

# IFTNC Site Type Initiative

## Phase II: Paired Plot Density Management Trials

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Terry Shaw

2014 IFTNC Annual Meeting

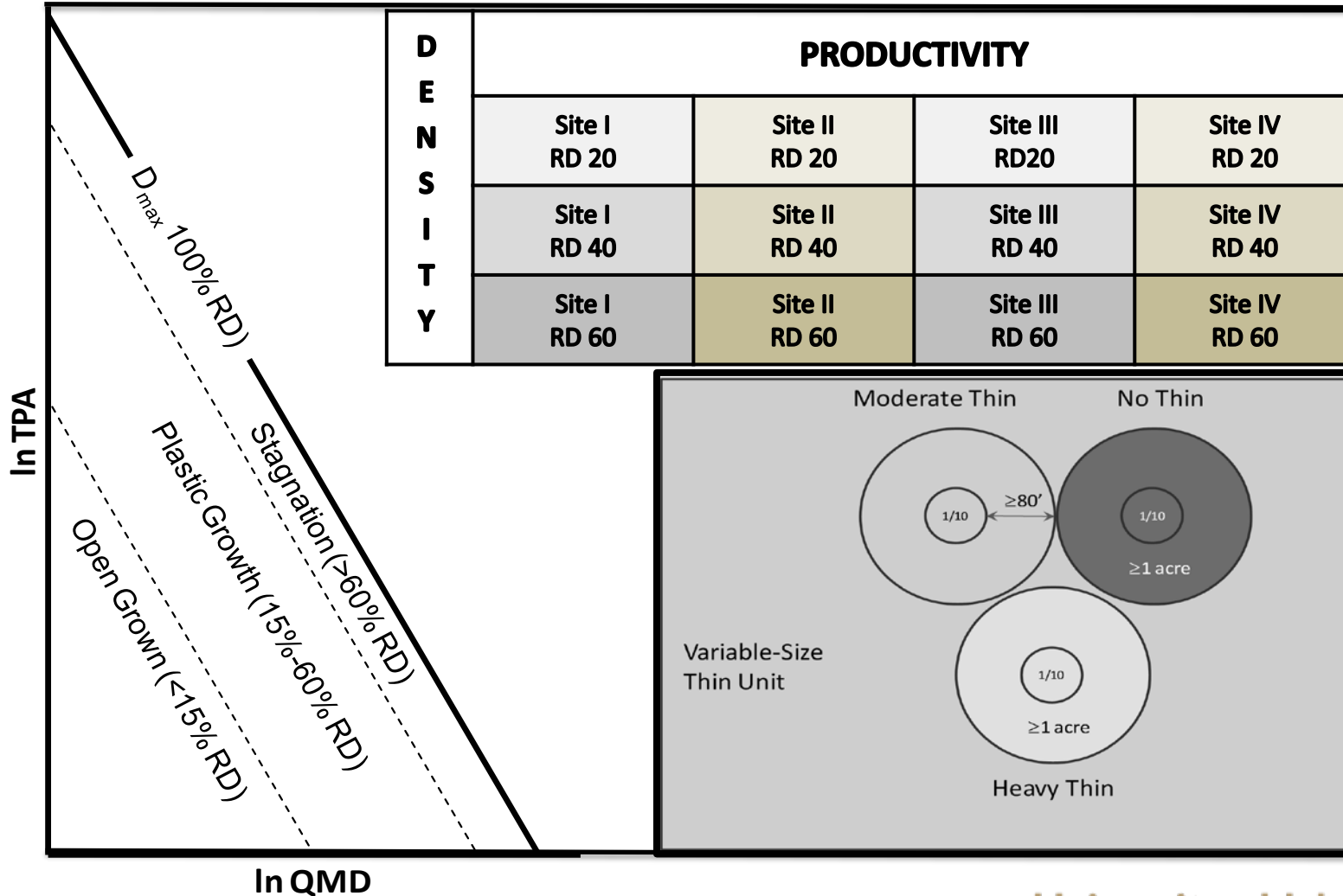


University of Idaho

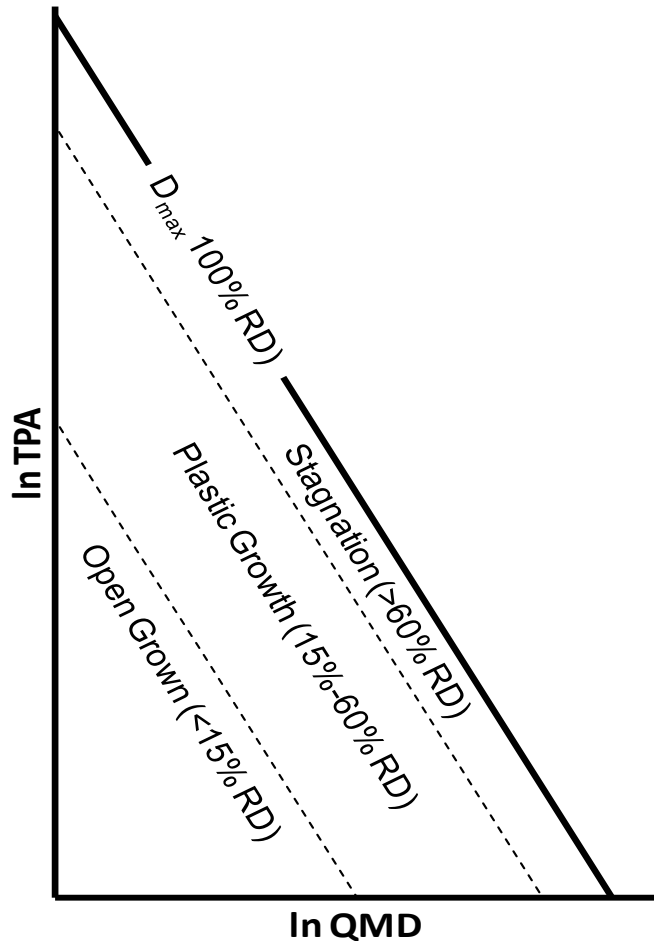


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## Phase II: Paired Plot Density Management Trials



