



**Soil
Critter
Field
Guide**

BACKGROUND INFORMATION: CRITTERS

Use this Soil Critter Field Guide to identify the organisms that you find during your soil explorations.

Invertebrates

Animals that lack a backbone are called invertebrates. The invertebrates represent 95% of all of the animal species on Earth. Insects, spiders, snails, and worms belong to the invertebrates. All of the animals in this Field Guide are invertebrates.

Arthropods

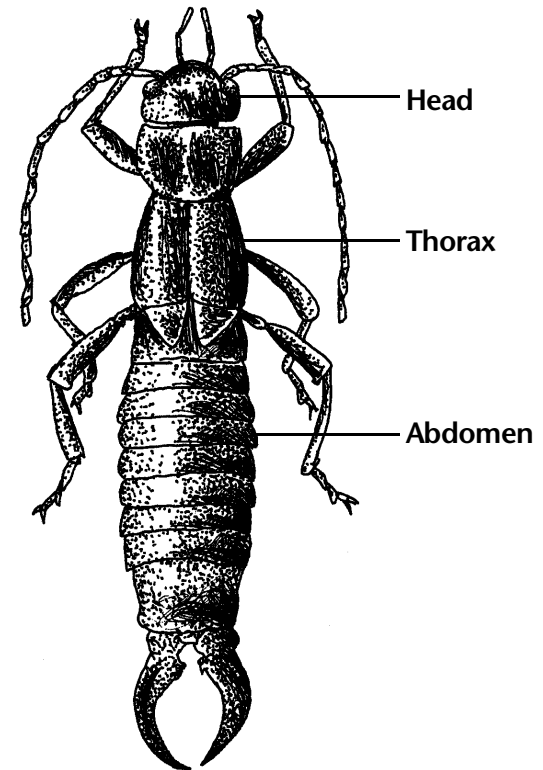
Arthropods have jointed legs and a hard outer skeleton called an exoskeleton. They include groups such as the insects, arachnids such as spiders, crustaceans such as crabs and lobsters, centipedes, millipedes, and a few other less familiar groups. An exoskeleton gives great protection, but it doesn't come in one-size-fits-all. As an arthropod outgrows its skeleton, it sheds the old one in a process called molting and grows a bigger one.

Insects

Insects are arthropods that have three body regions: a head, a thorax, and an abdomen. They have one pair of antennae on the head and they have six legs that are attached to the thorax. Most insects have wings, though some do not. The life cycle of an insect may follow one of

two general patterns. Insects such as butterflies, ants, and beetles undergo a complete metamorphosis that involves four steps. They begin as an egg, hatch out, and live for a time as a larva. Next comes the pupa stage, in which they go through internal changes until they emerge in their adult form. The other type of life cycle, which insects such as grasshoppers and cicadas follow, involves more gradual changes from egg to adult. There are about one million named insect species in the world, but many more undiscovered species exist.

Insect Body Parts



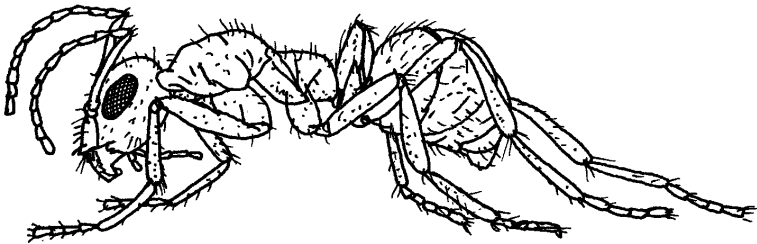
Ant

AVERAGE SIZE: 7 mm

COLOR: Pale yellow, reddish, all shades of brown, black

HABIT AT: Oak forest, sand dune, backyard

Ants are insects that may be pale yellow or reddish to all shades of brown or black. Ants have a thin waist and the head is often modified according to function. For example, soldier ants have huge jaws. Ants are known for their complex social organization—they live, work, and raise young together in colonies. Ant nests are made up of a network of tunnels that are often underground. Some colonies are like huge cities with thousands or even millions of ants living there. As ants work, they mix up the soil and enrich it with new nutrients. Ants bring soil particles to the surface and carry their food down into the soil.



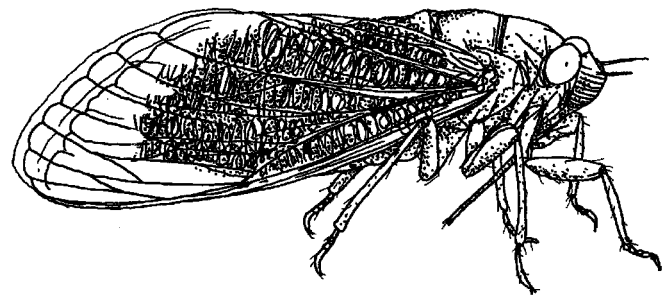
Cicada

AVERAGE SIZE: 3 cm

COLOR: Young: light brown to white; **Adult:** black or black and green

HABIT AT: Oak forest

Most adult cicadas are large, colorful insects with large, transparent wings, and bulging eyes. Females lay eggs in twigs. When the young hatch, they fall to the ground and burrow into the soil. Young cicadas live underground and have large front legs for digging. Lots of insects spend at least part of their lives in soil, but periodical cicadas win the underground endurance record. Young cicadas stay underground sucking plant juices from roots for one to 17 years before emerging as adults. When they are ready to hatch into adults, they will dig a hole out of the soil and climb up on a tree. There they will shed their skin and spread their wings. Most adults live for only a few weeks, which is just long enough to mate and lay eggs. Adult cicadas are the loudest insects. They make a distinctive buzzing sound that can be heard for miles.



