RW-19 Update: Leesville, Louisiana and Hilliard, Florida

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RW-19: Forest Productivity Co-op

- Thinning and fertilization study
- Manage density to optimize value in fertilization
- Eight industrial study sites established across different physiographic regions
- Six in the southern US
- Established near Leesville, LA and near Hilliard, FL

RW-19: Treatments

- Thinning
  - 100 TPA
  - 200 TPA
  - 300 TPA
  - 500 TPA
- Fertilization
  - With: 200 lbs N + 25 lbs P
  - Without

Forest Health Cooperative Objectives

- Quantify the populations of root and lower stem colonizing beetles (*Hylastes* spp.) and other pine bark beetles through different seasonal periods
- Compare populations among plots under various treatments (thinning and fertilization) during different seasonal periods
- Determine tree vigor following thinning and fertilization treatments
- Relate management and site characteristics to changes in insect populations while monitoring for changes in forest health condition

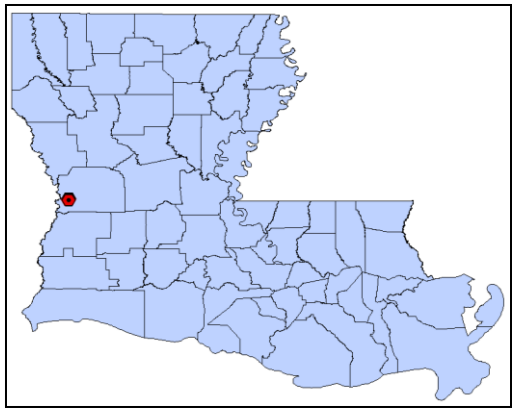
Location of RW-19 Plots

Site Description: RW-19 Leesville, LA

- Managed by Forest Capital Partners
- Property embedded in a Wildlife Management Area
- Located in Vernon Parish
- Gulf lower coastal plain
- 105 acres, loblolly pine planted January 2000
- 500 TPA, 6” DBH, 40’ HT

Study Setup: RW-19 Leesville, LA

- Contractor established 50 plots
  - One acre plots (including buffer)
  - Stocking, DBH, height, soil, foliage
- FHC installed 1 panel and 1 pitfall trap at 36 plots
  - Eight plots per thinning treatment
  - Sixteen plots per fertilization treatment
  - Four controls (no treatment)

