

HYLASTES POPULATION DYNAMICS AND FOREST HEALTH EVALUATION IN ASSOCIATION WITH THINNING AND FERTILIZATION

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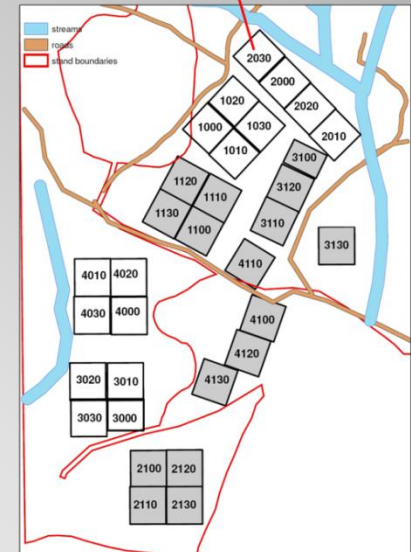
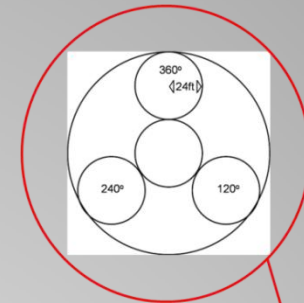


OBJECTIVES

- Quantify the populations of root and lower stem colonizing beetles (*Hylastes* spp.) and other pine bark beetles, in stressed and healthy pine stands through three different seasonal periods spring, summer and fall.
- Compare populations among stands under various management regimes (thinning and fertilization) during the three seasonal periods.
- Determine tree vigor under various management regimes during the three seasonal periods.
- Relate all management and site characteristics to changes in populations of root and lower stem colonizing insects while monitoring for changes in forest health condition.



- Thirty-five plots (32 treatment, 3 control)
- Insects sampled every two weeks for 24 months



Panel trap



Flight intercept trap



Pitfall trap

Methods

Thinning

- 100, 200, 300, 500 stems/acre
- Each replicated 8 times + 3 control plots
- Thinned Sept 2006 – Jan 2007

Fertilization

- Each replicated 4 times + 3 control plots
- 150 lbs N/ac + 25 lbs P/ac
- Fertilized April – May 2007

TREATMENTS

Vector Insects

- *Hylastes salebrosus*
- *Hylastes porculus*
- *Hylastes tenuis*
- *Hylastes opacus**
- *Dendroctonus terebrans*
- *Hylobius pales*
- *Pachylobius picivorus*

