

# IFTNC Site Type Initiative

## Paired Plot Density Management (PPDM) Trials

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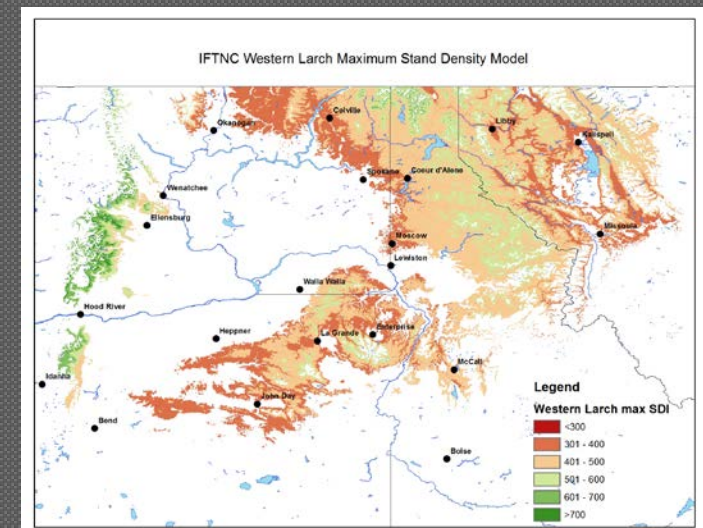
<b>D E N S I T Y</b>	<b>PRODUCTIVITY</b>			
	Site I RD 20	Site II RD 20	Site III RD20	Site IV RD 20
	Site I RD 40	Site II RD 40	Site III RD 40	Site IV RD 40
	Site I RD 60	Site II RD 60	Site III RD 60	Site IV RD 60

IFTNC Annual Meeting 4/07/15

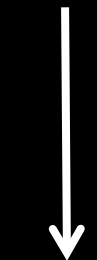

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# OBJECTIVES

- Determine maximum stand growth densities of various site types.
- Identify growth phase where maximum thinning response occurs.
- Evaluate density effects on light, nutrients, and water resources.
- Improve small diameter maximum capacity growth model projections (ie. - maxSDI).



# SITE TYPE MATRIX

<b>D E N S I T Y</b> 	<b>PRODUCTIVITY</b> Low  High			
	<b>Site I</b> RD Low	<b>Site II</b> RD Low	<b>Site III</b> RD Low	<b>Site IV</b> RD Low
	<b>Site I</b> RD Med	<b>Site II</b> RD Med	<b>Site III</b> RD Med	<b>Site IV</b> RD Med
	<b>Site I</b> RD High	<b>Site II</b> RD High	<b>Site III</b> RD High	<b>Site IV</b> RD High

<b><u>Relative Density (RD)</u></b>
RD = BA/(QMD <sup>1/2</sup> ) <b>(Curtis 1982)</b>
RD ≤ 35
35 > RD < 60
RD ≥ 60

<b><u>Productivity</u></b>
10-Year (10YR) Height Segment
Site I = 10YR ≤ 18'
Site II = 19' ≥ 10YR ≤ 22'
Site III = 23' ≥ 10YR ≤ 26'
Site IV = 10YR ≥ 27'

