

25TH WINTER BIRD-POPULATION STUDY

Edited by Ronald A. Ryder

List of Studies

<i>Habitat</i>	<i>State or Province</i>	<i>Hec- tares</i>	<i>Birds per sq. km.</i>	<i>Hrs. Obs.</i>	<i>Spe- cies</i>	<i>Yrs. of Study</i>
A. Forest Habitats						
1. Upland Beech-Maple Forest	Connecticut	8.1	99	6.8	10	1
2. Black Spruce-Tamarack Bog	New York	4.6	304	40.8	10	1
3. Upland Oak Forest	New York	11.7	42	21.7	6	1
4. Maturing Upland Red Pine-White Pine Plantation	New York	15.4	273	18.0	8	2
5. Upland Stream Bottom Deciduous Woods	Pennsylvania	24.3	581	14.0	24	1
6. Mixed Hardwood Forest	Maryland	11.3	521	15.5	28	14
7. Mature Deciduous Floodplain Forest	Maryland	17.8	594	17.1	25	20
8. Hickory-Oak-Ash Floodplain Forest	Maryland	18.4	1064	29.3	33	1
9. Upland Tulip-tree-Maple-Oak Forest	Maryland	12.0	401	20.1	30	1
10. Forest Developing after Cultivation	Maryland	8.1	198	12.3	18	4
11. Cove Hardwoods	West Virginia	6.1	560	15.0	24	1
12. Upland Oak-Hickory Hardwood Forest	Virginia	60.2	91	15.9	17	2
13. Hardwood-Softwood Forest	North Carolina	15.0	67	3.5	17	29
14. Southern Mixed Hardwood Forest	Georgia	10.1	573	21.0	25	9
15. Mature Deciduous Woodland	Ohio	8.1	494	20.0	20	2
16. Old Growth Beach-Tulip-tree-Black Gum Forest	Indiana	10.1	992	19.2	31	1
17. Oak-Maple Forest and Forest-Edge	Illinois	22.3	85	28.0	23	37
18. Bottomland Oak-Gum-Cypress Forest	Mississippi	11.4	1372	15.0	32	2
19. Mixed Pine-Deciduous Forest	Louisiana	8.9	719	11.0	27	2
20. Lower Foothills, Ponderosa Pine Forest	Colorado	8.1	198	10.5	12	7
21. Lodgepole Pine Forest with Aspen	Colorado	13.4	187	12.0	8	3
22. Mature Douglas Fir Forest	California	9.8	3196	21.3	22	1
23. Riparian Willow Woodland	California	4.0	(6153)	32.0	44	1
24. Deciduous Oak Woodland	California	3.2	3799	27.1	34	3
B. Forest Mixed with Other Habitats						
25. Upland Oak-Maple Forest, Second Growth, Meadow and Edge	Connecticut	8.1	235	7.2	17	2
26. Floodplain Forest and Cultivated Bottomland	New York	51.8	376	20.0	30	2
27. Upland Oak-Wild Grape Woods	Pennsylvania	20.2	781	16.0	26	1
28. Open Swamp and Fields	Maryland	10.1	830	3.5	36	1
29. Mixed Upland Habitat	District of Columbia	14.2	911	39.2	34	13
30. Abandoned Strip Mine	Virginia	25.9	568	9.2	39	3
31. Wooded Creek Bottom	Nebraska	8.1	457	5.8	24	2
32. Floodplain Cottonwood Forest	Colorado	9.7	762	18.0	17	1
C. Brush, Grassland and Desert						
33. Mixed Prairie Park	Nebraska	16.0	1670	22.0	35	2
34. Mesquite-Juniper Canyon Bottomland	Texas	12.5	1639	35.8	47	5
35. Live Oak-Mesquite Brushland	Texas	12.1	865	12.7	30	6
36. Riparian Woodland: Oak-Juniper Association	Arizona	8.1	1446	10.9	31	4
37. Desert Scrub: Whitethorn Association	Arizona	8.1	297	7.1	19	3
38. Coastal Chaparral	California	13.8	821	12.0	16	1

Habitat	State or Province	Hec-tares	Birds per sq. km.	Hrs. Obs.	Spe-cies	Yrs. of Study
D. Habitats Including Open Water						
39. Exposed Cove and Adjacent Ocean	Maine	43.7	1551	8.0	18	3
40. Reservoir	Tennessee	40.5	15	4.0	4	2
41. Rocky Shoreline and Adjacent Ocean	California	560.0	96	22.4	39	1
E. Croplands						
42. Partially Abandoned Hayfields and Pastures	Connecticut	7.7	520	15.2	32	1
43. Upland Farm Land	New York	67.2	430	22.0	20	2
44. Cultivated Field	North Carolina	36.4	258	15.0	11	14
45. Corn Field	North Carolina	40.5	909	19.5	16	9
46. Irrigated Pastureland, Weed Areas, Tree Rows	Oregon	19.4	782	8.2	21	2
F. Urban Habitats						
47. Urban Park	South Carolina	8.1	1804	7.3	33	2
48. Suburban School Park	Florida	8.0	725	12.1	19	4
49. Urban Residential Area, IV	Ontario	101.2	101	16.5	5	1
50. Urban Residential Area, V	Ontario	87.0	217	23.3	15	1
51. Forested City Park	Ontario	10.1	267	13.3	14	2
52. Residential Street	Ohio	17.6	660	?	13	2
53. City Park	Ohio	29.3	232	15.0	11	3
54. Suburban Woodlot	Illinois	8.1	680	10.5	25	5
55. City Park	Iowa	13.4	180	12.5	15	18
56. Suburban Nature Center	California	34.4	884	17.5	54	2

1. UPLAND BEECH-MAPLE FOREST.—**Location:** In northwestern part of town and northern portion of 280-acre Audubon Center of Greenwich, Fairfield County, Connecticut; Glenville, Conn. Quadrangle, USGS. **Size:** 8.09 ha = 20 acres (rectangular, surveyed). **Description of Area:** See *American Birds* 25: 970-971 (1971). **Weather:** 1951-1971 averages are shown in parentheses. Average temperatures: January, 30.4°F. (28.1°); February, 27.4° (30.8°). Precipitation (inches): January, 2.05 (2.78); February, 4.68 (3.41). The ground was free of snow during most of the count period. The snowfall for January was 1.62 in. and for February 16.9. Since most of the periods of snow were followed by mild days, any accumulations soon disappeared. Weather information from the weather station at the Stamford Museum 7 miles to the east. **Coverage:** Dec. 31; Jan. 15, 23; Feb. 26; March 4, 11 (twice). Total: 7 trips averaging 58 minutes each. Trip hours were between 8:10 a.m. and 4:50 p.m. **Count:** (average total, followed in parentheses by birds per square kilometer and birds per 100 acres) Downy Woodpecker, 2 (25, 10); Black-capped Chickadee, 2 (25, 10); Hairy Woodpecker, 1 (12, 5); Blue Jay, 1 (12, 5); Com. Crow, 1 (12, 5); White-breasted Nuthatch, 1 (12, 5); Sharp-shinned Hawk, +; Pileated Woodpecker, +; E. Bluebird, +; Am. Goldfinch, +. **Average Total:** 8 birds (density 99 per sq. km., 40 per 100 acres). **Remarks:** The Downy Woodpecker and the chickadee were noted on 5 trips, Hairy Woodpecker and nuthatch on 4, Pileated Woodpecker on 3, and Blue Jay on 2. Two bluebirds were observed on Jan. 15 passing slowly through the area and were being followed rather closely by the Sharp-shinned Hawk. Pileated Woodpeckers had nested in the area last spring and those observed on this census were seen in the late

afternoon near this old nesting hole. Seen overhead, but not counted, were 3 more crows. The area was frequented by White-tailed Deer (*Odocoileus virginianus virginianus*).—*WM. BOLTON COOK and GARY E. PALMER (compiler), 264 Davis Avenue, Greenwich, Conn. 06830.*

2. BLACK SPRUCE-TAMARACK BOG.—**Location:** The Mud Lake bog is about 2 miles N. of Pine Lake on South Hill and about 2 miles E. of West Davenport, Delaware County, New York. It is part of an 1100-acre ecological preserve owned by Hartwick College and partially bounded by State Forest and Otsego County Forest. Approximate coordinates on West Davenport Quadrangle, USGS: 42° 29' N, 74° 55' 45" W. The bog plot is labeled Mud Lake on the above USGS map. The Otsego County-Delaware County line bisects it. **Size:** 4.6 ha = 11.3 acres of vegetation (1.9 acres of central water not included in plot area) (elliptical, measured into a square grid of 16 one-acre units by steel tape and many measured vegetation edge points connected to give the vegetation zone ellipses for a plot map on graph paper, from which, zonal areas and widths were determined). **Description of Area:** Mud Lake is a typical bog pond with little or no surface inflow or outflow, nearly elliptical in shape with 1.9 acres of water at the approximate center of the bog. It is composed of three major ring-shaped vegetation zones totaling 11.3 acres, with the outside perimeter being the edge of the original pond. From the inside out the zones have been labeled I (open zone), II (shrub zone), and III (tree zone). Zone I (2.6 acres, width varying from 50 ft. to 107 ft.) is a floating mat of vegetation composed mainly of Sphagnum moss, Leatherleaf (*Chamaedaphne caly-*

culata), Bog Rosemary (*Andromeda glaucophylla*), Sundew (*Drosera rotundifolia*), Pitcher Plant (*Sarracenia purpurea*), Small Cranberry (*Vaccinium oxycoccos*), Bog Grass and others, with 40-50 small trees (Black Spruce and Tamarack). (A quantitative description of this zone will be included with the Breeding Bird Census of this area to be done in 1972.) Zones II and III, 3.6 (width 50 ft. to 124 ft.) and 5.1 (width 42 ft. to 191 ft.) acres respectively, are both tree zones. II, however, can be better described as a shrub zone, as there is a much higher density of shrubs in that area. Sphagnum moss and Cinnamon-Fern (*Osmunda cinnamomea*) are characteristic of both. These zones are described quantitatively according to a method by James and Shugart (*AFN* 24: 727-736, 1970). Vegetation study is based on 6.3, 8.4, and 14.7-0.01 acre rectangles for zones II, III and II + III combined, respectively. These rectangles actually comprise 6 six-foot wide radial strips, each cutting zones II and III and running from the water side out to the bog's outside edge, as the spokes in a wheel. (Eight radii gave data within the tolerances suggested by James/Shugart, indicating 6 as sufficient.) (Numbers correspond to zones II, III and II + III in that order.) For trees 3 in. and over there are 889, 1013, and 973 trees/acre; total basal area is 157, 132 and 143 sq. ft./acre. Species comprising 93% of the total number of trees (figures after each tree for each zone and both zones combined give number trees/acre, relative density (%), relative dominance, frequency, in that order); Black Spruce (*Picea mariana*)—II (301,34,41.4,84); III (95, 9.4,9.1,84); II + III (184,19.2,24.3,100); Tamarack (*Larix laricina*)—II (95,10.7,6.1,84); III (48,4.7,5.5,33); II + III (68,7.1,5.7,84); Red Maple (*Acer rubrum*)—II (127,14.3,15.2,84); III (250,24.7,22.7,100); II + III (197,20.6,19,100); E. Hemlock (*Tsuga canadensis*)—II (64,7.1,16.2,50); III (250,24.7,33.6,100); II + III

(170,17.7,25.2,100); Blowdown trees—II (175,19.7,11, 100); III (143,14.2,11,50); II + III (156,16.6,11,100); Dead standing trees—II (95,10.7,8,50); III (155,15.3, 11.8,50); II + III—(29,13.5,10,66). Other trees include Paper Birch (*Betula papyrifera*), Yellow Birch (*B. alleghaniensis*), White Pine (*Pinus strobus*), Sweet Birch (*B. lenta*) and White Oak (*Quercus alba*). Trees by diameter size class (figures after each size class give number trees/acre, relative density (%), basal area in sq. ft./acre and relative dominance): A (3-6 in.)—II (700,78.5, 70,45); III (916,90.5,91.6,69); II + III (823,86,82.3, 58); B (6-9 in.)—II (111,12.5,33.4,20); III (72,7.5,21.4, 16); II + III (88,9.2,26.5,19); C (9-12 in.)—II (64,7.1, 38.2,24); III (12,1.2,7.2,5); II + III (34,3.5,20.4,14); D (12-15 in.)—II (16,1.8,16,10); III (12,1.2,12,9); II + III (14,1.4,13.6,9.5). Shrub stems/acre: II (6538); III (2084); II + III (3970). Shrubs included Mountain Holly (*Nemopanthus mucronata*), Speckled Alder (*Alnus rugosa*), Northern Wild-Raisin (*Viburnum cassinoides*), young conifers, young deciduous trees (Red Maples mostly) and dead shrubs. In zone II over 60% of the shrubs were of the first three mentioned and others. In zone III the young conifers and young deciduous trees comprised the majority. In both zones approximately 23% of the stems counted were dead. Canopy cover (in Winter): II (50%), III (35%). Canopy height: Average 30-35 ft., maximum 45-50 ft. for both zones II and III. A zone of variably thick Hemlocks lies outside and circles the bog (plot). On the north and east sides this zone reaches a width of about 100 yds., but in other places its width is about 20 yds. or less. Some Hemlocks, both in the bog and out, are up to 18 in. in diameter. Zone I, ground cover, and Summer canopy cover will be quantitatively described in the 1972 Breeding Bird Census of this plot. Plant names are from M. L. Fernald, *Gray's Manual of Botany*, 8th ed., 1950. This



Study 2. Spruce-Tamarack Bog. View north from southwest side of pond. Photo/J. Robert Miller.

area was burned over about 70 years ago and has not been disturbed since. **Edge:** Pond—Zone I, 1000 lineal ft; zone I—Zone II, 1500 lineal ft; zone III—bog edge, 2700 lineal ft; and immediately outside the bog (plot) the hemlock elliptical zone has a diffuse edge with the surrounding deciduous forest (measurements by map measuring wheel on the plot map). South Hill is almost all forested for some miles along its length (NE-SW). It is deciduous with some lower slopes of Hemlock. The Upland Oak Forest Plot (Study No. 3 in this issue) is typical of the higher deciduous ridges and lies $\frac{1}{4}$ mile southwest of the bog at about the same elevation. Nearest valley roads, buildings, and fields are about $1\frac{1}{2}$ miles to the north and south. There are 3 "jeepable" trails to Mud Lake from the two valleys, but it is visited by relatively few people and is now posted as a no trespassing—ecological preserve (1971). **Cover:** The bog plot itself is an excellent cover center (zones II, III) as is, to a lesser extent, the circle of hemlocks surrounding it. A thick evergreen swamp lies 0.4 mile to the east and a lengthy White Pine-Hemlock ravine (north-south) 0.5 mile to the west. The latter has sizeable thick swamp areas. **Topography:** Elevation is 1780 ft. The land surrounding the bog on the west, south and southeast sides slopes slightly upward to 1800 ft. which is the highest level of the section of South Hill. On the northeast the land starts to drop off gently from the bog (plot) outer edge and a brook begins to flow at this point. (There is no direct flow outward from the pond's edge.) **Water:** A northeasterly brook starts at the NE bog edge. Another brook rises and begins its flow southwesterly at a point 0.4 mile to the southeast. **Food:** No unusual conditions noted. Note the number of blowdowns and dead trees in the Description of Area. No birds foraged significantly in the open zone (I) except occasionally chickadee in the few small Tamaracks and Black Spruces. **Weather:** Trips were made in all kinds of weather. Trip temperatures averaged about 27°, with snow cover varying 1 in. to 14 in., always present, and averaging 4.7 in. Broome County Airport (75 miles to the southwest) supplied all the following weather data. For the 34-day study period temperatures ranged from -4° to 54°F. with average of daily highs and lows of 22° and total precipitation of 1.75 in. (water equivalent). As compared with other years January departed by +0.9° and -1.2 in. in precipitation. **Coverage:** Jan. 9, 10, 15, 19, 21, 22, 23, 24, 26, 29, 30; Feb. 6, 7, 12. Total: 14 trips, at varying times between 8:40 a.m. and 4:30 p.m., averaging 175 observer minutes each. **Count:** This is given first for the 11.3 acre plot. The second number in parentheses is the average per trip per 100 acres using the same average per trip count as before but using only the actual forage area—i.e., shrub (II) and tree (III) zones (8.7 acres). Black-capped Chickadee, 7 (62) (81); Pine Grosbeak, 5 (44) (58); Hairy Woodpecker, 1 (9) (12); Red-breasted Nuthatch, 1 (9) (12); Ruffed Grouse, +; Blue Jay, +; White-breasted Nuthatch, +; Brown Creeper, +; Pine Siskin, +; Red Crossbill, +. **Average Total:** 14 birds (density, 124 (163) per hundred acres). **Remarks:** The chickadee was noted on all trips, the Pine Grosbeak on 10 trips, the Hairy Woodpecker on 8 trips and the Red-breasted Nuthatch on 7 trips. Five Pine Grosbeak flocks were seen over the plot on 4 trips and 7 Evening Grosbeak flocks over on 7 trips. An owl or hawk killed and ate half a Snowshoe Hare within the

plot. Black-capped Chickadee, Hairy Woodpecker, Blue Jay and White-breasted Nuthatch were recorded just off the plot several times (2 trips, 2 trips, 3 trips, 1 trip). —J. ROBERT MILLER, Dept. of Chemistry, and ROBERT FRITZ, Hartwick College, Oneonta, N.Y. 13820.

3. UPLAND OAK FOREST.—**Location:** About $1\frac{1}{2}$ miles north of Pine Lake on South Hill and about 2 miles east of West Davenport, Delaware County, New York. It is part of an 1100-acre ecological preserve owned by Hartwick College and partially bounded by State Forest and Otsego County Forest. Approximate coordinates on West Davenport Quadrangle, USGS: 42° 28' 33" N, 74° 56' 15" W. **Size:** 29.1 ± 0.5 acres (11.7 ha) (nearly square, essentially 6 x 5 units of 208 ft. edge—i.e., measured with steel tape into a grid of one-acre units). **Description of Area:** Method of James and Shugart, *AFN* 24: 727-736, 1970. Trees, 3-in. diameter and over, based on five 0.1-acre circular samples, 340/acre (six circles gave data within the tolerances suggested by James/Shugart indicating 5 as sufficient); total basal area 109.2 sq. ft./acre. Species comprising 92% of the total number of trees (figures after each give trees/acre, relative density (%), relative dominance, frequency, in that order): Northern Red Oak (*Quercus rubra*), 140, 41.2, 39.8, 100; White Oak (*Q. alba*), 78, 22.9, 27, 100; Red Maple (*Acer rubrum*), 62, 18.2, 6.4, 100; Chestnut Oak (*Q. prinus*), 32, 9.4, 22.6, 80. Other species include Big-tooth Aspen (*Populus grandidentata*); Paper Birch (*Betula papyrifera*) and White Pine (*Pinus strobus*). Chestnut Oak tends to be concentrated in the southwest corner, and a stand of Big-toothed Aspen in



Study 3. Upland Oak Forest. View from southwest corner. Photo/J. Robert Miller.

the southeast corner. There are 15-20 large White Pines (about 20 in. diameter) spread through the plot. The understory consists mainly of Red Maples but also includes some Sweet Birch (*Betula lenta*) and some Hemlocks [*Tsuga canadensis*]. Trees by diameter size class (figures after each class give number of trees/acre, relative density (%), basal area in sq. ft./acre, relative

dominance): A (3-6 in.) 182, 53.5, 18.2, 16.7; B (6-9 in.) 100, 29.4, 30.0, 27.5; C (9-15 in.) 46, 13.5, 36.8, 33.7; D (15-21 in.) 10, 2.9, 18.0, 16.5; E (21-27 in.) 2, 0.6, 6.2, 5.7. Shrub stems/acre 4520; average canopy height 55-60 ft. (approx. range of 5-10 ft. of either extreme). Ground cover and Canopy cover will be included in the 1972 Breeding Bird Census of this plot, along with major species comprising shrubs and ground cover. Plant names are from M. L. Fernald, *Gray's Manual of Botany*, 8th ed., 1950. This woodland was burned over about 70 years ago and has not been disturbed since. Large burned stumps of American Chestnut and White Pine are common. **Edge:** None. South Hill is almost all forested for some miles along its length (NE-SW). It is deciduous with some lower slopes of Hemlock. Nearest valley roads, buildings, and fields are about 1-2/3 miles to the north and south. There are no trails into this immediate area. **Topography:** Western boundary is on a short north-south ridge at 1800 ft. Plot drops off to 1660 ft. in southeast corner. **Cover:** Ravine of Hemlock runs north-south the length of plot on west at a distance of about 1/5 mile. The Mud Lake Black Spruce-Tamarack Bog Plot (see Study No. 2 in this issue) lies 1/4 mi. northeast. **Water:** A small stream rises (and flows southward) 1/4 mile from southwest plot corner. A brook flows southwesterly and is nearest the plot at 1/2 mile from plot's southeast corner. The Mud Lake Bog Plot, 1/4 mile northeast, has 1.9 acres of pond water. **Food:** No unusual conditions. **Weather:** Trips were made in all kinds of weather. Trip temperatures averaged 27° with snow cover varying 1 in. to 14 in., always present, and averaging 4.5 in. Broome County Airport (75 miles to the southwest) supplied all the following weather data. For the 34-day study period temperatures ranged from -4° to 54° with average of daily highs and lows of 22° and total precipitation of 1.75 in. (water equivalent). As compared with other years January departed by +0.9° and -1.2 in. in precipitation. **Coverage:** Jan. 10, 15, 19, 21, 22, 23, 24, 26, 29, 30; Feb. 6, 7, 12. Total: 13 trips at varying times between 8:30 a.m. and 3:30 p.m., averaging 100 observer minutes each. **Count:** Black-capped Chickadee, 3 (10); Hairy Woodpecker, 1 (3); White-breasted Nuthatch, 1 (3); Downy Woodpecker, +; Boreal Chickadee, +; Brown Creeper, +. **Average Total:** 5 birds (density, 17 per 100 acres). **Remarks:** The chickadee was noted on 8 trips, the Hairy Woodpecker on 6 trips and the White-breasted Nuthatch on 5 trips. Pine Grosbeak flocks were seen over the plot on 8 trips, Evening Grosbeak flocks over on 3 trips, and Pine Siskin flocks and Red Crossbill flocks each over on 2 trips. The Blue Jay was recorded twice less than 208 ft. off the plot and a hawk (species ?) once just off the plot. After the first 7 trips the count was the same as reported here for the 13 trips.—**J. ROBERT MILLER**, Dept. of Chemistry, and **ROBERT FRITZ**, Hartwick College, Oneonta, N.Y. 13820.