*Invasive



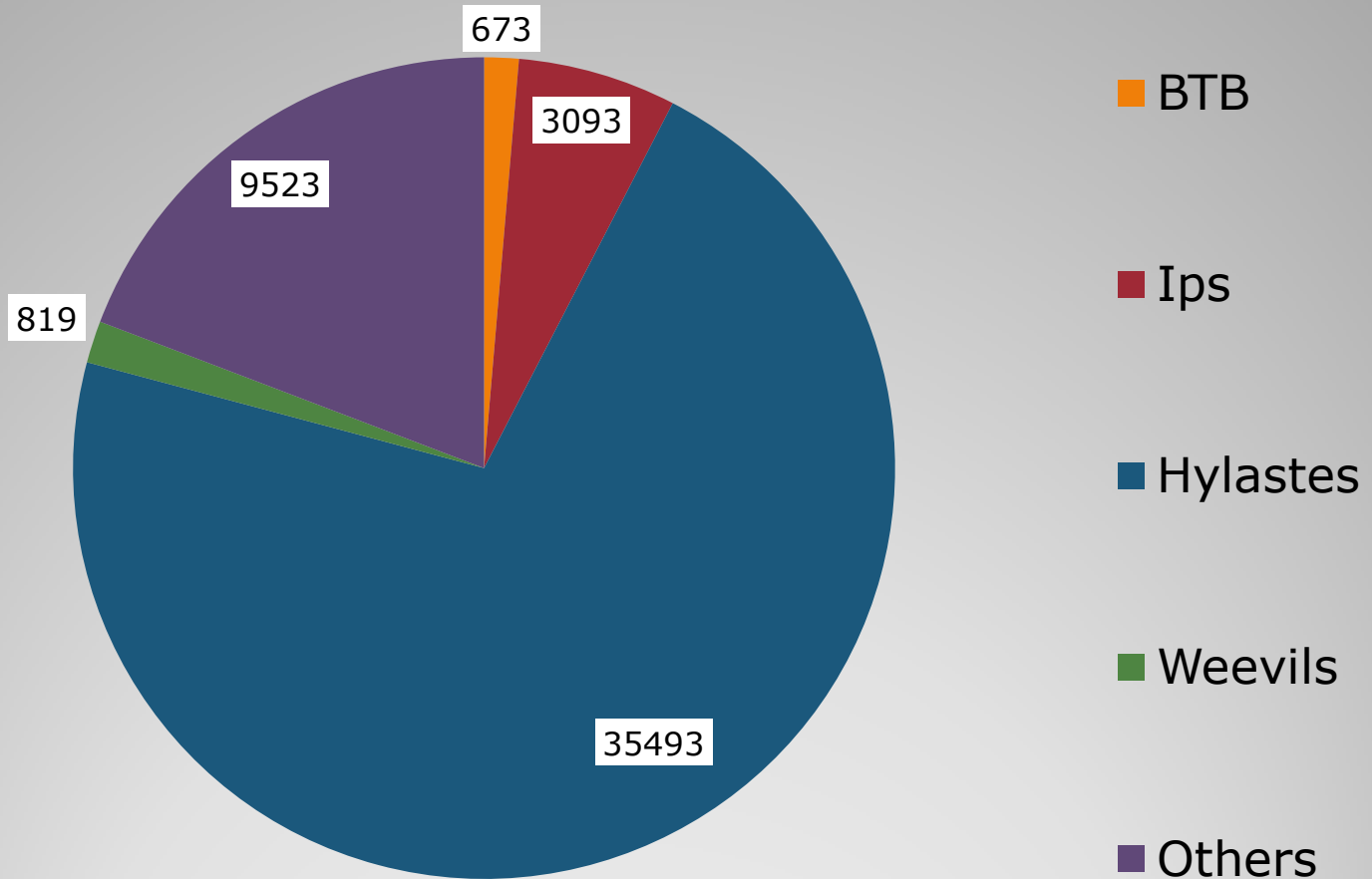
Others Pestiferous Insects

- *Dendroctonus frontalis*
- *Ips avulsus*
- *Ips granicollis*
- *Ips calligraphus*
- *Pissodes nemorensis*

