Growth Rings II (OPTIONAL)

Dendrochronology

This information about analyzing growth rings and about very old trees is **optional**. If you would like to examine a really large section of wood, go to the second floor of the Plant Sciences Building, next to Mann Library. The huge section is mounted on the wall in the hallway.

Dendrochronologists study growth rings for information about the past. What can you tell from the growth rings on the wood you are examining? Here are a few hints:

- A wet growing season shows up as a wider distance between rings, and a dry season creates a narrower ring.
- A gradual decrease in ring width from year to year may indicate increasing competition from surrounding trees. A sudden increase would indicate elimination of competition (as by selective logging).
- Off-center rings can occur if prevailing winds occur from one direction - woody dicots put the extra wood on the side toward the wind, and conifers (gymnosperms) put the extra wood on the side away from the wind. Other forces besides wind can cause the same effect.
- One small annual ring between large rings may indicate a one-season problem, such as defoliation by insects.
- Odd features can occur, such as fire scorches, barbed wire, old nails, and arrow tips.

In semiarid regions, where there is very little rain, the tree is a sensitive rain gauge. An excellent example of this is the bristlecone pine (*Pinus longaeva*) of the western Great Basin. Each growth ring is different, and a study of the rings tells a story that dates back thousands of years. The oldest known living specimen of bristlecone pine is 4900 years old. Dendrochronologists have been able to match samples of wood from living and dead trees, and in this way they have built up a continuous series of rings dating back more than 8200 years. The widths of the growth rings of bristlecone pines at the higher elevations (the upper tree line) have also been found to be closely related to temperature changes, and a record of average ring width in these trees provides a valuable guide to past temperatures and climatic conditions.

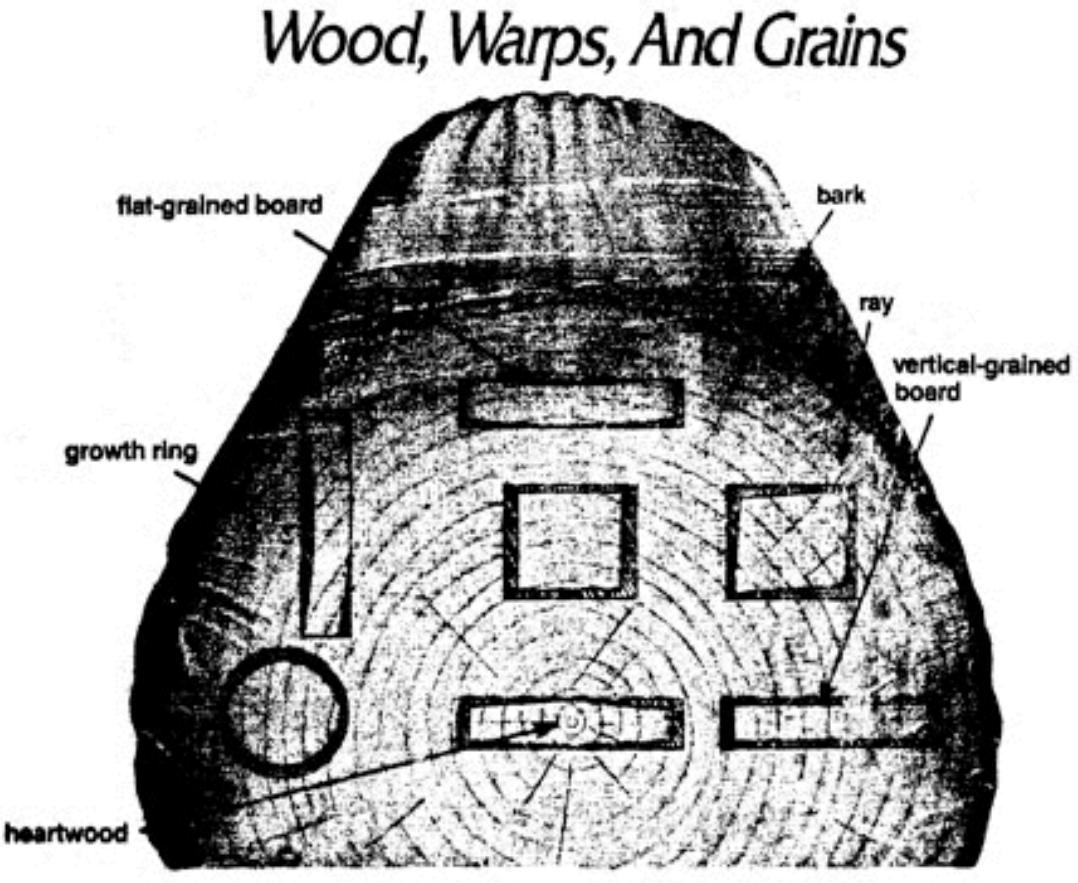
For example, in the White Mountains of California, the summers were relatively warm from 3500 B.C. to 1300 B.C., and the tree line was about 150 meters above its present level. Summers were cool from 1300 B.C. to 200 B.C.

Lumber and Growth Rings

Various grades of lumber are milled from different parts of the tree trunk. This diagram shows where typical cuts (posts or boards such as 2x4s) are taken from a log. Only the end of each post or board is shown.

The black lined area around each cut shows that cut of wood's typical warping. For some work, warp is irrelevant, and cheaper grades of wood can be used. Other work requires minimum, predictable warp.

Rays are placed where boards and posts may crack.



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