
OCM BOCES Science Center

Food Chains and Webs

Information, Tips and Hints

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Overview

The big part of this unit, for the teacher, is the care of the critters. You will be setting up terrariums which will be homes for crickets, worms and anoles.

Activity 1 FYI (YOU OR YOUR STUDENTS WILL NEED TO PROVIDE “LOCAL SOIL” FOR THIS ACTIVITY.)

- Activity 1 starts off with the exploration of soil and leads to the basic components of soil: sand, silt and clay. It then leads into setting up classroom terrariums where gravel and soil provide the base layers of the terrarium.
- **Spring Water:** The Materials list includes “spring water”. You only need to think about providing spring water if you have not aged water obtained at school or from home. (see Aged Water below)
- **Setting up the terrarium:** The last part of Activity 1 involves building the terrarium environment. (p 20) Figure 1-3 on p 20 is misleading - the soil level in the actual terrarium will be much lower than insinuated by the drawing. The paragraph above Figure 1-3 gives directions for building the terrarium. The directions refer to adding bags of gravel and peat humus – WE DO NOT PROVIDE INDIVIDUAL BAGS OF THESE MATERIALS FOR EACH TERRARIUM, We provide large bags which need to be divided up between the terrariums. Each SMALL bag referred to in the directions is equal to 2 cups of material, therefore,

1 bag gravel = 2 cups gravel

2 bags peat humus = 4 cups of peat humus

Leaf Litter and Anole Stick: You may choose to put a paper towel or layer of leaf litter between the gravel and peat humus layers. You should also consider obtaining some leaf litter (from your or a student's yard) for the surface of the soil as a shelter area for the Anole and food source for the earthworms.

Ask your student teams to bring a stick/twig in that can be leaned into a corner wall of the terrarium to provide a high place for the Anole to rest upon.

- **Grass seeds:** Once the terrarium is constructed and the seeds are planted, water the terrarium by spraying the surface until it is thoroughly damp. If the peat humus is VERY DRY, add water by pouring it down the terrarium wall on a side or in a corner until you see a low layer of water in the gravel layer. Cover the terrarium with plastic (do not cut up the plastic sheet provided in the kit as you may need it later for the “Anole Greenhouse” set up) or use the Styrofoam trays provided in the kit; cover most of the holes in the terrarium top to minimize evaporation of water.
- **Aged Water:** Have some aged water on hand for adding water to the terrarium environment. To age water, fill a clean bucket or jug with water and let it sit for at least 2 days to allow the chlorine that is added to tap water to dissipate out into the air. If you are caught without aged water- use tap water and hope for the best.

Activity 2 FYI

- In this activity you will need to provide a soil mixture, use one of the large supply buckets to mix the sand and potting soil. Use the plants from this activity for Activity 3. You will want to have students grow a few extra.

Activity 3 FYI

- **Planting seeds:** This activity requires grass plants and has you setting up 16 small pots in order to have plants for the sunlight/no sunlight experiment. Consider using the plants that have thrived from Activity 2 to do this activity (or even plant some extra pots when setting up for Activity 2).

Activity 4 FYI – Cricket Arrival and Care

- **Crickets:** You will receive enough crickets to do team observations of a cricket with your class and to feed the Anoles for two weeks. Two weeks should be sufficient time for your students to make their anole and food chain observations of the terrariums.
- **Cricket Arrival:** The crickets will arrive in small transport containers. In order to make it easier to handle the crickets we suggest emptying one of the large supply buckets and “pouring” the crickets into the bucket. They will NOT be able to jump or climb out of the bucket; it will be easier to obtain crickets for the activity and for adding to the terrariums. Be sure to include the egg carton sections or add other material, such as toilet paper tubes, to the bucket for the crickets to hide under or in. They will be less stressed out if they have places to hide. Be sure to *return the transport container* to the Science Center with your kit.
- **Cricket Care:** You should receive some cricket food with your cricket delivery. Be sure to feed the crickets as, without food, they will become aggressive towards each other. Water the crickets by placing wet paper towels in their environment. You can also add apple or potato slices as a source of moisture. In addition to the cricket food, you can add: oats, fish food, dog food, vegetable slices. An occasional wiping of the floor of the bucket will help to keep the cricket environment healthy.

