

*platyglossa*), Grassnut Brodiaea (*Brodiaea laxa*), Ground Brodiaea (*B. terrestris*), Purplehead Brodiaea (*B. pulchella*), Soap Plant (*Chlorogalum pomeridianum*), clover (*Trifolium* sp.), and *Linanthus*. **Weather:** Abnormally cloudy, cold, and windy. Precipitation normal. **Coverage:** March 21, 28, 29; April 1, 2, 6, 8, 9, 12, 13, 14, 15, 22, 27, 28, 29, 30; May 4, 6, 7, 10, 11, 12, 13, 14, 21, 22, 23, 26; June 3. Two trips on each date, averaging 25 minutes each, varying between 6:40 a.m. and 12:00 noon and totaling 25 hours. **Census:** W. Meadowlark, 4.5 (17); Sparrow Hawk, 1; W. Bluebird, 1; Lark Sparrow, 1; Violet-green Swallow, 0.5 (females). **Total:** 5 species; 8 territorial males (or females) (30 per 100 acres). **Visitors:** (Total number recorded on the 60 trips): Cliff Swallow, 68; California Quail, 25; Turkey Vulture, 23; Red-tailed Hawk, 17; Mourning Dove, 12; Barn Swallow, 12; Scrub Jay, 8; White-throated Swift, 4; Ash-throated Flycatcher, 4; White-tailed Kite, 1; Red-shafted Flicker, 1; Acorn Woodpecker, 1; White-breasted Nuthatch, 1; Robin, 1; Lesser Goldfinch, 1; Brown Towhee, 1. **Remarks:** Most individuals were seen on the serpentine soil grassland half (dense long grass, 12-24 inches high). The sandstone section has only 0.5 territories each of W. Meadowlark and Sparrow Hawk. Two male Sparrow Hawks used the area, but the females were seldom seen. Two pairs of W. Bluebirds used the area, nesting in bordering Blue Oaks; on May 12 one pair was incubating and the other feeding nestlings. The Lark Sparrows nested in the serpentine area and had 4 eggs on May 4; the nest was empty May 21, and adults were feeding at least one fledgling. One pair of Violet-green Swallows was building a nest in a bordering Blue Oak on May 22; the other Violet-green Swallow nests could not be located. A pair of White-breasted Nuthatches nested in a Valley Oak in the middle of the area, but did not use the grassland itself. On June 3, a Red-tailed Hawk was seen eating a freshly killed Gopher Snake 3-4 feet long. Pete Jensen, Anneke de Werk, Paul Hertz, Stacey Zones, and Dave DeSante assisted on many censuses. — VAN REMSEN, 7160 West 9th Place, Lakewood, Colo. 80215.

#### 64. MIXED UPLAND HABITAT AND SWAMP.

— **Location:** Connecticut; Newtown: 41°24'10"N, 73°14'10"W, Derby Sheet, U.S.G.S. **Size:** 14.2 ha = 35 acres (irregular, pie-shaped, greatest dimensions 653 x 364 yards; surveyed). **Description of Area:** See *Audubon Field Notes* 22: 714-715 (1968). In 1971 a temporary loss of cover occurred through complete destruction by span worms of the first crop of leaves of ash, beech, oak, and dogwood. Maple and hemlock retained a substantial portion of their foliage. Tulip-tree, cedar, walnut, and mulberry were unaffected. **Coverage:** Complete trips, May 15, 17, 18, 20, 22-24, 27, 29, 31; June 2, 4, 6, 7, 9, 11, 12, 14, 16, 19-21; July 3-5, 11, 18, 25. Half trips, May 17, 26, 28; June 1, 5, 10, 13, 17. Hours varied from 4:40 a.m. to 6:00 p.m., E.D.T., and totaled 76 man-hours. There was fragmentary coverage almost daily through June 21. **Census:** Rufous-sided Towhee, 16 (113, 46); Wood Thrush, 13 (92, 37); Ovenbird, 11 (78, 31); Red-eyed Vireo, 7 (49, 20); Rose-breasted Grosbeak, 7 (49, 20);

Yellow-shafted Flicker, 5 (35, 14); Robin, 5 (35, 14); Great Crested Flycatcher, 4 (28, 11); House Wren, 4 (28, 11); Catbird, 4 (28, 11); Black-and-white Warbler, 4 (28, 11); Brown-headed Cowbird, 4 (28, 11) females; Scarlet Tanager, 4 (28, 11); Indigo Bunting, 4 (28, 11); E. Wood Pewee, 3 (21, 9); Blue Jay, 3 (21, 9); White-breasted Nuthatch, 3 (21, 9); Brown Thrasher, 3 (21, 9); Yellowthroat, 3 (21, 9); Baltimore Oriole, 3 (21, 9); Cardinal, 3 (21, 9); Veery, 2.5; Yellow-billed Cuckoo, 2; Black-billed Cuckoo, 2; Downy Woodpecker, 2; E. Phoebe, 2; Black-capped Chickadee, 2; Tufted Titmouse, 2; Yellow-throated Vireo, 2; Blue-winged Warbler, 2; Field Sparrow, 1.5; Ruffed Grouse, 1 female; Hairy Woodpecker, 1; E. Bluebird, 1; Red-winged Blackbird, 1; Chipping Sparrow, 1; Song Sparrow, 1. **Total:** 37 species; 139 territorial males (or females) (981 per square kilometer, 397 per 100 acres). **Visitors:** Individuals seen simultaneously: Com. Crow, 6; Starling, 6; Chimney Swift, 5; Am. Redstart, 4; Turkey Vulture, 2; Red-shouldered Hawk, 2; Mourning Dove, 2; E. Kingbird, 2; Cedar Waxwing, 2; Canada Warbler, 2; House Sparrow, 2; Com. Grackle, 2; Am. Goldfinch, 2; Red-tailed Hawk, Broad-winged Hawk, Whip-poor-will, Ruby-throated Hummingbird, Black-throated Blue Warbler, Chestnut-sided Warbler, E. Meadowlark, 1 each. **Remarks:** Active nests found: Yellow-shafted Flicker, 2; E. Phoebe, 2 (1 and 2 broods); Robin, 2; Wood Thrush, 2; Ruffed Grouse, 1 brood; Black-billed Cuckoo, 1; Hairy Woodpecker, 1; Downy Woodpecker, 1; House Wren, 1. From 1968 to 1971 there have been the following marked fluctuations in the census: Great Crested Flycatcher, 2-2-1-4; White-breasted Nuthatch, 0-1-1-3; Catbird, 3-1-1-4; Brown Thrasher, 2-1-5-1-3; Wood Thrush, 6.5-6.5-7-13; Red-eyed Vireo, 12-7-9-7; Yellowthroat, 1-0.5-0-3; Rose-breasted Grosbeak, 0-1-2-7; total territorial males, 94.5-87.5-97.5-134. One may conjecture that the increased 1971 total reflects the plentiful food afforded by the 1970 span worm infestation, including the moth stage. Also, since the 1970 breeding season, 80-100 acres of woodland within 2.5 miles of the area have been destroyed in superhighway construction. — LAURA H. MOSELEY, R.R. 1, Box 60, Sandy Hook, Conn. 06482.