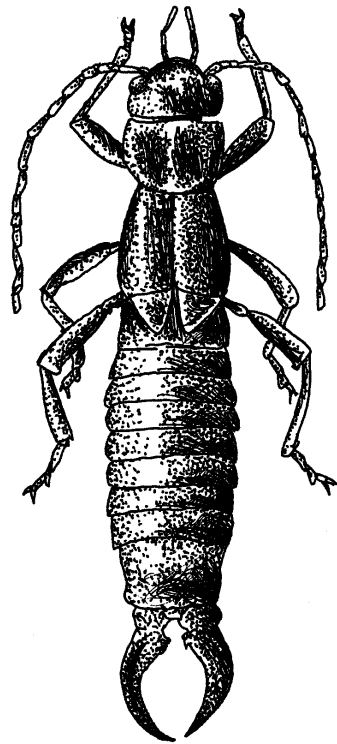
Earwig

AVERAGE SIZE: 1.5 cm

COLOR: Dark brown or blackish-brown

HABIT AT: Backyard

Earwigs are distinguishable by the pinchers on their abdomen. They are dark brown or blackish-brown insects with a flattened body, pale legs, and thread-like antennae. They are nocturnal and spend the day hiding in dark places. They eat live plants, decaying vegetation, fungi, pollen, and some insect prey. Earwig mothers are exceptional, especially for insects. After laying about 30 eggs, a female earwig seals herself inside an underground nest for the winter. During this time, she licks her eggs over and over to keep them clean. After the babies hatch in the late winter or early spring, she protects them and even feeds them from her own mouth.



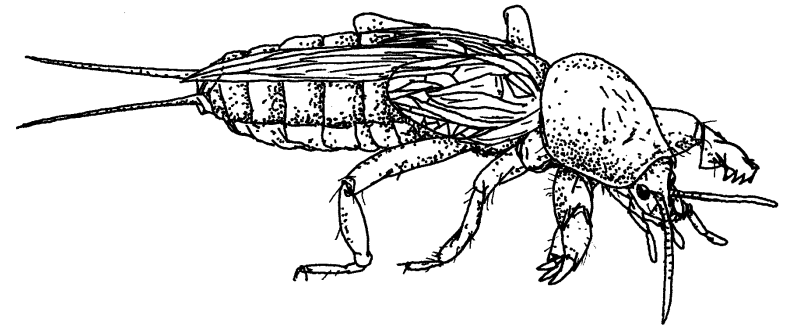
Mole Cricket

AVERAGE SIZE: 3 cm

COLOR: Reddish-brown, with dark brown or pinkish-brown markings

HABIT AT: Damp, sandy soils

This type of cricket is much less common than black field crickets. Mole crickets slightly resemble true crickets, but they have front legs shaped like shovels. The mole cricket likes soft, sandy soil that must be damp. They seem to like the habitat conditions at golf courses due to the sandy soils, watering conditions, and types of grass. Mole crickets are first-rate diggers. They “breast-stroke” their way through soil and make long, winding tunnels. In fact, their holes can be as much as a half-inch in diameter! They are nocturnal and feed on roots and seedlings or worms and grubs. Mole crickets do not jump, but some species can fly. Male mole crickets construct elaborate chambers that amplify their singing to attract females. On a clear night, their songs can be heard up to one-half mile away.



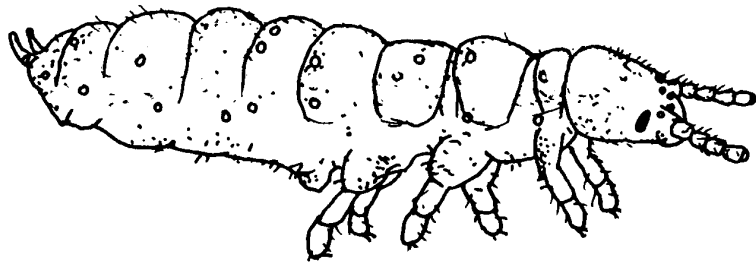
Springtail, Springing and Nonspringing

AVERAGE SIZE: .5 mm

COLOR: White

HABIT AT: Many types of moist soil

Springtails are wingless insect relatives that live on the surface or under the soil. Springing springtails are excellent jumpers. If you see a tiny white spot jumping on the surface of the soil, chances are it is a springing springtail. Nonspringing springtails live in deep soil and have no room to fling, so they have very short tails (pictured). Springtails sometimes live together in groups called herds. Chemicals in their bodies attract other springtails. Springtails graze on plants and mold among the soil particles. To find a springtail, slowly move freshly dug soil through your hands. You will see these little, white, long, skinny critters quickly climb back into the soil.



BEETLES

Beetles are insects whose front wings are modified as hard wing covers. Most have a second pair of wings for flying that are folded underneath the wing covers. Beetles go through complete metamorphosis and the larvae often eat very different foods than the adults eat. Beetles are the most numerous group of insects, with over 350,000 species already named.