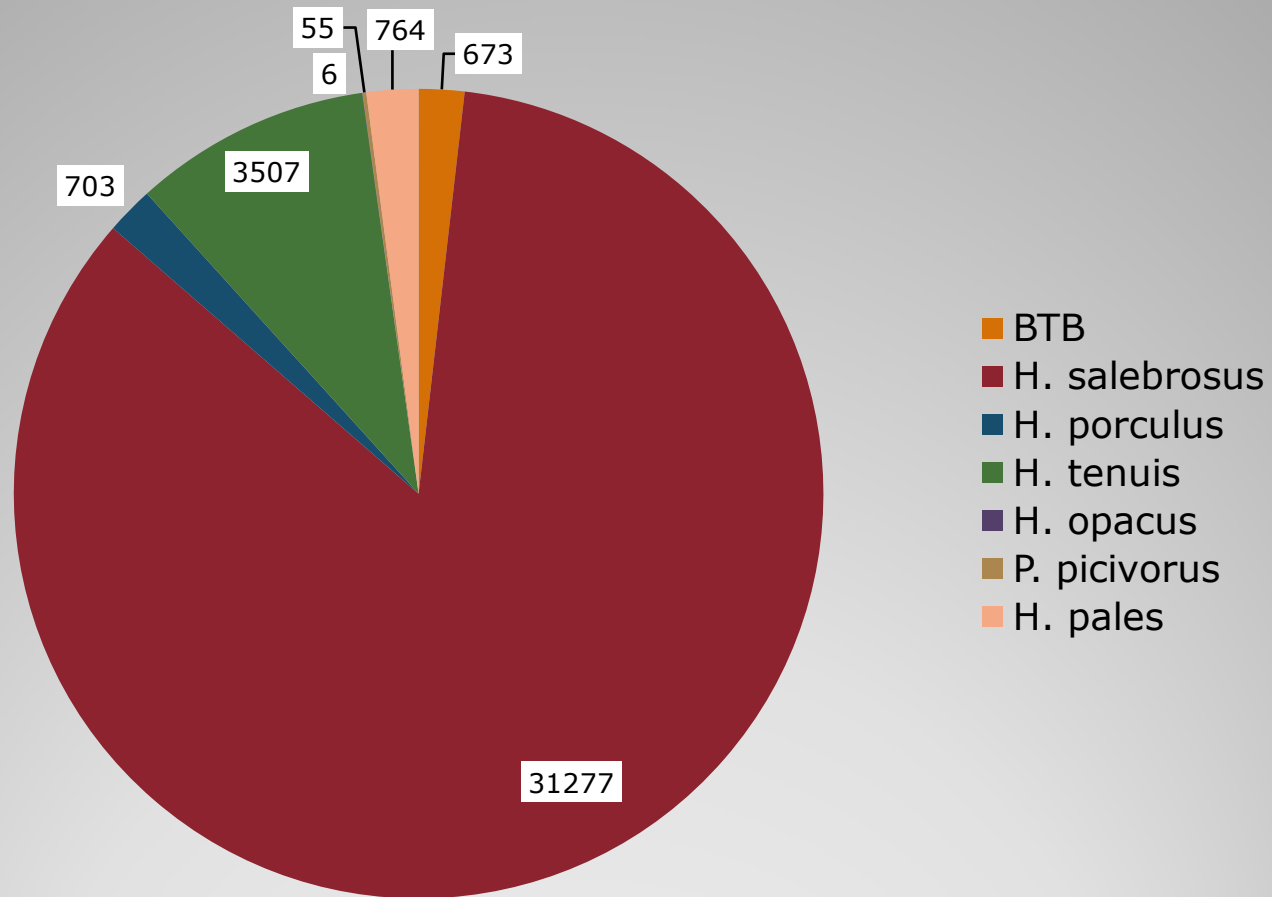
Ambrosia Beetles

- *Gnathotrichus materiarius*
- *Monarthrum fasciatum*
- *Monarthrum mali*
- *Orthotomicus caelatus*
- *Xyleborinus saxeseni**
- *Xylosandrus crassiusculus**
- *Xylosandrus compactus**
- *Xylosandrus germanus*
- *Xylosandrus mutilatus**
- *Xyleborus atratus**
- *Xyleborus pubescens*