4. MATURING UPLAND RED PINE-WHITE PINE PLANTATION.—**Location:** The plot lies 2 miles west of Alfred, New York, and is part of the State "reforestation area" that lies between Randolph Road and Water Wells Road near the western boundary of the Township of Alfred, Allegany County; 42° 7' 30" N, 77° 45' W; Andover Quadrangle, USGS. **Size:** 15.4 ha =

38 acres; nearly square, measured by tape and compass. **Description of Area:** See *AFN* 24: 754 (1970). **Water:** The volume of water in the small stream that runs across the plot was small and not likely to be of much significance to the winter population. **Food:** The cone production on the pines was not heavy. The small numbers of berry and seed producing trees and shrubs were not productive of fruit. The main food source in the plot would probably be derived from the stems and foliage of the pines. **Weather:** The mean temperatures for January and February were 24.5° and 19.9°F., respectively. The daily maximums on count days ranged from 30° to 47°. Total snowfall amounted to only 15 in. in January; this was sufficient to maintain a permanent snow cover underneath the evergreens. Two major storms on Feb. 12-13 and Feb. 18-19 accounted for nearly one-half of the total snowfall of 37 in. for the month of February. (Weather data from the U.S. Cooperative Weather Station at Alfred.) **Coverage:** Jan. 4, 7, 12, 18, 20; Feb. 19. Total: 6 trips; the times varied from 9:45 a.m. to 12:00, except one trip between 2:00 and 3:00 p.m., and averaged 100 minutes per trip. There were two observers on 5 trips and one on the last, making a total of 18 man-hours in the field. **Count:** Black-capped Chickadee, 26 (169, 68); Red-breasted Nuthatch, 8 (52, 21); White-breasted Nuthatch, 3 (20, 8); Brown Creeper, 3 (20, 8); Ruffed Grouse, 1; Blue Jay, 1; Hairy Woodpecker, +; Downy Woodpecker, +. **Average Total:** 42 birds (273 per sq. km., 111 per 100 acres). **Remarks:** This second-year study resulted in a tally of more than twice as many birds among essentially the same species. The increase over last year was largely accounted for by 11 more chickadees and 9 Red-breasted Nuthatches. The latter species was particularly conspicuous in the mature pine and spruce plantations in this plot and in nearby areas this year. The larger number of birds this year could be attributed, in part, to the relatively milder weather during January. The grouse were observed near the edges of the plot, which suggests that this species used the pines for cover and roosting and fed in nearby deciduous woods and shrub. The chickadee and Red-breasted Nuthatch were recorded on six trips, the White-breasted Nuthatch, Brown Creeper and grouse on four, the Blue Jay on three and the woodpeckers on only one trip. It is felt that the count of Brown Creepers is subject to question since this species is quite inconspicuous on days when the birds remain silent. Although several species of winter finches, such as Evening Grosbeak, Common Redpoll, Pine Siskin, and the crossbills, were in the Alfred area, none were observed on the plot. Acknowledgment is made to the Division of Lands and Forests for making the plot available for study and to the Cooperative Weather Observer at Alfred for weather information. Appreciation is expressed to the Allenterm Committee of Alfred University for sponsoring this study during the January Term.—**PATRICIA H. LITTLE** and **CLARENCE W. KLINGENSMITH** (compiler), Alfred University, Alfred, N.Y. 14802.

5. UPLAND STREAM BOTTOM DECIDUOUS WOODS.—**Location:** 5 miles northeast of Pittsburgh, Pennsylvania. **Size:** 60 acres. **Description of Area:** The area covered is a woods that runs along either side of a stream valley for approximately 4/5 mile. The stream that bisects the area averages about 10 ft. wide. A mod-

erately traveled two-lane road passes along the stream and, with the exception of the easternmost section, all areas are a fairly mature deciduous woodland with trees ranging from approximately 50 ft. to 120 ft. (average about 80 ft.). The easternmost area is much younger with second-growth trees ranging from 30 to 50 ft. tall. Part of the eastern woods has been cut for telephone wires, and another line was cut for a sewer. There are some large sycamores along the stream and there are also some large (over 100 ft.) Tulip-trees just above the southern side of the stream. There are two remarkably large Eastern Hemlocks along the stream, one of which is probably over 100 ft. There is a row of evergreens composed of Red Pine (*Pinus resinosa*), White Pine (*Pinus strobus*), Scotch Pine (*P. sylvestris*), and Norway Spruce (*Picea abies*) planted along the north ridge. These are probably reforested trees because they were planted in an area that was cut over about 50 years ago. The dominant trees in order of decreasing abundance are: Sugar Maple (*Acer saccharum*), White Oak (*Quercus alba*), Red Oak (*Q. rubra*), Am. Beech (*Fagus grandifolia*), Tulip-tree (*Liriodendron tulipifera*), White Ash (*Fraxinus americana*), Am. Sycamore (*Platanus occidentalis*), Red Maple (*Acer rubrum*), Am. Basswood (*Tilia americana*), E. Hemlock (*Tsuga canadensis*), Black Birch (*Betula lenta*), Black Tupelo (*Nyssa aquatica*), Black Cherry (*Prunus serotina*), Am. Elm (*Ulmus americana*), Shagbark Hickory (*Carya ovata*). The trees range from several inches to 3 ft. DBH, averaging about 2 ft. The easternmost area is dominated by Black Cherry and Black Locust (*Robinia pseudo-acacia*). Almost all Am. Elms are dead, which has created several open areas along the stream. A distinct understory is present, consisting of Great Rhododendron (*Rhododendron maximum*), which was extensively planted along the stream, Wild Grape (*Vitis* sp.), Poison-ivy (*Rhus radicans*), various unidentified bushes, Spicebush (*Lindera benzoin*), Sassafras (*Sassafras albidum*), Black Locust (*Robinia pseudo-acacia*), Common Witch-hazel (*Hamamelis virginiana*), Flowering Dogwood (*Cornus florida*), Mountain Laurel (*Kalmia latifolia*), on the south-facing slope only, and various saplings. Names are taken from *A Field Guide To The Trees And Shrubs* by George A. Petrides, 1958 (Houghton Mifflin). Christmas Fern (*Polystichum acrostichoides*) is also common. **Topography:** A valley which joins another valley midway along the woods. The stream bottom is at 860 ft., while the top of each ridge is at about 980 ft. **Edge:** To the north, there is a young second-growth field; to the south and west, there is similar habitat with a field to the southwest. To the east, there is a tennis club and to the southeast, there is a housing development. **Coverage:** Dec. 22, 27; Jan. 1, 15, 22, 23, 29, 30. Total: 8 trips, all in morning, averaging 1.75 hours. **Weather:** Unusually warm until Jan. 22. **Count:** Tufted Titmouse, 30 (50); Slate-colored Junco, 17 (28); Black-capped Chickadee, 16 (27); Carolina Wren, 13 (22); Pine Siskin, 13 (22); White-breasted Nuthatch, 7 (12); Downy Woodpecker, 6 (10); Golden-crowned Kinglet, 6 (10); Cardinal, 6 (10); Blue Jay, 5 (8); Evening Grosbeak, 5 (8); Com. Crow, 4 (7); Robin, 3 (5); Am. Goldfinch, 3 (5); Hairy Woodpecker, 2 (3); Brown Creeper, 2 (3); Starling, 1 (2); White-throated Sparrow, 1 (2); Song Sparrow, 1 (2); Red-tailed Hawk, +; Belted Kingfisher, +; Pileated Woodpecker, +;

Ruffed Grouse, +; Hermit Thrush, +. **Average total:** 141 birds (235 per 100 acres). **Remarks:** Black-capped Chickadees were scarcer than usual. The Slate-colored Junco figure is probably larger than it should be because of the field along the north ridge. Carolina Wrens were not present in this area in 1968. The Pine Siskins occurred in tame flocks which were seen feeding both on the ground and in the trees, especially the hemlocks. This has been a good winter for Evening Grosbeaks. The Com. Crow number is based on birds seen perched in trees actually in the count area. The Robins were undoubtedly present because of the warm weather, because there are almost never Robins in this area during the winter. There were many goldfinches heard flying over the count area. The goldfinches were in a flock feeding in some sycamores and the weed patch at the eastern end. There are fewer Song Sparrows than in previous years presumably because the open areas created by the dead elms have largely grown over. The Belted Kingfishers were observed at the eastern end where two streams merge. Pileated Woodpeckers were more frequently observed in the same woods outside the count area. This is an off-year for Ruffed Grouse. The Hermit Thrush is very rare here in winter and was undoubtedly present because of the warm weather. The temperatures on coverage dates ranged from -10° to 55° F. with the mean at about 35° . All counts were conducted in the morning.—*W. O. ROBINSON, SCOTT ROBINSON (compiler), Grandview Dr. S., Pittsburgh, Pa. 15215.*

6. MIXED HARDWOOD FOREST. — **Location:** Calvert County, Maryland, northwest of Plum Point and one mile inland from Chesapeake Bay, between State Routes 263 and 261. **Size:** 28 acres. **Description of Area:** See *AFN* 13:333 (1959). This is the fourteenth successive population count on this area. **Weather:** The sky was clear on six of the ten days. The ground was bare on all of the trips. The creek and low wet area were frozen on only one trip. High temperature on count days varied between 64° and 18° F. **Coverage:** Dec. 29, 31; Jan. 6, 7, 9, 16, 23, 29; Feb. 6, 13. The trips averaged 93 minutes and started between 9:10 and 11:45 a.m., E.S.T. **Count:** Carolina Chickadee, 9 (32); Cardinal, 9 (32); White-throated Sparrow, 7 (25); Tufted Titmouse, 5 (18); Slate-colored Junco, 4 (14); Brown Creeper, 3 (11); Carolina Wren, 3 (11); Golden-crowned Kinglet, 3 (11); Red-bellied Woodpecker, 2 (7); Downy Woodpecker, 2 (7) Winter Wren, 2 (7); Myrtle Warbler 2 (7); Yellow-shafted Flicker, 1 (4); Com. Crow, 1 (4); Cedar Waxwing, 1 (4); Evening Grosbeak, 1 (4); Purple Finch, 1 (4); Pine Siskin, 1 (4); Am. Goldfinch, 1 (4); Am. Woodcock, +; Barred Owl, +; Pileated Woodpecker, +; Yellow-bellied Sapsucker, +; Hairy Woodpecker, +; Hermit Thrush, +; E. Bluebird, +; Rusty Blackbird, +; Red-eyed Towhee, +. **Average Total:** 59 birds (density, 211 per 100 acres). **Remarks:** Single Turkey Vultures occurred over the area on five trips. The average totals were less than last year's (66 birds and 237 per 100 acres), and the previous 13-year average (65 birds and 233 per 100 acres). Although the Cardinal was again the most numerous species (tied by the Carolina Chickadee), the average density of 32 birds per 100 acres was exactly one-half of the previous year's high count, and it was the lowest to date on this plot. The previous 13-year average is 41. The Carolina Chickadee

increased slightly this year (32 over 29) and equalled the Cardinal. Its 13-year average is 27. Other species showing increases were Tufted Titmouse, Brown Creeper, Winter Wren, Carolina Wren, Golden-crowned Kinglet, and Slate-colored Junco. Species in addition to the Cardinal showing decreases were Yellow-bellied Sapsucker, Cedar Waxwing, Myrtle Warbler, and White-throated Sparrow. No nuthatches occurred this year. The Evening Grosbeak, Purple Finch, Pine Siskin and Am. Goldfinch were recorded regularly. The Barred Owl was present for the first time since 1969, and the Am. Woodcock for only the third year. The Pine Siskin was the only new species in the area this year. A total of 28 species was recorded this year, one more than last year. A total of 50 species including the Turkey and Black Vultures have occurred on this study plot during the 14 winter-bird counts. — *JOHN H. FALES, Neeld Estate, Huntingtown, Md. 20639.*

7. MATURE DECIDUOUS FLOODPLAIN FOREST. — **Location:** Glen Echo, Maryland, 2½ miles northeast of the District of Columbia, between the C & O Canal and the Potomac River. **Size:** 17.8 ha., 44.1 acres. **Description of Area:** See *AFN* 2: 153-156 (1948). The land is a fairly flat strip along the river, supporting a heavy growth of deciduous hardwoods 80 to 100 ft. high. **Weather:** Temperature during walks averaged 28° F. There was almost no snow during the census period. Snow (several in.) was on the ground on only one walk. **Coverage:** Dec. 18; Jan. 8, 9, 15, 29; Feb. 5, 21. Total: 7 trips, averaging 2.44 hours, between 7:50 and 10:50 a.m. **Count:** Starling, 34 (191, 77); Carolina Chickadee, 21 (118, 48); Tufted Titmouse, 11 (62, 25); Downy Woodpecker, 10 (56, 23); Cardinal, 6 (34, 14); Carolina Wren, 4 (22, 9); Com. Crow, 3 (17, 7); Song Sparrow, 3 (17, 7); Blue Jay, 2 (11, 5); White-throated Sparrow, 2 (11, 5); Red-bellied Woodpecker, 2, (11, 4); Turkey Vulture, 1 (6, 2); Mourning Dove, 1 (6, 2); Pileated Woodpecker, 1 (6, 2); White-breasted Nuthatch, 1 (6, 2); Brown Creeper, 1 (6, 2); Evening Grosbeak, 1 (6, 5); Am. Goldfinch, 1 (6, 2); Slate-colored Junco, 1 (6, 2); Rock Dove, +; Yellow-shafted Flicker, +; Yellow-bellied Sapsucker, +; Hairy Woodpecker, +; Winter Wren, +; Mockingbird, +. **Average Total:** 106 birds (594 per sq. km., 240 per 100 acres). **Remarks:** Seen on the water near the area: Pied-billed Grebe, Great Blue Heron, Mallard, Black Duck, Com. Merganser, Ring-billed Gull, Belted Kingfisher. The average total per trip shows a distinct decrease from last year, which was unusually high, but does not indicate any real deviation from the general high level of the last 12 years. This level, well above the first 11 years of the census, was established after changes in nearby habitat produced more openness and edge around the tract. The count for 1971 was probably higher because individual trips were longer. The drop this year is evident in all the more abundant species. Crows, which had shown considerable increase in 1969-71, were back to their former level. Starlings, as usual, showed great variation during the census period, ranging from 0 to 63 on different trips. Their number seems to depend on how many roost in the area during the night and how fast they depart to feed elsewhere in the morning. The Barred Owl which usually appears on the area was absent. The count for Evening Grosbeaks is higher than usual: a flock of six on one trip. — *JOAN*

H. CRISWELL (compiler), WILLIAM H. CRAMER, JENNIFER SANTLEY (members of the Audubon Naturalist Society, 8940 Jones Mill Rd., Washington, D.C. 20015).

8. HICKORY-OAK-ASH FLOODPLAIN FOREST. — **Location:** Floodplain of Middle Patuxent River due west of the Hobbits Glen Golf Course, Columbia, Howard County, Maryland; 39° 13' 10" N, 76° 54' 45" W, Clarksville Quadrangle, USGS. **Size:** 18.4 ha = 45.5 acres (L-shaped following the 310-foot contour; surveyed). **Description of Area:** See *AB* 25: 963-964 (1971). The dominant canopy trees are Pignut Hickory (*Carya glabra*), Red Oak (*Quercus rubra*) and Green Ash (*Fraxinus pennsylvanica*). Average canopy height, 39 ft. **Weather:** Exceptionally mild during the late fall and winter. Snow covered the ground on only one day in the census period. January temperatures averaged about three degrees above normal. Temperatures on the four morning counts ranged from 18° to 27° F. and on the four afternoon counts from 35° to 48°. Wind speeds ranged from calm to 6 m.p.h., gusting to 10 m.p.h. on one day. The sky was clear on five days and overcast on three days. **Coverage:** Jan. 15, 18, 23, 26, 29, 30, 31; Feb. 10. The trips averaged 3 hours, 40 minutes. The morning trips started between 0 and 14 minutes after sunrise; the afternoon trips were completed between 8 and 12 minutes before sunset, except for the first trip which was completed 45 minutes before sunset. **Count:** Myrtle Warbler, 54 (293, 119); Downy Woodpecker, 18 (98, 40); White-throated Sparrow, 18 (98, 40); Cardinal, 17 (92, 37); Carolina Chickadee, 16 (87, 35); Evening Grosbeak, 11 (60, 24); Slate-colored Junco, 11 (60, 24); Yellow-shafted Flicker, 7 (38, 15); Red-bellied Woodpecker, 6 (33, 13); Tufted Titmouse, 6 (33, 13); White-breasted Nuthatch, 4 (22, 9); Purple Finch, 4 (22, 9); Yellow-bellied Sapsucker, 3 (16, 7); Hairy Woodpecker, 3 (16, 7); Blue Jay, 3 (16, 7); Brown Creeper, 2 (11, 4); Carolina Wren, 2 (11, 4); Ruby-crowned Kinglet, 2 (11, 4); Am. Goldfinch, 2 (11, 4); Pileated Woodpecker, 1 (5, 2); Com. Crow, 1 (5, 2); Robin, 1 (5, 2); E. Bluebird, 1 (5, 2); Golden-crowned Kinglet, 1 (5, 2); Rufous-sided Towhee, 1 (5, 2); Song Sparrow, 1 (5, 2); Great Blue Heron, +; Turkey Vulture, +; Red-shouldered Hawk, +; Mourning Dove, +; Belted Kingfisher, +; Winter Wren, +; Hermit Thrush, +. **Average Total:** 196 birds (1064 per sq. Km., 431 per 100 acres). **Remarks:** Total species, 33. Average number of birds flying over the plot: Com. Crow, 36; Fish Crow, +; Starling, 3; Red-winged Blackbird, +; Com. Grackle, 1320. Although this is the first winter bird-population study of this plot, I have made enough casual observations within the plot over the past 20 years to know that this winter's population is far above normal. This is attributed not only to the mild fall and winter, but to the abnormal abundance of native berries, especially Poison Ivy (*Rhus radicans*). The flickers, Downy Woodpeckers, Carolina Chickadees, Myrtle Warblers, Evening Grosbeaks and White-throated Sparrows in particular fed heavily upon the Poison Ivy berries. Other birds utilizing the Poison Ivy included Yellow-bellied Sapsucker, Red-bellied Woodpecker, Cardinal and Ruby-crowned Kinglet. A great abundance of Poison Ivy berries was available throughout the month of January, but the supply rapidly diminished during the first

ten days of February. Still present on the last day of the study were fruits of the Poison Ivy, Bittersweet (*Celastrus scandens*), Japanese Honeysuckle (*Lonicera japonica*) and Tulip-tree (*Liriodendron tulipifera*). Fifteen species of birds were seen on all eight counts: Yellow-shafted Flicker, Red-bellied Woodpecker, Yellow-bellied Sapsucker, Hairy Woodpecker, Downy Woodpecker, Carolina Chickadee, Tufted Titmouse, White-breasted Nuthatch, Brown Creeper, Carolina Wren, Ruby-crowned Kinglet, Myrtle Warbler, Cardinal, Am. Goldfinch and White-throated Sparrow. The Blue Jay, Evening Grosbeak and Purple Finch were recorded on seven of the eight trips. Common Crows (up to 191 birds) flew over enroute to or from their roost on five of the eight trips, but this species was not included on the counts except when individuals alighted in the study plot. The Starlings and blackbirds also were commuting from a roost several miles away, and flocks irregularly passed over the study plot. No migration was noted during the period covered by the study, nor was there any appreciable singing within the study period—*CHANDLER S. ROBBINS, Migratory Bird Populations Station, Laurel Md. 20810.*

9. UPLAND TULIP-TREE-MAPLE-OAK FOREST.—**Location:** West edge of Middle Patuxent River valley, southwest of Hobbits Glen Golf Course at Columbia, Howard County, Maryland; 39° 12' 55" N, 76° 54' 40" W, Clarksville Quadrangle, USGS. **Size:** 11.98 ha = 29.6 acres (basically rectangular, 1125 ft. north-south by 1000 ft. east-west, but irregularly extending farther in each direction where uniformity of habitat permitted). **Description of Area:** See *AB* 25: 971 (1971). The dominant canopy trees are Tulip-tree (*Liriodendron tulipifera*), Red Maple (*Acer rubrum*), White Oak (*Quercus alba*) and Red Oak (*Q. rubra*). Average canopy height, 49 ft. Boundaries were changed slightly to exclude a small narrow area from the northwest corner and add a rectangular area of nearly the same size in the southeast corner. This resulted in a net loss of 0.1 acre from the original study plot. **Weather:** Exceptionally mild during the late fall and winter. Snow covered the ground on only one day in the census period. January temperatures averaged about three degrees above normal. Temperatures ranged from 17° to 44°F. on the four morning counts and from 28° to 48° on the four afternoon counts. Winds were less than 5 m.p.h. except on one day when they ranged from 10 to 12 m.p.h. The sky was clear on three days and overcast on five days. **Coverage:** Jan. 8, 9, 12, 23, 27; Feb. 5, 6, 9. The trips averaged 2 hours, 31 minutes. The morning trips started within 5 minutes of sunrise; the afternoon trips were finished between 34 minutes and 5 minutes before sunset. **Count:** Carolina Chickadee, 8 (67, 27); Myrtle Warbler, 6 (50, 20); White-throated Sparrow, 6 (50, 20); Cardinal, 5 (42, 17); Downy Woodpecker, 3 (25, 10); Am. Goldfinch, 3 (25, 10); Carolina Wren, 2 (17, 7); Golden-crowned Kinglet, 2 (17, 7); Tufted Titmouse, 2 (17, 7); Purple Finch, 2 (17, 7); Yellow-shafted Flicker, 1 (8, 3); Red-bellied Woodpecker, 1 (8, 3); Hairy Woodpecker, 1 (8, 3); Blue Jay, 1 (8, 3); Com. Crow, 1 (8, 3); White-breasted Nuthatch, 1 (8, 3); Brown Creeper, 1 (8, 3); Evening Grosbeak, 1 (8, 3); Slate-colored Junco, 1 (8, 3); Turkey Vulture, +; Sharp-shinned Hawk, +; Red-tailed Hawk, +; Red-shouldered Hawk, +; Am.