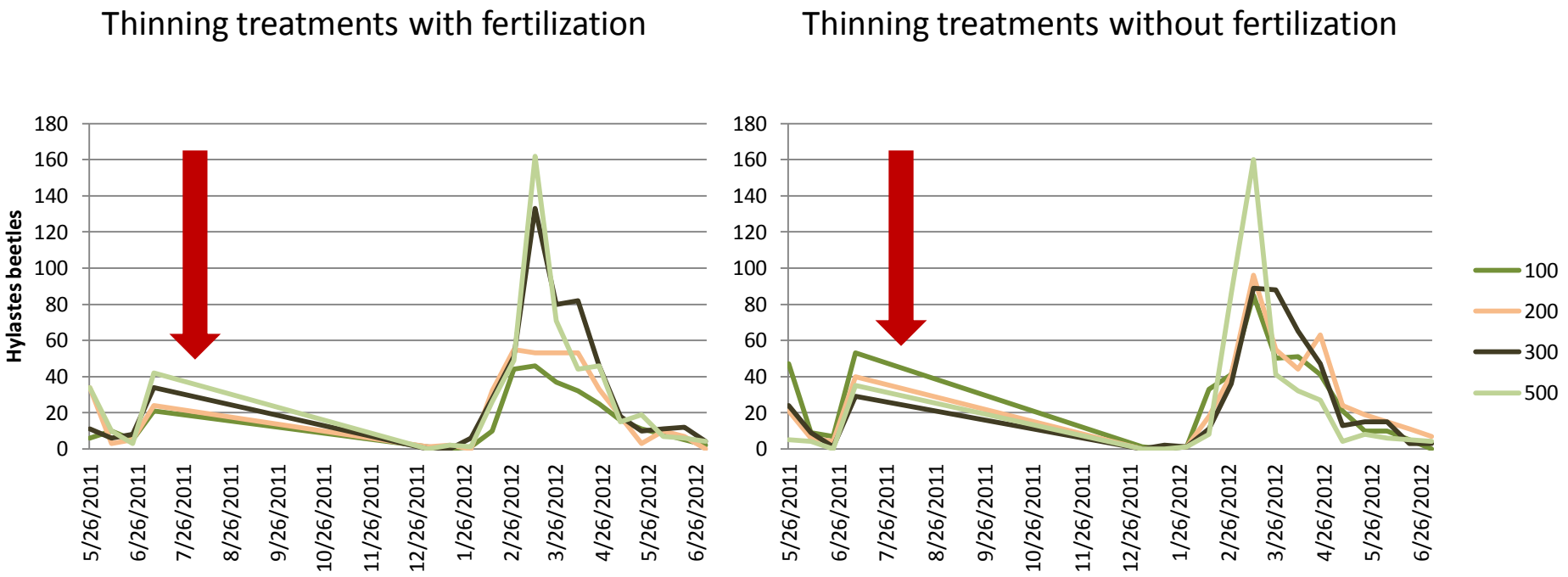


Study Timeline: RW-19 Leesville, LA

- Plots installed and pre-treatment stand data recorded by contractors
- Insect traps installed: May 2011
  - Four insect collections completed pre-treatment by Roger Menard (USFS)
- Insect traps removed: July 2011
- Thin: July 2011
- Insect traps re-installed: December 2011
  - Post-treatment collections continuing to 12/2012 by Roger Menard
- Plot data for tree measurements and vigor: May 2012
  - Collected resin, root cores, site characteristic data, and crown ratings

