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The Forest Flu

Skills
Observation, compare and contrast, drawing, discussion, cooperative learning, critical thinking

Subject Areas
Science, art, drama (activity variation)

Materials
3" x 5" cards

Poster or butcher paper

Drawing supplies

Background Information for Teachers

Typically, we think of a diseased tree negatively. When a beautiful tree that is part of our landscape becomes damaged or diseased and dies, we are sad to see it go. When East Coast towns suffered an outbreak of Dutch elm disease the local landscape was severely altered. Tronsen Creek campground on Washington's Blewett Pass has been temporarily closed because many seemingly healthy trees have a serious root disease. When tree roots become infected they can no longer efficiently draw up water and nutrients, and the tree eventually dies. The next windstorm can cause considerable damage as weakened trees fall to the forest floor. These are not favorable conditions for a family camping trip!

The landowner managing a forest for timber production does not welcome disease. Many U.S.D.A. Forest Service lands in eastern Washington and Oregon are now considered not suitable for timber production because of widespread disease and insect infestation. Some possible causes could be an abundance of a single tree species or policies that dictated suppression of wildfires and allowed limited use of controlled burns.

From a human perspective forest diseases are not very desirable. But sometimes insects and disease have beneficial roles in the forest ecosystem. Disease and insects, along with fire, lightning and wind, help create snags that provide important wildlife habitat. Diseased trees die and fall and allow sunlight to reach shade-intolerant seedlings. The fallen logs, in turn, create new habitat for many plants and animals and return nutrients to the soil as they decay.

Learning Outcome

Students will gain an understanding of the positive and negative roles disease plays in the forest regeneration cycle.

Learning Procedure

Go Outside: Take the class on a field trip around the school grounds or surrounding neighborhood. Have students look for evidence of diseased trees (brown, crisp branches; scars; curling leaves). Ask students to visually and verbally compare diseased trees with healthy trees. (If there are no trees in your area, look at bushes or other vegetation.)

Let's Play Tree Doctor: Either outside or back in the classroom use the background information to conduct a discussion on what evidence

indicated a tree might be diseased. (Make comparisons to the ways people show evidence of injury and disease, i.e., scabs, scars, fever, rashes). Ask students what they do to prevent and control disease and infection in their bodies. Ask them what could be done to prevent and control disease in a forest.

Forest managers sometimes use pesticides and fungicides to control disease and insects. They also use biological methods, such as release of bacteria that specifically attack forest damaging insects or release of sterilized female insects for population control. Some forest managers plant a variety of tree species and stagger their harvest schedule to create a mixed-age forest. Variety and staged development decrease the likelihood of an entire stand of trees being wiped out by infection or insect infestation.

If possible, have students look closely at a fallen log to find evidence of insects, fungi and decay, and discuss the role of disease in the recycling of soil nutrients.

Disease and the Forest Cycle: Copy the 7 statements below and cut into 7 strips or cards. Divide students into 7 groups and give each group one card:

Card #1 You are a forester planting a tree seedling in the forest soil.

Card #2 You are a young tree growing among many big and small trees.

Card #3 You are a tree with many leaves eaten by insects.

Card #4 You are a tree who is dying from lack of water and nutrients because your roots are diseased and can't do their job.

Card #5 You are a big windstorm that knocks down a diseased tree.

Card #6 You are a new log lying on the forest floor, and many plants, insects and animals are using you for shelter and nourishment.

Card #7 You are a very decayed log in the forest, turning into soil.

Instruct each group to draw a picture of what their card tells them they are. When all the groups have finished, display the pictures either in a line or a circle on the floor or wall. Discuss with students the natural cycle and the role disease plays in forest regeneration.

Variation: Divide students into seven groups, give each group one of the situation cards and have them make props to dramatize the forest regeneration cycle.

More Ideas

1. Invite a forester to your classroom to discuss the negative and positive aspects of forest disease and insects.
2. Take a field trip to a local tree farm to see how it is managed for timber production, wildlife, recreation and water quality. See what a tree farmer does to prevent and control tree disease.
3. Students contact a forester, tree farmer, wildlife biologist, nursery professional, garden club member, city arborist, or tree surgeon to compare how different professionals prevent and control disease and insect infestation.
4. Instruct the class to draw a mural of the forest regeneration cycle and label its stages and phases.

Assessment: What Did We Learn?

Students list two detrimental and two positive aspects of tree disease.

Western Red Cedar