



# BUGS!

## HAVING FUN WITH CREEPY CRAWLIES — THE ARTHROPODS

by Jim Cornish

**Y**ou're outnumbered. Every time you venture into the wilderness or even the yard at your meeting hall, you're surrounded. By what? Arthropods.

Arthropod species number in the millions and represent over 80% of all known animals on our planet. The oldest and most successful animals on the planet are arthropods — insects, crabs, lobsters, shrimp, millipedes, centipedes, mites, ticks, scorpions and sea spiders to mention a few. They live in all but

the most inhospitable environments and in numbers so large, scientists are unable to accurately calculate their populations. Although we often loathe them, many food chains would collapse if it were not for arthropods. Since they are readily available, scientists study arthropods to help increase mankind's understanding of the morphology, behavior, interrelationships, taxonomy, evolution and developmental biology in most living things. But first, you have to catch them!

Photo: Sue Ashburner

## Collecting Arthropods

The arthropods that commonly share their habitats with man are the insects and their creepy crawly allies. To properly study their diversity, arthropods must be captured in a variety of habitats such as backyards, ponds, woodlands and open fields, at different times of the day and in each season of the year. Sometimes, collecting them requires specialized techniques. Regardless of how they are collected, all creepy crawlies should be stored in sealable containers (vials, jars or plastic bags) and labeled with the time, date, location and collector's name. It may be appropriate to discuss "respect for life" with the youth before undertaking "bug capture". It is possible to capture, observe, and then release insects without harming them. So head outside and try one or more of these collecting techniques.

## Fingers, Tweezers and Art Brushes

Turn over ground litter, break apart a piece of decayed wood, move a stone, or disturb plants resting on the water near shore and you are likely to find a crawly hurrying away to safety. Most large and hard-shelled arthropods can be collected with blunt tweezers and/or your fingers. Capture smaller ones using a small wet artist's brush. Water crawlies can be caught using a fine mesh net. However, be prepared — most insects scurry away quickly!

## Baked Potatoes

Some captures will require you to wait for the crawly to return. To capture these, cut a baked potato in half and gently squeeze to create cracks in the pulp. Place the potato halves white side down on the ground and check after one night. Use a pair of tweezers to dislodge any arthropod hidden in the cracks.

## Aspirators

Crawlies too delicate and small for fingers and tweezers can be captured using an aspirator. The simplest one is a soda straw with one end covered by a piece of nylon stocking taped in place — you don't want to swallow a bug! To collect the insect, suck through the mesh covered end while holding the open end over the creature. Once it's sucked into the straw, blow gently to place it in a storage container. Or, make your own bug sucker using a jar with two pieces of plastic tubing. This aspirator can be used for temporary storage too. (See sidebar for instructions on making your own bug sucker.)

## Pitfall Traps

Pitfall traps are smooth-sided plastic or glass containers placed in a hole equal to the diameter and height of the jar. Bait such as bits of meat or a banana/sugar water combination will be sure to attract interested creatures. Crawlies falling into the jar cannot escape because of the containers'

## MAKE A BUG SUCKER (ASPIRATOR)

*What you need:* clear plastic container with lid, two pieces of flexible plastic tubing, nylon mesh (pantyhose).

*What to do:*

1. Before the meeting, drill two holes in the lid the diameter of the plastic tubing. Make them just large enough that the tubing fits through snugly but not pinched.
2. Cut the tubing into two pieces, making one about 5 cm long and the other about 15 cm.
3. Tape the nylon mesh over one end of the shorter piece of tubing. The mesh prevents insects from being sucked into the mouth.
4. Insert the tubing through one of the holes in the lid so that the mesh end is in the container and the uncovered end is sticking out.
5. Put the lid on the container and stick the longer tubing in the second hole.
6. To capture a bug, hold your bug sucker so that the longer tube is directly over a bug, then gently suck on the shorter tube, drawing the bug into the container.



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smooth sides. Check the jar after one night. Remove the jar and cover with a lid punched with the tiniest of breathing holes or use a nylon stocking taped in place.

### Light Traps for Night-time Captures

Crumple one page of a newspaper and place in a coffee can. Add a funnel made from a large coffee filter. Place a light above the filter. Flying insects hitting the light will fall through the funnel and remain trapped inside the can. They will hide in the newspaper instead of trying to escape.

### Nets

Fine-meshed, long-handled nets are great for collecting flying and aquatic crawlies. Make your own using coat hangers bent in a circle and one pantyhose leg taped to the ring.

### Studying Creepy Crawlies

Live insects can be studied in their natural habitat outside or in terrariums inside. Terrariums are best for live studies. Use wide-mouthed glass jars, two litre pop bottles (with a rectangular piece cut out to allow access for adding material and insects) or an old aquarium free of leaks. Begin with a thin layer of activated charcoal covered by another thin layer of potting soil. Add detritus from the insects' natural environments (leaves, twigs, dead wood and moss for example). Leave dry or moisten slightly to natural conditions. Place a vial cap filled with water on the surface for drinking. Either cover to prevent escapes or line the top edge with petroleum jelly to prevent the insects from crawling out. Store at or near normal room temperature. For added warmth, store under a lightbulb. Do not overcrowd the terrarium with one species and be careful not to mix too many species.

### What and How To Study

Most Scouts and Cubs will be familiar with doing studies following the scientific method through their schools' science programs. For general interest's sake, here are some tips:

- ✿ Place baited and un-baited pitfall traps or potato traps in various locations to compare the types and numbers of arthropods captured.
- ✿ Experiment with different types of bait.
- ✿ How many different insects were captured?
- ✿ Where did you locate the most insects? Hypothesize why.
- ✿ What were the insects doing when captured?
- ✿ Compare the anatomy of the collected arthropods (how many legs, eyes, antennae, number of body pieces, etc.).
- ✿ Compare observations with another member of your colony, pack or troop.
- ✿ Divide a collection into beneficial and harmful species.
- ✿ Organize collection according to Class characteristics.
- ✿ Draw a picture of a cawlie highlighting its distinguishing characteristics.

In some countries, crawlies and grubs are considered a food delicacy. Although we don't have to eat them, knowing more about an arthropod's existence in our natural world may lead a budding scientist to start a life-long fascination with the bugs around him/her. It's hoped that by learning to appreciate and understand them better, youth will fear them less. By feeling more comfortable with bugs today, youth will be less likely to kill them with poison tomorrow, and the result will be a much more healthy and sustainable world. ✕

*- Jim is a writer and teacher living in Gander, Newfoundland.*

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## SUPPORTING WEB SITES

The following web sites will help leaders and youth understand more about the fascinating world of insects.

- Insect Identification**  
[http://www.einsteins-emporium.com/life/animal-info/insects/insect\\_identification.htm](http://www.einsteins-emporium.com/life/animal-info/insects/insect_identification.htm)
- Bug Bios**  
<http://www.insects.org/>
- Insects in the Classroom**  
<http://insected.arl.arizona.edu/info.htm>
- Bug Hunter**  
<http://bughunter.tamu.edu/tenreasons.htm>
- Insect Taxonomy**  
<http://www.kendall-bioresearch.co.uk/ifile.htm>
- Insect Zoo**  
<http://insectzoo.msstate.edu/Students/index.html>
- Insects and Their Allies**  
[http://www.ento.csiro.au/education/insects\\_allies.html](http://www.ento.csiro.au/education/insects_allies.html)
- Arthropod Collecting Tools**  
<http://insected.arizona.edu/collectinggear.htm>
- Collecting Techniques**  
<http://www.nfi.org.za/inverts/Collect/techniques.html>