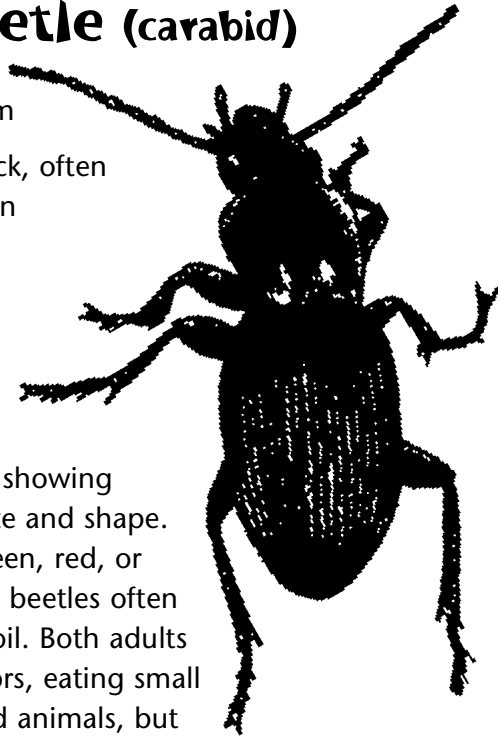
Ground Beetle (carabid)

AVERAGE SIZE: 1.5 cm

COLOR: Brown or black, often with a metallic sheen

HABIT AT: Oak forest, marsh, backyard

These beetles are dull or shiny, brown or black insects, often with a metallic sheen, showing lots of difference in size and shape. Some species have green, red, or white markings. These beetles often lay their eggs in the soil. Both adults and larvae are predators, eating small invertebrates and dead animals, but some groups also eat seeds. Their legs are adapted for running fast, although in some they are modified for digging. Most species spend their lives hunting on the ground, but some hunt prey in trees and shrubs. Some types produce a foul-smelling chemical to repel their enemies. The predatory larvae of one group, the tiger beetles, dig deep burrows and wait at the openings to catch passing insects with their powerful jaws.



June Beetle Grub

AVERAGE SIZE: 3 cm in length, 2 cm diameter of curled grub

COLOR: White

HABIT AT: Backyard

June beetle grubs are beetle larvae that live underground and look like white C-shaped caterpillars. There are more than 200 known species of June beetles in North America. All of them live underground for two to three years as larvae, feeding on living plant roots. These grubs spend most of their time in one place, eating and eating and eating. Look for brown patches of grass in an otherwise green lawn. Chances are there is a grub eating the life out of those plants' roots. Dig about two to four inches into the soil and you should see them. June beetle grubs are an important food source for many birds, small mammals such as shrews, and various predacious arthropods such as spiders and centipedes. After metamorphosis, the adult June beetle lives above ground and feeds on the leaves of many plants. The adults are often found clinging to window screens and flying near bright lights at night around the month of June.



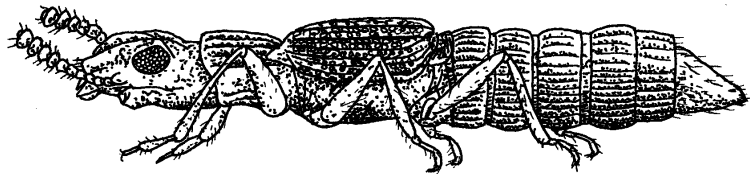
Rove Beetle (staphylinid)

AVERAGE SIZE: 2 cm

COLOR: Black or brown

HABITAT: Sand dune, oak forest, marsh

Rove beetles generally are black or brown insects with elongated bodies and short wing covers that expose the abdomen. They may have red, white, or metallic markings, or highly textured surfaces. They may be covered with hairs. Rove beetles can be predators, scavengers that feed on dead organisms, or fungus eaters. They may live underground both when they are young and as adults, and they usually eat similar foods during both life stages. Many lay their eggs near dead animals or other decomposing material. Most adults can fly, and some species are active during the day while others are active at night or at dusk. Some rove beetles resemble ants and live in ant nests, preying on weak individuals. In some cases, they can even deceive the ants well enough to be fed by them. This is one of the largest groups of beetles, with over 45,000 species named worldwide.



ARACHNIDS

Arachnids are arthropods with eight legs, one or two body regions, no antennae, and no wings. Included in this group are spiders, Daddy-long-legs, scorpions, pseudoscorpions, mites, and ticks. Some arachnids have silk glands that they use to spin webs or egg sacs. Nearly all arachnids are predators, and some use poison to paralyze or kill their prey.

Mites

Mites are tiny arachnids, but instead of two distinct body regions, theirs are fused into one. Examples of mites include ticks and spider mites. They are the most abundant of the arachnids, and they live in many different habitats. Below are two kinds of mites that live in the soil, but you most likely will not be able to tell them apart without a microscope.

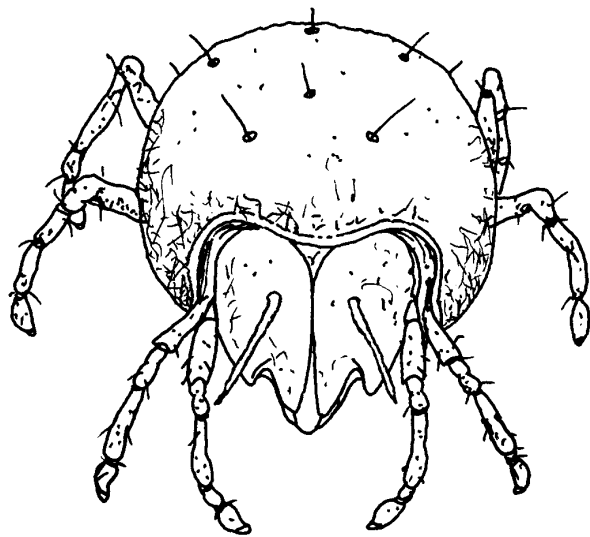
Oribatid Mite

AVERAGE SIZE: 2 mm

COLOR: Brown

HABIT AT: Forests, moist topsoil

Oribatid mites are the most common soil mites in forests. They are found wandering around the small cracks in the topsoil if it is moist. Some have hard, shiny shells and they may resemble tiny dark brown or black dots. They munch their way through the top layers of soil and eat plants, decaying leaves, and fungi. When magnified, oribatids look like helmets with legs.



