Transactions of the Illinois Academy of Science
(1987), Volume 80, 3 and 4, pp. 327-332

HABITAT USE AND ACTIVITY PATTERNS OF CANADA GEESE ASSOCIATED WITH REND LAKE, ILLINOIS

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ABSTRACT

A total of 184,699 Canada geese (*Branta, canadensis*) in 222 flocks were observed along habitat survey routes near Rend Lake, Illinois October-February 1983-84. Overall, 44% of geese were observed in corn fields, 10.1% in soybeans, 2.6% in milo, 30.2% in clover, and 12.7% in winter wheat. Use of clover and winter wheat fields occurred primarily on public lands adjacent to the Lake. Public lands management for geese at Rend Lake should emphasize maintenance of clover and winter wheat and provide some corn; soybeans should not be planted because of potential goose esophogeal impaction, and milo eliminated because of low selection by geese.

INTRODUCTION

Rend Lake is relatively new, completed by the Army Corps of Engineers in 1971. Because of this, little is known of the activity patterns and food habits of Canada geese wintering there. Rend Lake has supported large numbers of geese in late winter in recent years; January populations have reached 120,000 geese. Thornburg et al. (1986) reported geese at Rend Lake to weigh significantly less in winter 1983-84 than geese at other southern Illinois refuges, suggesting the need for improved habitat management. Our purpose was to document activity patterns and habitat use of Canada geese using Rend Lake.

STUDY SITE AND METHODS

Rend Lake, located in Jefferson and Franklin counties of Illinois, is a 7,560 ha impoundment of the Big Muddy River (Figure 1). The Refuge is located on Nason Point (Figure 1) and contains 810 ha of land and 1,215 ha of water. Rend Lake Wildlife Management Area (RLWMA) provides 4,375 ha of land and water around the northern half of the Lake, including numerous public hunting areas and boat ramps. Wayne Fitzgerrell State Park provides an additional 2,860 ha of public land on the east side. Cropland on the Refuge and Wildlife Management Area is sharecropped by tenant farmers, part of the crop being left in fields for waterfowl. Crops include corn, milo, soybeans, winter wheat, and clover.

Two approximately 120 km habitat survey routes 0-16 km from Rend Lake (Figure 1) were driven Friday and Saturday each week 28 October - 18 February 1983-84; one from one half hour after sunrise to noon and the other from noon until sunset. Each route was driven once in the morning and once in the afternoon during each 2 day period with route direction and order reversed each week. Time of day, flock size and habitat type were recorded for all geese seen within 0.8 km of routes. Habitat availability within 0.8 km was documented by ground cover mapping; field sizes were determined by ocular estimation.

Habitat use during surveys was categorized as <3 km, 3-8 km or >8 km from the lake. The shore of the lake, rather than a central point was used to define these distances. Equal lengths of survey route were located within each distance category. To account for the effect of availability on goose habitat use, selectivity indexes (SI) were computed by dividing percent goose use of habitats by the respective percentage availability of each habitat along survey routes (Sauer 1983).

RESULTS AND DISCUSSION

Availability of crops along habitat survey routes was assumed to be representative of the entire area within 16 km of Rend Lake. While no data was gathered to verify this assumption in 1983-84, no difference ($P>0.05$) was found between land use within 16 km of Rend Lake (Agricultural Stabilization and Conservation Service crop reporting data) and land use along these habitat routes in 1984-85 (Unpub. data, SIU-C Cooperative Wildlife Research Laboratory).

A total of 184,699 Canada geese in 222 individual flocks was observed during fall/winter 1983-84 (Table 1). Over the entire fall/winter period, 44% of geese were observed in corn fields, 10.1% in soybeans, 2.6% in milo, 30.2% in clover, and 12.7% in winter wheat. Geese selected corn and clover in excess of availability, while wheat, soybeans, milo, and pasture were used less than their availability (Table 1). Bell (1957), Arthur, (1968), and Sauer (1983) reported similar findings at other southern Illinois refuges.

Geese were observed 0-16 km from Rend Lake; 38% were observed on the refuge, 26% off the refuge but within 3 km of the lake, 5% between 3-8 km from the lake, and 30% at greater than 8 km (Table 1). Within the refuge, use of corn and milo fields (5% and 4%) was less than percentage availability (18% corn and 37% milo). In contrast, clover fields made up 25% of available refuge habitat, but contributed 75% of refuge goose use. Off-refuge, geese selected corn, and rarely used the area 3-8 km from the lake (Table 1). Little use of milo was noted anywhere.

All use of forage was observed within 3 km of the lake despite high availability of both clover and winter wheat further from the lake (Table 1). Clover was selected on the refuge (SI = 10.6), but was used only in proportion to its availability <3 km from the lake (Table 1). Off-refuge clover use occurred primarily on private land, as little clover was available on RLWMA. Geese selected winter wheat both on the refuge (SI = 1.9) and off-refuge within 3 km of the lake (SI = 2.5). Off-refuge, 96% of winter wheat use was observed on Rend Lake Wildlife Management Area.

CONCLUSIONS AND RECOMMENDATIONS

Rend Lake Refuge and Rend Lake Wildlife Management Area provided almost all forage crops used by geese in 1983-84. Little use of winter wheat occurred on private land although available. The importance of public land in supplying forage for geese, and the ability of geese to find corn on private land, suggest that providing sufficient supplies of winter wheat and clover on the Refuge and Wildlife Management Area should be a primary habitat management goal. However, plantings of corn should be maintained on public land to provided high energy food sources close to roosts. Soybeans should not be planted on public land due to the potential impaction (Jarvis 1976), and milo planting should be discouraged because it is rarely used by geese.

