FARMLAND HABITAT USE BY WILD TURKEYS IN WISCONSIN

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ABSTRACT

Habitat use and food habits of wild turkeys (Meleagris gallopavo) were studied during summer 1988-89 in southwestern Wisconsin in order to address growing concerns that turkeys cause considerable crop damage. Intensive telemetric monitoring in 1988 suggested that turkeys used crop fields (corn-alfalfa-oats) at a low rate compared to forest types. Brooded hens used forest habitats less and field habitats more than broodless hens and gobblers. Brooded hens appeared to use forest and crop field habitats less and non-crop fields (pasture and idle) more than expected. Broodless hens and gobblers appeared to use forest types and non-crop fields more and crop fields less than expected. Crops of 3 hens collected to determine what turkeys are eating while feeding in agricultural fields contained 79% plant matter (mostly oats) and 21% animal matter (mostly grasshoppers). Crops of 15 poults similarly collected contained 87% animal matter (mostly grasshoppers) and 13% plant matter (mostly oats). Brood flocks in southwestern Wisconsin appear to be utilizing crop fields for insects.

INTRODUCTION

Wild turkeys were extirpated from Wisconsin in the late nineteenth century due to habitat loss and over-hunting (Schorger 1942). By the 1930s the habitat had recovered sufficiently but early restoration efforts were largely unsuccessful due to the use of non-wild stock. Wild turkeys were successfully re-established in Wisconsin in 1976 following a trade agreement in which Missouri wild-trapped turkeys were exchanged for Wisconsin ruffed grouse (Bonasa umbellus) (Burke 1982). Populations increased dramatically following trap/transplant efforts by the Wisconsin Department of Natural Resources (WDNR) and natural re-colonization of suitable habitat throughout the bird's former range.

Increasing densities, high visibility, and the gregarious nature of wild turkeys, coupled with misconceptions about their habits, have accentuated the general perception that turkeys cause considerable crop damage in Wisconsin. To address this issue, the WDNR initiated a study in 1987 to assess the magnitude of crop damage attributable to turkeys. The objectives of this paper were to determine (1) trends in farmland habitat use by wild turkeys during the growing season through intensive telemetric monitoring and (2) food habits of birds feeding in agricultural fields.

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STUDY AREA AND METHODS

This study is being conducted in Turkey Management Zone 1A (which encompasses 455 km^2) in southern Vernon County (Fig. 1). The area is typical of the unglaciated region of southwestern Wisconsin and is characterized by rugged topography with steep slopes and deep valleys. Commercial and non-commercial forest lands encompass 43% of the area; oak-hickory (Quercus-Carya) is the principal type, comprising 60% of the forested area. Land use is dominated by dairy farming with strip rotations of corn, alfalfa, and oats on ridgetops and in valleys. South-facing slopes