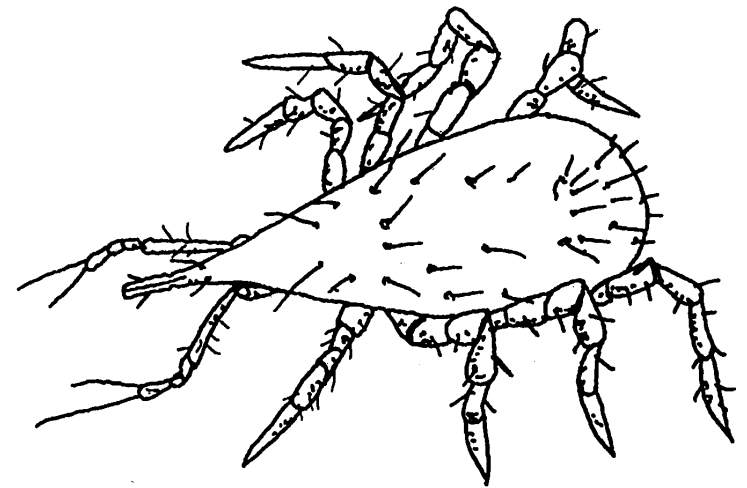
Predatory Mite

AVERAGE SIZE: 2 mm

COLOR: Brown

HABIT AT: Moist topsoil

Predatory mites live in most soils. Like oribatid mites, predatory mites are found in the small cracks of moist topsoil. They are voracious predators that scour the soil in search of smaller, less agile animals, like smaller mites and springtails, and insect eggs. When they are magnified, their long, pointed mouthparts can be seen.



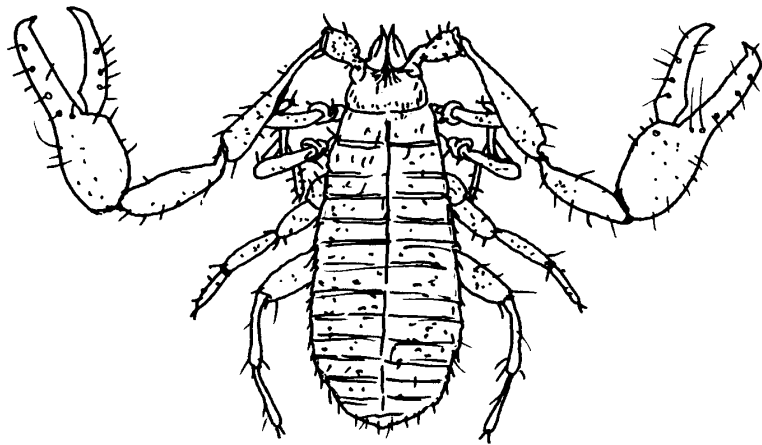
Pseudoscorpion

AVERAGE SIZE: 2 mm

COLOR: Brown

HABIT AT: Moist areas, like basements or in mulch

These critters look like small scorpions, or like a tick with giant pincers. They have one body region and large front claws, but no curvy tail or stinger. When two pseudoscorpions meet, they vibrate their claws. Scientists think that this behavior helps them identify others or ward off rivals. Pseudoscorpions are predators. They eat smaller animals like mites and springtails. They are pretty common but so small that most people don't notice them. To find one, try looking around the edges of a house or in a damp basement. Pseudoscorpions spend much of their time hunting under leaf litter or mulch, so look closely as you turn over a pile of old leaves and you may see one or two looking for lunch.



SPIDERS

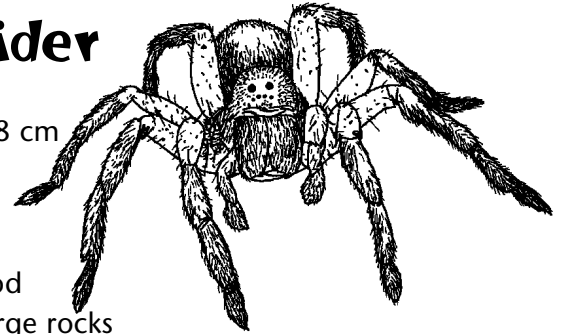
Spiders are arachnids with two distinct body regions. The eight walking legs and one pair of short hand-like legs are attached to the front body region. All spiders have spinnerets at the back of their body that they use to spin webs or egg sacs. There are more than 30,000 spider species on our planet. Many species of sac spiders, sheet-web spiders, and wolf spiders hunt on the ground and in leaf litter.

Wolf Spider

AVERAGE SIZE: 8 cm

COLOR: Light to dark brown

HABIT AT: In wood piles, under large rocks



Wolf spiders can be light to dark brown with hairs covering their bodies. Some wolf spiders live in underground burrows. Wolf spiders don't build webs, so look for dark and dry places for them to hide in wait for tasty creatures to eat. Look in wood piles and under large rocks that have been in one place for a year or more. If you can find their food, they will be close. Wolf spiders prey on both surface dwellers and underground critters that get too close to their burrow's entrance. They grab their prey, inject venom with their fangs, and then suck out the insides.

OTHER ARTHROPODS

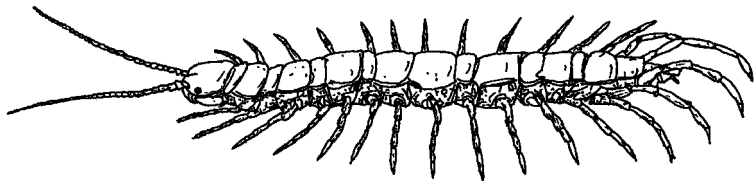
Centipede

AVERAGE SIZE: 4 cm

COLOR: Reddish-brown

HABIT AT: Backyard, under boards or rocks

Centipedes are arthropods with many body segments and one pair of legs on each segment. They have one pair of antennae. Centipedes are often reddish-brown to camouflage their body, but other species can have bright red tails signifying they are venomous and don't want to be bothered. Centipedes have reduced vision and most soil centipedes are blind. Most centipedes are active at night. They are all predators and have a venomous bite used for killing their prey, such as beetle grubs and worms. You can find them under logs and rocks, where the soil is damp but not dry and where there are other critters to eat. They live in burrows that they often steal from their prey.