# Phase II: Paired Plot Density Management Trials



## OBJECTIVES

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

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



# Phase II: Paired Plot Density Management Trials

## Design Matrix

D E N S I T Y	PRODUCTIVITY			
	Low			High
LOW	Site I RD 20	Site II RD 20	Site III RD 20	Site IV RD 20
	Site I RD 40	Site II RD 40	Site III RD 40	Site IV RD 40
HIGH	Site I RD 60	Site II RD 60	Site III RD 60	Site IV RD 60

### Relative Density (Curtis 1982)

$$RD = BA / (QMD^{1/2})$$

### Productivity (Site Index)

10-Year Height Segment

$$SI = 2.5(10\text{-Year HT Segment}) + 30$$

Douglas-fir Site Index (Monserud, King)



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## Site Selection - Sample Design

### Objectives and Goals

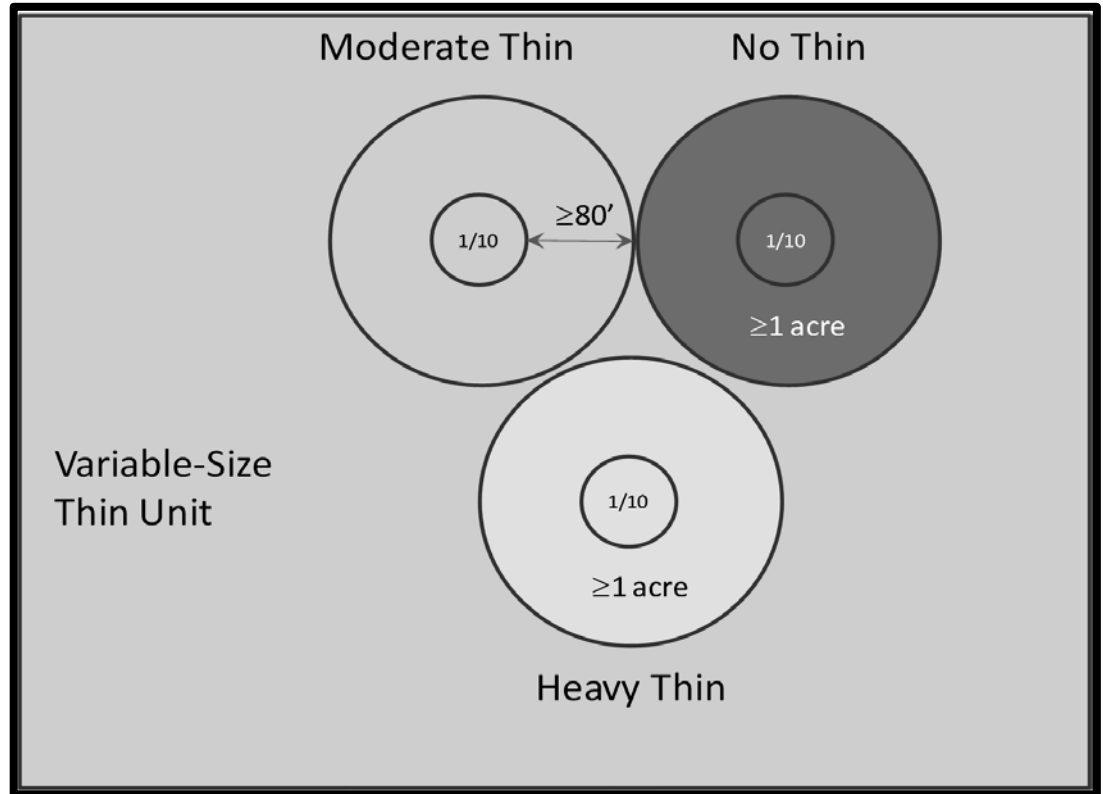
100-150 PCT Stands (10-30YO)

Install 20+ Sites/Year

2 Species (Douglas-fir, P. Pine)

Tri-Plot Design:

- No Thin (Con)
- Moderate Thin (14' - 222 TPA),
- Heavy Thin (18' - 134 TPA)



# IFTNC 2013 D-f Paired Plot Density Management Matrix

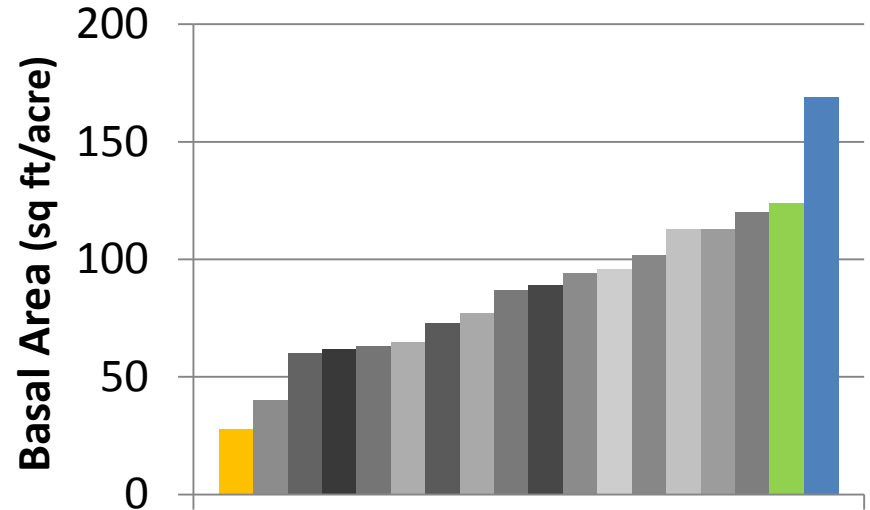
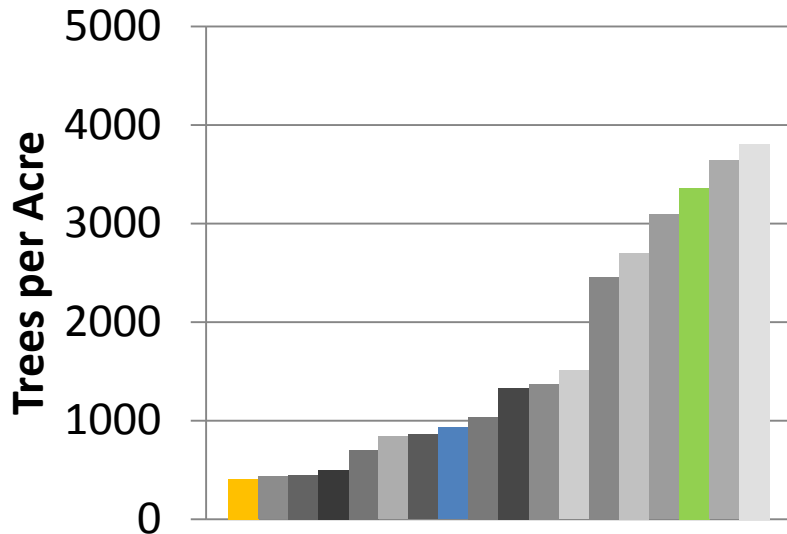
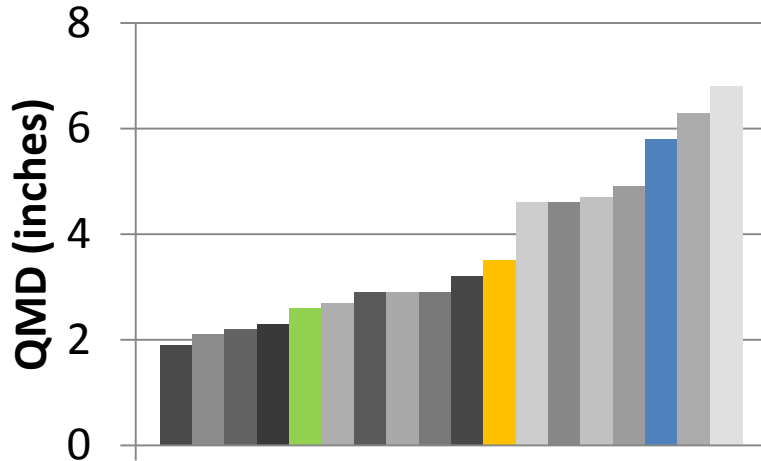
		DF PRODUCTIVITY INDEX - "10 Year Stem Segment - Estimated SI"			
		≤ 75' (SITE I)	76-85' (SITE II)	86-95' (SITE III)	≥ 96' (SITE IV)
DENSITY INDEX Relative Density	RD ≤ 35	0	1	1	2
	RD 36-60	3	4	3	1
	RD ≥ 61	0	2	0	1