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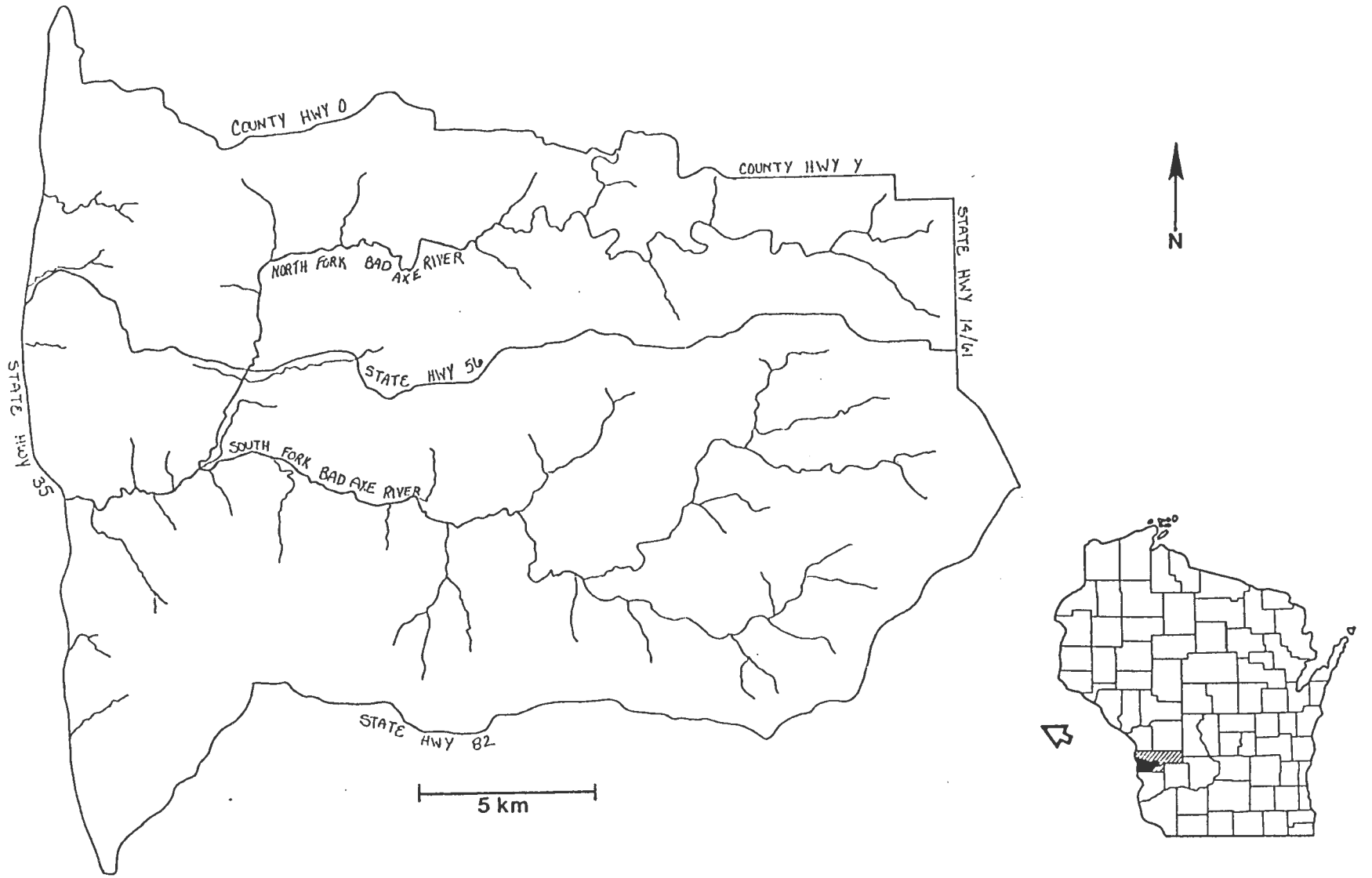

Figure 1. Wild turkey experimental management zone 1A in Vernon County, Wisconsin.

(which remain relatively snow-free), crop residues and manure-spreading, and spring seeps are important factors favoring over-winter survival of turkeys.

Turkeys were trapped January-March 1988 using rocket net boxes (Wunz 1984) and were fitted with leg bands, patagial markers, and backpack radio transmitters. Radio-marked turkeys were monitored during the growing season (21 May-16 August 1988) to determine use of crop fields, non-crop fields, and forests. Birds were monitored daily during 1 or more of 5 randomly-selected 3-hour time periods beginning at 0530 and ending at 2030 hours. Turkeys were located by triangulation from $\geq$ 3 receiver locations with vehicle-mounted twin 4-element Yagi antennas (Heezen and Tester 1967).

To determine food habits, turkeys observed feeding in crop fields for at least 1/2 hour during July and August 1988-89 were shot.

