RW-19 Update: 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
- Discussed plots established near near Hilliard, FL

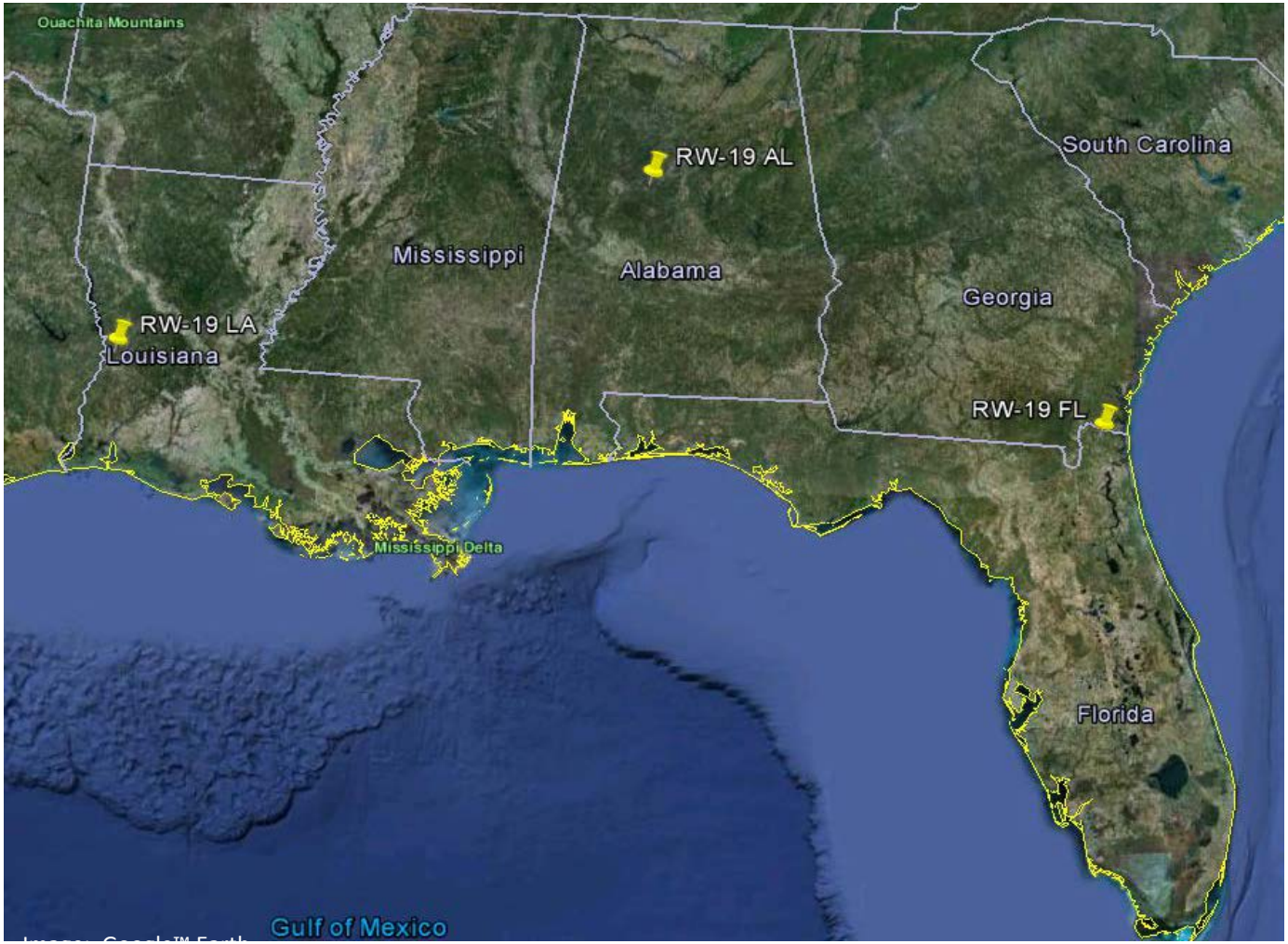
RW-19: Treatments

- 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 Hilliard, FL

- FHC installed 1 panel and 1 pitfall trap at 36 plots
- 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
- Thinned: 2013
- Insect traps re-installed: February 2014
- Insect traps removed: February 2015