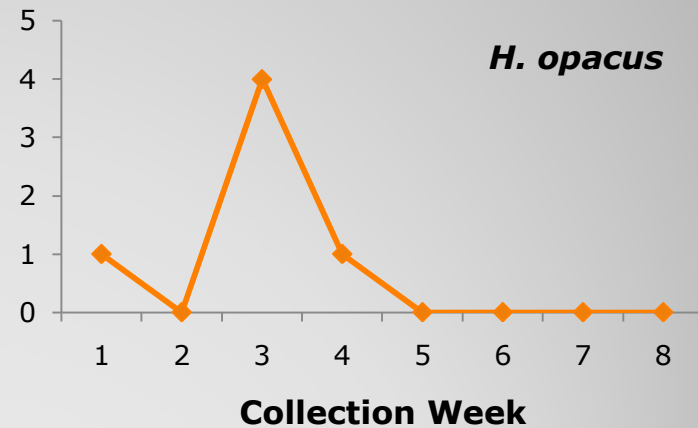
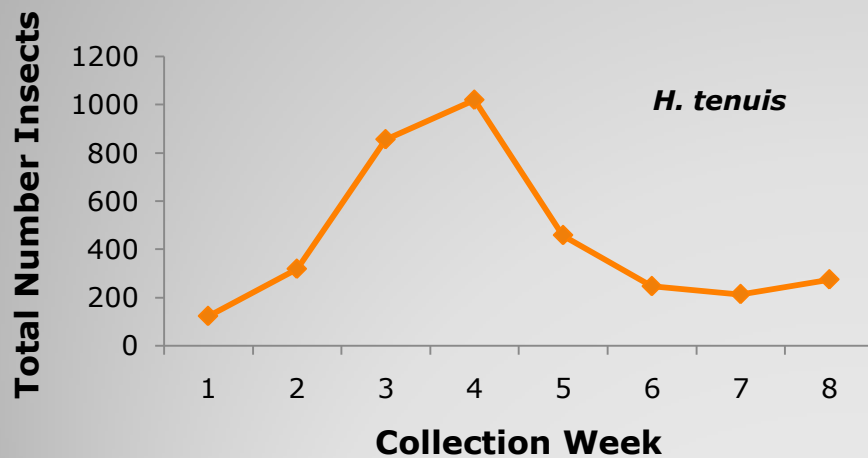
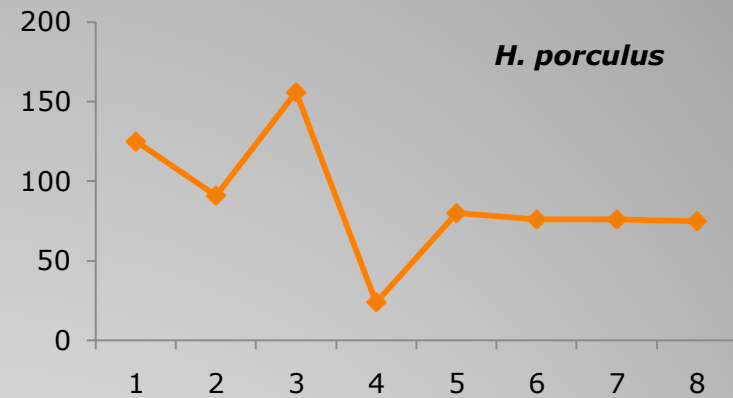
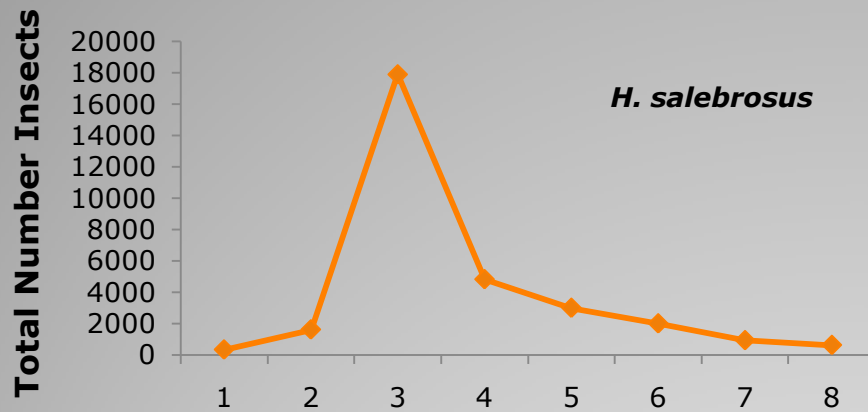
Insects Identified