Habitat availability data were analyzed using the Spatial Ecology Analysis System (SEAS) developed by John Cary of the Department of Wildlife Ecology at the University of Wisconsin-Madison. Habitat availability was determined within the composite summer home range for all birds rather than the entire study area because this was a more realistic approximation of availability (Vander-Haegen 1987). Habitats were categorized as forests, crop fields, and non-crop fields and were delineated on 1:4800-scale aerial photographs and digitized. Turkey habitat use was determined by visually estimating triangulated locations of radioed turkeys on covertype maps for all useable radio locations. Nesting hens and observations where error polygons were >1.0 ha were excluded. Locations where the error polygon may have included 1 or more habitat types were assigned to "edge" categories. Use of specific crop types was difficult to interpret because of contour farming in narrow strips and the error polygons associated with telemetry locations. Subjective determination of habitat use precluded any statistical testing of results.

Crop contents of collected turkeys were sorted into animal, cultivated crop, and wild plant categories and aggregate percent volumes were calculated (Martin et al. 1946, Swanson et al. 1974).

RESULTS AND DISCUSSION

Habitat Use

Three-hundred-twenty-three telemetric and visual observations were obtained from 20 hens (5 with broods [n= 62], 15 without [n=173]) and 5 gobblers (n=88). Results suggested that wild turkeys used crop fields at a low rate compared to forest types. Brooded hens, broodless hens, and gobblers were located in crop fields 13%, 6%, and 7% of the time respectively, and in forest/crop field edges 21%, 20%, and 16% of the time respectively (Fig. 2). Brooded hens used woodlands less and fields (crop and non-crop) more than broodless hens and gobblers. Broodless hens and gobblers appeared to use all habitats similarly, while use of field edges appeared to be similar for all categories of birds. Hillestad and Speake (1970) also reported that forest/field edges were important to turkeys in eastern Alabama.

In order to compare habitat use information with availability, it was assumed that observations along field edges occurred equally in forest and crop/non-crop habitats. Brooded hens appeared to use forest and crop field habitats in proportion to their occurrence (Fig. 3). In contrast, brooded hens appeared to use non-crop fields in greater proportions than available. These habitats provide an abundant source of insects, which are attractive to young poults (Blackburn et al. 1975, Healy 1985, Hurst and Stringer 1975). Pastures were the largest proportion of non-crop fields in our study area and probably are important brood-rearing habitat (Hillestad and Speake 1970).

Brooded hens in this study spent approximately 45% of their time in field habitats and used crop and non-crop fields equally. Porter (1980)

