

# Introduction to Dendrochronology Lab

## Fall 2010

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### **General laboratory format**

Depending on enrollment, we will set up two lab sections if necessary: Tuesday (and Thursday) afternoons, 1 - 3:50 PM (students are welcome to stay until 5 PM if they wish).

Students are expected to be in lab promptly at 1 PM so we can go over the sessions objectives, hand out material, and answer questions as a group during the first 20-30 minutes. Students are welcome to bring lunch and remain in the classroom after lecture if they choose.

We will try to pace the class so all students are working on the same set of material at roughly the same time. **Students are expected to be conscientious in their attendance so they don't fall behind.** The material is ordered so that the experience gained is cumulative - solving the first exercise helps with the second, etc.

We will have 15 regular lab sessions and a lab practical exam Tuesday Dec. 7<sup>th</sup>.

### ***Introduction to woods and crossdating***

The lab class will begin with an overview of wood characteristics, suitability for dendrochronology, and an introduction to the skeleton plotting method of crossdating. Students are encouraged to utilize Dr. Paul Sheppard's SkeletonPlot program for practicing this technique.

This program can be accessed through the internet at:

<http://www.ltrr.arizona.edu/skeletonplot/SkeletonPlot19.htm>

The introductory and explanatory material can be found here:

<http://www.ltrr.arizona.edu/skeletonplot/introcrossdate.htm>

Lab exercises will begin with Pine-tree House "pseudocores", **crossdating** the individual cores; building a "**floating master**"; and placing this in calendar time against the **master chronology** provided. (**10 pts.**) Please complete this exercise and turn it in by the 3<sup>rd</sup> lab session.

### ***Chronology building exercise***

This exercise is designed to provide a practical experience in crossdating and chronology building based on wood specimens from a site in Zuni Mountains of southwestern New Mexico. The samples are from trees of six species found in the mixed-conifer forest that dominates sites between 8,000 and 9,000' elevation: Douglas-fir (*Pseudotsuga menziesii*), ponderosa pine (*Pinus ponderosa*), piñon pine (*Pinus edulis*), quaking aspen (*Populus tremuloides*), Gambel oak (*Quercus gambelii*), Rocky Mountain juniper (*Juniperus scopulorum*). (160 pts.)

### **Procedure:**

The assignment consists of: (1) making skeleton plots of all samples, plotting a minimum of **two radii** from each sample; (2) using a logical procedure to construct a skeleton plot master chronology from the individual plots. This procedure consists of starting with the younger and least problematic trees with a known outer ring date, e.g. 1998, and adding in older trees and those that the date of the last ring is unknown one at a time by pattern matching.

Each student will be provided with a set of wood sections to begin the exercise. Keep these and your skeleton plots in your box. When you have completed a specimen have one of the instructors check it.

Fill out the data sheet with the information for each specimen as you complete them (ID, inside and outside date, comments where appropriate regarding problems or features of interest).

Count carefully, mark clearly and lightly with a #2 pencil, and ask questions if you are unsure about a ring. We will try to resolve at least some of these questions as a group, using the microscope/video projector.

### ***Mounting and surfacing cores from field trip***

We will prepare, mount and surface the increment cores collected on the field trip. (10 pts.)

### ***Applications and additional species***

We will explore some applications of dendrochronology by dating fire scars and archaeological specimens, and look at woods of additional species that have been used extensively in dendrochronology studies, or other application of interest to the student and approved in advance by the instructors. (20 pts.)

### ***Practical Exam***

We will have a practical laboratory exam on the last day of class. We will have a review and practice exam around the time of the lecture mid-term exam.

### ***Grading***

Lab exercises total: 200 points

Laboratory Exam: 50 points

This syllabus can be found online at: <http://www.ltrr.arizona.edu/introdendro/>