Activity 5 FYI – Anole Arrival and Care

- **Anole Arrival:** Your anoles may arrive at the same time as the crickets or at a later date depending on how they are delivered. Ask your student teams to bring a stick/twig in that can be leaned into a corner wall of the terrarium to provide a high place for the Anole to rest upon. **PLEASE** plan on being at your school on the arrival date as the anoles will need to be placed in the terrariums. They may arrive at the end of the school day.
 - **Science Center Delivered:** Anoles that come directly from the Science Center will arrive in plastic bags (4 to a bag).
 - **Supplier Drop Shipped:** If the anoles are drop shipped from a supplier they will come in a box. When you open the box they will be ready to escape. Have a large clear plastic bag (most schools use this style for trash can liners) available to open the box into so that the anoles will not escape. When they have settled down you can remove them from the bag one at a time.
 - **Handling an Anole:** Using a glove from the kit, you can reach into the bag and remove one anole at a time. Do this by slowly approaching the anole, firmly grasping it by the base of the tail with your thumb and index finger – place the rest of your fingers or hand under the anole to support its feet. It may use its feet to try to leverage the tail out of your grasp – hold on firmly. Supporting the anole’s feet helps to avoid the panic and thrashing that will occur if you lift the anole only by its tail. (Grasp as close to the base of the tail as you can as the tip of the tail can break off – a survival mechanism.)
 - **Secure the Terrarium Cover:** After placing an Anole in a terrarium tape the top down or use the rubber bands provided in your kit to secure the lid as sometimes the anoles wedge themselves against the top and may inadvertently pop the lid up.
- **Anole Care:**
 - Feed the anoles by placing crickets in the terrarium – an anole will eat 2-3 crickets every 2 days.
 - Water the anoles by spraying their environment – they will drink water droplets. Water the terrarium by spraying it and/or by pouring water down an inside wall to create a layer of water in the bottom gravel. Keeping the terrarium well watered, covering the top leaving only a small area open for ventilation and placing the terrarium in the sunlight (under a lamp) should minimize evaporation and cause condensation droplets to form inside the terrarium which will “water” the anoles.

- Anoles prefer ambient temperatures above 70 degrees. During the day a window that receives a good dose of sunlight will provide enough warmth. For nighttime or weekends, there is a light source, protective cage and some plastic sheeting to allow you to set up a warm Anole “Greenhouse” environment. (see the “Anole Greenhouse” handout in your white kit envelope)

Activity 6 FYI - Earthworms

- **Earthworm Arrival:** Evaluate the container in which the earthworms arrive. If they appear to need more space (or it will be several days before you use them), place them in a larger container with some damp soil from Activity 1 (cool whip container, unused terrarium, empty bucket).
- **Earthworm Lessons:** In Activity 6 your student will explore the characteristics of the earthworms and their general behavior. Once you place the earthworm into the terrariums it will be difficult to retrieve them without providing escape opportunities for the crickets and anoles. Before doing this, look over “Activity 9 Earthworms and Decomposers” to make sure that you are ready to place them in the terrariums.
- **Earthworm Care:** The earthworms that we provide are well suited for living in shallow soil as they are tolerant of warmer temperatures. They will obtain moisture from the terrarium soil and feed on any organic matter, such as leaf litter. There is some additional information about the red wiggler earthworm in the paragraphs below.
 - *Eisenia fetida*, known under various common names such as red worm, brandling worm, tiger worm and red wiggler worm, is a species of earthworm adapted to decaying organic material. These worms thrive in rotting vegetation, compost, and manure; they live at or above the soil surface.
 - **Adult Males and Females:** Earthworms are both male and female (hermaphrodites) – their bodies have both sets of sex organs – but they still mate with other worms to produce their eggs. A thickened band (clitellum) that forms around the earthworm creates a cocoon substance that the eggs are placed into. The earthworm crawls out of the cocoon ring which then closes over to form the ovoid shaped final cocoon. Tiny, fully formed worms will emerge from the cocoon.
 - **Habitat:** Worms live on or in the soil. Some worms live in and tunnel through the soil. Some worms live in the upper organic matter. Worms may have preferences for different temperature levels – traveling deeper into the soil will allow worms to experience cooler temperatures. The red wigglers are well adapted to living at the upper soil levels. They are tolerant of warmer temperature such as our typical “room temperature”.
 - In Elementary classrooms earthworms are often described as being “decomposers”. For scientists this is technically incorrect as bacteria and fungi are the true decomposers. The products of the earthworm’s digestive system called earthworm castings, are worked upon by these bacteria and fungi. The resulting material is now in a form that plants can use. So earthworms are a part of this “decomposition” of matter part of the food chain and which leads back to plants.

Activity 8 FYI – What Do Crickets Eat?

- **Preparation:** Pull out the few crickets that are going to be used for this activity, placing them in separate small containers. Add some wet paper toweling to each container for water access but do not feed them for two days.
- **Materials:** If you choose to provide a meat product for this activity and do not want to provide cooked hamburger, we suggest pieces of boloney or hot dog as an alternative.

Activities 7, 9 – 12: No special suggestions or clarifications.