

## **INTRODUCTION TO DENDROCHRONOLOGY (GEOS, GEOG, WSM, ANTH 439a/539a)**

### **Exercise Cross Section Sets Information & Suggested Sequence and Completion Pace**

There are fifteen (15) lab sessions plus a final (16th session) Lab Practical Examination. There are two(2) paper exercises. There are seventeen(17) cross sections. There will be the glue mounting and the surfacing of the increment cores collected on the field trip.

Session 1. Basic information/orientation. Two(2) paper exercises, one done in class, the other, an archaeological site, started & perhaps finished in class by small working groups of 3-4 students or taken home. Then begin with the first two (2) cross sections ZMT08 & ZMT19. Both cross sections are Douglas-fir (*Pseudotsuga menziesii* PSME). Purpose: To begin the process of skeleton plotting of two(2) radii done on each cross section, and then to construct a composite skeleton plot master chronology from these radii plots.

Session 2. Check the take home paper archaeological site crossdating. Finish and check ZMT08 & ZMT19. Start two(2) radii skeleton plots on ZMT18. This cross section is also Douglas-fir (PSME). Purpose: to check crossdating of ZMT18 on the composite master and to provide a crossdate for the damage/event seen in the wood.

Session 3. Finish and check ZMT18. Begin plotting two(2) radii for ZMT 14, also a Douglas-fir (PSME). Purpose: to compare the radii from ZMT14 to the composite master to obtain the correct crossdates and identify the absent or locally absent rings. Also, to extend the composite master back in time with the additional inner rings. Plot two(2) radii from the top of ZMT14 to solve the dating problems of absent and locally absent rings from the lower portion of ZMT 14.

Session 4. Finish and check both cross sections from ZMT14. Plot two(2) radii from ZMT31 a Douglas-fir(PSME). Purpose: to solve absent and locally absent ring problems and confirm the inner portion of the composite master.

Session 5. Finish and check ZMT31. Plot two(2) radii from ZMT108, also a Douglas-fir(PSME). Purpose: to identify false rings and provide crossdates for events seen in the wood. ZMT108 is also intended to confirm and extend the composite master chronology.

Session 6. Finish and check ZMT108. Plot two(2) radii from ZMT113. Purpose: to introduce a new species, ponderosa pine (*Pinus ponderosa* PIPO) and compare the wood anatomy & the crossdating characteristics of this species to that of the Douglas-fir. Please take notice of the differences and similarities of these two(2) species. Also note the locally absent, absent and false rings in this cross section and how it confirms or varies from the composite master chronology.

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Session 7. Finish and check ZMT113. Plot two(2) radii from ZMT11. This is a ponderosa pine(PIPO). Purpose: to solve locally absent and absent ring problems and injury/events seen in the wood and to compare ZMT11 & ZMT113 to each other and to the previous samples of Douglas-fir. Also, to add pertinent information and confirm the inner portion of the composite master chronology.

Session 8. Finish and check ZMT11. Plot two(2) radii from ZMT39. Purpose: to introduce a new species and its wood anatomy and crossdating characteristics. This is a pinyon pine (*Pinus edulis* PIED). Please notice the differences between Douglas-fir, ponderosa pine and pinyon pine. Purpose is also to show that climatically complacent ring series can be as difficult to crossdate as climatically sensitive ring series and to also demonstrate ecological amplitude. Some portion of this lab session will be devoted to the glue mounting of increment cores collected on the field trip.

Session 9. Finish and check ZMT39. Plot two(2) radii from ZMT42. This is a pinyon pine(PIED). Purpose: to extend the composite master chronology and to solve somewhat complex locally absent and absent ring problems and identify and crossdate injury/events in the wood of the cross section. Some portion of this lab session will be devoted to the surfacing of the increment cores collected on the field trip.

Session 10. Finish and check ZMT42. Plot two(2) radii on ZMT04 and two(2) radii on ZMT15. These two cross sections are from Rocky Mountain juniper (*Juniperus scopulorum* JUSC). Purpose: to introduce a new species that is fairly different in appearance from the previous three(3) species examined, but will still crossdate on the composite master chronology. These juniper trees have some very “real” appearing false rings, but using information from many of the previous cross sections plus the crossdating of the composite master these false ring problems can be solved.

Session 11. Finish and check ZMT04 & ZMT15. Plot two(2) radii on BLF01 and two(2) radii on BLF24. These two cross sections are from quaking aspen (*Populus tremuloides* POTR). Purpose: These cross sections are not only a different species. They are from an entirely different plant family. Up to this point all the samples were from conifers in the gymnosperms. These quaking aspens are diffuse porous wood angiosperms. They will however, crossdate with the composite master chronology.

Session 12. Finish and check BLF01 & BLF24. Plot two(2) radii from ZMT05 and ZMT22. Purpose: These two cross sections are from gambel oak (*Quercus gambelii* QUGA), which is a ring porous wood angiosperm. The “search image” for rings in oak can initially be confusing. However, these cross sections can also be crossdated using the composite master chronology though they do have some specific problems that need to be explained when plotting them.

Session 13. Finish and check ZMT05 & ZMT22. This will end the required lab exercise sets. This leaves Sessions 14 & 15 to work on student projects or special applications such as archaeology, ecology eg. fire history, geomorphology, etc.

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**HOWEVER**, it should be noted that some cross sections i.e. ZMT14, 11, 42 and perhaps some other sections might need more than one lab session to complete so that Lab Sessions 14 & 15 might be needed to finish the required exercise sets.

Session 14. Student projects or applications.

Session 15. Student projects or applications. Also a review and a preparation for the Lab Practical Examination.

Session 16. The Laboratory Practical Examination. Purpose: to use the methods and techniques learned during the previous 1