



Nature | Education

GET TO KNOW
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GRAB N' GO ACTIVITY:
Get To Know Insects

OVERVIEW:

In this activity, your students will have an opportunity to hunt for live insects in different places. For this activity, it is not important that your students learn the proper classification and names of the insects they find. Rather, the intent is to show them that insects are everywhere, that they are diverse and exquisitely complex, and that they have interesting lifestyles and behaviours.

PRIOR KNOWLEDGE

To test what understanding your students have about insects, ask them some questions like the following:

- **What's the difference between an insect and a spider?** Spiders have two body segments and 8 legs, whereas insects have only 6 legs and have three distinct body segments (head, thorax, and abdomen).
- **What might be the most common insect we would find around the school?** Probably ants. Ants are one of the most common insects in the urban environment, easily found around most sidewalks, flower beds, and grassy areas around schools.
- **Can you think of some insects that are beneficial or helpful to people?** There are literally thousands of species of insects that provide benefits of some kind to people in many ways. One of the most obvious examples is that of honeybees, which produce a valuable food (honey), and which also help the fruit growing industry by pollinating fruit tree blossoms.

MATERIALS:

- Insect Observation Worksheet
- Plastic spoon
- 2 Plastic cups (Petri dishes, lidded plastic containers, sample bottles, etc.)
- Magnifier box, or hand lens

Ages: 6 - 13

Time: 60 minutes

PREPARATION

Before doing this activity, we recommend you work through the "Get to Know Insects" backgrounder with your students.

Be sure they understand basic insect anatomy to help them recognize and differentiate insects from other organisms, and to help them appreciate some of the major groups of common insects.

You'll need to visit your field trip site and make a note of the different habitats your students will examine and compare based on their insect observations. Your trip location could be outside the door in the schoolyard, or it could be a nearby municipal park, or it could be a more remote natural area you bring your class to by bus. In any case, pick out and mark several different spots where your students will be able to find insects. Each group will have two locations where they will sample for bugs.

For safety, be sure all the locations you have selected are easily identified by the students, that they are relatively close together (within easy walking distance of the staging area), and all within sight of one another and you.

Here are some suggestions for different locations:

- Under a log
- Near or under rocks or gravel
- In a grassy spot in full sunlight
- At the base of a tree
- In the leaf litter on the forest floor
- In the leaves and blossoms of a flowering plant
- On the trunk and branches of a tree
- Near the wall of a building
- On or near a sidewalk



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PROCEDURE

Step 1: Divide your class into small groups (preferably pairs), each group equipped with simple insect capture and observation tools, a clipboard, a pencil, and a worksheet, as listed above.

Step 2: Assign each group two locations (you may have them write the names of these locations on the appropriate blanks on their worksheets to help them remember).

Step 3: Send your students out to their various stations to look for insects. Give them between 10 and 15 minutes at each location. Instruct them to handle the insects very carefully, and if the insects are too fast or vigorous, to leave them alone.

Step 4: Call your students together for 10 minutes of “show and share” to highlight some of their finds. Be sure your students have recorded their insect observations on the worksheet.

Step 5: Debrief the experience with your students with the following questions:

- In which location did we find the MOST insects?
- Who found organisms that were NOT insects? What were they?
- Who found the biggest insect? Where was it found?
- What animals in this area might be eating these insects? (Prompt your students for answers such as birds, mice, shrews, bats, other insects.)

TIPS & ENRICHMENT

- Pond in aquarium (early spring only): If you can't get out into the field to study insects, perhaps you can bring insects into the classroom. A wonderful way to do this is with an artificial pond. Set up a large jar or aquarium, filling it with a sample of pond water. Be sure to scoop up some of the mud, plants, and detritus from the bottom of the pond as well. You'll likely get a few aquatic insect larvae of various kinds, including stoneflies, mayflies, diving water beetles and their predaceous larvae, caddis fly larvae (with their mobile homes made of debris), and many others. Place a piece of screen over the top of the aquarium and leave some grass stems for developing adults to crawl out onto.
- Invite a beekeeper to your class. Have him or her talk about the life cycle of bees, how the bees gather nectar and transform it into honey, and how the hive is organized by the queen.
- Many digital cameras come equipped with excellent close-focussing (“macro”) capabilities. If you have access to such equipment, you can use it to photograph some of your students more spectacular insect finds. Print full-sized enlargements on your school's colour printer and post these in the classroom as a reminder of the trip and its highlights.
- Visit a bug exhibit at a local museum or zoo with your class. Have your students prepare questions for the museum or zoo staff about the insects on display.
- There are dozens of excellent books on local insects available in many bookstores and libraries. Obtain copies of guides to local insects, butterflies, beetles, etc. and have these on hand so your students can identify their collected samples.
- You may be able to order live moth or butterfly pupae. Under the right conditions, the pupae will emerge and your students will be able to observe the transformation first-hand. Check with local biological or science supply companies for the availability of live specimens.

Submit your work to the Get to Know Contest for a chance to win wild prizes & go to

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to find more free resources and activities



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BACKGROUND INFORMATION

Insects are part of a huge and incredibly diverse group of living things called arthropods. There are more than twice as many species of arthropods as there are of all the other species living on the earth. They can be found in almost every possible habitat on the planet, including the deep oceans, volcanic hot springs, glaciers, and caves.

The term “arthropod” means “jointed foot”. Arthropods are different from other organisms because of their exoskeleton and jointed body parts. The exoskeleton of arthropods is what gives strength and stiffness to their bodies, legs, wings, and other parts. The exoskeleton does the same job that bones do in birds, fish, mammals, and amphibians. The exoskeleton protects the soft inside parts of arthropods, and lets them take on amazing shapes and colours.

