Collaborative Silviculture Research: SMC style

Coastal Silviculture Committee Winter Workshop 2018

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SMC

HISTORY, MOTIVATION, OBJECTIVES

History: SMC has roots in RFNRP

- In 1969 the Regional Forest Nutrition Research Project (RFNRP) was established to address how the forest industry and the forest related public agencies can achieve more efficient utilization and productivity of forest land
  - 28 members, 3 public, 25 private
  - The goal was $100,000 per year for a six-year forest fertilization project to finance the installation, measurement, analysis and reporting of 720 Douglas-fir plots and 288 western hemlock plots and to support graduate student research

Motivation: SMC formed to fill gaps

- Two-year study (1983-1985) by key personnel in forest operations and research revealed knowledge gaps:
  - Effects of treatments in forest plantations
  - Breadth of treatments in plantations
  - Long-term growth data from plantations
  - Combined effects of treatments on wood quality
- Cost of effort to establish & maintain long-term research program to develop new knowledge beyond capability of any single organization

Motivation: SMC formed to fill gaps

- Cooperative effort needed involving forest industry, public land-managing and research organizations, and research universities
  - Individual efforts suffer from lack of standard procedures, inconsistent monitoring of variables/conditions, etc.
  - Foreseen that large benefits will accrue to members at relatively low cost per individual organization
  - Will involve major effort in plot installation and treatment, data collection, data management, data analysis
  - Likely to provide link between silviculture – wood quality

SMC Formation

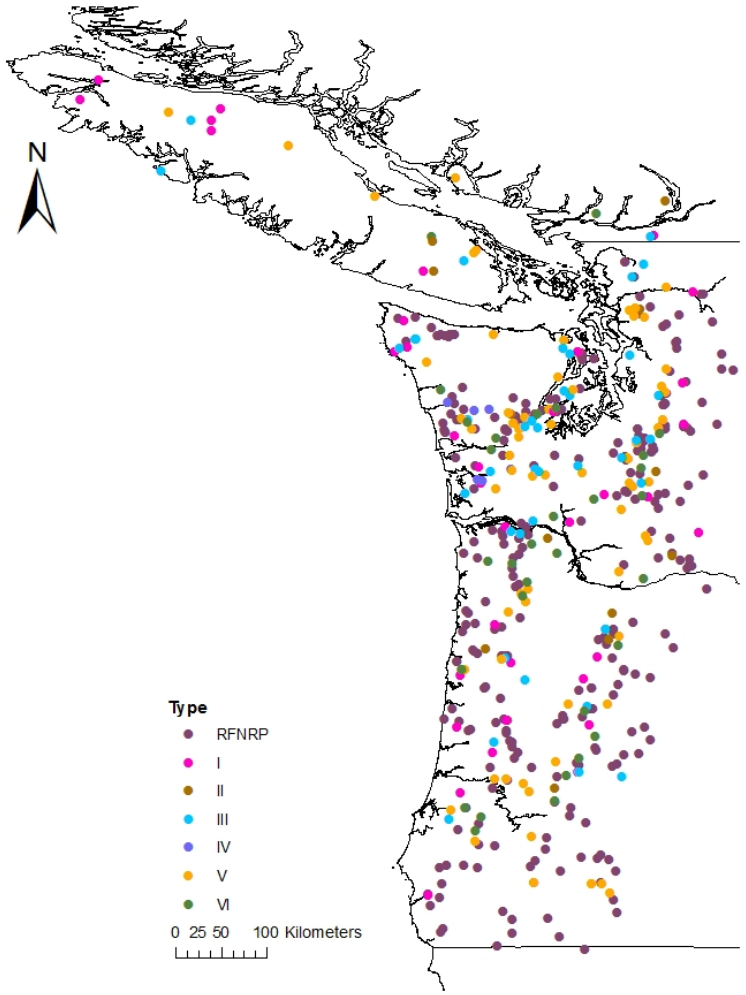
- In 1985 the University of Washington is selected as the host institute for the Stand Management Cooperative (SMC) to broaden and build on the RFNRP's cooperative research
- The SMC is composed of forest industry, state, provincial, and federal agencies, suppliers, and universities and other institutions who commit resources and expertise to the mission
- The voting Policy Committee, composed of monetarily contributing members, controls policy with the goal of establishing the highest possible technical standards in carrying out its mission

SMC: Raison d'être

- Vision
  - To be the preeminent provider of silvicultural research information and analysis in the Pacific Northwest through the ongoing development of quality silvicultural and wood quality research information, by providing leadership and promotion of collaborative research synthesis throughout the region for the purposes of furthering global competitiveness of the forest products sector and improving environmental benefits to society.
- Mission
  - To provide a continuing source of high-quality information on the long-term effects of silvicultural treatments and treatment regimes on stand and tree growth and development and on wood and product quality.
- Objectives
  - Design & establish field research installations and conduct technology transfer to assist in the application of information gained from the research

