Noxubee National Wildlife Refuge

Pine Project Area

The Noxubee National Wildlife Refuge Pine-grassland Project includes 261 ac of mid– to late-rotation lob-lolly pine which were managed with a heavy pine thin (50-60 ft^2/ac residual), commercial hardwood removal, selective herbicide application, and prescribed fire to provide habitat for pine-grassland wildlife species.

Management

2007—Pre-treatment condition.

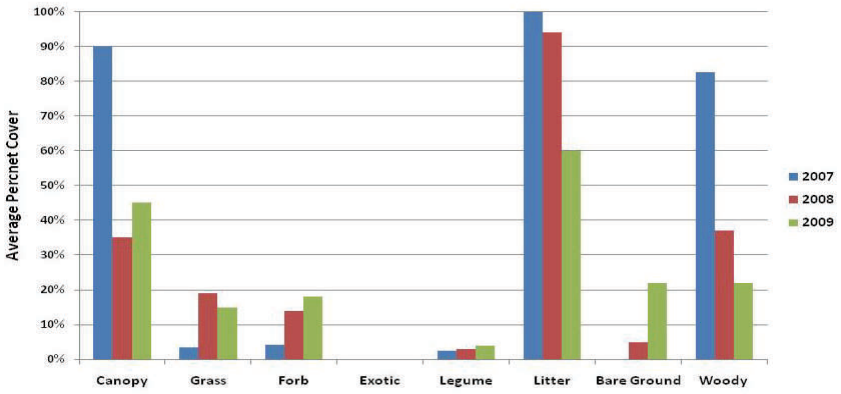
2008—One year post-thinning, prior to herbicide/burn treatment.

2009—Two years post-thinning, August 2008 herbicide application (32 oz/ac Chopper Gen2 + MSO), and late-winter 2009 burn.

Vegetation Community

Thinning opened the canopy allowing sunlight to reach the forest floor. The herbicide application controlled the well-established hardwood midstory, and the prescribed fire reduced litter and promoted herbaceous ground cover. Mid-rotation management created a two-layer stand with an open pine-overstory and early successional herbaceous ground cover.

- Canopy cover was dramatically reduced by pine thinning, hardwood removal, and midstory competition control.
- The open canopy structure allowed development of a diverse herbaceous/shrub ground cover.
- Canopy cover of grasses, forbs, and legumes increased 2-10 fold following management.
- Prescribed fire enhanced midstory control and reduced the litter layer creating bare ground.



- Plant community and wildlife response in these managed stands was consistent with other published studies.
- Thinning combined with selective herbicide and prescribed fire has been shown to improve habitat quality for many species of wildlife by increasing plant species richness; native legume, grass, and forb coverage; and white-tailed deer and northern bob-white preferred food plants (Thompson 2002, Edwards et al. 2004, Woodall 2005, Singleton 2008, and Jones et al. 2009).
- In mature pine forests, similar management increased energy-based carrying capacity for white-tailed deer 35-fold relative to untreated stands (Edwards et al. 2004).
- In thinned, mid-rotation CRP pine plantations, selective herbicide in combination with prescribed fire provided high quality growing season forage and substantial winter browse for white-tailed deer (Jones et al. 2009).
- Studies in mature pine sawtimber, mid-rotation industrial pine plantations, and mid-rotation CRP pines have all reported shifts in bird communities and net gains similar to those observed on this project (Thompson 2002, Woodall 2005, and Singleton 2008).

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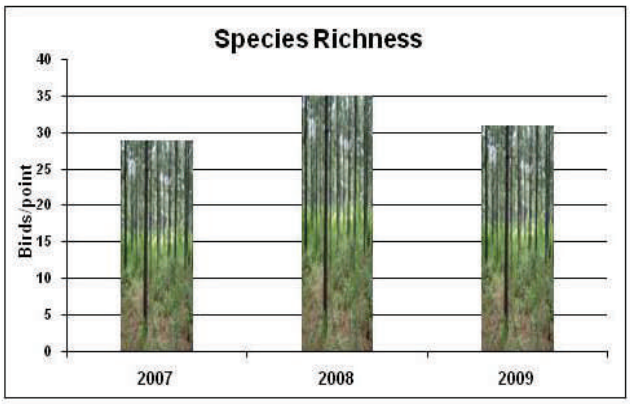
Noxubee National Wildlife Refuge