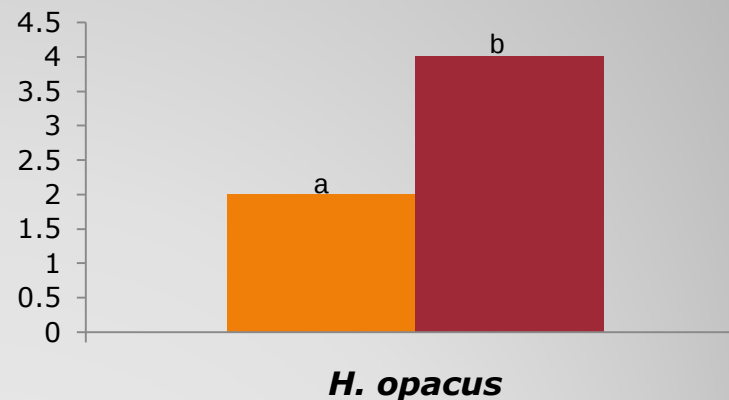
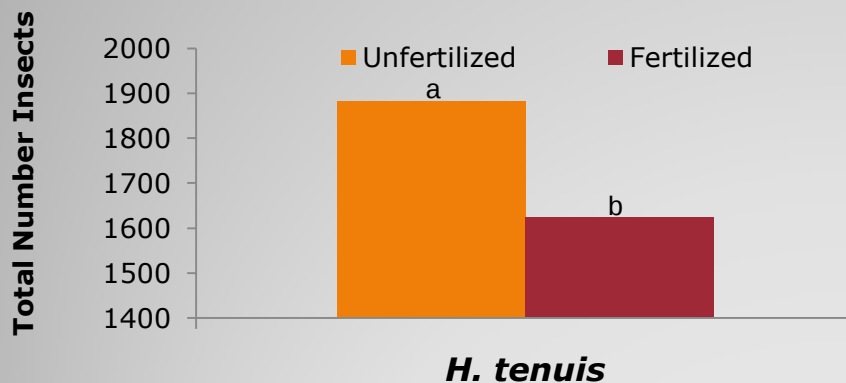
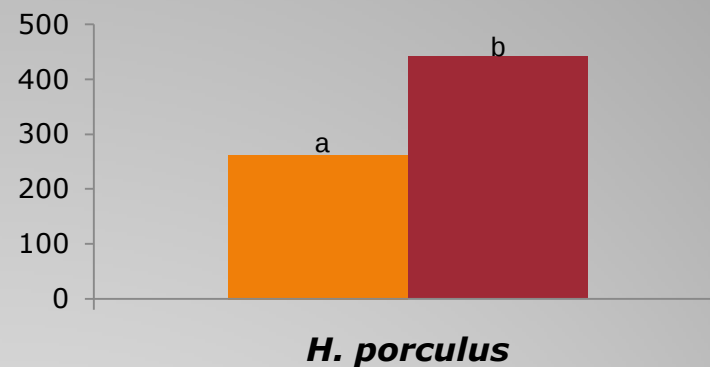
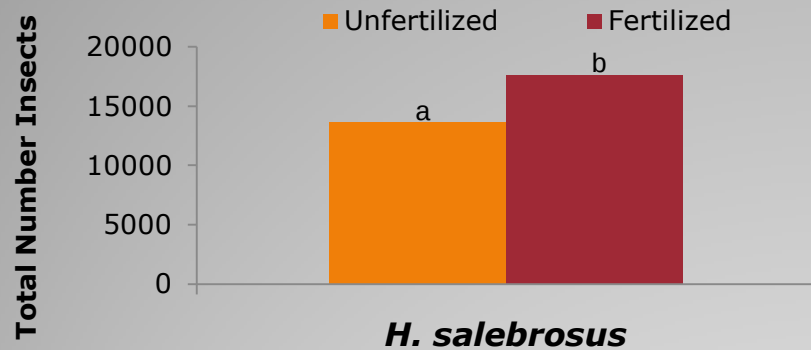
Results –All Insects