SMC Scope

Oregon and Washington, west of Cascade Crest, and coastal British Columbia



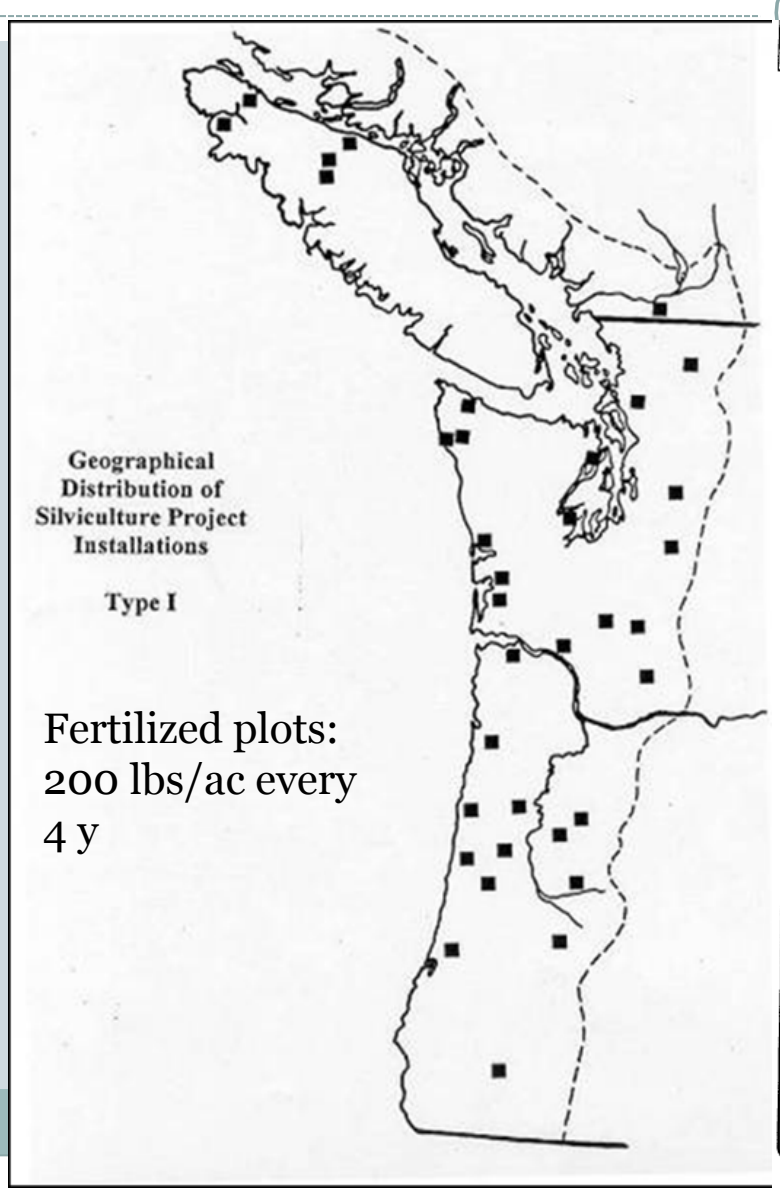
SMC Members

- American Forest Management
- B.C. Ministry of Forests
- Bureau of Land Management
- Campbell Global
- Cascade Timber Consulting
- Green Crow
- Green Diamond
- Hampton Affiliates
- Hancock Forest Mgmt.
- Lewis & Clark Tree Farm
- Lone Rock Timber
- Olympic Resource Management
- Oregon Department of Forestry
- Pacific Denkmann
- Port Blakely
- Quinault DNR
- Rayonier Forest Resources
- Stimson Lumber
- TimberWest Forest Corp.
- Washington DNR
- Weyerhaeuser

