

Biodiversity Barriers

Estimated Time: 1 hour

SUMMARY

Biodiversity is an important part of the global ecosystem but threats like habitat destruction, fragmentation, and edge effects reduce population sizes in sensitive species. In this activity you will be creating a model of a habitat that borders areas of human activity and figuring out how to protect the reserve from human impact.

WHAT YOU'LL LEARN

- The concept of biodiversity and its importance will be discussed.
- Learn about the concepts of deforestation, edge effect, and fragmentation.
- Learners will appreciate how these concepts negatively affect species populations and biodiversity.

| Materials Used | Resources Used |
|---|---|
| <ul style="list-style-type: none"> • Colored pencils, crayons, or markers • Scissors • Paper towel tubes • Colored paper • Glue stick (or other glue) • Stapler (optional) • Cardboard • Hot glue gun (optional) • Duct tape (optional) • Tempera paints (optional) | <ul style="list-style-type: none"> • Internet research or nature books |

WHAT TO DO

1. Decide what sort of habitat you want to create and what sorts of plants and animals live there. Here are a few things to consider.
 - a. Will it be a forest, a prairie, a desert, etc?
 - b. Is it located near the equator or towards the poles?
 - c. Which hemisphere is it in?
2. Using the materials gathered, build a model of your wildlife preserve that is interrupted by a farm/pasture and by a busy road. Use a large cardboard piece as the base for your model and color, glue, and/or paint on top of it.
3. Add *buffer zones* and *wildlife corridors* to your preserve to protect animal populations.
4. Think about how your reserve works to increase the fitness – the ability to survive and reproduce – of some of the specific wildlife species that live in your reserve.
5. When you're finished, think about what it would be like to build this reserve in real life.
 - a. What are the challenges in creating a reserve?
 - b. What factors determine how big your reserve would actually need to be?
 - c. How would you monitor the success of your reserve?
 - d. What did you do to lessen the impacts of the pasture in your reserve?
 - e. What did you do to lessen the impacts of the busy road in your reserve?

6. Keep going with your habitat by adding more species, water sources, or anything else you want to include. Real preserves have many different features and are always changing!

TIPS

There are a couple key concepts that you can help learners find during this activity.

- *Buffer Zones* are areas intentionally left undeveloped between areas of human activity and your preserve area.
- *Deforestation* is the cutting down and clearing away of trees from forests.
- *Edge Effect* is the boundary between older forest and newly harvested areas. This can affect conditions within the forest and extend a few hundred yards into the forest. Species might avoid these boundary areas, making the habitat smaller than it otherwise would be.
- *Fragmentation* is the “cutting up” of intact forest to provide access to resources and extraction of resources. For instance, putting a highway through a large forest can make two small forests that might not support populations.
- *Wildlife Corridors* are long undeveloped areas that connect larger preserve habitats to let animals move between them.

A well-designed reserve will have three types of areas:

- A core that is isolated and protected for the animals.
- An area with multiple uses (a *buffer zone*) where humans and animals can both go.
- *Corridors* connecting multiple core areas so that animals can move between them.

You should also consider the *matrix* (the area surrounding the reserve) because whatever is built next to your protected area. Even if you have healthy buffer zones and connecting corridors, you probably still don't want a nuclear waste facility next to your nature reserve!