# Site Selection - Sample Design

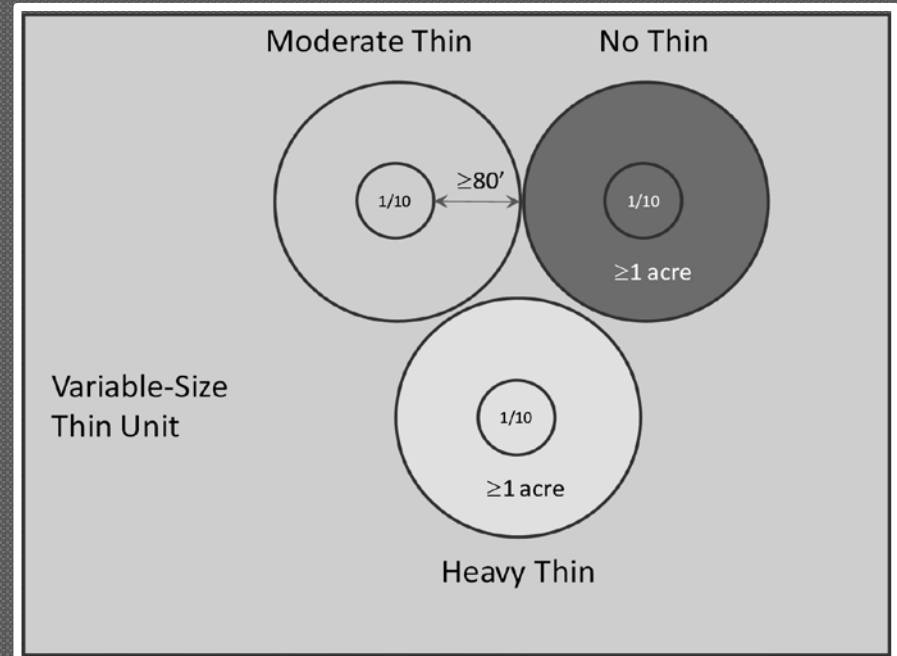
100-150 PCT Stands (10-30YO)

