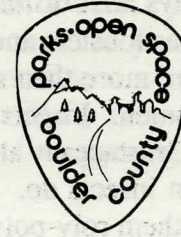


Spring/Summer
1991



Nature Detectives

Who's been here? What were they doing and why were they doing it? When did it happen? Nature detectives try to answer questions like these by looking for clues and evidence of the activities of creatures in the outdoors.

Have you ever wondered about teeth marks on the trunk of a tree, or strange footprints in the snow or mud? If you have, then you are already a nature detective.

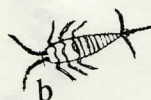
THEME:

AMAZING INSECTS

Even if you studied ten insects a day, every single day for the rest of your life, you would not run out of new ones to study. There are more different kinds of insects in the world than there are all other kinds of animals put together. You can find insects in all sorts of habitats--grasslands, woodlands, deserts, tundra. They live in the ground, the air, the water. They live in way-off wildernesses and in city homes and yards. And *this* is the ideal time to find them!

Scientists sort insects into groups that are like each other. This makes it easier to keep track of the facts about them. Here are some of the insect groups. See if you can match them with their pictures.

1. Silverfish
2. Crickets and grasshoppers
3. Earwigs
4. True bugs (look for the "X" of the wing cover)
5. Dragonflies and damselflies
6. Butterflies and moths
7. Beetles
8. Wasps, ants, and bees
9. Flies (look for 2 wings)
10. Fleas



Answers: 1b 2f 3d 4g 5h 6j 7i 8a 9e 10c

ARMADILLO BUGS?

Roly-polys, pillbugs, armadillo bugs, wood lice. Believe it or not, these are all the same thing and they're not bugs or insects.

Roly-polys are *crustaceans*. They belong to the same group as lobsters and crayfish, not insects. Crustaceans have more than six legs attached to the thorax and abdomen. Insects have six legs attached to the thorax. Crustaceans also have one more pair of antennae than insects do.

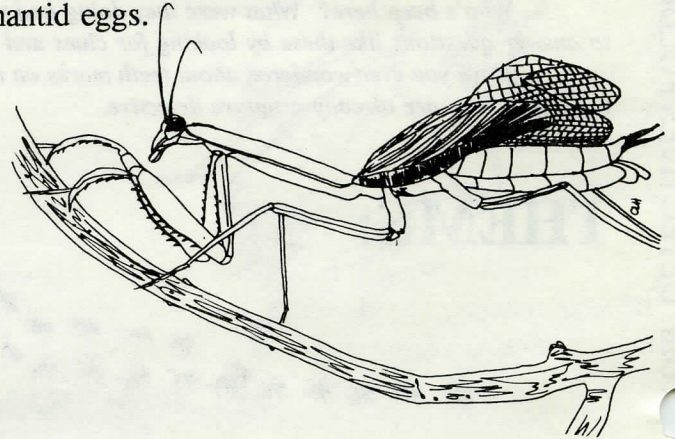
We call them roly-polys or pillbugs, because they roll up into balls whenever they are scared. We call them armadillo bugs because, like armadillos, they have armor plating for protection. They are named wood lice because they like to live in dark, wet places such as old rotten trees.

Look under rocks or logs to find pillbugs. Are they scramblers or freezers? (Be sure to put the rocks or logs back so the pillbugs can find their way home.)

WATCH OUT, BROTHER

Do you think it's hard to be a kid? Be glad you're not a praying mantis! When they are young, their biggest problem is to make sure their brothers and sisters don't eat them!

In the summer, the female mantis lays her eggs in foam that hardens to form an egg case. There are usually about 100 eggs in the case. For these developing mantids, the first danger is from wasps. Some kinds of wasps lay their eggs in mantid egg cases so that the baby wasps can eat the mantid eggs.



If the egg case stays safe from wasps, it gets brown and hard and waits for spring. In the spring the little mantids, or nymphs, hatch. They quickly scramble away to avoid being eaten. It's not only other mantids who like to eat mantids. Spiders, birds, and other insects all think mantids make a tasty lunch. Very few mantids will live long enough to grow up.

Young mantids are yellowish-brown and very tiny, not much bigger than a drop of water. As they grow, they will shed their skin like a snake does. They will shed, or molt, about nine times before they are full-grown. By this time they will be green, will have wings, and will be 3 to 4 inches long. After a few months of eating lots of tasty bugs, they will be ready to lay eggs and start the whole cycle all over again.