Results: RW-19 Leesville, LA

- *Hylastes* Response to Treatments

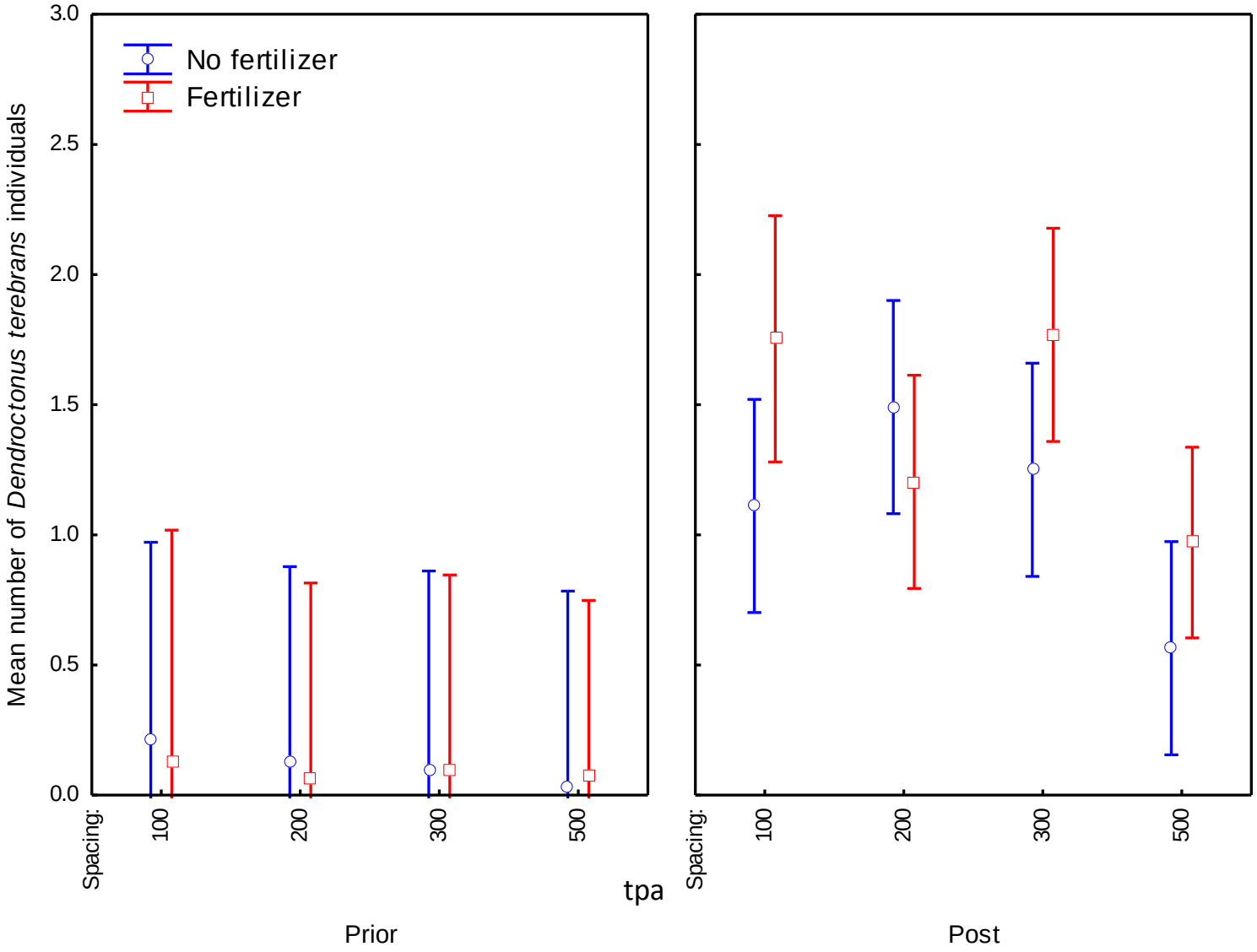


Insect Response to Treatments

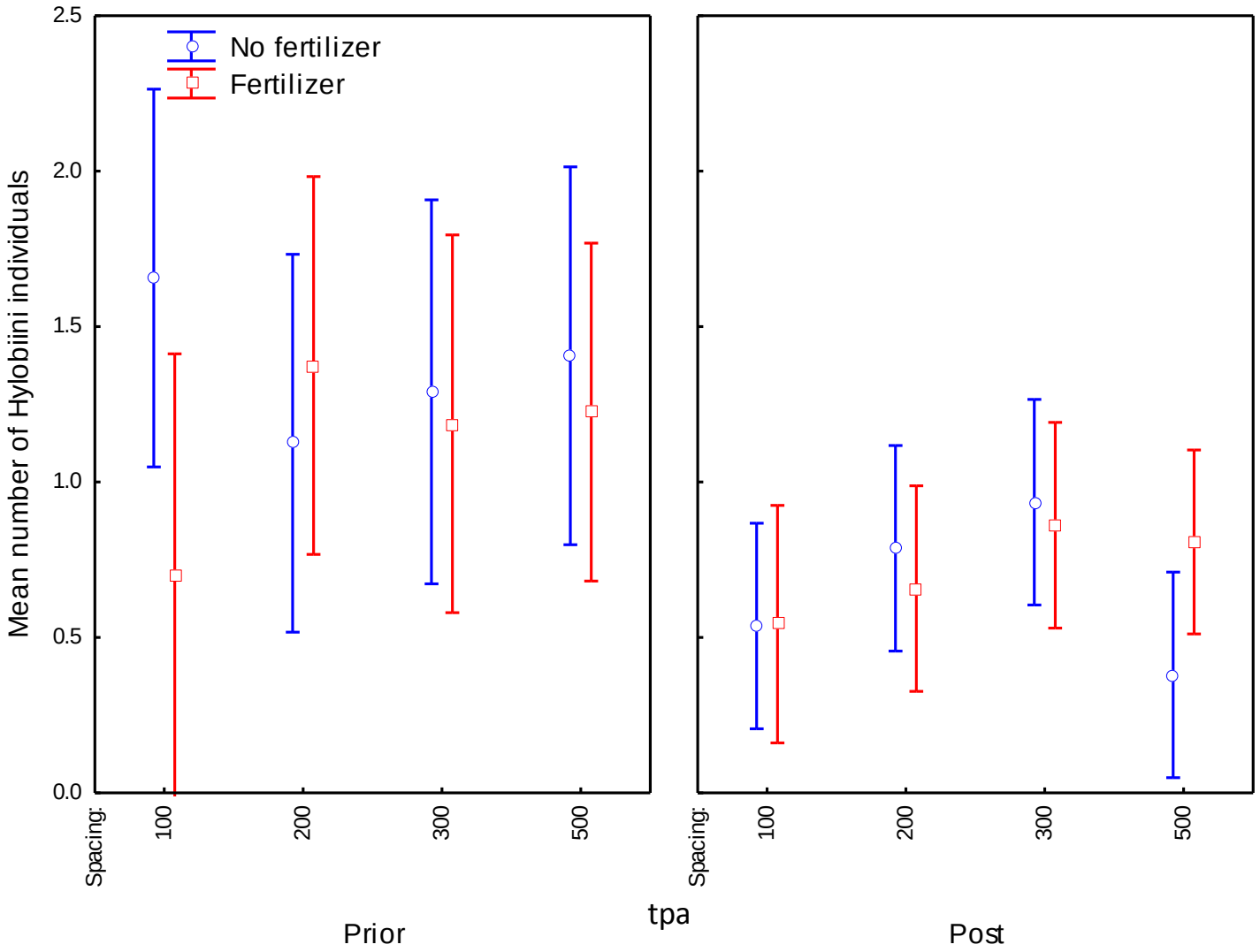
Louisiana Pre Treatment						
	df	*Dendroctonus terebrans*	*Hylastes*	Hylobiini	*Ips* spp.	Ambrosia
Fertilizer	1	$p = 0.551$	$p = 0.551$	$p = 0.444$	$p = 0.667$	p =0 .189
Thinning	3	$p = 0.301$	$p = 0.521$	$p = 0.993$	$p = 0.820$	$p = 0.502$
Fertilizer x Thinning	3	$p = 0.718$	$p = 0.352$	$p = 0.638$	$p = 0.530$	$p = 0.570$