Install 20+ Sites/Year

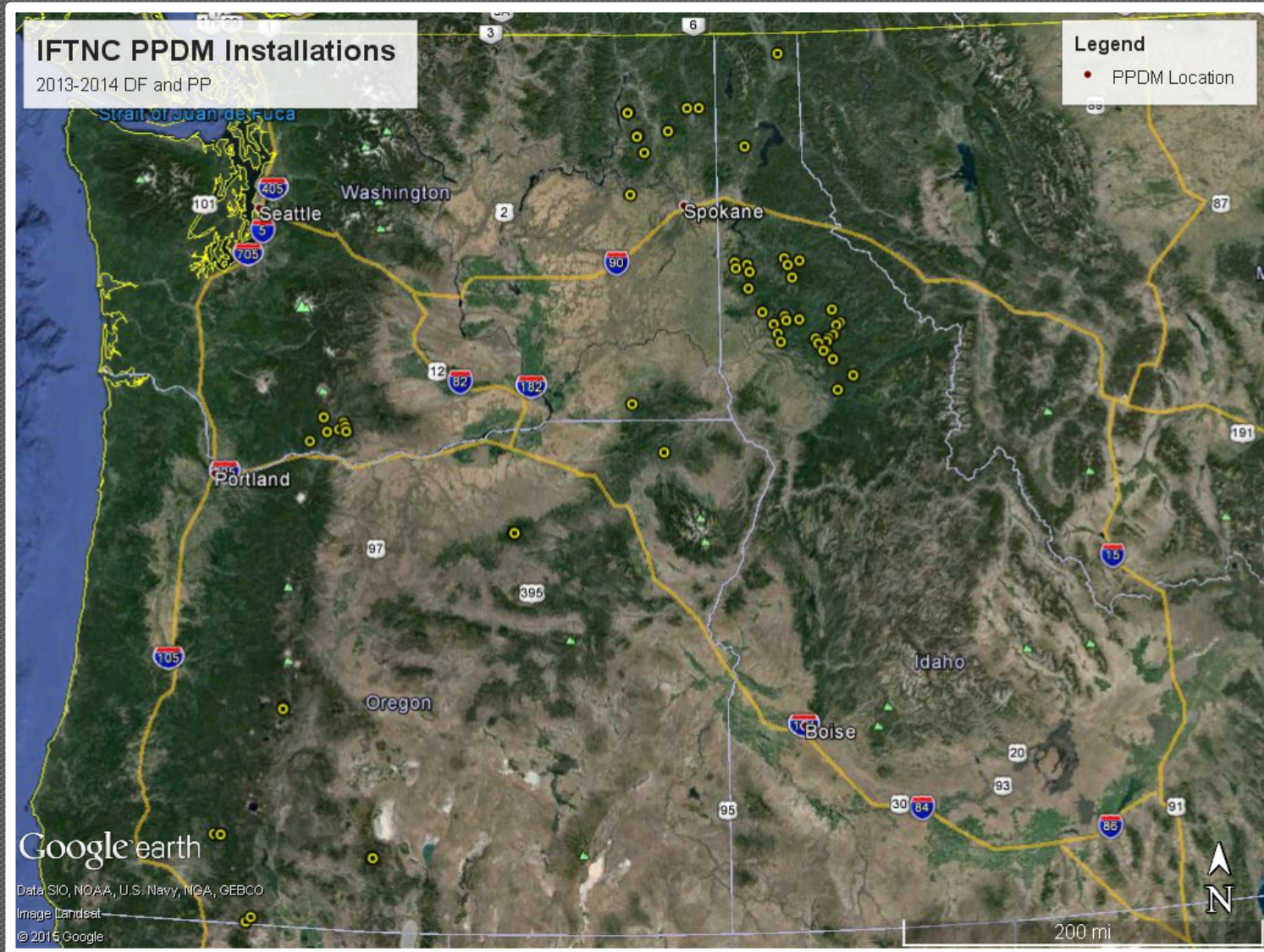
3 Species - DF, PP, WL

Tri-Plot Design:

- 1 No Thin (Control)
- 1 Moderate Thin and 1 Heavy Thin
- Range 10' (436 TPA) - 18' (134 TPA)



# 2013-2014 PPDM Site Locations



# Douglas-fir PPDM Matrix

		Douglas-fir Productivity Index - 10 Year Height Segment			
		10YR $\leq$ 18'	19' $\geq$ 10YR $\leq$ 22'	23' $\geq$ 10YR $\leq$ 26'	10YR $\geq$ 27'
DENSITY INDEX Relative Density (Curtis)	RD $\leq$ 35	1	2	2	4
	RD 36-60	3	4	3	1
	RD $\geq$ 61	1	1	1	1

- Install 3-5 Sites per Matrix Cell
