Blue Oak Age and Growth in the Big Chico Creek Ecological Reserve

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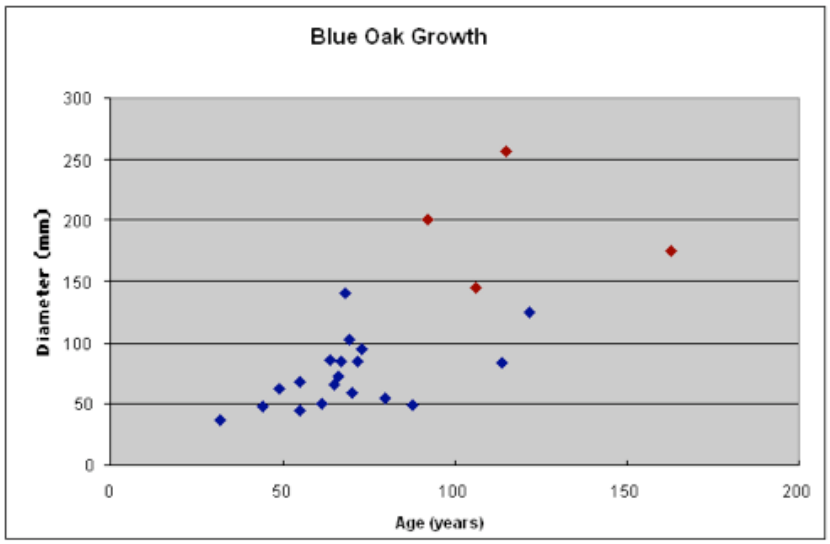
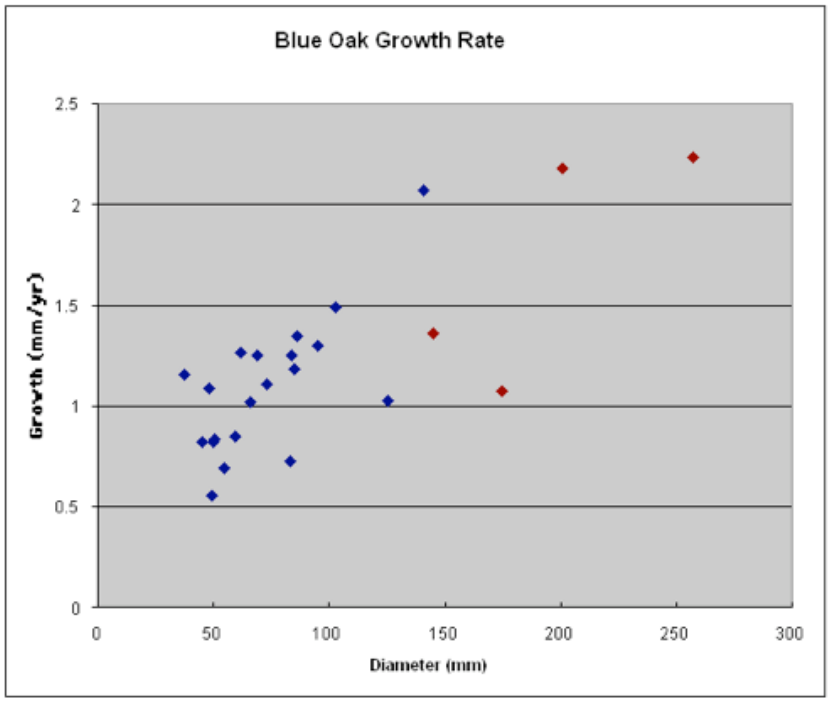
Procedure:

Twenty blue oak (Quercus douglasii) trees were cut from the BCCER in preparation for road construction. Elevation ranged from about 800 ft to about 1400 ft. Since the roadway deliberately avoided large trees, four larger off-road fire-killed trees were added to the data set (points in red on graphs). Sections (cookies) were cut from each tree for growth-ring analysis. Each cookie was prepared by smoothing a path from the center to the edge by shaving with a sharp knife, then rings were identified and counted under 10X magnification. The narrowest and widest diameter of xylem in each cookie was measured in mm and averaged to provide an index of tree size.

Results:





Discussion:

Growth of the blue oaks was variable so that diameter was only weakly correlated with age. Even the highest overall growth rate was slow, less than 2.5 mm per year. Most trees showed varying rates of growth, with periods of several years when the tree grew

several mm/year and other periods of substantially less than 1 mm/year. Quite possibly some rings were so narrow they blended together and were missed.

The variation in age observed suggests that over the long term blue oaks in this region have been reproducing. However, since a 50 mm (2 inch) diameter tree is likely to be 50 years old, a destroyed stand will not soon be replaced. Planning for fire management, firewood harvest, or construction with mitigation, should all take into account that several human generations will pass before a blue oak woodland can be fully regenerated.