Louisiana Post Treatment						
	df	*Dendroctonus terebrans*	*Hylastes*	Hylobiini	*Ips* spp.	Ambrosia
Fertilizer	1	$p = 0.103$	$p = 0.821$	$p = 0.920$	$p = 0.657$	p =0 .881
Thinning	3	**$p = 0.020$**	$p = 0.198$	**$p = 0.024$**	**$p = 0.021$**	$p = 0.195$
Fertilizer x Thinning	3	$p = 0.138$	$p = 0.320$	$p = 0.094$	$p = 0.658$	$p = 0.648$

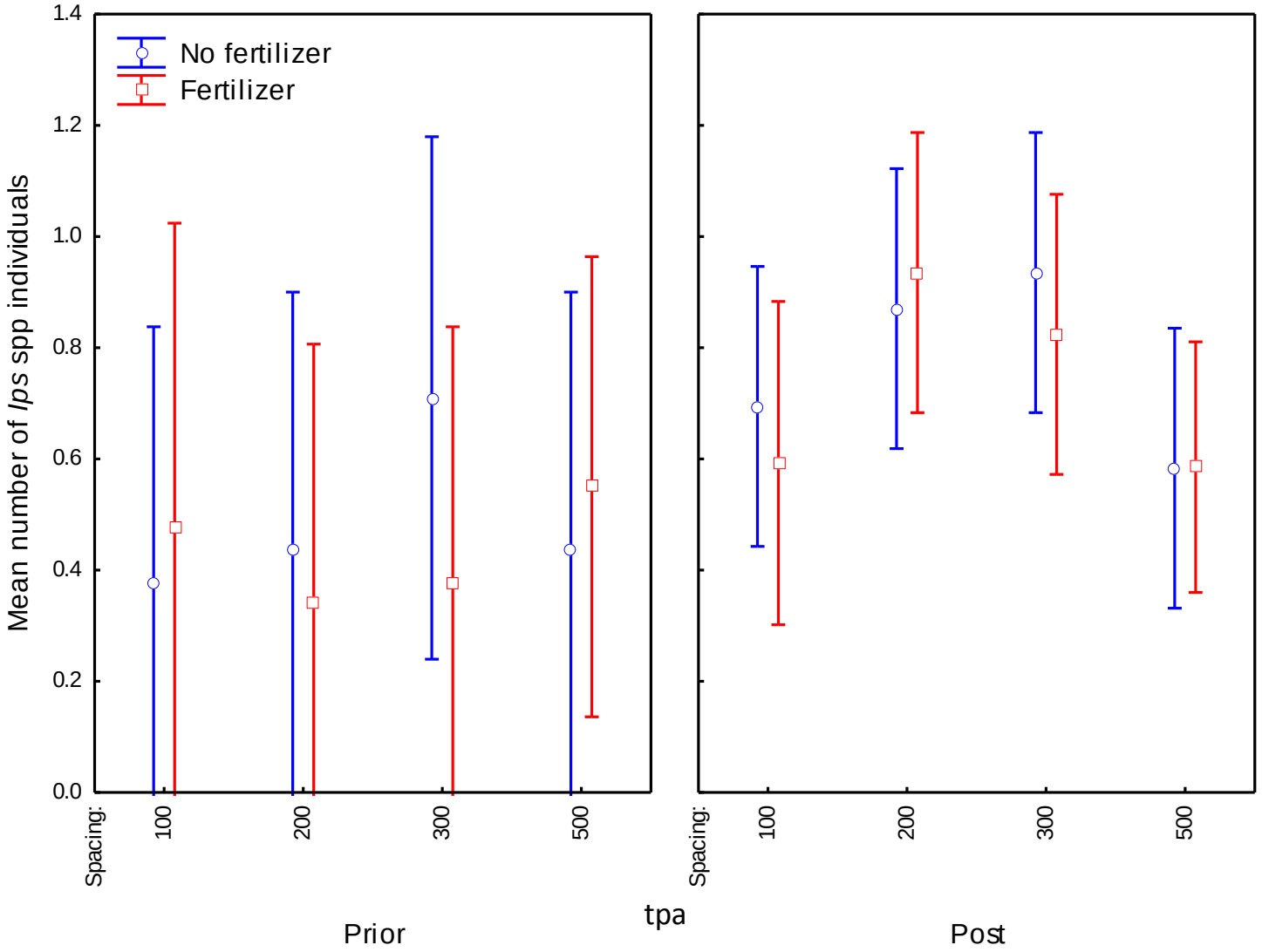
BTB Pre- and Post Treatment



Weevils Pre- and Post Treatment



Ips Pre- and Post Treatment



Site Description: RW-19 Hilliard, FL

- Managed by Rayonier
- Located in Nassau County, FL
- Atlantic Lower Coastal Plain
- 300 acres, loblolly pine planted January 2000
- Single bed
- CRIFF "C" (spodic with an argillic) soils
- 700 TPA, 5.5“ DBH, 49‘ HT

