

The effect of invasive species management on post hurricane recovery patterns in a Louisiana bottomland forest

John Lambrinos¹, Sean Anderson², Thomas Huggins³, Katie Brasted⁴

¹Department of Horticulture, Oregon State University; ²Environmental Science and Resource Management, California State University Channel Islands; ³UCLA Herbarium (LA), University of California Los Angeles, ⁴Woodlands Conservancy

Background

- Woody invasive species threaten the remaining fragments of bottomland hardwood forest in coastal Louisiana.
- Hurricanes Katrina and Rita severely disturbed these forests, removing up to 90% of the canopy and facilitating woody invasions.

Question

- Is active management required to limit the long-term dominance of woody invaders in disturbed forest stands?

Methods

1 The study site was the English Turn Forests in Southeastern Louisiana managed by Woodlands Conservancy.



2 We established 18 0.04 ha permanent plots prior to invasive species management in October 2009.

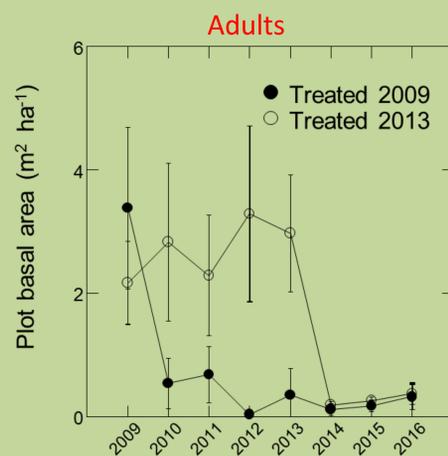
3 In 2009, half of the plots were treated using herbicide and mechanical removal of *Triadica sebifera*, *Ligustrum* spp., and *Melia azederach*.



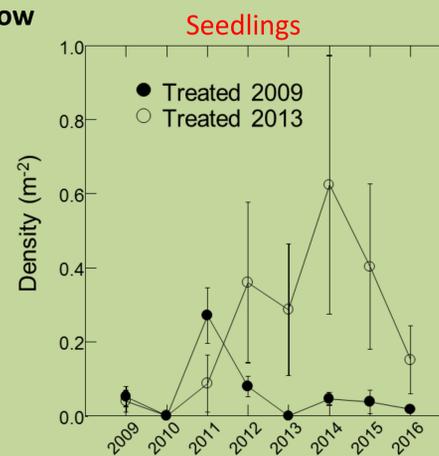
The remaining plots were treated in 2013 and all plots received spot follow-up treatment in 2015.

4 We censused plots yearly in March and before treatments were applied in 2009 and 2013. We recorded size and density of all woody species in the plot as well as plot level vegetation characteristics.

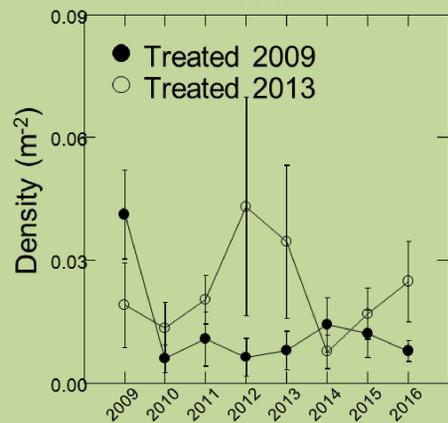
1 Management reduced the overall abundance of woody invaders as well as suppressed recruitment of seedlings for several years. Values are plot means \pm SE



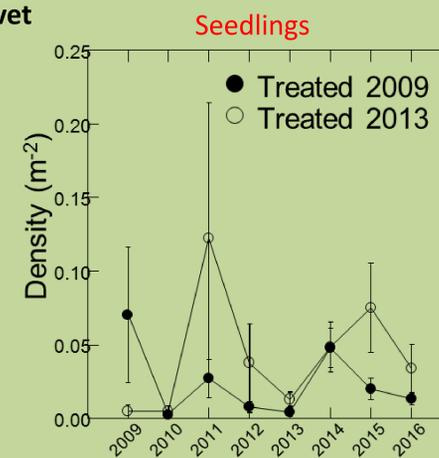
Tallow



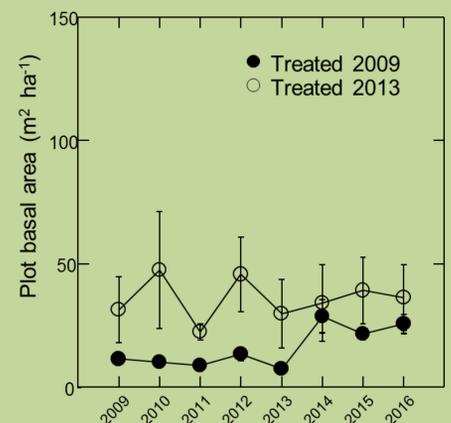
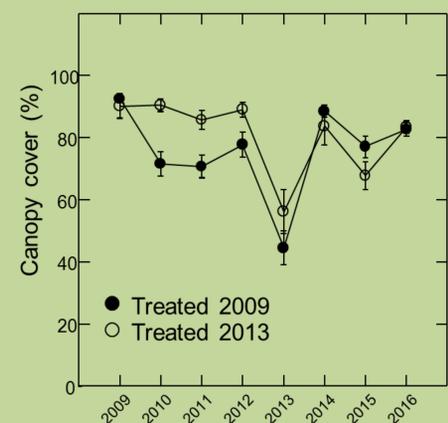
Adults



Privet



2 Invasive management caused a transient reduction in canopy cover, but had little impact on overall plot basal area after accounting for initial differences in stand composition. Values are plot means \pm SE



Discussion

Overall, were the invasive species management treatments a good decision? **Yes.**

- It reduced the abundance of invaders for seven years, potentially improving wildlife habitat and reducing competition with native species.
- It reduced invader seed supply to the entire English Turn forest.
- It provided an opportunity to conduct long-term monitoring of the effectiveness of this management approach.
- Treatment induced disturbances appear to be minimal and transient.

Conclusion

Invasive removal has immediate short-term benefits including limiting the regional seed supply, which is important given the fragmented and disturbed nature of the region's forests. The degree to which invasive removal has fostered desired successional trajectories and the eventual dominance of desired native canopy trees is still not clear.

Acknowledgments

Data were collected as part of an annual service learning class (ESRM 492) taught by the authors and funded by the CSUCI Instructionally Related Activities Fund. Katie Brasted and Woodlands Conservancy provided support and financial assistance. Funding for the invasive species management was provided by Barataria-Terrebonne National Estuary Program, National Wildlife Federation and Shell.

Contact: John.Lambrinos@oregonstate.edu