Goal – 3-4 per cell per species

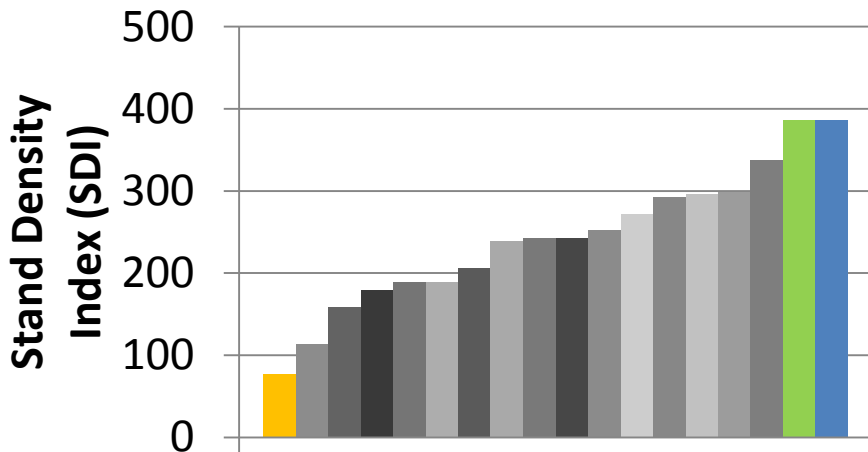
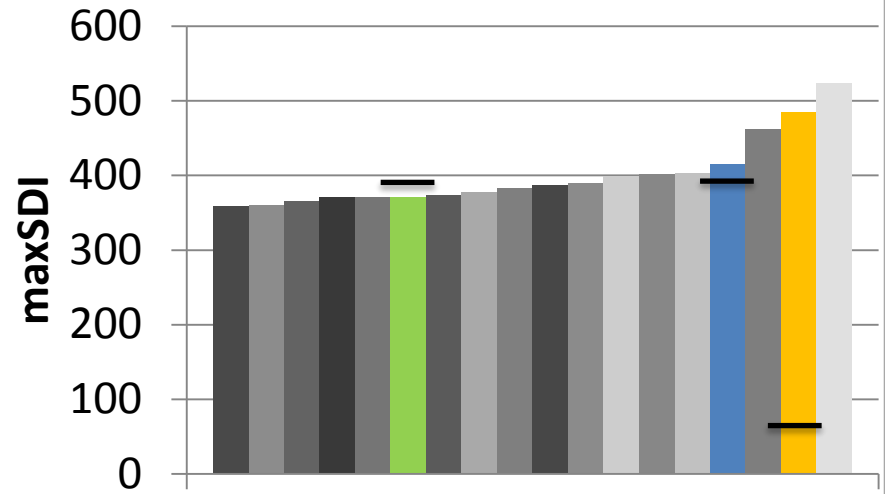
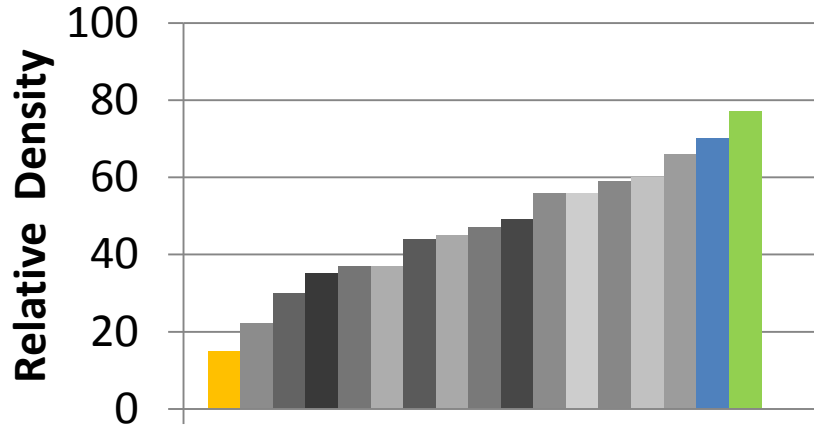
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## 2013 D-f Sites - Unthinned Mensurational Characteristics



