



★ ECOLOGICAL DIVERSITY AND NATIVE SPECIES ★

Promoting 'diversity' is a basic principle of urban forestry. A diverse forest implies a more resilient forest, since disease or insect outbreaks likely won't affect every tree all at once.

Goal and Objectives

Goal: Students will evaluate how the diversity of species affects the ecosystem.

Objectives: Students will

1. Investigate and define qualities related to ecological diversity.
2. Present a plan to create a diverse ecosystem that includes native species.
3. Evaluate an ideal diverse forest community.

Materials

General

- Tablet(s) or computer(s) with internet access
- Projector and screen
- White board or chart paper and markers
- Tree Trails Portfolio, Student Learning Log/Journal

Handouts

- Diverse Ecosystem Rubric

Activity Materials

- Cameras or camera phones

Time and Internet Links

Instructional Time: 2-3 sessions, 45 minutes each

- Keep America Beautiful Leader Learning Guide Community Greening article, Backyard Biodiversity <http://www.americanforests.org/magazine/article/backyard-biodiversity>
- Keep America Beautiful Leader Learning Guide Discover What Trees Do For Your Community <https://www.kab.org/our-programs/education/student-and-leader-learning-guides>
- Firewise, Communities Compatible with Nature brochure <http://bit.ly/2e6qoal>



Instructional Procedures

I. Engage/Excite

1. Lead a discussion about how the diversity of trees, the biodiversity of forests and animals and its ecosystems are important to our community and world.
2. Develop a chart with three columns to compare the concepts: Diversity, Biodiversity and Ecosystem. Ask students what they might already know about these terms and list on a chart.

*Teacher Tip: **Diversity** is the difference in a set of like species, such as trees. **Biodiversity** means the diversity, or variety, of plants, trees, animals and other living things in a particular area or region. An **ecosystem** is a complex set of relationships among the living and non-living resources, habitats, and the community of residents of the area. This includes plants, trees, animals, birds, fish, microorganisms, water, soil and people interacting as a system. Everything that lives in an ecosystem is dependent on the other species and elements. The balance of an ecosystem is delicate and a disruption, such as the introduction of a new element, can damage or interrupt the balance.*

II. Explore

1. Ask the students if they have noticed different kinds of trees around their school and/or neighborhood. Move students into groups of three or four. Take students out to walk around the school grounds or neighborhood. Assign each group a specific area to investigate, but assign only one group to an area that has a limited diversity of plants or trees, such as only grass or only one type of plant or tree.
2. Ask each group to investigate their assigned section for a number and variety of living plants, animals, insects and trees. Each group should take notes and/or photographs and save these to assist them with documenting the findings of their observations.
3. Return to class and discuss options for documenting their investigation, such as charting a graph depicting their finds (number of each category) and/or make posters showing a map of what they observe. They may use symbols to represent trees, plants, animals, insects, etc. They should post their maps or graphs in the classroom, halls or where other groups can observe.
4. Each group should present their chart or map to the class and discuss their findings.

III. Explain

1. Their findings should lead into a discussion about the diversity, biodiversity and ecosystem they found and what improvements might be investigated.
2. Provide the group with a laptop/tablet to research an ideal diverse ecosystem for their community.



III. Explain continued

They should go online to determine what native plants are best for their environment. They may consider other strategic ecosystem plans as a model.

3. Have students use their research as a plan to find ways to improve the diversity and ecosystem of their school grounds, neighborhood and/or community.
4. Provide each group with the Diverse Ecosystem Rubric to assist them with defining some of the characteristics of a more diverse landscape.

IV. Extend/Elaborate

1. Have each group develop a presentation of an ideal landscape plan for a particular area in their community. Their plan should outline what native plants, animals, organisms and trees will work best together for their environment.
2. Each group should give their presentation to the class.

V. Evaluate

1. Ask each group to evaluate other group's ideal plan. Ask students to combine their best ideas to create one plan for the school, neighborhood and/or community. They may present the plan to the principal, school board and/or the city council.
2. Then make a new map or revise the one they created earlier. Graphs may be used to enhance their plan.
3. Ask students what they *Learned* about Diversity, Biodiversity, & Ecosystems and list on a chart.

VI. Extra Mileage/Attention

Extra Mileage: Have students go online to locate a different ideal forest ecosystem (in another area of the world, state, community, etc.). Compare and contrast that to their local ecosystem. Ask these students to present their findings to the rest of the class.

Extra Attention: Have "expert" peers work with students to analyze and/or revise the Diverse Ecosystem Rubric.

Tree Trails curriculum was developed by Texas A&M Forest Service in cooperation with Texas Urban Forestry Council and was supported by grants from the USDA Forest Service and Keep America Beautiful.



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Diverse Ecosystem Rubric

Directions:

Use this rubric to assist you in designing a diverse ecosystem.

After you have developed a plan, score it according to the rubric, then revise your plan to make it better.

	1 Point	2 Points	3 Points	4 Points
Tree Qualities	Little or no trees	Few of same trees	Diverse number of trees	Diversity of trees planted in ideal locations
Plant Qualities	Little or no plants	Few of same plants	Diverse number of plants	Diversity of plants planted in ideal locations
Animal Qualities	Little or no animals	Few of same animals	Diverse number of animals	Diversity of useful animals on landscape
Insect Qualities	Little or no insects	Few of same insects	Diverse number of insects	Helpful insects found in landscape

Tree Qualities _____

Plant Qualities _____

Animal Qualities _____

Insect Qualities _____

Total _____

Score Review:

0-3 = Poor Plan, You need more variety, consider adding items for each Quality.

4-8 = Average Plan, You're on your way, consider adding items for each Quality.

9-13 = Good Plan, Well done, your plan shows some diversity.

14-16 = Excellent Plan, Diversity in your ecosystem shows a healthy system.

