

Habitat Hunters

*Habitat Hunters activities are directly tied
to the ninth spread - pages 17 and 18 of "Our Wetland Project".*

Students will engage in a series of guided inquiry lessons to investigate relationships between organisms and the environment. Through data collection, analysis, interpretation and conflict resolution regarding local natural resource issues, students will experience the complex interactive influences of human and wildlife needs on the environment and themselves.

Levels

Grades 4 and up

Subjects

Language Arts, Science, Mathematics, Social Studies

Skills

Discussing, Comparing and Contrasting, Analyzing, Problem Solving, Creative Writing

Concepts

Connections of science, society, and local landscapes

Interactions of living things and environments

Local landscapes

Objectives: Students will be able to:

Describe several factors that impact wildlife populations, including energy flow and carrying capacity

Describe how the conditions in the environment impact the value of the habitat

Identify different perspectives and discuss how these perspectives might impact problem-solving and conflict resolution

Discuss methods of problem-solving and conflict resolution and describe what data would be useful in decision-making

Time Considerations

Preparation - 45 minutes

Activity - 125 minutes

Lesson Overview

- **Carrying Capacity** (50 minutes)
- **Habitat Assessment** (45 minutes)
- **Pause for Poetry** (30 minutes)

Carrying Capacity Lesson Details - 50 Minutes

Materials (20 student class-size)

envelopes - 1 per student

food cards for foraging activity

game materials - boundary markers

Carrying Capacity Worksheet

Background

Carrying Capacity - the carrying capacity of a biological species in an environment is the population size of the species that the environment can sustain indefinitely, given the food, habitat, water, and other necessities available in the environment.

Limiting Factor - an environmental factor that limits the growth, abundance, or distribution of a population or organisms in an ecosystem. For example, water, nutrients, sunlight, prey, etc.

Carrying Capacity Lesson Details - 50 Minutes *(continued)*

STEP ONE. Review the vocabulary terms including limiting factors and carrying capacity. Hand each student an envelope that will represent their den site.

STEP TWO. In advance of the lessons, scatter the pre-made “food” cards in a designated area. Each card represents a food category--some with numbers written on them are types of food in that category. The number of cards will vary depending on class size. There should be less than 80 pounds of “food” per student (representing the total pounds of food a bear would need to survive for ten (10) days).

STEP TWO. Review with the students what elements make up a habitat.

- space
- shelter
- food
- water

Carrying Capacity Work Sheet

Name _____

Date _____

How many pounds of each food type did you collect?

Red (meat) _____

Green (plants) _____

Orange (berries) _____

Yellow (insects) _____

Brown (nuts) _____

Blue (water) _____

Total pounds collected _____ / number of students _____ = _____

How many “bears” in your class survived?

What was the “limiting factor” for the bears in the carrying capacity activity?
(for this activity, one bear requires 80 pounds of food to survive for ten days)

Draw a graph of the food collected by the “bears” .

Carrying Capacity Lesson Details - 50 Minutes *(continued)*

STEP THREE. Have students form a line at the edge of the “habitat” and set their envelope at their feet. Tell the students that they are all black bears and they are going to forage for food. But, not all bears are alike. Choose one student who represents a *young male bear* trying to establish his own territory with a broken leg from when he encountered a larger male. He must forage with a strong limp. Identify another student who represents a *blind bear*, blinded by looking too closely at a porcupine. The blind bear must forage blindfolded. Choose a third student to represent a *mother bear* with two young cubs in the den. The mother bear must collect twice as much food as the other bears to survive. The other students represent bears without limiting factors.

Without telling the students what the cards represent, tell them that they are going to walk into the forest to forage. When they find a card they must bring it back and place it in their envelope before returning to the forest to gather more food. After all of the cards are collected have the students use their journal page to add up the total pounds of food they have gathered referencing the Carrying Capacity Work Sheet on the previous page.

STEP FOUR. Using chart paper/white board, record the weights each student collected. Make a special note of the injured, blind, and mother bears. Tell the students that they need to collect 80 pounds of food and at least one water card to survive.