Millipede

AVERAGE SIZE: 8 cm

COLOR: Gray or brown

HABIT AT: Oak forest

Like centipedes, millipedes are arthropods with many body segments, but they have two pairs of legs per segment. Millipedes are decomposers. Most eat decaying plants and fallen leaves. Millipedes are found under stones, in moist soil and leaf litter, but you can see them walking around the sidewalks in the spring. Millipedes plow through the soil like tiny bulldozers. When the soil is too hard to budge, millipedes will munch their way through instead. Some millipedes produce strong-smelling, poisonous secretions to keep birds and toads from eating them. Many millipedes also have brightly colored markings on their bodies as a warning signal to predators.



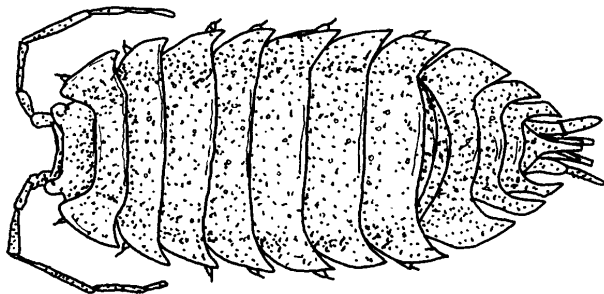
Isopods— Sowbug and Pillbug

AVERAGE SIZE: 1 cm

COLOR: Often gray or brown, sometimes light reddish-colored

HABIT AT: Damp areas such as basements, mulch around buildings

Isopods are related to other crustaceans, such as crabs and lobsters. Most crustaceans are aquatic, but the isopod group includes some that live on land. Sowbugs or pillbugs are found almost everywhere but they need lots of moisture to survive because they use gills to breathe. Look under rocks, decaying leaves, and mulch around buildings, or in damp areas like basements. Isopods look like armor-plated critters with seven pairs of legs. They go above ground at night to feed on decaying wood, leaves, and other vegetation. In shady places, they are also active during the day. When danger threatens, sowbugs just hunker down or run away, but pillbugs can roll into a ball. Females carry their eggs underneath their bodies.



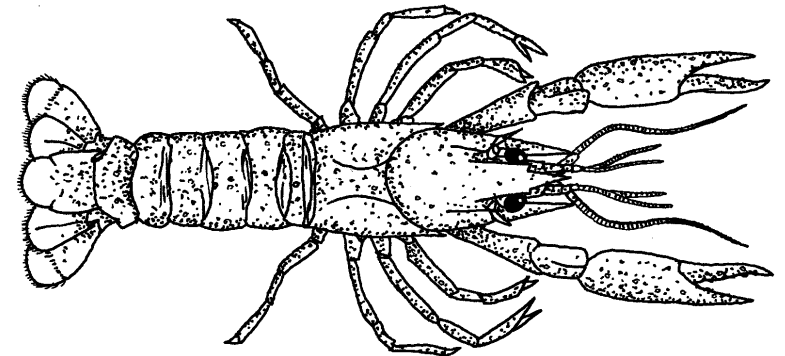
Crayfish or Crawdad

AVERAGE SIZE: 8 cm

COLOR: Varies from greenish-grey to brown and even red

HABIT AT: Very moist soil, often in or near a creek or pond

Crayfish are crustaceans that breathe through gills on the underside of their abdomen and look like tiny lobsters. To get oxygen, they must bathe their gills in water. They do this by burrowing down to the water table. (The water table is the level where almost all the spaces in the soil are constantly filled with water. The water table is made up of water from the surface that trickles down through the soil and collects in underground reservoirs.) Some crayfish live in holes along the side of a creek or pond, where they can slip down into the water and away from danger. Some crayfish burrows will have “chimneys” made of the leftover soil they have pushed out of their tunnel. This will tell you that a crayfish is living there, but you may have to dig down six feet to find them. Crayfish eat both plant matter and living or dead worms and grubs.



OTHER INVERTEBRATES

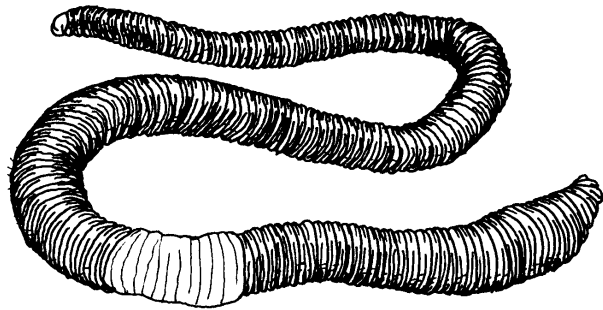
Earthworm

AVERAGE SIZE: 8 cm

COLOR: Light grayish-brown to reddish-brown

HABIT AT: Oak forest, backyard

Earthworms are annelids, which are true segmented worms with no legs. Earthworms burrow through the soil by relaxing and contracting muscles along their bodies. They have no eyes but they have light receptors covering their entire body. They can also find their way by touch and by sensing vibrations in the earth. Earthworms are very abundant in healthy soil. As they tunnel through soil, they mix in organic matter and break up clumps of soil. Their tunneling creates spaces for air, and these spaces also serve as channels for water when it rains. Since all soil organisms need air and water to survive, many of them owe their survival to the earthworm.