#### 65. SUBURBAN WILDLIFE SANCTUARY-MIXED HABITAT.

— **Location:** Connecticut; Mid-Fairfield County Youth Museum in Westport; 41°08'N, 73°22'W, Norwalk North, Conn.-N.Y. Quadrangle, U.S.G.S. **Size:** 50 acres (boundary very irregular owing to the attaining of property in small parcels). **Description of Area:** The plot (Wadsworth Wildlife Sanctuary) is basically two habitats. About 20 acres are dry upland woods and 25 acres are low swampy woods. The remaining 5 acres are made up of 3 small grass fields, the immediate landscaped areas surrounding the Youth Museum and one residence. The upland woods is a mature stand of Am. Beech (*Fagus grandifolia*) with small numbers of White Oak (*Quercus alba*), Black Oak (*Q. velutina*), and Black Birch (*Betula lenta*). There are few understorey plants; those most common being Flowering Dogwood (*Cornus florida*) and Greenbrier (*Smilax rotundifolia*). Ground cover is

mostly Canada Mayflower (*Maianthemum canadense*), Ground-pine (*Lycopodium obscurum*), and Running-pine (*L. complanatum*). The low woods is a Red Maple (*Acer rubrum*) swamp with many of the trees up to 40 feet in height with a DBH of 2.5 to 3 feet. Smaller numbers of Yellow Birch (*B. lutea*), White Oak and Am. Beech are interspersed through the area. The understory consists of Highbush Blueberry (*Vaccinium corymbosum*), Spicebush (*Lindera benzoin*), Ironwood (*Carpinus caroliniana*), and small Black Birch. Major ground covers are Canada Mayflower, Ground-pine, and Skunk Cabbage (*Symplocarpus foetidus*). The fields are cut each fall to remain in their grassy state. One small area (1/2 acre) has Red Cedars (*Juniperus virginiana*) growing in it. The low woods swamp holds water into June but then dries up. A stream runs near the swamp and holds water all summer. **Edge:** The sanctuary is surrounded by residences, all of which have at least an acre of property and are set in the woods resulting in no sharp change between the sanctuary and the boundaries. Scientific names for plants taken from M. L. Fernald, *Gray's Manual of Botany*, 8th Ed., 1950. **Coverage:** May 26, 28; June 1, 7, 9, 12, 17, 20, 22, 27; July 2, 4, 6, 7. Hours for June 20 and 27 and July 4 and 6 were between 6:00 and 8:30 p.m. All other trips were between 5:30 and 8:30 a.m. Total man-hours 16. **Census:** House Wren, 7 (14); Rufous-sided Towhee, 7 (14); Robin, 6 (12); Tufted Titmouse, 5 (10); Red-winged Blackbird, 5 (10); Field Sparrow, 5 (10); Yellow-shafted Flicker, 4 (8); Blue Jay, 4 (8); Wood Thrush, 4 (8); Downy Woodpecker, 3 (6); Great Crested Flycatcher, 3 (6); Black-capped Chickadee, 3 (6); Catbird, 3 (6); Brown Thrasher, 3 (6); Veery, 3 (6); Baltimore Oriole, 3 (6); Mourning Dove, 2; Hairy Woodpecker, 2; House Sparrow, 2; Brown-headed Cowbird, 2; Mallard, 1; Ring-necked Pheasant, 1; Yellow-billed Cuckoo, 1; Black-billed Cuckoo, 1; Pileated Woodpecker, 1; E. Wood Pewee, 1; Com. Crow, 1; White-breasted Nuthatch, 1; E. Bluebird, 1; Starling, 1; Blue-winged Warbler, 1; Yellowthroat, 1; Cardinal, 1; Rose-breasted Grosbeak, 1; Song Sparrow, 1. **Total:** 35 species; 91 territorial males (182 per 100 acres). **Visitors:** Green Heron, Wood Duck, Barred Owl, Chimney Swift, Red-bellied Woodpecker, E. Kingbird, E. Phoebe, Barn Swallow, Brown Creeper, Mockingbird, Red-eyed Vireo, Black-and-white Warbler, Prothonotary Warbler, Yellow Warbler, Chestnut-sided Warbler, Ovenbird, N. Waterthrush, Canada Warbler, Am. Redstart, Scarlet Tanager, Am. Goldfinch, House Finch. **Remarks:** This is the first breeding bird census to be taken on the sanctuary and as such will serve as the base year for all future censuses. There were several factors that could have had an effect on the bird population here. First, a fire on April 23 burned about 10 acres of the upland woods. The trees were not killed, but the understory plants and ground cover were completely eliminated. Secondly, there was a heavy defoliation of trees by the Elm Span Worm. The Red Maples in the swamp area were 90% defoliated and the oak and beech of the upland woods about 75%. This may account for the lack of some tree nesters that would normally have been expected such as the Scarlet Tanager and the almost unbelievably absent Red-eyed Vireo. A third

factor is the amount of human traffic through the sanctuary. Up to 300 people use the trails on a weekend day in the spring. Trails are numerous and cover the entire sanctuary. A number of the smaller trails were closed this year in an effort to reduce the traffic in some areas. I would expect bird populations to be somewhat lower here than in a less traveled woodland. **Nests found:** 1 Yellow-shafted Flicker, 2 Hairy Woodpecker, 1 Downy Woodpecker, 1 Brown Thrasher, 2 Robin, 1 Starling, 1 House Sparrow, 2 Field Sparrow, and 1 House Wren, 1 bluebird, and 1 House Sparrow in nest boxes. The Prothonotary Warbler was a territorial bird which sang continually in a section of the swamp from June 1 to 23. No female was in evidence at any time; had there been one present it would have been discovered. The Barred Owl, roosting in a White Pine since January, was heard almost nightly from mid-March to mid-June but there was no indication that it found a mate or successfully nested. — ROBERT C. DEWIRE, *Mid-Fairfield County Youth Museum, Westport, Conn. 06880.*

**66. DECIDUOUS FOREST WITH POND AND BROOK.** — Location: New Jersey; Campgaw Mountain Reservation, Mahwah. **Size:** 41.3 acres (rectangular 250 x 800 yards, paced). **Description of Area:** See *Audubon Field Notes* 19: 623-624 (1965). **Coverage:** June 1, 3, 8, 10, 15, 17, 22, 24, 29. Hours of coverage were 5:30 to 6:45 a.m. on each visit. Total man-hours were 30. **Census:** Wood Thrush, 3 (7); Ovenbird, 3 (7); Mallard, 2; Tufted Titmouse, 2; White-breasted Nuthatch, 2; Catbird, 2; Scarlet Tanager, 2; Yellow-shafted Flicker, 1; Downy Woodpecker, 1; Great Crested Flycatcher, 1; E. Phoebe, 1; E. Wood Pewee, 1; Blue Jay, 1; Black-capped Chickadee, 1; Robin, 1; Veery, 1; Red-eyed Vireo, 1; Chestnut-sided Warbler, 1; Louisiana Waterthrush, 1; Yellowthroat, 1; Baltimore Oriole, 1; Brown-headed Cowbird, 1; Cardinal, 1; Rufous-sided Towhee, 1; Song Sparrow, 1. **Total:** 25 species; 34 territorial males (82 per 100 acres). **Visitors:** Green Heron, Black Duck, Wood Duck, Mourning Dove, Yellow-billed Cuckoo, Belted Kingfisher, Hairy Woodpecker, Com. Crow, Starling, Black-and-white Warbler, Worm-eating Warbler, Blue-winged Warbler, Lawrence's Warbler, Red-winged Blackbird, Com. Grackle, Rose-breasted Grosbeak, Indigo Bunting, Am. Goldfinch. — J. BROTHERTON, MRS. P. HORNAK, F. MUELLER, MRS. N. SJOLANDER, MRS. J. WORRALL, *Fyke Nature Association, Box 141, Ramsey, N.J. 07446.*

