

Response of *Microstegium vimineum* and *Lonicera japonica* to continuous cover forestry practices

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Microstegium vimineum

Nepalese browntop, Japanese stiltgrass, Mary's grass



- Annual C₄ grass
- Shade tolerant
- Shallow roots
- Mesic soils
- Most of eastern US
- Class C noxious weed in Alabama

Lonicera japonica Japanese honeysuckle



- Semievergreen to evergreen woody vine
- Shade tolerant
- Tolerates a wide range of site conditions
- Most of US
- Ornamental and deer browse

Background

- Silviculture study looking at forest management options for private landowners at the urban-rural interface
 - Continuous cover forest management
 - Promote the continued establishment and development of tree reproduction

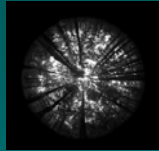
Silviculture study objectives

- Apply gradient of cutting regimes.
- Quantify the relationship between residual forest structure and understory microclimate (especially light).
- Assess the relationship between the understory environment and seedling growth response.



- Quantifying Forest Environment

- Vertical and horizontal structure
- Understory microclimate



- Assessing Relationships Between:

- Canopy structure and light transmittance
- Canopy structure and development of planted cherrybark oak, yellow poplar, and water oak seedlings
- Canopy structure, light transmittance and growth of *Microstegium* and *Lonicera*

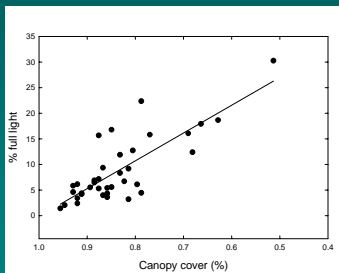
- Fifty 0.05 ha plots in riparian hardwood forest

- Structural manipulations:

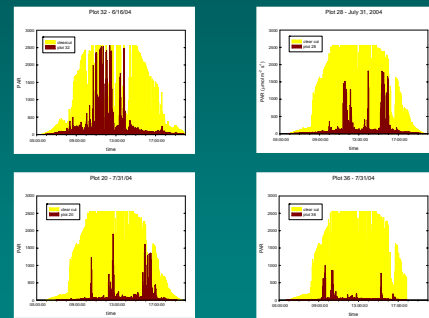
- Control: No trees cut
- Light cut: 1/3 of all midstory trees cut
- Moderate cut: 1/2 of all midstory trees cut
- Heavy cut: all midstory trees cut



Gradient in forest structure



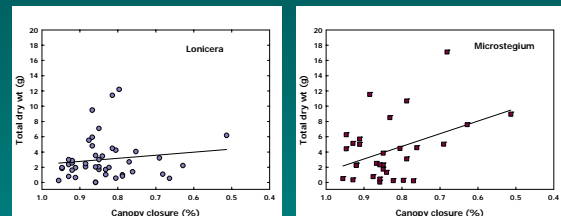
Light regimes in four representative plots

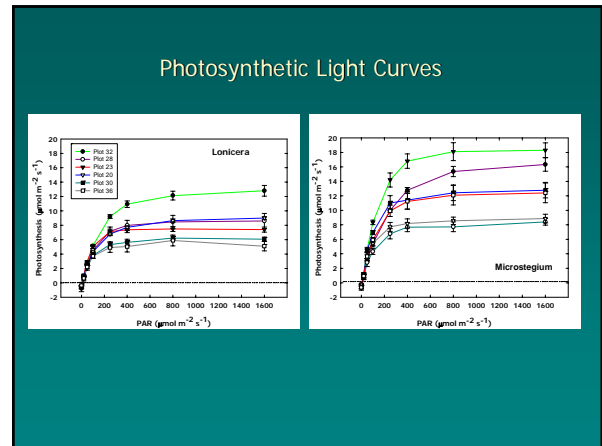
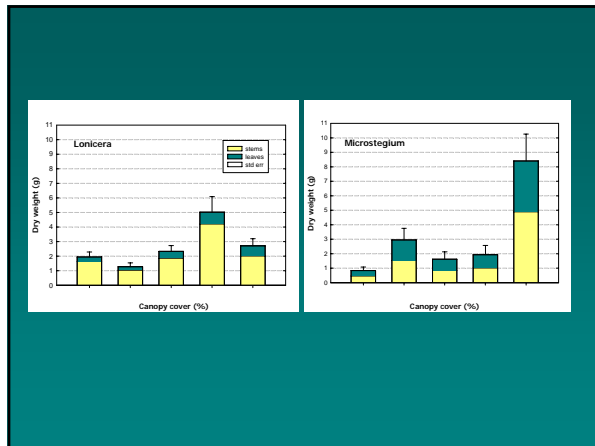


Methods

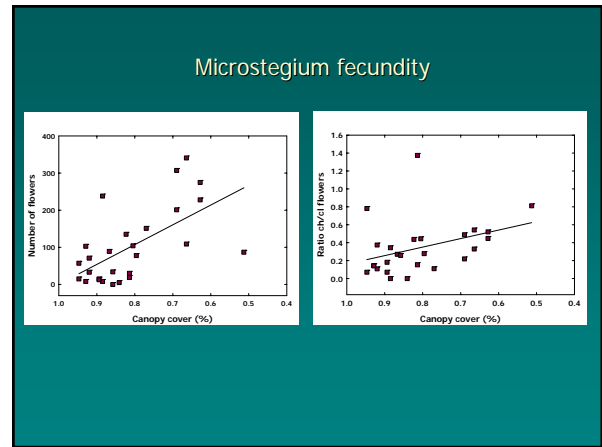
- Biomass
 - Percent cover - 1 m² plots (spring and late summer)
 - Clip plots (late summer)
- Photosynthesis
 - Photosynthetic light curves
- Fecundity
 - Clip plots (after seed set)

Above-ground biomass





- Chasmogamous flowers - flowers that open, exposing stamens and styles to the environment allowing potential cross-pollination
- Cleistogamous flowers - flowers that do not open and are self-pollinated



- ### Conclusions
- *Microstegium* was more responsive than *Lonicera* to the moderate increase in light.
 - First year results may not fully reflect the potential impact of *Lonicera*.
 - Herbicide treatments may be required.

- ### Acknowledgements
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Questions?