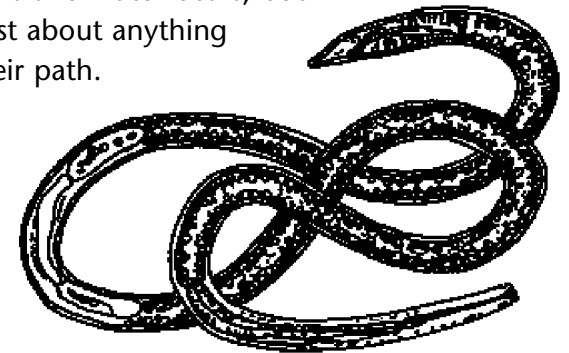
Nematode

AVERAGE SIZE: microscopic

COLOR: White

HABIT AT: Any moist topsoil

Nematodes are small, squiggly, white, worm-like creatures with no segments. Each handful of soil contains thousands of nematodes, but most of these little transparent worms are too small to see with the bare eye. What these tiny worms lack in size they make up for in numbers. Nematodes are the most abundant multi-celled creatures on Earth. Because nematodes are so small, they are difficult to study. Scientists believe there are hundreds of unidentified species of nematodes even in our backyards. You will find nematodes living in almost every kind of soil and in many other places too. Nematodes need to stay moist, so they live in the film of water that coats soil particles. They move their way through the water by thrashing and splashing. Nematodes hunt other critters that live in the water droplets within the soil, including rotifers and water bears, but they will eat just about anything that crosses their path.

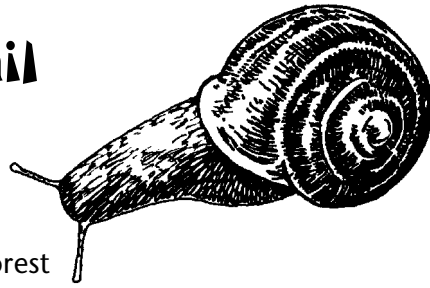


Slug and Snail

AVERAGE SIZE: 2.5

COLOR: Brown or gray

HABIT AT: Backyard, oak forest



Snails and slugs belong to the gastropods. Gastropods are mollusks, which also includes clams and octopuses. Gastropods have a large muscular foot on which they crawl. The majority of gastropod species live in the ocean, but there are also many freshwater and land-dwelling species. The major difference between snails and slugs is that snails have spiral shells on their backs that most of them can pull into for protection, while slugs do not. Snail eyes are often on the end of stalks on their heads. During the day, snails and slugs burrow down in the soil where it is moist and cool. At night or on rainy days, they feed above ground on fungi, plants, and algae. Some species of snails are predators that hunt other animals, even other snails. When snails and slugs crawl along, they leave a slippery slime trail that protects their soft foot from injuries. Land snails with their shell and slugs with just a “helmet” can dry out very easily in the hot sun or wind, so they try to stay as cool and moist as possible. Many snails and slugs live under leaves of garden plants or other tasty treats. If it is really hot and dry, look in old piles of leaves or under rocks or decaying logs. You may find just a shell, but look closely to see if anyone is inside.



ADDITIONAL ORGANISMS

As you investigate the soil, you might come across some of these additional organisms that make their home in the soil.

Rhizobial Bacteria

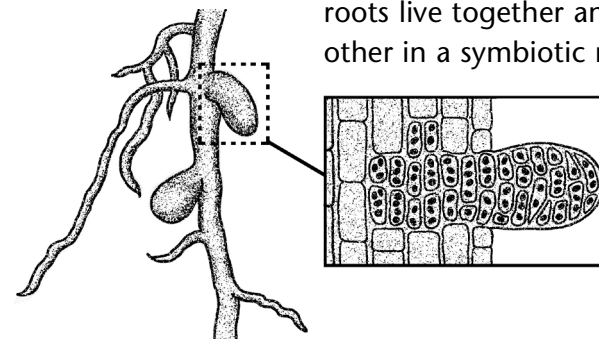
AVERAGE SIZE: Microscopic

COLOR: White

HABIT AT: In and around the roots of legumes

Rhizobial bacteria are shaped like a rod, and because they are so tiny, they cannot be seen by the naked eye. They live in and around the roots of plants like peas and beans. These kinds of plants are called *legumes*. The rhizobial bacteria are very important because they help mix atmospheric nitrogen with other elements like oxygen and hydrogen so the plants can use the nitrogen for food. This is called nitrogen-fixing. Rhizobial bacteria can be found living in the soil, but they depend on legumes for carbohydrates for energy. Rhizobial bacteria and plant

roots live together and help each other in a symbiotic relationship.



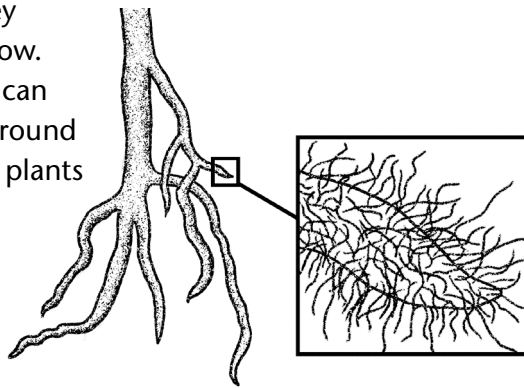
Mycorrhizal Fungi

AVERAGE SIZE: Microscopic

COLOR: White

HABIT AT: In and around the roots of plants

Mycorrhizal fungi are organisms that cannot make their own food, so they depend on plant roots for food (sugar). In return, they give nutrients and water to plant roots. The body of a mycorrhizal fungus is made of threads called *hyphae*. The hyphae absorb sugar from plant roots and produce fruiting bodies (such as mushrooms) that we can see. Mycorrhizal fungi are not harmful to plants. In fact, they help the plants grow. Mycorrhizal fungi can be found in and around the roots of living plants in healthy soil.