- 24 Douglas-fir Sites Installed in 2013 and 2014

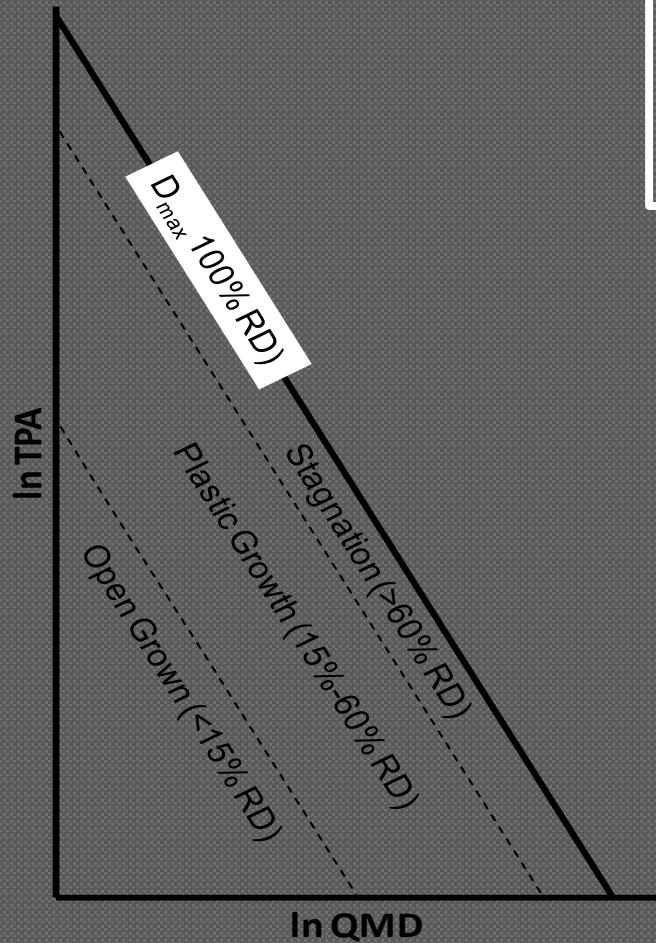
# Ponderosa Pine PPDM Matrix

		Ponderosa Pine Productivity Index - 10 Year Stem Height Segment			
		10YR $\leq$ 18'	19' $\geq$ 10YR $\leq$ 22'	23' $\geq$ 10YR $\leq$ 26'	10YR $\geq$ 27'
DENSITY INDEX Relative Density (Curtis)	RD $\leq$ 35	0	4	0	1
	RD 36-60	3	5	1	0
	RD $\geq$ 61	4	4	0	0

- Install 3-5 Sites per Matrix Cell
- 22 Ponderosa Pine Sites Installed in 2014

# Growth Phase

- Identify growth phase where maximum thinning response occurs.