ACKNOWLEDGEMENTS

Financial support for this study was provided by a grant to W.D. Kilmstra from the Illinois Department of Conservation, and by the Cooperative Wildlife Research Laboratory (Project No. 22: Canada Goose Studies) at Southern Illinois University at Carbondale. We thank J.W. Spitzkeit for field assistance and W.D. Klimstra for his many contributions to the project. D.D. Thornburg played a major role in starting and supporting the study. This manuscript is from a thesis by the senior author in partial fulfillment of M.A. degree requirements in the Department of Zoology at SIU-C.

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Table 1. Percentage habitat use and selection by Canada geese at various distance from Rend Lake during fall/winter 1983-84.

	Distance from Rend Lake[a]				
Habitat	Refuge	<3 km	3-8 km	>8 km	Area[b] wide
Corn	2%	11%	5%	26%	44%
	(2.9)[c]	(1.2)	(0.6)	(3.2)	(1.7)
Milo	2%	1%	0%	0%	3%
	(1.4)	(0.5)	(0.0)	(0.0)	(0.4)
Soybeans	—	6%	0%	4%	10%
		(0.8)	(0.0)	(0.6)	(0.5)
Winter Wheat	6%	6%	0.1%	0%	13%
	(2.8)	(2.5)	(0.0)	(0.0)	(0.6)
Clover	28%	2%	0%	0%	30%
	(30.8)	(1.0)	(0.0)	(0.0)	(2.1)
Column Total[d]	38%	26%	5%	30%	100%

[a] Distance from the shore of Rend Lake; <3 km catagory excludes the refuge.
[b] Percent of geese on entire habitat route observed in each habitat.
[c] Selectivity index = percent of total goose observations in each habitat/distance category divided by availability of habitat at each distance (area of habitat available at each distance divided by total area visible from habitat routes).
[d] Percent of all geese observed on habitat routes at each distance from the lake.

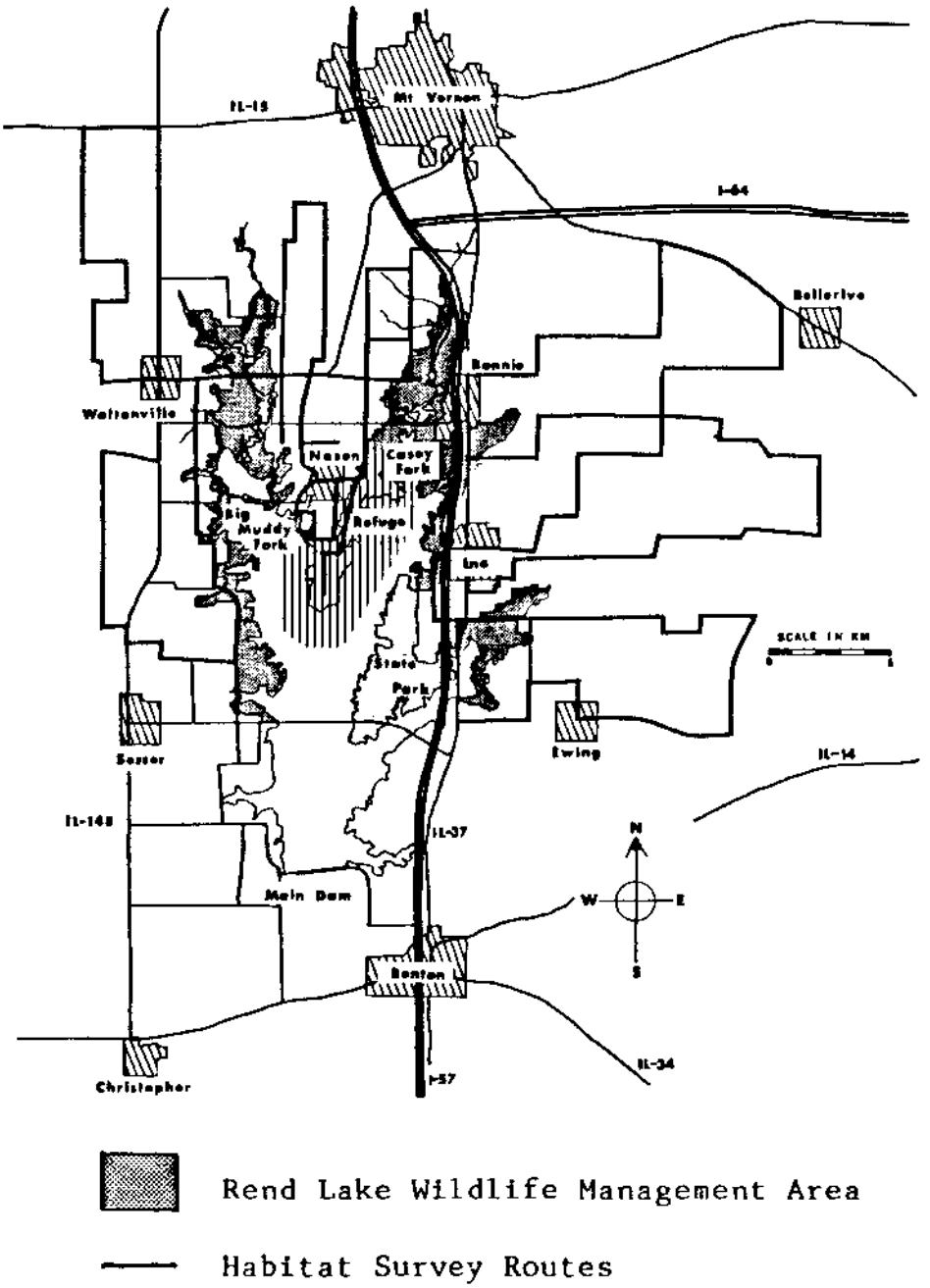

Figure 1. Rend Lake, Franklin and Jefferson counties, Illinois.