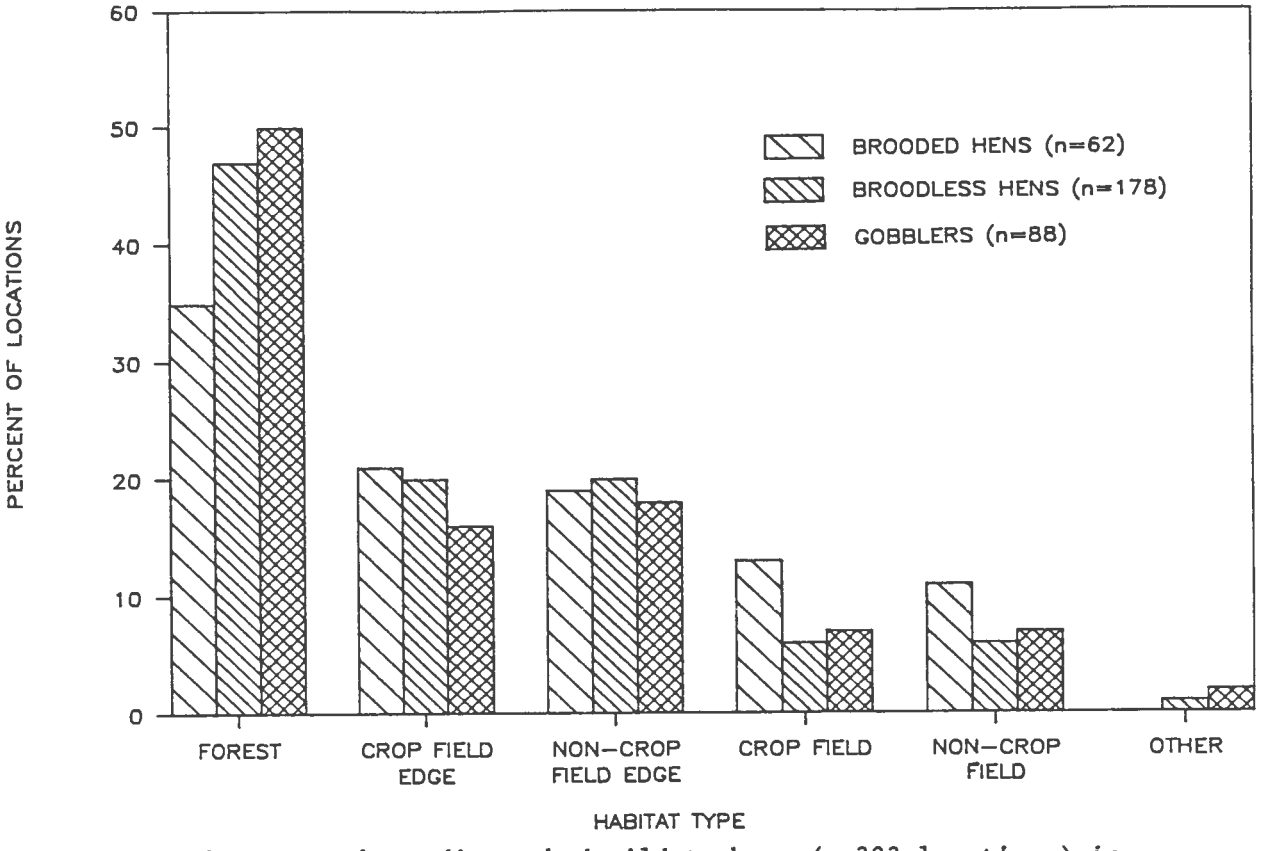

Figure 2. Habitat use by radio-marked wild turkeys (n=323 locations) in southwestern Wisconsin during summer 1988[123]

reported that turkey broods in southeastern Minnesota spent the same amount of time (45%) in field habitats, but primarily in fields of contour-stripped corn and alfalfa. Alfalfa strips were utilized most, probably because of insect and plant protein availability, with corn strips providing loafing and escape cover. Vander-Haegen (1987) also reported that cropland was preferred brood habitat in western Massachusettes.

Broodless hens and gobblers appeared to use forest types and non-crop fields more and crop fields less than expected (Fig. 3). Overall, turkeys appeared to use woodland habitats slightly more and crop field habitats less than available (Fig. 4). Non-crop field use appeared similar to availability. Grenon (1976) found that turkeys selected for woodland and upland shrub habitats and avoided agricultural habitats.

Food Habits

Three hens and 15 poults were collected in oats and alfalfa fields in July and August of 1988 and 1989. The results of this analysis should be interpreted only as what turkeys are eating in crop fields and not as an indication of the general food habits of turkeys in southwestern Wisconsin. Crops of hens contained 79% plant matter and 21% animal matter. Oats, alfalfa, and wild plants comprised 53, 13, and 13%, respectively, of the plant matter, while grasshoppers (Orthoptera) were the principle animal matter consumed. A crop of 1 of the hens comprised 87% of the total volume and contained mostly oats. Insects, oats, alfalfa, and wild plants occurred in 3, 2, 1, and 1, respectively, of the crops of the hens collected.