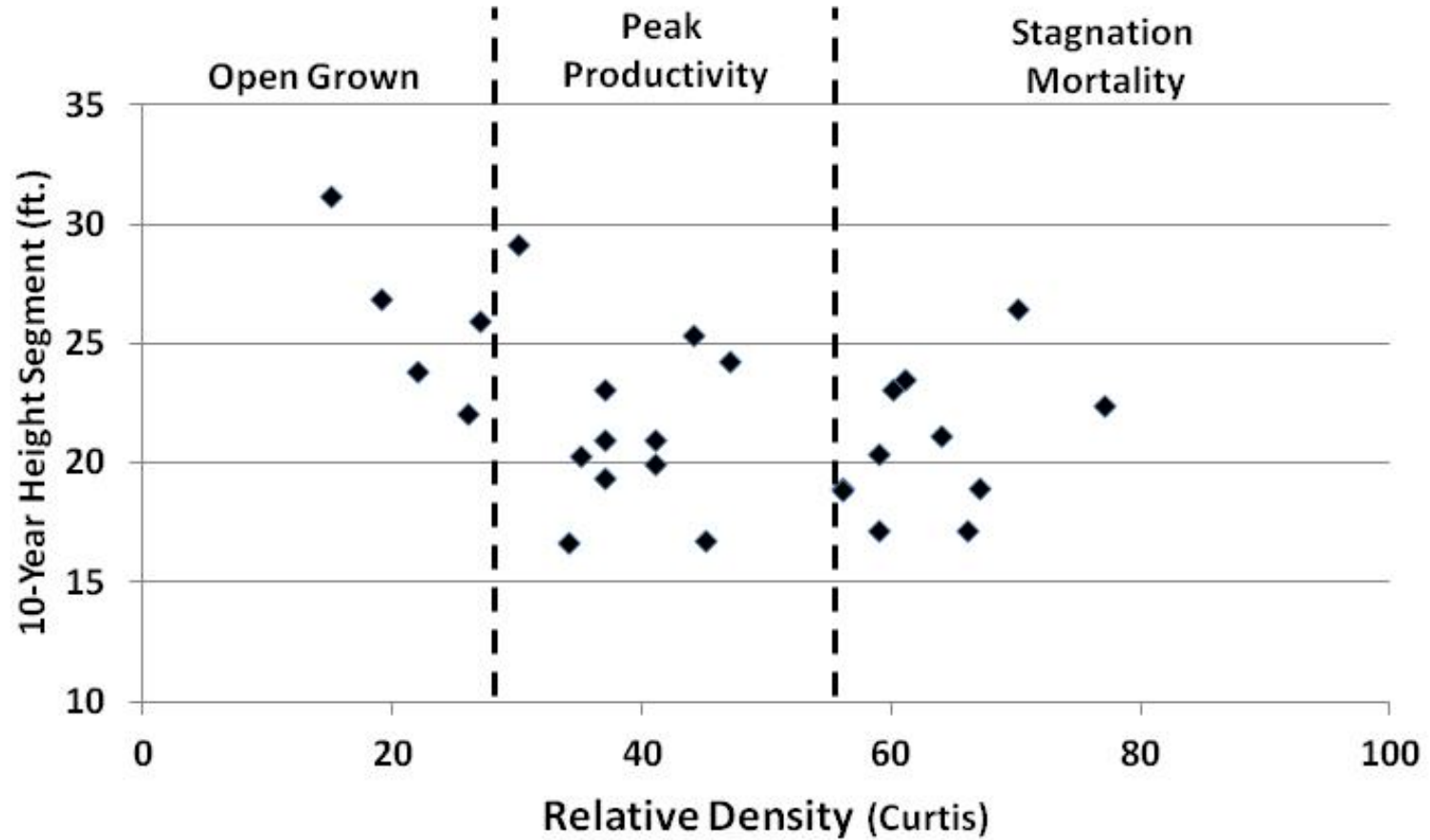


*Adapted from Drew and Flewelling 1979, Oliver 1986 and Powell 1999*

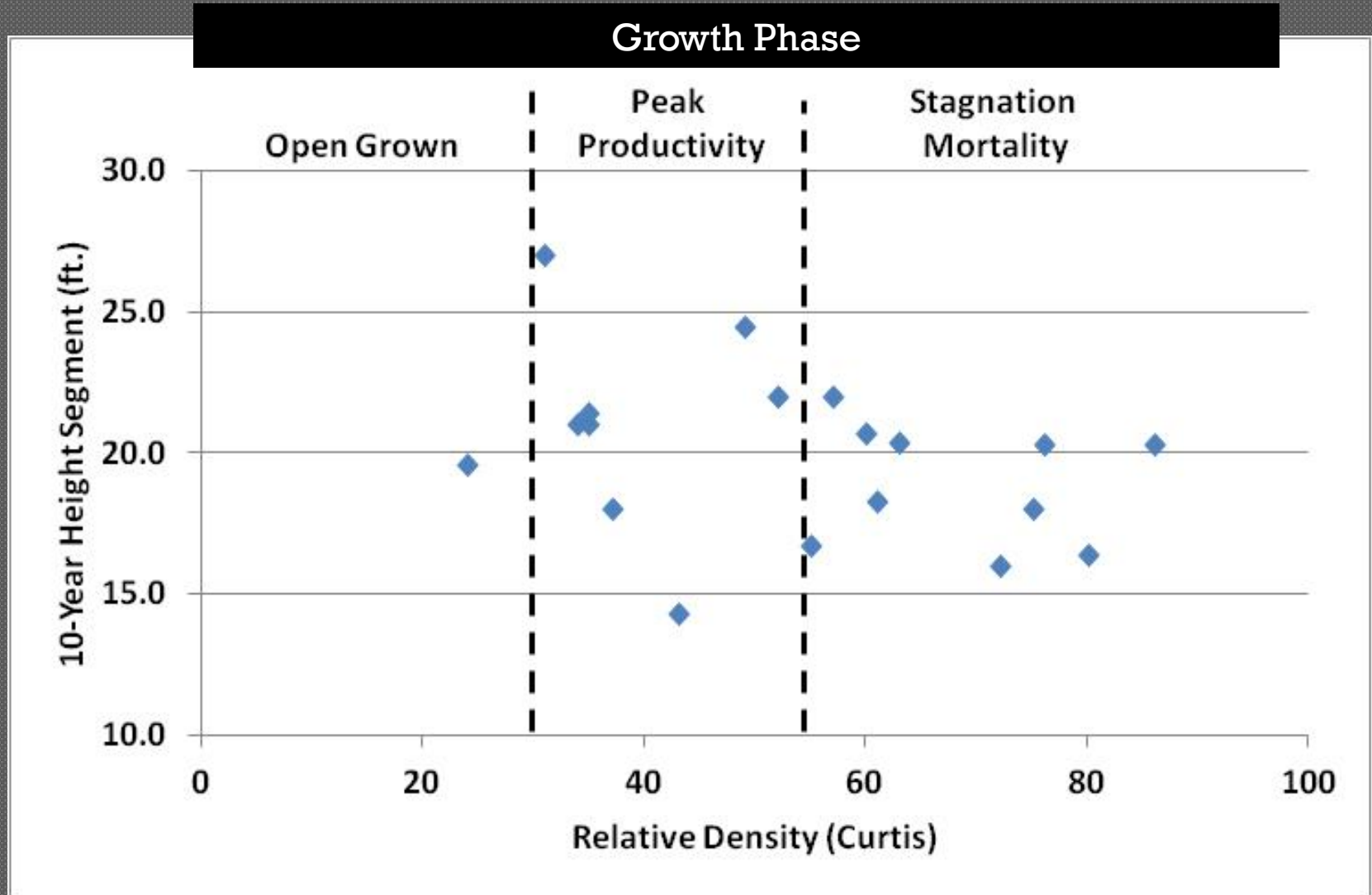


# Douglas-fir (unthinned) Relative Density by 10YR Index

## Growth Phase



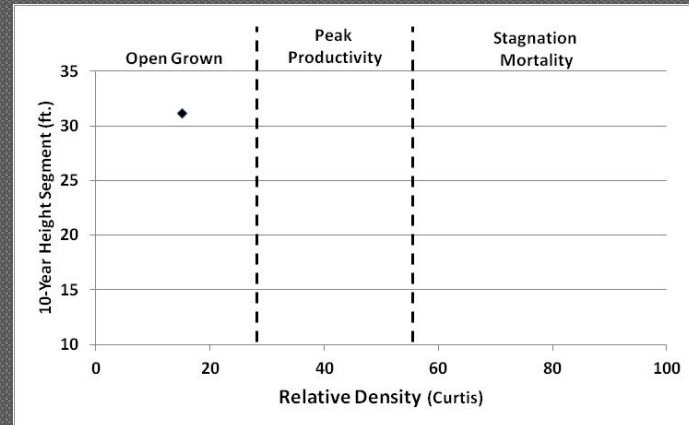
# P. Pine (unthinned) Relative Density by 10YR Index



# Douglas-fir