

Research/Teaching/Demonstration Project Study Plan – Maple Competition

10 October 2006

1. Relevance to McDonald-Dunn Forest Plan

Forest Plan Appendix – Silviculture Team (Themes 1 and 2)

The McDonald-Dunn Forest Plan established five appendix teams to write appendices and investigate research questions in the forest. The Silvicultural Themes Team developed a Silvicultural Framework attached as Appendix 2 to the Forest Plan. The Silviculture Team is also proposing and leading three RTD Projects beginning in CY2007.

The project proposed in this study plan supports the Forest Plan by providing insight into the consequences of decisions to treat or not treat competitive hardwoods, and evaluates the cost of various levels of competitive hardwood composition in conifer production stands.

2. Title of RTD Project

Maple Competition Project: a measurement of the impact of big-leaf maple on the growth of Douglas-fir in McDonald-Dunn Forest

3. Principal Investigators

Mike Newton

Debbie Johnson

4. CY2007 Requests from FEC

Funding Request -\$9, 900

College Forests staff-time request – 7 days

5. Objectives of RTD Project

The objective of the Maple Competition Project is to test and measure the impact of big-leaf maple on the growth of Douglas-fir in several locations within Themes 1 and 2 of McDonald-Dunn Forest over a period of ten years. The study will begin by evaluating the degree to which percent hardwood basal area reduces conifer basal area. In ten years, stands 20-30 years old, with hardwoods treated and untreated, will be re-measured

to determine the degree conifers can occupy the space previously occupied by hardwoods so as to approach normal yields by rotation time. This research project will engage faculty, staff, students, and the public, and provide a publishable document that will help calibrate ORGANON to accurately predict growth on stands with hardwoods as a component.

6. Timeline: 2007-2017

2007: Install 24 plots distributed in three stands, in 20-30 year old stands with hardwoods ranging from 0-80 percent of basal area in hardwoods. Run 100% cruise of all basal areas. Treat hardwoods in half the plots in each stand. Run approximately 200 prism plots in stands 40-60 years old to determine degree to which hardwood admixtures in life of stand is correlated with current basal area. Calibrate with Forest Inventory Data.

2008: Write initial report describing correlations of hardwood level and basal areas of conifers.

2012: Re-measure younger stands to determine whether conifer increment is responding to removal of hardwoods vs non-removal

2017: Final measurements of young stand plots, now 30-40 years old. Prepare manuscript for Western Journal of Applied Forestry. Incorporate data into ORGANON projections.

7. Basic overview of approach/methods

Measuring competition between hardwoods, largely bigleaf maple, and Douglas-fir involves two approaches:

1. Determination of the degree to which prior existence of hardwoods has already influenced growing stock of conifers, hence approximate potential for avoiding areas of sub-optimum stocking by preventing hardwoods,

2. Treating matches pairs of young stands with varying degrees of hardwood mixtures, and evaluating comparative responses of released conifer stands in accord with previous hardwood levels.

8. Budget for Project: CY2007

2007: The Maple competition Project is requesting \$1500 for CY2007 to support one student assistant for one month, and \$8350 for 10 days of Liz Cole's field time plus ten days of data management and writing time.

2017: We will request approximately \$8000 (in October 2016) to re-inventory treated and untreated young stands in CY2017, and prepare manuscript for publication.

9. Teaching components of RTD Project

One or two students will be involved. These installations will be available for instruction in forest ecology or silviculture. Newton or Cole will be competent and prepared to address classes on request. Silviculture and ecology instructional faculty will be advised of availability of these installations for both classroom instruction and as subject matter for field trips. A high school teacher from the ORTOSA program (Oregon Teachers on Summer Assignment) will be invited to participate in this project.

10. Outreach components of RTD project

Results of the Maple Competition Project will be submitted for publication in 2017 and will be presented to a variety of field tours on request in the foreseeable future. The young stand installations will be maintained with visible markers for a minimum of ten years.