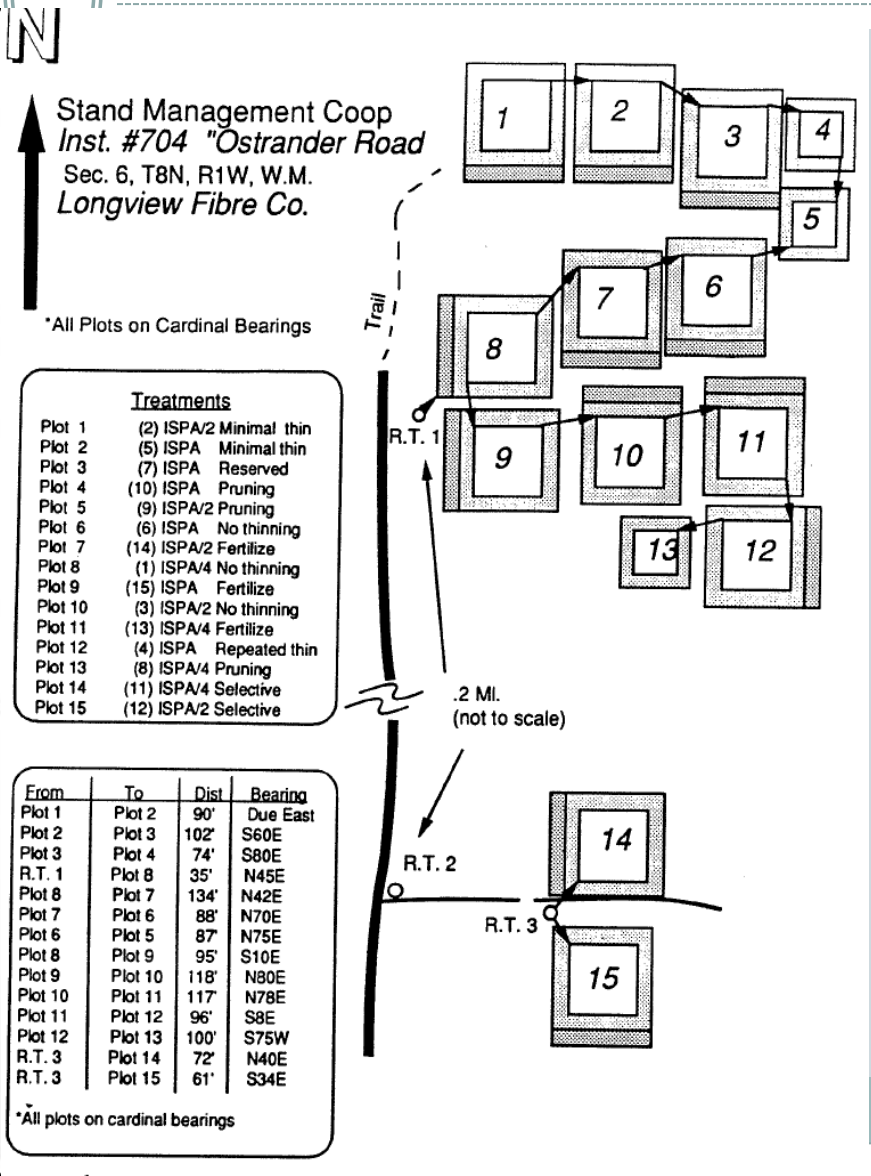
Research

OUR BIGGEST PROJECTS/RESEARCH SITES

Type I: Spacing, Thinning, Fertilization trials



Fertilized plots:
200 lbs/ac every
4 y

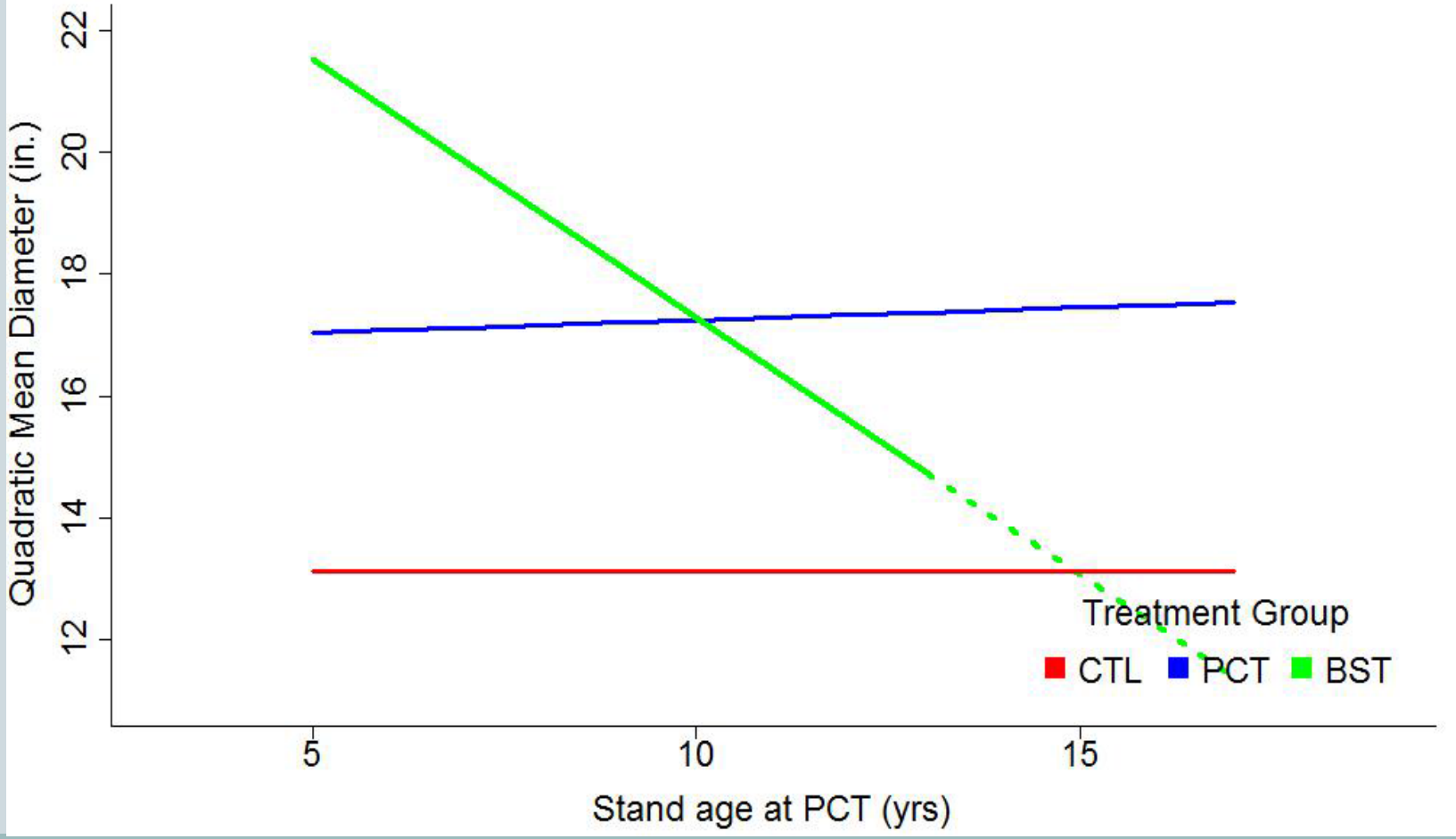


Treatments	
Plot 1	(2) ISPA/2 Minimal thin
Plot 2	(5) ISPA Minimal thin
Plot 3	(7) ISPA Reserved
Plot 4	(10) ISPA Pruning
Plot 5	(9) ISPA/2 Pruning
Plot 6	(6) ISPA No thinning
Plot 7	(14) ISPA/2 Fertilize
Plot 8	(1) ISPA/4 No thinning
Plot 9	(15) ISPA Fertilize
Plot 10	(3) ISPA/2 No thinning
Plot 11	(13) ISPA/4 Fertilize
Plot 12	(4) ISPA Repeated thin
Plot 13	(8) ISPA/4 Pruning
Plot 14	(11) ISPA/4 Selective
Plot 15	(12) ISPA/2 Selective

From	To	Dist	Bearing
Plot 1	Plot 2	90'	Due East
Plot 2	Plot 3	102'	S60E
Plot 3	Plot 4	74'	S80E
R.T. 1	Plot 8	35'	N45E
Plot 8	Plot 7	134'	N42E
Plot 7	Plot 6	88'	N70E
Plot 6	Plot 5	87'	N75E
Plot 8	Plot 9	95'	S10E
Plot 9	Plot 10	118'	N80E
Plot 10	Plot 11	117'	N78E
Plot 11	Plot 12	96'	S8E
Plot 12	Plot 13	100'	S75W
R.T. 3	Plot 14	72'	N40E
R.T. 3	Plot 15	61'	S34E

*All plots on cardinal bearings

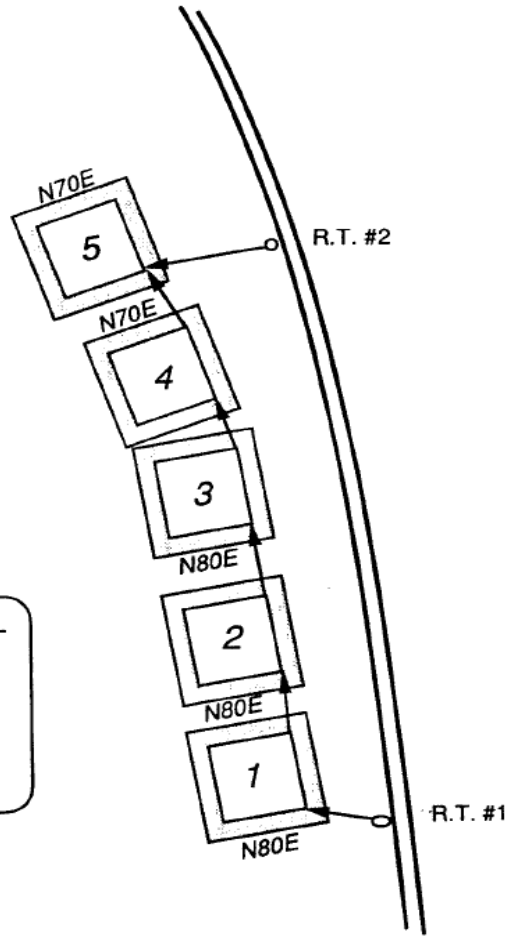
Type I: PCT Analysis – Response Model

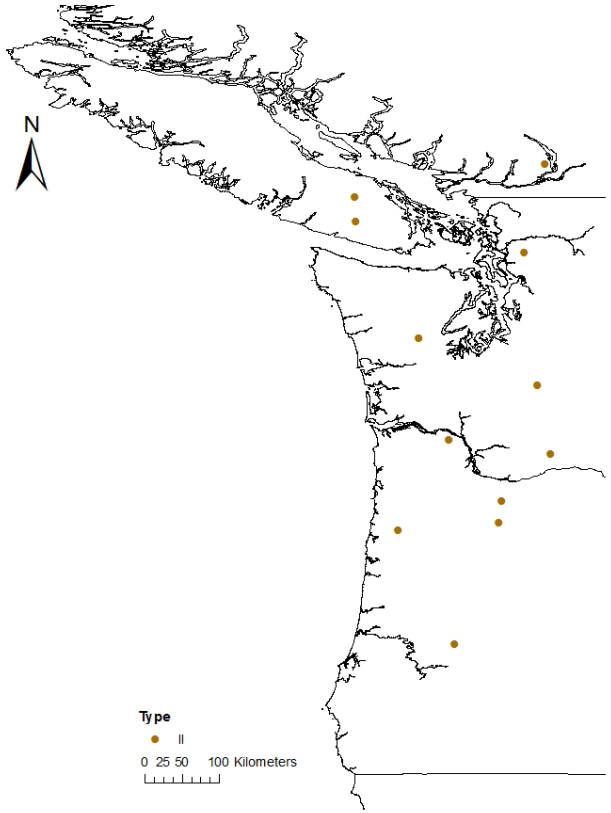


Type II: Commercial thinning (advanced age)