Woodcock, +; Mourning Dove, +; Barred Owl, +; Yellow-bellied Sapsucker, +; Winter Wren, +; Starling, +; Pine Siskin, +. **Average Total:** 48 birds (401 per sq. km., 162 per 100 acres). **Remarks:** Total species, 30. Average number of birds flying over the plot: Ring-billed Gull, +; Com. Crow, 36; Starling, 2; Red-winged Blackbird, 2; Com. Grackle, 2670; Brown-headed Cowbird, 1; Evening Grosbeak, 3. Fruits of the Poison Ivy (*Rhus radicans*), Japanese Honeysuckle (*Lonicera japonica*) and Tulip-tree persisted throughout the period of the study. Five species were seen on all eight counts: Downy Woodpecker, Carolina Chickadee, Carolina Wren, Cardinal and White-throated Sparrow. The following species were seen on only one count: Turkey Vulture, Sharp-shinned Hawk, Red-tailed Hawk, Red-shouldered Hawk, Am. Woodcock, Barred Owl, Starling, Evening Grosbeak and Pine Siskin. Crows commuting to or from their roost were seen over the area on every trip. Starlings and/or grackles and other blackbirds flew over the plot on seven of the eight trips. No migration was noted during the period covered by the study, nor was there any appreciable singing within the study period—*CHANDLER S. ROBBINS, Migratory Bird Populations Station, Laurel, Md. 20810.*

10. FOREST DEVELOPING AFTER CULTIVATION.—**Location:** 5 miles northeast of Hampstead, Maryland; on the watershed of Prettyboy Reservoir, 0.2 miles northeast of Beckleysville crossroads; 39° 39' N, 76° 47' W; Lineboro Quadrangle, USGS. **Size:** 20 acres. **Description of Area:** Described in *AFN* 23:528 (1969). **Weather:** During the study period there was only 1 day when the temperature did not rise above freezing and there were 12 nights when it did not go below freezing. Precipitation was above normal, mostly as rain, but with about 4 cm. of snow on the last two counts. **Coverage:** Dec. 29, 31; Jan. 8, 9, 15, 22, 29, 30. Total: 8 trips, averaging 92 minutes each, between 7:50 and 11:00 a.m. **Count:** chickadee (sp.), 3 (15); Slate-colored Junco, 3 (15); Com. Crow, 2 (10); Golden-crowned Kinglet, 2 (10); Downy Woodpecker, 1 (5); Blue Jay, 1 (5); Tufted Titmouse, 1 (5); Brown Creeper, 1 (5); Myrtle Warbler, 1 (5); Am. Goldfinch, 1 (5); Ring-necked Pheasant, +; Yellow-shafted Flicker, +; Red-bellied Woodpecker, +; White-breasted Nuthatch, +; Carolina Wren, +; Hermit Thrush, +; Cardinal, +; White-throated Sparrow, +. **Average Total:** 16 birds (80 per 100 acres). **Remarks:** Seen flying over the area were Pine Siskin (1 trip), Evening Grosbeak (5 trips), and additional goldfinches (3 trips) and crows (3 trips). No species was recorded on all 8 trips; on 6 trips, chickadee and jay; on 5 trips, crow, kinglet, and junco; on 4 trips, Downy Woodpecker and goldfinch; on 3 trips, titmouse, creeper, wren, and Hermit Thrush; on 2 trips, Myrtle Warbler and White-throat; all others on 1 trip only.—*HAVEN KOLB, Rte. 1, Box 147A, Millers, Md. 21107.*

11. COVE HARDWOODS.—**Location:** Part of the nature trail system of Oglebay Park, Ohio County, West Virginia. The section studied begins about 75 yds. above the Falls Drive bridge and extends three-eighths of a mile upstream almost to the golf course. A. B. Brooks had designated this section as the Thoreau Trail. **Size:**

15 acres (rectangular 110 x 660 yds., measured longitudinally and estimated laterally). **Description of Area:** A narrow ravine with a generally north-south direction. The centerline follows the stream and the ravine narrows perceptibly in the length of the study plot. Elevation between 1000 and 1100 ft. **Plant Cover:** The area has been dominated by stately Am. Elms (*Ulmus americana*) for many years. The majority of these trees are now dead or dying of Dutch Elm Disease so that a change is in progress. The elms occupied about 30-35% of the land area and some reached 3 ft. DBH. The canopy still averages about 65 ft. in height. Sugar Maple (*Acer saccharum*) occupies about 20% of the area with one or two trees reaching 18-20 in. DBH, but most are young trees up to 12 in. which may soon replace the dying elms. Oaks, both White and Red (*Quercus alba* and *Q. rubra*) to 32 in. DBH occupy about 13% of the area as does Wild Cherry (*Prunus serotina*) to 28 in. DBH. The remainder of the canopy contains Beech (*Fagus grandifolia*) to 30 in., Tulip-tree (*Liriodendron tulipifera*) to 20 in., Linden (*Tilia americana*) to 24 in., Black Willow (*Salix nigra*) to 18 in., Black Walnut (*Juglans nigra*) to 28 in., White Ash (*Fraxinus americana*) to 16 in., Sycamore (*Platanus occidentalis*) to 14 in., Tree of Heaven (*Ailanthus altissima*) to 21 in. and Hemlock (*Tsuga canadensis*), planted, to 6 in. DBH. Among the understorey are young of the above species, Privet (*Ligustrum* sp.) and Japanese Knotweed (*Polygonum cuspidatum*). The ground cover includes: Lady's Thumb (*Polygonum persicaria*), Clearweed (*Pilea pumila*), Ground Ivy (*Glechoma hederacea*), Bedstraw (*Galium* sp.), Leafcup (*Polymnia canadensis*), Sweet Cicely (*Osmorhiza claytonii*), Common Chickweed (*Stellaria media*) and Two-leaved Toothwort (*Dentaria diphylla*). **Weather:** This must be considered a mild winter in the area. Only during February was the ground covered by snow for any length of time. During December and January the precipitation, in normal amounts, was mostly rain with little snow accumulation. Precipitation totaled 8.74 in. for the period. Lowest temperature was -12° F. on Jan. 16, 1972. The high for the period was 68° on Feb. 29. **Coverage:** Dec. 1, 1971 to Feb. 27, 1972. The 17 trips were concentrated about 8:00 to 9:00 a.m. with the earliest beginning at 7:20 and latest ending at 3:30 p.m. About 15 party-hours. **Count:** chickadee (sp.), 9 (60); Downy Woodpecker, 4 (27); Tufted Titmouse, 4 (27); Carolina Wren, 3 (20); White-breasted Nuthatch, 2 (13); Brown Creeper, 2 (13); Slate-colored Junco, 2 (13); White-throated Sparrow, 2 (13); Red-bellied Woodpecker, 1 (7); Hairy Woodpecker, 1 (7); Com. Crow, 1 (7); Winter Wren, 1 (7); Starling, 1 (7); Cardinal, 1 (7); Cooper's Hawk, +; Red-tailed Hawk, +; Ruffed Grouse, +; Yellow-shafted Flicker, +; Pileated Woodpecker, +; Golden-crowned Kinglet, +; E. Bluebird, +; Myrtle Warbler, +; Rufous-sided Towhee, +; Song Sparrow, +. **Average Total:** 34 birds (227 birds per 100 acres). **Remarks:** Visitors: Evening Grosbeaks. This is the fifth of a series of winter and breeding bird counts to document the bird life of Oglebay Park. This plot was about one-quarter mile from the feeding station at the Nature Education center. The effect of the feeding station became more apparent as the season progressed and feed became harder to find in the area. Chickadees (it is assumed that both Black-capped and Carolina species

were present), titmice, Carolina Wrens, the woodpeckers and Cardinals showed little change in numbers throughout the period. However, the juncos, White-throated Sparrows, and, surprisingly, the Brown Creepers showed a tendency to smaller numbers toward the end of the period. There were two Winter Wrens on the area, but they could be flushed only part of the time. They were found more regularly at the beginning of the count, but were in their usual places at the end of the count.—GREG and ANNE EDDY, GERALD and DOLORES DEVAUL, DOROTHY BROEMSEN, RUTH WELLER, EARL VANSKOY, WILLIAM BEATTY, and GLEN PHILLIPS (compiler), *The Brooks Bird Club, 707 Warwood Ave., Wheeling, W. Va. 26003*.

12. UPLAND OAK-HICKORY HARDWOOD FOREST.—Location: Burling Park, McLean, Virginia.

Size: 27.2 acres (60.2 ha.). **Description of Area:** See *Atl. Nat.* 26 (2) and *AB* 25:636 (1971). The census area is an immature oak-hickory hardwood forest, the Tulip-tree being the most common large tree, and is surrounded by similar habitat. The 336-acre park was saved from residential development in 1970 by timely citizen action and, it seems likely, will be preserved as a natural retreat. **Weather:** Clear on 3 trips, overcast or cloudy on 6. Some snow on the ground on only 2 trips, as the weather was comparatively mild during the reporting period. The average temperature was 36.4° F. Only one trip was windy. **Coverage:** Jan. 14, 16, 20, 23 (2 trips); Feb. 2, 6, 10, 12. Total: 9 trips, between 7:45 a.m. and 3:45 p.m., averaging 1 hour and 46 minutes. **Count:** Tufted Titmouse, 3 (27, 11); Carolina Chickadee, 2 (18, 7); Red-bellied Woodpecker, 1 (9, 4); Hairy Woodpecker, 1 (9, 4); Downy Woodpecker, 1 (10, 4); Com. Crow, 1 (9, 4); Brown Creeper, 1 (9, 4); Turkey Vulture, +; Mourning Dove, +; Pileated Woodpecker, +; Blue Jay, +; White-breasted Nuthatch, +; Winter Wren, +; Carolina Wren, +; Mockingbird, +; Golden-crowned Kinglet, +; Ruby-crowned Kinglet, +. Four Herring Gulls were seen in transit over the site on one trip. **Average Total:** 10 birds (density, 37 per 100 acres, 91 per 100 ha.). **Remarks:** While the number of species (17) was nearly equal to last year's (18), the density diminished. The drop in sightings of Pileated Woodpecker and Blue Jays was particularly marked. Weather was, so far as can be determined, not a factor in results. Some observers opined that the increased numbers of well-stocked bird feeders at houses surrounding the area were drawing birds away from the census site in winter.—E. F. RIVINUS, BEN FERN, ROBERT J. WATSON, JESSICA GIUSTI, ERNEST GIUSTI, and EDWARD A. MAINLAND (compiler), 7208 Churchill Rd., McLean, Va. 22101.

13. HARDWOOD-SOFTWOOD FOREST.—Location: North Wilkesboro, North Carolina. **Size:** 37 acres. **Description of Area:** Fully described in *AFN* 8:280-281 (1954), except that the area was doubled on each side.

Since then construction of houses and roads has reduced the tract by three acres. **Weather:** Average temperature for January was 43.16° F. with a maximum of 68° and a minimum of 10°. The February average was 43.72°. January precipitation was 4.49 in. with 1 in. of snow. February precipitation was 3.21 in. with 2 in. of snow. **Coverage:** Jan. 11, 14, 18, 27; Feb. 25; Mar. 6. Total: 6 trips, averaging 2¼ hours per trip. **Count:** Mourning Dove, 2 (5); Tufted Titmouse, 2 (5); White-throated Sparrow, 2 (5); Screech Owl, 1 (3); Barred Owl, 1 (3); White-breasted Nuthatch, 1 (3); Carolina Wren, 1 (3); Pileated Woodpecker, +; Downy Woodpecker, +; Blue Jay, +; Com. Crow, +; Carolina Chickadee, +; Brown Creeper, +; Hermit Thrush, +; Rufous-sided Towhee, +; Slate-colored Junco, +; Field Sparrow, +. **Average Total:** 10 birds (density, 27 per 100 acres). **Remarks:** This is the smallest population in 18 years. Many factors contributed, some of them unknown. One was the scarcity of food, owing to lack of hickory nuts and acorns and reduced ground plant cover because of higher and thicker tree canopies. Also, the almost complete suppression of ground plants beneath the thick stands of White Pines which have reached a height of 8 to 10 ft. in many sections. No wild fruit of consequence could be found in the region after November, and the preceding summer was not favorable to the production of seeds in size or in quantity to compare with the average growing season. Apparently many species enlarged their feeding range. Pesticides, with the exception of parathion on apple orchards, were not used to any extent. Perhaps the seven-in. snowfall and unseasonably cold weather of early December forced some species to move to lower altitudes where food could be obtained more readily.—WENDELL P. SMITH, 911 E Street, North Wilkesboro, N.C. 28659.

14. SOUTHERN MIXED HARDWOOD FOREST.

—**Location:** Wormsloe Plantation, Isle of Hope, Chatham County, Georgia, approximately 9 miles south of the civic center of Savannah, Georgia; Isle of Hope Quadrangle, USGS. **Continuity:** 1964; 9 years, consecutive. **Size:** 10.1 ha = 25 acres, censused by walking 2.4 km. (1.4 miles) on a single-track, virtually unused road, counting birds within 22.9 m. (75 ft.) on each side. **Description of Area:** See *AFN* 17:502-503 (1963) and 18:555 (1964). **Weather:** Temperatures ranged from 35° to 75° F. during counting hours. Weather for eight trips was noted as clear, for one as partly cloudy, and for one as overcast. **Coverage:** Jan. 8 (morning and afternoon), 9, 16 (morning and afternoon), 28, 29 (morning and afternoon), February 5 (morning and afternoon). Total: 10 trips, six in morning and four in afternoon; all trips between 8:30 a.m. and 5:30 p.m. hours. Total man-hours, 21. **Count:** Ruby-crowned Kinglet, 9 (89 per sq. km., 36 per 100 acres); Carolina Chickadee, 7 (69, 28); Myrtle Warbler, 7 (69, 28); Tufted Titmouse, 6 (59, 24); Pine Warbler, 5 (49, 20); Rufous-sided Towhee, 5 (49, 20); Carolina Wren, 4 (40, 16); Cardinal, 3 (30, 12); Red-bellied Woodpecker, 2 (20, 8); White-throated Sparrow, 2 (20, 8); Red-tailed Hawk, 1 (10, 4); Yellow-shafted Flicker, 1 (10, 4); Pileated Woodpecker, 1 (10, 4); Yellow-bellied Sapsucker, 1 (10, 4); Downy Woodpecker, 1 (10, 4); Blue Jay, 1 (10, 4); Blue-gray Gnatcatcher, 1 (10, 4); Black-and-white Warbler, 1 (10, 4); Great Horned Owl, +;

Com. Crow, +; Fish Crow, +; White-breasted Nuthatch, +; Brown-headed Nuthatch, +; Robin, +; Hermit Thrush, +. **Average Total:** 58 birds (573 per sq. km., 232 per 100 acres). **Remarks:** Only two Red-tailed Hawks were known to be present on about 400 acres; the "estimate" of four per 100 acres is inaccurate. This year's average total of 58 birds is 25% less than last year's of 77 and is among the three lowest counts for the nine years over which winter bird-population studies have been conducted on this area. The rather erratic "ups and downs" in the numbers of birds wintering on this area have been noted in previous reports, as has the absence of any observable local phenomena which might explain them.—L. B. DAVENPORT, JR., *Biology Department, Armstrong State College, Savannah, Ga. 31406.*

15. MATURE DECIDUOUS WOODLAND.—

Location: Northern portion of Thompson Park, East Liverpool, Ohio; 40° 37' 30" W, 80° 34' N, East Liverpool quadrangle, USGS. **Size:** 20 acres (rectangular, measured longitudinally and estimated laterally). **Description of Area:** Described in *AB* 24:638 (1971). Extensive cutting on the south boundary and the slope above the centerline occurred during the early spring of 1971. All of the Slippery Elms were taken from the plot and several of the largest White Oaks were felled. As a result of this cutting the canopy was opened in several places. There was no disturbance north of the centerline; therefore this portion of the plot remains a part of some 40 acres of undisturbed mature woodland. Several loads of dead leaves were dumped on the extreme western end of the plot in late fall. **Weather:** Temperatures ranged from 48° F. in January to 20° on Feb. 8. Eight trips were made under sunny skies and three were overcast. The ground was bare on all except the last four trips when from 1½ to 6 in. of snow covered the ground. **Coverage:** Jan. 10, 14, 19, 24, 31; Feb. 8, 12, 18, 23, 27. Total: 12 trips (two trips Feb. 12 and 23), all between 10:30 a.m. and 4 p.m., totaling about 20 hours. **Count:** Slate-colored Junco, 9 (45); Tufted Titmouse, 8 (40); White-breasted Nuthatch, 5 (25); Downy Woodpecker, 4 (20); Carolina Chickadee, 3 (15); Carolina Wren, 2 (10); Song Sparrow, 2 (10); Pileated Woodpecker, 1 (5); Hairy Woodpecker, 1 (5); Black-capped Chickadee, 1 (5); Brown Creeper, 1 (5); Winter Wren, 1 (5); Golden-crowned Kinglet, 1 (5); Cardinal, 1 (5); Ruffed Grouse, +; Red-tailed Hawk, +; Red-bellied Woodpecker, +; Am. Goldfinch, +; White-throated Sparrow, +; Fox Sparrow, +. **Average Totals:** 40 birds (200 per 100 acres). **Remarks:** Very good numbers of Slate-colored Juncos wintered in this area and from 4 to 30 were seen on 8 of the trips. Downy Woodpecker, chickadees, Tufted Titmouse, White-breasted Nuthatch and Carolina Wrens were seen on all trips. Pileated Woodpecker was seen on 8 trips and two were seen together Jan. 14. Winter Wren was seen on 6 trips. Com. Crows flew over the plot on two occasions. Mourning Doves, Evening Grosbeaks, Pine Siskins, and a White-winged Crossbill were seen and heard in flight during the censusing. A Blue Jay and 3 Robins were seen on one trip only. Two factors appear to contribute to the increase of the count on the study plot. First, more food and cover was available as a result of the cutting. An abundant weed crop matured in the open-

ings, and the brush and tree limbs left on the ground proved attractive to ground-oriented species. Second, a much greater population of wintering birds was in the region during this winter. It seems desirable to census the plot another year to determine the real effect of the disturbance on and adjacent to the study plot.—*MRS. NEVADA LAITSCH, MC 21, East Liverpool, Ohio 43920.*

16. OLD GROWTH BEECH-TULIP-TREE-BLACK GUM FOREST.—**Location:** South Officer's Woods; 1 mile southeast of Volga, Jefferson County, Indiana; 38° 46' N, 85° 30' W, Volga quadrangle, USGS. **Size:** 24.9 acres. **Description of Area:** See *AB* 25:979-980 (1971). **Weather:** The winter was about average for southern Indiana, but all the severe weather was crowded into January and the first half of February. On count days, snow cover ranged from none (5 times) to 5 in. Temperatures during the daytime counts ranged from 25 to 60° F.; wind from various quarters, 1 to 8 m.p.h.; sky clear twice, partly cloudy 5 times, overcast twice; no precipitation during counts. **Coverage:** Dec. 27; Jan. 8, 12, 19; Feb. 2, 12, 16, 26 (night), 28. Total: 8 daylight trips at varied hours, averaging 138 minutes and ranging from 129 to 170 minutes, plus one night trip of 50 minutes. **Count:** Brown-headed Cowbird, 32 (129); Com. Grackle, 32 (129); Carolina Chickadee, 6 (24); Tufted Titmouse, 6 (24); Cardinal, 5 (20); Red-bellied Woodpecker, 2 (8); Com. Crow, 2 (8); Starling, 2 (8); Black Vulture, 1 (4); Turkey Vulture, 1 (4); Pileated Woodpecker, 1 (4); Hairy Woodpecker, 1 (4); Downy Woodpecker, 1 (4); Blue Jay, 1 (4); White-breasted Nuthatch, 1 (4); Brown Creeper, 1 (4); Robin, 1 (4); Golden-crowned Kinglet, 1 (4); Myrtle Warbler, 1 (4); Purple Finch, 1 (4); Am. Goldfinch, 1 (4); Red-tailed Hawk, +; Sharp-shinned Hawk, +; Cooper's Hawk, +; Mourning Dove, +; Barred Owl, +; Yellow-shafted Flicker, +; Yellow-bellied Sapsucker, +; Red-breasted Nuthatch, +; Rufous-side Towhee, +; Slate-colored Junco, +. **Average Total:** 100 birds (402 per 100 acres). **Remarks:** Only the Red-bellied Woodpecker, chickadee, titmouse, and Cardinal were noted on all eight daylight counts; in contrast, the Black Vulture, all 3 hawks, the flicker, sapsucker, Red-breasted Nuthatch, and junco were noted only once. Different results obtained by counting or not counting birds in flight are well illustrated by this count. If individual birds not seen to land had not been counted, the Black Vulture, Turkey Vulture, Red-tailed Hawk, Sharp-shinned Hawk, Cooper's Hawk, and Starling would have been omitted, the Com. Crow, Brown-headed Cowbird, and Am. Goldfinch reduced to +, and the Com. Grackle to 1 (4). The other 21 species would remain the same. **Average Total:** 31 birds (124 per 100 acres). Neither method is perfect of course, for each distorts the true ecological picture. However, I believe that the first method, wherein all birds seen on or above the tract are counted, is preferable. On the one hand, some flying birds pass unnoticed; on the other, some birds, seen flying over, land on the other end of the tract, unseen by the observer. And what about the birds that land during the days and hours when the observer is not on the tract? Juanita R. Webster and Jackson R. Webster assisted with the count, but their time was not calculated above.—*J. DAN WEBSTER, Hanover College, Hanover, Ind. 47243.*

17. OAK-MAPLE FOREST AND FOREST-EDGE.—**Location:** Six miles northeast of Champaign, Illinois. **Size:** 55 acres of forest plus 1.25 miles of forest-edge. **Description of Area:** See *AFN* 2:151-152 (1948). **Coverage:** Dec. 18; Jan. 8, 19, 29; Feb. 11, 26. Total party-hours, 28. **Count:** *Forest Interior Species:* Downy Woodpecker, 6 (11); Brown Creeper, 6 (11); Red-bellied Woodpecker, 4 (7); Great Horned Owl, 1 (2); Hairy Woodpecker, 1 (2); Winter Wren, 1 (2). *Forest Edge Species* (Individuals per mile in parentheses): Slate-colored Junco, 22 (18); Ring-necked Pheasant, 16 (13); Starling, 13 (10); Blue Jay, 7 (6); Song Sparrow, 6 (5); Cardinal, 3 (2); Am. Goldfinch 3 (2); Mourning Dove, 2 (2); Red-headed Woodpecker, 2 (2); Yellow-shafted Flicker, 1 (1); Am. Robin, 1 (1); House Sparrow, 1 (1); Tree Sparrow, 1 (1); Red-tailed Hawk, +; Com. Crow, +; Red-winged Blackbird, +; Swamp Sparrow, +. **Average Total:** *Forest Interior*, 19 birds (35 per 100 acres); *Forest Edge*, 78 birds (62 per mile).—*S. CHARLES KENDEIGH, Dept. of Zoology, U. of Illinois, Champaign, Ill. 61820, BRIAN W. CAIN, EDWIN D. PENTECOST, and ROBERT J. CLEMANS.*

18. BOTTOMLAND OAK-GUM-CYPRESS FOREST.—**Location:** North of State Highway 12 in LeRoy Percy State Park, 4 miles West of Hollandale, Washington County, Mississippi (parts of Sections 5, 8 and 9, T 15 N, R 7 W). **Size:** 28.1 acres; rectangular in shape: 836 ft. x 1463 ft.; laid off with compass and steel tape. **Description of Area:** See *AB* 25:638-639 (1971). **Weather:** During the study period the temperatures on count days ranged from 35° to 75° F. The mean high temperature for the study period was 54.1°, and the mean low was 34.8°. Total rainfall for the study period was 9.01 in. The mean temperatures for last year for the same period were 51.1° and 32.7° respectively, while the rainfall for last year was 4.73 in. The general temperature for the period was milder than the averages indicate, however, because on three days in January an intense cold front caused the temperature to drop as low as 12° to 17°. The preceding months of November and December were much milder and drier than last year. (Weather data from Delta Branch Experiment Station, Stoneville, Miss. 15 miles to the north). **Coverage:** Jan. 8, 9, 22, 23, 29, 30; Feb. 5, 6, 12, 13. Total of 10 trips, starting at various times during the day from 10:35 a.m. to 4:00 p.m. Two observers covered the plot, each with assigned areas. Average time per trip: 90 minutes. **Count:** Myrtle Warbler, 44 (157); Rusty Blackbird, 27 (96); White-throated Sparrow, 18 (64); Robin, 14 (50); Com. Grackle, 12 (43); Cardinal, 7 (25); Carolina Chickadee, 4 (14); Red-bellied Woodpecker, 3 (11); Hermit Thrush, 3 (11); Golden-crowned Kinglet, 3 (11); Am. Goldfinch, 3 (11); Yellow-shafted Flicker, 2 (7); Pileated Woodpecker, 2 (7); Downy Woodpecker, 2 (7); Ruby-crowned Kinglet, 2 (7); Cedar Waxwing, 2 (7); Am. Woodcock, 1 (4); Yellow-bellied Sapsucker, 1 (4); Tufted Titmouse, 1 (4); Brown Creeper, 1 (4); Carolina Wren, 1 (4); Red-winged Blackbird, 1 (4); Purple Finch, 1 (4); Slate-colored Junco, 1 (4); Red-tailed Hawk, +; Hairy Woodpecker, +; E. Phoebe, +; Blue Jay, +; Winter Wren, +; Yellowthroat, +; Rufous-sided Towhee, +; Swamp Sparrow, +. **Average Total:** 156 birds (555 per 100 acres). **Remarks:** Seen on every trip were: flicker, Red-bellied Woodpecker, chickadee,

