Ozark Highlands Tree Model

Script for the Slideshow

Slide 1 - *Please use the* Click *prompts that are embedded in the slideshow script to coordinate the narration with corresponding images.*

In this lesson, a physical model will be used to investigate how fuel types and their arrangement affect the potential for fires to spread vertically in a plant community. Click

Slide 2 - In a natural setting, fuels are anything that can burn. This activity focuses on how a system's fire behavior can change depending on the types of living and dead vegetative fuels that are present. *Give students enough time to include the definition of "fuel" on their worksheets.* Click

Slide 3 - To investigate how fuel distribution can influence fire behavior, understanding plant community stratification is important. Be aware that the information on this slide corresponds to Table 1 on the student worksheet. Temperate forests, like the Ozark Highlands, can be separated into four layers. The **canopy**, or the **crowns** of trees, is the top layer of woody species consisting of overlapping leaves and branches. The **understory** is confined by the first branches of dominant/mature trees and the top of the shrub layer. The **shrub layer** is made up of woody, perennial plants that usually have many stems and that are shorter in stature than trees. The lowest layer is the **floor** which is dominated by herbaceous vegetation, such as grasses and wildflowers, that does not produce persistent woody tissue like trees and shrubs. While viewing the following images, keep these four layers in mind. Click

Slide 4 – The three generalized categories of fuel that will be included in this lesson are: 1) surface fuels; 2) debris; and 3) ladder fuels. Add these three fuel types to the "tree model treatments" column of Table 2 on your worksheet. *Give students time….* As we go over the fuel types, add descriptions, definitions, and/or examples for each. Click

Slide 5 – Surface fuels include a wide variety of living and dead vegetative material found on the surface of the ground. Such fuels include grasses, forbes, leaves, needles, pine cones, twigs, small branches, etc. Surface fuels allow fire to move, or to carry, across the ground. Fuels that are dead or dormant are typically drier and will ignite and burn more easily than green or growing vegetation that has a higher moisture content. The more "continuously" the ground fuels are spread, the more easily fire will carry across the surface of the ground. A lower amount of fuel, a "lighter" fuel load, will burn less intensely than a larger or "heavy" fuel load. *Give students time….* Click

Slide 6 – Woody debris on the ground could contribute not only to the "horizontal" movement of fire but also to the "vertical" movement of fire from the surface/floor into the canopy or crowns of trees. *Give students time….* Click

Slide 7 – Ladder fuels provide pathways for a surface fire to move from the surface/floor through the shrub layer and understory into the canopy. *Give students time….* Click

Slide 8 – These two images show examples of surface fires that have been able to spread into the canopy or into the crowns of trees. Land management typically attempts to avoid crown fires because they are very intense and extremely difficult or impossible to suppress. One of the phenomena fire ecologists deal with is the patchiness of fires; Click why certain fuels/plants are consumed while others survive. The primary

purpose of this lesson is to investigate which fuels contribute most to tree mortality resulting from passing fires. Click

Slide 9 – For this activity, you will collect data from videos of five different fuel treatments. A tree model is used to determine fire impacts. The physical model consists of a metal base, a steel-form-stake trunk, welding-rod branches, and packing-paper foliage. It is time for you to continue the activity on your own by following the directions on the student worksheet. Click

The End