Quadrillions of ants. They crawl over the rocks by the dock. They pile up sand on the sidewalk. They scurry across the kitchen floor. City or country, outdoors or in, ants are everywhere!

Some of these amazing insects are hunters. Some are harvesters. Some farm fungi. Some keep slaves. Others keep caterpillars or aphids. Scientists have identified more than 11,000 species of ants worldwide. Minnesota has more than 100 ant species.

Most kinds of ants make their homes in tunnels in the soil or in wood. They live and work together in communities made up of hundreds or thousands of individuals, almost all of them sisters.

Scientists think the world has about 10 quadrillion ants. Though most people don't pay much attention to them, these common creatures are among the most fascinating critters on earth.

by Mary Hoff *Illustrations by Taina Litwak*

Young Naturalists

Life of Ants

Ants are *social insects.* That means they live in colonies and share the work of building a nest and feeding and caring for the eggs and young.

A new colony begins after a winged female ant, called a *queen*, emerges from an existing colony. Flying through the air, she meets and mates with one or more males. After landing, she breaks off her wings with her legs.

If she is the kind of ant that lives underground, the **queen** 1 digs a hole in the earth, using her mouthparts to move tiny bits of soil.

Inside the hole, the queen starts to **lay eggs.** 2 Her fertilized eggs will become female ants. Almost all ants are females.

The eggs hatch after several days. The queen feeds the **larvae** 3 that emerge by spitting up food she makes from her leftover wing muscles, from her own energy reserves, and sometimes from eating some of the other eggs or larvae.

The larvae grow and grow, then form **pupae.** 4 Gradually, they turn into adult ants. When the pupae open in a week or two, **adult ants** 5 emerge and start to gather food.

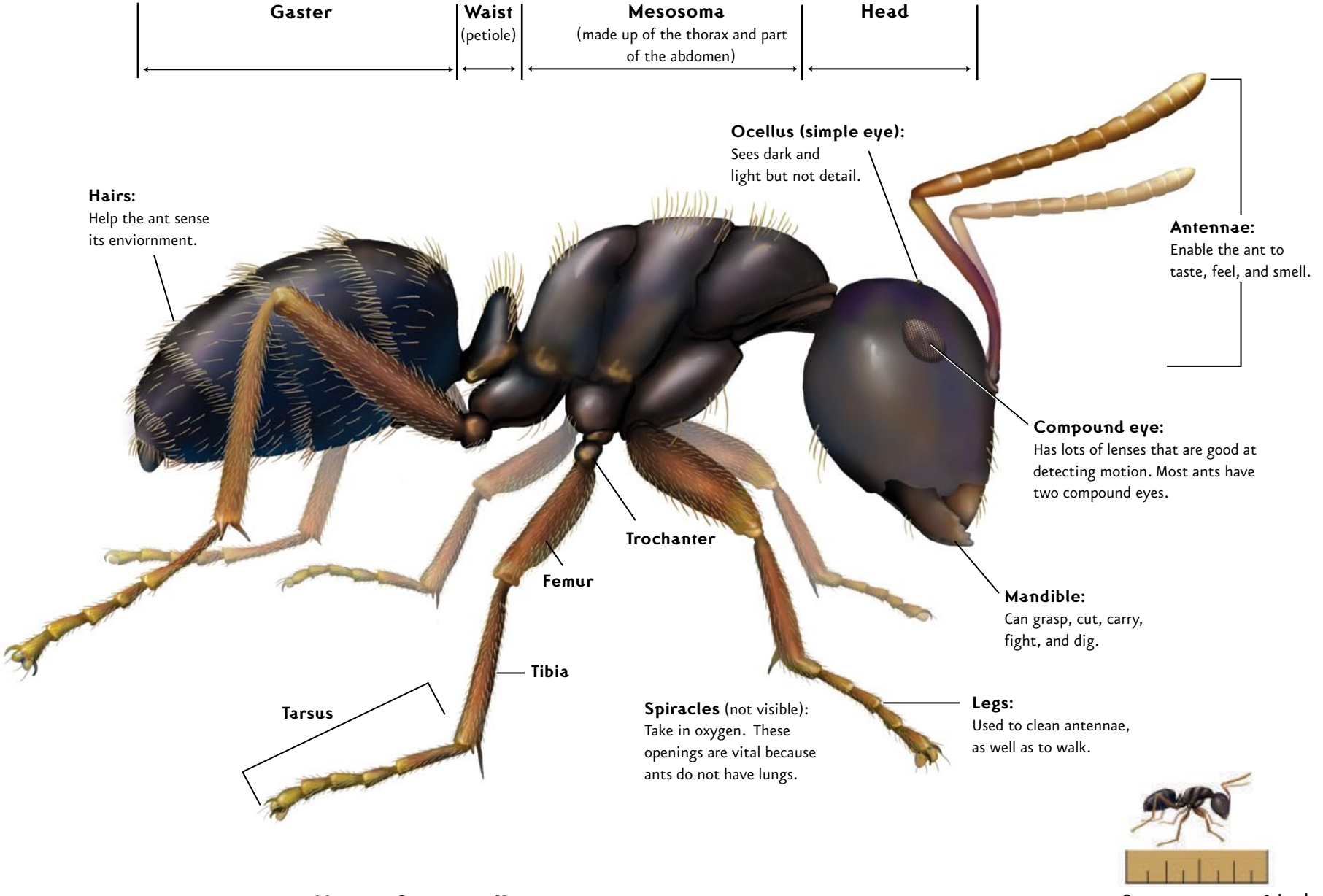
Worker ants are sterile females, which means they do not lay eggs. Worker ants keep eggs, larvae, and pupae at the right temperature by moving them from chamber to chamber within the nest. They also expand the nest, build **chambers** 6 for more eggs laid by the queen, and dig tunnels connecting the chambers.