Robin, Myrtle Warbler, Rusty Blackbird, Cardinal, and White-throated Sparrow. Downy Woodpecker and Golden-crowned Kinglet were seen on all but one trip, while the Pileated Woodpecker, Hermit Thrush, and goldfinch were seen on 8 trips. The grackle, Ruby-crowned Kinglet, and Brown Creeper were seen on 7 trips, and the sapsucker, titmouse, and Carolina Wren on 6. The Purple Finch was seen on 5 trips and the woodcock on 4. The junco and red-wing were seen on 3 and 2 trips respectively while the Cedar Waxwings were seen in a flock of 19 on only one day. Barred Owl was heard on 3 occasions just off the tract, and could have used it at times. Species not recorded last year include: woodcock, Yellowthroat, Purple Finch, goldfinch, towhee, and Swamp Sparrow. These new species as well as the great increase in Myrtle Warblers, blackbirds and sparrows could be attributed to the greater abundance of food this year. The mild fall and winter were responsible for a larger insect supply, while a very late crop of all fruit and seeds was evident. Especially prevalent seemed to be Sweet Gum seeds, Poison Ivy berries, and Swamp Holly berries. Acorns were much more abundant than last year. Species showing a significant decline this year were: the kinglets, wrens, sapsucker, and titmouse. They could possibly have stayed north of us this year.—*MR. and MRS. G. E. ALEXANDER, JR., Box 659, Greenville, Miss. 38701.*

19. MIXED PINE-DECIDUOUS FOREST.—**Location:** One mile west of the Northwestern State University campus, within the Northwestern State University Natural History Reservation and on the south side of Louisiana Highway 6 (Section 81, R7W, T9N), Natchitoches Parish, Louisiana. **Size:** 22 acres (L-shaped, measured by pacing with compass). **Description of Area:** See *AB* 25:639-640 (1971). Habitat change: The woodland on the south boundary of the 84-acre Natural History Reservation was cleared during 1971. The result was an isolated tract with the nearest woods ½ mile distant. The south boundary of the census area borders on this newly cleared land. **Weather:** Daytime temperatures ranged from 40° to 75°F. Night temperatures ranged from 25° to 50°. Four count days were overcast and two days were clear. About one in. of rain fell on Jan. 29. Wind during counts ranged from 0 to gusts up to 3 on the Beaufort scale. The weather was considered mild for this area in winter. The daytime average temperature was higher than the average January temperature for the area. **Coverage:** Jan. 23, 25, 26, 27, 28, 30. Total: 6 trips all between 10 a.m. and 3 p.m., averaging 110 minutes. **Count:** Ruby-crowned Kinglet, 8 (36); Carolina Chickadee, 6 (27); Tufted Titmouse, 5 (23); Golden-crowned Kinglet, 5 (23); Pine Warbler, 5 (23); Blue Jay, 4 (18); Myrtle Warbler, 4 (18); Red-bellied Woodpecker, 3 (14); Carolina Wren, 3 (14); Robin, 3 (14); Cardinal, 3 (14); White-throated Sparrow, 3 (14); Pileated Woodpecker, 1 (5); Yellow-bellied Sapsucker, 1 (5); Hairy Woodpecker, 1 (5); Downy Woodpecker, 1 (5); Brown Creeper, 1 (5); Brown Thrasher, 1 (5); Blue-gray Gnatcatcher, 1 (5); Solitary Vireo, 1 (5); Orange-crowned Warbler, 1 (5); E. Phoebe, 1 (5); Am. Goldfinch, 1 (5); Slate-colored Junco, 1 (5); Yellow-shafted Flicker, +; Mockingbird, +; Hermit Thrush, +. **Average Total:** 64 birds (density 291 birds per 100 acres). **Remarks:** Total species, 27. The Red-

bellied Woodpecker, Blue Jay, Carolina Chickadee, Tufted Titmouse, Carolina Wren, Robin, Golden-crowned Kinglet, Ruby-crowned Kinglet, Myrtle Warbler, Pine Warbler and Cardinal were seen on all 6 counts; the Yellow-bellied Sapsucker, Hairy Woodpecker, Downy Woodpecker, Brown Creeper and White-throated Sparrow on 5; the Brown Thrasher and Solitary Vireo on 4; and the Pileated Woodpecker, E. Phoebe, Blue-gray Gnatcatcher and Orange-crowned Warbler on 3. The remaining 5 species were seen on 1 or 2 counts. Thirty species were seen in 1971. The average total increased from 200 birds in 1971 to 291 birds per 100 acres in 1972. The Golden-crowned and Ruby-crowned Kinglet showed the greatest increase in numbers. In 1971 the most abundant bird was the Com. Grackle. The absence of grackles this year appeared to be owing to clearing of land and other disturbances of flocks that used the area in past winters. Flocks were seen in the vicinity but I did not observe them to use the census area.—*CHARLES E. VIERS, Dept. of Biological Sciences, Northwestern State Univ., Natchitoches, La. 71457.*

20. LOWER FOOTHILLS, PONDEROSA PINE FOREST.—**Location:** One-half mile south of Boulder, Colorado. **Size:** 20 acres. **Description of Area:** Situated in the northeast corner of a pine-covered mesa, at an elevation of 5900 ft. See *AFN* 8: 372 (1954). **Weather:** November and February were unusually dry; December and January were slightly above average in precipitation and below average in mean temperature. Severe wind storms raked the Boulder area in January. Snow partially or wholly covered the plot on 10 trips; the most was 13 in. on Jan. 16. Temperatures ranged from 12° to 40°F. **Coverage:** Nov. 7, 14, 21, 28; Dec. 12, 18, 26; Jan. 9, 16, 30; Feb. 6, 13, 20. Total: 13 trips, totaling 10.5 hours. Trips were taken from 7 to 9:45 a.m. **Count:** Steller's Jay, 4 (20); Golden-crowned Kinglet, 4 (20); Brown Creeper, 3 (15); juncos (sp.), 2 (10); Mountain Chickadee, 1 (5); Pygmy Nuthatch, 1 (5); Robin, 1 (5); Red-shafted Flicker, +; Black-billed Magpie, +; White-breasted Nuthatch, +; Cañon Wren, +; Townsend's Solitaire, +. The following flew over on one occasion: Cedar Waxwing, Evening Grosbeak, Pine Siskin, Red Crossbill (twice). **Average Total:** 16 birds (80 per 100 acres). **Remarks:** This was a low population compared to previous winters; the birds did not form the usual flocks. There was no pine cone crop on the mesa. No Clark's Nutcrackers, Red-breasted Nuthatches, or Cassin's Finches were seen.—*LOUISE HERING, 568 Marine, Boulder, Colo. 80302.*

21. LODGEPOLE PINE FOREST WITH ASPEN.—**Location:** One mile west of Silverthorne, Summit County, Colorado, 39° 37' N, 105° 6' W, Dillon Quadrangle, USGS. **Size:** 13.4 ha. = 33 acres, consisting of a rectangle 2000 ft. long by 600 ft. on the west, and by 800 ft. on the east. The linear shape is dictated by topography and edge. **Description of Area:** See *AFN* 24:550 and 24:760 (1970). **Coverage:** Nov. 26, 28; Dec. 4; Jan. 9; Feb. 5, 21. Total: 6 counts, between 8:00 a.m. and 10:00 p.m. **Weather:** Snow covered the ground throughout the study period. Despite the greater precipitation and colder temperatures than during last year's study period, snow cover amounted to less than last year.

Snow was 6 in. deep on Dec. 4; 15 in. deep on Jan. 9; 24 in. deep on Feb. 5 and 21. Average temperatures (lows and highs) and precipitation are presented in the following table:

	Temperature (°F.)		Precipitation (inches)
	Low	High	
Nov. 16-30	10	34	.43
December	2	31	.66
January	0	30	.51
February	6	35	.61

Count: Mountain Chickadee, 10 (75, 30); Brown Creeper, 4 (30, 12); Gray Jay, 2.5 (19, 8); Black-capped Chickadee, 2.5 (19, 8); White-breasted Nuthatch, 2 (15, 6); Red Crossbill 2 (15, 6); Hairy Woodpecker, 1 (7, 3); Golden-crowned Kinglet, +. **Average Total:** 25 birds (187 birds per ha., 76 birds per 100 acres). **Remarks:** Species flying overhead, but not using count area: Com. Raven. Mountain Chickadees counted on the November and December trips totaled only 10-20 percent of those counted on the January and February trips. My impression is that they lingered at higher elevations until mid-December snows sent them down to lower elevations. Gray Jays may have been preparing to nest in late February, as one was observed carrying a stick in its beak on Feb. 21.—*HUGH E. KINGERY, 10 Emerson, Denver, Colo. 80218.*

22. MATURE DOUGLAS FIR FOREST.—Location: 4 miles northwest of Bolinas, Marin County, California, and 1¼ miles north of Point Reyes Bird Observatory (P.R.B.O.); 37° 56' N, 122° 43' W, Bolinas Quadrangle, USGS. The area is within the Point Reyes National Seashore. **Size:** 24.2 acres (roughly rectangular 5280 × 200 ft., paced). **Description of Area:** For the most part the habitat is similar to the description in AB 25:987 (1971). However, there are two small clearings 100 × 100 ft. and 200 × 150 ft. where the vegetation is Coyote Bush (*Baccharis pilularis*), Blackberry (*Rubus ursinus*), and scattered Douglas Fir (*Pseudotsuga menziesii*). **Weather:** In general this winter was much drier and slightly colder than normal. The total rainfall at P.R.B.O. for November 1971 through February 1972 was 18.4 in., which was 10.5 in. below the average for the same period during three previous years. The daily mean high temperature was 53°F.; the mean low temperature was 36°. Last year's means were 53° and 40°. **Coverage:** Nov. 16, 30; Dec. 6, 13; Jan. 6, 16, 26; Feb. 18. Total: 8 trips; trips were made between 8:40 a.m. and 12:15 p.m. and lasted approximately 160 minutes. **Count:** Oregon Junco, 61 (252); Fox Sparrow, 60 (248); Chestnut-backed Chickadee, 52 (215); Varied Thrush, 25 (103); Song Sparrow, 19 (79); Wrentit, 16 (66); Rufous-sided Towhee, 11 (45); Ruby-crowned Kinglet, 11 (45); Golden-crowned Kinglet, 9 (37); Hermit Thrush, 8 (33); Pine Siskin, 8 (32); Steller's Jay, 7 (29); Winter Wren, 7 (29); Red-breasted Nuthatch, 5 (21); Bewick's Wren, 3 (12); Red-shafted Flicker, 2 (8); Hairy Woodpecker, 2 (8); Pygmy Nuthatch, 2 (8); Brown Creeper, 2 (8); Townsend's Warbler, 2 (8); Hutton's Vireo, 1 (4); Downy Woodpecker, +. **Average Total:** 313 birds (1293 per 100 acres). **Remarks:** Only two

or three Pine Siskins were usually detected until Feb. 18 when several large flocks were seen. Turkey Vultures, Red-tailed Hawks, ravens, and crows were seen flying over the area.—*KATE DARLING, Point Reyes Bird Observatory, P.O. Box 321, Bolinas, Calif. 94924.*

23. RIPARIAN WILLOW WOODLAND.—Location: On the Jasper Ridge Biological Experimental Area of Stanford University, San Mateo County, California; 4 miles west-southwest of Stanford University's Main Quadrangle; 37° 24' N and 122° 13' W, USGS Palo Alto Quadrangle. **Size:** 10 acres, paced (irregular; approximately an isosceles right triangle, the right angle being at the northeast corner). **Description of Area:** Part of a rather unique, extensive mature willow woodland formed by the damming of San Francisquito Creek to make Searsville Lake. Over 90% of the semi-closed canopy is composed of 50-70 ft. high Yellow Willows (*Salix lasiandra*) with 1½ ft. DBH. Smaller numbers of White Alder (*Alnus rhombifolia*) and Red Willow (*S. laevigata*) are interspersed, chiefly in the southern and eastern parts of the plot. Box Elder (*Acer negundo*) occasionally reaches tree size, especially in the eastern part of the plot. However, it is much more prominent as a shrubby understory, 10-20 ft. high. It, along with the even more abundant dogwood (*Cornus sp.*), forms a nearly impenetrable understory throughout the eastern half of the plot. The western half of the plot is subject to more frequent flooding and lacks the majority of this dense understory although Box Elder and dogwood are still present. The ground is essentially bare below the thick understory in the eastern half of the plot. In the more open western half, Pacific Oenanthe (*Oenanthe sarmientosa*) forms a nearly continuous ground cover, averaging 18 in. in height. There are large numbers of fallen willow trees and branches throughout the plot and a substantial layer of litter covers the ground. A fair number of dead willow stubs 10-30 ft. high are still standing throughout the plot. A narrow boundary of Sandbar Willow (*S. Hindsiana*) extends along the north and west edges of the plot mostly along the edge of standing water. Scattered individuals of Arroyo Willow (*S. lasiolepis*) are interspersed between the Yellow and Sandbar Willows, along the southern edge of the plot and around openings within the plot. A 12 ft. wide bridle trail parallels the northern edge of the plot, about 15 ft. inside, and essentially divides the Sandbar from the Yellow Willows along this edge. This trail is bordered on the north by a rather dense understory of blackberry (*Rubus sp.*) and Coyote Bush (*Baccharis pilularis*), and on the south by a similar understory of blackberry, Chaparral Currant (*Ribes malvaceum*), Poison Oak (*Rhus diversiloba*), Nettle (*Urtica holosericea*) and Poison-Hemlock (*Conium maculatum*) with a very few individuals of Coffeeberry (*Rhamnus californica*). No substantial numbers of any of these species are more than 10 ft. removed from this trail. Plant names are those used in Munz, *A California Flora*, 1959. **Topography:** A flat floodplain along the southern edge of Searsville Lake; elevation 280 ft. The north boundary is formed by the open water of Searsville Lake while the west boundary and northeast corner is defined by an extensive irregularly penetrating expanse of Cat-Tail (*Typha latifolia*) marsh. The south boundary is defined by a small creek across which begins

an area of disturbed oak woodland. A strip of willow woodland varying from 30 to 100 ft. in width extends along the southern edge of this creek and acts as a buffer zone to remove edge effects from the oak woodland. However, six very large California White Oaks (*Quercus lobata*) and three Coast Live Oaks (*Q. agrifolia*) just reach the southern boundary of the plot across the small creek. The east boundary is formed by an arbitrary line through the mature willow woodland. Several very large Black Cottonwoods (*Populus trichocarpa*), interspersed with the Yellow Willows, are just outside the eastern boundary of the plot. **Weather:** Very dry; 2.01 in rainfall in January, 2.36 in. in February and none during the first week of March is only about half of the normal rainfall. Temperature normal to a little above normal; February had a high of 71° F. and a low of 25°, while the first week of March had a high of 83° and a low of 41°. (Weather data from the Woodside Fire Station, 2 miles away.) **Coverage:** Jan. 20, 30; Feb. 4, 6, 9, 13 (two trips), 15, 17, 24, 25; Mar. 2, 4, 5. Total: 14 trips; 7 between 8:00 a.m. and noon, and 7 between noon and 5:30 p.m., averaging 137 minutes each and totaling 32 hours. **Count:** Data are presented as: Bird, average of 7 morning counts/average of 7 afternoon counts: average of all 14 counts (average/100 acres). Robin, 5/101 : 53 (530); Cedar Waxwing, 20/75 : 48 (480); Chestnut-backed Chickadee, 36/37 : 36 (360); Bewick's Wren, 18/17 : 17 (170); Ruby-crowned Kinglet, 10/16 : 13 (130); Brown Creeper, 8/10 : 9 (90); Myrtle Warbler, 9/10 : 9 (90); Plain Titmouse, 8/6 : 7 (70); Song Sparrow, 9/4 : 6 (60); Anna's Hummingbird, 2/3 : 3 (30); Downy Woodpecker, 4/2 : 3 (30); Violet-green Swallow, 5/1 : 3 (30); Varied Thrush, 1/4 : 3 (30); Am. Goldfinch, 4/3 : 3 (30); Lesser Goldfinch, 5/2 : 3 (30); Rufous-sided Towhee, 5/1 : 3 (30); Brown Towhee, 5/2 : 3 (30); Turkey Vulture, 2/2 : 2 (20); Yellow-bellied Sapsucker, 2/3 : 2 (20); Steller's Jay, 1/2 : 2 (20); Wren-tit, 2/2 : 2 (20); Hutton's Vireo, 2/2 : 2 (20); House Finch, 2/2 : 2 (20); Red-shouldered Hawk, 1/1 : 1 (10); Great Horned Owl, +/1 : 1 (10); Black Phoebe, 1/2 : 1 (10); Scrub Jay, 1/1 : 1 (10); Common Bushtit, 3/0 : 1 (10); White-breasted Nuthatch, 1/1 : 1 (10); Winter Wren, 1/1 : 1 (10); Purple Finch, 1/1 : 1 (10); Golden-crowned Sparrow, 1/1 : 1 (10); Fox Sparrow, 2/1 : 1 (10); Cooper's Hawk, +/+ : +; Red-tailed Hawk, 0/+ : +; Mourning Dove, +/0 : +; Allen's Hummingbird, 1/0 : +; Acorn Woodpecker, 0/+ : +; Barn Swallow, 1/0 : +; Hermit Thrush, +/0 : +; Golden-crowned Kinglet, +/0 : +; Audubon's Warbler, 0/+ : +; Pine Siskin, +/0 : +; White-crowned Sparrow, 1/0 : +. **Average Total:** 183 birds on 7 morning counts/314 birds on 7 afternoon counts : 249 birds on all 14 counts (2490 per 100 acres). **Remarks:** The higher average total on the afternoon counts was primarily caused by the large numbers of Robins that regularly visited the plot between 3 and 5 p.m. Apparently the birds used the plot as a gathering place before proceeding to their winter roost, some 5 miles to the northwest. They utilized the area for drinking, bathing and "socializing" but most birds were involved in some feeding during their afternoon stay and therefore were considered an integral part of the avifauna. The Robins usually were accompanied by several Varied Thrushes. This afternoon influx decreased markedly between Feb. 9 and 24 when

most of the winter population left the area. Larger numbers of Cedar Waxwings also utilized the plot in the afternoon as compared with morning. These birds stayed high in the willow canopy and continually sallied after insects. Numbers of waxwings were larger on warm, sunny days than on cool cloudy days and numbers increased greatly after Feb. 13 when the willow catkins opened at the tops of the trees. This indicates that the waxwings were feeding on some species of flying insects that were partial to the willow blossoms and whose activity increased with increasing temperature (afternoons were considerably warmer than mornings). Ruby-crowned Kinglets and Myrtle Warblers behaved much like the waxwings, often gleaning in the mid-levels and understory in the mornings but mostly sallying in the canopy in the afternoon. The temporal nature of each of these two species, however, was quite different. Ruby-crowned Kinglets were very common on several preliminary censuses in December when many dead leaves remained on the willows. Numbers began decreasing in early January, when the leaf fall was complete and continued to decrease throughout the study period. Myrtle Warblers, however, were only fairly common when the trees held dead leaves in December and decreased abruptly to near zero when the leaf fall was complete; but they became increasingly common, even abundant, after Feb. 13 when the willow catkins opened. Song Sparrow numbers increased rather steadily after Feb. 6, apparently indicating an influx into the area. This is most surprising since this species is considered a permanent resident in this area. The Common Bushtit, pre-eminently a foliage feeder, moved into the plot in numbers on Mar. 5, when the willows came into leaf. Very small numbers were present earlier when the species was more confined to the live oak woodland. The Violet-green Swallows were spring migrants and were first observed over the plot on Feb. 25. Similarly, the Allen's Hummingbirds and Barn Swallows were spring migrants, both appearing on Mar. 5. The White-throated Swifts were also seen on Mar. 5 and could have been migrants although a substantial flock wintered in the area. The remaining species were rather uniformly distributed throughout the period and numbers were generally equal or slightly greater in the morning than in the afternoon, reflecting an activity pattern characteristic of most landbirds. One of the Yellow-bellied Sapsuckers present in the plot from Jan. 30 to Feb. 6 was a hybrid between our normal Red-breasted type and the Rocky Mountain Red-naped type. Such hybrids are thought to be quite rare. Several species of birds utilized the very edge of the plot but were not included in the census. Long-billed Marsh Wrens, Yellowthroats and Red-winged Blackbirds were present in the cattails along the west edge and NE corner and often perched on the willows along the edge. A California Thrasher and many Starlings frequently sang from several of the oaks that adjoined the south boundary of the plot, but were never seen within the plot itself. Acorn Woodpeckers and Mourning Doves frequented these same oaks, but each species was once seen within the plot and thus is included in the census. The total number of species found in the plot (44) and the density (2490 birds per 100 acres) are both very high indicating the high productivity of riparian habitat. Peter Egan and Byron Swift helped

with several of the censuses. Weather data were supplied by Mr. L. Stacy of the Woodside Fire Department.—*DAVE DeSANTE, Dept. of Biological Sciences, Stanford, Calif. 94305.*

24. DECIDUOUS OAK WOODLAND.—Location: On the Jasper Ridge Biological Experimental Area of Stanford University, San Mateo County, California; 3.5 miles west-southwest of Stanford University's Main Quadrangle; 37° 24' 20" N, 122° 13' 30" W, USGS Palo Alto Quadrangle. **Size:** 8 acres. **Description of Area:** See *AFN* 24: 554-555 (1970). Blue Oak (*Quercus douglasii*) is the dominant species of tree within the plot, which is bordered on two sides by California Live Oak (*Q. agrifolia*) woodlands, on one side by a California Live Oak and Toyon (*Photinia arbutifolia*) thicket, and on the fourth side by a foothill grassland. There is a small field about 2 acres in extent dividing the plot into two parts. **Weather:** 2.01 in. rainfall in January, 2.36 in. in February, and none during the first week of March. This is about half the normal rainfall but still considerably more than the same period last year, during which only 2.77 in. total rainfall occurred. Temperatures were roughly normal, with February having a high of 71°F. and a low of 25° and the first week of March having a high of 83° and a low of 41°. (Weather data from Woodside Fire Station, 2½ miles away.) **Coverage:** Jan. 29; Feb. 1, 3, 6, 8, 13, 15, 17, 21, 24, 29; Mar. 2, 7. Total: 13 trips averaging 125 min. each. All were between 8:25 and 11:55 a.m. and totaled 27 hours. **Count:** Robin, 29 (363); Oregon Junco, 13 (163); Plain Titmouse, 10 (125); Brown Towhee, 9 (113); Cedar Waxwing, 8 (100); Golden-crowned Sparrow, 8 (100); Scrub Jay, 7 (88); Rufous-sided Towhee, 6 (75); Ruby-crowned Kinglet, 4 (50); Chestnut-backed Chickadee, 3 (38); Common Bushtit, 3 (38); White-breasted Nuthatch, 3 (38); Bewick's Wren, 3 (38); Myrtle Warbler, 3 (38); Lesser Goldfinch, 3 (38); Anna's Hummingbird, 2 (25); Red-shafted Flicker, 2 (25); Purple Finch, 2 (25); Turkey Vulture, 1 (13); Red-tailed Hawk, 1 (13); Band-tailed Pigeon, 1 (13); Yellow-bellied Sapsucker, 1 (13); Downy Woodpecker, 1 (13); Violet-green Swallow, 1 (13); Hutton's Vireo, 1 (13); White-tailed Kite, +; Sparrow Hawk, +; Mourning Dove, +; Great Horned Owl, +; Hairy Woodpecker, +; Steller's Jay, +; Com. Crow, +; Townsend's Warbler, +; Western Meadowlark, +. **Average Total:** 123 birds (1538 per 100 acres). **Remarks:** The Scrub Jay, Plain Titmouse, White-breasted Nuthatch, Bewick's Wren, Rufous-sided Towhee, Brown Towhee, and Oregon Junco were seen on all 13 trips. Anna's Hummingbird, Red-shafted Flicker, Yellow-bellied Sapsucker, Chestnut-backed Chickadee, Robin, Ruby-crowned Kinglet, and Golden-crowned Sparrow were seen on 9 to 12 counts. Red-tailed Hawk, Common Bushtit, Hutton's Vireo, Myrtle Warbler, Purple Finch, and Lesser Goldfinch were seen on 5 to 8 counts. Birds definitely less common than during the same period last year were Yellow-bellied Sapsucker (3-1), Com. Bushtit (7-3), Bewick's Wren (7-3), Ruby-crowned Kinglet (6-4), W. Bluebird (1-0), and Hermit Thrush (4-0). The latter exhibited the most dramatic decline and was consistent with the generally small numbers of Hermit Thrushes seen in the Bay Area this winter. Birds more common this year than last were Robin (10-29), Lesser Goldfinch (+-3), Rufous-sided