PPDM @ Fisher Creek



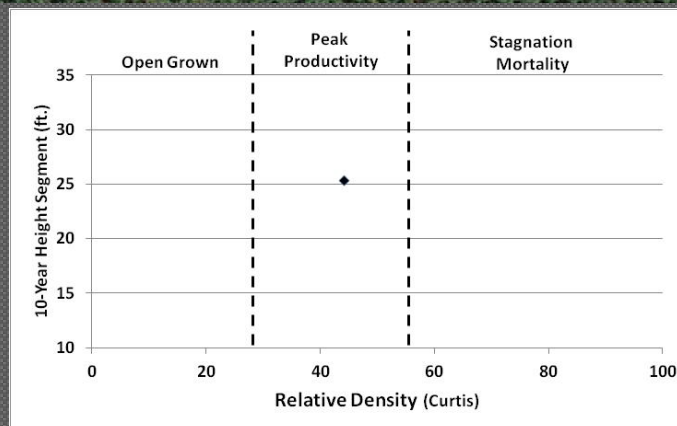
- QMD – 3.5
- TPA – 410
- BA/AC – 28
- RD – 15
- SDI – 76
- SDImax – 361 (@ DF – 10" QMD)



# Douglas-fir PPDM @ Alder



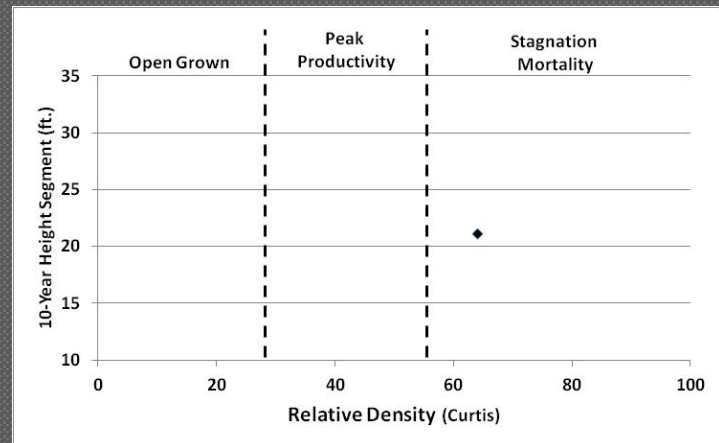
- QMD – 6.8
- TPA – 450
- BA/AC – 113
- RD – 43
- SDI – 242
- SDI<sub>max</sub> – 393 (@DF – 10" QMD)