Plot	Treatment
1	Repeated Thinning, Low Density
2	Repeated Thinning, High Density
3	Delayed Thinning
4	Minimal Thinning
5	Control

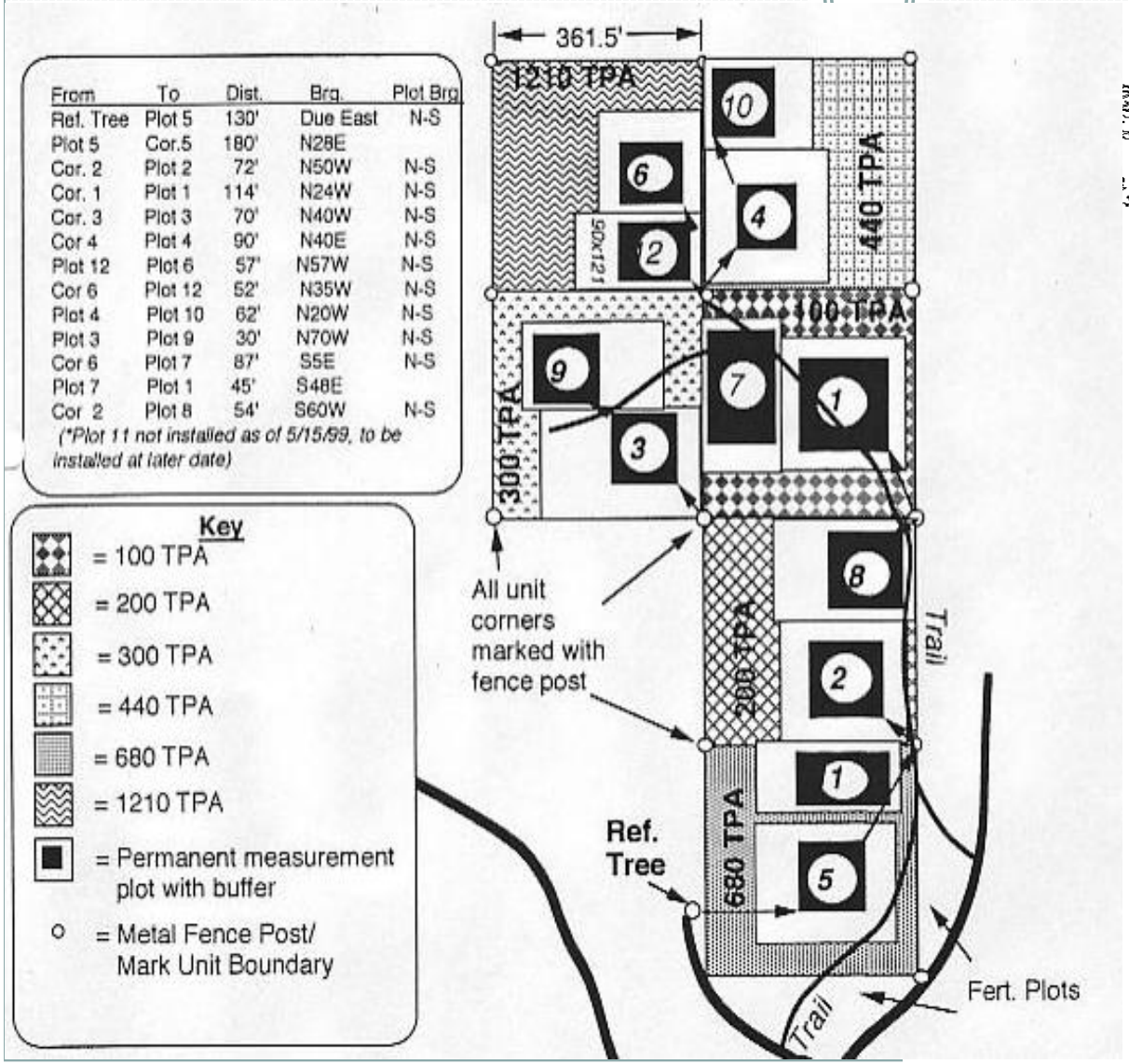
From	To	Distance	Bearing
R.T. 1	Plot 1	116'	N70W
Plot 1	Plot 2	115'	N 5 W
Plot 2	Plot 3	136'	N 9 W
Plot 3	Plot 4	100'	N21W
Plot 4	Plot 5	128'	N32W
R.T. 2	Plot 5	207'	S70W





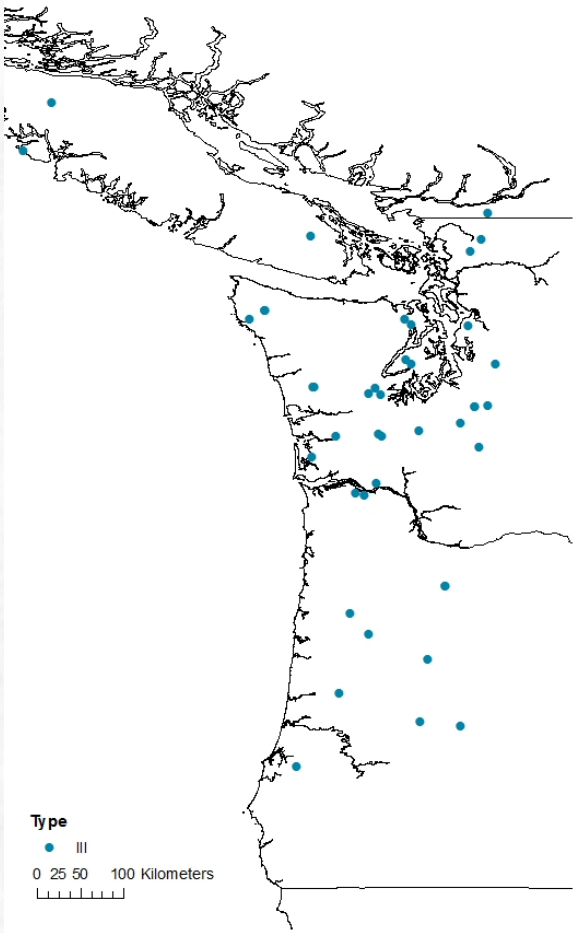
Installation Number and Name		Year Estab	Spp	BH Age	Site Class	Establishment SPA	RD*
810	J2 Nanaimo River	1989	DF	26	IV	405	49