Towhee (4-6), Brown Towhee (6-9), Golden-crowned Sparrow (2-8), Cedar Waxwing (0-8), and White-tailed Kite (0-+). The Cedar Waxwings were seen on only three occasions in irregular flocks of 35, 57, and 5 individuals, thus accounting for their unusually large average numbers. White-tailed Kites were observed relatively frequently in the area reflecting an overall increase in population size of that species in the Bay Area. The Violet-green Swallows were early spring migrants rather than winter residents. The Steller's Jays and Townsend's Warblers were strays from the nearby Redwood forest at the base of Jasper Ridge and did not reside in the study plot. The W. Meadowlarks were usually perched singing on a Blue Oak right at the edge of the bordering grassland. I would like to thank David DeSante and Dr. Harold Mooney for their sponsorship. Weather data were provided by Mr. L. Stacy of the Woodside Fire Department.—*WALTER KOENIG, Dept. of Biological Sciences, Stanford, Calif. 94305.*

25. UPLAND OAK-MAPLE FOREST, SECOND GROWTH, MEADOW AND EDGE.—Location: In the northwestern part of Greenwich and southeastern portion of 280-acre Audubon Center of Greenwich; Fairfield County, Connecticut; Glenville, Conn. Quadrangle, USGS. **Size:** 8.09 ha = 20 acres (rectangular, surveyed). **Description of Area:** See *AFN* 23: 724-725 (1969). **Weather:** 1951-1971 averages are shown in parenthesis. Average temperatures: January, 30.4°F. (28.1°); February, 27.4° (30.8°). Precipitation (inches): January, 2.05 (2.78); February, 4.68 (3.41). The ground was free of snow during most of the count period. The snowfall for January was 1.62 in. and for February was 16.9. Since most of the periods of snow were followed by mild days, any accumulations soon disappeared. Weather information from the weather station at the Stamford Museum 7 miles to the east. **Coverage:** Dec. 31; Jan. 15, 23; Feb. 5, 6, 26; Mar. 11. Total: 7 trips averaging 62 minutes each. Trip hours were between 9 a.m. and 4 p.m. **Count:** Black-capped Chickadee, 6 (74, 30); Ruffed Grouse, 3 (37, 15); Blue Jay, 2 (25, 10); Com. Crow, 2 (25, 10); Cardinal, 2 (25, 10); Hairy Woodpecker, 1 (12, 5); Downy Woodpecker, 1 (12, 5); Tufted Titmouse, 1 (12, 5); White-breasted Nuthatch, 1 (12, 5); Great Horned Owl, +; Robin, +; E. Bluebird, +; Starling, +; Myrtle Warbler, +; Am. Goldfinch, +; Tree Sparrow, +; White-throated Sparrow, +; **Average Total:** 19 birds (density 235 per sq. km., 95 per 100 acres). **Remarks:** The Ruffed Grouse was seen on all trips, Downy Woodpecker and chickadee on 6, Blue Jay, nuthatch and Cardinal on 5, Hairy Woodpecker and crow on 4, titmouse and bluebird on 2. Declines from the previous year were Am. Goldfinch (-9), Robin (-5), the chickadee, bluebird and Slate-colored Junco (-3), and Downy Woodpecker, nuthatch and Tree Sparrow (-1). Increasing were Cardinal (+2) and grouse, Blue Jay, titmouse and crow (+1) each. The overall count declined from 39 to 19 and was possibly due to the poor crop of berries in the area this season. Robins in general were not wintering in the surrounding areas as they did the previous winter. However, as it was a fairly mild winter, the Cardinal was apparently not as dependent on feeders and frequented the plot. The Great Horned Owl was noted on Dec. 31 and was being harassed by about 10 crows. Seen overhead, but not

counted, were 1 Herring Gull and 5 more Com. Crows. The area was also frequented by White-tailed Deer (*Odocoileus virginianus virginianus*).—*WM. BOLTON COOK and GARY E. PALMER (compiler), 264 Davis Avenue, Greenwich, Conn. 06830.*

26. FLOODPLAIN FOREST AND CULTIVATED BOTTOMLAND.—

Location: North of and adjacent to the village of Scio, Allegany County, New York; 42° 10'N, 77°59'W, Wellsville Quadrangle, USGS, 1926. **Size:** About 128 acres. **Description of Area:** See AB 25: 644-45 (1971). This year the cultivated area on the southern end was planted to 38 acres of corn, about one quarter harvested as grain and the rest for silage. The sod and fall plowing on the northern end are the same as last year. Of the floodplain area, near the northern end, the truncated oxbow lake, or slough, was frozen over for most of this study except at the head where underground springs kept small areas open. **Food:** There was a good supply of full ears of corn left behind on the grain-harvested corn stubble until deep snow covered it early in February. Box-elder seeds were abundant but nearly all gone by the close of the study. There were no wild apples or grapes left, but staghorn sumac fruit was fair. Sycamore fruit was plentiful although only goldfinches seemed to feed on it. There were fewer top dressings this year. However, the birds took full advantage of one spread soon after the 10 in. snowfall Feb. 4. There were large numbers of rabbits and mice for hawks and owls. **Weather:** For the 43 days covered by the survey the temperature stayed below freezing 19 days and reached freezing or below on all but one night. The temperature ranged from -10°F. (Feb. 9) to 60°F. (Jan. 13). The mean for January was 24.5°, considerably higher than last year's 9.0°. The mean for February through the date for the last trip was 17.0°. During December there was only a trace of precipitation. Snow on the ground for most of January was only one-half to one in. while during the period from Feb. 4 to Feb. 12 there was 10 to 12 in. (Data from the Alfred Coop-Weather Station, 16 miles northeast of Scio and 770 ft. higher elevation. Their records vary little from ours.) **Coverage:** Jan. 1, 1, 6, 24, 24, 28, 28, Feb. 1, 8, 9, 12. Total 8 trips averaging 150 minutes each. The longer part of each trip was made between 8:15 a.m. and 11:40 a.m. with three 20-minute partials (to make complete trips) between 3:35 p.m. and 5:05 p.m. **Count:** Rock Dove, 37 (29); Mourning Dove, 32 (25); Evening Grosbeak, 29 (23); Com. Crow, 27 (21); Com. Redpoll, 14 (11); Black-capped Chickadee, 10 (8); Blue Jay, 8 (6); Downy Woodpecker, 7 (5); Am. Goldfinch, 7 (5); Cardinal, 5 (4); Black Duck, 3 (2); Belted Kingfisher, 3 (2); White-breasted Nuthatch, 3 (2); Com. Merganser, 2 (2); Pine Siskin, 2 (2); Herring Gull, 1 (1); Pileated Woodpecker, 1 (1); Hairy Woodpecker, 1 (1); Horned Lark, 1 (1); House Sparrow, 1 (1); Tree Sparrow, 1 (1); Red-breasted Merganser, +; Com. Goldeneye, +; Cooper's Hawk, +; Red-tailed Hawk, +; Sparrow Hawk, +; Brown Creeper, +; Starling, +; White-throated Sparrow, +; Song Sparrow, +. **Average Total:** 195 birds (density, 152 per 100 acres). **Remarks:** The Mourning Dove, Downy Woodpecker, Blue Jay, crow, chickadee, Evening Grosbeak and redpoll appeared on every trip and the kingfisher and Cardinal on every trip but one. With the exception of Red-breasted Merganser and

Black Duck, each sighted Jan. 1, waterfowl did not appear again until the last of January when Lake Erie, about 60 miles n.w. of Scio, froze over. The large flocks of Rock Doves (124 and 95), Mourning Doves (141) and crows (124) are attributed to the light snow cover making the corn stubble easily available for food. The number of species as well as the average total bird population rose from 20 species, 51 birds (42 per 100 acres) in 1971 to 30 species, 195 birds (152 per 100 acres) in 1972. This increase, and the appearance of hawks, may be due to the open winter's giving better access to ground food. Another factor for this difference may be that in 1971 the larger number of trips was made between 11 a.m. and 3 p.m. when birds are usually less active, while most of this year's coverage was done before 11 a.m. With the exception of the Great Blue Heron and Snow Bunting, all species seen last year appeared on this survey with 12 in addition: Com. Merganser, Red-breasted Merganser, Cooper's Hawk, Red-tailed Hawk, Sparrow Hawk, Pileated Woodpecker, Starling, House Sparrow, Com. Redpoll, Pine Siskin, White-throated Sparrow, and Song Sparrow. Appreciation is extended to Dr. Clarence Klingensmith for weather data, to Don Maybee and Paul McQueen, owners, for permission for the study, and to Raymond Pitzrick and Michael Pitzrick for help in the field.—*VIVIAN PITZRICK, Box 61 R. 1 Amity Lake, Belmont, N.Y. 14813.*

27. UPLAND OAK, WILD GRAPE WOODS.—

Location: About 5 miles northeast of Pittsburgh, Pennsylvania. **Size:** 50 acres. **Description of Area:** A fairly wide rectangular oak and grape vine woods. The oaks average between 75 and 100 ft. and are about 2½ ft. DBH. Other trees average between 40 and 130 ft. There is one part of the coverage area which is more of the Red Oak-Red Maple-Tulip-tree variety with no wild grape. This area is about 8 acres. The general composition is that of widely spaced white Oaks with dense mats of grape vines hanging from the trees and covering nearly 100% of the ground in some parts. At the western area, the grape vines are less dense, and there are some large areas covered with Poison-ivy. There is a small, man-made pond at the western border. The dominant trees in order of decreasing abundance are: White Oak (*Quercus albus*); Red Oak (*Q. rubrus*); Sugar Maple (*Acer saccharum*); Am. Beech (*Fagus grandifolia*); White Ash (*Fraxinus americana*); Red Maple (*A. rubrum*); Tulip-tree (*Liriodendron tulipifera*); Black Cherry (*Prunus serotina*); Com. Catalpa (*Catalpa bignonioides*) (origin unknown); Mossycup Oak (*Q. macrocarpa*). The understorey is composed primarily of wild grape (*Vitis* sp.); Com. Witch-Hazel (*Hamamelis virginiana*); various saplings; Flowering Dogwood (*Cornus florida*); Poison-ivy (*Rhus radicans*); various unidentified bushes; Spicebush (*Lindera benzoin*); Sassafras (*Sassafras albidum*); Black Locust (*Robinia pseudo-acacia*) and Christmas Fern (*Polystichum acrostichoides*). All names taken from *A Field Guide to the Trees and Shrubs* by George A. Petrides, Houghton Mifflin, 1958. The northern third of the area is on the north-facing slope of the valley and is a more typical deciduous woods with fewer grape vines. The oak woods is probably very old because of the size of the trees and the existence of some fairly extensively rotted trunks.

There are many recently felled oaks, presumably knocked over during a strong wind storm about two years ago. Most of the approximately 200-acre woods is protected in the Trillium Trail Wildlife Sanctuary. **Edge:** To the north, a regular deciduous woods takes over leading into a valley. To the east, there is a tennis club. To the southeast, there is a new housing development. To the south, the study area is bordered by similar habitat gradually giving way to second-growth areas. To the southwest, there is a large short-grass field. To the west, the habitat is similar. **Topography:** The northern boundary of the area is at the edge of a steeply rising north-facing slope of a valley. The north edge is at about 980 ft. The southern end at about 1020 ft. This area is on the north top of a hill. **Weather:** It was unusually warm until Jan. 22, and after that it was seasonably cold. There was very little snow more than ½ in. until Jan. 29 and 30, when there was 2½-3 in. and Feb. 5, 6, when there was 7 in. **Coverage:** Dec. 22, 27, Jan. 1, 15, 22, 23, 29, 31. Total: 8 trips averaging 2 hours. **Count:** Tufted Titmouse, 37 (74); Black-capped Chickadee, 22 (44); Cardinal, 14 (28); Downy Woodpecker, 11 (22); Slate-colored Junco, 11 (22); Evening Grosbeak, 9 (18); White-breasted Nuthatch, 8 (16); Pine Siskin, 8 (16); Golden-crowned Kinglet, 6 (12); Com. Crow, 5 (10); Carolina Wren, 5 (10); Blue Jay, 4 (8); White-throated Sparrow, 4 (8); Hairy Woodpecker, 3 (6); Brown Creeper, 3 (6); Com. Redpoll, 2 (4); Song Sparrow, 2 (4); Pileated Woodpecker, 1 (2); Robin 1 (2); Tree Sparrow, 1 (2); Starling, 1 (2); Red-tailed Hawk, +; Ruffed Grouse, +; Great Horned Owl, +; Yellow-shafted Flicker, +; Yellow-bellied Sapsucker, +. **Average Total:** 158 birds (316 per 100 acres). **Remarks:** The warm weather during the first half of the period probably accounted for the Robins and the Yellow-shafted Flicker. Black-capped Chickadees were scarcer than usual along this route, while Tufted Titmice were commoner than usual. The fact that the Tufted Titmice often sang during the period made them fairly easy to observe. The Cardinals were found only during warm weather. The Evening Grosbeaks were the first ever observed in the area. The Pine Siskins were tame and there were often some Com. Redpolls mixed in with them. There was at least one flock of Pine Siskins that spent most of January in the woods, but they were observed only twice in the count area. The Carolina Wrens have increased 40% over last year. The Com. Crow figure is based on birds seen perched in trees actually in the count area, not those heard overhead. They probably fed in the field at the southwestern boundary of the area. All White-throated Sparrows were observed early in the period. The Tree Sparrows were observed feeding in some weeds along a sewer cut at the eastern boundary. There were two different Red-tailed Hawks, one an immature and another an adult. They were often seen perched in the middle of the woods, probably to escape harassment by the crows. The Great Horned Owl figure is probably low because all counts were made during the day. This appears to be a bad year locally for Ruffed Grouse and Yellow-bellied Sapsuckers. There was an average of four goldfinches per walk heard flying overhead.—SCOTT ROBINSON (compiler), *Grandview Dr. S., Pittsburgh, Pa. 15215*, W. O. ROBINSON.

28. OPEN SWAMP AND FIELDS.—**Location:** College Park, Maryland, 38° 59' N, 76° 55' W, Washington East Quadrangle. **Size:** 25 acres. **Description of Area:** Part of a water over-flow drainage area. Basically, it is composed of a two-acre pond, an one-acre pond, and the rest is an open developing swamp that is divided in half by a dike. On the eastern and southern edges of the plot, there is considerable growth of shrubs and medium-sized trees. In a small open part of the eastern side, there are a number of junked cars. The northern border is bordered by Cleveland Ave. and the site is bordered on the west by the main-line tracks of the Baltimore and Ohio Railroad. Just beyond the southern border is Paint Branch, the creek of which this area serves as an over-flow area. On the northern edge, there is a well-traveled path bordered by seedlings and a few large trees. There are three major dikes going through the area, on which grow numerous seedlings, small trees, and cover. On the eastern part of the marsh, there are hundreds of dead River Birch (*Betula nigra*) seedlings. Large trees averaged about 35 ft. in height, seedlings and small trees about 10 ft. in height. For the entire area the prevalent trees are as follows: Red Maple (*Acer rubrum*), Black Willow (*Salix nigra*), River Birch, Black Cherry (*Prunus serotina*), Am. Sycamore (*Platanus occidentalis*). There are scattered individuals of the following trees: Staghorn Sumac (*Rhus typhina*), White Ash (*Fraxinus americana*), White Oak (*Quercus alba*), Shining Sumac (*R. copallina*), Virginia Pine (*Pinus virginiana*), S. Red Oak (*Q. falcata*), Sweetgum (*Liquidambar styraciflua*), and Am. Beech (*Fagus grandifolia*). The edge in the eastern and southern boundaries consists mainly of Red Maple, and River Birch. Cover for the area includes: Bluegrass (*Poa* sp.), Virginia Creeper (*Parthenocissus quinquefolia*), Poison-ivy (*Rhus radicans*), Goldenrod (*Solidago* sp.), Yarrow (*Achillea millefolium*), Daisy (*Chrysanthemum leucanthemum*), Smooth Blackberry (*Rubus canadensis*), Dandelion (*Taraxacum officinale*), Jack-in-the-Pulpit (*Arisaema triphyllum*), buttercup (*Ranunculus* sp.), clover (*Trifolium* sp.), Skunk Cabbage (*Symplocarpus foetidus*), Jimsonweed (*Datura stramonium*), Mullein (*Verbascum thapsus*), Milkweed (*Asclepias syriaca*), Ragweed (*Ambrosia* sp.), Japanese Honeysuckle (*Lonicera japonica*), Com. Cat-tail (*Typha latifolia*), several unidentified water plants, and Greenbrier (*Smilax rotundifolia*). **Food:** Weeds very good, sumacs good, sycamore droppings excellent, some water open throughout period. **Elevation:** 50 ft. **Weather:** It was unseasonably mild during January, and about average for February. Temperatures on trips ranged from 26° to 61°F. The average temperature for all trips was 47°F., certainly above normal for this area. Sky conditions were clear on all trips, and only on Feb. 7 was there wind above 10 m.p.h. (20 m.p.h. on Feb. 7). There was no snow cover on any trip. A few small snowstorms in mid-February on non-count days did not remain on the ground long enough to have any effect. No precipitation occurred on any trip, with rainfall only moderate during the period itself. **Coverage:** Jan. 12, 18, 19; Feb. 7, 11, 23. Total: 6 trips, between 11:55 a.m. and 5:10 p.m., averaging 2 hours 15 minutes. **Count:** Red-winged Blackbird, 15 (60); Starling, 14 (56); Song Sparrow, 7 (28); Mourning Dove, 6 (24); Brown-headed Cowbird,

6 (24); White-throated Sparrow, 6 (24); Carolina Chickadee, 3 (12); Cedar Waxwing, 3 (12); Field Sparrow, 3 (12); Blue Jay, 2 (8); Mockingbird, 2 (8); Com. Grackle, 2 (8); Cardinal, 2 (8); Swamp Sparrow, 2 (8); Great Blue Heron, 1 (4); Mallard, 1 (4); Belted Kingfisher, 1 (4); Downy Woodpecker, 1 (4); Com. Crow, 1 (4); Tufted Titmouse, 1 (4); Carolina Wren, 1 (4); House Sparrow, 1 (4); Pine Siskin, 1 (4); Slate-colored Junco, 1 (4); Tree Sparrow, 1 (4); Wood Duck, +; Sharp-shinned Hawk, +; Cooper's Hawk, +; Red-tailed Hawk, +; Sparrow Hawk, +; Sora, +; Long-billed Marsh Wren, +; Yellow-breasted Chat, +; Rusty Blackbird, +; Evening Grosbeak, +; Rufous-sided Towhee, +; **Average Total:** 84 birds (336 per 100 acres). **Remarks:** The mild weather was probably responsible for the Long-billed Marsh Wren, Sora, and the chat. All three are unusual in midwinter in Prince Georges County, Maryland. The hawks perhaps found the small birds an inviting prospect, though I never saw one actually catch a bird. A fire was started along the northern part of the area on Jan. 19, but was extinguished before it could have any real effect on the area. There was daily disturbance from the trains on the B&O railroad and from aircraft landing at nearby College Park Airport. Surprising was the lack of any woodcock or snipe, which are very common on this tract in migration. Seen from the area or flying over were Herring Gull, Ring-billed Gull, Rock Dove, and Fish Crow. This area was chosen because it will have the Washington Metro going near or on the tracks in the mid-1970's. It will be interesting to measure the effect of this on the area.—CHARLES F. HILLS, 3052 Burr St., Fairfield, Conn. 06430.

29. MIXED UPLAND HABITAT.—**Location:** the central third of Glover-Archbold Park, a long, narrow stream valley park in the northwest section of the District of Columbia. **Size:** 35 acres. **Description of Area:** see *AFN* 14: 502-502 (1960). **Coverage:** Jan. 8, 9, 12, 16, 19, 22 (2), 23 (2), 26, 27 (2), 29 (2); Feb. 5, 6, 11, 12 (4), 15, [19, 21, Mar. 1.] The last three trips, being past the official end of the census period, have not been included in the summary except as noted under Remarks. Hours ranged from 8:15 a.m. to 4:45 p.m., with 13 in the morning or chiefly so, and 9 in the afternoon. A total of 39 hours, 15 minutes was spent, in 22 trips, but since several gave only partial coverage, this totaled 15 complete coverages of the area. The average coverage time was 2 hours, 41 minutes. Weather was clear on 10 trips, overcast on 9, light rain on 3. Average temperature was 36° F., but was below freezing on only 5 trips. Wind was 20-30 m.p.h. on 1 trip, and 10-15 m.p.h. on 5. This was the 13th consecutive year that the census has been taken. **Count:** Com. Crow, 17 (120, 49); Carolina Chickadee, 16 (113, 46); Starling, 15 (106, 43); Tufted Titmouse, 13 (92, 37); Cardinal, 10 (71, 29); Blue Jay, 9 (64, 26); Mourning Dove, 8 (56, 23); House Sparrow, 5 (35, 14); Red-bellied Woodpecker, 4 (28, 11); Downy Woodpecker, 4 (28, 11); Mockingbird, 4 (28, 11); Am. Goldfinch, 4 (28, 11); White-throated Sparrow, 4 (28, 11); Ring-billed Gull, 3 (21, 9); Carolina Wren, 3 (21, 9); Slate-colored Junco, 3 (21, 9); White-breasted Nuthatch, 2 (14, 6); Rock Dove, 1 (7, 3); Yellow-bellied Sapsucker, 1 (7, 3); Hairy Woodpecker, 1 (7, 3); Purple

Finch, 1 (7, 3); Rufous-sided Towhee, 1 (7, 3); Turkey Vulture, +; Black Vulture, +; Red-tailed Hawk, +; Red-shouldered Hawk, +; Bobwhite, +; Pileated Woodpecker, +; Fish Crow, +; Brown Creeper, +; Winter Wren, +; Brown-headed Cowbird, +; Evening Grosbeak, +; Song Sparrow, +. **Average Total:** 129 (911 birds per sq. km., 369 per 100 acres). **Remarks:** If the last three trips are included, which adds one complete coverage, two additional species were found, Yellow-shafted Flicker and Cedar Waxwing. Other statistics would not be appreciably affected. Our highest species total was 35, in 1970, which was also the year with highest coverage, 16 complete surveys. This year then roughly equals our record for coverage and species, but falls behind 1960 with 180 individuals. No new species were added to the cumulative list of 53. The first year in which we counted Rock Doves was 1971. Some increase was seen for Mourning Dove, Red-bellied Woodpecker, Yellow-bellied Sapsucker, Blue Jay, Com. Crow, Tufted Titmouse, White-breasted Nuthatch, Mockingbird, Starling, House Sparrow, Cardinal, Purple Finch, Am. Goldfinch, Rufous-sided Towhee, and White-throated Sparrow, but not enough in any case to be out of line with past variations. Decreases were also slight for Turkey Vulture, Pileated Woodpecker, Carolina Chickadee, and Slate-colored Junco. Two Buteo hawks sighted could not be identified as to species—SHIRLEY A. BRIGGS (compiler), DOROTHY BELL, MICHAEL L. HOFFMAN, DAVID MEHLMAN, ALICE HELEN MOORE, JOSEPH B. PHILLIPS, MARGARET RECKMEYER, WINFRED STONE, PAUL WAGNER, DONALD WEBER, Audubon Naturalist Society, 8940 Jones Mill Rd., Washington, D.C. 20015.

