SCIENCE 3D

RAINFOREST BIODIVERSITY

In this packet, sample student answers are provided in red and notes to teachers are in blue.

In this **Explore Your Backyard** activity, students explore a local ecosystem. They will document the biodiversity in their area and gain further understanding about limiting resources for populations. This activity is best completed outside, but it can also be completed by visiting the website of a local park or natural area. Students can even make observations of organisms where they live or in their neighborhoods. If you are conducting a field trip, give students a set amount of time to explore and record the different organisms they see in Table 1. Then, have students go through their table and brainstorm the resources that they think the organisms need. If time is limited, have students select three to five organisms to focus on.

Alternate Activity: Have students work in groups to create a Field Guide for the area that they explore. Do not provide them with resources. Tell them they are going to explore biodiversity like early explorers. Have them 1) sketch each species (teams can divide the work), 2) decide what kind of animal or plant it is (e.g. bird or flowering plant) and/or 3) provide notes on their physical features, behaviors, and environments.

We explored the biodiversity of the Costa Rican Rainforest. With so many species in a small area, there are sure to be many interactions. Some are positive. Others are negative. One very important interaction is competition for resources. Competition can occur between individuals of the same population or between species. Populations don't grow as large when organisms have to complete for limited resources.

Let's explore!

For this activity, have students explore a local ecosystem. If possible, provide them with local field guides to help them identify species.

Your teacher will take you to an ecosystem or give you one to research. Use your observations to **complete** Table 1.

1. In the first column of Table 1 on the next page, **list** all of the different organisms that you see in the ecosystem. If you don't know the name of an organism, you can make one up. For example, you might write "small brown bird" or "short tree with big green leaves." Take pictures of or draw the organisms in the space below to help you remember how they look.

2. **Record** the relative abundance of the organism in the second column. Use the terms: **One, Few, Abundant, Very Abundant.** Consider having students discuss what criteria they would use to determine if organisms are abundant or very abundant. You could also lead a discussion about the benefits and costs of recording actual abundance data or using qualitative categories like those listed here.

3. In the last column, **record** what resources the organisms need to survive. For example, birds need places to build nests.

Table 1. Relative abundance and resources needed for organisms

Organism Name	Relative Abundance	Resources Needed for Survival
Duck	Abundant	Pond for food and swimming
Tall grass	Very abundant	Soil for nutrients open area for sunlight
Raccoon	One	Tree hole for shelter

4. **Describe** how you decided what to record in Column 2.

Answers may vary. The goal is to get students thinking about how they make decisions. A sample answer is, "I looked at how many individuals I saw of different types of animals and tried to make categories that made sense."

5. **Compare** the biodiversity you recorded in the ecosystem you studied with what you learned about rainforests in the **Mission Reader** and video. **Explain** the similarities or differences you observe.

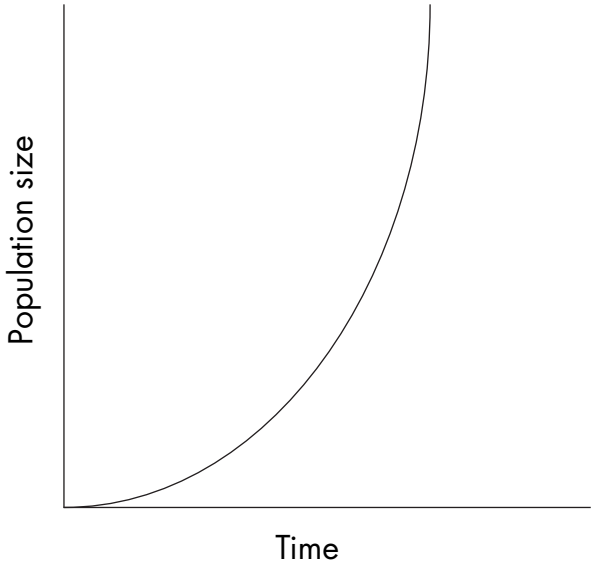
Answers will vary but will probably say that the biodiversity in their ecosystem is much lower than what they learned about in the rainforest. Students may say that it is because conditions are better for plants and animals in the tropical rainforest.

If organisms weren't limited by resources, their populations would never stop growing. In fact, their populations would increase each year. But, once most of the resources that plants or animals need get used up in competition, populations no longer can grow. Think of a bird in the rainforest. If the only limiting resource was the number of holes to nest in, then the population would grow until all the nesting holes were taken.

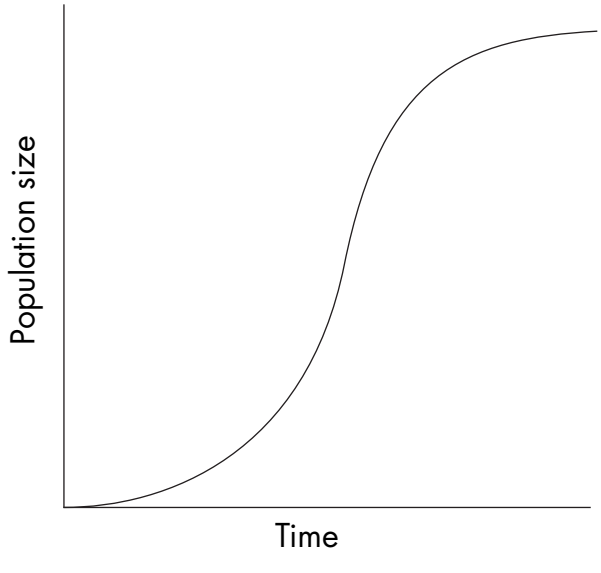
6. Using the figure below, **describe** which graph shows a population that has a resource that is limiting.

The Logistical Growth graph is a population that has a limiting resource. The population stops growing eventually. That must be when the resource is used up.

A. Exponential Growth



B. Logistical Growth



Choose one organism in Table 1.

7. My organism is ___a duck_____.

8. **List** the resources that the organism needs to survive and reproduce.

Answers will vary but should be based on answers in Table 1.

water, shelter, food, mates

9. Select one of the resources from your list that is limited. **Describe** how your organism competes with other individuals of its species or with other species for that resource.

Answers will vary. Plants have to compete with other plants to get light. Other plants may create shade. Plants may also compete for nutrients. When one plant takes them up with its roots, they are not available for other plants. For animals, individuals of the same species or other species compete for food, shelter, or places to build a nest.

10. **Draw** a diagram or **create** a poster that shows your organism and the resources it needs to survive. For each resource, be sure to state if the resource is limited or unlimited. If the resources is limited, provide notes and drawings to show what competes with your organism for that resource.