Type III: Spacing Trial

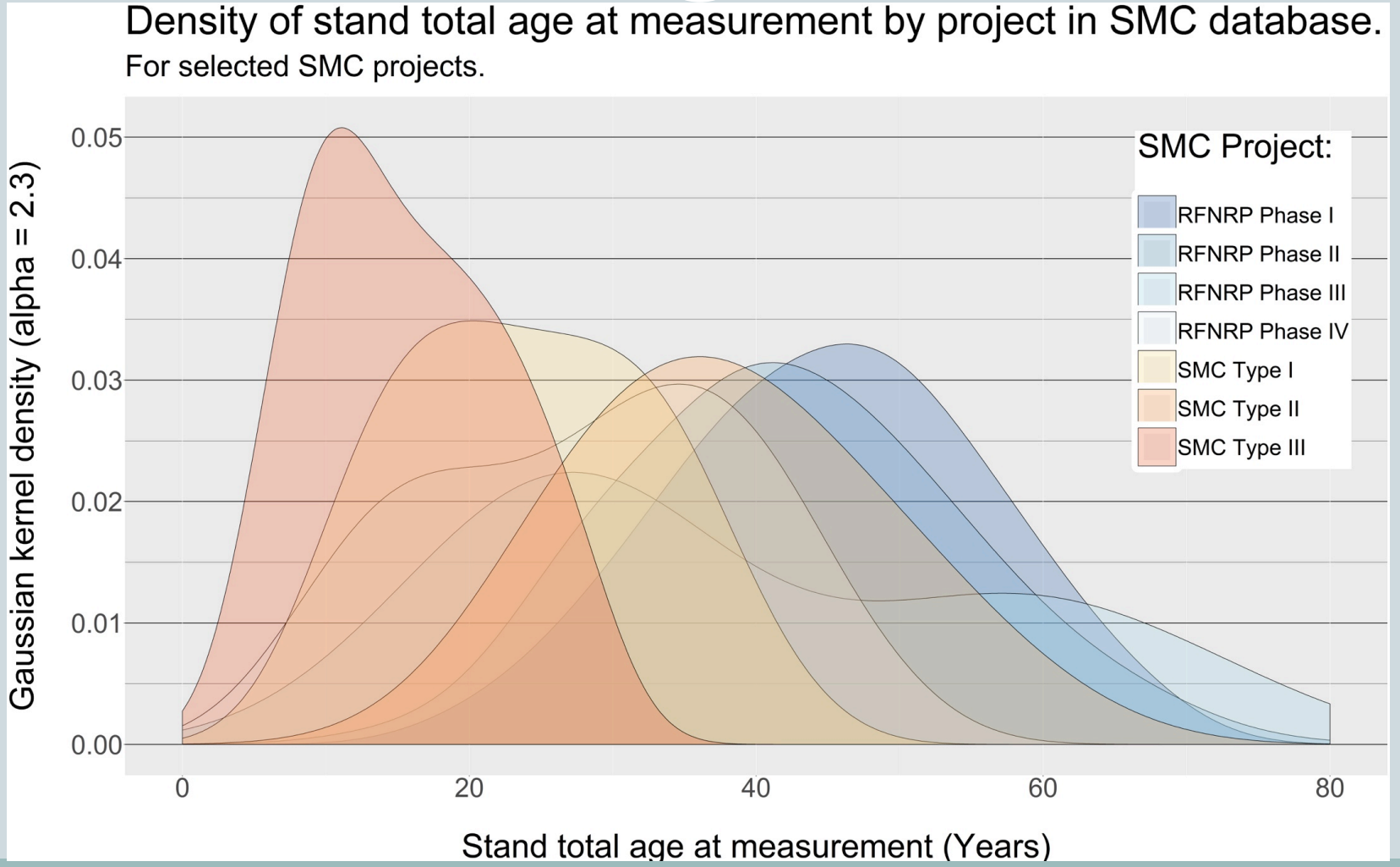


From	To	Dist.	Brg.	Plot Brg.
Ref. Tree	Plot 5	130'	Due East	N-S
Plot 5	Cor.5	180'	N28E	
Cor. 2	Plot 2	72'	N50W	N-S
Cor. 1	Plot 1	114'	N24W	N-S
Cor. 3	Plot 3	70'	N40W	N-S
Cor 4	Plot 4	90'	N40E	N-S
Plot 12	Plot 6	57'	N57W	N-S
Cor 6	Plot 12	52'	N35W	N-S
Plot 4	Plot 10	62'	N20W	N-S
Plot 3	Plot 9	30'	N70W	N-S
Cor 6	Plot 7	87'	S5E	N-S
Plot 7	Plot 1	45'	S48E	
Cor 2	Plot 8	54'	S60W	N-S

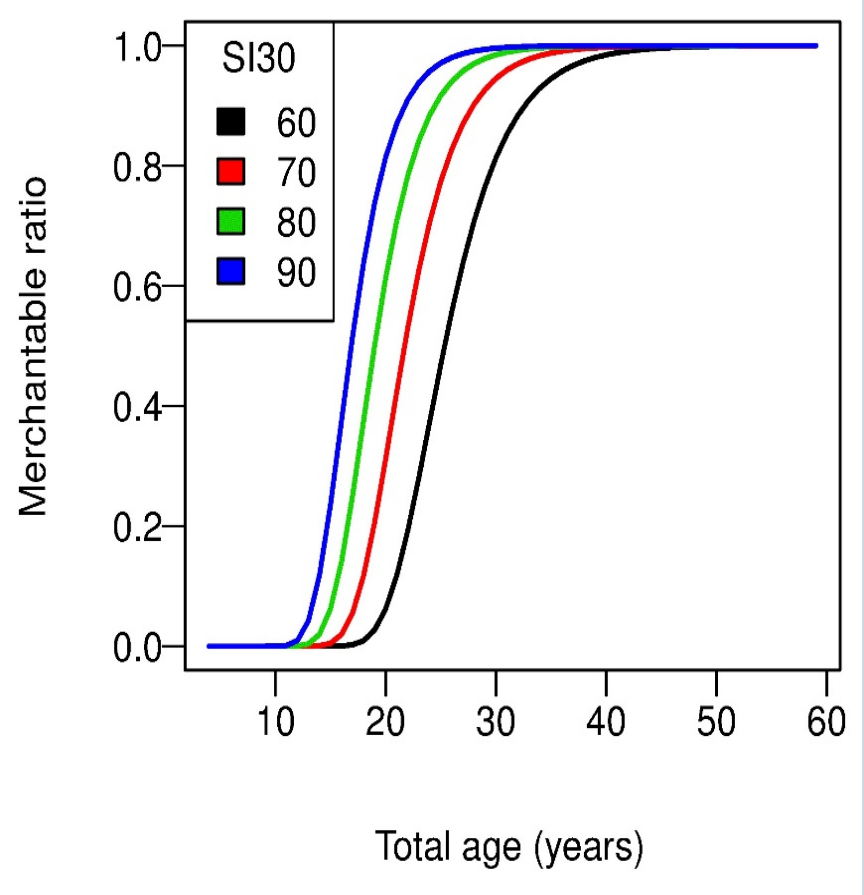
*(*Plot 11 not installed as of 5/15/99, to be installed at later date)*