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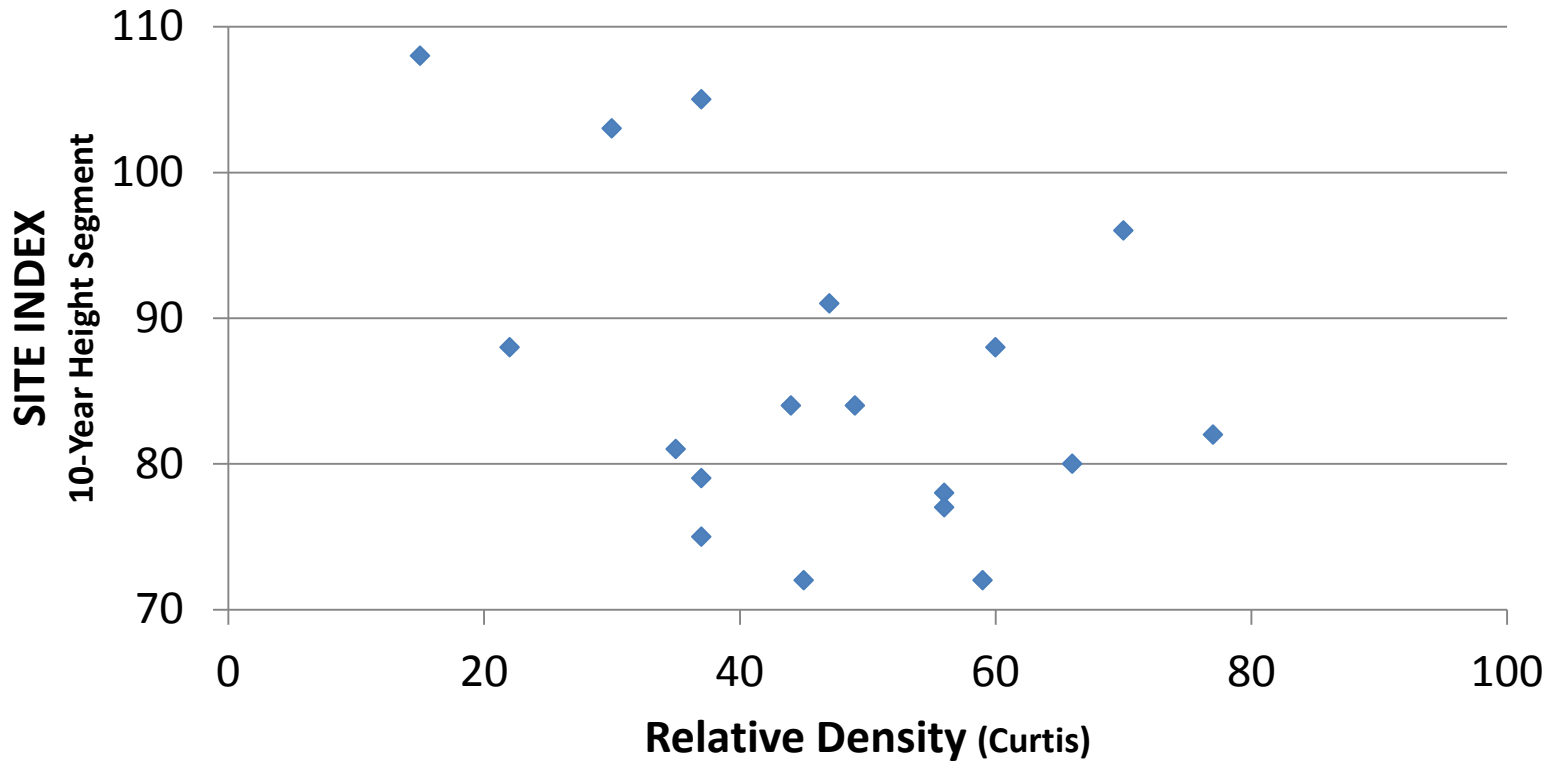
2013 D-f Sites - Unthinned Mensurational Characteristics (cont.)





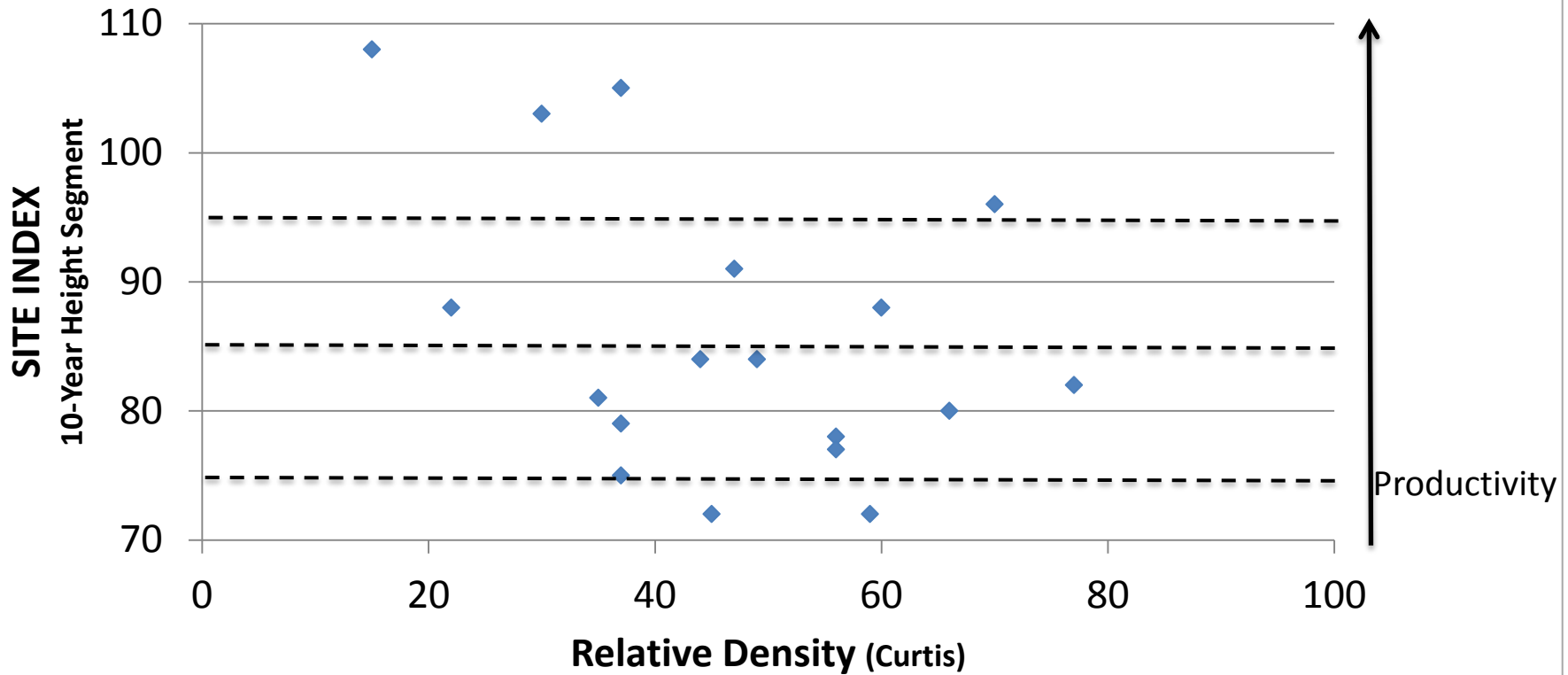
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## 2013 D-f Sites - Unthinned Relative Density by Site Index