Big Bluestem

AVERAGE SIZE: 1 to 3 m (3 to 9 feet)

COLOR: Grayish-blue and turns orange in the fall

HABIT AT: Tall grass prairies

Big bluestem is a tall grass—it can grow three to nine feet high. The leaves are bluish and then become red-purple as the plant matures. Big bluestem can be found in the tall grass prairies of North America, especially very wet and rocky areas. Big bluestem is a warm season grass. Domestic animals and wildlife use this tall grass for food and shelter. As a food source, big bluestem is called “ice-cream grass” because livestock and wildlife will often eat this species first, before eating any other kinds. Big bluestem is also known as “Turkey foot” because of the three long clusters of seeds that appear on the top of the grass’s stem. These seeds can stick to animal furs and hitch a ride. Big bluestem is threatened by strong chemicals like fertilizer and weed killer. If this threat continues, this grass will eventually disappear from its native prairie area.



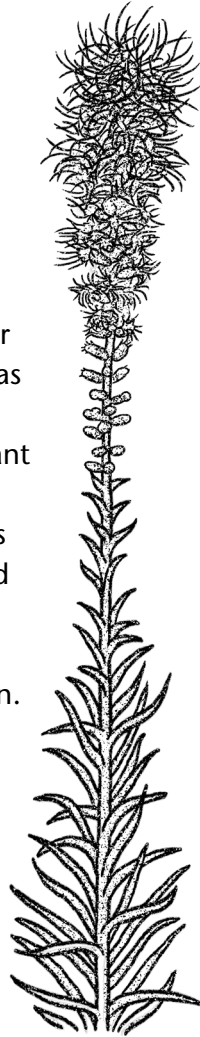
Blazing Star

AVERAGE SIZE: 1 to 2 m (3 to 5 feet)

COLOR: Green with pink or purple flowers

HABIT AT: Tall grass prairies

The blazing star is a common prairie plant. It blooms in mid-July to August. Blazing star can grow at least three to five feet tall. It has spikes that are 18 inches long and attract pollinators from all over the prairie. The plant has little flowers sticking out from the stem that are filled with nectar. The blazing star's huge roots work like a storage tank for food and water. This plant is a favorite among gardeners because its long roots mean the plant doesn't need to be watered very often. It is also a perennial, so the gardener does not have to replant it every year.



Purple Prairie Clover

AVERAGE SIZE: .6 to 1 m (2-3 feet)

COLOR: Green with purple flowers

HABIT AT: Tall grass prairies

Purple prairie clover can be found in tall grass prairies. In ideal conditions, this plant can grow up to three feet tall. It grows well in sandy soil. It is a flowering plant that blooms between May and September. Its tiny flowers are arranged in spikes. It is a very high-protein food for animals, because it is a *legume*. The purple prairie clover can withstand long periods of drought because it has a large root system that can extend 10 feet below the soil surface. The plant spreads across the prairie through its underground root system, creating a carpet-like covering.



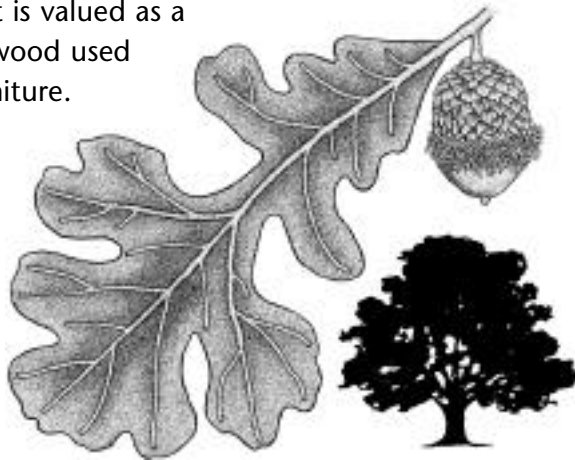
Bur Oak

AVERAGE SIZE: Up to 30 m (90 feet) high, with a leaf canopy up to 27 m (80 feet) wide

COLOR: Brown with green leaves

HABIT AT: Oak savannas and tall grass prairies

The bur oak is a large tree with stout limbs forming a broad crown when it fully matures in 200 to 300 years. It can be found primarily in the Midwestern and the Great Plains states. It can grow up to 90 feet high when it fully matures, with a leaf canopy up to 80 feet wide. The bark is dark gray, with rough, deep ridges and furrows. This thick bark helps the tree to survive adverse conditions like fire and drought. The bur oak has deep roots that spread out underground as far as twice the height of the tree. It can grow in a variety of soils, but does particularly well in fertile loam. Because of its very long taproot, it can withstand long periods without rain. Acorns from the tree are used as food by animals, like squirrels. When the tree fully matures, it is valued as a source of hardwood used for making furniture.