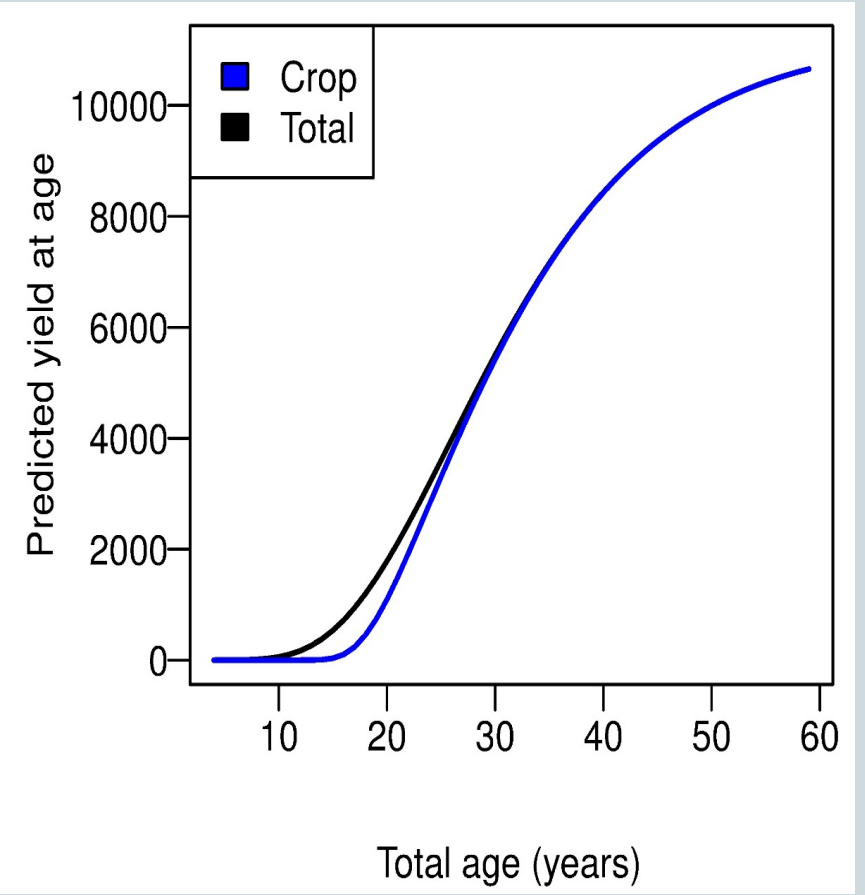


Cumulative Measurement Stream

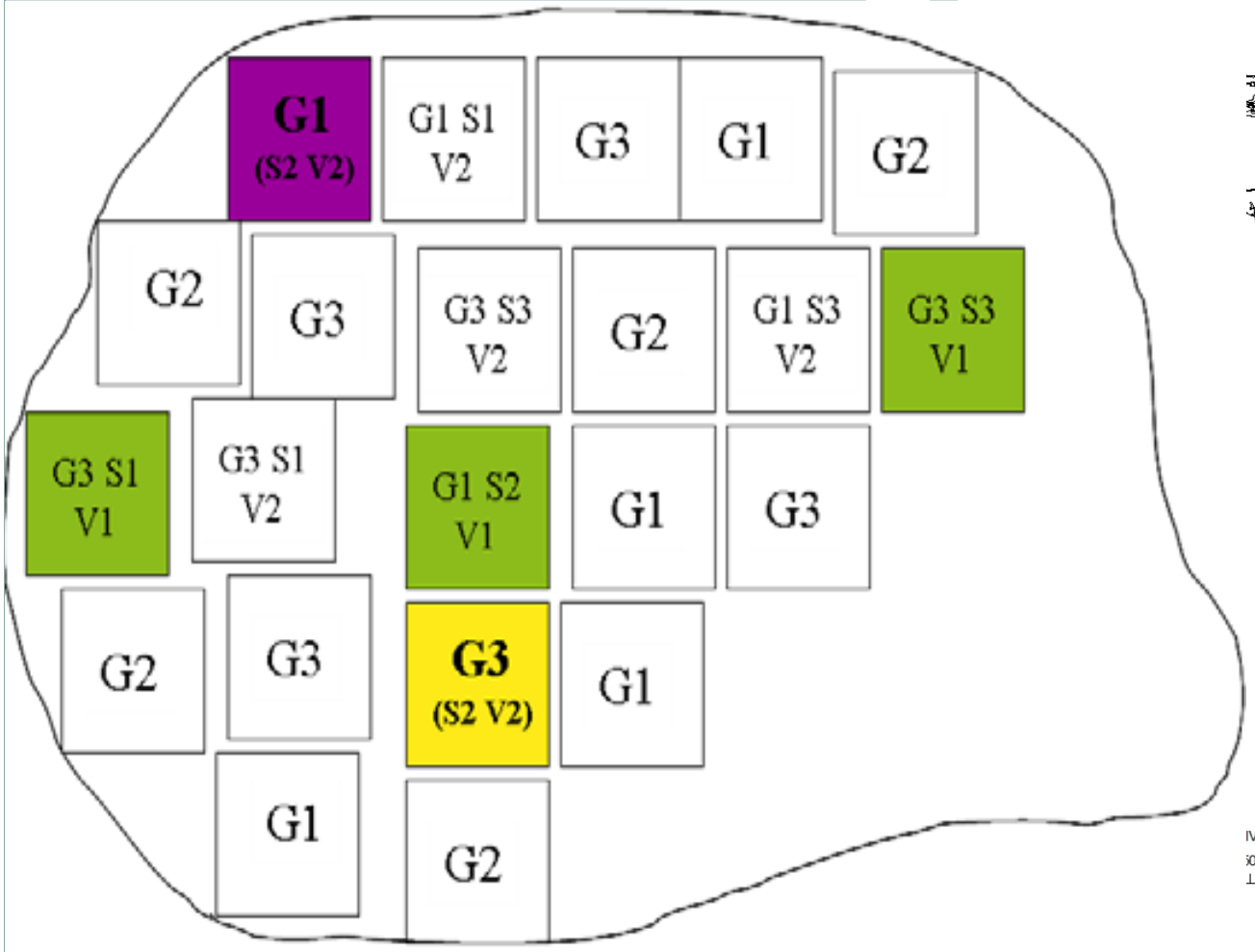


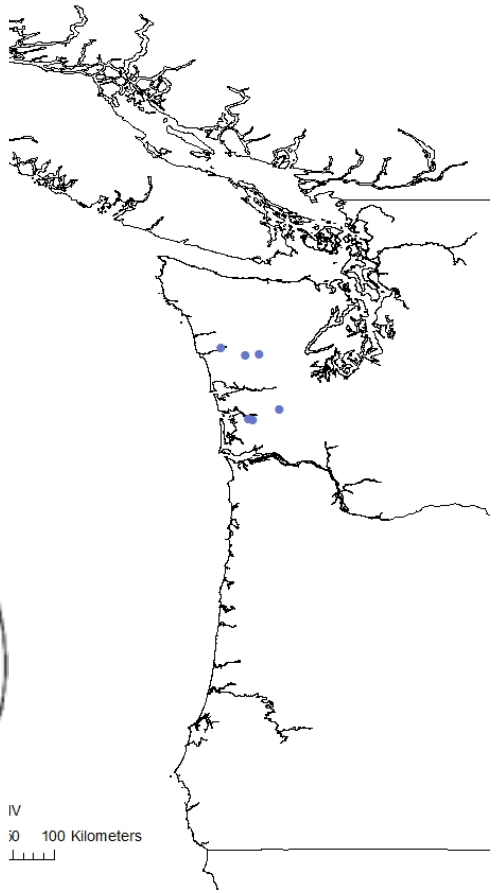
Types I,II,III: Plantation Yield Calculator





