A Field, a Forest, and a Stream

ACTIVITY

Background:

All plants and animals have a particular place or area where they live called their **habitat**. While the term habitat generally focuses on a particular organism, an **ecosystem** encompasses a whole community of living things, non-living elements, and their interrelationships.

Plants and animals have many important interactions within their communities, and depend on different factors in their environment. Animals may depend on plants or other animals for food, and may use different plants for cover, while plants may need insects to pollinate them and earthworms to tunnel about so they add air to the soil.

Environmental factors—such as different climates, the amount of sunlight, the amount and type of water available (e.g., salt, fresh, moving, stagnant), the shape of the land, altitude, type and condition of soil in the area—will all help to determine what sort of plants and animals live in any given place.

What to Do:

1. Divide participants into four groups and ask each group to elect a Recorder to write down data they collect, and an Equipment Leader to pick up and return the required equipment. Groups can trade off roles between locations if they wish. Tell each group that they will investigate different aspects of the environment present in each of three locations similar to these: (1) the edge of a pond, stream or lake; (2) an open field; and (3) the forest floor.

2. Distribute the Data Collection Chart and equipment to each group. If possible, have volunteers oversee small groups. Review appropriate collection techniques and safety considerations (pages 17-18). Assign each group a role: soil, temperature, plant life, and animal life.

Soil Group: Ask this group to examine soil moisture at each location. Participants can use a trowel or stick to scrape the surface of the ground to obtain a small sample of soil. By feeling the soil, they should be able to tell whether it is wet, moist or dry. Test the soil at three places in each location. Record their observations. They might also record light intensity by using a photographic light meter.

Temperature Group: Ask this group to record the water temperature of the pond, stream, or lake and the air and soil temperatures at all three locations. They should also sketch out a brief diagram of the sun and shade pattern they observe at each location.

Summary:

Participants gather data on temperature and moisture from three different habitats.

Grade Level:

3-8

Time

1 hour 30 minutes

Learning Objectives:

Participants will be able to:

- Collect and record scientific data.
- Describe similarities and differences among three habitats observed.
- Make hypotheses regarding how different environmental factors affect temperature.

Materials Needed:

- Copies of the Data Collection Sheet
- Paper & clipboards or nature journals
- Pencils
- Trowel
- Outdoor thermometer
- Regional field guides (recommended, but optional)

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Plant Life Group: Ask this group to describe the various kinds of plants they observe (i.e., trees, shrubs, vines, grass, etc.). Suggest that they record what they observe to be the most common plants found in each location and note especially where each is growing relative to the others. Sketch these plants in a nature journal. If possible, provide a field guide for the group to use.

Animal Life Group: Ask this group to note the various kinds of mammals, insects, birds, reptiles, fish, frogs, tadpoles, and other creatures (or evidence of them such as scats, tracks, burrows) present in each location. See page 255 for additional wildlife clues.

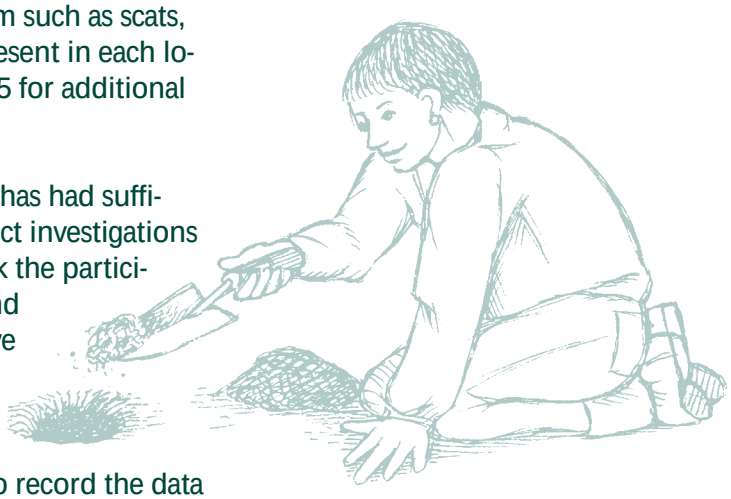
3. After each group has had sufficient time to conduct investigations in each location, ask the participants to regroup and share what they have recorded. Use an enlarged data collection chart on a board or flipchart to record the data gathered for each habitat listed on this chart.

