

Biodiversity Jenga

Introduction

Biodiversity combines the words biological diversity into one word. Biodiversity describes the variety of life on Earth, comprising of the variety within a species (genetic diversity) and between species, as well as variety within and between ecosystems. All life depends on other forms of life. It's this diversity of life which helps maintain the health of the environment.

To play this game you'll need Jenga blocks painted the following colours, with each colour representing a different part of an ecosystem:

- Green = Vegetation (plants, trees, moss, weeds, etc.)
- Blue = Water (lakes, rivers, rain, snow, etc.)
- Brown = Fauna (mammals, birds, fish, reptiles, amphibians, etc.)
- Grey = Shelter (rocks, soils, hills, tree trunks, etc.)
- Purple = Humans (human development, homes, factories, etc.)
- Black = Invasive species (Emerald ash borer, zebra mussel, purple loosestrife)

Use the following scenarios to play the game.

Scenarios

Scenario 1

Your ecosystem is a forest. A paper mill is looking for an area to cut trees which it can use for the production of paper and decided that your ecosystem would be the ideal place. At the beginning, the factory only cuts certain trees, a practice called *selective cutting*. This means that only certain trees (green blocks) are removed from the ecosystem and humans (purple blocks) are added to the ecosystem.

Taking turns, remove a green block from the tower and place a purple block at the top of the tower for a total of five blocks of each colour.

The factory needs to increase its production so changes its method to one called *clear cutting* in which it cuts all the trees in the area.

Taking turns, remove one green block at a time until all the green blocks are removed from the tower.

Scenario 2

Your ecosystem is a forest. Hunting is regulated by the government to ensure animals aren't over hunted. A group of hunters decide to break the law and hunt the caribou found in the forest. In this scenario, half the brown blocks represent the caribou and the other half of the brown block represent wolves.

Taking turns, remove four brown blocks to show the sudden decline of the caribou population.

As a result of the population decline in the caribou, the wolves have less food for themselves and their numbers decline as well.

Taking turns, remove three brown blocks to show the decline of the wolf population.

The removal of wolves from the ecosystem results in a population grow of the hare which is free to reproduce as its principal predator, the wolf, is gone from the ecosystem. As a result, the hare population is uncontrolled and eats half the vegetation in the ecosystem.

Taking turns, place one brown block on top of the tower and remove one green block from the tower, for up to five turns. This represents the growth of the hare population at the top of the ecosystem and the reduction in the amount of vegetation as a result.

Scenario 3

Your ecosystem is a wetland. A construction company decides that because this ecosystem is flat, it would be ideal for the development of residential homes. The law protects many wetlands but not this one and developers can make a lot of money building and selling homes. The company starts cutting trees and digging the ecosystem to build new houses.

Taking turns, remove one green block, one blue block and one grey block to a maximum of four of each colour. This represents the loss of vegetation, water and shelter. Place all the purple blocks at the top of the tower to represent the construction of homes on the wetland.

A now much smaller wetland remains which is home to a number of native plants and animals. Humans who live in the neighbouring homes plant flowers in their garden and have house pets. One family accidentally plants an evasive plant that grows quickly and suppresses the native species. Another family has pet Red Eared Slider Turtles which they can no longer care for so they release them into the swamp. Red Eared Sliders are also invasive species that compete against snapping turtles and painted turtles for food, shelter and space. Furthermore, another resident has been fishing a number of wetlands and releases what he has caught in this one, which includes a rounded goby, an evasive species that competes with native fish.

Taking turns, remove four brown blocks and two green blocks from the tower and replace them with six black blocks at the top of tower to demonstrate how the invasive species survive at the loss of native species.

Biodiversity Jenga Questions

Scenario 1-3

1. What happened to your ecosystem? Did it survive the changes or did it collapse?
2. In your opinion, why did this happen?
3. What did this scenario represent in the real world?
4. Even when being careful, did your ecosystem get affected by your actions in this scenario?

Scenario 2

1. What happened to your ecosystem? Did it survive the changes or did it collapse?
2. In your opinion, why did this happen?
3. What did this scenario represent in the real world?
4. Even when being careful, did your ecosystem get affected by your actions in this scenario?

Scenario 3

1. What happened to your ecosystem? Did it survive the changes or did it collapse?
2. In your opinion, why did this happen?
3. What did this scenario represent in the real world?
4. Even when being careful, did your ecosystem get affected by your actions in this scenario?