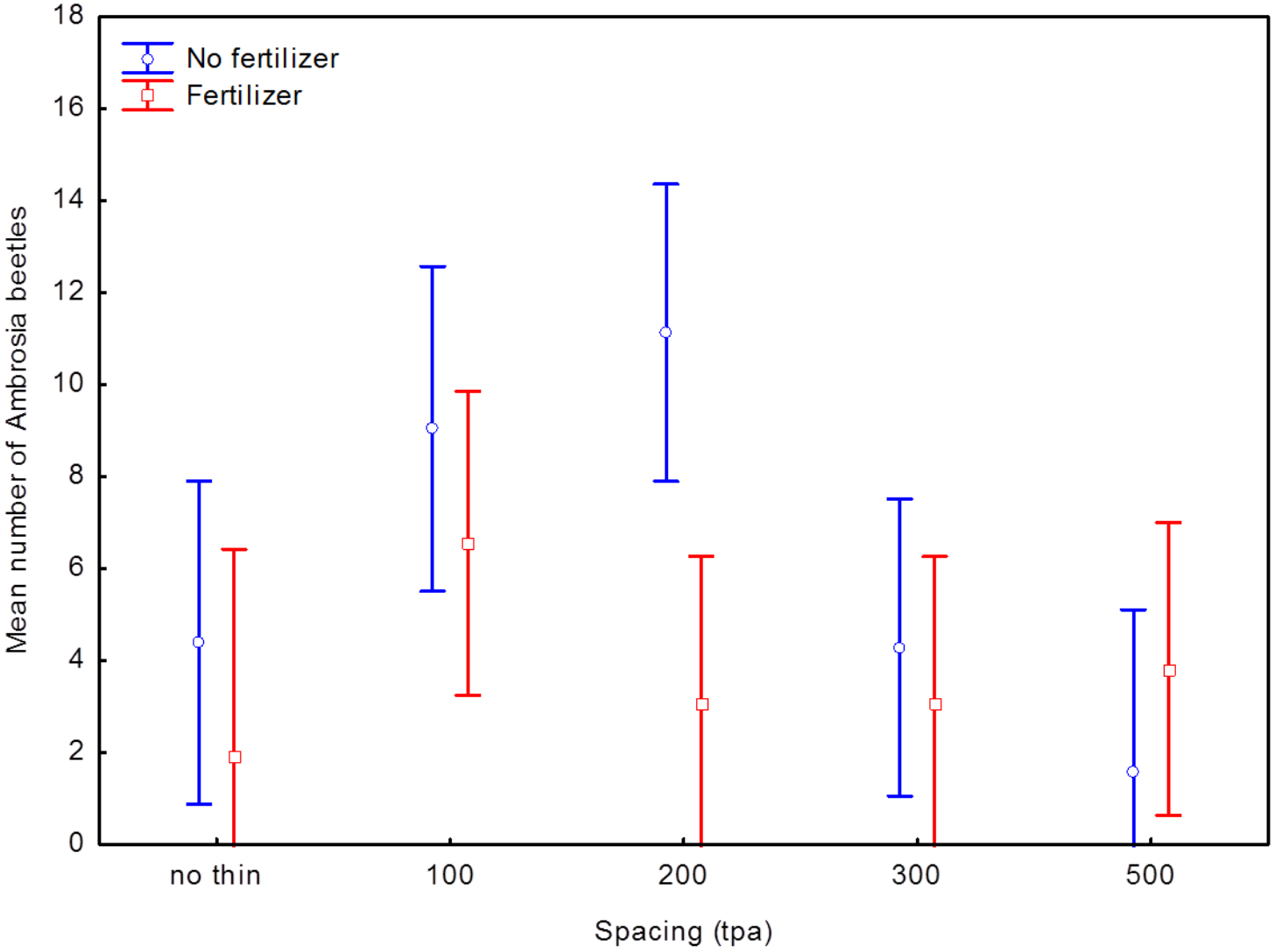
Study Timeline: RW-19 Hilliard, FL

- Plots installed and pre-treatment stand data recorded by contractors
- Insect traps installed: November 2012; 13 collections
- Insect traps removed: May 2013
- Thin: 2013
- Insect traps re-installed: February 2014
- Plot data for tree measurements and vigor: July 2014
  - Collect resin, root cores, site characteristic data, and crown ratings

Preliminary Insects Florida

Florida Pre Treatment						
	df	*Dendroctonus terebrans*	*Hylastes*	Hylobiini	*Ips* spp.	Ambrosia
Fertilizer	1	$p = 0.566$	$p = 0.688$	$p = 0.962$	$p = 0.378$	**$p = 0.031$**
Thinning	4	$p = 0.111$	$p = 0.294$	$p = 0.231$	$p = 0.320$	**$p = 0.005$**
Fertilizer x Thinning	4	$p = 0.750$	$p = 0.743$	$p = 0.251$	$p = 0.390$	**$p = 0.043$**

Ambrosia Beetles Pre-Treatment



Continuing Work in Florida

- Insect collection continuing post-treatment
- Tree vigor measurements and plot data

Research Impacts

- Provide managers with better knowledge of how thinning and fertilization affects pest insect populations

Acknowledgments

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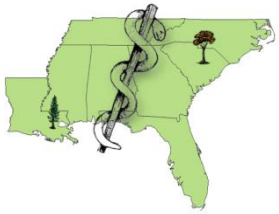