Type IV: Genetic Gain/Spacing





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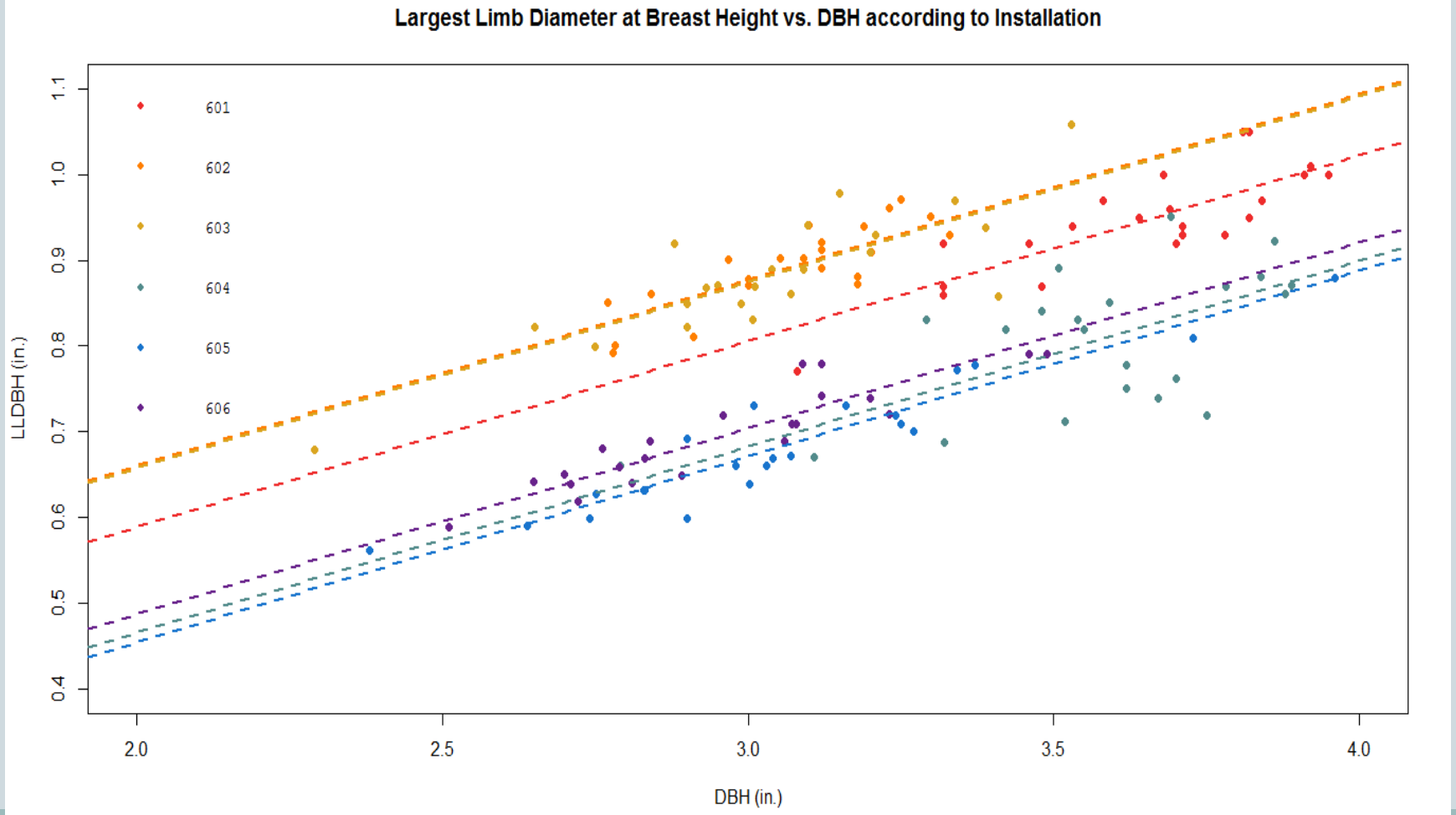
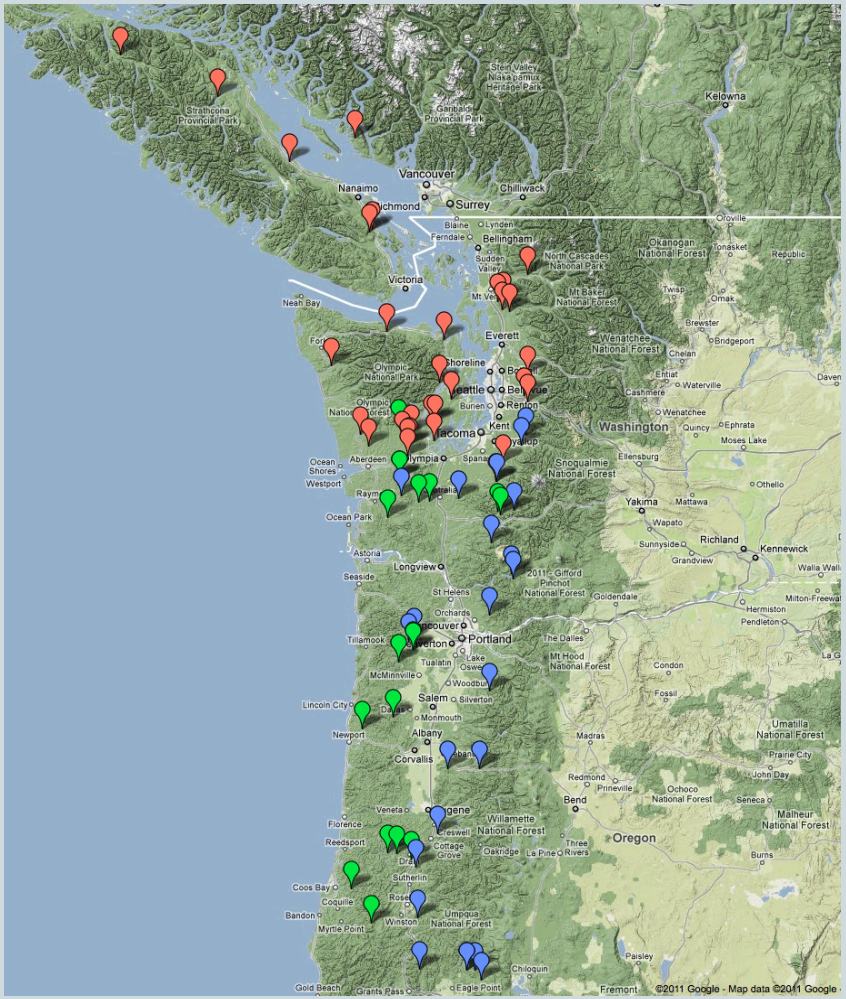


