**Super Dendro Class @ Middle Bear**

Dendroecology Activities

Each activity will last 35-40 minutes, before the groups will rotate.

**Fire Ecology Mapping Exercises**

Led by Pamela Pelletier

Materials: White Board, Markers, & the exercises developed by Lori Daniels.

We will discuss different features we can observe in tree rings, such as release, suppression, and marker rings.

Students will examine thirty “cookies” collected from trees after a wildfire in 2001. Tree cookies with fire scars demonstrate tree adaptations to fire. Using images of fire scarred trees, students will use several types of evidence derived from tree-ring analysis to determine the date of a forest fire and map its impact in the forest.

Following the mapping activity, we will discuss difference in tree-ring width as a result of fires, droughts, and insect activity – and how we determine each.

**Species Identification Activity**

Materials: White Board, Markers, Measuring Tapes, Species Identification Color Sheets, Increment Borers (3) & Paper Cores

Using the Species Identification Color Sheets, students will survey the tree species in their site (wash or hillslope location) and measure the diameter of the tree trunks. Students will record their data. Students will also map their survey site – drawing a “plan view” or “bird’s eye view” of the site.

Data Sheet Example:

|  |  |  |
| --- | --- | --- |
| **Tree Species** | **Diameter (in inches)** | **Number of trunks** |
| Ponderosa Pine | 20 | 1 |
| Arizona Walnut | 10 | 2 |

After reviewing their data, students will determine which tree has the largest diameter. Students will then core this tree, and make observations. Following data collection, students can graph the species diversity within their study area.

Tree rings are an example of climate proxy data, providing indirect evidence of past climates. Scientists can use tree-ring patterns to reconstruct regional patterns of climate change. The amount of tree growth depends on various local environmental conditions.

**What Cores can tell us.**

Materials: Spades, and Water Infiltration Kit items.

1. The transformation of parent material into soil is brought about through interactive physical, biological, and chemical processes as considered by the soil forming factors. This results in the organization of soil into distinctive layers, or horizons. The differentiation of soil into horizons is a hallmark of soil formation. The kinds of properties and horizons that develop in soils depend on the nature, intensity and duration of these processes, which are in turn governed by climate, geology, living organisms and landscape topographic factors. Soil profiles are two-dimensional vertical cuts down through the soil that include all the horizons.

Students will dig a soil profile in their site (wash or hillslope location) to make observations about the soil layers.

1. Water Infiltration: Infiltration is the movement of water into a soil profile. The rate at which infiltration occurs is controlled by the inherent properties of the soil, the level of soil saturation when rainfall starts, and by the ways in which humans have modified the landscape. Infiltration rates, in turn, control runoff rates and soil erosion, which are important because these processes influence the quality and quantity of our water resources.

Students will collect data on water infiltration methods.