30. ABANDONED STRIP MINE.—**Location:** A part of the campus of Clinch Valley College of the University of Virginia and largely within the town of Wise. **Size:** 64 acres. **Description of Area:** See *AFN* 24:556-557 (1970). **Weather:** Temperatures for the study period ranged from -13° to 68°F. The average temperature was unusually high and snowfall unusually low (rain: 8.47 in. in Jan., 4.6 in Feb.; snow: 1.9 in Jan., 16.0 in Feb.) Significant snow cover was present only on Jan. 17, frozen standing water on Jan. 17 and Feb. 5. (Information from Clinch Valley College Weather Station.) **Coverage:** Jan. 17, 22, 23, 29; Feb. 5, 12. Total: 6 trips, all between 9:45 a.m. and 12:07 p.m., averaging 92 minutes each. **Count:** Cedar Waxwing, 38 (59); White-throated Sparrow, 16 (25); Robin, 14 (22); Purple Finch, 13 (20); Slate-colored Junco, 11 (17); Cardinal, 8 (13); Field Sparrow, 8 (13); Song Sparrow, 8 (13); Blue Jay, 7 (11); Carolina Wren, 6 (9); Carolina Chickadee, 5 (8); Tufted Titmouse, 5 (8); Rufous-sided Towhee, 4 (6); Com. Crow, 3 (5); Downy Woodpecker, 2 (3); Golden-crowned Kinglet, 2 (3); Starling, 2 (3); Brown Thrasher, 2 (3); Black-crowned Night Heron, 1 (2); Yellow-shafted Flicker, 1 (2); Hairy Woodpecker, 1 (2); White-breasted Nuthatch, 1 (2); Winter Wren, 1 (2); Mockingbird, 1 (2); Hermit Thrush, 1 (2); E. Bluebird, 1 (2); Am. Goldfinch, 1 (2); Evening Grosbeak, 1 (2); Tree Sparrow, 1 (2); Fox Sparrow, 1 (2); Red-shouldered Hawk, +; Ruffed Grouse, +; Belted Kingfisher, +; E. Phoebe, +; Brown Creeper, +; Ruby-crowned Kinglet, +; Myrtle Warbler,

+; House Sparrow, +; Common Redpoll, +. **Average Total:** 147 birds (230 per 100 acres). **Remarks:** The mildness of the winter accounts for the appearance of species such as the Black-crowned Night Heron and phoebe. The fact that January precipitation came largely as rain rather than snow possibly accounts for the significantly greater use of the area by seedeaters such as the White-throated Sparrow, Slate-colored Junco, Purple Finch, and Field Sparrow. On the other hand Tree Sparrows were less abundant than previously and Black-capped Chickadees absent. An unusually large number of species was found on every trip: Blue Jay, Carolina Chickadee, Tufted Titmouse, Carolina Wren, Mockingbird, Brown Thrasher, Robin, Cardinal, Purple Finch, Field Sparrow, White-throated Sparrow, and Song Sparrow. The Downy Woodpecker, Golden-crowned Kinglet, Cedar Waxwing, Rufous-sided Towhee, and Slate-colored Junco were noted on five trips. — R. H. PEAKE, *Clinch Valley College, Wise, Va. 24293.*

31. WOODED CREEK BOTTOM. — **Location:** Wooded creek on the University of Nebraska's Reller Natural History Research Area; one mile southwest of Sprague, Nebraska; NW $\frac{1}{4}$, SW $\frac{1}{4}$, Section 33, T8N, R6E, Lancaster County, Nebraska. Hallam Quadrangle, USGS. **Size:** Approximately 20 acres (rectangular, paced). **Description of Area:** See *AFN* 24:739-741 (1970). **Weather:** Weather during the last week of December was mild (average temperature 34°) with only a trace of snow. The average temperature for January was 22.7° F., 2.4° below normal. The high was 49° and the low 8°; 2.7 in. of snow fell in January (2 in. on Jan. 3). Average temperatures for February (28.7°) were normal, with a high of 64° and a low of -3°. Four in. of snow fell in February (3.4 in. on Feb. 1-2). The creek

that flows through the study area was open throughout the entire study period. **Coverage:** Dec. 25; Jan. 8, 16, 22, 30; Feb. 12, 20. **Total:** 7 trips between the hours of 8:30 a.m. and 11:30 a.m., averaging 50 minutes each. **Count:** Black-capped Chickadee, 8 (40); Downy Woodpecker, 3 (15); Cardinal, 3 (15); Slate-colored Junco, 3 (15); Bobwhite, 2 (10); Red-bellied Woodpecker, 2 (10); White-breasted Nuthatch, 2 (10); Robin, 2 (10); Tree Sparrow, 2 (10); Harris' Sparrow, 2 (10); Red-tailed Hawk, 1 (5); Yellow-shafted Flicker, 1 (5); Hairy Woodpecker, 1 (5); Blue Jay, 1 (5); Brown Creeper, 1 (5); Starling, 1 (5); House Sparrow, 1 (5); Screech Owl, +; Great Horned Owl, +; Com. Crow, +; Tufted Titmouse, +; Golden-crowned Kinglet, +; Brown-headed Cowbird, +; Song Sparrow, +. **Average Total:** 37 birds (density, 185 per 100 acres). **Remarks:** Black-capped Chickadees, Cardinals, Downy Woodpeckers and Red-bellied Woodpeckers were observed on all seven trips. Robins were found on three trips, always in small flocks. Tree Sparrow, Harris' Sparrows, and juncos foraged as flocks along the creek or on the edge of the woods. The large number of Bobwhite is accounted for by a single covey which was roosting in the woods after a snow storm. Population levels are comparable to last year with a slight increase noted in the chickadees. Robins and kinglets were not found on the area last winter. The Great Horned Owl and Screech Owl are permanent residents of this woods but are seldom seen during the day. My thanks to Kent Fiala who assisted me on one of the counts. — CALVIN L. CINK, *Department of Zoology, University of Nebraska, Lincoln, Neb. 68508.*

32. FLOODPLAIN COTTONWOOD FOREST. — **Location:** In Jefferson County, Colorado, about 10 miles southwest of Denver on west bank of South Platte River,



Study 32. Floodplain Cottonwood Forest. Cottonwood trees with Great Blue Heron nests.

2 miles upstream from its confluence with Plum Creek and about 4 miles downstream from where the river exits from the foothills of the Rocky Mountains onto the high plains; NE ¼, Section 14, T6S., R69W of the 6th P.M.; 39°32' N, 105°5' W, Littleton Quadrangle, USGS. Elevation 5425 ft. **Size:** 9.7 ha = 24 acres (in an oval shape about 1600 × 850 ft). **Description of Area:** See AB 25:966-967 (1971). **Weather:** Heavy snowfalls occurred in mid-September. Temperatures were exceptionally warm for January and February. Snow cover was minimal and lasted only a few days after the snowstorms. **Coverage:** Nov. 6, 13, 20; Dec. 25; Jan. 9, 15; Feb. 6, 20. Total: 8 counts. Observation times varied between 7 a.m. and 4 p.m. M.S.T. and totaled 18 man-hours. **Count:** Tree Sparrow, 52 (535, 217); Song Sparrow, 8 (82, 33); Black-capped Chickadee, 4 (41, 17); Black-billed Magpie, 2 (21,8); Great Horned Owl, 1 (10, 4); Red-shafted Flicker, 1 (10, 4); Downy Woodpecker, 1 (10, 4); Am. Goldfinch, 1 (10, 4); Oregon Junco, 1 (10, 4); Red-tailed Hawk, +; Harlan's Hawk, +; Rough-legged Hawk, +; Sparrow Hawk, +; Belted Kingfisher, +; Slate-colored Junco, +; Harris' Sparrow, +; Fox Sparrow, +. **Average Total:** 74 birds (762 per 100 ha., 308 per 100 acres). **Remarks:** This census was continued owing to future plans for the study area. The cottonwood grove will lie within the permanent pool of the reservoir created by the Chatfield Dam now under construction by the U. S. Army Corps of Engineers. The reservoir will begin filling in 1973 or 1974 and will be a few feet deep in the cottonwood forest at its normal operating level. In the autumn of 1970, cottonwood trees to be inundated by the reservoir were cut, except for the trees in the study area, because Great Blue Herons have used these trees as a nesting site for at least 60 years. Although the Great Blue Herons were not observed using the cottonwood forest during this winter census, as many as seven were seen in the immediate vicinity all winter. Heavy snowfall in mid-September, when the leaves were still on the cottonwood trees, broke many limbs and littered the forest floor with broken branches. For the majority of the winter census, no snow cover stayed in the cottonwood forest. Considerable numbers of Rough-legged and Red-tailed Hawks were seen in the vicinity of the cottonwood grove, feeding over the open fields. The hawks used the grove as look-out points. The flock of Tree Sparrows was usually found on the eastern edge of the cottonwood grove in currant and snowberry bushes and always on the fringes of the grove. If the grove were surrounded by similar cottonwood forest, the Tree Sparrows would probably not use the area, nor would the hawks use it as a perch. Without the Tree Sparrows, the average population would be 22 birds (227 per 100 ha. or 92 per 100 acres). This low population density contrasts sharply with the high breeding bird density. — NANCY HURLEY, HUGH KINGERY, JO TRAINOR, RICHARD BOTTORFF, (compiler), 3040 Osceola St., Denver, Colo. 80212.

33. MIXED PRAIRIE PARK. — **Location:** Chet Ager Nature Center (CANC) is in the southwest corner of Pioneers Park; T9N, R6E; 5.5 miles (8.8 km) southwest of Lincoln, Lancaster County, Nebraska; 40°46' N, 96°46' W. **Size:** 16.0 ha = 39.5 acres. **Description of Area:** See AB 25:648-649 (1971). **Weather:** During De-

ember 1971, temperatures averaged 31.2° F. with 2.3 in. snow; January (1972) temperatures averaged 22.7° with 2.7 in. snow; February temperatures averaged 28.7° with 4 in. snow. During the 73-day study period, maximum temperatures were below freezing 26 days; minimum temperatures were below freezing 63 days, and minimum temperatures were below 0° F. 18 days. Extremes were 59° and -18°. On count days the average temperature ranged from 8° to 32° at the study area. (Data from U. S. Dept. of Commerce Environmental Data Service and CANC weather station). **Coverage:** Dec. 16, 18, 27; Jan. 8, 20, 22, 29; Feb. 4, 12, 19, 26. Total: 11 trips; all between 9:00 a.m. and 4:40 p.m., averaging 120 minutes. Total observer hours: 22. **Count:** Mallard, 72 (182); Com. Crow, 42 (106); House Sparrow, 40 (101); Tree Sparrow, 22 (56); Harris' Sparrow, 16 (41); Slate-colored Junco, 14 (35); Black-capped Chickadee, 9 (23); meadowlark, 7 (18); Mourning Dove, 6 (15); Oregon Junco, 6 (15); Pintail, 5 (13); Bobwhite, 5 (13); Cedar Waxwing, 5 (13); Am. Goldfinch, 5 (13); Downy Woodpecker, 3 (8); Blue Jay, 3 (8); Starling, 3 (8); Ring-necked Pheasant, 1 (3); Hairy Woodpecker, 1 (3); Robin, 1 (3); Cardinal, 1 (3); Green-winged Teal, +; Am. Widgeon, +; Red-tailed Hawk, +; Swainson's Hawk, +; Rough-legged Hawk, +; Marsh Hawk, +; Belted Kingfisher, +; flicker, +; White-breasted Nuthatch, +; Brown Creeper, +; Com. Redpoll, +; Rufous-sided Towhee, +; White-throated Sparrow, +; Song Sparrow, +. **Average Total:** 267 birds (676 per 100 acres). **Remarks:** Total species: 35. Downy Woodpecker, Com. Crow, Black-capped Chickadee, House Sparrow and Slate-colored Junco were observed on all trips; Mallard and Harris' Sparrow were seen on 10 trips; Oregon Junco and Tree Sparrow on 9 trips; Hairy Woodpecker and Am. Goldfinch on 8 trips, Blue Jay and White-breasted Nuthatch on 7 trips; all others were observed on 6 or fewer trips. The Red-bellied Woodpecker, Red-breasted Nuthatch and Pine Siskins were not observed during the study. Ten species, in fewer numbers than in the previous winter, were regular visitors at the feeders. — DR. ESTHER BENNETT, *Park Naturalist*, and JIM COMMERS, *Lincoln Park Dept.*, 2740 "A" St., Lincoln, Nebraska, 68502.

34. MESQUITE-JUNIPER CANYON BOTTOM-LAND. — **Location:** 12 miles east of Canyon, Texas, and 4 miles from entrance to Palo Duro Canyon State Park (first water crossing); 34° 57' N, 101° 40' W, Fortress Cliff Quadrangle, USGS. **Size:** 30.9 acres, steel tape and compass (rectangular). **Description of Area:** See AFN 21:659-661 (1967). **Weather:** During the 85-day study period the temperature remained below freezing on 5 days. The range of temperature was from 81° to 1° F., while the average temperature was 38°. The days of greatest precipitation in the form of snow or sleet were Dec. 5 (.5 in.), Jan. 3 (.5 in.), 4 (4 in.), 27 (.7 in.), and Feb. 11 (.1 in.). The average wind speed was 13.4 m.p.h. Data from the Amarillo Air Terminal, approximately 18 miles north of the study area; at this point the elevation is 3604 ft. while on the study area it is 2876 ft.. **Coverage:** Dec. 5, 12, 22, 25; Jan. 1, 9, 16, 23, 30; Feb. 6, 13, 20, 27. Total: 13 trips between 7:45 and 11:00 a.m., and 12:45 and 4:05 p.m., averaging 165 minutes each. **Count:** Oregon Junco, 36 (117); Am. Gold-

finch, 31 (100); White-crowned Sparrow, 25 (81); Slate-colored Junco, 21 (68); Song Sparrow, 20 (65); Robin, 16 (52); Rufous-sided Towhee, 7 (23); Bewick's Wren, 5 (16); Cardinal, 4 (13); Pine Siskin, 4 (13); Golden-fronted Woodpecker, 3 (10); Ruby-crowned Kinglet, 3 (10); Tree Sparrow, 3 (10); Black-crested Titmouse, 2 (6); Com. Bushtit, 2 (6); Townsend's Solitaire, 2 (6); Golden-crowned Kinglet, 2 (6); Cedar Waxwing, 2 (6); House Sparrow, 2 (6); House Finch, 2 (6); White-throated Sparrow, 2 (6); Green-winged Teal, 1 (3); Sparrow Hawk, 1 (3); Mourning Dove, 1 (3); Red-shafted Flicker, 1 (3); Ladder-backed Woodpecker, 1 (3); Com. Crow, 1 (3); Mockingbird, 1 (3); Mountain Bluebird, 1 (3); Rufous-crowned Sparrow, 1 (3); Chipping Sparrow, 1 (3); Lincoln's Sparrow, 1 (3); Gadwall, +; Red-tailed Hawk, +; Golden Eagle, +; Marsh Hawk, +; Killdeer, +; Roadrunner, +; Screech Owl, +; Belted Kingfisher, +; Winter Wren, +; Rock Wren, +; Myrtle Warbler, +; Red-winged Blackbird, +; Baird's Sparrow, +; Gray-headed Junco, +; Field Sparrow, +. **Average Total:** 205 birds (density, 663 per 100 acres). **Remarks:** The Golden-fronted Woodpecker, Bewick's Wren, Robin, solitaire, towhee, Slate-colored Junco, Oregon Junco, White-crowned Sparrow, and Song Sparrow were seen on every trip, the titmouse, Ruby-crowned Kinglet, Cardinal, goldfinch, and White-throated Sparrow on 12 trips, the flicker, siskin, and Lincoln's Sparrow on 11 trips, the Ladder-backed Woodpecker, Mockingbird, Golden-crowned Kinglet, House Finch, and Tree Sparrow on 10 trips, the Sparrow Hawk on 9 trips, the crow on 8 trips, the House Sparrow and Rufous-crowned Sparrow on 7 trips, the Rock Wren on 6 trips, the bushtit on 5 trips, the dove, kingfisher, and Winter Wren on 4 trips, the teal, Roadrunner, bluebird, waxwing, and Field Sparrow on 3 trips, the Marsh Hawk, warbler, blackbird, Baird's Sparrow, and Chipping Sparrow on 2 trips, and the Gadwall, Red-tailed Hawk, Golden Eagle, Killdeer, owl, and Gray-headed Junco on 1 trip. The most pronounced change of this season from those of the previous four years was the great increase in fringillids. In 1967-68 the average total per trip was 61, in 1968-69 76, in 1969-70 80, in 1970-71 59, and this year 158. Those showing the greatest increase in numbers per trip were the goldfinch (31 from a previous high of 6), Slate-colored Junco (21 from a previous high of 11), and White-crowned Sparrow (25 from a previous high of 15). Perhaps the one single factor that attracted and held the birds to the area was the abundant supply of weed and grass seeds. The entire region had been experiencing a prolonged drought with spring and summer being particularly dry. All the playa lakes were dry and even some of the larger reservoirs were. Abundant late summer rains, however, changed the scene rapidly and by the time winter had set in a good crop of seeds had been produced. Russian-Thistles (*Salsola kali*) were prevalent and in several places could be found in windrows. The resident birds that seemed hardest hit by the drought were the quail. Not a single Bobwhite or Scaled Quail was seen during the period, either on or off the study area. — KENNETH D. SEYFFERT, 2709 S. Fairfield St., Amarillo, Tex. 79103.



35. LIVE OAK—MESQUITE BRUSHLAND. —

Location: Northeast Preserve, city park of San Antonio, Texas, located 2 miles northeast of San Antonio International Airport. Study area is along the northern boundary of the park, extending 660 yds. east-southeast of Jones-Maltsberger Road and 220 yds. south-southwest of the fence. **Size:** 12.1 ha = 30 acres, based on survey stakes along the fence and measured outward 220 yds. by steel tape. **Description of Area:** See *AFN* 21:472 (1967). Hikers use the paved trail running through the area, mainly along the fence line. Group campers use two sites on the southwest corner with some disturbance to about 4 acres and several trees cut each year. **Weather:** Rainfall of 2.86 in. in December was 1.11 in. above normal followed by near normal 1.35 in. in January. Heavy rainfall in late summer and early fall caused a heavy late growth of shrubs and grass with conditions continuing relatively lush through the winter period. Temperatures were 3.5° F. above normal in December and near normal in January. **Coverage:** Jan. 8, 11, 19, 25; Feb. 1, 5, 8. Total: 7 trips, averaging 109 minutes, between 7:15 and 11:45 a.m. **Count:** Cardinal, 17 (140, 57); Lincoln's Sparrow, 15 (124, 50); White-throated Sparrow, 14 (115, 47); Am. Goldfinch, 13 (107, 43); Rufous-sided Towhee, 9 (74, 30); Bewick's Wren, 7 (58, 23); Ruby-crowned Kinglet, 5 (41, 17); Black-crested Titmouse, 4 (33, 13); Robin, 4 (33, 13); Mockingbird, 3 (25, 10); Ladder-backed Woodpecker, 2 (16, 7); Verdin, 2 (16, 7); House Wren, 2 (16, 7); Carolina Wren, 2 (16, 7); Fox Sparrow, 2 (16, 7); Carolina Chickadee, 1 (8, 3); Cedar Waxwing, 1 (8, 3); Myrtle Warbler, 1 (8, 3); Field Sparrow, 1 (8, 3); Mourning Dove, +; Ground Dove, +; Great Horned Owl, +; Yellow-shafted Flicker, +; Golden-fronted Woodpecker, +; E. Phoebe, +; Hermit Thrush, +; Blue-gray Gnatcatcher, +; Orange-crowned Warbler, +; Purple Finch, +; White-crowned Sparrow, +. **Average Total:** 105 birds (density, 865 per sq. km., 350 per hundred acres). **Remarks:** Seen on all counts were Bewick's Wren, Carolina Wren, Ruby-crowned Kinglet, Cardinal, towhee, White-throated Sparrow and Lincoln's Sparrow. Mockingbird and Black-crested Titmouse were missed on only one trip. The average number of 105 birds per trip, highest for the 6 years of the study, followed a late summer and fall of above average rainfall, while last year the average number of 43 birds followed the driest fall and winter on record. Lincoln's Sparrows were the highest in the 6 years after being entirely absent last year. The Am. Goldfinch count was mainly a result of 80 found on Feb. 5. The Purple Finch and the Blue-gray Gnatcatcher were new for the study period. House Wrens, recorded for the third time in 6 years, reached their highest count this year. Red-winged Blackbirds were seen overhead on Feb. 5. — NEIL LAMB and JAMES A. MIDDLETON (compiler), San Antonio Audubon Society, Witte Memorial Museum, 3801 Broadway, San Antonio, Tex. 78209.

36. RIPARIAN WOODLAND : OAK—JUNIPER ASSOCIATION. —

Location: Madera Canyon, Pima and Santa Cruz Counties, Arizona; 31°43'51" N, 110°52'52" W, Patagonia Quadrangle, USGS. **Size:** 20 acres. **Description of Area:** See *AFN* 23:538 (1969). **Weather:** Temperatures during January ranged from 23° (Jan.

