Dendrochronology

Code: EL1 and MID: SC, MA, CR

Objective:
1). Familiarize students with the dating technique of dendrochronology (tree ring dating)
2). Utilize comparison skills and mathematical skills

In this activity students will learn how the annual growth rings from tree wood can be used to determine the age of a piece of wood found at an archaeological site along the Nez Perce Trail or it shows them how archaeologist determine the age of culturally modified trees found along the Nez Perce Trail.

Materials:
Use attached handout, *Reading The Rings*.

Vocabulary:
Dendrochronology
Annual growth rings
Chronology
Culturally Modified Trees

Background:
The age of a tree can be readily determined by counting its number of annual growth rings. These are visible on the surface of stumps or logs, or a boring instrument can be drilled into a tree to retrieve a cross section of the growth rings. Each year of a tree's life is represented by a single growth ring which has a dark band and a light band. The light band represents the optimal growing seasons for the tree: late spring, summer, and early fall. The darker band is generally more narrow and represents the late fall, winter, and early spring when most trees are dormant. As the tree gets older the rings tend to get smaller but the wood often becomes more dense.

The size of growth rings vary from year to year due to changes in available moisture, nutrients, and other environmental factors. In a given region, trees occupying similar environments tend to show the same patterns of growth over time. If enough samples of trees from overlapping time periods can be found, a long-term growth ring chronology can be devised. These chronologies can be compiled using wood from very old trees, dead trees, and by using absolute dating techniques such as radiocarbon dating of wood. The best tree ring chronologies tend to be in areas where the environment goes through periods of stress, because in these situations there is much more variation in the growth ring sizes from year to year, making it easier to locate the proper time match for a piece of wood.

Directions:
1. Explain to students the concept of annual growth rings and how one year of growth is represented by one band (for the purpose of this exercise, each year is represented by one band on the handout illustration). Each annual band can be counted to determine how old the tree is.

2. Explain to students that in some parts of the country a master chronology (or chart) of tree ring growth dating back hundreds and sometimes even thousands of years has been made. When archaeologists find pieces of wood in a site or find culturally modified trees like those along the Nez Perce Trail, they can look at the local chart and determine when the piece of wood used at the site was cut down. This allows archaeologists to very accurately date the piece of wood or the tree or if it is used in a building like a cabin or lookout, to determine the likely date that the building or lookout was constructed.

3. Utilizing the illustration, *Reading The Rings*, divide students into pairs. Give each a handout showing the master tree ring chronology and a second handout illustrating a segment of a piece of wood.

READING THE RINGS—