**67. MIXED UPLAND HABITAT.** — Location: District of Columbia; the central third of Glover-Archbold Park, a long, narrow stream valley park in the northwest section. **Size:** 14.2 ha = 35 acres (irregularly shaped, roughly 1520 x 1000 feet in outside dimensions). **Description of Area:** See *Audubon Field Notes* 14: 502-503 (1960). **Coverage:** March 31; April 3, 10, 11 (2 trips), 12, 15, 17 (2 trips), 18, 20, 23, 25, 26, 27; May 2, 6, 7, 9 (2 trips), 12, 17, 21, 22, 23, 31 (3 trips); June 2, 5, 7, 15, 17, 19, 20, 22, 26, 27, 29; July 3 (2 trips), 5, 12. Hours ranged from 5:55 a.m. to 9:05 p.m., over half in the a.m. The 43 trips totaled 78 hours, 20 minutes, and gave about 32 complete

coverages of the area, with an average of 2.43 hours per coverage. **Weather:** Clear for 28 trips, overcast or hazy on 11, cloudy on 1, and with light showers on 3. Temperatures ranged from 30° to 90° F., averaging in the 60°-75° range. **Census:** Veery, 28 (198, 80); Cardinal, 22 (155, 63); Starling, 19 (134, 54); Tufted Titmouse, 15.5 (109, 44); Red-eyed Vireo, 14.5 (102, 41); Rufous-sided Towhee, 14 (99, 40); Catbird, 13.5 (95, 39); Carolina Chickadee, 10 (71, 29); Carolina Wren, 8.5 (60, 24); Wood Thrush, 8.5 (60, 24); Blue Jay, 7 (49, 20); Red-bellied Woodpecker, 6 (42, 17); Downy Woodpecker, 6 (42, 17); Acadian Flycatcher, 6 (42, 17); Com. Crow, 5 (35, 14); Bobwhite, 4 (28, 11); Yellow-shafted Flicker, 4 (28, 11); Am. Redstart, 4 (28, 11); Great Crested Flycatcher, 3 (21, 9); Brown-headed Cowbird, 3 (21, 9); Mourning Dove, 2; E. Wood Pewee, 2; Mockingbird, 2; Scarlet Tanager, 2; Hairy Woodpecker, 1.5; Song Sparrow, 1.5; Wood Duck, 1; Broad-winged Hawk, 1; Pileated Woodpecker, 1; White-breasted Nuthatch, 1; House Wren, 1; Brown Thrasher, 1; Blue-gray Gnatcatcher, 1; Ovenbird, 1; House Sparrow, 1; Com. Grackle, 1; Kentucky Warbler, +; Yellowthroat, +. **Total:** 38 species; 223 territorial males (1574 per square kilometer, 632 per 100 acres). **Visitors:** Great Blue Heron, Red-tailed Hawk, Osprey, Yellow-billed Cuckoo, Screech Owl, Chimney Swift, Ruby-throated Hummingbird, E. Phoebe, Rough-winged Swallow, Barn Swallow, Fish Crow, Robin, Cedar Waxwing, White-eyed Vireo, Warbling Vireo, Parula Warbler, Louisiana Waterthrush, Yellow-breasted Chat, Red-winged Blackbird, Baltimore Oriole, Indigo Bunting, Am. Goldfinch. **Remarks:** This 13th census of the area made three records: The highest number of trips, hours of coverage, and total species, combining breeding birds and visitors. On our first year, we had 68 hours and 48 species; in 1960 we had 39 hours, 16 trips, and 45 breeding species plus 12 visitors. Eleven people took part this year, nine in 1960, seven in 1959. The figures this year do not make unexpected changes in the numbers of the commoner birds, but do give more evidence for scarce birds, making it easier to differentiate between those with a full territory and those with a partial one. After dropping back last year, Veeries are again at the top of the list, but the Wood Thrushes continued to increase slightly from the 7 last year, 6 in 1969, and the low of 3 in 1968. We may just have made a more accurate count. This was the first year we had made some dusk trips through the area playing thrush and Veery songs on a tape recorder to inspire full song. Six new species, all visitors, were added to the total list: Great Blue Heron, Osprey, Screech Owl, Rough-winged Swallow, Barn Swallow, and Warbling Vireo. The Screech Owl was also located by playing a tape at dusk after we learned that a nest had been found earlier in the section to the south of the census area. Red-eyed Vireos remain high, Carolina Wrens reached a record high, exceeding the 7 for the past 2 years, and Am. Redstarts continue their decline. Their numbers for the 13 years are: 9, 5, 14.5, 15, 13.5, 12, 7, 10, 8.5, 9, 6, 5, 5, 4. They have never quite recovered from the change of habitat with the sewer construction in 1963, though the center strip has grown up densely since. Catbirds reversed a downward trend, gaining 2.5 pairs

since last year. Starlings, after a record high last year, are down to a more normal level. Parula Warbler dropped from resident to visitor for the first time, but we gained the Wood Duck as breeder, and returned the Broad-winged Hawk to that status after many years. Katharine Mergen and James Deane participated on two census trips. — SHIRLEY A. BRIGGS (compiler, with assistance from those marked with asterisk), KEVIN ADAMS, DOROTHY BELL, MICHAEL L. HOFFMAN, DAVID MEHLMAN\*, JOSEPH B. PHILLIPS\*, MRS. HENRY PUTZEL, RICHARD A. ROWLETT, NAPIER SHELTON, PAUL WAGNER\*, DONALD WEBER\*. *Audubon Naturalist Society of the Central Atlantic States, 1621 Wisconsin Ave., N. W., Washington, D.C. 20007.*

**68. MIXED UPLAND HABITAT.** — **Location:** West Virginia; North Boundary Ridge Study Area, McClintic Wildlife Station, 5.5 miles north-northeast of Point Pleasant; 38°56'39"N, 82°04'08"W, extending WNW along the ridge, beginning about 300 feet uphill from the old cemetery. **Size:** 15 acres (rectangular, 110 x 660 yards, measured). **Description of Area:** The ridge forms the north boundary of a 2000-acre reserve set aside in 1942 during construction of a munitions plant. The land rises about 200 feet above the Ohio River floodplain and is fairly typical of this part of the Ohio Valley. Land use has been a succession of forest, farm, pasture and finally abandonment. There have been no man-made changes in the last 30 years. The partially closed canopy, made up of trees 50 to 60 feet in height and up to 14 inches DBH, includes Red Maple (*Acer rubrum*), Black Cherry (*Prunus serotina*), Red Oak (*Quercus borealis*), Black Locust (*Robinia pseudo-acacia*), Tulip-tree (*Liriodendron tulipifera*), White Ash (*Fraxinus americana*), Slippery Elm (*Ulmus rubra*), and Sassafras (*Sassafras albidum*). The intermediate understory is composed of Redbud (*Cercis canadensis*), Pawpaw (*Asimina triloba*), Flowering Dogwood (*Cornus florida*) and Spicebush (*Lindera benzoin*). Tree climbers are wild grape (*Vitis* sp.), Virginia Creeper (*Parthenocissus quinquefolia*), Poison Ivy (*Rhus radicans*) and Trumpet Vine (*Campsis radicans*). Blackberry (*Rubus* sp.), is distributed throughout and *Rosa multiflora* and Japanese Honeysuckle are becoming well established. The ground cover includes several patches of Periwinkle (*Vinca minor*), Gromwell (*Lithospermum officinale*), May-apple (*Podophyllum peltatum*), and grasses. Christmas Fern (*Polystichum acrostichoides*), New York Fern (*Dryopteris noveboracensis*) and Adder's-tongue Fern (*Ophioglossum vulgatum*) were found. An old haul road, used as the centerline, passes through a grassy opening of about one half acre midway through the plot. **Topography:** The ridge is level at an elevation of 820 to 850 feet with a 20-30% slope on each side of the ridge. **Coverage:** May 28, 29, 30, 31. Ten trips were made between daybreak and 8 a.m., two in late morning and two in late afternoon. Total man-hours, 20. **Census:** Cerulean Warbler, 6 (40); Cardinal, 5 (33); Blue-gray Gnatcatcher, 4 (27); Acadian Flycatcher, 3 (20); Red-eyed Vireo, 3 (20); Indigo Bunting, 2.5; Kentucky Warbler, 2; Rufous-sided Towhee, 2; E. Wood Pewee, 1; Blue Jay, 1;