Crops of the 15 5-8-week-old poults contained 87% animal matter (mostly grasshoppers), 9% oats, 2% wild plants, and trace amounts (<1%) of alfalfa and

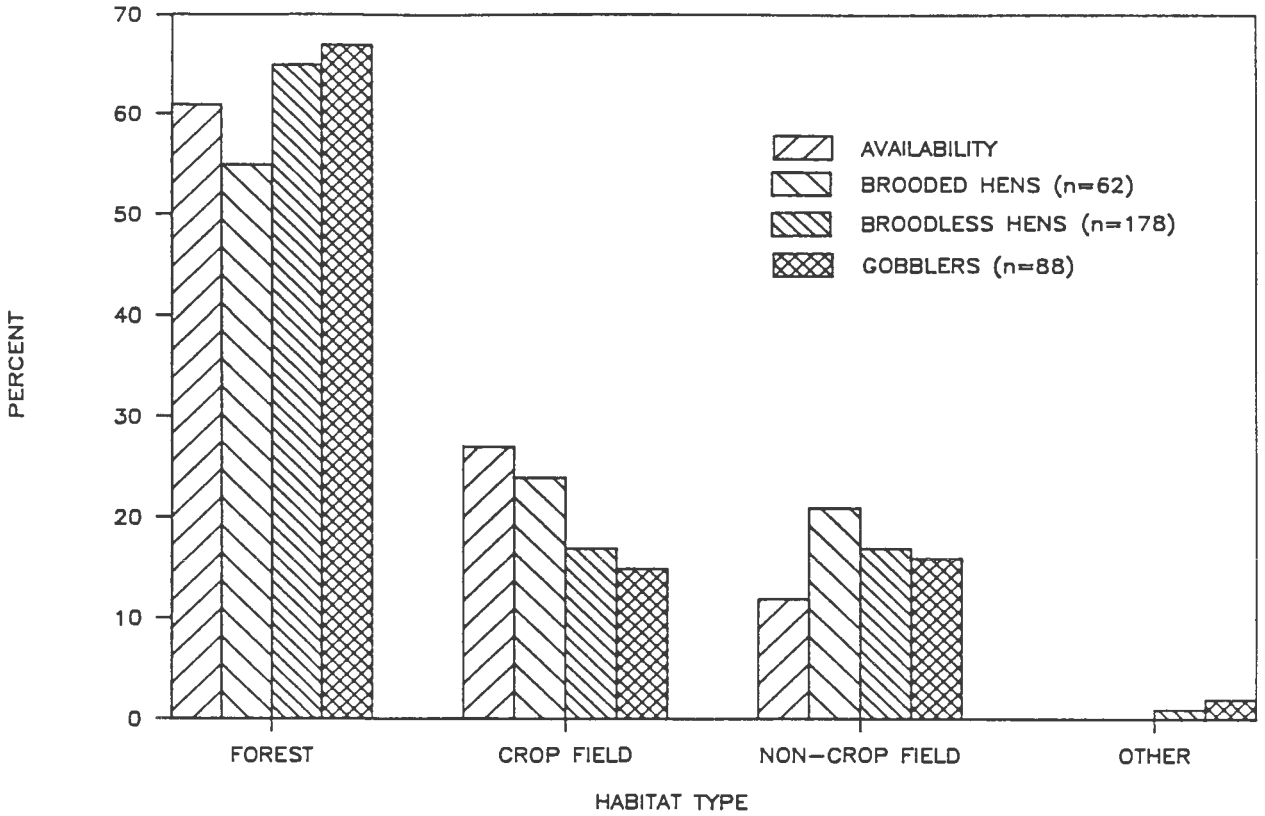

Figure 3. Habitat availability (percent of composite summer range) and use (percent of radio locations) for brooded hens, broodless hens, and gobblers in southwestern Wisconsin during summer 1988.

corn. The frequency of occurrence of insects, oats, and wild plants was 100, 33, and 33%, respectively. One poult whose crop contained oats had been utilizing waste grain.

Information on wild turkey food habits in agricultural habitats during the growing season is limited. Blackburn et al. (1975) found that the proportions of vegetative matter increased and animal matter decreased in the diet of poults from June to September in Alabama. Their results were based on analyses of droppings collected in permanent forest openings dominated by grasses. Hurst and Stringer (1975) reported that crops of 5 5-week-old poults accompanied by brooder chickens contained 85% plant material and 15% animal material by weight in hayfield/pasture habitats in Mississippi. In contrast, crops of 5 5-week-old poults collected from hayfields in this study consisted almost entirely of insects.