Besides insects, the arthropod group also contains spiders, scorpions, and their relatives, crustaceans (crabs, lobsters, barnacles, and their relatives), millipedes, and centipedes. They also have exoskeletons, but mostly are very different from the most common arthropods that we see every day. Insects differ from other arthropods in that they have three body segments and six legs. Many insects have wings, but not all. Insects usually have two or more compound eyes, made up of hundreds of tiny simple eyes. They live mainly on land and in fresh water.

INSECT LIFE CYCLES

Many insects go through radical changes over their short lifetimes. All insects begin as eggs laid by adult females. When the eggs hatch, a larva usually comes out. For many insects, the larva looks nothing like the adult. The larva must undergo a complete change or metamorphosis before it can become an adult. This change happens during the pupa stage. Compare the photo of the monarch butterfly caterpillar, and the adult butterfly.

INSECTS IN OUR MIDST

You don't have to go far to find wild insects. They live in our homes, parks, gardens, schools. They are a vital part of our lives in so many ways. Insects are an essential part of Earth's living systems. Here are a few of the important jobs insects perform in nature:

- Break down plant and animal remains
- Pollinate flowers (essential for many human food crops and plant reproduction)
- Provide food for animals
- Help keep other insect populations under control

BEETLES AND BUTTERFLIES

Beetles and butterflies are some of the most common insects you will find. They are also some of the most spectacular. In particular, adult moths and butterflies can have amazing colours, and grow to huge sizes. Besides their fancy wings, moths and butterflies have long straw-like mouthparts for reaching deep into flowers for nectar.

Of all the different kinds of insects, beetles are probably the most diverse. There are hundreds of thousands of species of beetles, probably more than any other kind of insect. They all have certain features in common, such as wings, hard wing-covers (called elytra), and chewing mouthparts. Some beetles are predators, some are herbivores, and some are scavengers.





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AQUATIC INSECTS

Many insects live in fresh water for all or part of their lives. Dragonflies are a good example of the latter. Dragonfly larvae spend up to a year living in ponds and streams, catching tadpoles, other insect larvae, and even small fish with their lightning-quick jaws. At their last moult, the larvae crawl out of the water onto a cattail or bulrush, and emerge from their larval skin as an adult dragonfly.

Many other insects have larvae that live in the water. Among them are many of the biting flies, such as mosquitos, horseflies, blackflies, and deerflies. Their larvae are a favourite food of the dragonfly larvae mentioned above.

BEEES, WASPS, AND ANTS

Bees, wasps, and ants are cousins and share many common characteristics. For instance, they mostly live in large colonies, with sometimes thousands, even millions of individuals living together. They also have stingers in their abdomens (with some exceptions among all three groups), and they all have sharply pinched waists where their abdomen joins the thorax. They also all have wings, at least at some point in their life cycles.

Ants, bees, and wasps have great importance in the natural world. Bees and wasps are well known for pollinating flowers, while vast numbers of ants scour the forests and meadows for food, acting like nature's clean-up crew.



OTHER ARTHROPODS

SPIDERS

Spiders are very common in gardens and yards, and are fascinating to watch. Everyone is familiar with their amazing webs, made of strands of nearly invisible silk.

Not all spiders spin webs for catching insects. Many, like the jumping spiders, simply pounce on their prey to catch it. Crab spiders, commonly seen in gardens are masters of camouflage. They hide in flowers by matching the colour of the petals perfectly, and use their long front legs to snatch insects that come to feed at the flower.



CRUSTACEANS

Most crustaceans live in the oceans, although there are many species that live on land and in fresh water. They include crabs, lobsters, shrimp, krill, pill bugs, barnacles, and many other kinds. Most crustaceans are very small, nearly microscopic in size. They are part of the plankton that you find in oceans and lakes. Other crustaceans such as crabs and lobsters can get to be very large. Some Pacific Ocean crabs can stretch more than 4 meters in width when their legs are spread out.



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STUDYING INSECTS

Look around and see what insects, spiders, or other arthropods are living near your home or on the school grounds. You'll be surprised how many you find. Be aware that many insects we see are larvae, and may look very different from the adults they will eventually become.

To study them, you can often just watch them in their habitat without disturbing them. If you are careful, you can also catch them in a container or net and get a much closer look. A magnifying glass or hand lens will help you spot the fine details of their wings, legs, and other parts. Always handle insects gently, and let them go unharmed, exactly where you found them. Also, be aware that some insects sting or bite, and that some people are extremely allergic to insect stings. Do not handle insects unless you know they are harmless.

Many modern digital cameras can take excellent close-up shots of small things. If you have a digital camera, try using it to take insect pictures. Most of the images in this backgrounder were taken with a hand-held digital camera.





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GET TO KNOW INSECTS - STUDENT WORKSHEET

Use this worksheet to record your insect discoveries. For each one,

- a) **Drawing:** Make a pencil drawing of each insect you find.
- b) **Movement and behaviour:** Describe what the insect was doing when you found it. How was it moving around? What did it do when it met an obstacle? Was it eating something?
- c) **Give it a name:** If you don't know what kind of insect you've found, make up a name that will help you remember it.

Investigator

#1: _____

Investigator

#2: _____

My first location: _____

Drawing	Name	Movement & Behaviour



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My second location: _____

Drawing	Name	Movement & Behaviour