Fire effects on insect populations in managed pines

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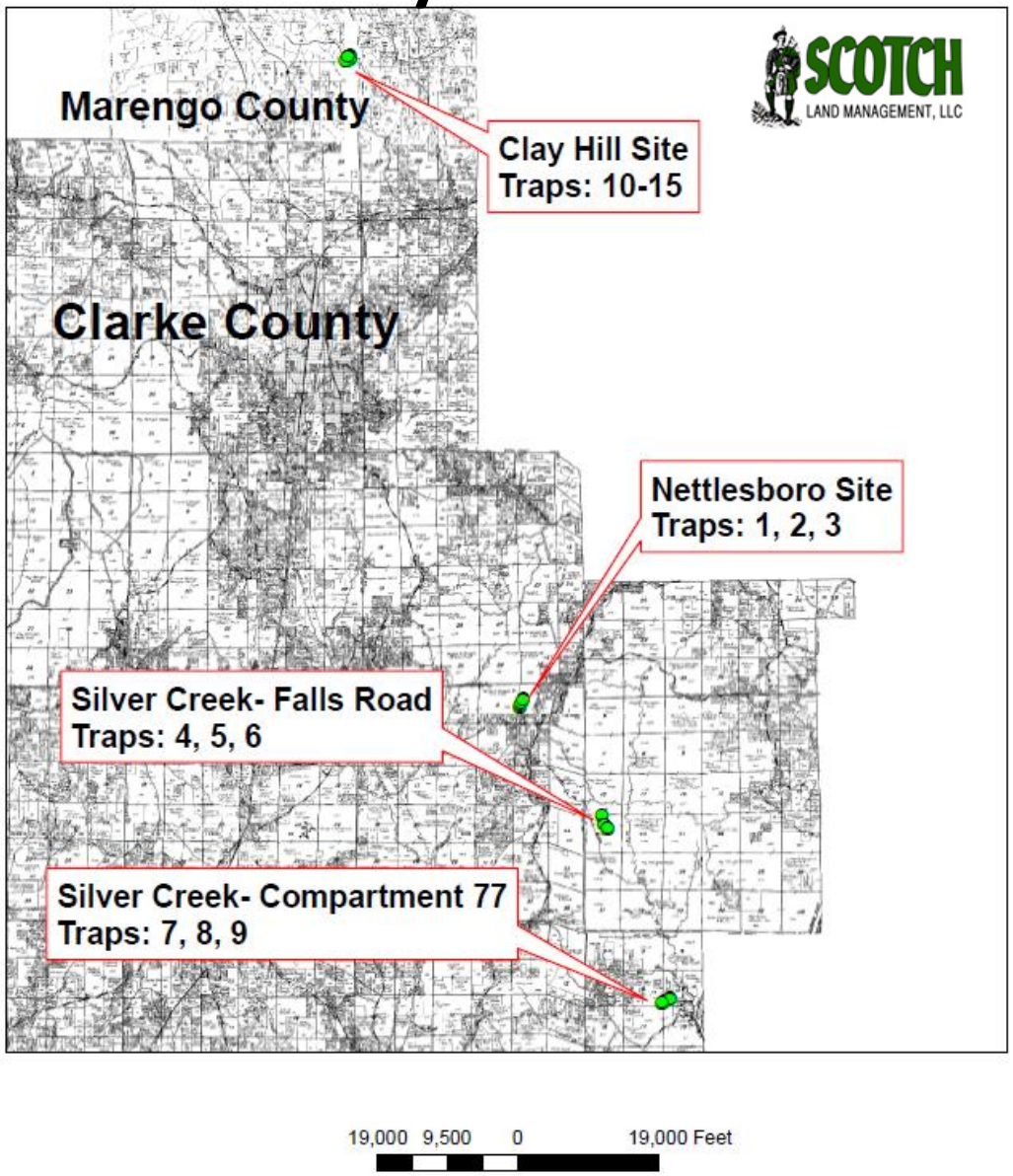
Burn Study: Forest Health Co-op

- Management of insects using fire
- Five Treatments
  - 2 to 3 year burn
  - Symptomatic area not burned
  - Unmanaged control
  - Burned
  - Unburned
- Scotch Management
  - Clark and Marengo Counties, Alabama

Forest Health Cooperative Objectives

- Quantify the populations of root and lower stem colonizing beetles and other pine bark beetles across different burning regimes
- Compare populations among sites under various treatments
- Relate management methods to changes in insect populations

Study Sites


SCOTCH
LAND MANAGEMENT, LLC
Marengo County
Clay Hill Site
Traps: 10-15
Clarke County
Nettlesboro Site
Traps: 1, 2, 3
Silver Creek- Falls Road
Traps: 4, 5, 6
Silver Creek- Compartment 77
Traps: 7, 8, 9
19,000 9,500 0 19,000 Feet

