

# Use of a Right-of-Way by Breeding Birds in Lake County, Illinois

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## ABSTRACT

Since 2007, there have been three objectives at the Lake County Research and Demonstration Area (LCRDA) in northeastern Illinois to: 1) compare commonly-used mechanical and herbicidal maintenance treatments on controlling target trees (trees capable of growing tall in wire zones and possibly causing a blackout, hereafter termed undesirable), 2) develop plant cover types that are resistant to tree invasion, and 3) determine the effectiveness of mechanical and herbicidal maintenance on vegetation and wild-life species of high public interest. The wire-border zone method of vegetation management was implemented on the right-of-way (ROW) on eight units of the Lake County Area, and four of the eight units (Gurnee Sites) were mowed in November 2009. The wire-border usually results in a tree-resistant forb-shrub-grass cover type in wire zones and a tall shrub cover type in border zones, thereby producing wildlife habitat diversity on the ROW.

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## INTRODUCTION

Transmission ROW are linear corridors that often traverse contiguous forests, thereby making these ROW extremely valuable for bird species requiring early successional habitats (Bramble et al. 1992, Yahner et al. 2002). For instance, most nests found on the State Game Lands (SGL) 33 ROW in 1991-92 were those of early successional species, including field sparrow (*Spizella pusilla*), gray catbird (*Dumetella carolinensis*), eastern towhee (*Pipilo erythrophthalmus*), common yellowthroat (*Geothlypis trichas*), and indigo bunting (*Passerina cyanea*) (Bramble et al. 1994). My objective in the present study is to document 2-years (2008-09) of bird use of the LCRDA prior to maintenance in November 2009, with a particular focus on early successional bird species. Avifauna associated with the LCRDA has not been examined, to my knowledge.

## STUDY AREA AND METHODS

The LCRDA is in Lake County, Illinois, just west and south of the town of Gurnee, 63 km north of Chicago, and 79 km south of Milwaukee. The LCRDA consists of a major span of ROW with several access points. Two sections of this ROW were selected tentatively in 2007 that accommodated eight treatment units, with each unit extending from 94-119 m long; the wire zone is about 46 m wide and each border zone is about 11 m wide. Sites selected for study depended on a measurement of undesirable tree density

(e.g., trees that are can grow into the wire zone, thereby causing a blackout and invasive (including exotic species) or the presence of landscape features (e.g., residential areas, water bodies, and croplands were avoided). The LCRDA is about 2.41 km in length.

Undesirable tree species, e.g., green ash (*Fraxinus pennsylvanica*), are uncommon, and the invasive shrub, buckthorn (*Rhamnus cathartica*), an invasive species from Europe, is common throughout the ROW. A border zone, which ideally consists of desirable shrubs and trees, e.g., dogwoods (*Cornus* spp.) is virtually non-existent. Desirable trees and shrubs are those that are of benefit to wildlife as cover or food, provide aesthetic value to the ROW, and do not have the potential to grow tall enough to cause a power outage. The natural colonization of the border zones by desirable trees and shrubs will be encouraged via plant succession during the study. No shrubs or trees will be planted on the ROW.

I felt that it was critical to preliminarily assess the vegetation at the LCRDA in 2007 and again in depth in both 2008 and 2009, using techniques on SGL 33 RDA and Green Lane RDA in Pennsylvania (e.g., Yahner 2006). These techniques include a count of target (undesirable) trees at least 0.29 m in height. Trees were recorded within two permanent transect belts (each 19.56 m long x 1.96 m wide) in wire zones and within two corresponding permanent transect belts (each 9.78 m long x 1.96 m wide) that extended east and west within adjacent border zones of each unit. Only trees rooted in transect belts were counted, but those rooted outside the belt with foliage extending into the belt were not counted. I then calculated the total number of target trees/acre in each treatment unit and zone.

I noted the maximum height (to the nearest foot) of target trees in both wire and border zones of each unit in the vicinity of each transect belt (Yahner 2006). Cover types were determined within a 4.89-m radius plot placed in the center of each transect belt in wire and border zones, using the Braun-Blanquet Method for estimating abundance and sociability of major plants. From these estimates within each treatment unit, I calculated plant cover type(s) in each unit as forb, grass, shrub, tree, or a combination of these.

In June 2008, Lake County was designated a disaster county by the governor of Illinois because of excessive water in the area. This gives support for 2 years (2008-2009) of baseline information at the LCRDA.