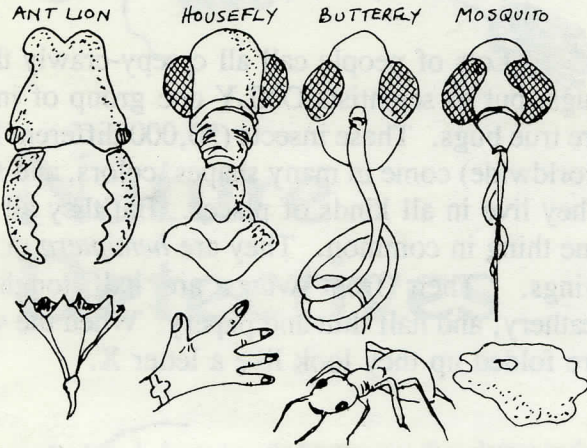
LONGHORNS



You may have heard of Longhorn cattle, but what about Longhorn beetles? The "long horns" of the beetle are its antennae. They are longer than its whole body. The beetle uses these nobbly antennae to "tune in" to its surroundings, feeling and smelling its world.

FLY-IN FEAST

Attract and observe beautiful moths by offering them fast food. Mix very ripe banana with sugar and a little water or beer. Tie a string on a sponge. Dip the sponge in your sweet, sticky mixture and hang it outside a window. Leave a light on. The moths will fly in to feast and you'll get a close up look. Can you see their strawlike sucking mouths?



MIGHTY MOUTHS

Insects eat all kinds of food. Leaves, flowers, nectar, blood, meat, feathers, skin, other insects, grain, vegetables--you name it, insects eat it!

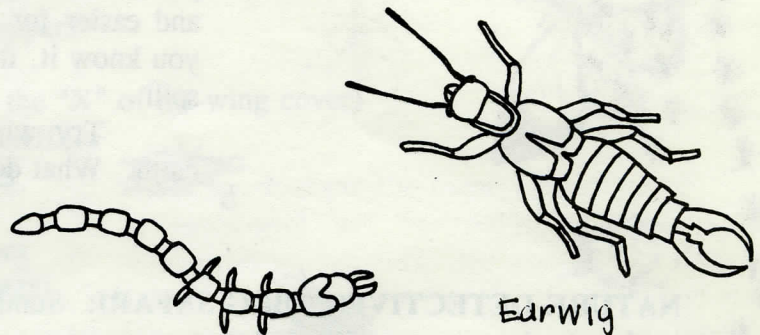
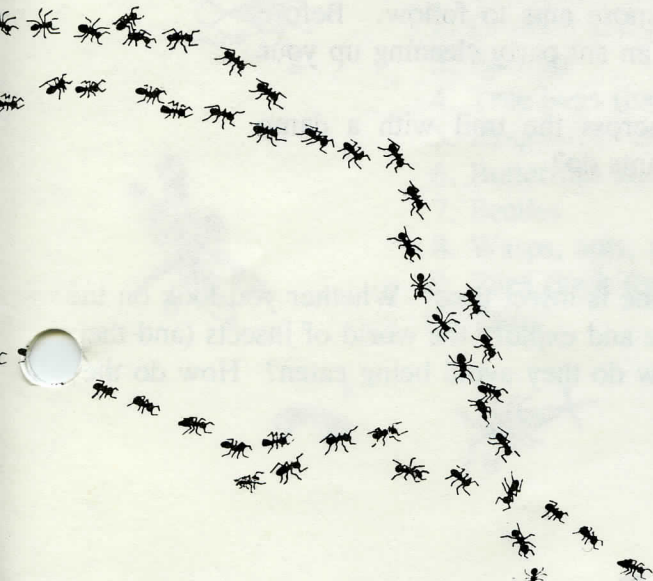
You can tell what kind of eating an insect mouth does by how that mouth looks. Mouths that chew look like pliers or tongs. Mouths that suck look like straws, vacuum cleaners, or hypodermic needles.

Match these mouths with the meals--who eats what?

Next time you are out bug-hunting, take a look at those mighty mouths. See if you can figure out what they eat.

