Let me introduce **Lumbricus terrestris**, or LT. LT is one of the top “soil scientists” in the world. Well, there are far more than one of these scientists. There are actually about 2,700 different kinds of these soil scientists and countless numbers of each kind. These soil scientists have long, segmented bodies, few hairs and no eyes or feelers. *Can you guess what they are?* They are not that hard to find. In an acre of typical soil (so not unlike the soil upon which your house or school might be located) there are more than a million of them. About 100,000 in an average back yard! Let’s riddle it: *What has no eyes, no arms or legs and, after a hard rain, can be found scattered on the surface of the ground rather than burrowed in it?* Earthworms of course. L.T. is a worm!

Picture what it’s like to spend a day with L.T…

Lumbricus is famished; yes, always hungry, hungry, hungry. Even though he often eats his own body weight in food each day—and did so yesterday, and the day before—he is famished. And so he’s off to find breakfast. Clenching his muscles, pulling in his tail end, inching forward, burrowing into the soil, L.T. cannot help but feel he is being watched. And indeed he is.

The soil, formed from rocks and decaying plants and animals, surrounds the Earth like the peel on an orange. It contains air and water, as well as minerals and living matter. L.T. is one of many earthworms and other organisms that inhabit the soil. L.T. is on high alert for the real thugs in the neighbourhood—there are some hairy giants that burrow into the soil and would squish or eat him in an instant. Moles and shrews are a couple of these big hairy beasts that would really enjoy him for breakfast. The other day he came across a very large cave in the soil—a rabbit hole most likely.

On a daily basis L.T. senses the proximity of critters his own size such as woodlice, beetles, centipedes, slugs, snails, and ants. He always enjoys meeting snails—he feels like a real speed demon in comparison—and cannot believe how many teeth they have (some 14,000!). There are lots of mites in the soil too. L.T. has always been fascinated by mites. Mites are part of the arthropod family so they have arms and legs that are hinged with joints. What would *that* be like!? While mites have no backbone (L.T. is pretty comfortable with being boneless), they do have an external skeleton. The mites chow down on fungi. They work hard for food, scraping and consuming bacteria and fungi off the root surfaces. L.T. knows that these critters compete with him for food; they also feed off the organic material in the soil (decaying plants, for example) to survive.

L.T. chews away at some decaying organic matter in the soil—a dead plant or animal perhaps. As he does so, he cannot help but sense the wispy tickle of a story escaping. Where did this bit of leaf come from? What did this leaf experience? From where did it fall? L.T.’s dream is broken, however, when he begins to feel too wet, the moisture in the soil is getting to be too much. He needs to escape to the surface or he’ll drown. Struggling toward the surface he begins to sense some light. It seems like an eternity but he does reach the surface, passing mites that seem to be forever in his way. He doesn’t eat the mites, though. Instead L.T chews up leaves, stems, dead roots, and dead animals in the soil. He is used to the soil filling with water like this—soil is a great absorber of water. And, well, waste too. That’s another thing soil does. It neutralises and filters pollutants. It stores tons of water (as much as 1673 tonnes of water per acre actually). As they forage for food, soil creatures create channels in the soil that are important for aeration and drainage.

L.T. can sense the surface of the soil approaching, but then his path is blocked momentarily. Whatever it is just will not budge. L.T. attempts to burrow his way into it. No luck. A root. What a pain. Roots get in his way but, of course, they also loosen the soil and help him burrow in other ways. By loosening the soil, roots allow oxygen to penetrate, which is essential for the survival of animals living in the soil, L.T. included. Roots also keep the soil together—L.T. has heard of places where the roots have disappeared and, as a result, the soil has just washed away in heavy rain.

At last L.T. manages to escape from the wet pool of muck that used to be his perfect soil habitat. L.T. waits, on edge, to return into the dark. Sunlight is the enemy. It dries up his skin, preventing him from breathing. He cannot hide. He hopes there are no birds around. Suddenly, feeling something squeezing his sides, he curls and wriggles in response. He is dropped. He is still alive, though. Again, he feels pressure at his head and at his tail. This time he is being stretched. Ouch! The light is starting to be unbearable. He is sure it is all over, he thinks he’s going to have hearts attack (he has 5 of them after all). His life flashes before his eyes. But suddenly he falls into softness. He feels the comfort of soil around him again. Somehow he has returned to the dirt. Phew. Whatever it was, this has happened to him before. He gets scooped up, squeezed and put back. He has heard that soil makes excellent mud pies and, well, he often gets discovered in the process.

Around him he is surrounded by life he cannot sense. He is surrounded by life that is often no bigger than the head of a pin, and often much *much* smaller. Yeasts, bacteria, fungi, protozoa, and roundworms are some of the microscopic creatures that live with him in the soil. Oh boy—the bacteria seriously outnumber the worms. In one gram of soil there are 100,000 to several billion! What’s even smaller? Well in a tablespoon of soil there are about 50 billion microbes! Nematodes and protozoa swim in the film of water that surrounds soil particles. They feed on bacteria. Mites eat fungi and fungi decompose soil organic matter. Actually, fungi and bacteria play very important roles in maintaining healthy soil. They are decomposers that break down organic materials to form detritus and other breakdown products. Nutrients are released into the soil in the process that are really important for plant growth. Detritus is what L.T. eats and digests. L.T. relies, thus, on the fungi and bacteria. He never remembers to thank them.