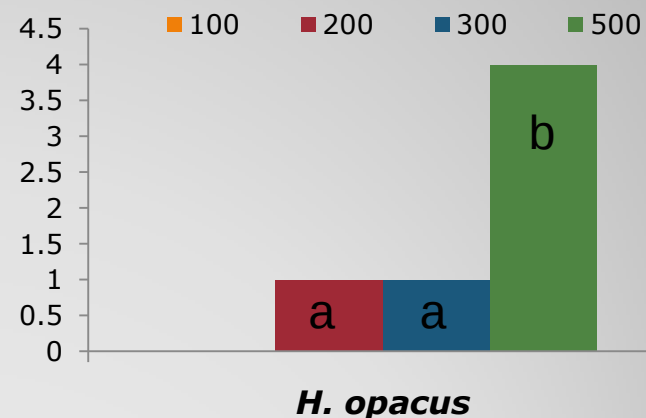
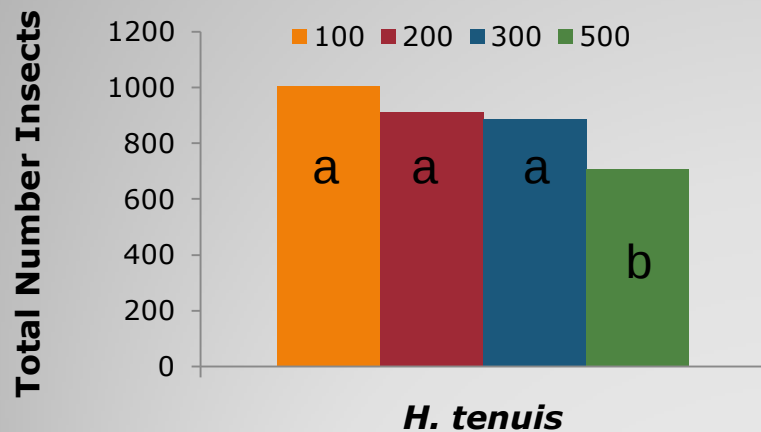
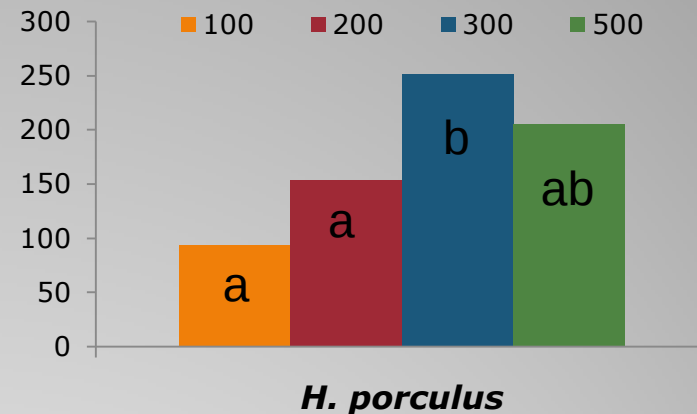
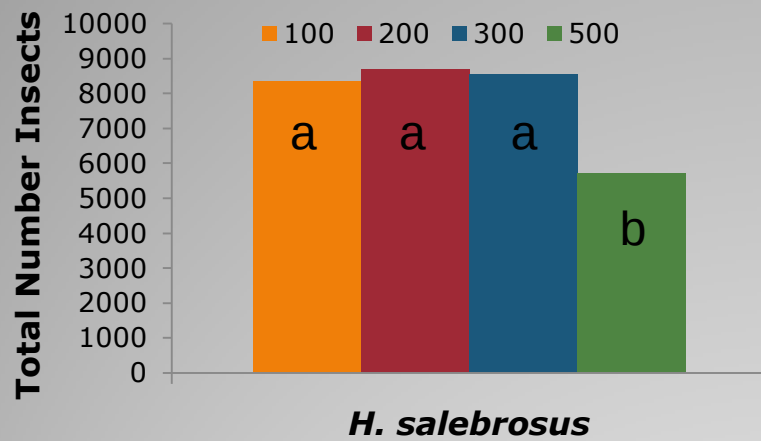
Results – Vector Insects