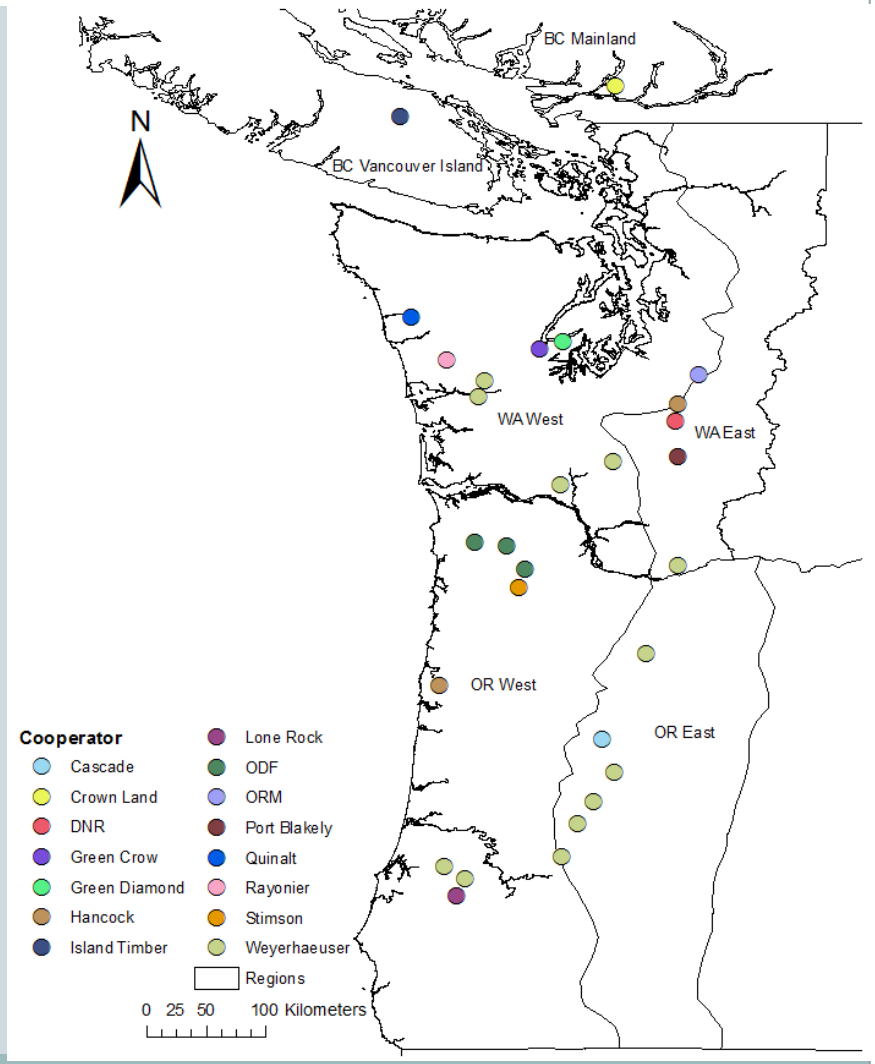
Type V: Paired-Tree Fertilization Study

- Established 2008 – 2011 in Douglas-fir plantations using paired-trees to study effects of mid-rotation fertilization on basal area, height, and volume
- Stratified by soil parent material: red-glacial, blue-igneous, and green-sedimentary
- Also examining how climate, soil, and other physiographic factors affect fertilization responses
- There are two treatments, 0 and 224 Kg N/ha as urea as a single-tree fertilization



Type VI: Paired-Plot (Late) Fertilization Study

- Established 2016 – 2018 in Douglas-fir plantations using paired-plots
- There are two treatments, 0 and 224 Kg N/ha as urea.
- Installed in stratified random sampling fashion, allocating sites proportionally to regional timberland area among four ecoregions in the US and two ecoregions in BC.
- Plan: Thirty six (36) sites total (30 in WA & OR, 6 in BC).



Team SMC

FUNCTION

Functioning Collaboration

- Policy Committee
  - Periodic review of mission, goals, & objectives
  - Develop outlook & priorities of future needs of members
- TAC's
  - Member-driven research questions / studies
  - Develop experimental designs, field measurement protocols, etc.
  - Develop research plans, proposals for external funding, etc.
  - Develop appropriate collaborations with other cooperatives
- Idea Generation & Future Needs Assessment
  - From members, TAC's, related Requests For Proposals, etc.

Thank You

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Stand Management Cooperative
SILVICULTURE ▪ NUTRITION
WOOD QUALITY ▪ MODELING