Insect Response to Treatments

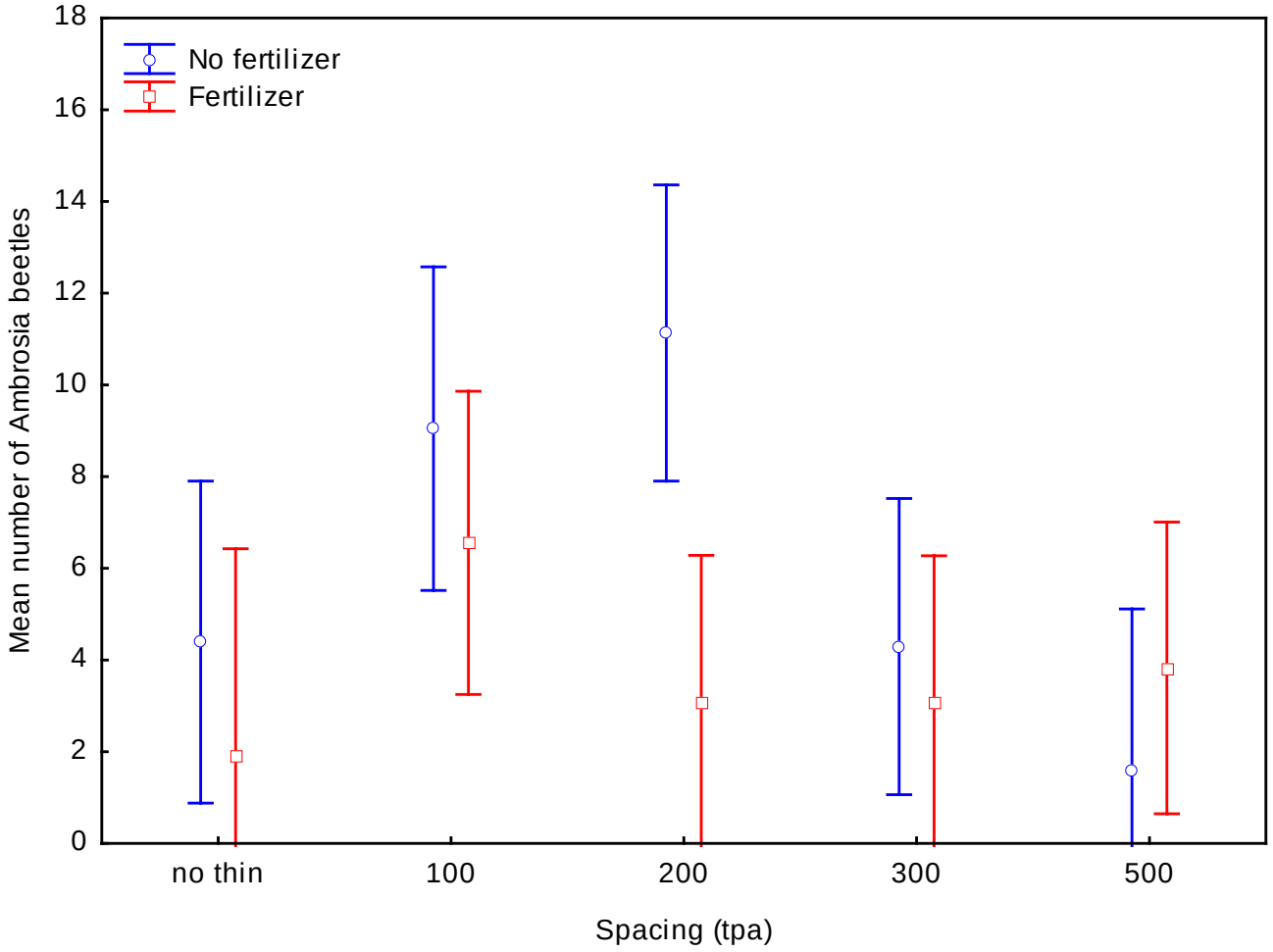
Florida Pre Treatment

	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	$p = 0.750$	$p = 0.743$	$p = 0.251$	$p = 0.390$	**$p = 0.043$**

