Earthworms In the Garden

By Carole Sewell

Denizens of your garden aerate, fertilize soil.

The other morning as I went out on my daily slug roundup, I came upon my first 16-inch nightcrawler. Having had only one cup of coffee, I took a quick step backward. Worms I understand, but 16-inchers get my attention. As I watched this specimen, it started retreating into the ground—from both directions. It turned out to be two very large nightcrawlers in the process of reproducing.

This set me to wondering about what else these jumbo, subterranean creatures were doing in my yard and garden.

One acre of soil may hold up to eight million earthworms. They go unnoticed unless a heavy rain or intense irrigation drives them to the surface at night, or if their castings (a fancy name for worm poop) mar your otherwise pristine putting green.

Earthworms are beneficial to the soil in many ways. Because of the physical and chemical effects of their castings, they modify the soil structure by breaking larger plates and blocks of material into fine granules. They also deposit digested organic matter and minerals along their burrows, which provides a rich source of nutrients in the area where plant roots can easily access them. The types of worms that make permanent vertical burrows, such as nightcrawlers, leave their castings on the surface, where they benefit the soil by providing nitrogen in a usable form for other organisms that decompose organic matter on the soil surface. This interaction stimulates accelerated decomposition, which helps reduce thatch buildup.

Vertical or horizontal burrows improve the soil's porosity and moisture-holding capacity by up to 400 percent. As these burrows penetrate the topsoil and downward into the subsoil, they increase the soil-to-air ratio by 8 to 30 percent.

Considering the benefits these creatures provide, it is amazing that so little consideration is given to the impact of pesticides on earthworms. There is little research into the chronic effects of pesticides on earthworms, but this is something to think about when you set out to eradicate any garden insect pests.

Toxicity to earthworms varies among types of pesticides. Two groups of these products are extremely toxic to earthworms and most other soil organisms. These categories are fumigants, such as chloropicrin, dichloropropane and methyl bromide; and vermicides, such as ammonium sulphate and mercuric chloride. Carbamate compounds significantly reduce worm populations. Such compounds as Baygon and Turcam cause paralysis in earthworms at normal dose rates. Organophosphates are a widely used class of turf insecticides. Of these, ethoprop is the most toxic to earthworms. Herbicides pose relatively little threat to worms.

Other research has shown that chemicals applied to fields and lawns may take shortcuts through worm holes and end up more quickly in ground water. This shortcut hazard only exists a few days a year, in most areas of the US, such as during heavy rainstorms that occur shortly after such herbicides are applied. Here in the Pacific Northwest, it is something to consider when applying chemicals to soil, given our weather patterns. It is another reason to be extra cautious when considering chemical garden products.

Garden earthworms are not to be confused with composting worms that are kept in containers. The nightcrawler, *lumbricus terrisitris*, is a burrower and will kill itself trying to burrow out of a worm bin. The composting worms, sometimes called "red wigglers," cannot tolerate temperature extremes and while they might survive in a compost pile, will die if left to their own in garden soil.

Worms are hermaphroditic, meaning that they possess both sets of sex organs. However, they still need to mate with another worm to produce offspring. The raised band that encircles the worm is actually a carrying case for its eggs. Once the eggs form, the band migrates along the worm's body and is then shed and the eggs left to hatch in the burrow.

Maintaining a healthy population of worms in your garden or lawn is easy. Just see that they have a moist, well-mulched habitat with plenty of decaying matter. Worms are hardy, have a high reproduction rate and can survive without us. Considering their beneficial actions, it is unclear if we could survive without their help. At the very least, they make our gardening endeavors easier.

Still, just in case there are even bigger worms lurking out there in my yard, I have left word with friends that if I suddenly turn up missing, please bring a backhoe and check carefully in the yard for suspiciously large burrow openings.

Calling all fishermen: Take your worms home!

As beneficial as earthworms and nightcrawlers can be for your garden, they can be equally disastrous for forest ecosystems. Earthworms that have been dumped onto the ground after fishing in a mountain lake or stream can multiply quickly and gobble up the layer of organic debris that typically covers forest floors. That layer nurtures the trees, shrubs and other plants that grow in woodland settings; without it, the health of native plant life declines rapidly.

In some states, such as Minnesota, the harmful effects of earthworms on native forests are already being discovered—and not much can be done to reclaim the forests once they have begun their decline. It's important, then, for fishers to bring their worms home and dump them in their vegetable or flower gardens, where they can do the most good—and the least harm.

photo by Jason Miller

Worms are hermaphroditic, meaning that they possess both sets of sex organs. However, this little guy/gal will still need to mate with another worm to produce offspring.

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One acre of soil may hold up to eight million earthworms. To keep their numbers healthy in your garden, provide a moist, well-mulched habitat with plenty of decaying matter.

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