

Schoolyard Ecology: Using Pitfall traps to discover Invertebrate communities

Baltimore Ecosystem Study
Cary Institute of Ecosystem Studies
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Pitfall Traps

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Questions In what areas do you find the highest levels of arthropod (and other leaf litter inhabitant) diversity?

Are some organisms more abundant in certain areas (e.g. There are more Gastropods (snails and slugs) found near streams)?

Overview Under our feet exists a very diverse and abundant community of organisms. The forest floor and the small herbaceous plant and tree species that are associated with it support a wide variety of different species. Small mammals, invertebrates, reptiles, and even birds depend upon the forest floor for shelter as well as a place to forage for food.

In this study, you will use track plates made from dark-painted aluminum flashing coated with graphite powder. Ideally, animals that are moving around and foraging on the forest floor will leave footprints in the graphite powder. By placing similar track plates in different areas you can ask questions about habitat preferences and population sizes.

Materials *Initial setup:*

- 16 Oz. plastic cups (as many as your design calls for)
- Metric measuring tape
- Trowels
- Gloves
- Cardboard
- Scissors/ Box cutters
- Gallon of water-soap mix
- Large stones (can usually find out in the field)

After collection:

- Sharpie pen
- Ice cube trays
- Strainers
- Magnifying glasses and/or dissecting microscope

Procedure → **Decide what you want to investigate and what question you want to ask.**

1. Write down the question about leaf litter organisms that you would like to address. Also, formulate a hypothesis based upon your question.
2. Survey your schoolyard, pick your sampling sites, and develop methods to collect your data.
3. Pick areas that you will later be able to compare to one another.

→ **Before heading out...**

1. Cut cardboard squares long enough to cover the top of your cup with a little room to spare
2. In a gallon jug, put some soap (and salt if you would like) and water and mix well.

→ **Place your pitfall traps at your site**

1. At your site decide how many transects you would like to set up and the number of traps (ideally 5-10) per transect. Your sites should have different land cover.
2. Traps should be 5 meters apart, either in a straight line or in a grid pattern.
3. Dig a hole for each trap, deep enough so that your cup will be slightly below the top of the hole. Make sure the cup fits snugly in the hole. (This setup is designed to allow arthropods to “fall” into the trap as they move along.)

4. Use 2 cups (1 inside the other) for each hole. This will allow you to easily remove the top cup and place the arthropods into a container without disturbing the existing hole).
5. When the holes are dug the cups are place in the ground, get your water/salt/soap solution and shake it.
6. The pour a little in the bottom of your cup.
7. Place stones on the side of the cup, and place the cardboard square on top of the stones. This allows the cardboard to be slightly raised off the ground to allow arthropods to fall in. Also place stones on top of the cardboard to hold it in place.
8. Create a map of the placement of your cups within your sampling area to allow you to find them later.
9. Return to your site in 2-4 days to retrieve your cups. Label each cup with the site and trap code that you determined earlier. (e.g. S1/T1, S2/T2, etc.)