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Reproductive Success of Upland Nesting Red-winged Blackbirds Within an Interstate Right-of-way in Northwestern Illinois

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ABSTRACT

Nesting success of Red-winged Blackbirds (*Agelaius phoeniceus*) in upland habitats has been reported to be lower than that in wetland habitats, but few data are available from these upland sites. Reproductive success rates were calculated for 356 Red-winged Blackbird nests located along an upland stretch of Interstate 88 right-of-way (ROW) during the nesting seasons of 1985 and 1986. Overall reproductive success was 53.6%, unusually high for upland areas. The data suggest that some upland habitats, under certain conditions, may be as productive as wetland habitats.

Previous investigators have shown that upland nests are more vulnerable to Brown-headed Cowbird (*Molothrus ater*) parasitism than wetland nests. In this study, forty-six nests (13%) were parasitized by cowbirds. This frequency, although low for reported upland studies, is still much higher than previous investigations of wetlands. Nest predation by mammals is often high along corridors and responsible for lower success rates of birds that nest near the ground. Mammalian predation was not a significant factor in this study. The lack of suitable adjacent ROW cover (90% of adjacent habitat was intensively rowcropped) may be responsible for the relatively low predation rates.

INTRODUCTION

The Red-winged Blackbird (*Agelaius phoeniceus*) may have greater nesting success within emergent wetlands than in upland situations (e.g., Case and Hewitt 1963, Robertson 1972). Dolbeer (1976), however, suggested that there was no difference in success rates between the two habitats. Few studies have examined nesting success of Red-winged Blackbirds in upland areas. I documented clutch size, and hatching success and reproductive success (the ratio of young fledged to eggs laid) for Red-winged Blackbirds within an upland habitat. The effects of mammalian predators was also

monitored as they can often be a significant factor in the reproductive success of low to ground nesting birds (Robertson 1972). Lastly, many studies (Nickell 1955, Friedmann 1963) have investigated Brown-headed Cowbird (*Molothrus ater*) parasitism rates in a variety of species and habitats but little data has been collected from birds nesting within interstate ROW's. Cowbird parasitism was recorded and monitored in broods of Red-winged Blackbirds.

STUDY AREA METHODS

I examined nests along Interstate 88 in Whiteside County during the breeding seasons of 1985 and 1986. Hungarian brome (*Bromis inermis*) and tall fescue (*Festuca elatior*) were the dominant ground cover (Paruk 1990). Abundance and species of trees, shrubs, and woody vines present in the ROW have been described in Paruk (1990). The ROW was not mowed except for a 5 m buffer strip adjacent to the paved shoulder. Adjacent ROW habitats were predominantly (>90%) agriculture. A total of 6,710 m of roadside (15.2 ha) was surveyed between 3 April and 2 August of each year. Nest survey methods have been previously described in Paruk (1990). Each nest was monitored every 2 to 4 days.

RESULTS AND DISCUSSION

Three hundred and fifty-six Red-winged Blackbird nests were found during the two year study (Table 1). Of these, 220 (61.8%) were in woody vegetation and 136 (38.2%) in herbaceous cover. Forty-six (12.9%) nests were parasitized by Brown-headed Cowbirds (*Molothrus ater*): 25 (54.3%) and (45.7%) were in woody and herbaceous vegetation, respectively. In other studies (Hergenrader 1962, Hill 1976, Linz and Bolin 1982) Red-winged Blackbirds nesting in upland habitats had higher nest parasitism by Brown-headed Cowbirds than conspecifics nesting in wetland habitats (Nickell 1955, Friedmann 1963, Robertson and Norman 1977). Hergenrader (1962) found 54% (N=59) of the Red-winged Blackbird nests in a Nebraska highway ROW were parasitized. Similarly, Linz and Bolin (1982) found 42% (N=258) parasitism in a North Dakota highway ROW. Hill (1976) found lower parasitism rates (22%) in a prairie site in Kansas. I suspect one potentially important reason for the low parasitism rates at my study site was due to the lack of suitable foraging areas for cowbirds adjacent to the Interstate ROW. More investigation is needed to determine the type and extent of cover cowbirds require.

Brown-headed Cowbirds did not have much success parasitizing Red-winged Blackbirds. Twenty-four of the parasitized nests were abandoned and in 20 nests (43.5%) Red-winged Blackbird females removed the cowbird eggs. Only 2 (4.3%) of the parasitized nests fledged a cowbird (Table 1).

The mean ($\pm$ SD) clutch size for Red-winged Blackbirds, excluding cowbird eggs, was 3.1 $\pm$ 0.7 (3.2 $\pm$ 0.6 for unparasitized and 2.7 $\pm$ 0.5 for parasitized blackbirds). These differences were not statistically different ($p > 0.05$). The majority of the clutches contained either 3 (N=190, 53.4%) or 4 (N=123, 34.5%) eggs. Previous investigators (Dolbeer 1976, Lenington 1982, Rigby 1982) have reported higher mean clutch values (3.4 - 3.7 $\pm$ 0.5) for Red-winged Blackbirds (although parasitism rates were not mentioned in the analyses). The small mean clutch-size I found is a consequence of the larger ratio of 3:4 egg clutches (1.54). Rigby (1982) tabulated ratios of 3:4 egg clutches and reported a mean of 0.68 from 180 nests in wetland habitats. Large ratios are

generally suggestive of poorer quality habitats, but comparisons between studies should be viewed with caution (Rigby 1982).

Hatching and reproductive success rates for unparasitized (61.4% and 53.6%) and parasitized nests (54.6% and 50.9%) were not significantly different ($t = 1.508$, $df = 12$, $p > 0.05$). Reproductive success of Red-winged Blackbirds that placed their nests above and below 1 m were compared because mammalian predators may influence the reproductive success of ground or low-nesting birds (Robertson 1972). Although birds nesting above 1.0 m had a slightly higher success rate (N=170, 58.9%) than birds nesting below 1.0 m (N=186, 50.3%) the differences were not statistically significant (Mann-Whitney $U = 154$, $p > 0.05$). The lack of suitable adjacent cover for mammalian predators may account for these results (J. Paruk, pers. obs.).

Francis (1971) summarized reproductive success rates of Red-winged Blackbirds in wetland habitats from 8 studies. He found reproductive success varied from 27-67%. In my study, Red-winged Blackbirds nesting in upland habitat were equally as productive (53.6%) as those in wetland habitats.

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Table 1. Reproductive success and Cowbird Parasitism rates for Red-winged Blackbirds in upland habitat Row, 1985-1986.

Year	# of active nests	- $\bar{x}$ clutch size	# para-sitized	# nests that fledged cowbird	reproductive success (%) *
1985	164	3.23	22 (13.4%)	1 (4.5%)	54.1
1986	192	3.14	24 (12.5%)	1 (4.2%)	53.3
Totals	356	3.19	46 (12.9%)	2 (4.3%)	53.6

*ratio of young fledged to eggs laid