Poults collected from agricultural fields in southwestern Wisconsin utilized a much higher proportion of animal matter than has been reported elsewhere, suggesting that brood flocks in this study utilize agricultural fields primarily for animal matter. However, animal matter still remains an important component in the diet throughout the range of the wild turkey.

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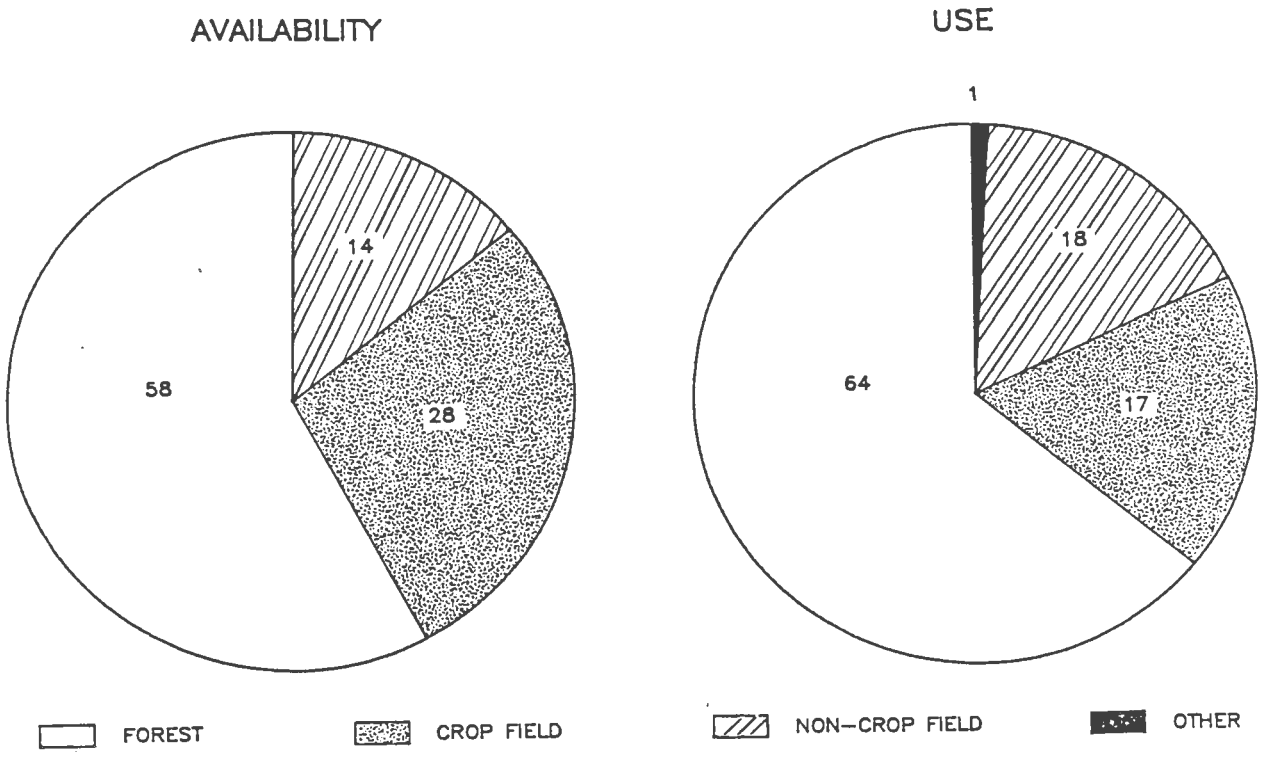

Figure 4. Habitat availability (percent of composite home range) and use (percent of radio locations [n=323]) by wild turkeys in southwestern Wisconsin during summer 1988.

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