24) to 77°F. (Jan. 25). The average high was 66°; the average low, 35°; mean temperature was 50°. There was no precipitation during the study period. Temperatures at time of counts ranged from 36° to 54°. (Data from Tucson International Airport, 28 mi. north of the study area at 2500 ft. elevation.) **Coverage:** Jan. 9 (2 trips), 15 (2 trips), 22 (2 trips), 23, 30. Total: 8 trips, all between 8:00 a.m. and 1:17 p.m. and averaging 82 minutes each. **Count:** Mexican Jay, 45 (225); Gray-headed Junco, 17 (85); Acorn Woodpecker, 13 (65); Steller's Jay, 8 (40); Mexican Junco, 7 (35); Bridled Titmouse, 6 (30); Oregon Junco, 5 (25); Chipping Sparrow, 4 (20); White-breasted Nuthatch, 3 (15); Mourning Dove, 2 (10); Common Bushtit, 2 (10); Ruby-crowned Kinglet, 2 (10); Yellow-bellied Sapsucker, 1 (5); Bewick's Wren, 1 (5); Rufous-sided Towhee, 1 (5); Brown Towhee, 1 (5); junco (sp.), 1 (5); Goshawk, +; Golden Eagle, +; Red-shafted Flicker, +; Lewis' Woodpecker, +; Arizona Woodpecker, +; Brown Creeper, +; Rock Wren, +; Robin, +; W. Bluebird, +; Audubon's Warbler, +; Townsend's Warbler, +; Painted Redstart, +; House Finch, +; Rufous-crowned Sparrow, +; Slate-colored Junco, +. **Average Total:** 117 birds (585 per 100 acres). **Remarks:** Unusually heavy snows during December probably caused larger numbers of Steller's Jays and lower numbers of juncos in the area this year. Madera Canyon lies on the north side of the Santa Rita Mountains, and higher elevations were snow-covered throughout the count period for the first time in the four years of our census. Fewer juncos are largely responsible for the average total being 110 down from last year's. Last year 116 juncos of all species were seen per trip; this year, 30. Jay and junco population changes have also been noted by Nelson J. Moore this winter during his dissertation study in the Santa Catalina Mountains 40 miles north of the Santa Ritas.—*DARRELL T. LEE, 1302 West Ajo Way, Space 193, Tucson, Ariz. 85713.*

37. DESERT SCRUB : WHITETHORN ASSOCIATION. — **Location:** On north side of Continental-Madera Canyon road 0.5 to 0.75 miles east of Continental, Pima County, Arizona; 31°50'51" N, 110°58'04" W, Sahuarita Quadrangle, USGS. **Size:** 20 acres. **Description of Area:** See *AFN* 23:543-544 (1969). **Weather:** Extreme temperatures during January were 23°F. (Jan. 24) and 77° (Jan. 25); average low temperature was 35°; average high temperature was 66°. Temperatures during counts ranged from 32° to 69°. Winds of 10-15 m.p.h. were encountered during the last five counts. There was no precipitation during the month. (Count period data from Tucson International Airport, 20 miles north of the study area at 2500 ft. elevation.) **Coverage:** Jan. 9, 15 (2 trips), 22 (2 trips), 23 (2 trips), 30. Total: 8 trips, between 7:35 a.m. and 1:20 p.m., averaging 53 minutes each. **Count:** Black-throated Sparrow, 7 (35); Cactus Wren, 3 (15); Brewer's Sparrow, 3 (15); Mourning Dove, 2 (10); Verdin, 2 (10); Brown Towhee, 2 (10); Lark Bunting, 2 (10); Com. Raven, 1 (5); Curve-billed Thrasher, 1 (5); Black-tailed Gnatcatcher, 1 (5); Red-tailed Hawk, +; Gilded Flicker, +; Ladder-backed Woodpecker, +; Bewick's Wren, +; Crissal Thrasher, +; thrasher sp., +; Loggerhead Shrike, +; House Finch, +; Rufous-winged Sparrow, +; White-crowned Sparrow, +. **Average Total:** 24 birds (120 per 100 acres). **Remarks:** Habitat

loss to pecan groves extending for about eight miles to the north, copper mining on the west side of the valley, and expansion around Green Valley and Continental (a 500-space trailer park will be built in 1972) may be responsible for a decrease in sparrow numbers. The average total is down to 24 from 78 last year. Human disturbance of the study area may be another factor. Vehicles are making two roads into the area at both east and west sides. People were seen in the area the first three weekends. The Santa Rita Experimental Range, bordering the study area to the east, refused to give weather data for our Madera Canyon census area and may be experimenting with habitat, also.—*DARRELL T. LEE, 1302 West Ajo Way, Space 193, Tucson, Ariz. 85713.*

38. COASTAL CHAPARRAL. — **Location:** 4 miles northwest of Bolinas, Marin County, California, and ¼ mile inside the southern boundary of the Point Reyes National Seashore, about 500 yards northwest of the Observatory headquarters; 37°55' N, 122°45' W, Bolinas Quadrangle, USGS. **Size:** 34 acres (approximately a rectangle 800 × 1900 ft., measured). **Description of Area:** See *AB* 25:1003 (1971). **Edge:** Bounded on the south by similar habitat; on the west and east by fields plowed in 1965, now consisting of grass and scattered Coyote Bush (*Baccharis pilularis*); on the north by exposed rocky hillside. **Weather:** In general this winter was much drier and slightly colder than normal. The total rainfall at Point Reyes Bird Observatory for November 1971 through February 1972 was 18.4 in., which was 10.5 in. below the average for the same period during three previous years. The daily mean high temperature was 53° F.; the mean low temperature was 36°. Last year's means were 53° and 40°. **Coverage:** Dec. 8, 17; Jan. 11, 16. Trips were made between 0900 and 1200. Total time 12 hours. **Count:** Wrentit, 29 (85); White-crowned Sparrow, 18 (53); Common Bushtit, 15 (44); Bewick's Wren, 13 (38); Song Sparrow, 18 (53); Rufous-sided Towhee, 11 (32); Ruby-crowned Kinglet, 10 (29); Red-shafted Flicker, 3 (9); Scrub Jay, 2 (6); Fox Sparrow, 1 (3); Turkey Vulture, +; Red-tailed Hawk, +; Sparrow Hawk, +; Robin, +; Hermit Thrush, +; Golden-crowned Sparrow, +. **Average Total:** 113 birds (332 per 100 acres). — *ROBERT M. STEWART, Point Reyes Bird Observatory, P. O. Box 321, Bolinas, Calif. 94924.*

39. EXPOSED COVE AND ADJACENT OCEAN. — **Location:** Schoodic Point section of Acadia National Park, Winter Harbor, Hancock County, Maine; 44° 20' N, 68°04' W. Chart 306 U.S.C. & G.S. **Size:** 108 acres (irregular shape). **Description of Area:** See *AFN* 23:545 (1969). Area unchanged in 1971-72. **Weather:** Warm with little snow cover. Average temperatures measured at study site: Dec. 28°F., Jan. 32°, Feb. 18°. Temperature range during trips: +56° to -8°. Seawater surface temperatures measured at a point six miles from the study area: Dec. 1971 range 46° to 33°, ave. 40.5°; Jan. 1972 range 46° to 29°, ave. 37°; Feb. range 42° to 30°, ave. 34°. No trips were made during precipitation. Ground was bare until Feb. 20 with snow cover thereafter. Seas were predominantly SW at 1 to 2 ft. except in storms. Only two major NE storms occurred during the study period, one on Feb. 4 having

winds of 64 m.p.h. and seas of 10 to 12 ft. from the SE. No sea ice formed in the study area this winter. There was no fishing activity in the study area. **Coverage:** Dec. 18, 19; Jan. 1, 9, 16; Feb. 5, 19, 27. Total: 8 trips made at varying times between 8 a.m. and 3 p.m. Average time per trip was one hour. **Count:** Com. Eider, 497 (460); Black Duck, 127 (118); Herring Gull, 14 (13); Great Black-backed Gull, 8 (7); Oldsquaw, 6 (6); Mallard, 4 (4); Bufflehead, 4 (4); Com. Loon, 2 (2); Red-necked Grebe, 2 (2); Horned Grebe, 2 (2); Red-breasted Merganser, 2 (2); Black-legged Kittiwake, 2 (2); Razorbill, 2 (2); Dovekie, 2 (2); Pintail, 1 (1); Black Guillemot, 1 (1); Red-throated Loon, +; King Eider, +. **Average Total:** 678 birds (628 birds per 100 acres). **Remarks:** Visitors to intertidal zone: Bald Eagle, Pine Siskin, Com. Redpoll, Snow Bunting. The numbers of Com. Eiders continue to show fluctuation from year to year. Oldsquaws, Buffleheads, and guillemots show considerable decrease over the entire area. Feeding area of Horned Grebes and Com. Eiders seems to have moved into deeper water near the mouth of the cove. Scoters of all species were conspicuous by their absence this year. During the past summer, waters of the Bay of Fundy adjacent to the study area were the warmest since 1949. — WILLIAM C. TOWNSEND, *Biology Dept., Sumner H.S., East Sullivan, Me. 04632.*

40. RESERVOIR. — **Location:** Carroll Lake, located 3.25 miles southeast of McKenzie, Tennessee, on State Highway 22. 88°28' W, 36°6'30" N. **Size:** 100 acres. Acreage was determined by the Carroll County A.S.C.S. office using a 1:20,000 aerial photograph and a planimeter. **Description of Area:** See AB 25:655:656 (1971). This is the second consecutive count for this area. **Weather:** During the study period the temperature ranged from a high of 80°F. to a low of -2°. Average high was 50°, low 30°. In the two-month study period there were 20 days with measurable precipitation. The weather generally was described as wet and mild by the operator of the McKenzie U.S. Weather Station. **Coverage:** Jan. 8, 9, 15, 22, 30; Feb. 5, 12, 15. Total: 8 trips, averaging 30 minutes per trip. Earliest trip 10:00 a.m., latest at 4:30 p.m.; most between 12 and 3. **Count:** Canada Goose, 3 (3); Mallard, 3 (3); Green-winged Teal, +; Belted Kingfisher, +. **Average Total:** 6 birds (6 birds per 100 acres). **Remarks:** Canada Geese and Mallards were observed on four of the counts. Observed over the reservoir during counts, but not considered a part of the reservoir ecosystem were: Black Vulture, Com. Crow, Robin and Starling. A small flock of domestic geese and ducks (1 Canada goose and 3 Pekin Ducks) is maintained by the lake manager. The wild Canada Geese freely fraternized with this domestic flock. Although the count has not been conducted for a long enough period to see any trends it is speculated that the mild weather dispersed the locally wintering waterfowl and gave the count a lower density of birds this year. — MR. and MRS. DON MANNING, *Route 1, McKenzie, Tenn. 38201.*

41. ROCKY SHORELINE AND ADJACENT OCEAN.—**Location:** Shoreline from Lunada Bay to Bluff Cove in Palos Verdes Estates, California. **Size:** 560 ha. (1384 acres), 4.0 km. long by 1.4 km. wide; measured from Redondo Beach Quadrangle USGS 7.5

minute series #2351 IV SW Series V895). **Description of Area:** The census area extends from the base of the cliff talus (beginning of rocky intertidal zone) out over the ocean to a distance marked by the Palos Verdes Point Buoy. Birds seen on the talus itself or beyond the distance of the buoy are not included. Tidal range is 2.3 ft. (neap) to 4.5 ft. (spring). At spring low tides the exposed zone averages about 50 m. wide covering approximately 20 ha. (0.36% of the total census area). A habitat survey was conducted during spring low tide consisting of three dm.-grid line transects (35, 49, and 50 m. long) and two cm.-grid transects (each 7 m. long). Bare rock made up 80% of the area. The remaining 20% consisted of algal and sedentary faunal cover composed of: Mussel (*Mytilus californianus*), 37%; Kelp (*Egrecia* sp.), 23%; Calcareous Red Algae (*Corallina* sp.), 22%; Acorn Barnacles (*Chthamalus*, sp.), 4.4%; Encrusting Red Algae (*Lithophyllum* or *Lithothamnium* sp.), 2.8%; Red Algae (*Gigartina* sp.), 2.4%; Bubble Brown Algae (*Colpomenia* sp.), 2.0%; Calcareous Red Algae (*Jania* sp.), 2.0%; Sea Lettuce (*Ulva* sp.), 1.8%; Sea Anemone (*Anthopleura xanthogrammica*), 1.6%; Thatched Barnacle (*Tetraclita squamosa*); Calcareous Red Algae (*Lithothrix* sp.); Sea Anemone (*Anthopleura elegantissima*); Sand Tube Worm (*Sabellaria californica*); Spungeweed (*Codium fragile*); Surfgrass (*Phyllospadix* sp.); Brown Algae (*Pachydictyon* sp.); and Nori (*Porphyra perforata*). Identifications were based upon *Seashore Animals of the Pacific Coast* by M. Johnson and H. Snook; and *Seashore Plants of Southern California* by E. Y. Dawson. **Topography:** Elevation sea level. The ocean floor drops to a depth of 3 fathoms approximately 300 m. offshore and reaches a depth of 30 fathoms at the margin of the census area. **Edge:** Bounded on the east by talus surmounted by cliffs reaching an average height of 150 ft. and by open ocean on the west. The same formation of cliff and rocky shore extends to the north and south of the survey area. **Water:** There are several locations where small amounts of fresh water seep into the ocean. **Food:** Numerous intertidal invertebrates provide a diverse food supply including large numbers of hermit and other shore crabs, small snails, worms, and isopods in addition to the species listed above. **Weather:** Temperatures during the census period ranged from 40° to 81°F. averaging 55° with a mean daily high of 61° and a mean nightly low of 48°. Skies were clear 77% of the time, cloudy on 20% of the days and partly cloudy for the remaining 3%. Precipitation during the census period consisted of 6.4 in. which is less than the normal of 9.4 in. for this time period. Total rainfall for this season (measured from July 1) was 7 in. (normal is 11 in.). **Coverage:** Nov. 21; Dec. 5, 29; Jan. 5, 15, 27; Feb. 19; Mar. 4. Total: 8 trips, ranging in time from 7:10 a.m. to 5:30 p.m., averaging 168 minutes each. **Count** (numbers in parentheses are birds per ten linear kilometers rather than densities per unit area): Gull sp., 145 (363); California Gull, 65 (163); Surf Scoter, 52 (130); Black-bellied Plover, 46 (115); Ring-billed Gull, 42 (105); Sanderling, 32 (80); Willet, 30 (75); Heermann's Gull, 26 (65); Spotted Sandpiper, 18 (45); Western Grebe, 17 (43); Red-breasted Merganser, 12 (30); Western Gull, 10 (25); Horned Grebe, 6 (15); Whimbrel, 5 (13); Bonaparte's Gull, 5 (13); Wandering Tattler, 4 (10); Black Turnstone, 3 (8); Herring Gull, 3 (8); Eared Grebe, 2 (5);

Double-crested Cormorant, 2 (5); Glaucous-winged Gull, 2 (5); Black-legged Kittiwake, 2 (5); Com. Murre, 2 (5); Brown Pelican, 1 (3); Brandt's Cormorant, 1 (3); Am. Widgeon, 1 (3); White-winged Scoter, 1 (3); Com. Loon, +; Arctic Loon, +; Red-throated Loon, +; Pied-billed Grebe, +; Blue-footed Booby, +; Pelagic Cormorant, +; Oldsquaw, +; Parasitic Jaeger, +; Mew Gull, +; Franklin's Gull, +; Royal Tern, +; Caspian Tern, +; Rock Wren, +. **Average Total:** 535 birds (density, 1338 per 10 linear km., 215 per linear mile). The nature of our census area indicates that a linear measure of density gives a more accurate density measure than the standard areal measures. **Remarks:** Surf Scoter, Red-breasted Merganser, Black-bellied Plover, Whimbrel, Spotted Sandpiper, Wandering Tattler, Willet, Sanderling, Ring-billed Gull, and Heermann's Gull were seen on all censuses; Horned, Eared, and Western Grebes, Double-crested and Brandt's Cormorants, Glaucous-winged, Western, Herring, California, and Bonaparte's Gulls, and Black-legged Kittiwake were also seen on at least half of the counts. All 12 Com. Murres were seen in one flock on Dec. 29. The single flock of 7 Am. Widgeon was found on Dec. 5. A record invasion of Blue-footed Boobies into Southern California during the fall season produced the lone late straggler sighted on our survey. The Franklin's Gull, quite rare in this region during the winter, was seen only once. The Oldsquaw is also rare in Southern California. Gull numbers were extremely variable, with as few as 31 and as many as 1034 recorded on single counts. The variation appeared to be random (no correlation with either

were found on only 3 counts this winter. However, the most dramatic change was in the abundance of diving birds (see Table I). There were severe declines from 1969-70 to 1970-71 and only *Podiceps* (Horned and Eared) grebes and Red-breasted Merganser showed complete recoveries by 1971-72. Loons and pelicans have almost disappeared. This decrease may indicate the effects of growing pesticide pollution and oil spills. Tides were low on two censuses, incoming once, outgoing twice, and high on three trips. The effects of tide on shorebird numbers were minimal, but at high tide most species concentrated in large mixed flocks and appeared to be resting. At low tide they were feeding actively and were spread more uniformly throughout the census area. Spotted Sandpiper and Wandering Tattler were two notable exceptions. These birds consistently showed up in the same locations and were more evenly distributed along the route than the other shorebirds.—**DAVID and RICHARD BRADLEY**, 2209 Via Pacheco, Palos Verdes Estates, Calif. 90274; and **RUSSELL SCALF**.

42. PARTIALLY ABANDONED HAYFIELDS AND PASTURES.—**Location:** 7 miles north of the center of Fairfield, Connecticut; 41°12' N, 73°17' W, Westport Quadrangle. **Size:** 19 acres. **Description of Area:** See AB 25:1007-1008 (1971). An individual of Mockernut (*Carya tomentosa*) was found on the study area this winter. **Weather:** Temperature ranged from 0° to 62°F. The average temperature during area coverage was about 38°. A light rain fell on Dec. 20. An inch of snow fell on Jan. 3. A five-inch snowstorm fell on Feb. 3, and snow cover was present throughout the period from then on. There were no winds over 10 m.p.h. recorded during count coverage. **Coverage:** Dec. 15, 16, 17, 19, 20, 28; Jan. 1, 22, 23, 27, 29; Feb. 8, 15. Trips averaged 70 minutes, starting from 2:30 a.m. to 11:55 p.m. This was the first winter-bird population study for this area. **Count:** Black-capped Chickadee, 6 (32); Starling, 4 (21); Pine Siskin, 4 (21); Slate-colored Junco, 4 (21); Mourning Dove, 3 (16); Tufted Titmouse, 3 (16); Am. Goldfinch, 3 (16); White-breasted Nuthatch, 2 (11); House Finch, 2 (11); Ring-necked Pheasant, 1 (5); Downy Woodpecker, 1 (5); Blue Jay, 1 (5); Com. Crow, 1 (5); Mockingbird, 1 (5); Tree Sparrow, 1 (5); Field Sparrow, 1 (5); White-throated Sparrow, 1 (5); Song Sparrow, 1 (5); Screech Owl, +; Great Horned Owl, +; Saw-whet Owl, +; Barred Owl, +; Hairy Woodpecker, +; Brown Creeper, +; House Wren, +; Robin, +; Golden-crowned Kinglet, +; Ruby-crowned Kinglet, +; Com. Grackle, +; Evening Grosbeak, +; Com. Redpoll, +; Red Crossbill, +. **Average Total:** 40 birds (211 per 100 acres). **Remarks:** Japanese Barbbery was the only shrub that had its berries still in abundance. Herring Gull was seen flying overhead. The House Wren was a visitor Dec. 28, undoubtedly owing to the mild weather. This species is rare at this season in southern Connecticut. A Gray Fox was seen on the area Dec. 20. The fact that the area's eastern brook did not freeze over helped stabilize the late-winter bird population, which usually declines in that area after freeze-over.—**HELEN HILLS, CHARLES F. HILLS (compiler)**, 3052 Burr St., Fairfield, Conn. 06430.

Table I

Three year summary of diving bird totals

	1969-70	1970-71	1971-72
loons	16	3	1
<i>Podiceps</i> grebes	4	+	8
Western Grebe	60	6	17
Brown Pelican	34	2	1
cormorants	9	8	3
Red-breasted Merganser	13	7	12
TOTAL	136	26	42

month, time of day, or weather). Among the total of 21 Herring Gulls was one *thayeri*. Rock Wrens were feeding on the rocky shore on two counts but were heard up on the talus during two other trips. Visitors to the rocky shore included: Sparrow Hawk, Rock Dove, Mourning Dove, Anna's Hummingbird, Say's Phoebe, House Finch, Brown Towhee, Rufous-crowned Sparrow, and Song Sparrow. This survey was actually an extension of a census of shorebirds we have conducted since 1969 for the California Department of Fish and Game. Thus we have some past data to compare with this year's results. Four species of shorebirds showed a marked increase in density this year. The average numbers per count for these birds in past winters were: Black-bellied Plover, 30; Spotted Sandpiper, 11; Willet, 16; and Sanderling, 7. The numbers of Whimbrels and Wandering Tattlers remained about the same. In contrast, Black Turnstones dropped from an average of 8 in the past down to 3 and

43. UPLAND FARM LAND.—**Location:** The plot is a portion of the Alfred Agricultural and Technical College Farm and Animal Husbandry Center located on the north edge of the Village of Alfred, N.Y.; 42° 15' N, 77° 45' W; Alfred Quadrangle, USGS. **Size:** 67.2 ha = 166 acres; irregular rectangular, area measured by planimeter on a tracing made from an aerial photograph of scale 1 : 7920. **Description of Area:** See *AB* 25: 656 (1971). **Food:** The principal food source was the regular spreading of manure from the dairy barn. Very little plant refuse and weed tops were left on the sodded fields and the pastures. Two feed lots adjacent to the barns were used as a food source for Starling, House Sparrow, and Rock Dove. **Weather:** The average mean daily temperatures for December and January were 31.9° and 24.5°F, respectively. The daily maximums on count days ranged from 31° to 49°. Total snowfall for the two months was 6.8 in. and 15 in., respectively. December and January were characterized as relatively mild and below average in precipitation whereas February was more typical of winter in this area. The snowfall was not sufficient to maintain a constant snow cover on all the cultivated fields during the study period, particularly on the southern exposures. (Weather data from the U.S. Cooperative Weather Station at Alfred.) **Coverage:** Dec. 19, 29; Jan. 3, 5, 10, 19, 24. Total: 7 trips; the times varied from 9:20 a.m. to 4:30 p.m. and averaged 115 minutes per trip. Two observers on four trips and one observer on three trips made a total of 22 man-hours in the field. **Count:** Cedar Waxwing, 75 (112, 45); House Sparrow, 68 (101, 41); Rock Dove, 58 (86, 35); Com. Redpoll, 30 (45, 18); Starling, 24 (36, 14); Com. Crow, 14 (21, 8); Horned Lark, 7 (10, 4); Tree Sparrow, 4 (6, 2); Blue Jay, 2 (3, 1); Black-capped Chickadee, 2 (3, 1); Evening Grosbeak, 2 (3, 1); Downy Woodpecker, 1 (1, 1); Cardinal, 1 (1, 1); Purple Finch, 1 (1, 1); Sparrow Hawk, +; Hairy Woodpecker, +; White-breasted Nuthatch, +; Golden-crowned Kinglet, +; Am. Goldfinch, +; White-throated Sparrow, +. **Average Total:** 289 birds (430 per sq. km., 174 per 100 acres). **Remarks:** The results of this second-year study were comparable to the previous year. There was a notable increase in Cedar Waxwing and House Sparrow, but a decrease in Starling and Com. Crow. Redpolls were recorded this year but not last year. Snow Buntings were missed on the plot this year although flocks of this species were in the area and observed on the plot after the study ended. Six new species were recorded over the previous list and six were also missing. Rock Dove, Cedar Waxwing, and House Sparrow were recorded on all seven trips, Starling on five, Downy Woodpecker, Blue Jay, chickadee, and Tree Sparrow on four, Horned Lark, crow, White-breasted Nuthatch, Cardinal, and redpoll on three, Sparrow Hawk, Evening Grosbeak, Purple Finch, and goldfinch on two and the remaining species on only one trip. One flock of redpolls numbered 120 and foraged on the few weeds above the snow on one of the pastures. The Cedar Waxwings were attracted to the Multiflora Rose hedges where the largest flock amounted to 180. Acknowledgment is made to the Farm Manager for making the plot available for study. Appreciation is due the Allenterm Committee of Alfred University for sponsoring this project during the January Term.—*PATRICIA H. LITTLE and CLARENCE W.*

KLINGENSMITH (compiler), Alfred University, Alfred, N.Y. 14802.