The last year of ROW maintenance at the LCRDA was 2006, when it was maintained via herbicide. In a previous cycle (5 years earlier), it likely was treated via mowing (E. Cunningham, personal communication, 2007). The ROW consists of two rows of towers, with a 345 kV double-circuit tower to the west and a 138 kV double-circuit tower to the east. The 138- kV was built in 1958, and the 345-kV line was built in 1966. I monitored breeding bird populations for four consecutive mornings in both June 2008 and 2009, using a belt survey method (Yahner et al. 2002). Units were visited from dawn until about 11 am, varying order in which units were visited. All birds seen per unit, and their location in each unit (wire versus border) were noted during each survey. Care was made to monitor the location of each bird so not to count an individual bird twice. Birds flying entirely over the site were not counted. Because these results are based on a survey, I did not use statistics. Also, data were pooled in both years to increase sample size. With the exception of Red-winged Blackbirds, bird populations were similar between years.

## RESULTS AND DISCUSSION

A total of 20 bird species was observed on the LCRDA in June 2008 and 2009 during breeding surveys. Of these 20 species, seven species were common in both years combined (observed at least once per day) (Table 1). Based on all 20 species, 10 (50%) are considered early successional species by many authorities. Common species found in both seasons were Red-winged Blackbirds (scientific names are in Table 1), Song Sparrows, Common Grackles, and Northern Cardinals. High numbers of Red-winged Blackbirds in June 2008 were expected because this species prefers wetlands and water. These habitats were abundant throughout the LCRDA vicinity, and this species nests in colonies. Song Sparrows and other early successional species were found on the LCRDA because several units contained high densities of woody shrubs.

In June 2008, which had an extremely wet spring, abundances of birds were somewhat higher than in June 2009. Densities in June 2008 attest to the need to conduct field studies for at least 2 years. Border zones usually were used more often than wire zones by birds in both years. For example, in June 2009, only 36% of the bird observations were in wire zones at the Gurnee sites. Exceptions in June 2008 were Red-winged Blackbirds, which probably nested or foraged in wet wire zones, American Goldfinches, which foraged in wire zones, and Eastern Kingbirds (*Tyrannus tyrannus*), which used the towers as perches and possibly as nest sites as at the Green Lane Research and Demonstration Area (RDA) (Yahner et al. 2002). In summary, based on 2 years of observations at the LCRDA, avifauna during the breeding season is abundant and diverse. The LCRDA is very important to early successional species, e.g., Song Sparrow, particularly in a ROW that traverses habitat unlike that of the LCRDA. I found that most species at the LCRDA are early successional species, as is true of two sites in Pennsylvania (Bramble et al. 1992, Yahner et al. 2002). Of these two sites, one site mainly traverses contiguous forest (SGL 33 RDA) and the other site is amid residential areas (Green Lane RDA).

## LITERATURE CITED

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Table 1. Average number of individuals of a bird species seen per day of seven common species (those in which at least one individual was noted/day) and average number of common species seen per ha per zone (no./ha per zone [wire vs. border] in eight units at the Lake County Research and Demonstration Area near Gurnee, Illinois, in June 2008 and 2009 combined. Total area sampled at the LCRDA = 5.09 ha.

Species	Avg. No./Day	No./Day/ha/Zone	
		Wire	Border
Red-winged Blackbird ( <i>Agelaius phoeniceus</i> )	9.0 (44.0)	0.27 (0.96)	1.13 (3.51)
American Goldfinch ( <i>Spinus tristis</i> )	3.5 (5.5)	0.03 (0.12)	0.68 (0.17)
Gray Catbird ( <i>Dumetella carolinensis</i> )	3.0 (3.5)	0.03 (0.03)	0.57 (0.28)
Song sparrow ( <i>Melospiza melodia</i> )	3.0 (11.0)	1.47 (0.10)	0.11 (0.91)
Common Grackle ( <i>Quiscalus quiscula</i> )	2.5 (8.0)	0.00 (0.10)	0.57 (0.57)
Northern Cardinal ( <i>Cardinalis cardinalis</i> )	2.0 (6.0)	0.08 (0.12)	0.34 (0.51)
Yellow Warbler ( <i>Dendroica petechia</i> )	1.0 (5.5)	0.06 (0.09)	0.00 (0.98)
Total (all 20 species)	34.0 (104.5)		