

## Vermiculture

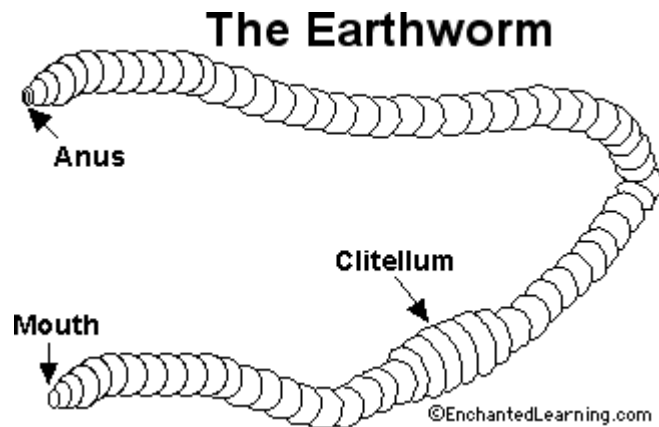
Spring 3<sup>rd</sup> Grade: Visit 4

- >Can someone tell me what composting is? (Review last week's visit)
- >Can someone tell me what worms are?

**Worms:** Mother Nature's natural composer. Broadly speaking, a wingless invertebrate that is much longer than it is wide or thick.

A good place to start is to get rid of the "yuck" factor that may be associated with worms. Have the class say "Ewwwwwww" on the count of three. Then take the "ewww" and have them put in their pocket for safekeeping. Now they are not going to say "ewww" or yuck for the rest of the presentation, or it may hurt our feelings because we do not think worms are gross, but interesting and useful.

**Vermiculture** is composting using worms. Vermiculture uses the worms to decompose various food scraps. Worms do not have eyes, but they can detect light and light changes. Worms prefer a darker environment and will be much happier this way.



**Earthworms** (also called nightcrawlers) are very important animals that aerate the soil with their burrowing action and enrich the soil with their waste products (called castings). Good soil can have as many as 1,000,000 (a million) worms per acre.

There are over 3,000 species of earthworms around the world. These invertebrates (animals without a backbone) range in color from brown to red, and most have a soft body. Earthworms range in size from a few inches long to over 22 feet long. The largest earthworms live in South Africa and Australia.

The brain, hearts, and breathing organs are located in the first few segments of the worm.

- How many hearts does a worm have? It has five pairs of hearts! The rest of the inside of an earthworm is filled with the intestines, which digest its food. Earthworms eat soil and the organic material in it - like insect parts and bacteria. The mouth is covered by a flap (called the prostomium) which helps the earthworm sense light and vibrations. Tiny bristles (called setae) are on most segments of the earthworm's body.
- Worms are cold blooded and they breathe through their skin. Unlike humans, they have no lungs. Worms respire through the entire surface of their bodies.
- They have no eyes or legs.

**Reproduction:** There are no boy worms and there are no girl worms, they are just worms. Although earthworms are hermaphroditic (having both male and female reproductive systems), it takes two worms to mate and reproduce. They make more worms by fusing their clitella (the enlarged segments in the middle of an earthworm) and then laying eggs in a cocoon. After the worms are done maturing, they hatch.

They also enjoy moist environments in contrast to dry ones. However, they can handle a wide variety of temperatures, ranging from 50-90 degrees. Worms like moist homes, and they like to have a bedding of some sort, for instance newspaper, soft cardboard, straw and leaves.

-Worms eat about half their weight each day. So if you have a pound of worms, they can conceivably eat half a pound of food. They can eat almost any food that humans do. However they dislike acidic foods like citrus and meat and dairy. They enjoy eating fruit and vegetable scraps. Eggshells and grains are acceptable in limited quantities. Things that humans do not eat, such as tea bags and coffee grinds and newspaper or straw can be eaten by the worms in addition to the normal organic matter.

-Worms move backwards and forwards through contracting and relaxing their muscles in waves.

### **Worm Myths and Facts:**

Q. Why do worms lie dead on the street after a storm?

-Worms leave the soil because water from rain washes into the dirt and the worms can't breathe in mud. So they crawl out onto the street and sidewalks. They end up in puddles. Now most people think worms drown in the puddles. But actually, they usually die because they get too much light. They are **photosensitive**, which means they are allergic to light. So they really die from the sun.

Q. If you cut a worm in half, will there be two living worms?

-If a worm is cut in half, the half with a head may grow a new tail, but the tail half can not grow a new head, and so will die.

Q. Will worms hurt your garden by eating your plants?

-In the old days people thought worms were bad, so they killed them. That's where the word "vermin" came from. But they are really good for your garden. They break down the soil, which helps plants grow more easily. Their castings actually help plants grow.

Q. Do worms have eyes and noses?

-No. The worm has a fleshy pad above his mouth which acts like eyes and a nose, since it searches around for food. When it finds foods, it brings it into the mouth and then closes over it.

### **Poster Activity**

Attach the various likes and dislikes of the worms onto the board, with the help of students.

Yes= Tea Bags, coffee grinds, egg shells, vegetables and fruits, water, newspaper

No= Citrus, meat, dairy, heavy grains, heat

### **Activity: Handling and Observing Worms**

Have children wash their hands before handling the worms. Be sure to wash your hands before and afterwards as well!

Explain that the worms are alive and we should respect them. Distribute one worm to every student or every two students. Let them watch the worms for a few minutes. \*Make sure that the students are not too rough with the worms.

- Ask if they can find the clitellum.

- Ask if they can estimate the number of different segments in a worm.

- Ask if they can find the "front" of the worm.

After the activity, ask the kids to say goodbye to the worms as you collect them into the container. Have them wash their hands after the worm observation.