Carolina Chickadee, 1; Tufted Titmouse, 1; Carolina Wren, 1; Wood Thrush, 1; Yellow-breasted Chat, 1; Summer Tanager, 1; Barred Owl, +; Pileated Woodpecker, +; Red-bellied Woodpecker, +; Hairy Woodpecker, +; Downy Woodpecker, +; Com. Crow, +; Yellow-throated Vireo, +; Ovenbird, +; Scarlet Tanager, +; Brown-headed Cowbird, +; Am. Goldfinch, +. **Total:** 27 species; 46 territorial males (307 per 100 acres). **Visitors:** Cedar Waxwing, Worm-eating Warbler, Blackburnian Warbler, Canada Warbler. **Remarks:** Nests found: One each of Acadian Flycatcher, Blue-gray Gnatcatcher and Cardinal. The territories of the breeding birds were remarkably well established and defined on the plot. Good opposition singing, especially with Cerulean Warblers, solved any problems that arose. All of the Blue-gray Gnatcatchers were found near the centerline and were seen or heard on every trip. A juvenile Barred Owl was seen on 3 trips. Most of the visitors were late-migrating birds. A Black Snake was observed on the plot and Gray Squirrels and E. Cottontails were seen. The type of vegetation provides good nesting sites and cover as well as ample food. This appears to contribute to the number of species and individual birds found in this study. — NEVADA LAITSCH (compiler) and MAXINE THACKER, *Brooks Bird Club, Inc., Wheeling, W. Va. 26003.*

69. **PARTIALLY CUT-OVER PINE-OAK FOREST.** — **Location:** West Virginia; Big Draft Study Area, Greenbrier County, one-half mile west of Anthony Creek Road on Big Draft Road, centered on an aban-

doned road bed running north and south parallel to and about 200 feet east of the present Big Draft Road. **Size:** 15 acres (a rectangle, 110 x 660 yards, measured longitudinally and estimated laterally). **Topography:** The area is almost level; elevation approximately 2500 feet. **Plant Cover:** Described in *Audubon Field Notes* 20: 627-628 (1966). Approximately 40% of the plot, logged during 1970 and now almost barren, is starting to show the growth of a few sprouts of the former trees and a few Blackberry (*Rubus allegheniensis*). It is anticipated that most of the former plants of the forest floor will not do well and will be crowded out by more vigorous growth of blackberries, etc., that grow well in intense sunlight. **Coverage:** June 5 to 8. Twelve trips between daylight and dusk. **Census:** Ovenbird, 5.5 (37); Red-eyed Vireo, 3 (20); Hooded Warbler, 2; Rufous-sided Towhee, 2; Black-capped Chickadee, 1; Catbird, 1; Wood Thrush, 1; Black-and-white Warbler, 1; Golden-winged Warbler, 1; Great Crested Flycatcher, 0.5; Carolina Wren, 0.5; Parula Warbler, 0.5; Chestnut-sided Warbler, 0.5; Scarlet Tanager, 0.5; Sparrow Hawk, +; Ruffed Grouse, +; Hairy Woodpecker, +; Blue Jay, +; Com. Raven, +; Com. Crow, +; Cedar Waxwing, +; Brown-headed Cowbird, +. **Total:** 22 species; 20 territorial males (133 pairs per 100 acres). **Visitors:** Black-billed Cuckoo, Golden-crowned Kinglet, Indigo Bunting, Am. Goldfinch. **Remarks:** Study on this particular area afforded a unique opportunity to observe the changes occurring immediately after the tree crop is harvested from the land. This plot, formerly a relatively mature pine-oak forest, was

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studied by members of the Brooks Bird Club in 1966. Perhaps a better contrast could have been made had the entire area been cut, but this study was interesting. As expected, the Ovenbirds, Vireos, Wood Thrush, and Black-and-white Warbler were occupying the undisturbed portion of the plot. The timbering amounted to a clear cut over the portion that was harvested. The Hooded Warblers, towhees, Catbird and Golden-winged Warblers were found among the slashings and small live brush that was left. Also significant is the overall drop in total population from 1966 to 1971-45 to 20 territorial males. This suggests that even the surrounding areas decline in bird population immediately following the cutting of timber. — ANN and GREGG EDDY, GLEN PHILLIPS and DOROTHY

BROEMSEN (compiler), *Brooks Bird Club, Inc., Wheeling, W. Va. 26003.*

**70. DISTURBED OAK-HICKORY FOREST, PINE STAND, EDGE AND POND.** — Location: Ohio; Camp Falling Rock, Eden Township, Licking County. Size: Approximately 35 acres. Description of Area: This area has been censused annually (except 1943) since 1937. See *Bird-Lore* 39: 379-380 (1937); *Audubon Field Notes* 1: 221-222 (1947) and subsequent years. Continued rechanneling work on the northern edge and removal of most of the dead, standing timber constituted the major disturbing changes in the habitat. Weather: Several heavy rainstorms resulted in noticeable erosion in trails and natural depressions. Rainfall in May was about double the average; temperature was slightly below normal. Precipitation, more than an inch below average in June, was slightly above in July; both June and July were cool. Coverage: March 14, 28; April 18; May 14, 27; June 5, 8, 25, 26. About 50 man-hours. Census: Wood Thrush, 11 (31); Acadian Flycatcher, 10 (29); Red-eyed Vireo, 8 (23); Robin, 6 (17); Cerulean Warbler, 5 (14); Scarlet Tanager, 5 (14); E. Wood Pewee, 4 (11); Catbird, 4 (11); Ruby-throated Hummingbird, 3 (9); House Wren, 3 (9); Cardinal, 3 (9); E. Phoebe, 2; Yellow-throated Vireo, 2; Kentucky Warbler, 2; Indigo Bunting, 2; Chipping Sparrow, 2; Mourning Dove, 1; Yellow-billed Cuckoo, 1; Yellow-shafted Flicker, 1; Red-bellied Woodpecker, 1; Hairy Woodpecker, 1; Downy Woodpecker, 1; Great Crested Flycatcher, 1; Blue Jay, 1; Carolina Chickadee, 1; Tufted Titmouse, 1; White-breasted Nuthatch, 1; Carolina Wren, 1; Blue-gray Gnatcatcher, 1; Warbling Vireo, 1; Ovenbird, 1; Louisiana Waterthrush, 1; Am. Redstart, 1; Brown-headed Cowbird, 1; Song Sparrow, 1. Total: 35 species; 91 territorial males (260 per 100 acres). Visitors: Regular: Green Heron, Ruffed Grouse, Whip-poor-will, Chimney Swift, Belted Kingfisher, Pileated Woodpecker, Red-headed Woodpecker, Com. Crow, Cedar Waxwing, Yellow Warbler, Yellow-throated Warbler, Yellowthroat, Yellow-breasted Chat, House Sparrow, Baltimore Oriole, Com. Grackle, Am. Goldfinch, Rufous-sided Towhee, Chipping Sparrow, Field Sparrow. Irregular: Great Blue Heron, Wood Duck, Turkey Vulture (feeding on the census area), Red-tailed Hawk, Red-shouldered Hawk, Spotted Sandpiper, Great Horned Owl, Barred Owl, E. Kingbird, Rough-winged Swallow, Barn Swallow, Purple Martin, Starling, Red-