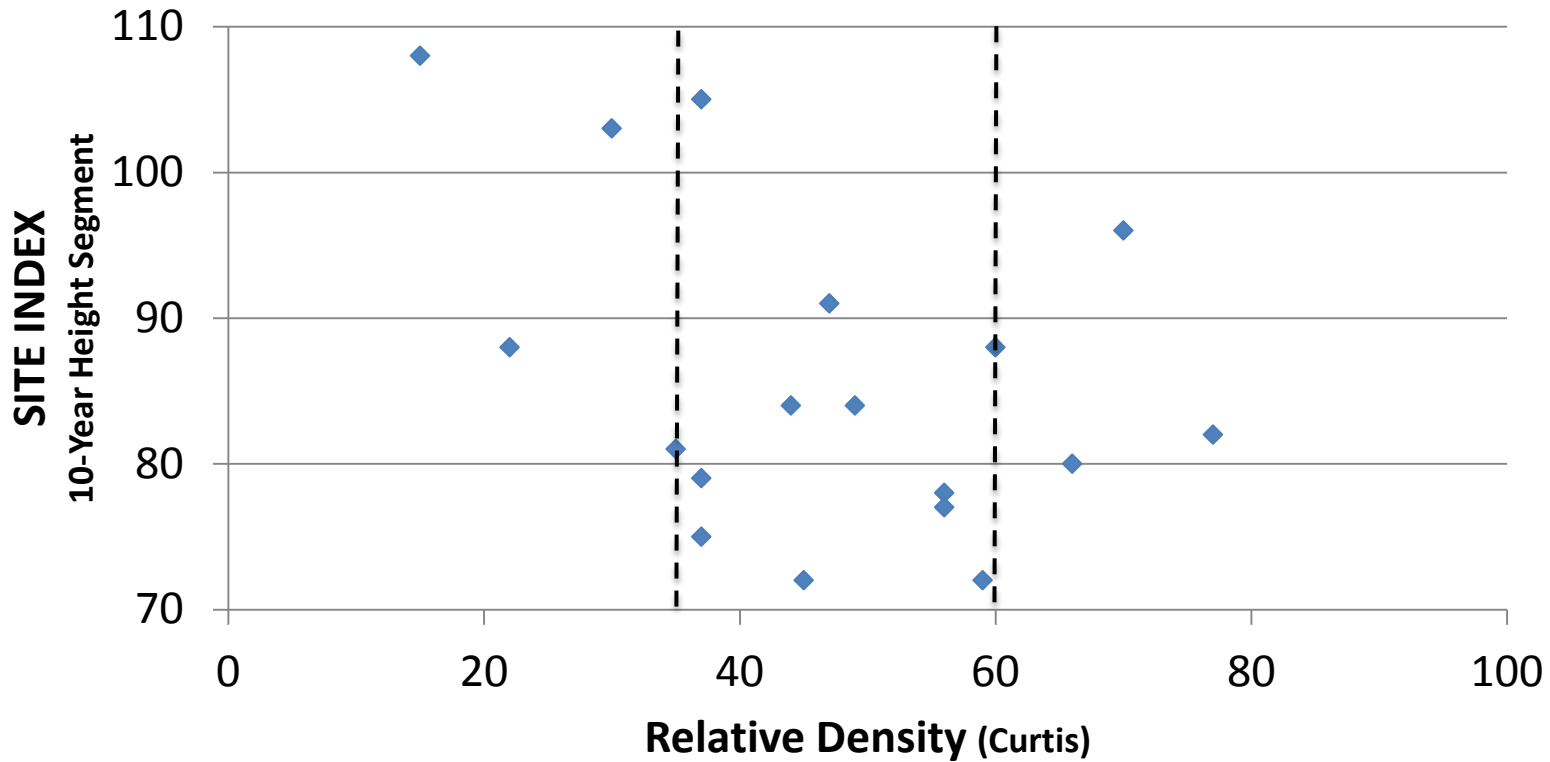
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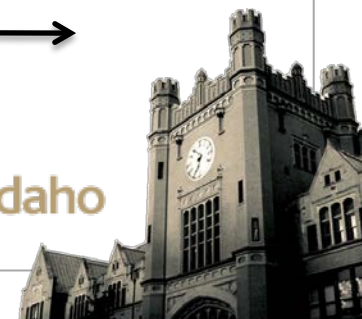
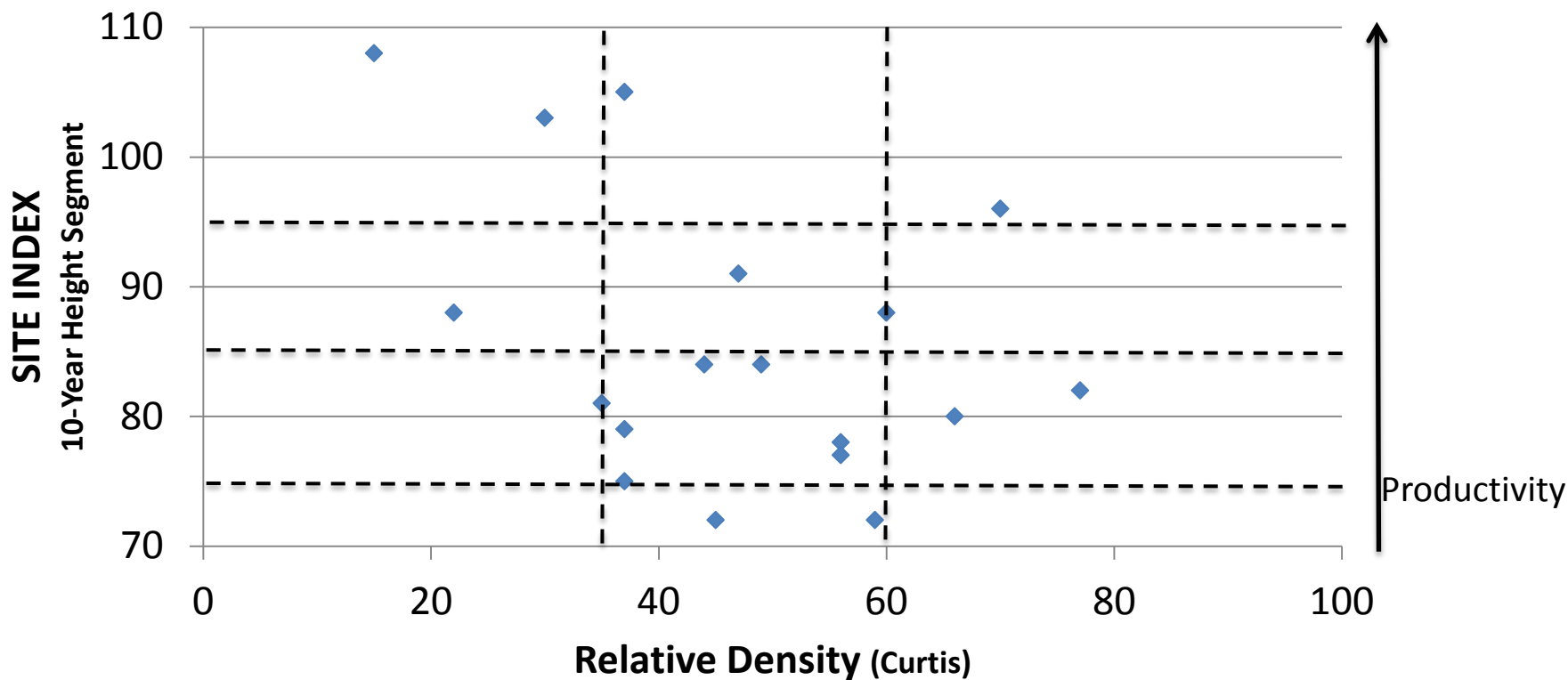