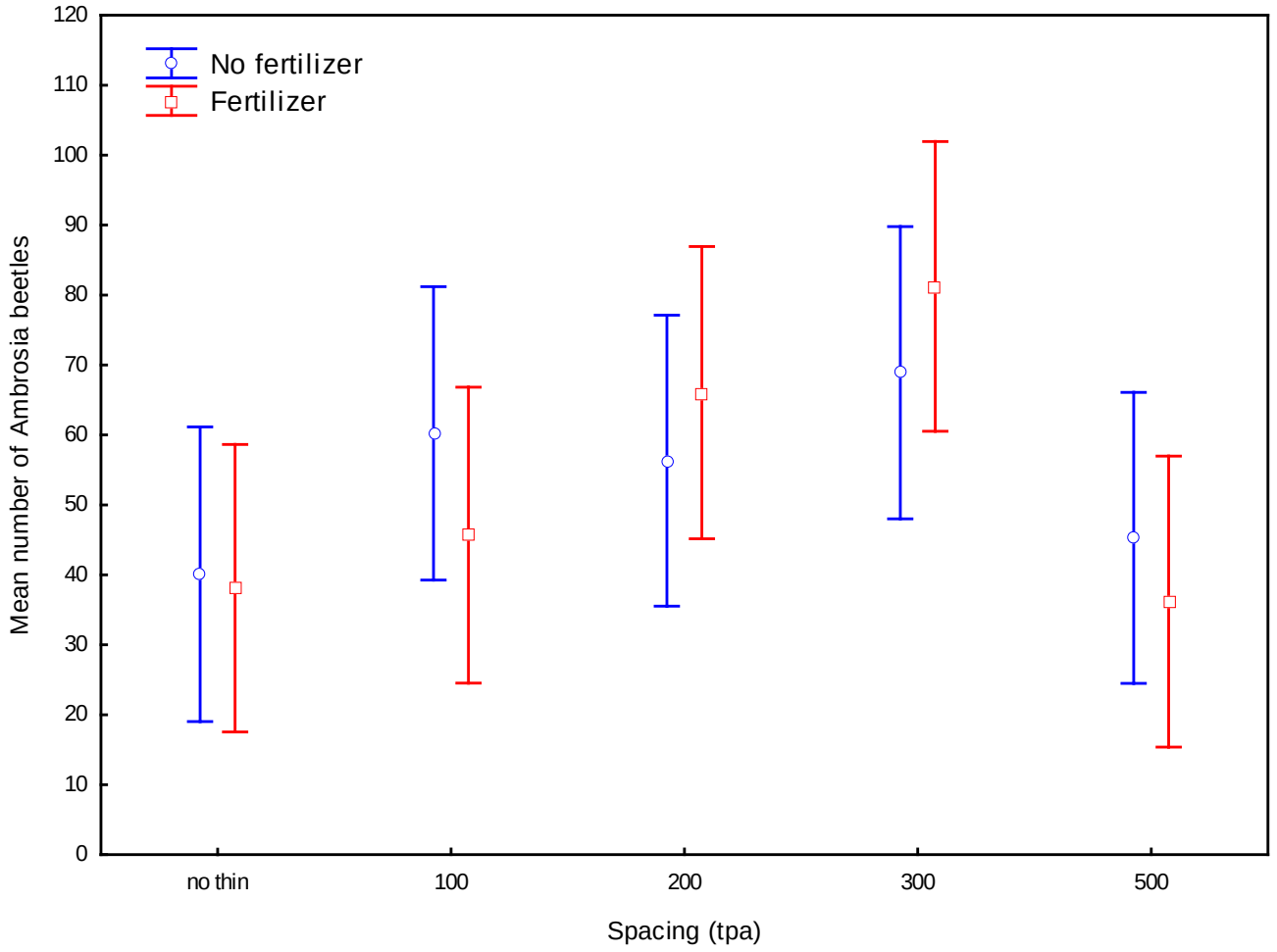
Florida Post Treatment

	df	*Dendroctonus terebrans*	*Hylastes*	Hylobiini	*Ips* spp.	Ambrosia
Fertilizer	1	$p = 0.130$	$p = 0.641$	$p = 0.310$	$p = 0.937$	$p = 0.915$
Thinning	4	$p = 0.137$	**$p = 0.0001$**	$p = 0.477$	$p = 0.369$	**$p = 0.003$**
Fertilizer x Thinning	4	$p = 0.843$	$p = 0.188$	$p = 0.350$	$p = 0.634$	$p = 0.664$