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Table 1. Density of the Three Leading Breeding Birds

	1964	65	66	67	68	69	70	71	Total Nests-Pairs	Average
Acadian Flycatcher	11	13	10	9	9	10	9	10	81	10.1
Wood Thrush	8	8	13	12	7	9	8	11	76	9.5
Red-eyed Vireo	10	10	11	10	9	9	8	8	75	9.4
Total Nests	29	31	34	31	25	28	25	29	232	29.0
Total Pairs per 35 acres	87	84	95	90	90	97	93	91	727	90.9
% of total Pairs	33	37	36	34	28	29	27	32		32

Table 2. Species Composition of Spruce-nesting Pairs in the Spruce Area\*\*

Year*	Mourning Dove	Wood Thrush	Robin	Yellow-billed Cuckoo	Black-billed Cuckoo	Catbird	Chipping Sparrow	Scarlet Tanager	Blue Jay	Com. Crow	Cardinal	Cedar Waxwing	Acadian Flycatcher	Brown-headed Cowbird	Field Sparrow	Total Nests	Total Species
1971			1			1	1									3	3
1968			1										1			2	2
1965	1	1									1					3	3
1964										1						1	1
1963	1		1			1				1	1					5	5
1962	1															1	1
1961	1	1	2													4	3
1960											1					1	1
1959	1		1								1					3	3
1958	1						1				1					3	3
1957	1	1									1			1		4	4
1956	2	2									1					5	3
1955	3	1									1					5	3
1954	1	2	1			1	1				1					7	6
1953	2	3	2								1					8	4
1952	3	3					1				1	1				9	5
1951	2	2	1			2	1		1		1					10	7
1950	5	2	1			1	1		1		1					11	6
1949	4	1	1			1	1				1					9	6
1948	4	2	2			1	2	1			2					14	7
1947	6	2				1	2									11	4
1946	4	1	1	1	1	1	1		1							11	8
1945	2	1	1	2	1	1	2			1	1					12	9
1944			1													1	1
1942							1									1	1
1940	1		1				1									3	3
1939											1				1	2	2
Species																	
Total	46	25	18	3	2	10	16	1	3	3	18	1	1	1	1	149	(15)
% of Total Nests	31	17	12	2	1	7	11	0.7	2	2	12	0.7	0.7	0.7	0.7	100	

\*No census in 1943; no nests found in the years not in sequence, including 1937 and 1938.

\*\*These data are confined to the original spruce planting made early in the history of the census area.

Table 3. Yearly Frequency of Spruce Nests Related to Density and Diameter of Trees.

Year	Nests	Species	Total Nests	Total Species	% of Total Nests	% of Total Species	Av. Diam.	* DDI	** DSI
1971	3	3	38	35	8	9	28.7	9.6	9.6
1970	0	0	38	37	0	0	—	—	—
1969	0	0	54	37	—	—	—	—	—
1968	2	2	36	34	6	6	20.0	10.0	10.0
1967	0	0	47	34	—	—	—	—	—
1966	0	0	46	32	—	—	—	—	—
1965	3	3	37	34	8	9	15.0	5.0	5.0
1964	1	1	43	35	2	3	(12.0)	(12.0)	(12.0)
1963	5	5	42	35	12	14	13.8	2.8	2.8
1962	1	1	30	30	3	3	(14.0)	(14.0)	(14.0)
1961	4	3	33	30	12	9	13.2	3.3	4.4
1960	1	1	33	32	3	3	(15.0)	(15.0)	(15.0)
1959	3	3	40	31	8	10	13.0	4.3	4.3
1958	3	3	38	34	8	9	12.3	4.1	4.1
1957	4	4	36	36	11	11	11.2	2.8	2.8
1956	5	3	40	32	13	9	11.0	2.2	3.7
1955	5	3	41	28	12	11	10.4	2.1	3.5
1954	7	6	45	35	16	17	10.6	1.5	1.5
1953	8	4	41	30	20	13	9.1	1.1	2.3
1952	9	5	48	35	19	14	9.3	1.0	1.9
1951	10	7	48	33	21	21	8.6	0.9	1.2
1950	11	6	63	32	17	19	9.3	0.8	1.6
1949	9	6	53	37	17	16	8.7	1.0	1.5
1948	14	7	65	38	22	18	7.5	0.5	1.1
1947	11	4	49	38	22	11	7.3	0.7	1.8
1946	11	8	39	33	28	24	6.1	0.6	.8
1945	12	9	54	32	22	28	6.2	0.5	.7
1944	1	1	9	32	11	3	(8.0)	(8.0)	(8.0)
1942	1	1	43	34	2	3	(5.0)	(5.0)	(5.0)
1941	0	0	35	26	—	—	—	—	—
1940	3	3	13	30	23	10	4.0	1.3	1.3
1939	2	2	21	28	6	7	3.5	1.8	1.8
1938	0	0	37	28	—	—	—	—	—
Totals	149	15	1345	62	11	24			

\*DDI(Diameter-density index): The average diameter divided by the number of nests in spruce trees each year.

\*\*DSI (diameter-species index): The average diameter divided by the number of species which nest in spruce trees each year.

For a relationship between these data and total pairs per 35 acres or 100 acres, see *Audubon Field Notes* 23: 751-754 (1969).

