

devoid of trees. From our car some 300 yards away, we saw the Sparrow Hawk fly to the ground approximately 90 feet north of the high tension line. The hawk remained on the ground for 10 to 15 seconds and then returned to its original perch on the wire with a mouse in its talons. It remained on the wire for half a minute, made no effort to eat the mouse, and then flew to the ground again near the point of capture of the mouse. The hawk hopped around for a few seconds and then flew up and hovered, first at approximately 30 feet and then at 70 feet, over the same spot on the ground. Returning to the high tension wire without the mouse, the hawk perched for 10 minutes. It then flew north again, hovered for 15 to 20 seconds over the spot, and finally flew 600 yards northeast where it perched in a tree.

We went into the field and after some searching found the warm, freshly-killed carcass of a male deer mouse (*Peromyscus maniculatus*) 84 feet north of the high tension line. The mouse was on the ground, belly down, tucked between coarse stems of a large clump of grass (*Panicum capillare*). There was no external evidence of injury although the mouse had the back of its skull crushed. The part of the field in which the mouse was captured and hidden had been planted with soybeans. Harvesting of the soybeans left a large amount of ground litter but little standing vegetation. The mouse was hidden in one of the most conspicuous clumps of grass. One interesting aspect of the hawk's behavior was the hovering over the spot where the mouse was stored. Possibly the hawk was memorizing the exact spot to make it easier to find the mouse when necessary.

On January 26, 1955, near Lawrence, Hardy and I saw a female Sparrow Hawk kill and store a male *Microtus ochrogaster* (weight, 15 grams; estimated age, three weeks). The hawk flew to the ground in two places before finally storing the mouse belly down, eight inches off the ground, in the top of a thick clump of a green grass, *Bromus inermis*. The storage site was almost 100 feet from the point of capture. The elapsed time from capture of the mouse until storage was approximately 45 seconds. The female falcon hovered over the hidden mouse after storing it, as did the male mentioned above.

The fact that the captive Sparrow Hawk mentioned earlier stored its food in an elevated place suggests that trees also might be used as storage places. If storage of surplus food is regularly practiced by Sparrow Hawks, the adverse effect on the birds of prolonged winter storms would be greatly reduced.—HARRISON B. TORDOFF, *Museum of Natural History, University of Kansas, Lawrence, Kansas, January 28, 1955.*

**Size of home range in eight bird species in a southern Illinois swamp-thicket.**—During the summer of 1950, William Hardy and the writer studied the ecology of a 13-acre tract of swamp and thicket in Jackson County, about one mile north of Murphysboro, Illinois. The study included a plot census of the breeding bird population (Brewer and Hardy, 1950. *Audubon Field Notes*, 4:303). By connecting successive points of observation as plotted on the study maps in such a way as to include the smallest possible area, it was possible to derive the minimum horizontal area utilized by many of the pairs of birds. Since plotted observations included all records of the occurrence of a pair and not merely records of actual or implied defense of a point (such as fights or scolding or singing birds), it seems better to designate the areas delimited in this manner as home ranges rather than as territories (Burt, 1943. *Jour. Mammalogy*, 24:346-352). There was evidence that in some cases the two areas were identical or nearly so.

The study tract consisted of three small ponds, each surrounded by a narrow zone of swamp dock (*Rumex verticillatus*) and mild water-pepper (*Polygonum hydropiperoides*)

and a much wider one of cat-tails (*Typha latifolia*) which gave way in some places to alternates of lizard's-tail (*Saururus cernuus*) and of peripheral, interdigitated, and interspersed second-growth thickets of pin oak (*Quercus palustris*), American elm (*Ulmus americana*), red maple (*Acer rubrum*), shellbark and shagbark hickories (*Carya lacini-osa* and *C. ovata*), flowering dogwood (*Cornus florida*), and 28 other tree species. The average height of the thicket was 30 feet. The canopy was continuous and the understory consisted of a sparse growth of common ragweed (*Ambrosia artemisiifolia*), a sedge (*Carex squarrosa*), three-seeded mercury (*Acalypha virginica*), white-top (*Erigeron an-nuus*), spotted touch-me-not (*Impatiens biflora*), adder's-tongue (*Ophioglossum vulga-tum*), and wood reedgrass (*Cinna arundinacea*). In some places poison ivy (*Rhus radi-cans*) and trumpet creeper (*Campsis radicans*) formed low, dense growths. A zone of weeds, shrubs, and shrubby trees occupied varying areas between the swamp and thicket habitats in several places. The characteristic plants of this transition zone were golden-rod (*Solidago altissima*), tickseed-sunflower (*Bidens aristosa*), great ragweed (*Ambrosia trifida*), swamp-milkweed (*Asclepias incarnata*), beard-tongue (*Penstemon tubaeiflorus*), brambles (*Rubus allegheniensis*), smooth sumac (*Rhus glabra*), common elder (*Sam-bucus canadensis*), American elm, and pin oak. A narrow strip of thicket composed al-most entirely of black willow (*Salix nigra*) lay along the western edge of the area. The ponds and the swamp stages made up about 41 per cent of the total area, the transition zone about 18 per cent, and the two divisions of thicket about 41 per cent. The land was nearly level. It was bounded on the north and south by similar habitats and on the east and west by cultivated fields.

The study area was visited 22 times from April 23 to August 30. Forty-two territorial males of 16 species of birds were present during that period. Home ranges were cal-culated for pairs whose movements were confined entirely to the study area and for which more than five observations were obtained. The arithmetic means, the extremes, and the numbers of pairs studied for eight species which satisfied these requirements are presented in the following table.

Species	Number of pairs	Mean size, acres	Range
Carolina Wren, <i>Thryothorus ludovicianus</i>	3	0.30	0.12-0.61
Catbird, <i>Dumetella carolinensis</i>	2	0.26	0.16-0.36
White-eyed Vireo, <i>Vireo griseus</i>	1	0.33	————
Yellow Warbler, <i>Dendroica petechia</i>	4	0.42	0.15-0.94
Yellow-throat <i>Geothlypis trichas</i>	5	0.56	0.24-1.09
Yellow-breasted Chat, <i>Icteria virens</i>	4	0.33	0.14-0.71
Cardinal, <i>Richmondia cardinalis</i>	5	0.37	0.31-0.45
Indigo Bunting, <i>Passerina cyanea</i>	5	0.26	0.15-0.52

Species resident on the study area but omitted from consideration were Mourning Dove (*Zenaidura macroura*), Yellow-billed Cuckoo (*Coccyzus americanus*), Carolina Chickadee (*Parus carolinensis*), Brown Thrasher (*Toxostoma rufum*), Bluebird (*Sialia sialis*), Blue-gray Gnatcatcher (*Poliotilta caerulea*), Red-winged Blackbird (*Agelaius phoeniceus*), and Red-eyed Towhee (*Pipilo erythrophthalmus*).—RICHARD BREWER, *Department of Zoology, Southern Illinois University, Carbondale, Illinois, December 30, 1954.*