Earthworms Are Movers and Shakers
by Vera Strader

Earthworms specialize in mixing, churning, and enriching the soil.
Sometimes called intestines of the earth, earthworms burrow through the soil processing bits of leaves, twigs, and other organic material while creating castings that help form nutrient-rich topsoil.

Earthworms were considered lowly, dirty creatures until Charles Darwin published his 1881 book," The Formation of Vegetable Mould, Through the Action of Worms." Darwin studied worms for nearly 40 years, spending immeasurable hours lying on his belly watching laboring earthworms. He estimated that each year earthworms can produce a whopping 18 tons of castings per acre, though some scientists today consider that number too low.

Three types of earthworms till our soil. Epigeic or red wigglers are favorites of worm composting enthusiasts. They toil near the surface breaking down mulch, manure, and organic debris. Endogeic worms loosen soil around plant roots and break down dead roots. Anecic worms or nightcrawlers are vertical burrowers, delving up to 8 feet in damp soils.

Nightcrawlers pull bits of vegetation deep into the soil creating tunnels for roots, water, air, and nutrients. Their castings, pulled to the surface, include soil particles along with digested organic material coated with mucous from their digestive tracts. These castings help form soil aggregates that assist air and water penetration into heavy soils. The mucus is also excellent food for bacteria, many of which are beneficial. Some studies indicate that casting-enriched soil helps plants resist pests and diseases.

Not only do earthworms play a fundamental role in decomposition, they are a key player in the food web, providing valuable food for birds, moles, and other creatures that are in turn eaten by larger mammals.

There are no native earthworms in areas that were under ice sheets during the last ice age. In our northern states and Canada, non-native earthworms threaten forests by breaking down the leaves and detritus on the forest floor. This material normally forms a fluffy layer called duff, a place for forest seedlings to grow and a habitat for many small creatures. The loss of duff also speeds rain runoff, allowing less time for moisture to seep into the soil.

The soils in other areas are usually populated by a mixture of native and non-native earthworms, many of which were brought by early European settlers. These worms appear to be working cooperatively with native worms to improve our soils.

Assisting Our Earthworms. We gardeners inadvertently do things detrimental to earthworms. We plow and dig, breaking up earthworm tunnels and disrupting countless beneficial microorganisms. Instead, we can condition new planting beds and remove

unwanted lawn with layers of newspaper or cardboard topped with generous amounts of compost. Instead of applying strong fertilizers to feed plants, we can feed the soil with compost, mulch, fallen leaves, and aged manures that in turn feed plants a more complete diet.

Pesticides too are risky for earthworms. If they don't directly kill the worms, they may concentrate in the worms' bodies. Rachel Carson first pointed out that earthworms concentrate DDT, passing along toxic doses to birds that consume worms. This worm trait is sometimes put to good use in toxic pollution cleanup and in sewage treatment.

Great garden soils are enriched by hard working earthworms but simply adding worms will not make for great soil. It is up to us to provide the conditions under which earthworms can thrive; that is clean, undisturbed soil and plenty of organic material for them to eat.

For more about earthworms, their many benefits, and how to set up a worm composting bin, read "The Earth Moved, On the Remarkable Achievements of Earthworms" by Amy Stewart.

Rather than tilling her garden, Vera Strader applies an abundance of aged compost and mulch.