Av. Diameter: Computed in inches at breast height.

winged Blackbird. **Remarks:** Nests found: Red-bellied Woodpecker-April 18, 1 (building). Acadian Flycatcher-June 5, 2 with 3 eggs each; June 8, 2 with 3 eggs each; June 25, 2; June 26, 1 with 3 young 4 days old. Catbird-June 25, 1. Robin-May 27, 2 with young; June 8, 1 with 4 young 10 days old; June 25, 1; June 26, 1. Wood Thrush-June 8, 1 (inactive), 1 with 4 eggs, 1 with 4 young 8 days old; June 26, 1 (building), 1 with 1 egg, 2 fledged. Blue-gray Gnatcatcher-May 14, 1 (building). Am. Redstart-June 25, feeding young out of nest. Indigo Bunting-June 26, 1. A total of 14 nests was found on May 27. This year's density reflects

interacting and basically off-setting relationships between habitat and birds. Loss of habitat, mainly sub-canopy and dead trees, probably caused a shifting of territories by some pairs. This is indicated by the concentration of species occupying sub-canopy niches in the remaining attractive areas and by a lower density of hole-nesting birds (11 in 1970, 8 in 1971). A tendency toward a high population was represented by the three most abundant species, Acadian Flycatcher, Wood Thrush, and Red-eyed Vireo, coupled with an increase of Robins. Modifying the tendency were failures of Ruffed Grouse, Baltimore Oriole, and Summer

Tanager to nest, along with a reduction of several species from two pairs to one. In the past 8 years the Red-eyed Vireo has been declining as a ranking species, whereas the Wood Thrush and Acadian Flycatcher have taken over first place several times. Table 1 presents data relative to these 3 species. For comparable data through 1966 see *Audubon Field Notes* 18: 566-567 (1964) and 20: 668-670 (1966). The relative contribution of these three species (32%) to the total breeding-bird density of the area over the 8-year period is significant. Of the three, the Acadian Flycatcher has had a slight edge in average population; the Red-eyed Vireo has shown more stability; and the Wood Thrush has been the most variable. The maximum variation of each species between adjacent years is: Acadian Flycatcher, 3; Wood Thrush, 5; Red-eyed Vireo, 1. It seems just as important to find reasons why any given habitat has only five pairs of some desirable species, and not twice or three times that number, as it is to know that 100 acres of habitat will support 250 pairs of birds. One of the important aspects of density totals is the relative contribution of the floristic species, structure, and age of the vascular plants which form the habitat. To illustrate this concept data on Norway Spruce (*Picea abies*) are included in Tables 2 and 3. Careful study of these tables will reveal a few outstanding features such as (1) a maximum density associated with diameter, (2) the decline in the attractiveness of habitat, (3) the wide range of species attracted, and (4) the "psychological" difference between species as expressed in part by the frequency of nesting. Mortality and predation seemed to be normal; cowbird activity was much reduced; the effects of weather were determined to be "not significant." For an environmental puzzle, ponder the single record of cowbird activity (Table 2) in 149 nests in the Spruce Area. The return of Catbird, Robin, and Chipping Sparrow to the Spruce Area may have limited significance. In view of the total ecology of these trees, however, the event may not be an isolated response to environment. — A. H. CLAUGUS, 228 S. Lake St., Carey, Ohio, 43316.

**71. MIXED DECIDUOUS-PINE AND OLD FIELD.** — **Location:** Mississippi; Mississippi State University Ecological Research Area, on the South Farm, 3 miles southwest of the main campus at State College. **Size:** Approximately 29 acres (measured with steel tape and compass). **Description of Area:** The area is grazed by cattle. It consists of 3 acres of pine woods, 19 acres of deciduous woods and 7 acres of old field. The overstory consists principally of the following trees in order of decreasing abundance: Hickory, mainly Shagbark (*Carya ovata*); various species of oak, chiefly S. Red Oak (*Quercus falcata*) and Post Oak (*Q. stellata*); Black Gum (*Nyssa sylvatica*), Sugarberry (*Celtis laevigata*), White Ash (*Fraxinus americana*), Winged Elm (*Ulmus alata*), Loblolly Pine (*Pinus taeda*), and Sweet Gum (*Liquidambar styraciflua*). The understory is chiefly oak, hickory, and elm saplings interspersed with Flowering-Dogwood (*Cornus florida*), Ironwood (*Carpinus caroliniana*), E. Red Cedar

(*Juniperus virginiana*), Persimmon (*Diospyros virginiana*), and Osage Orange (*Maclura pomifera*). The ground cover consists primarily of Japanese Honey-suckle (*Lonicera japonica*), Supple-Jack (*Berchemia scandens*), small buckeye (*Aesculus* sp.), sedges (*Cyperus* and *Carex* spp.), and May-apple (*Podophyllum peltatum*). The principal plants of the old field are sedges (*Cyperus* and *Carex* spp.), milkweed (*Asclepias* sp.), fennel (*Foeniculum* sp.) and blackberry (*Rubus* sp.). Scientific names of plants came from Radford, Ahles, and Bell, *Manual of the Vascular Flora of the Carolinas*, 1968. **Topography:** Flat, elevation 320 feet. **Edge:** The west, south, and east sides are bounded by strips of open pastureland. The north side is bounded by a continuation of the deciduous woodland. **Weather:** The temperature ranged from 72° to 95°F. Two count days were clear; three had scattered clouds; three were overcast; one had threat of rain; one had light rainfall. **Coverage:** June 12, 13, 16, 17, 20 (2 trips), 23, 24, 26 (2 trips). Total: 10 trips, at various times from 5:30 a.m. to 8 p.m., with 2 hours per trip for a total of 20 man-hours. The same observer covered the plot on each trip. **Census:** Cardinal, 11 (38); Carolina Chickadee, 8 (28); Yellow-billed Cuckoo, 7 (24); Blue Jay, 6 (21); Bobwhite, 4 (14); Carolina Wren, 4 (14); E. Meadowlark, 4 (14); E. Wood Pewee, 3 (10); Red-eyed Vireo, 3 (10); Kentucky Warbler, 3 (10); Mourning Dove, 2; Great Crested Flycatcher, 2; Tufted Titmouse, 2; Wood Thrush, 2; Summer Tanager, 2; Chuck-will's-widow, 1; Yellow-shafted Flicker, 1; Red-bellied Woodpecker, 1; Red-headed Woodpecker, 1; E. Kingbird, 1; Red-winged Blackbird, 1; Indigo Bunting, 1; Red-shouldered Hawk, +; Barred Owl, +; Hairy Woodpecker, +; Downy Woodpecker, +; Mockingbird, +; Catbird, +; Brown Thrasher, +; Robin, +; White-eyed Vireo, +; Ovenbird, +; Orchard Oriole, +; Field Sparrow, +. **Total:** 34 species; 70 territorial males (241 per 100 acres). **Visitors** (average number per trip): Com. Crow, 3; Com. Grackle, 3; Killdeer, 1; Green Heron, +; Turkey Vulture, +; Black Vulture, +; Com. Nighthawk, +; Chimney Swift, +. **Remarks:** Habitat preferences for the most abundant birds were: Deeply wooded areas—Carolina Chickadee, Carolina Wren, Red-eyed Vireo, Summer Tanager, Wood Thrush, Kentucky Warbler; fringes of wooded areas—Yellow-billed Cuckoo, Blue Jay, Tufted Titmouse, E. Wood Pewee, Great Crested Flycatcher; open areas—Mourning Dove, E. Meadowlark, Killdeer, Bobwhite. Cardinals were scattered throughout the area. — JAMES N. SAPPINGTON, Department of Zoology, Mississippi State University, State College, Miss. 39762.