4. Use the chart as a basis for leading a discussion with participants on the differences between the three habitats including:

- *How does the forest affect light intensity, humidity, air temperature, and soil temperature?*
- *How does the water (pond, stream, lake) influence the soil temperature and soil moisture?*
- *What is the influence of the amount of vegetation cover on soil moisture, or on temperature?*
- *What impact does air temperature, soil temperature, and light intensity have on wildlife?*

For Younger Participants (K-2):

Take the whole group to each of the sites and assist them in taking temperature readings at each



site and making verbal observations of the plants and animals they see. If possible, take along several large sheets of posterboard—one for each site—and have participants take turns making drawings of the things they observe, so that each posterboard becomes an observation journal for the whole group. After visiting each site, return to the base and discuss what you found. *What differences did they observe? Why do they think those exist?*

Questions:

- How do temperatures differ in different habitats?
- Do plants affect temperature?
- Does water affect temperature?

Adaptations:

Refer to general adaptations on pages 11-16.

Hearing Disabilities:

- Have a set meeting place in case individuals get separated.
- Clearly mark the areas (use string or flags).
- Demonstrate how to use a thermometer and have participants practice the skill.
- Have all participants write down comments to facilitate effective communication in their small groups.
- Allow participants who have difficulty speaking to use the sign language interpreter to present their findings to the group.
- Position yourself and the sign language interpreter so the participants can see you for further directions or warnings while on the trail/at the site.

Learning/Cognitive Disabilities:

- Have a set meeting place in case individuals get separated.

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- Clearly mark the areas (use string or flags).
- Use the largest thermometer you can find. Demonstrate how to use the thermometer and have participants practice the skill.
- Have different soil samples for participants to touch and practice identifying (i.e., wet, moist, or dry) before they head out into the field.
- Keep groups small to allow for as much hands-on interaction as possible. If necessary, have two groups complete each of the assigned tasks and compare results.
- Provide small tape recorders for those participants who have difficulty writing to record their information or have them dictate input to the group Recorder.
- If appropriate, complete the younger student version of the activity.

Motor Disabilities:

Overall:

- Select a site that is largely accessible.

For participants with limited muscle strength, coordination, or dexterity of the hands:

- Use the largest thermometer you can find. Provide test tube clamps for participants who are unable to hold the thermometer. Build up the handles of the clamps with tape as needed.
- Provide small tape recorders for those participants who have difficulty writing or have them dictate input to the group's Recorder.

Visual Disabilities:

Overall:

- Clearly mark the trail/areas with a guide string on one side.
- Provide small tape recorders for participants to record their findings if they do not have a method of writing available to them, or have participants dictate input to the group's Recorder.
- Demonstrate how to use the thermometer and how to take the different temperatures. Have participants practice this skill.
- Have different soil samples for participants to touch and practice identifying (i.e., wet, moist, or dry) before they head out into the field.
- Have partners use vivid descriptions and encourage participants to touch and explore items to be observed; insure that participants are fully engaged in the activity.
- Have resources available in alternative formats.

For participants with low vision:

- Create a large print version of the Data Collection Sheet. Provide thick black markers for use.
- Use the largest thermometer you can find. Mark number increments with a black marker for easier viewing.
- Have a variety of magnifiers available.

For participants who are blind:

- Create a Braille version of the Data Collection Sheet.
- If possible, purchase a Braille thermometer for this activity. If not, use the largest thermometer you can find. Mark every ten degrees in Braille, every five degree with tape, and place a single dot of glue for each degree in between. Have partners assist with reading the thermometer.