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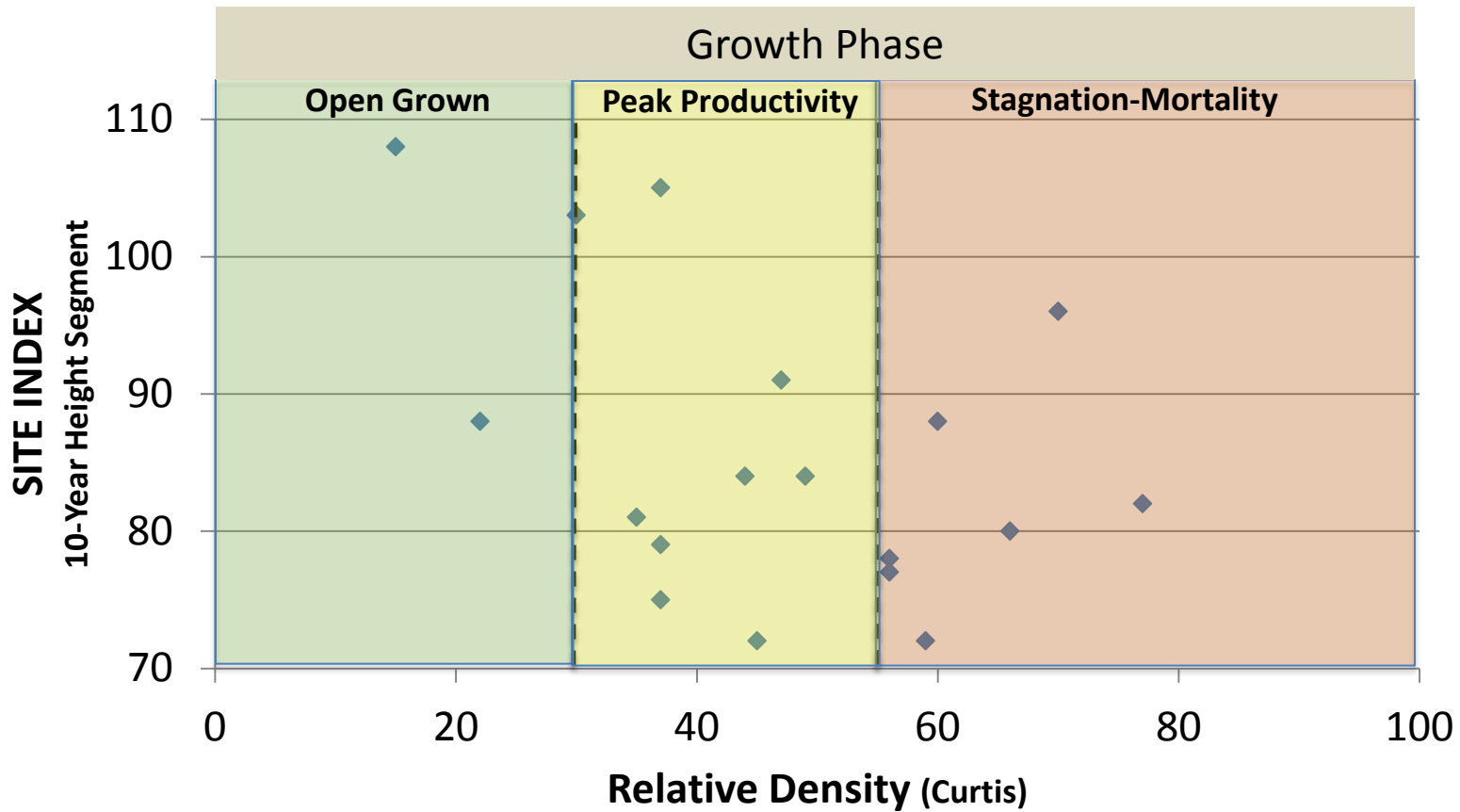
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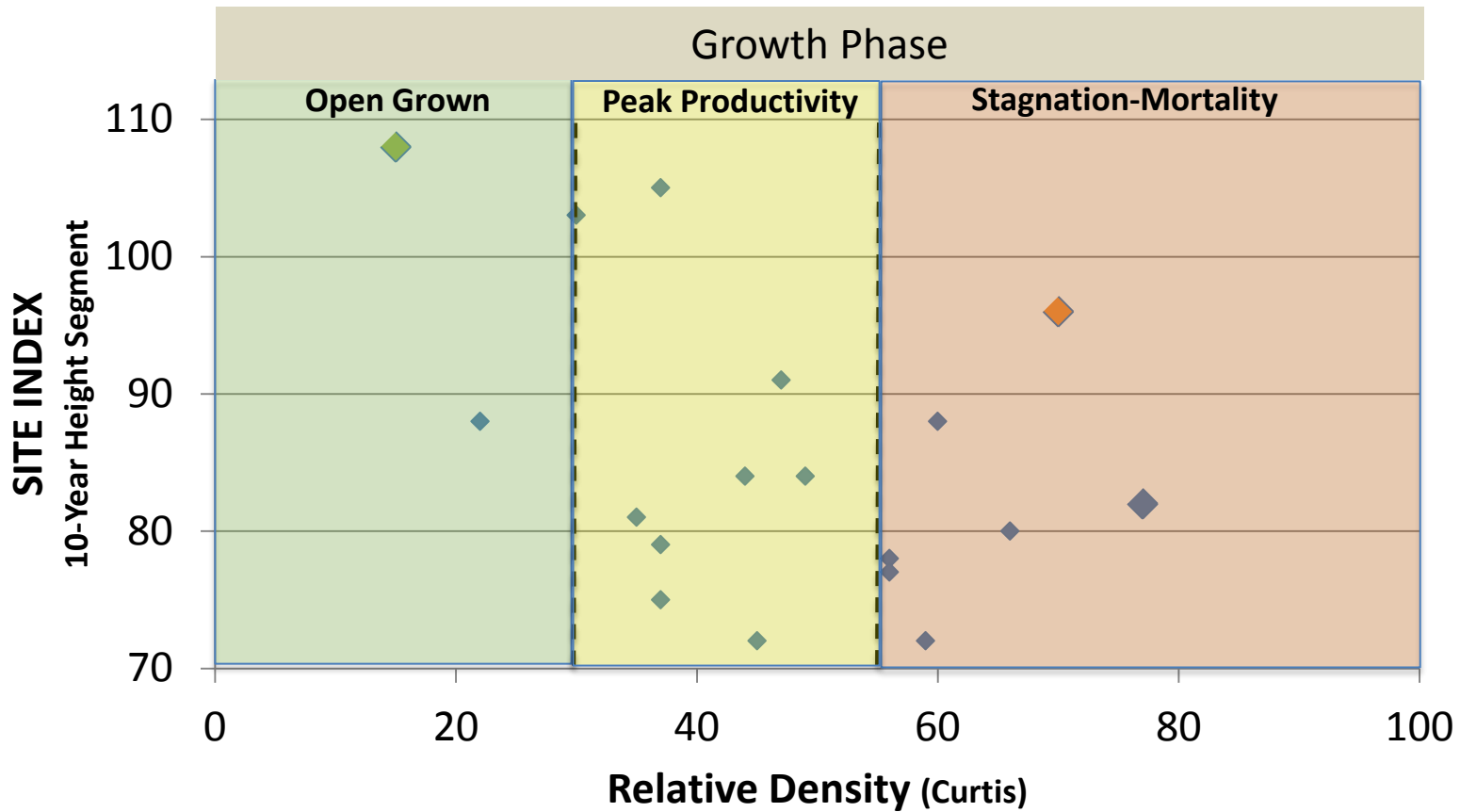