**72. OAK-HICKORY-WALNUT FOREST AND MEADOW.** — **Location:** Iowa; 5 miles south of Red Oak, on the north side of a gravel road 0.5 mile west of intersection with Highway 48, in Grant Township, Montgomery County; 40°56'N, 95°15'W. **Size:** 40 acres (square, compiled from Montgomery County plat book, measured longitudinally and laterally by pacing and rechecked by pacing, into approximately one-acre blocks). **Description of Area:** See *Audubon Field Notes* 24: 558-559 (1970). Since then there have

been planted 30 Arrowwood (*Viburnum dentatum*), 30 Guelder-rose (*V. opulus*), 20 Wayfaring-tree (*V. lantana*), 30-gallon potted Austrian Pine (*Pinus nigra*), and 30-gallon potted Ponderosa Pine (*P. ponderosa*), along a portion of the south perimeter of the plot, plus about a dozen other assorted trees. In 1970 a severe storm toppled many trees (at least 50); approximately a dozen large oaks were uprooted and the lower end of the lane to the creek was blocked by a dozen large elms, since cleared away. **Edge:** Cultivated Soy Beans lie to the east; hay, seeded, lies to the south across a road; an extension of the timber on the plot lies to the west and north; northeastward, formerly a pasture full of thistles, was plowed and seeded to corn this spring. **Topography:** Rolling, with elevation about 1100 feet. Three springs originate on the study plot; two of these never freeze and run constantly. All 3 springs run into a creek that empties into the East Nishnabotna River. **Coverage:** May 1, 2, 8, 29; June 1, 2, 3, 4. Hours were from 5:15 to 9:15 a.m. C.D.S.T. Total 20.3 man-hours, plus observations during the period. **Census:** House Wren, 12 (30); Dickcissel, 11 (28); Grasshopper Sparrow, 11 (28); House Sparrow, 10 (25); Bobwhite, 9 (22); Robin, 7 (18); Mourning Dove, 6 (15); Rufous-sided Towhee, 6 (15); Field Sparrow, 6 (15); Black-capped Chickadee, 5 (12); Yellow-billed Cuckoo, 4 (10); Blue Jay, 4 (10); Tufted Titmouse, 4 (10); Brown Thrasher, 4 (10); Cardinal, 4 (10); Yellowthroat, 4 (10); Ring-necked Pheasant, 3 (8); Downy Woodpecker, 3 (8); E. Wood Pewee, 3 (8); Catbird, 3 (8); E. Meadowlark, 3 (8); Red-winged Blackbird, 3 (8); Brown-headed Cowbird, 3 (8); Great

Horned Owl, 2; Chimney Swift, 2; Red-headed Woodpecker, 2; Barn Swallow, 2; E. Bluebird, 2; Loggerhead Shrike, 2; Baltimore Oriole, 2; Rose-breasted Grosbeak, 2; Am. Goldfinch, 2; Yellow-shafted Flicker, 1; E. Kingbird, 1; Great Crested Flycatcher, 1; White-breasted Nuthatch, 1; W. Meadowlark, 1; Indigo Bunting, 1. **Total:** 38 species; 152 territorial males (380 per 100 acres). **Visitors:** Com. Nighthawk, Com. Crow, Killdeer. **Remarks:** Crows (about 10-12) were often observed harassing the owls during the day. The Chimney Swifts were noted particularly in late afternoon and early evening. The lack of Starlings surprised me. I am indebted to my husband, George Franek, for the hours he spent measuring, staking and rechecking the study plot, and to the S.C.S. Office for help in printing, which made this study possible. — DOROTHY L. FRANEK, Route 3, Box 75, Red Oak, Iowa 51566.

**73. MIXED PRAIRIE PARK.** — **Location:** Nebraska; Chet Ager Nature Center, in the southwest corner of Pioneers Park, Lincoln. **Size:** 39.5 acres. **Description of Area:** First described in *American Birds* 25: 648-649 (1971). **Coverage:** April 30; May 3, 25, 26, 27; June 2, 4, 22, 25, 28; July 2, 6, 7, 15. The 14 trips were taken between 5 a.m. and 10 p.m., and totaled 46.5 man-hours. **Census:** Red-winged Blackbird, 29 (73); Mourning Dove, 19 (48); House Wren, 13 (33); Com. Grackle, 13 (33); Rough-winged Swallow, 12 (30); Brown Thrasher, 11 (28); Yellowthroat, 11 (28); House Sparrow, 11 (28); Cardinal, 9 (23);

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Am. Goldfinch, 9 (23); Baltimore Oriole, 8 (20); Blue Jay, 7 (18); Catbird, 7 (18); Robin, 7 (18); Black-capped Chickadee, 6 (15); E. Meadowlark, 6 (15); Warbling Vireo, 5 (13); Brown-headed Cowbird, 5 (13) females; Bobwhite, 4 (10); Yellow-shafted Flicker, 4 (10); Red-headed Woodpecker, 4 (10); E. Kingbird, 4 (10); Dickcissel, 4 (10); Rose-breasted Grosbeak, 3 (8); Black-headed Grosbeak, 3 (8); Yellow-billed Cuckoo, 2; Downy Woodpecker, 2; Yellow Warbler, 2; Indigo Bunting, 2; Mallard, 1; Ring-necked Pheasant, 1; Killdeer, 1; Great Horned Owl, 1; Screech Owl, 1; Com. Nighthawk, 1; Ruby-throated Hummingbird, 1; Belted Kingfisher, 1; Hairy Woodpecker, 1; Great Crested Flycatcher, 1; White-breasted Nuthatch, 1; Loggerhead Shrike, 1; Bell's Vireo, 1; Red-eyed Vireo, 1; Orchard Oriole, 1; Blue Grosbeak, 1; Chipping Sparrow, 1; W. Meadowlark, +; Grasshopper Sparrow, +; Lark Sparrow, +; Field Sparrow, +. **Total:** 50 species; 239 territorial males or females (605 per 100 acres). **Visitors** (average number seen/number of censuses seen): Com. Crow, 3/10; Red-tailed Hawk, 1/7; Chimney Swift, 2/6; Am. Coot, 4/5; Barn Swallow, 2/5; Purple Martin, 4/4; Green Heron, 1/3; Chestnut-sided Warbler, 2/3; Pied-billed Grebe, 1/2; Am. Bittern, 1/2; Yellow-crowned Night Heron, 1/2; *Empidonax* Flycatcher, 1/2, Great Blue Heron, 1/1; Shoveler, 1/1; Blue-winged Teal, 1/1; Cooper's Hawk, 1/1; Swainson's Hawk, 1/1; Sora Rail, 1/1; Spotted Sandpiper, 1/1; Black Tern, 8/1; W. Kingbird, 4/1; E. Phoebe, 1/1; Tree Swallow, 2/1; Long-billed Marsh Wren, 1/1; Wood Thrush, 1/1; Starling, 2/1; Yellow-breasted Chat, 3/1; Brewer's Blackbird, 4/1; Yellow-headed Blackbird, 1/1; Savannah Sparrow, 1/1; Song Sparrow, 1/1. **Remarks:** Nest searches were made and 61 nests of 19 species were found. A colony of House Sparrows in a martin house is not in this total of 61. The active nests were: Rough-winged Swallow, 12; Mourning Dove, 8; Red-winged Blackbird, 7; House Wren, 6; Robin, 4; Red-headed Woodpecker, 3; Brown Thrasher, 3; Baltimore Oriole, 3; Downy Woodpecker, 2; Blue Jay, 2; House Sparrow, 2 (plus colony), Com. Grackle, 2; Ring-necked Pheasant, 1; Yellow-shafted Flicker, 1; E. Kingbird, 1; Loggerhead Shrike, 1; Warbling Vireo, 1; Orchard Oriole, 1; Cardinal, 1. Young of the following species were seen: Mallard, Bobwhite, Screech Owl, Downy Woodpecker, Rough-winged Swallow, House Wren, Robin, Loggerhead Shrike, Warbling Vireo, Red-winged Blackbird, Orchard and Baltimore Oriole, Rose-breasted and Black-headed Grosbeak, Am. Goldfinch. The Black-headed Grosbeaks are an extreme rarity in the eastern part of Nebraska. Pairs were seen here during May, June and July, and adults were seen carrying food. No nests could be found. The last reported nesting activity in eastern Nebraska was in 1935 in Lincoln, Lancaster County. One male was seen in June 1937. There have been no summer reports since and very few migration reports. The birds seen this summer were not hybrids with the Rose-breasted Grosbeak. The Blue Grosbeak is also rarely seen in Nebraska. Although seen and heard singing several times, no nesting activity was observed. Twelve pairs of Rough-winged Swallows were observed nesting in the bank of Salt Creek bordering the Nature Center. The Red-winged