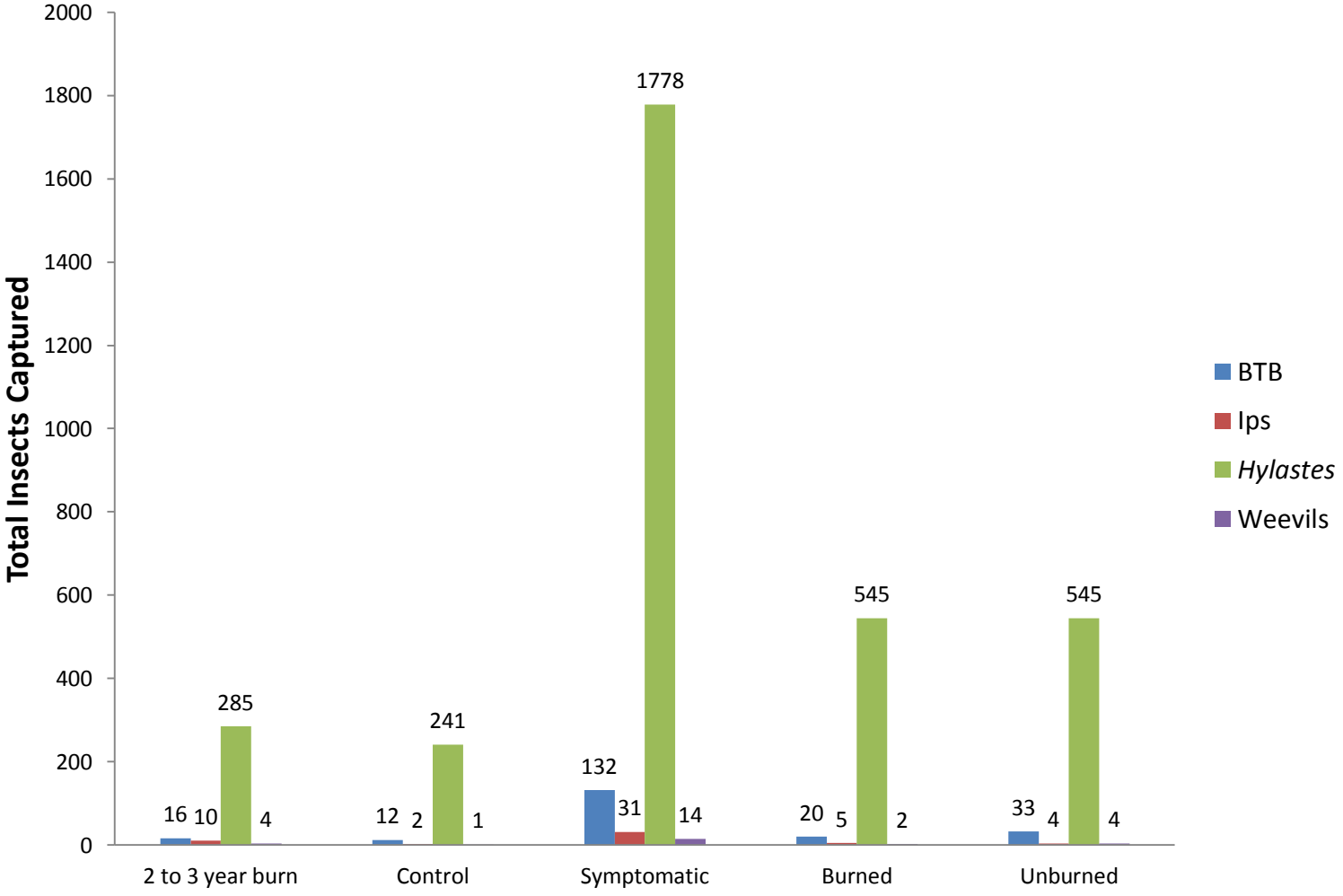
Study Timeline

- Trap installation February 2014
- Insect collections began March 2014
- Burn treatment on April 2014
- Traps reinstalled on April 2014
- Insect collections will continue until 2015

Predictions

- Pest insect numbers will be highest in the symptomatic and burned areas
- Pest insect numbers will be lowest in the control area
- Pest insect numbers will decrease in the unburned area and increase in the burn area after burning

Preliminary Results



Current Observations

- *Hylastes* beetles most abundant insect across all treatments
- *Hylastes* numbers are highest in the symptomatic site
- Control site has a heavy understory

Research Impacts

- Provide managers with better knowledge of how prescribed burning affects pest insect populations
- Determine the effectiveness of using fire to mitigate insect effects on tree health

Acknowledgments

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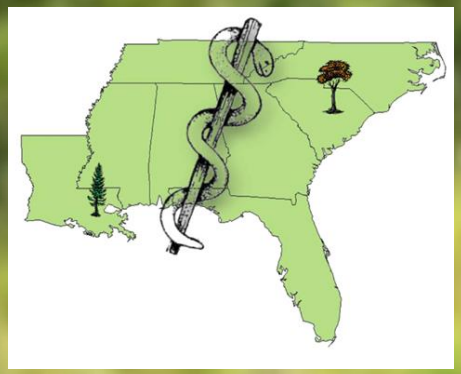
John Gates



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