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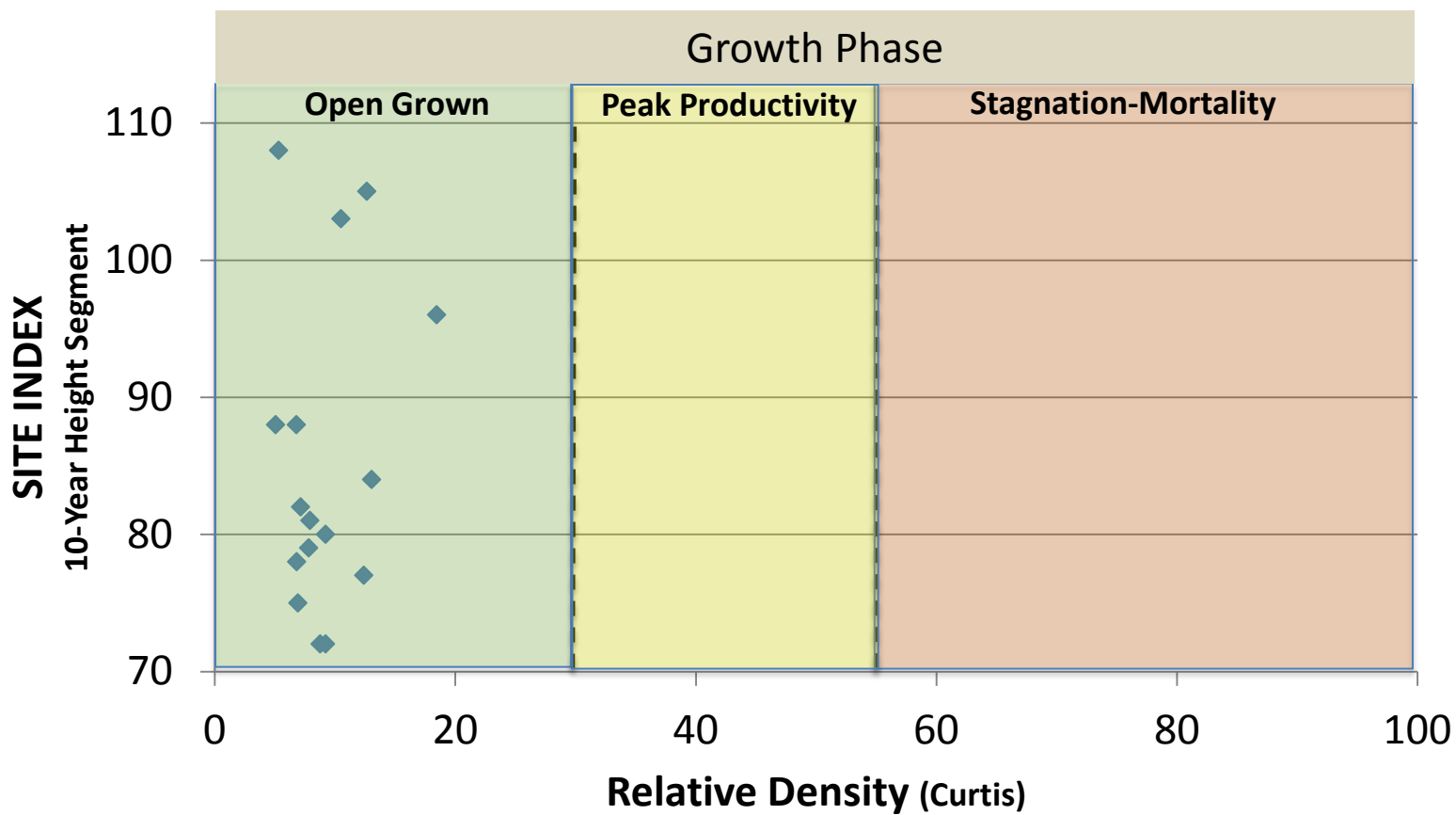
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## 2013 D-f Unthinned Relative Density by Site Index