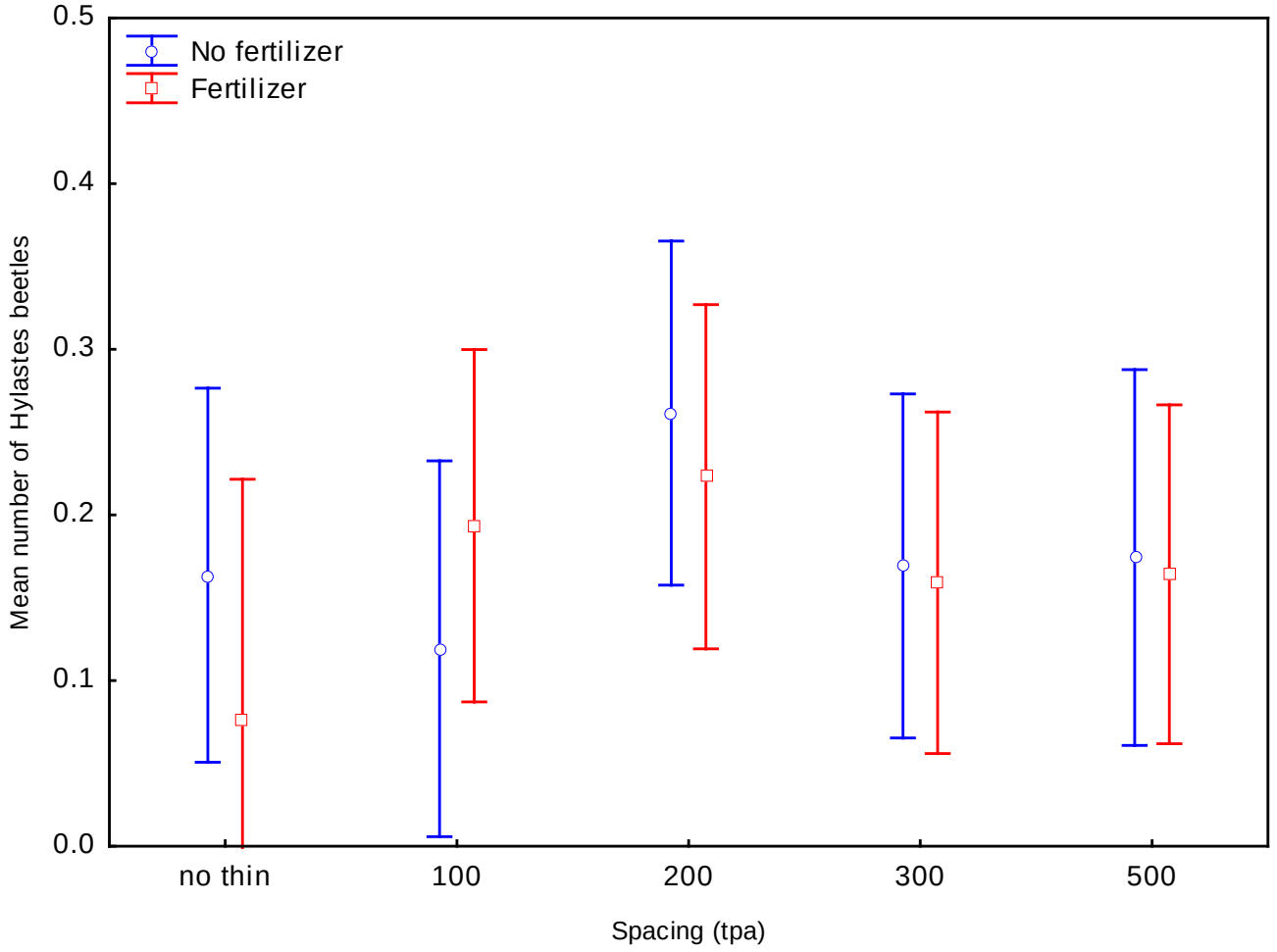
Ambrosia Beetles Pre Treatment



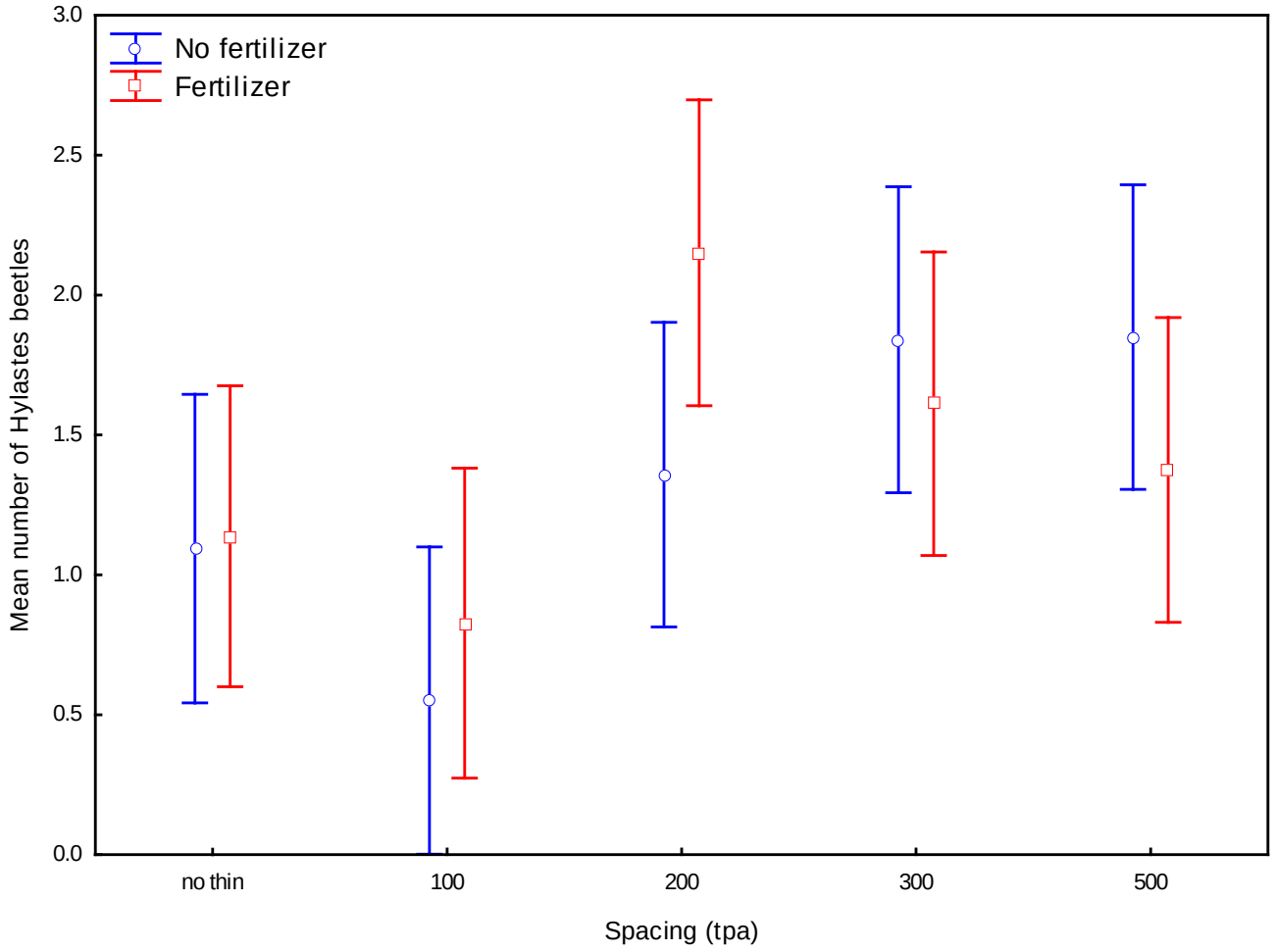
Ambrosia Beetles Post Treatment



Hylastes beetles Pre Treatment



Hylastes beetles Post Treatment



Conclusions

- Insect numbers were greater post treatment implementation
- A significant interaction with Hylastes and thinning regime was found with stands of 100 tpa having a fewer number of individuals
- Although significant interactions with treatments and Ambrosia beetle populations were present prior to treatment implementation, an interaction with thinning was still present post treatment implementation

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