I am amazed at the number of earthworms, grubs, and other critters I unearth. This made me wonder how many of these are native to the landscape and how many were introduced to the region by humans. I was somewhat surprised to learn that NO earthworms are native to this part of the country. I've moved around a bit and had previously learned that the majority of earthworms are European and Asian in origin, and are related to the extinction of many native earthworm species. In Oregon and Washington, for example, the native Oregon giant earthworm and giant Palouse earthworm live in the deep, moist, undisturbed soils of riparian forests, but are threatened by the destruction of their riparian habitat due to disturbances from agriculture and development, and due to changes in soil chemistry related, in part, to abundant introduced earthworm species.

But still, I was amazed to learn that there are absolutely no native earthworms here. Then again, the more I thought about it, the more sense it began to make. Due to our cold winters, most adult

earthworms die off in late fall after depositing thousands of cocoons with eggs. These eggs hatch in the spring as the soil warms and young worms emerge to repopulate the area. Any native earthworms that inhabited this area would have been destroyed by glaciers during the most recent Ice Age. Those earthworms that are present today came from Europe and Asia over the past 500 years.

One reason this is of interest is that introduced earthworms could have negative impacts on natural ecosystems by altering natural physical and biological components of these habitats. Recent earthworm colonization and activity is associated with profound changes in chemical and physical soils characteristics. The extent of the negative impact depends on the ecological interactions among the invaders, in addition to the interactions between other invasive and native species. In a recent study of the influence of earthworm invasion on soil microbial biomass and activity in surface soils of Allegheny northern hardwood forests in central New York state, researchers found that earthworm activity had mixed the natural soil layers that are characteristic of undisturbed forested areas, resulting in movement of organic matter from the forest floor into the mineral layers below.

The same properties that have inspired gardeners to value earthworms (aeration and mixing of soil layers enabling better infiltration of water and nutrients; rapid decomposition of organic matter which quickly returns nutrients to the soil), may be detrimental to the plant communities that colonized the region in the absence of earthworms. Forested plant communities are adapted to having a slowly decomposing leaf litter layer that protects the soils below from erosion, compaction, and moisture loss. Earthworms are voracious and can consume most accumulated leaf litter in one season. Earthworms also affect the important nitrogen cycle in the forest soil, disrupt fine root systems, interact with native invertebrates, and are related to many other changes that cannot be discussed here due to space limitations.

It seems that, on any topic I investigate, humans have inadvertently but quickly and often irreversibly altered a complex web of life that took eons to arrive at the sublime balance we observe. Invasive worms enter the forest primarily through horticulture, agriculture, and recreation. With this in mind, if you like to fish, please be sure to dispose of any extra bait properly and never dump it out on the ground or at the water's edge. If you plant trees and shrubs on your property, try to choose native species and examine the root balls for worms and destroy any you find, and also maintain a safe distance between your plantings and any nearby woodlots or forest edges. These small actions on your part can delay the invasion of our native ecosystems by non-native species, and can help maintain the integrity of our natural heritage.

The Chautauqua Watershed Conservancy is a private, not-for-profit, 501(c)(3) organization with a mission to preserve and enhance the water quality, scenic beauty and ecological health of the lakes, streams and watersheds of the Chautauqua region. Its urgent focus is to conserve the endangered natural shore lands of Chautauqua Lake, which provide fish and wildlife habitat and pollution filtering functions essential to a healthy lake. Only four miles (10%) of the lake's shoreline remains in a natural, undeveloped condition. The Conservancy is funded primarily through membership donations. Its 2009 annual membership campaign is currently underway. It is presently raising funds to conserve the Chautauqua Lake's most important remaining natural shoreline habitats, undertake programs to address the root causes of the conditions that fuel lake plant growth, and manage its preserves. Please contact the Conservancy at 664-2166 to join for 2009!