BACKGROUND INFORMATION: SOIL

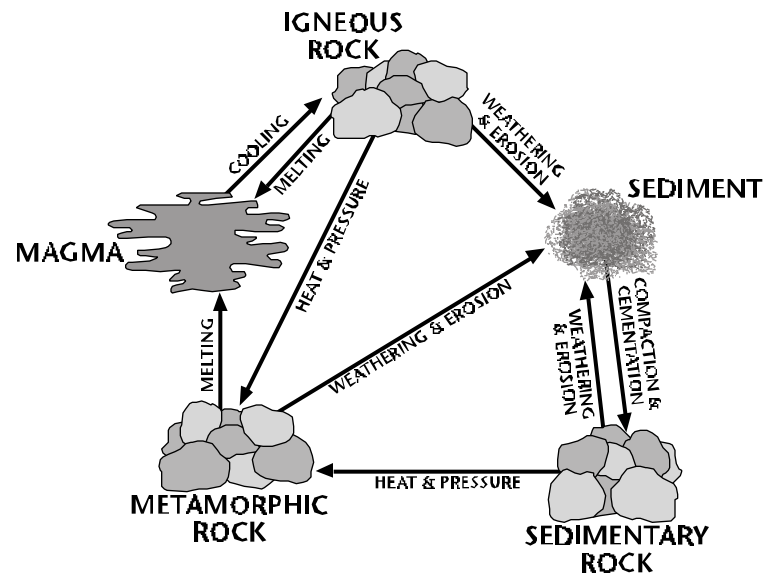
Soil Formation and the Rock Cycle

According to the United States Department of Agriculture, there are over 50,000 types of soil in the United States. The soil that we see on the surface is only part of the story. Soil horizons, or layers of the soil, reveal more information about how the soil was formed and the properties of the soil. All soil is formed from weathered rock, minerals, and organic materials. Many factors affect soil formation, including climate, time, organisms that travel in or on the soil, location in the landscape, and the types of rocks and minerals present.

Soil formation is part of the weathering process that plays a significant role in the rock cycle. In the basic rock cycle, rocks are weathered by physical or chemical means into sediments. These sediments are then transported by water, wind, or other means, and eventually deposited. These small sediments, mixed with organic material, form soil. Under certain conditions, these sediments combine to form sedimentary rocks. Under intense heat and pressure, sedimentary or igneous rocks can be chemically altered to form metamorphic rocks. Under some conditions, these rocks are melted, forming the magma from which igneous rocks are made, continuing the cycle. Each of the three types of rock—igneous, sedimentary,

and metamorphic—can be weathered, forming part of soil. Because each type of rock has different minerals associated with it, the type of rock can affect the mineral content in the soil.

BASIC ROCK CYCLE



SOIL TYPES

Soil can be classified based on its properties. One basic way of classifying soil is by the size of the soil particles. The three main types of soil, based on the size of the soil particles, are sand, silt, and clay. Most soil is a combination of these types. Soil that contains all three types of particles in fairly equal amounts is called loam. Each type of soil has unique properties. There are a number of simple tests used to determine soil type, including texture tests, soil ribbon tests, and soil suspension tests. Another way to test soil type is by using a compaction test. It's important to remember that outside factors can affect a soil's compaction. For example, if a soil has no roots or if it is in a place where many cars and trucks drive over it, it will have higher compaction than a soil of the same type that has not had the same impact.

Sand

PARTICLE SIZE: .05 mm to 2 mm

COMPACTION: Low

TEXTURE: Gritty

SUSPENSION: When soil is suspended in water, sand particles generally settle first

RIBBON TEST: When moist, the soil will not form a ball when squeezed and tends to fall apart

Sand particles are the largest and heaviest soil particles. Sand also has larger spaces between particles, and so is less compact than clay or silt. Sandy soils feel gritty to the touch. They are porous and usually hold less water for plants and animals than other soil types. Because of this dryness, soils with large amounts of sand are not useful for growing most plants. Sand particles tend to be weakly bonded together, so sandy soils are easily affected by erosion.

Silt

PARTICLE SIZE: .002 mm to .05 mm

COMPACTION: Medium

TEXTURE: Smooth and slippery

SUSPENSION: When soil is suspended in water, silt particles will settle after sand, but before clay

RIBBON TEST: When moist, silt cannot be pressed into a ribbon

Silt particles are of middle size and weight. Although silt is heavier than clay, it is more easily eroded by both wind and water because the bonds formed by the silt particles are weaker than those formed by clay particles. Silt feels smooth and slippery to the touch when wet. Silty soils hold both nutrients and water well, which can make them good soils in which to grow plants.

Clay

PARTICLE SIZE: Less than .002 mm

COMPACTION: High

TEXTURE: Sticky

SUSPENSION: When soil is suspended in water, clay particles are generally the last to settle

RIBBON TEST: When moist, clay can be pressed into a strong ribbon

Clay particles are the smallest and lightest soil particles. Clay particles tend to bond together strongly, which is one of the characteristics that makes clay useful for creating pottery. Clay soils are generally highly compact, with little space between particles. This can make it difficult for many plants to thrive in soil containing a high level of clay, since it is harder for roots to grow and for circulating air to reach the roots. Clay feels sticky to the touch when it is wet or cool but can harden and crack when dry and hot. Clay also tends to hold water. Because of this, soils with a high level of clay can be more prone to soil creep and landslides than other types of soil.

Loam

PARTICLE SIZE: Varies

COMPACTION: Medium

TEXTURE: Neither gritty nor smooth

SUSPENSION: When loamy soil is suspended in water, the layers of sand, silt, and clay that settle will be relatively equal

RIBBON TEST: When moist, loam can be pressed into a weak ribbon

Loam is a mixture of clay, silt, and sand. Loam can be further classified as sandy, silty, or clay loam based on which soil type is represented in larger amounts. Loams are the most fertile soils. The same properties that make the main soil types less fertile are helpful when the types are combined. For example, the sand in a loam helps to lighten the soil, allowing more air and water to circulate. Clay in a loam helps to bind the soil particles together and to hold water. The silt helps to hold nutrients needed by plants and animals.