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THE SMALL MAMMALS OF ROCKTON NATURE PRESERVE, WINNEBAGO COUNTY, ILLINOIS

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ABSTRACT

A survey of the small mammals of Rockton Nature Preserve was conducted on 19-23 September 1988. Five species of mammals were recorded from the site. Sedge meadow and marsh were the most productive communities based on number of species and capture rates. Wetland communities are critical to the conservation of Illinois' small mammal fauna.

INTRODUCTION

Rockton Nature Preserve is a 67 acre tract located 3 miles northwest of Rockton, Winnebago County, Illinois (Section 3, T46N, R1E, 3PM). The nature preserve contains examples of several wetland community types which are restricted in Illinois to the area of Wisconsin glaciation and are representative of the Winnebago Section of the Northeastern Morainal Natural Division of Illinois (Schwegman, 1973).

The flora of Rockton Nature Preserve has been documented (Fell, 1957); however, no studies of the fauna of the preserve are published. The objective of this project was to inventory the small mammals associated with the major community types present on the preserve.

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STUDY AREA AND METHODS

Sedge meadow, marsh, savanna, and successional field were the four major community types selected for sampling. The sedge meadow consists of tall, dense herbaceous vegetation dominated by tussock sedge (*Carex stricta*) and bluejoint grass (*Calamagrostis canadensis*). Other associated plant species include meadow sweet (*Spirea alba*), Canada anemone (*Anemone canadensis*), and Joe-pye-weed (*Eupatorium maculatum*). The marsh community is dominated by cattail (*Typha latifolia*) and is adjacent to the sedge meadow. Tussock sedge, bulrushes (*Scirpus* sp.), and prairie cordgrass (*Spartina pectinata*) also occur here. A disturbed oak savanna persists on sand deposits near the wet areas. Open-grown black oaks (*Quercus velutina*) are the dominant overstory tress. Black cherry (*Prunus serotina*) is also common. The dense understory consists of blackberry (*Rubus* sp.), hazelnut (*Corylus americana*), and the exotic common buckthorn (*Rhamnus cathartica*). A small red pine (*Pinus resinosa*) plantation exists within the savanna. The successional field community is comprised of goldenrods (*Solidago* sp.), ragweed (*Ambrosia artemisiifolia*), and timothy (*Phleum pratense*) and is being invaded by sedges (*Carex* sp.), meadow sweet, and sensitive fern (*Onoclea sensibilis*).

A trapline consisting of 33 trap stations (26 in the marsh) was established in each community. Trapping stations were placed 8 meters apart along the trapline. At each station, 3 Museum Special traps (4 at the last station in each line) were baited with a mixture of rolled oats, peanut butter, and bacon grease. Traps were checked on 4 consecutive nights, 19-23 September 1988. Small mammals captured were placed in plastic bags, labelled, and stored on ice for later identification.

RESULTS AND DISCUSSION

Total trapping effort included 1528 trap-nights: 400 trap-nights each in sedge meadow, savanna, and successional field and 328 in the marsh (Table 1). Trap success (number of animals captured/100 trap-nights) ranged from 3.5 to 16.0 and averaged 9.7 overall. Success was greatest in the wet areas (sedge meadow, marsh) and lowest in the savanna.

Mahan and Heidorn (1984) reported high trap success rates in sedge meadow, wet-mesic prairie and marsh communities and low trap success in savanna communities in Iroquois County, Illinois. However, values reported here for sedge meadow and marsh are 50 and 140 percent higher than those reported by these investigators and are similar to those reported for a Lee County, Illinois sedge meadow by Mahan and Nyboer (1984).

Five species of small mammals, totaling 149 individuals, were captured at Rockton Nature Preserve. The white-footed mouse (*Peromyscus leucopus*) was the most common (N=68), followed by masked shrew (*Sorex cinereus*) (33), meadow vole (*Microtus pennsylvanicus*) (23), short-tailed shrew (*Blarina brevicauda*) (13), and meadow jumping mouse (*Zapus hudsonicus*) (12) (Table 1).

The white-footed mouse and short-tailed shrew were the only species encountered in all 4 communities. White-footed mice were the most common species in sedge meadow, savanna, and successional field communities, while short-tailed shrews were common only in the sedge meadow. The white-footed mouse is commonly found in woods, forest edges, and other brushy or woody habitats (Hoffmeister and Mohr, 1957). Therefore, its abundance in the sedge meadow and

successional field and its occurrence in the marsh is notable. Mahan and Heidorn (1984) did not record this species from prairie, sedge meadow, or marsh communities in Iroquois County. However, it has been recorded from Lee County sedge meadows and prairies (Mahan and Nyboer, 1984). In both these previous surveys, white-footed mice were most common in pine plantations, a trend not evident in this survey (no captures occurred where the savanna trapline crossed through the pine plantation — 4 stations, 12 traps).

Short-tailed shrews are often associated with moist litter on forest floors and moist, thick duff in meadows (Getz, 1961). While common in the sedge meadow in this survey, this species has been found to be very common in sedge meadow, wet prairie, and successional fields (Mahan and Heidorn, 1984), as well as mesic sand prairies, sedge meadow, and bottomland forest (Mahan and Nyboer, 1984). The short-tailed shrew can be one of the most abundant small mammals in woodland areas (Hoffmeister and Mohr, 1957, Mumford and Whitaker, 1982) and yet was rare in these habitats at Rockton Nature Preserve.

