



# The Pressure's On

## level 2 on-site activity for fall

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Overview:	Students further their understanding of changes to native communities and explore the challenges presented by the shrinking of communities. The central activity enables students to experience firsthand the effects of a habitat that is being reduced in size by a variety of outside pressures.
Location:	Field site
Skills:	observing; relating/applying, interpreting, concept-forming, defining problems, determining cause and effect
Objectives:	Students will be able to describe five ways in which their area today is different from and the same as it was prior to European settlement. Students will be able to list at least one management practice used to restore native communities.
State Goals:	13.B.2e, 13.B.2f, 19A.1, 19.A.2, 19.C.1, 19.C.2a, 21.A.1a, 21.A.2a, 21.A.1b, 21.A.2b
Materials:	Index cards with habitat-threatening influences on them (1 per card); one segment of rope 15–20 feet long for every 8–10 students (or longer ropes for larger groups).
Time:	20–30 minutes
Vocabulary:	habitat, biodiversity
Copy Pages:	none

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### Background

Habitat loss is one of the biggest threats to biodiversity. Roads, shopping centers, housing developments, agricultural fields, and other developments are breaking up our large natural areas into smaller and smaller chunks. Conservationists call this habitat fragmentation. In many cases the fragments are too small to support the numbers and kinds of species that once lived there. Conservationists have the tough job of trying to determine how fragmentation is affecting biodiversity. They're asking questions like "How small is too small?", "Which species are we losing?", and "How can we balance our need for development with species' need for space?" Development and fragmentation can be difficult concepts for students to understand. It's important

that they see the relationship between the two and see that there are certain trade-offs that result from our decisions to develop in and around natural areas.

Since most development occurs to fill people's needs for schools, homes, roads, food, and income, it often is necessary. While most people recognize that we are not trying to destroy biodiversity when we build roads or homes, they also feel that the value of biodiversity is not factored into our decisions to develop. Many conservation biologists would like to see communities consider how development impacts biodiversity and work to accommodate natural systems as much as possible. In this activity, students are reminded that living members of natural communities need

adequate food, water, shelter, and space. Since each living thing has a different set of specific requirements, some are affected more than others as habitats shrink. Each student represents a species as they experience the shrinking of their habitat due to human influences.

### **Preparation**

Write up the index cards with habitat influences or have the students generate these in the classroom before going on the field trip. Ideas for index cards:

- Wetland is filled for new housing development
- Shopping mall is built
- A highway expansion will cut through a woodland
- A new airport will be built
- A shopping mall expands its parking lot for 500 more cars
- A road increases from two lanes to four
- A new housing development will put 50 houses on 100 acres of old fields
- A movie theater with parking lot is built on a flood plain
- Buckthorn (a non-native plant) spreads from a neighbor's yard into the natural area
- Fire is suppressed in the prairies and oak woodlands
- Purple loosestrife (a non-native plant) invades the wetlands
- White sweet clover (a non-native plant) begins growing in the prairie
- Garlic mustard (a non-native plant) shades out native woodland flowers
- A farmer clears more land to make larger fields

### **Procedure**

#### *Part A: Connecting Past and Present*

1. Remind students of their field site exploration assignment as introduced in the pre-trip activity. As they explore and get to know their field site they should:
  - a. Compare it to their vision and the picture they drew. Look for ways that it is the same as and different

from the pre-settlement descriptions they read.

- b. Note how it feels to be there, what colors dominate the landscape and anything else that will help them capture their site on paper when they return to the classroom.
- c. Notice what surrounds the site, any signs of human impact on the area, and how large it is.

#### *Part B: Shrinking Habitat*

2. Divide the class into groups of approximately 8 students (or use longer ropes for larger group sizes). Ask students to think about the natural community they are investigating and to use the observations made in the field and the pre-trip lessons to brainstorm the kinds of plants and animals that live in that particular community. Review the essential elements of a complete habitat that are necessary to support those species (sunlight, food, water, shelter, soil, space). Have each player choose an organism from the list generated and ask the player to represent that living thing during the activity. Each group should then form a circle and share with the others in the group the organism they have selected.
3. Lay a rope around each group. Tie a slip knot in one end of each rope, leaving the knot loose enough to insert the other end of the rope after it's been placed on the ground around the players. Players should have their heels inside and not touching the rope. Their goal is to stay inside the noose, and they may move in order to do so. Slip the end of the rope through the knot to complete the lasso.
4. Call out the habitat-threatening influences from the index cards one at a time. After each is read, the students should think about (or discuss, if time permits) how that threat would affect the organisms they represent.
5. Then tighten each noose. Encourage the students to help hold their community together by helping each other stay

inside the noose. If a student's heel touches the rope, that student is out. Students who are out can become helpers that check to see that no one is on or outside the rope in subsequent rounds.

6. Continue rounds until most players are out or as time permits.
7. Wrap up the activity through a discussion of the following points.
  - In a real natural community (woodland, prairie, savanna, wetland) would the organisms have helped each other to survive as they did in this activity?
  - How would the students have behaved differently if the rule to help each other stay inside the lasso had not been in place? Would there have been competition for the remaining habitat? What types of impact would that have on the organisms?
  - How did the examples of impacts on the cards compare to what they have observed so far about their field site?
  - Can they see signs of pressure being or having been placed on their field site (such as surrounding houses, roads, invasive species, farmland, etc.)? How might this translate into effects on the things living there?
  - What would the students want people to do or be aware of as they make decisions about developments in or near natural areas?
  - How does this relate to their stewardship activity? *Collecting seeds allows humans to have a positive impact on areas that are otherwise experiencing the problems associated with fragmentation. It's difficult for seeds to travel from one fragment to another without human assistance, just as animals now face difficulty migrating among fragments. By planting the seeds where they are needed later, people will have helped improve the biodiversity that is threatened as habitats shrink.*

### Assessment

Have students record:

- a. Several things that cause habitats to shrink and/or become fragmented.
- b. Some of the effects these changes have on the plants and animals that live in these habitats;
- c. Their ideas for helping people to consider the effects on biodiversity as they make necessary decisions about development in or around natural areas; and
- d. How the game relates to their stewardship and studies of their field site.

### Extensions

1. To add a math component, involve students in determining the number of ropes needed for the class and for measuring and cutting the ropes to the needed lengths.
2. Have students research the habitat requirements of some of the organisms listed for the type of community they are studying. What types of food and shelter do they need, what is the typical home range for the species (how much space does it need)? Determine which are likely to be impacted first by shrinking habitats.