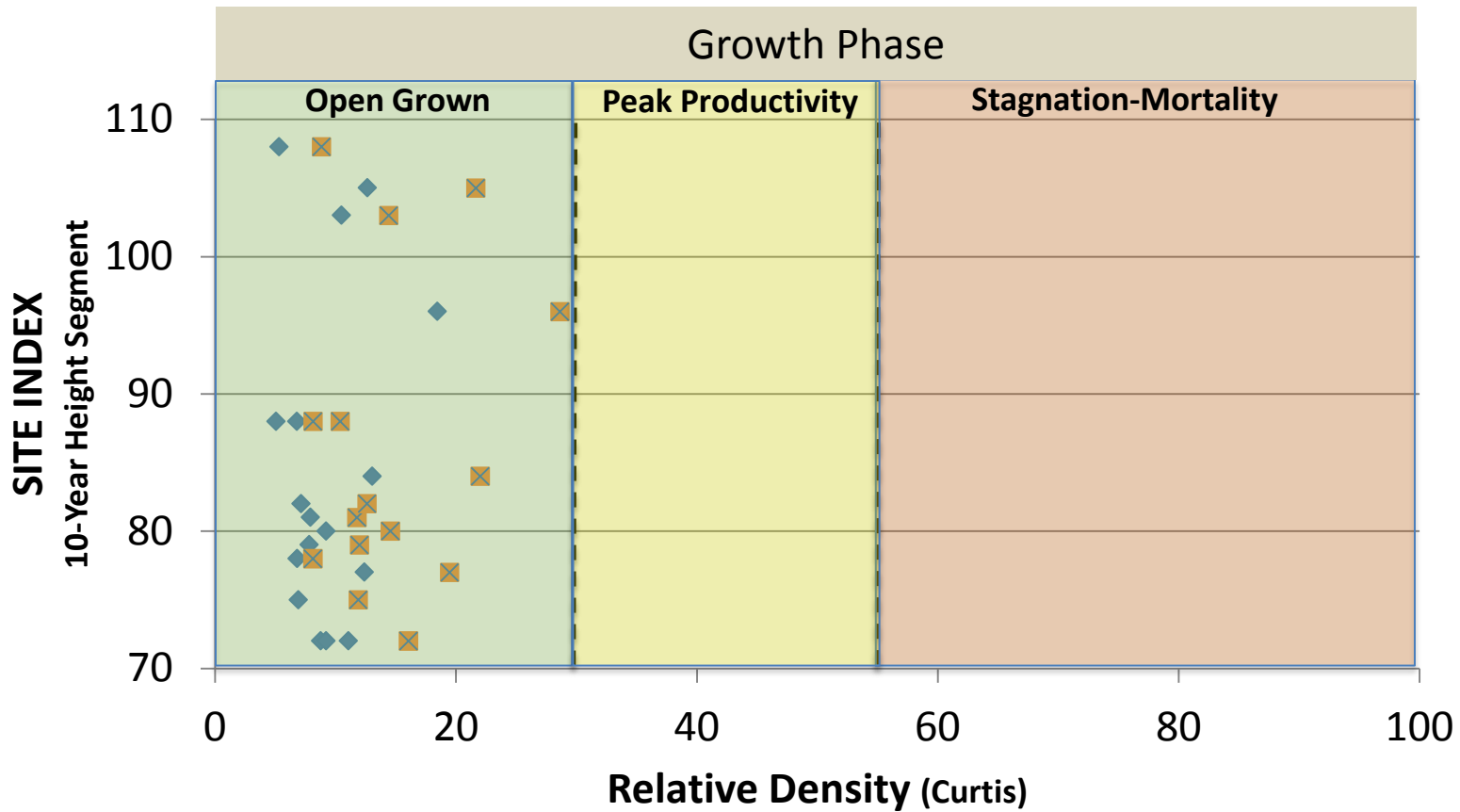
# Phase II: Paired Plot Density Management Trials

## 2013 D-f Thinned (18' x 18') Relative Density by Site Index



# Phase II: Paired Plot Density Management Trials

## 2013 D-f Thinned (14' x 14' and 18' x 18') Relative Density by Site Index





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### What's Next



- 19-21 PCT sites needed to complete D-f matrix
- Need low productivity sites with low and high densities
- To complete the matrix, we may need to select PCT aged stands that are not scheduled for PCT
- 2014 begin ponderosa pine selections and installations