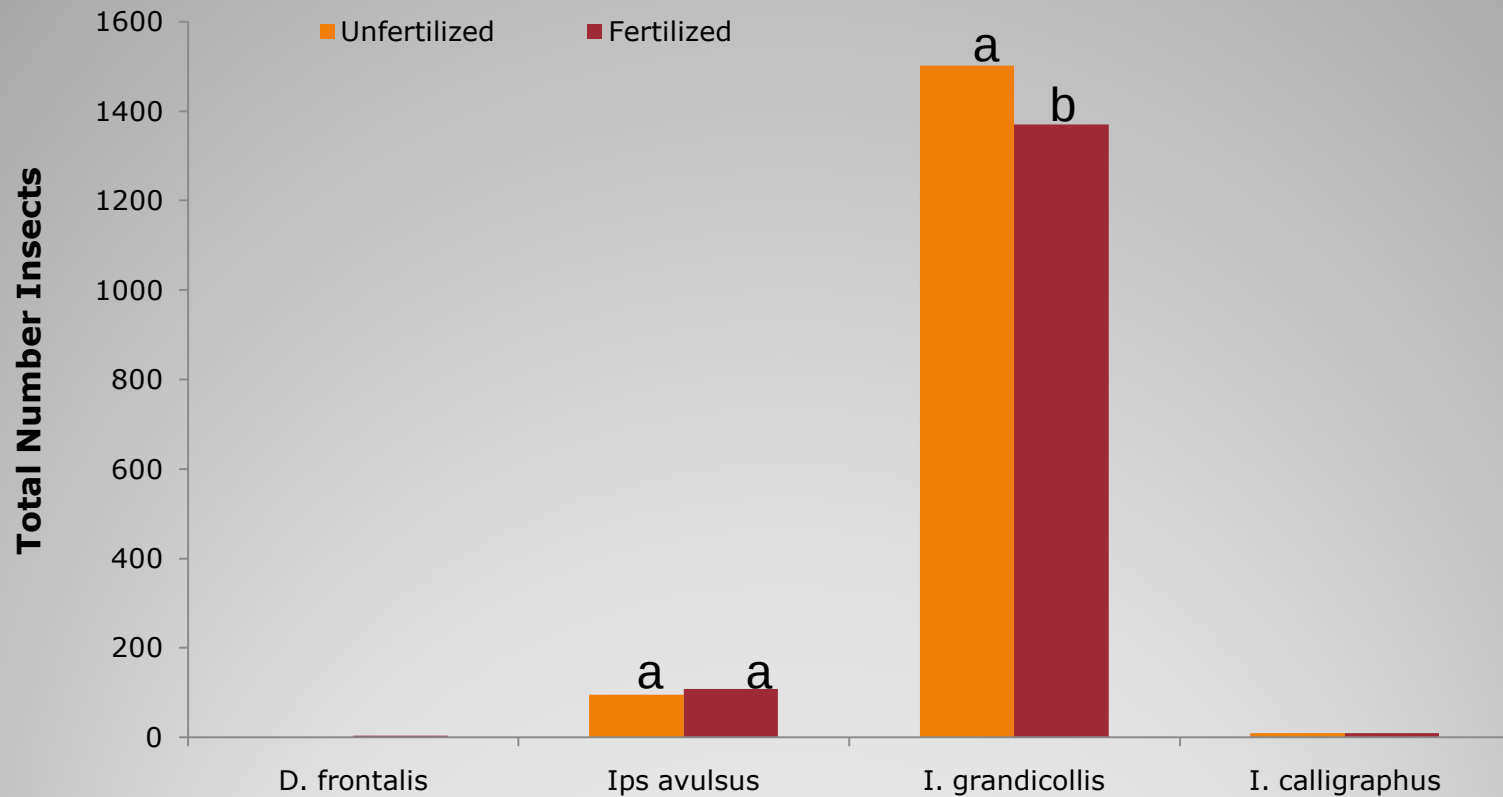
Vector Population Trends



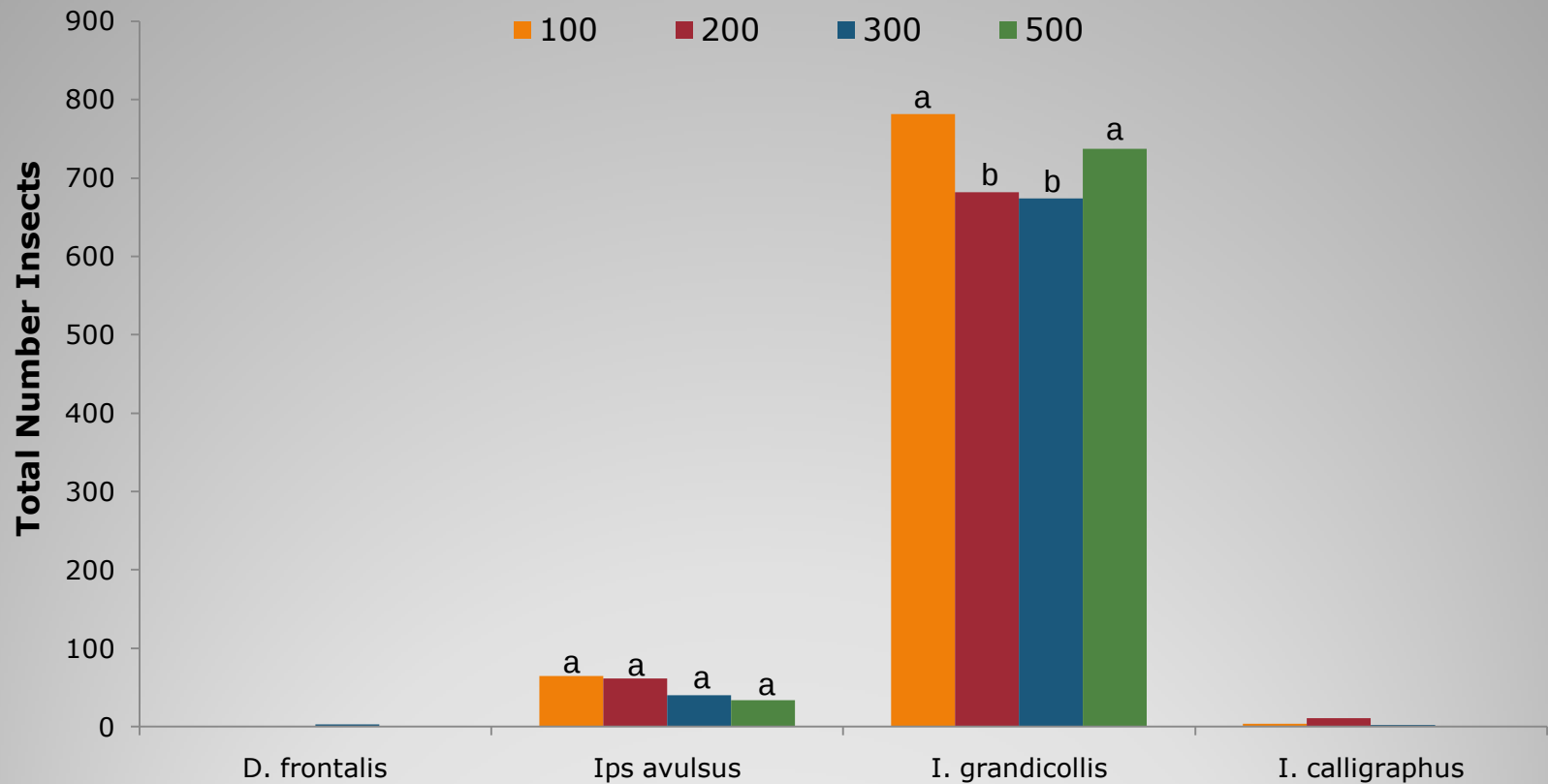
Hylastes species by Fertilization Treatment