SCRAMMERS AND FREEZERS

There are millions of insects underneath your feet! In fact, there are more things that live below the ground than above. A good way to see some of these creatures is to carefully turn over a rock or a log. Because these underground dwellers can hear voices and feel vibrations from your footsteps, you will want to be very quiet and walk on tiptoes. Sneak up to a rock or log and get ready to watch the action when you turn it over. Some of the insects will move quickly. These are the *scrammers*. They rely on moving fast to stay out of danger. Other insects will not move at all. These are the *freezers*. They hold still and blend into their surroundings to stay safe. What kinds of things scam? What kinds of things freeze? Notice the shapes and colors of both. Remember to return the rock or log things to the way you found it when you are finished.



Earwig
Scammer

Click Beetle Larvae-Wireworm
Freezer

GRASSHOPPER PIZZA?

In this country we don't usually eat insects. But in many parts of the world insects are used as food. They have more protein than hamburger.

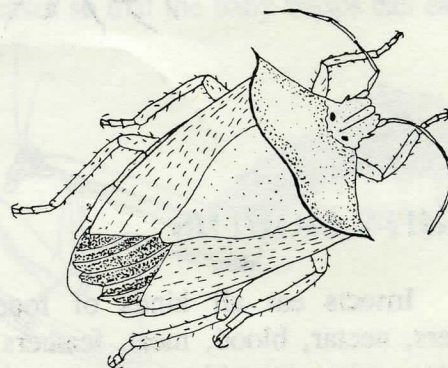
In parts of Africa people eat grasshoppers. They pull the legs and wings off first, because those cannot be digested.

The Maguay worm lives on the Maguay plant, which grows in the dry regions of Mexico. The worm (which is the larva of the giant skipper butterfly) is deep-fried to make the Mexican dish called *fritos*.

In the Middle East, people eat *manna*, which can be cooked in bread or cake. Manna is made by scale insects, which live on tamarisk trees. The insects secrete a hard, white material that forms a scale, or flat shell, that protects them. This white stuff is manna and it tastes like honey.

BUGS, BUGS, BUGS

Lots of people call all creepy-crawly things bugs, but to scientists ONLY one group of insects are true bugs. These insects (50,000 different kinds worldwide) come in many shapes, colors, and sizes. They live in all kinds of places. But they all have one thing in common. They are *hemiptera* or half-wings. Their front wings are half tough and leathery, and half thin and papery. When the wings are folded up they look like a letter X.

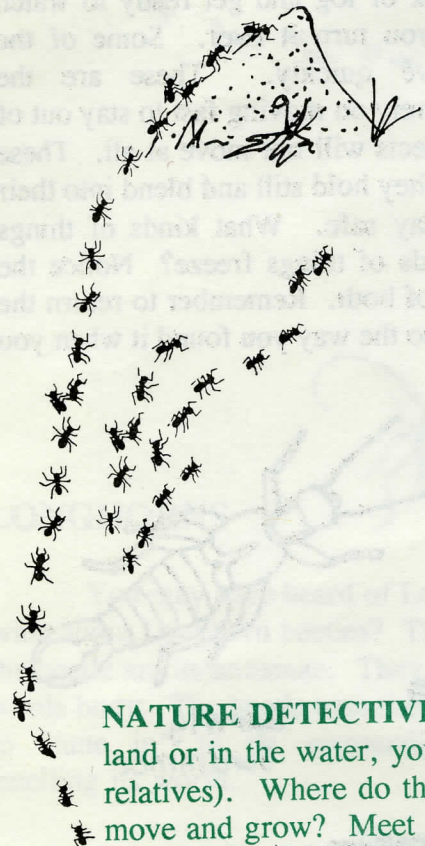


ANTS GO MARCHING ON

It's almost like magic! You spill some sugar, or jelly, or sweet lemonade on the floor, and before you know it the ants find it. How can they do this?

The first foraging ant finds the delicious spill. It goes back to the nest, but it leaves a scent trail along the ground. The trail is marked with special chemicals called *pheromones*. Other ants from the nest find the scent trail and follow it back to the yummy food. And they add their pheromones to the trail, making the smell stronger and easier for even more ants to follow. Before you know it, there's an ant party cleaning up your spill.

Try wiping across the trail with a damp cloth. What do the ants do?



NATURE DETECTIVES: BUG SAFARI: Summer time is insect time! Whether you look on the land or in the water, you'll find them everywhere. Come and explore the world of insects (and their relatives). Where do they live? What do they eat? How do they avoid being eaten? How do they move and grow? Meet bugs up close and magnified.

See "Discover Nature Calendar" for details.