Blackbirds were mostly confined to the edges of the marshes. Singing males were so numerous that it was impossible to get a completely accurate count. As many as 5 males were frequently seen within 2-3 feet of each other. Although this was the first breeding-bird census on this site, the Yellowthroats seemed to be more numerous than any regular observer could remember. At one spot, three could be heard singing at the same time, during every census. Four House Wrens nested successfully in boxes within a few yards of each other in an Austrian Pine area. They are included in the wren territories because four territories were plotted in the area before the houses were put up. Because of the irregular shape of the area it was impossible to lay out parallel census lines. The many trails on the plot were used to traverse it. In early spring wood stakes were placed at intervals along the trails to serve as listening posts, but they proved unsatisfactory because of the great density of birds encountered. To get an accurate count it became necessary to stop, look, and listen at irregular intervals. Many thanks go to Junior League volunteers Sue Blackman, Kay Dimon, and Ann Myers for their nest-finding efforts. Special thanks to Dr. Esther Bennett for her nest searching and the many other kind things she did to make it possible to carry out the census. — NORMA G. JOHNSON, 1204 Idylwild Drive, Lincoln, Neb. 68503.

[The following report is not included with the regular studies as it departs from the established approach recommended for Breeding-bird Censuses. This narrow, strip census presents many problems in accurately determining species' territories. It is suggested that workers who wish to establish plots in city and urban areas follow the example of Census 49 (*Audubon Field Notes* 24: 774-775) or 51 (24: 569-570). — Ed.]

74. CITY STREETS AND YARDS. — Location: Colorado; between 10 Emerson Street and 4040 East Louisiana, Denver. Size: A strip 50 feet in width on either side of the streets selected, 5.5 kilometers (3.4 miles) long. Description of Area: The census was taken on a linear route. The portion covered divides naturally into four areas of slightly differing characteristics. Area I: 1.1 kilometers (0.7 mile); trees mature, houses 35-50 years old, with a few apartments 5-25 years old. Area II: 1.8 kilometers (1.1 miles); Washington Park- mature trees spaced with open grassy lawns and 2 reservoirs- a heavily used city park. Area III: 0.8 kilometer (0.5 mile); similar to Area I, with mature trees forming a canopy over the street, but with newer houses- 15-35 years. Area IV: 1.8 kilometers (1.1 miles); an area with houses 5-15 years old; younger trees, no overhanging canopy, with fewer planted close to the street as there is no strip between the street and the sidewalk; one four-block stretch has a seminary campus on one side, with elms averaging 25 feet in height planted in rows. Tree densities are based on actual counts, including those within the ideal 50-foot line on either side of the streets. A quantita-

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Table 1. Tree Habitats.

Tree	Area per	I		II		III		IV		TOTAL	
		km	mi	km	mi	km	mi	km	mi	km	mi
Elms (Am., Chinese, Siberian)		49	77	74	121	129	206	35	57	64	104
Maples		71	101	21	35	19	26	5	8	26	41
Fruit trees		16	26	1	1	16	36	21	34	13	20
Cottonwood		5	7	11	17	-	-	-	-	4	7
Oak		-	-	10	16	-	-	-	-	4	6
Deciduous (other including Linden, willow, Russian Olive)		24	37	42	68	19	30	22	36	27	44
Spruce (mostly Colorado Blue)		27	43	25	41	37	50	28	45	27	44
Juniper		22	34	5	8	16	26	39	64	21	34
Douglas-fir		15	24	19	31	9	14	2	4	11	18
Piñon Pine		-	-	-	-	-	-	18	23	5	7
White Fir		-	-	3	5	-	-	-	-	1	2
Pine (other)		-	-	3	5	6	10	4	6	3	5
TOTAL		229	369	214	344	251	404	174	280	206	332

tive description of the habitats is given in Table 1. **Coverage:** March 18, 23, 27, 30, 31; April 2, 6, 7, 12, 27, 28; May 3, 4, 19, 24, 27; June 3, 4, 7, 10, 11, 14, 15, 18, 21, 24, 28; July 1, 19, 22, 26, 29; August 2, 5. Actual coverage of the area was at least 3 times per week from March 18 through August, except for the first 2 weeks in July. All trips made by bicycle. **Census:** Summarized in the Table 2, below, in which territorial males are listed by A, census; B, per linear kilometer; and C, per linear mile. **Visitors:** Chimney Swift, Com. Nighthawk, Blue Jay, Evening Grosbeak. **Remarks:** The lower population in the park probably related to the expanses of grass without trees. Rock Doves nested on the roof sills of two houses in Area I; since they flock, their population is something of an estimate. Likewise, the Mourning Dove is a baffling bird to count in this type of census, because it does not restrict itself to a small area, but moves about rather freely. The count of Mourning Doves is based upon birds calling in the same place with some frequency, plus nests located. The W. Kingbird nested on

a power pole in an alley next to the busiest street in Denver; pairs have nested along that street regularly in recent years. Starlings found nesting sites in trees in which holes had developed or been dug by flickers. The Solitary Vireo is not a nesting bird of the plains, and was definitely out of place here; however it sang from an identifiable territory from May 24 to June 18. The grackles nest in evergreens; the pairs counted in Washington Park were probably about a quarter of a colony. The single pair of grackles in Area IV began construction of a nest in an isolated Piñon Pine, but abandoned it without laying eggs. The House Finches nest in surprising proximity to each other; last year five pairs nested within the same 200 x 200-foot lot around an office building. This is the first year of substantial damage from Dutch Elm disease. During the course of the summer 20-40 trees were removed from the study line, mostly from Washington Park, so the city habitat may undergo a noticeable change. — HUGH E. KINGERY, 10 Emerson St., Denver, Colo. 80218.

Table 2. Summary of territorial males.

Species	Area	I			II			III			IV			TOTAL		
		A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
House Finch		12	11	17	2			7	9	14	24	14	22	45	8	13
House Sparrow		10	9	14	1			10	12	20	15	8	14	36	7	11
Robin		6	5	9	6	3	5	7	9	14	12	7	11	31	6	9
Starling		7	6	10	11	6	10	3	4	6	1			22	4	6
Mourning Dove		5	4	7	4	2	4	4	5	8	2			15	3	4
Yellow Warbler		2			2			1			5	3	5	10	2	3
Rock Dove		3	3	4	-			3	4	6	-			6	1	2
Red-shafted Flicker		1			3	2	3	1			1			6	1	2
Com. Grackle		-			5	3	5	-			1			6	1	2
Chipping Sparrow		-			1			-			1			2	+	1
W. Kingbird		-			-			-			1			1	+	+
Solitary Vireo		-			1			-			-			1	+	+
Black-headed Grosbeak		-			-			1			-			1	+	+
TOTAL		46	41	66	36	20	33	37	46	74	63	36	57	182	33	54