The masked shrew was limited to moist or wet areas and was particularly abundant in sedge meadow. As with most shrews in the genus *Sorex*, the masked shrew seems to prefer moist or wet habitats with dense ground cover (Hamilton and Whitaker, 1979). It has been recorded as being less tolerant of low humidity than the short-tailed shrew (Getz, 1961). In Lee County, 18 of 20 individuals captured were taken in sedge meadow (Mahan and Nyboer, 1984), while sedge meadow, shrub prairie, and flatwoods (a seasonally wet community) accounted for 10 of 11 masked shrews captured in Iroquois County (Mahan and Heidorn, 1984).

Meadow voles were captured only in the tall, dense herbaceous vegetation of the sedge meadow and marsh and were the dominant species in the latter. No meadow voles were captured in the successional field where vegetation was less dense but much shorter than in the sedge meadow or marsh. The meadow vole is a species of damp, grassy areas and is fairly abundant in northern Illinois (Hoffmeister and Mohr, 1957). Similar habitat affinities were recorded in Lee and Iroquois Counties where wet habitats accounted for 13 of 15 and 21 of 25 captures, respectively (Mahan and Nyboer, 1984; Mahan and Heidorn, 1984).

Meadow jumping mice were captured in all open habitats but were notably more common in marsh and sedge meadow. This species is frequently encountered in grassy areas near streams or ponds (Hamilton and Whitaker, 1979), but is generally considered to be uncommon throughout Illinois (Hoffmeister and Mohr, 1957). In Indiana, Mumford and Whitaker (1982) note that the meadow jumping mouse is often found in moist situations but felt this was more related to lack of disturbance and presence of dense ground cover than directly to moisture. Its primary habitats in Lee County were mesic sand prairie and sedge meadow (Mahan and Nyboer, 1984). Only 2 individuals were caught in 990 trap-nights in Iroquois County, however, both were taken in wet habitats (Mahan and Heidorn, 1984).

The current study, in conjunction with the investigations in Lee and Iroquois Counties, clearly indicate the importance and productivity of sedge meadow, wet prairie, and marsh communities to small mammal populations. These habitats consistently harbor the highest population levels and greatest number of species of all communities investigated as determined by early autumn traplines. These areas may be particularly important for maintaining shrew populations as moisture is a

limiting factor for many of these species (Getz, 1961). The preservation and maintenance of these communities is critical to the conservation of the native small mammal fauna.

Further, wetlands significantly disturbed by human activities (e.g. grazing), though recovering botanically, do not support small mammal communities comparable to less disturbed areas (successional field vs. sedge meadow). Nearby undisturbed sites must also be maintained as a source of plant and animal colonists for recovery of disturbed sites.

SUMMARY

The four major community types at Rockton Nature Preserve were sampled for small mammals. Wet communities were the most biologically rich areas sampled and harbored species not found or uncommon in other community types. No threatened or endangered species were encountered. While the preservation of wetlands has been discussed in terms of its impact on waterfowl, songbirds, reptiles, and amphibians, these habitats are also of great importance in the conservation of Illinois' small mammals.

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LITERATURE CITED

Fell, E.W. 1957. Plants of a northern Illinois sand deposit. Am. Midl. Nat. 57:441-451.

Getz, L.L. 1961. Factors influencing the local distribution of shrews. Am. Midl. Nat. 65:67-88.

Hamilton, W.J., Jr. and J.O. Whitaker, Jr. 1979. Mammals of the Eastern United States. Cornell University Press, Ithaca, NY. 346 pp.

Hoffmeister, D.F. and C.O. Mohr. 1957. Fieldbook of Illinois Mammals. Dover Publ., NY. 233 pp.

Mahan, C.J. and R.R. Heidorn. 1984. The mammals of Iroquois County Conservation Area. Trans. Ill. St. Acad. Sci. 77:23-28.

Mahan, C.J. and R.W. Nyboer. 1984. Small mammal survey at Green River Conservation Area. Unpubl. Report. Ill. Dept. Conservation, Springfield, IL. 7 pp.

Mumford, R.E. and J.O. Whitaker. 1982. Mammals of Indiana. Indiana Univ. Press, Bloomington. 537pp.

Schwegman, J.E. 1973. The Natural Divisions of Illinois. Ill. Nature Preserves Commission. Springfield, IL. 32 pp.

Table 1. Number of individuals and species of small mammals captured within each natural community at Rockton Nature Preserve, Winnebago County, Illinois, 19-23 September 1988.

	NATURAL COMMUNITY					
SPECIES	Sedge Meadow	Marsh	Oak Savanna	Successional Field	TOTAL	PERCENT
Masked shrew	19	8	0	6	33	22.1
Short-tailed shrew	9	2	1	1	13	8.7
White-footed mouse	24	7	13	24	68	45.6
Meadow vole	8	15	0	0	23	15.4
Meadow jumping mouse	4	7	0	1	12	8.0
TOTAL INDIVIDUALS	64	39	14	32	149	
TOTAL SPECIES	5	5	2	4	5	
NO. TRAP-NIGHTS	400	328	400	400	1528	
TRAP SUCCESS (%)	16.0	11.9	3.5	8.0	9.7	