Pine Project Area

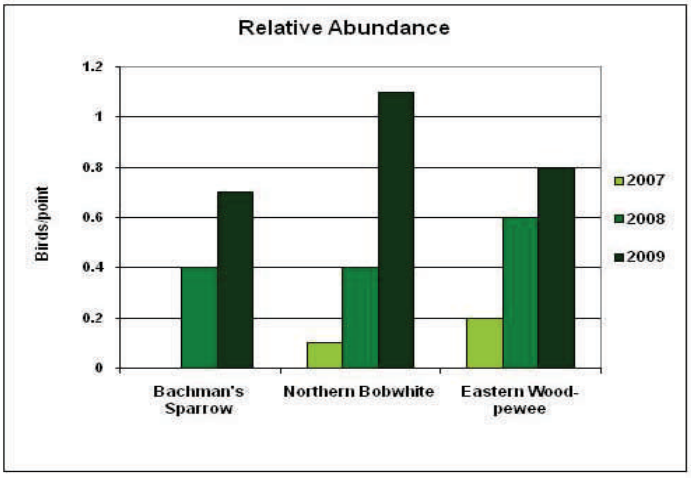
Bird surveys were conducted on 10 sample points within the Noxubee Pine Project Area in 2007, 2008 and 2009 to evaluate the effects of mid-rotation management (thinning, burn/herbicide) on the breeding bird community.

Avian Community

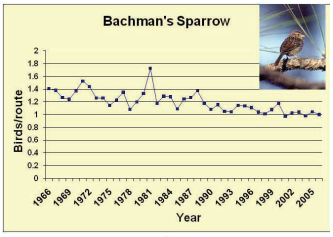
- Thinning combined with herbicide/burn created a two-layered stand (pine-overstory and herbaceous/shrub ground cover ground cover).
- We observed 29 species of birds in 2007, 35 in 2008 following thinning, and 31 in 2009 following fall herbicide application and late winter prescribe burn.
- Management did not reduce bird species richness, but shifted community structure from hardwood associated species to those adapted to pine-grasslands and early successional habitats.
- 14 species increased in abundance, 12 species decreased and 17 species exhibited no pattern over the 3-yr sampling period.

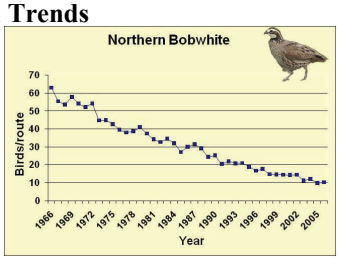


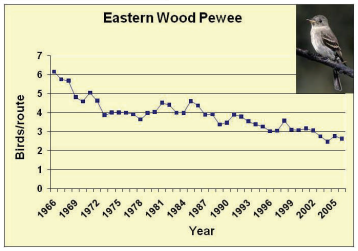
- Management created habitat suitable for pine-grassland (Bachman's sparrow, eastern wood-pewee, etc.) and early successional (northern bobwhite, blue grosbeak, etc.) bird species, many of which are declining regionally or nationally.



Population Trends

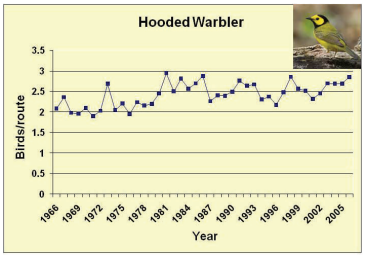


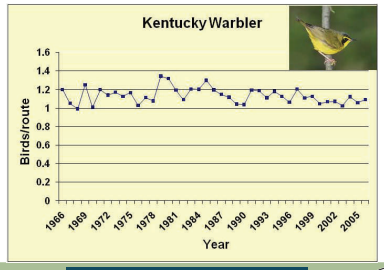


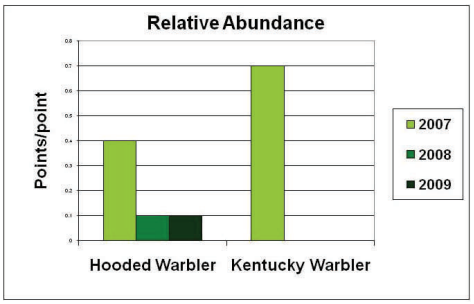


- Management did not create habitat for all bird species particularly those associated with hardwoods (e.g., hooded and Kentucky warblers, white-eyed vireo, yellow-breasted chat, etc.) many of which are exhibiting stable or increasing population trends within the region.

Population Trends







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