



MDC Resource Science

The Effects of Forest Management on Songbirds in the Missouri Ozark Forest Ecosystem

Science Notes



The Effects of Forest Management on Songbirds in the Missouri Ozark Forest Ecosystem

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SUMMARY

The Missouri Ozark Forest Ecosystem Project (MOFEP) is a forest management experiment. There are nine study areas, grouped into blocks of three; each study area in a block was randomly assigned to one of three management treatments—even-aged management (EAM), uneven-aged management (UAM), or no-harvest (NH). Pre-treatment data were collected during the period 1991-1995. Treatments were applied in 1996. Post-treatment data were collected from 1997 through the present. All forest songbirds that are territorial and vocal are included in the study, but we have focused our efforts on five forest interior species (Ovenbird, Worm-eating Warbler, Kentucky Warbler, Acadian Flycatcher, and Wood Thrush) and five early-successional species (Indigo Bunting, Yellow-breasted Chat, Hooded Warbler, Prairie Warbler, and White-eyed Vireo).

Forest Interior Species

Immediately following treatment, forest interior bird populations declined on all study sites, including NH. EAM treatment effects were negative for Ovenbird, but positive for Kentucky Warbler and Wood Thrush.

Goal: Determine effects of even-aged, uneven-aged, and no-harvest management on forest songbirds

Early-Successional Species

Both EAM and UAM treatment effects were positive for Indigo Bunting, Hooded Warbler, Yellow-breasted Chat, Prairie Warbler, and White-eyed Vireo.

Reproduction

We have found and monitored 3,000 songbird nests during the project. Calculated daily survival rates were mostly greater than 0.95, which translates into overall nesting success rates of about 30%. Brown-headed Cowbird parasitism rates were generally 3% or lower and did not increase following treatment; neither did predation rates increase following treatment. These findings suggest that forest harvest is less likely to affect populations of predators or brood parasites than are land use changes such as conversion to agriculture.

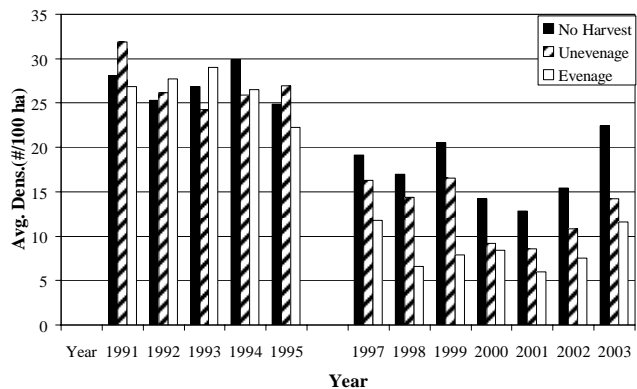
Mist Netting and Banding

Prior to treatment in 1996, capture rates were low (about nine birds per net line) in the mature forest of all study areas; it remained low in NH sites following treatment. Post-treatment capture rates doubled in UAM sites and tripled in EAM sites, where nets were placed around the edges and through the interiors of clear cuts.

Project Details

- Nine large study areas
- Three EAM, three UAM, and three NH sites
- Bird densities determined by spot-mapping
- Reproductive success determined by nest monitoring
- Mist-netting and banding also conducted

Ovenbird



Management Findings: Forest interior species responded both positively and negatively to treatments: All were excluded from clear cuts, but two species (Wood Thrush and Kentucky Warbler) were attracted to forest immediately surrounding cuts; one species (Ovenbird) not only avoided clear cuts, it also declined in EAM stands that were commercially thinned. Early-successional species responded positively to both treatments. Neither brood parasitism nor nest predation increased as a result of forest harvest. Mist netting in clear cuts demonstrated that nearly all forest birds use this habitat after the young have left the nest.

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