

NATURE KIDS



SCIENCE PROJECTS JUST FOR FUN.

WIGGLY WORMS

Earthworms are neat animals (see Teachers' Corner for lots of information). They are also very useful. They can help you recycle some of your garbage into new soil for your yard or garden. All you need to do is make a worm box and let the worms go to work. If you finish with the box, just put the worms and soil into your garden or yard and they will be right at home.

WORM BOX

materials:

- cardboard box - a large shoe box will do
- plastic bag - like one from the grocery store
- about 15 pages from the newspaper
- water
- 2 handfuls of soil
- pencil

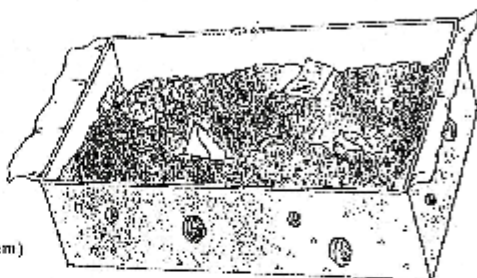
EARTHWORMS - you can collect them from your yard or buy some from a sport or bait shop (Academy sells them)

what to do:

1. Line the box with the plastic bag. You can tape it around the outside if you like.
2. Use the pencil to poke 4 or 5 holes through the plastic and box on each side.
3. Tear the news paper (top to bottom is usually easier) into 2-inch strips and place into the box.
4. Sprinkle the 2 handfuls of soil over the paper.
5. Pour in just enough water to make everything damp. One cup should be plenty.
6. Add the worms.

maintenance:

- Keep the box in the shade
- Add 2 - 3 tablespoons of kitchen scraps each day: vegetable and fruit peelings, coffee grounds, bread
- NO** meat or dairy products please
- Add enough water to keep everything damp but not soaking wet
- Watch the worms go to work
- HINT:** the best time to see the worms is at night when they come to the top of the soil to find food.



WORM BOX

WORM JAR

Another way to watch what worms do is to put together a worm jar.

materials:

- Large jar - peanut butter, mayonnaise, etc.
- Poke holes in the lid or use netting to cover the top
- sand and soil - **NOT MIXED TOGETHER!**
- black paper or cloth to cover the outside of the jar
- 1 or 2 worms

what to do:

- Put the sand and soil in the jar in layers (see illustration)
- Dampen with water - make sure it is damp all the way to the bottom
- Put the cloth or paper around the jar, add the worms

maintenance:

- Look under the cloth or paper each day. What is happening to the soil.
- If you keep the jar for more than a few days, add a food scrap each day and make sure the soil and sand stays damp.
- Put the worms in your garden when you are done.



WORM JAR

TEACHER'S CORNER

by Janet Malone

Elegant Earthworms

Blogant may not be the first word that comes to mind when you think of earthworms. They are, however, really amazing animals.

Earthworms are *annelids* - that is segmented worms. This group includes bristleworms, which are mostly marine; and leeches, which are mostly fresh water dwellers; as well as the earthworms and their relatives, which are primarily soil dwellers. Altogether, there are about 9,000 species of annelids; only 3,000-5,000 of which are earthworms. They live all over the world except in Antarctica, deserts, and according to one source, in Madagascar. They range in size from 1/25 inch to 11 feet in length.

The word annelid means "ringed", and if you look at an earthworm it is easy to see where the name came from. An adult earthworm has 120-200 rings or segments. Each segment has four pairs of setae (SEH-tay) or bristles which assist in locomotion through and on the ground. The skin is covered by a thin cuticle, similar to that of insects but not nearly as thick.

Annelids are the most complex of all the worm groups. They have several fully developed organs and systems that the round, ribbon and flat worms do not possess. They have a complete digestive tract, from mouth to anus. Simpler animals have only one opening and thus must expel wastes through their mouth, a much less efficient process. They have a circulatory system with five

paired pseudo-hearts and blood vessels which carry food to all of the cells (worms are the simplest animal to possess blood vessels). They also have an excretory organ, called a *nephridium* for disposing of liquid waste. The most significant new "new" feature in earthworms is the *coelom* (SEH-lom) which is a fluid filled space between the gut and the body wall allowing space for other organs.



However, earthworms do not have eyes or ears or a separate respiratory organ. They can sense light through light receptors on their skin, primarily located at either end of their body. They also have skin receptors for chemicals, touch and vibrations. They may be able to taste. Some tests have shown that earthworms have definite food preferences.

Earthworms eat leaves, sticks, bodies of dead insects and other animals found on the ground as well as organic bits of material in the soil itself. They can eat their own weight every day. The waste products of their digestion, called *castings*, contain the undigested material and material that was digested

but not absorbed. It is deposited at the burrow entrance or into the soil depending upon the type of worm. The castings are rich in organic nitrates, phosphates and potash and help to neutralize acids and alkalis in the soil. One worm can produce about eight pounds of castings each year. In 1943 Toulouse, France began using earthworms for sewage treatment and found that it was more effective and less costly than their traditional method. In the course of their wanderings, earthworms tunnel, creating pathways for water and air; and they mix the soil, bringing up deeper soils with organic matter to mix with the surface dirt.

Interestingly, all earthworms are hermaphroditic, though one cannot mate with itself. When earthworms mate, each fertilizes the other. After mating the *clitellum*, a gland occupying several adjoining segments, produces a cuff-like sleeve in which the fertilized eggs are deposited. Later the cuff is shed and then hardens and closes up at the ends to form a cocoon-like structure protecting the eggs. It is somewhat rubbery and about the size of a pea. The twenty or so eggs inside will hatch after several weeks and the newly hatched earthworms will move out into the world.

All in all, a most elegant animal.

