

### Transect of a Habitat

**Region:** Gulf Coast (could do anywhere)

**Grade levels:** 4-8

**Time Required:** 2 class periods (approximately 90 minutes).

**Focus Question:**

- What types of evidence/data are available to determine wildlife presence in a given area?

**Learning Objective:**

- Students will be able to determine the presence of wildlife by gathering and analyzing biotic and abiotic data collected from a transect.

**Materials:**

- Meter tape or wheel
- Light weight rope at least 10 meters in length
- Heavy duty string, cut in 1+ meter lengths (extra length is for tying to rope - there should be 1 meter length after tying string to rope)
- Small tent stakes
- Field microscopes or magnifying lenses
- Thermometers for recording air temperature
- Non-latex gloves for students
- Non-latex face masks for students with known allergies
- Clipboards, paper and pencils for recording student observations
- Optional: digital camera or camcorder

**Background:**

- All living things need the basic requirements of food, water, shelter and space in order to survive. An area that provides all of these needs is called a habitat. These life needs can also be called limiting factors because they are key to determining the size or limit of a wildlife population. Other factors that control wildlife numbers are predators, disease, non-native species, natural elements such as, fire, floods or drought and human impacts such as urbanization and agricultural development.

As sea levels rise due to climate change, sea water engulfs land along the coast. As land along the coast disappears into the sea, the habitats of wildlife are often severely limited, compromised and even threatened.

One method scientists use to study a habitat more closely is to perform a transect, a method where an area is divided into smaller plots which can be investigated more closely for biotic and abiotic samples. Transecting involves observations, data collection and evaluation.

- **Definition:** “Transect” - A narrow strip along which researchers count organisms within communities to determine species’ populations and variability.

### Procedures/Instructional Strategies:

1. Mark rope at 1 meter intervals with permanent marker.
2. Take students outside to a location suitable for spreading out, exploring and investigating.
3. Tie 1 meter length of string at each interval. If you want to have sample plots on both sides of the rope, tie two 1-meter length strings at each interval.
4. Tie one end of rope to stake.
5. Place stake at beginning of area in which you want to perform transect.
6. Lay rope in a straight line from the stake.
7. Place another stake at end of transect and tie off rope.
8. Pull string tied at each marked interval on rope, out 90 degrees from the rope. Weigh down the string ends with a rock or another small stake.
9. You now have 1x1 meter areas for students to make observations and/or collect data
10. Students should record the evidence found by drawing pictures and photographing the site.
11. Following data collection, have students return the site to its original condition as closely as possible.
12. Have younger students fill out “Student Data Sheet 1” and older students fill out “Student Data Sheet 2” (Provided at end of the Activity.).

### Outcome/Assessment:

- After sharing your data with other transect groups, what general conclusions can be made about the entire transect area. How would you describe the area to someone that had never seen it?
- What are limiting factors? What are some probable causes of an increase or decrease in limiting factors in a habitat?

### National Science Education Standards:

#### Life Science:

- A population consists of all individuals of a species that occur together at a given place and time. All populations living together and the physical factors with which they interact compose an ecosystem.
- The number of organisms an ecosystem can support depends on the resources available and abiotic factors, such as quantity of light and water, range of temperatures, and soil composition. Given adequate biotic and abiotic resources and no disease or predators, populations (including humans) increase at rapid rates. Lack of resources and other factors, such as predation and climate, limit the growth of populations in specific niches in the ecosystem.

### **Understandings about Scientific Inquiry**

- Different kinds of questions suggest different kinds of scientific investigations. Some investigations involve observing and describing objects, organisms, or events; some involve collecting specimens; some involve experiments; some involve seeking more information; some involve discovery of new objects and phenomena; and some involve making models.

### **Science in Social and Personal Perspectives**

- When an area becomes overpopulated, the environment will become degraded due to the increased use of resources.
- Internal and external processes of the earth system cause natural hazards, events that change or destroy human and wildlife habitats, damage property, and harm or kill humans.
- Human activities also can induce hazards through resource acquisition, urban growth, land-use decisions, and waste disposal. Such activities can accelerate many natural changes.

### Student Data Sheet 1

1. Describe what you see, smell, feel, and hear.
2. What is the air temperature?
3. What are the weather conditions? Is it wet/dry, warm/cool?
4. What living things do you see?
5. What non-living things do you see? Are they natural or man-made?
6. Is there any evidence of the presence of wildlife? Animal tracks, scat, burrows, chewed leaves or other vegetation?
7. Is there evidence of human activity?
8. Draw a picture of your transect area on the back of this sheet.
9. If possible, take pictures of the evidence you have found

**Return the site to its previous condition as closely as possible.**

### Student Data Sheet 2 Transect Activity

#### **Animal Life:**

1. Note and record the various kinds of animals at your site (insects, birds, reptiles, fish, amphibians, mammals).

2. Record evidence of wildlife such as scat, tracks, burrows, or chewed leaves. Which is the most dominant?

#### **Plant Life:**

1. Observe the various types of plants at your site (large trees, small trees, shrubs, small plants, grasses).

2. Record the most common types of plants found in the site. Which is the most dominant?

#### **Abiotic:**

1. What is the air temperature? Describe the weather conditions.

2. Observe and record any non-living features at your site. Are they man-made or natural?

Is there evidence of human activity at your site?

