

ScienceNews

Activity Guide for Students: Creating a Vascular Plant's Ecological Niche

Directions:

Please read the *Science News* article "[New Guinea has more known plant species than any island in the world.](#)" In this activity, you will be answering questions about ecological niches and the article. You will then conduct an online survey with a partner on vascular plants found in South Africa's Cape Floral Kingdom, a region rich in biodiversity and niche species. You also will conduct a field survey of vascular plants found in a local ecosystem as a homework activity. Finally, you will design a poster presentation about a vascular plant that you choose from a local ecosystem or South Africa's Cape Floral Kingdom. You will be creating an ecological niche for your chosen plant.

Ecological niche questions

Your teacher will introduce the concept of an ecological niche. To apply the concept of ecological niche to xerophytic plants in terms of biotic and abiotic factors, answer the following questions as a class.

1. In which niche environments are xerophytic plants found?
2. What are examples of xerophytic plants?
3. How do xerophytic plants survive in their niche environments?
4. How are xerophytic plants adapted to survive in their niche environments?

Article-related questions

Answer the following questions as a class.

1. About how many vascular plant species have been found in New Guinea? Of these, how many are only found in New Guinea?
2. What was the most and least abundant species of plants found in New Guinea?
3. What are epiphytes?
4. The article mentioned that vascular plants have specialized tissue to transport nutrients. Research two types of vascular tissues found in plants and what each transport.
5. Using an online source, name at least one plant species in New Guinea and describe its adaptation to its niche environment.

Partner discussion/ecological niche activity for South Africa

With a partner, do an online survey of plant life-forms in another unique environment, the Cape Floral Kingdom of South Africa. Identify at least three examples of vascular plant species in each category described in the article.

Use the following table to present your findings.

Ecosystem and location	Cape Floral Kingdom Western Cape, South Africa						
Type of plant	Trees	Herbs	Epiphytes	Shrubs	Climbers	Palms	Tree ferns
Names of 3 plant species							
Pictures of 3 plant species							

Plant exploration close to home

As a homework activity, you will conduct a survey in a local ecosystem. A conservatory (indoor garden), backyard, local park, local forest or any nearby location with some variety of plants will work. If you need help identifying plants, try one of the following apps.

Plant identification apps:

PlantNet

LeafSnap

PlantSnap

Google Lens

You can use the following table to present your findings.

Ecosystem and location							
Type of plant	Trees	Herbs	Epiphytes or other local category	Shrubs	Climbers	Palms or other local category	Tree ferns or other local category
Names of 3 plant species							
Pictures of 3 plant species							

Poster preparation

In your next class session, work individually to create a poster presentation of one of the vascular plants from either the Cape Floral Kingdom or your local ecosystem. Your poster should include the plant's common and Latin name, its life-form type, a description of its habitat (include abiotic and biotic factors), feeding method, activity patterns and environmental adaptations. Include a picture of the plant.

You can create the poster by hand on printer paper or by using computer software. Be as creative as possible. You are encouraged to use pictures (please credit your sources), diagrams and flowcharts. Try to keep words to a minimum and communicate your ideas with images whenever possible.