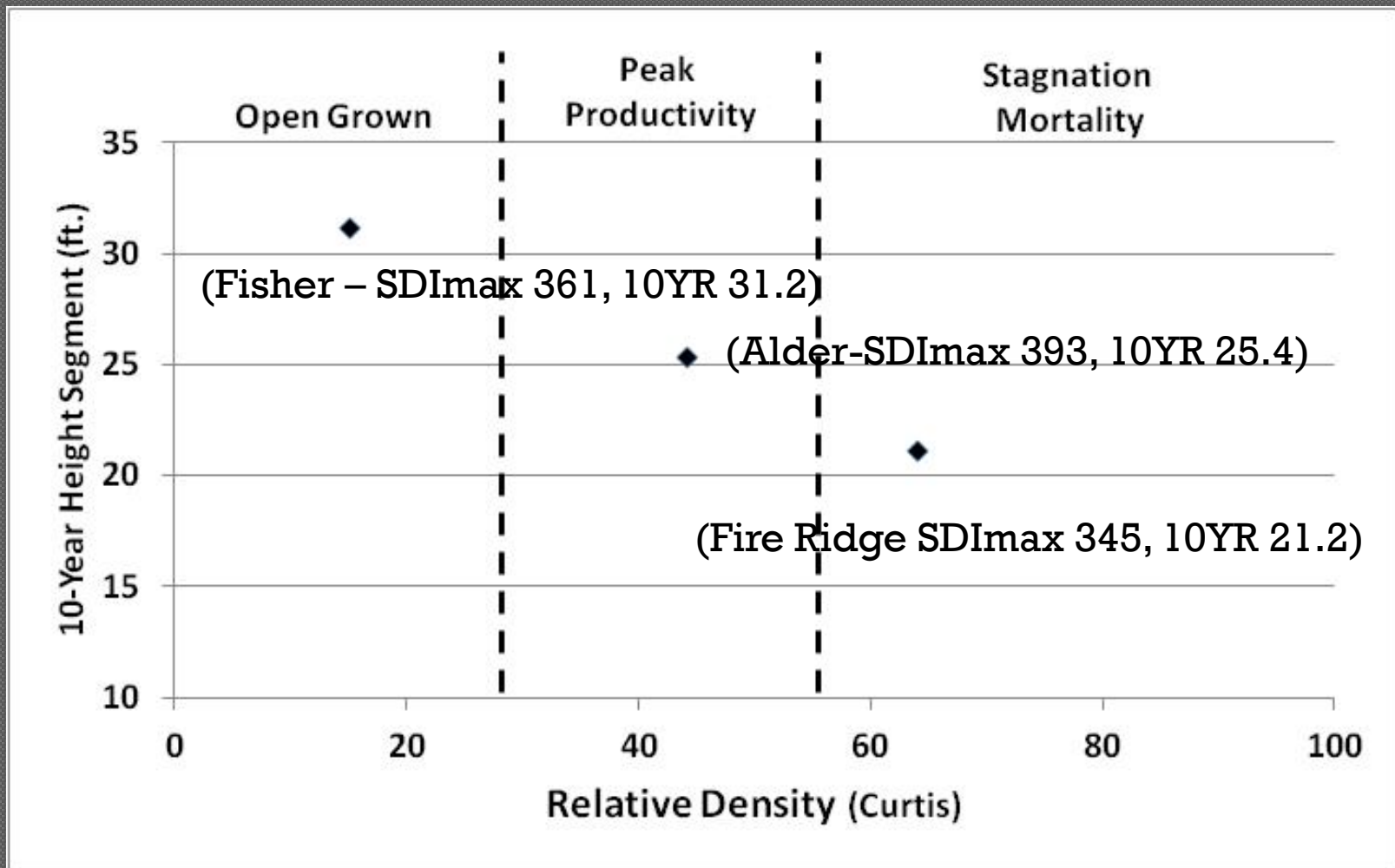
# Douglas-fir PPDM @ Fire Ridge



- QMD – 1.1
- TPA – 9525
- BA/AC – 68
- RD – 64
- SDI – 294
- SDImax – 345 ( @DF – 10"QMD)



# Relative Density by 10YR Index for Three DF PPDM Sites



# Phase II: Paired Plot Density Management Trials

## What's Next

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- 14 DF and 18 PP PCT sites are needed to complete matrix
- To complete the matrix, we may need to select PCT aged stands that are not scheduled for PCT
- 2015 begin western larch selections