Who survived?

How many did not survive in that habitat?

Did the “special” bears survive?

Was the mother bear able to feed her cubs?

If she did not have enough food, should she eat first?

What options to the bears that did not get enough food have to try to survive?

Have students record the total pounds collected by the class, and have them use the pounds needed to survive (80 pounds) number to figure out the Carrying Capacity of the designated habitat. Discuss the idea of carrying capacity with the students, and how limiting factors can affect the carrying capacity of a particular habitat.

Have students write their totals on the Carrying Capacity page of their journal.

Have students graph their food data in their journal.

What food was the most abundant?

How many bears survived?

What would happen if one of the food sources was not available one year?

Habitat Assessment Lesson Details - 45 Minutes

Materials

white paper
clip boards
pencils

Background

Carrying Capacity of a biological species in an environment is the population size of the species that the environment can sustain indefinitely, given the food, habitat, water, and other necessities available in the environment.

Limiting Factor is an environmental factor that limits the growth, abundance, or distribution of a population of organisms in an ecosystem. For example, water, nutrients, sunlight, prey, etc.

STEP ONE. Review with students some of the factors that can determine what organisms can live where and how many can live there.

Take students to a developed wetland/riparian area. Tell them their job is to “assess” the “habitat”. Tell students they will work in small teams of “research biologists” listing everything within a given area to assess the quality of the habitat. After 5 to 10 minutes have them gather in a circle and read aloud some of the elements found in their habitat. Record these findings on chart paper. After you have a fairly complete list ask them to tell you how the habitat is similar and different from a natural wetland. You can create a parallel list. For example, if students list asphalt or cement, the wetland would have soil; a jungle gym might be comparable to trees.

Explain that each student is going to design a new wetland preserve that would be more inviting for wildlife. The new wetland preserve will still retain the function of the present site, simply in a more “inviting to wildlife” manner. Tell students to map their “improvements” on their paper. Be sure to tell them the permanent structures must remain but other than that they can be as creative as they like. Give students ten minutes to design the new wetland preserve. All of the elements in their design should be labeled, drawn to scale, and include a key and compass rose similar to real maps. Students can use arrows pointing to where possible wildlife would be found.

After students have completed their new wetland preserve design, ask them to name one thing they changed and how that one thing impacted limiting factors and carrying capacity of the developed area.

What challenges will be faced to implement your plan?

What would have to be considered?

Would it be expensive to maintain?

Would it attract unwanted wildlife?

Would it become a human hazard?

Pause for Poetry Lesson Details - 30 Minutes

STEP ONE. Open with a discussion of the wetlands including plant and animals, as well as invasive species. Share pictures with students and have them write a poem that could include: descriptions, environmental implications, protective plans...

Possible poem formats.

Haiku is a non-rhymed verse genre, conveying an image or feeling in two parts spread over three lines, usually with a seasonal reference. Here's how to create a descriptive, engaging haiku.

- five (5) syllables in the first sentence
- seven (7) in the second
- five (5) syllables in the last sentence

Acrostic is the simplest form to put the letters that spell your subject down the side of your page. When students have done this they can go back to each letter and think of a word, phrase, or sentence that starts with that letter and describes their subject. Here's how an acrostic might look

E L K
L I E
K E G

Students can interpret acrostics in meaningful ways such as using ELK to remind them of E = environmental habitat; L = land resources; and K = kinships such as species of animal populations.

Another example.

W E E D
E D G E
E G G S
D E S K

Students can use WEED to remind them of W = wildlife habitat; E = environmental habitat; E: ecosystem function; D = disturbance by invasive plants like purple loosestrife in wetlands.

Concrete is the typographical arrangement of words, and is as important in conveying the intended effect as the conventional elements of the poem, such as meaning of words, rhythm and rhyme. It is sometimes referred to as visual poetry; a term that has evolved to have distinct meaning of its own because the words themselves form a picture. This can be called imagery because students use their senses to figure out what the words mean.