



UA Laboratory of Tree Ring Research Outreach and Education Resource Sheet

The University of Arizona Laboratory of Tree Ring Research

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LTRR Science Outreach and Education Resources

We host a variety of science based field experiences on the UA Campus, at the Bryant Bannister Tree Ring Building, at Tumamoc Hill, and at various field sites in the Catalina Mountains - where students learn that science is a dynamic process of gathering and evaluating information. We also offer portable classroom visits to introduce tree ring concepts and enhance field experiences or to supplement and support investigative and inquiry based lessons if you are unable to visit the UA Campus.

For educators and individuals interested in engaging in current research practices and learning more about dendrochronology and the myriad of projects happening at the UA Laboratory of Tree Ring Research (LTRR) we encourage you to get involved through our docent program which includes training sessions, workshops and opportunities to interact with a variety of audiences through outreach activities including lab tours, classroom visits and specialist presentations.

LTRR Outreach Experiences and Opportunities:

- Bryant Bannister Tree-Ring Building and Lab Tours tailored to each audience or grade level
- Sky Island Science Investigators Field Courses for Educators and Students
- Portable Classroom Visits & Dendrochronology Kits that include tree ring samples, activities and readings
- UA Laboratory of Tree-Ring Research Science Outreach Docents and Visiting Scholars Programs
- Classroom visits and presentations by members of the UA Tree Ring Lab Research Community
- Tucson Festival of Books Events at the UA Tree Ring Lab

Branching Out: Interdisciplinary Connections through Tree Ring Research

Tree ring research offers a connection to EVERY subject and discipline you can imagine! From Art History to Zoology there is always a tree ring that has something to offer you and your learners no matter what subject you teach. Including tree ring research as part of your educational curriculum or training promotes an interdisciplinary approach that allows learners to branch out and explore the many other disciplines and subject areas in dendrochronology may be applied.

LTRR Outreach Highlights: The Sky Island Science Investigators Program

<http://ltrr.arizona.edu/outreach/sky-island-science-investigators>

The Sky Island Science Investigators Program is an innovative outreach program through which **learners of all ages become the scientists**, and go beyond “just listening” to investigate, interpret and analyze their world through application of scientific concepts. We strive to make science accessible and relevant to the general public and are pleased to offer **field classes for FREE!** Our adaptive strategy includes customizing these classes to fit the needs of educators and students of all ages and grade levels. Our current courses meet the curriculum needs of 4th-12th grade students and can easily be tailored to mesh well with any learning objectives. In addition to hands-on presentations or field trips, each class receives readings and worksheets appropriate for their grade level. Here are a few examples of the program:

Sky Island Science Investigators Field Class Example #1: Ecology: Species, Slope, & Soil: Students will **survey cactus & perennial shrubs** species and will calculate plant densities in plots and compare results. A soil analysis will be conducted. Students will also determine the slope within their plot and use this information to analyze the vegetation densities within each plot. Students will do an analysis of their data set and look at patterns across the landscape in terms of elevation gradients. *Location: Tumamoc Hill*

- In this class, study plots have already been set up in the field at Tumamoc. Upon arrival at Tumamoc, students are given a review of the prep materials sent to the teachers prior to their visit (species identification sheets, slope diagram, and data collection worksheet). We review plant species and their identifying characteristics and discuss different survey techniques. We demonstrate how to take slope measurements in the field using our tools as well as how to identify differences in soil types. In the field, students in small groups decide on a survey method to use and begin collecting data. After all species, slope, and soil analysis are complete (usually 1 hour or more), we collectively review the data and begin a preliminary analysis. Teachers can choose to continue data analysis back in the classroom using the worksheets.

Sky Island Science Investigators Field Class Example #2: Tales Tree Rings Tell: Tree rings tell the tale of how climate, fire and people interacted hundreds and thousands of years ago. Students will be introduced to the subject of dendrochronology - the study of time using trees, specifically the annual growth rings in trees. Students in this class will have a **hands-on exploration of tree “cookies” or cross sections of trees** to better understand how dendrochronology has influenced forest ecology, archaeology, and climate change. *Location: Bryant Bannister Tree-Ring Building, UA Campus & Portable Classroom Visit*

If this is a Laboratory of Tree-Ring Research Visit:

- Students are given tree ring samples to examine and we begin our discussion with their observations. We continue our presentation of the Lab’s history, founding, and various fields within dendrochronology as we explore exhibits in our main lobby. A series of hands-on activities such as using an increment borer and a cross matching game precede our visit upstairs to the lab to observe and interact with the scientists as they work. During the lab tour we meet the people working on various projects and typically have one or more graduate students set up to discuss their own research at the lab as we look at samples from their field sites.

If this is a Portable Classroom Visit:

- Prior to our visit to your classroom, each class receives readings and worksheets appropriate for their grade level. Students are given many different tree ring samples to examine and we begin our discussion with their observations. We continue our presentation of the Lab’s history, founding, and various fields within dendrochronology. We do a couple of hands-on activities: using an increment borer (if possible) and the cross matching game. Students complete their worksheets during the presentation.

If you would like to schedule a Sky Island Science Investigator class, portable classroom visit, presentation or lab tour, or have questions about how to bring dendrochronology to your classroom or community group, please contact Pamela Pelletier at pamela@email.arizona.edu to learn more about the programs offered through the UA Laboratory of Tree Ring Research. Additional LTRR Educator Resources may also be found at <http://ltrr.arizona.edu/educators>.