These **worker ants** 7 take care of the new eggs, larvae, and pupae. They take care of the queen too. Now all she has to do is lay eggs. She may live for 10 to 20 years, laying eggs fertilized during her one mating flight.

Most of the fertilized eggs become new workers. But occasionally the worker ants feed more food to some of the young, and that makes them turn into queen ants.

Sometimes the queen lays unfertilized eggs, which become male ants. The male ants don't help maintain the colony. Instead, they fly from the nest in search of a queen. When they find a queen, they mate. Then the cycle begins again.

Anatomy of a Worker Carpenter Ant



Four Common Minnesota Ants


ALEX WILD

Lasius neoniger

Lasius neoniger, the turfgrass ant, is one of the most common ants in the eastern United States. It builds nests underground on lawns and along the side of the road, leaving a donut-sized anthill at the entrance. Queens and males emerge for their mating flight in late summer, often in swarms after a rain.

Turfgrass ants eat dead insects and plant nectar, and also tend root aphids, much as a farmer tends cows. In winter the ants store and care for aphid eggs in their nest. In spring they carry the newly hatched aphids to nearby plant roots to feed. As the aphids feed, they secrete a sweet substance, called *honeydew*, which the ants harvest and eat.


ALEX WILD

Tetramorium caespitum

If you see ants on the sidewalk, there's a good chance they are *Tetramorium caespitum,* or pavement ants. This ant was brought to North America from Europe. The workers are about as big as this letter *t.* The queen is more than twice as big. Some pavement ants bring butterfly caterpillars into their nest. The ants guard the caterpillars from predators. When the caterpillars feed, they secrete a juicy substance that the ants eat. Pavement ants are famous for getting into ant fights between colonies.

Solenopsis molesta is a tiny, yellowish ant that lives in the ground or in rotting wood. Members of this species are often called thief ants because they steal eggs and larvae from other kinds of ants, then eat them. If thief ants get into your house, they will try to steal your food instead. Though they will eat sugary treats, they like greasy food such as meat and cheese even better. In fact, some people call them grease ants. Because thief ants are so small—some smaller than this letter *o*—it's easy for them to squeeze into packaged food and other tiny places.


ALEX WILD

Solenopsis molesta

Camponotus pennsylvanicus, the carpenter ant, makes tunnels in wood for its nests. But carpenter ants don't eat wood. Instead, they eat plant juices, honeydew, other insects, and dead animals. Carpenter ant larvae have tiny hairs that make them stick together like Velcro. That makes it easy for workers to move them in bunches from chamber to chamber in the nest. Carpenter ants are mainly active at night. They are a favorite food of pileated woodpeckers.


ALEX WILD

Camponotus pennsylvanicus

Ant Talk

When you want to communicate with your friends, you might talk to them, send a text message, or just give them a look. Ants have many ways of communicating with their friends too.

Some tap out messages with their heads on the object they're standing on. The vibrations travel through the object to other ants.

Ants also communicate by *stridulating*—rubbing one body part against another to make a tiny squeaking sound.

One of the most important ways ants communicate is by giving off *pheromones*—chemicals that other ants can smell or taste. Scientists have identified more than a dozen different ant pheromones, each with its own message. When an ant finds food, it leaves a trail of a pheromone that says "This way to food!" to its nest mates. When worker ants pass food to each other, they also pass pheromones that send messages such as how healthy they are or whether there is danger nearby. When injured, an ant releases an alarm pheromone that sends other ants into a panic. Ants emit a pheromone to ask for help with a chore. Another pheromone identifies which colony the ant comes from.

A NOTE TO TEACHERS

Find teachers guides to this and other Young Naturalists stories online at www.dnr.state.mn.us/young_naturalists.

Ant Farms

Ant farms are a great way to learn more about ants. You can buy an ant farm or make your own using instructions from a book or the Internet. You can mail order worker ants for your farm. But if you want a queen, you'll probably have to find your own. You can do this by catching a newly mated queen or by digging up a colony with its queen. (Remember to ask permission before you dig, and put everything back the way it was when you are done.) Be sure to give your colony plenty of food (dead insects) and water!

Part of the World

Ants play important roles in the natural world. Ants eat other insects. Frogs, birds, bears, and other animals eat ants.

Ants that live underground help keep soil healthy by building tunnels through which air and water can travel. Carpenter ants help break down dead wood.

Some ants help plants reproduce. Woodland flowers such as wild ginger, bloodroot, and trillium produce seeds with tasty structures called *elaiosomes* that attract ants. The ants carry the seeds underground to feed their young. Then some seeds sprout.

Scientists studying the Karner blue butterfly, 1 an endangered species found in Minnesota, discovered that various species of ants help Karner caterpillars survive in a partnership called *symbiosis.* Ants take care of the caterpillars on wild lupine 2 plants. The caterpillars 3 in turn produce a nutritious liquid 4 that the ants eat. Thousands of other invertebrate species interact with ants in similar ways.

Some birds, such as blue jays, pick up ants and rub them on their feathers or sit on the ground and let ants crawl on them. No one knows for sure how this behavior, called *anting,* benefits birds. Some people think formic acid from the ants helps protect the birds from mites and other parasites. Others think the ants take some of the itch out of molting. What do you think? V