Hylastes species by Thinning Treatment



Ips species by Fertilization Treatment

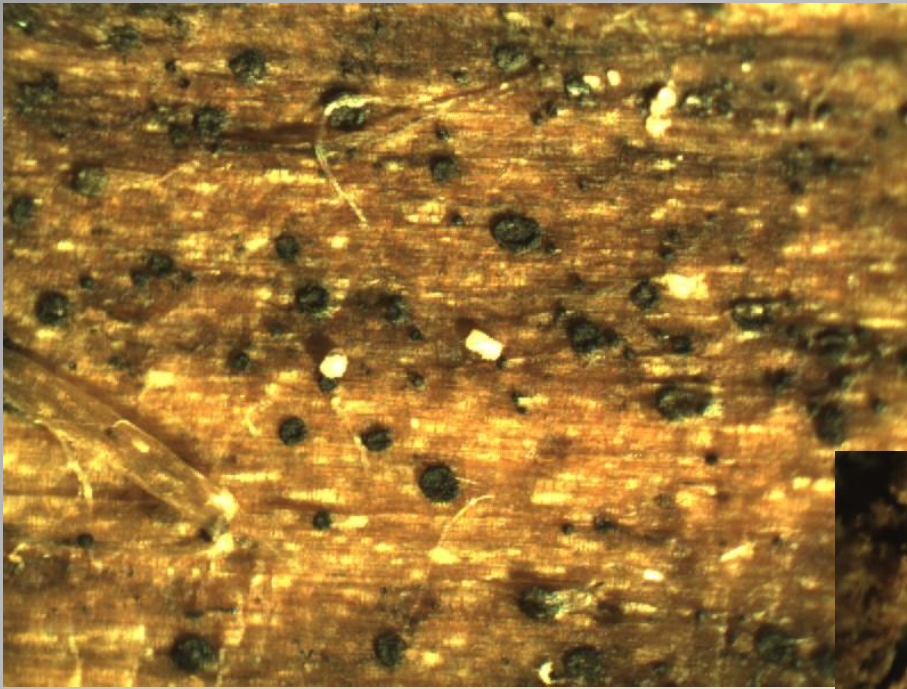


Ips species by Thinning Treatment

- Forest Health Measurements
 - Crown Ratings
 - Resin Collection
 - Plot Measurements
- Continuation of Insect Collections



Still to Come



Questions?