44. CULTIVATED FIELD.—**Location:** One mile west of North Wilkesboro, North Carolina. **Size:** 90 acres. **Description of Area:** See *AFN* 12:311 (1958). **Weather:** Average temperature for January was 43.16° F. with a maximum of 68° and a minimum of 10°. February gave a mean of 43.72°, with 3.21 in. of precipitation and 2 in. of snow. January precipitation was 4.49 in. with 1 in. of snow. **Coverage:** Jan. 16, 25, 31; Feb. 8, 14, 21. Total: 6 trips averaging 2½ hours each. **Count:** Starling, 43 (48); Red-winged Blackbird, 18 (20); Field Sparrow, 16 (18); Mourning Dove, 8 (9); Song Sparrow, 4 (4); White-throated Sparrow, 3 (3); Bobwhite, 1 (1); Com. Crow, 1 (1); E. Meadowlark, +; Com. Grackle, +; Evening Grosbeak, +. **Average Total:** 94 birds (104 per 100 acres). **Remarks:** Part of the tract was closely grazed until early January. A 25-acre tract had been run over to flatten the weeds in preparation for bulldozing in the spring for construction of a shopping center. Most of 35 acres had been bulldozed a year earlier in preparation for the same fate but plans had been changed and it was allowed to grow a crop of weeds which had been untouched. This latter area contained most of the birds. By midwinter there was no fruit on Hackberry and Privet, some food and shelter in the undisturbed weeds.—*WENDELL P. SMITH, 911 E Street, North Wilkesboro, N.C. 28659.*

45. CORN FIELD.—**Location:** One-half mile west of North Wilkesboro, North Carolina. **Size:** 100 acres. **Description of Area:** See *AFN* 17:372 (1963). **Weather:** Average temperature for January was 43.16° and February, 43.72°F. Extremes during the two months were 68° and 10°. Precipitation amounted to 4.49 in. in January with 1 in. of snow, and 3.21 in. in February with 2 in. of snow. **Coverage:** Jan. 6, 12, 20, 26; Feb. 9, 22. Total: 6 trips, averaging 3¼ hours per trip. **Count:** Starling, 195 (195); Red-winged Blackbird, 128 (128); Purple Finch, 24 (24); White-throated Sparrow, 10 (10); Evening Grosbeak, 2 (2); Field Sparrow, 2 (2); Bobwhite, 1 (1); Mourning Dove, 1 (1); Com. Crow, 1 (1); Carolina Wren, 1 (1); Cardinal, 1 (1); Song Sparrow, 1 (1); Tufted Titmouse, +; Rufous-sided Towhee, +; Slate-colored Junco, +; Fox Sparrow, +. **Average Total:** 368 birds (368 per 100 acres). **Remarks:** This is a 35 per cent decline from the 1971 count. A number of factors have contributed. The corn crop was only fair with about 50 per cent of the area planted. The pigs had consumed all of it by the end of December. All the feed consumed by the pigs, following the end of the corn, was through automatic feeders. There was a large area of Giant Ragweed but it bore smaller and fewer seeds. Most of the stalks were prostrate early in the winter. Absence of corn coincided with the almost complete disappearance of Mourning Doves and crows. Purple Finches were present in unusually large numbers. They fed to a large extent on Sycamore seeds. Red-winged Blackbirds fed on the ragweed. The largest population of this area occurred in 1966 with an average of 1090. This was in part owing to a Starling roost within a few miles.—*WENDELL P. SMITH, 911 E Street, North Wilkesboro, N.C. 28659.*

46. IRRIGATED PASTURELAND, WEED AREAS, TREE ROWS.—**Location:** The west side of State Highway 74, 0.9 mile north of the Heppner Library and Museum, Heppner, Morrow County, Oregon. **Size:** 48 acres. **Description of Area:** Described in *AB* 25:651-52 (1971). **Weather:** During the study period there were 15 days when the temperature did not rise above freezing and 28 nights when it did not go below freezing. Temperature during the period averaged 31°F, range was -6° to 64°F. Precipitation for period was 1.33 in. Snow was on the ground (about 2 in.) on one trip. **Coverage:** Dec. 26, 31; Jan. 15, 22, 29; Feb. 13, 22. Total: 7 trips, averaging 70 minutes each. Time of day ranged from 8:15 a.m. to 6:30 p.m., one in morning and 6 in afternoon. Five counts were taken under cloudy skies and 2 under clear. **Count:** Starling, 50 (104); House Sparrow, 38 (79); Oregon Junco, 30 (63); Black-billed Magpie, 12 (25); Song Sparrow, 6 (13); Horned Lark, 5 (10); California Quail, 3 (6); Robin, 2 (4); Killdeer, 1 (2); Great Horned Owl, 1 (2); Red-shafted Flicker, 1 (2); Com. Raven, 1 (2); House Finch, 1 (2); Slate-colored Junco, 1 (2); Am. Widgeon, +; Red-tailed Hawk, +; Marsh Hawk, +; Ring-necked Pheasant, +; Downy Woodpecker, +; Ruby-crowned Kinglet, +; White-crowned Sparrow (Gambel's race), +. **Average Total:** 152 birds (317 per 100 acres). **Remarks:** Seen flying over the area were a Rough-legged Hawk, plus additional Com. Ravens. The Black-billed Magpie, Starling, House Sparrow, and Song Sparrow were seen on every trip. Only one individual was noted of the following: Am. Widgeon, Red-tailed Hawk, Marsh Hawk, Ruby-crowned Kinglet, and White-crowned Sparrow. Four new species were observed this year, but 15 species seen last year were not seen this year, making a drop in the number of species from 32 to 21. Even with this decrease the density went up. The upper half of the creek had been silted in with mud by a previous flood that created muddy pools. This, and cattle, tended to erupt what used to be a good snipe and kingfisher habitat. An Audubon Bird Call was used with very good success on every count.—*BUTCH TAYLOR and GREG GREEN, Biology Department, Heppner High School, Heppner, Oreg. 97836.*

47. URBAN PARK.—**Location:** Western one-half of Hampton Park, Charleston, South Carolina; bounded on the west by the Citadel campus, the east by the park pond and bandstand, the north and south by Mary Murray Drive. **Size:** 8.1 hectares = 20 acres (rectangular, 360 x 270 yds., measured with steel tape). **Description of Area:** See *AB* 25(3):659-660 (1971). The unoccupied frame house in the southwest corner of the study area was torn down and removed before this year's census. **Weather:** During the 50-day study period, temperatures were above average, with below freezing reading for only two days. Precipitation was normal in December and February but above average in January. Total precipitation for the period was 6.7 in. In general this was one of the mildest winters on record. **Coverage:** Dec. 21, 23 25; Jan. 8, 19, 30; Feb. 5, 8. Total: 8 trips all between 9:30 a.m. and 4:30 p.m., averaging 55 minutes each. **Count:** Cedar Waxwing, 81 (405); White-throated Sparrow, 24 (120); Starling, 19 (95); Ring-billed Gull, 14 (70); Rock Dove, 12 (60); Blue Jay, 8 (40); Fish Crow, 8 (40);

Yellow-shafted Flicker, 6 (30); Cardinal, 6 (30); Robin, 5 (25); Mockingbird, 4 (20); Brown Thrasher, 4 (20); Rufous-sided Towhee, 4 (20); Myrtle Warbler, 3 (15); House Sparrow, 3 (15); House Wren, 2 (10); Red-bellied Woodpecker, 1 (5); Boat-tailed Grackle, 1 (5); Belted Kingfisher, +; Yellow-bellied Sapsucker, +; Hairy Woodpecker, +; Downy Woodpecker, +; Com. Crow, +; Tufted Titmouse, +; Blue-gray Gnatcatcher, +; Golden-crowned Kinglet, +; Ruby-crowned Kinglet, +; Solitary Vireo, +; Black-and-white Warbler, +; Orange-crowned Warbler, +; Baltimore Oriole, +; Am. Goldfinch, +; Slate-colored Junco, +. **Average Total:** 146 individuals (730 birds per 100 acres). **Remarks:** An average of 17 species was seen per trip. The flicker, jay, Starling, towhee and White-throated Sparrow were seen on 8 counts; Ring-billed Gull, Rock Dove, and thrasher on 7; Fish Crow, Mockingbird, and Boat-tailed Grackle on 6. Cedar Waxwings were seen three times with a flock of 550 accounting for their high density.—*DENNIS M. FORSYTHE, Dept. of Biology, The Citadel, Charleston, S.C. 29409.*

48. SUBURBAN SCHOOL PARK.—**Location:** Deerfield Beach, Florida, between N.E. 6th and 9th Avenues, Hillsboro Boulevard, and N.E. 2nd Street; 26° 19' N, 80° 05' W, USGS Nautical Chart. **Size:** 8.0 ha. = 19.77 acres (rectangular, 1127 x 764 ft.). **Description of Area:** See *AFN* 23:552 (1969). Since last season, two basketball courts have been hard-surfaced, a baseball practice area covered with rolled marl, and air-conditioning equipment installed in a formerly grassy courtyard. In the immediate vicinity another one-story house is under construction. **Weather:** The average temperature for January was 6° above normal. During the 23-day study period, temperatures ranged from 56° to 85°F.; precipitation was 1.24 in. The starting temperature on count mornings averaged 71°F. On 3 trips the weather was sunny; on 4, cloudy, with traces of rain on 2. Winds varied from calm to 12 m.p.h. **Coverage:** Jan. 8, 9, 15, 22, 23, 29, 30. Total: 7 trips, all between 7:50 and 10:00 a.m., averaging 104 minutes each. **Count:** Myrtle Warbler, 15 (187, 76); Mourning Dove, 10 (125, 51); House Sparrow, 10 (125, 51); Rock Dove, 9 (112, 46); Mockingbird, 4 (50, 20); Blue Jay, 2 (25, 10); Loggerhead Shrike, 2 (25, 10); Boat-tailed Grackle, 2 (25, 10); Sparrow Hawk, 1 (12, 5); Red-bellied Woodpecker, 1 (12, 5); Yellow-bellied Sapsucker, 1 (12, 5); Com. Grackle, 1 (12, 5); Cattle Egret, +; Fish Crow, +; Catbird, +; Robin, +; Solitary Vireo, +; Palm Warbler, +; Spotted-breasted Oriole, +. **Average Total:** 58 birds (725 per sq. km.; 293 per 100 acres). **Remarks:** The Sparrow Hawk, Rock Dove, Mourning Dove, Mockingbird, Loggerhead Shrike, Myrtle Warbler, and House Sparrow were noted on all trips, the Boat-tailed Grackle on 6, the Red-bellied Woodpecker on 5, and the Yellow-bellied Sapsucker, Blue Jay, and Com. Grackle on 4 trips. Not seen on these trips, but part of the winter population, was a pair of Barn Owls, whose nest with eggs was found by workmen in the school belltower. The average total of birds in the seasons from 1968-69 to date has been 48-46-38-58; Myrtle Warblers are largely responsible for the current increase. Species flying over on most trips were Cattle Egret,

Turkey Vulture, and Robin, the last sometimes in the hundreds.—*LAURA H. MOSELEY, 1083 Hillsboro Beach, Pompano Beach, Fla. 33062.*

49. URBAN RESIDENTIAL AREA, IV.—Location: Nepean Township, outer suburbs of Ottawa, Carleton County, Ontario. **Size:** 250 acres \pm 15 acres (measured from map). **Description of Area:** Two adjacent subdivisions. The northern is Stewart Farm. Its western half is occupied by multiple housing, chiefly double homes but with one area of townhouses. (Two 12-story apartment blocks near the northwest corner were not included in the census area.) The remainder of the area is in single family properties. Landscaping includes numerous ornamental trees, especially cedars, birches, mountain ashes, and crab-apples, up to 12 ft. in height. Dense cedar hedges up to 5 ft. tall are frequent. The southern subdivision, Borden Farm, is entirely single homes, at much lower densities than in most urban areas. Landscaping is scant; trees are few and small, and shrubs virtually lacking. A few clumps of mature



Study 49. Urban Residential Area. View of Borden Farm area. Photo/A. J. Eskine.

elms on Stewart Farm and a row of poplars on Borden Farm date from before subdivision. Schools (3) and playgrounds (5) occupy about 8 percent of the total area, while nearly 20 percent is in multiple housing; the balance is single homes. **Edge:** Subdivisions to the north are similar to Stewart Farm, but an area to the east, has far more and larger trees and shrubs than the area censused. Vacant fields, no longer used for agriculture, extend beyond the built-up area to southeast, south, and southwest. **Topography:** Sloping downward to south and east; elevation 290-340 ft. **Weather:** Extremely changeable during December and January, with periods of snow and rain alternating every few days, and less than 6 in. of snow accumulated on the ground up to early February. Thereafter, a series of heavy falls built up the snow cover to over 2 ft. in the open by early March, with many deeper drifts. Temperatures ranged from -20°F . (Jan. 16) to $+45^{\circ}$ (Dec. 11 and Jan. 13), but there were no prolonged cold or mild spells. Temperatures on count days ranged from -4° (Jan. 8) to $+30^{\circ}$ (Feb. 29). Winds varied up to force 3 (Beaufort) on count days, but were usually lighter. Skies varied from clear to overcast. **Coverage:** Dec. 2; Jan. 8, 15, 22; Feb. 26, 29. Total: 6 trips, about $2\frac{3}{4}$ hours per trip. All sur-

veys were in the morning. **Count:** House Sparrow, 70 (28); Evening Grosbeak, 17 (7); Starling, 12 (5); Com. Redpoll, 2 (1); Pine Siskin, 1 (+). **Average Total:** 102 birds (41 per 100 acres). Occasional visitors (only seen flying over plot) (total number seen): Rocky Dove, 19; Downy Woodpecker, 1. **Remarks:** The mean numbers of House Sparrows (range of counts 51 to 93) and Starlings (range 2 to 26) varied relatively little between surveys. However, these species were apparently influenced by temperature, since the counts of House Sparrows on the three surveys on which the temperature did not rise above 11° were markedly lower than the mean; the two highest counts of Starlings were made on the cold days, when these birds were conspicuously perched on chimneys. Evening Grosbeaks were not seen until the second survey, when 2 passed over the plot; they averaged 26 per survey on the four later visits. All the birds seen, except (on average) about 4 House Sparrows, were seen in Stewart Farm. Borden Farm, which differs from the surrounding fields mainly in the presence of buildings, was virtually devoid of birds. The presence of cedar hedges (for cover), and of birch and mountain ash trees and feeding stations (for food), in Stewart Farm apparently makes the difference between the subdivisions, as the houses themselves are not obviously different.—*ANTHONY J. ERSKINE, Migratory Bird Populations, Canadian Wildlife Service, Ottawa, Ont.*

50. URBAN RESIDENTIAL AREA, V.—Location: Village of Rockcliffe Park, inner suburbs of Ottawa, Carleton County, Ontario. **Size:** 215 acres \pm 15 acres (measured from map). **Description of Area:** Most of the village west of Mackay Lake, bounded on the west by



Study 50. Urban Residential Area. View of Rockcliffe Park. Photo/A. J. Eskine.

Lisgar, Birkenfels, and Minto, on the north by Coltrin, Crescent, and Lakehurst, on the east by Mackay Lake and Lansdowne Road, and on the south by Maple Lane. The area was built up gradually as a remote suburb. It has always been an exclusive area; the lots on most streets range up to one acre or more. Three schools with their grounds and sports fields, village offices and a park occupy about 15 percent of the area, the remainder being in residential housing. The area has a number of trees surviving from the original forest and many more planted later; it gives the impression of a mature mixed

wood with scattered houses. A sample comprising about 25 per cent of the area included over 1900 trees, or over 30 trees per acre. Most abundant were maples of at least 2 species (collectively 30%), and elms of 3 species (29%). Other important trees were spruces (3 species; 11%), cedars (6%), and pines (2 species; 6%), while smaller numbers of basswood, Lombardy poplar, birches (3 species), Black Locust, ashes, oaks, beech (with 1-3% each), and at least 14 other species were also present. Cedar hedges were commonly grown up to 15-20 ft., and many other rows of trees were probably originally hedges. **Edge:** A narrow band of similar housing, less than one block deep, borders the north edge of the plot, beyond which are parks and parkways of the National Capital Commission. Beyond the frozen surface of Mackay Lake and along the rest of the east side are disturbed woods, superficially similar to the plot itself except for the absence of houses. To the south the Lindenlea district of Ottawa has a much higher density of houses, with far fewer trees. **Topography:** Sloping gradually downward from north to south (from the cliffs along the Ottawa River one-quarter mile to the north); elevation 220-250 ft. **Weather:** Extremely changeable during December and January, snowy during February (see under "Urban Residential Area—IV."). Temperatures on count days ranged from -1°F . (Dec. 19) to 34° (Jan. 12) but only two counts (Dec. 19 and Mar. 4) experienced temperatures below 18° . Winds were light (force 2 or less) except on Jan. 18 (gusting to force 4). Skies ranged from clear to totally overcast with light drizzle at the end of the Feb. 28 survey. **Coverage:** Nov. 26, Dec. 14, 19, Jan. 12, 18, Feb. 28, Mar. 4. Total: 7 counts, averaging 3 hr. 20 min. per trip. All surveys were in the morning. **Count:** Evening Grosbeak, 94 (44); House Sparrow, 37 (17); Black-capped Chickadee, 20 (9); Rock Dove, 13 (6); Bohemian Waxwing, 4 (2); Com. Redpoll, 4 (2); Pine Siskin, 4 (2); White-breasted Nuthatch, 3 (1); Starling, 3 (1); Downy Woodpecker, 2 (1); Pine Grosbeak 2 (1); Blue Jay, 1 (+); Com. Crow, 1 (+); Brown Creeper, 1 (+); Hairy Woodpecker, +. **Average Total:** 189 birds (88 per 100 acres). Occasional visitors: Herring Gull and Am. Goldfinch (seen passing over plot on Nov. 26 and Dec. 19, before the Ottawa River froze), Red-breasted Nuthatch. **Remarks:** The numbers of chickadees (range of counts 11 to 33), nuthatches, woodpeckers, and jays were relatively stable, although of these only the chickadee and Downy Woodpecker were noted on all counts. Rock Doves (1 overhead, up to 37 on plot) and Starlings (range 0 to 10) varied widely without any pattern. House Sparrows and Evening Grosbeaks averaged only 10 and 8 per survey before Christmas, but were far more abundant on the four later visits, averaging 57 (range 43 to 70) and 158 (range 88 to 212) per survey in this period. Species apparently influenced by temperature were Rock Dove (none perched on plot on the two cold days) and House Sparrow (lowest counts of the early and late levels, respectively, on the cold days). The chickadees were usually associated with conifers, but these were so generally distributed as not to represent an obvious clumping of records. Feeding stations were obvious throughout, but were not well patronized until January. Two of the concentrations of Evening Grosbeaks (with about 55 and 20 birds) were centered on feeders, but the third (up to 100 birds,) frequented a well-

treed slope with an open trickle of water. The park and playground areas contained many trees, but birds were generally scarcer there than on residential properties. Squirrels were seen on all visits, averaging 6 Gray (up to 9 black phase and 2 gray phase) and 5 Red Squirrels (maximum 8) per survey.—*ANTHONY J. ERSKINE, Migratory Birds Populations, Canadian Wildlife Service, Ottawa, Ont.*

51. FORESTED CITY PARK.—**Location:** Homer Watson Park, Kitchener, Ontario. **Size:** 25 acres. **Description of Area:** See *AFN* 23: 535-536 (1969). The woods was partially logged around 1900, earlier perhaps partly burned over, and, since its 1913 public purchase, has been selectively cut. The oldest trees have been estimated to be about 140 years old and over 100 ft. high. A 1970 study by University of Waterloo students D. Mutrie and G. Donaldson, by means of the point-centered quarter method and transects, showed the following: maple-beech climax dominant over most of the north half (an upland ridge, dissected by ravines) with some very mature White Pine (*Pinus Strobus*) and Red Oak (*Quercus rubra*) but seedlings and saplings of the first 2 species mostly; towards the south and west, on poorly-drained soils, White Cedar (*Thuja occidentalis*) is dominant, with some Yellow Birch (*Betula lutea*) and other wet-adapted hardwoods on the drier knolls; along the sewer line (laid in early 1900s) and creek that mark the park's southwestern boundary, there is ecological imbalance and an early seral succession: dying elms (*Ulmus* sp.), shrubs and trees of the Rosaceae, along with considerable weedy herbaceous growth on the flood plain; large Hemlocks (*Tsuga canadensis*) dominate the east-west interior springy downslope, mixed with a few tall White Pine and limited ground cover and understorey. **Weather:** The initial count was on the mildest day of the 8 censuses—up to 34°F .; there was thin snow cover by then, however. The Dec. 18 count was during the first real cold spell of the winter, and snow fell Dec. 18 and 19. By Jan. 1, it was again mild (32° during the count), but Jan. 14 and Feb. 8 marked cold periods again ($10-15^{\circ}$) with quite heavy, crusty snow cover on the latter date. Feb. 27 had mild but frosty weather. All counts were on still days except Dec. 18 (mostly windy on ridges only) and Feb. 8 (10-15 m.p.h.). Skies were about equally overcast to clear on counts. **Coverage:** Dec. 3, 18, 19; Jan. 1, 14; Feb. 8, 26 (for owls), 27. Total: 8 trips and $13\frac{1}{2}$ man-hours. Trips were on foot and averaged 60 minutes each, except for the brief night trip for owls, with tapes of Screech Owls played where they had been found prior to 1965, but no response was elicited. Three counts were during mid-morning (9:40-11:45), four during later afternoon (3-4:45). **Count:** Black-capped Chickadee, 5 (20); Golden-crowned Kinglet, 5 (20); White-winged Crossbill, 5 (20); Brown Creeper, 4 (16); Am. Goldfinch, 4 (16); Slate-colored Junco, 3 (12); Downy Woodpecker, 1; Ruffed Grouse, +; Great Horned Owl, +; Pileated Woodpecker, +; Com. Crow, +; Blue Jay, +; White-breasted Nuthatch, +; Cardinal, +. **Average Total:** 27 (108 per 100 acres). **Remarks:** overhead: Red-tailed Hawk (1 adult, low, on Dec. 18); Herring Gull (up to 112, on Dec. 3, many Dec. 18, none in Jan. and 1, Feb. 8); Com. Crow, 5 (Feb. 27—arrivals). Chickadee and creeper were recorded on all daytime trips, kinglet on 6 trips, gold-

finch, junco and Downy Woodpecker on 4, crossbill on 2. Other species were noted once each. The first 3 species foraged over most of the tract, but seemed to favor the canopy of hemlock groves, as did the crossbills. The 2 Great Horned Owls on Dec. 18 were flushed from large Hemlocks near the southwest corner. Cardinal and grouse occurred only near the swampy tangle just outside the northwest corner of the tract. Goldfinches were noted in Yellow Birches, and the juncos along the upper woods edge and in openings on the springy bank. Some of the species (grouse, owls, Pileated Woodpecker) have not been found in other recent winter studies. Mammals recorded this winter on the tract were: Black/Gray and Red Squirrels, Cottontail, European Hare, shrew (sp.) and deer mouse (sp.) as well as Red Fox, which also has not been present previously for several years. The apparent return of some wildlife may be the result of virtual absence of snowmobiles since they were prohibited in 1970—only a few entered illegally from the back (?) of the park. Recreational usage by people and their pets continued to be high, as did traffic noise, especially on east and west boundaries. One of the nearest feeding stations, across Wilson Avenue by the Grand River, had numerous Downy Woodpeckers, chickadees and White-breasted Nuthatches, possibly drawn from the tract.—*CRAIG A. CAMPBELL (compiler) and WILLARD H. SCHAEFER of OIKOS Associates, P.O. Box 747, Waterloo, Ont., MR. and MRS. PETER C. BALD and JANE L. CAMPBELL.*

52. RESIDENTIAL STREET.—**Location:** Along Fairgreen Drive in northwestern Toledo, Ohio, a rectangular plot located east and south of Secor and Laskey Roads, respectively; 41° 43' N, 83° 39' W. **Size:** 43.4 acres (2365 x 800 ft., from city map). **Description of Area:** See *AB* 25:663 (1971). **Weather:** December was extraordinarily warm and nearly snow-free; January alternated periods of unseasonable warmth with record cold; February averaged colder than normal but without extremes. Temperature extremes were -15°F. on Jan. 16 and 69° on Dec. 16. Measurable snowfalls occurred on nine days, but cover exceeded 2 in. only twice (Jan. 13 and Feb. 25). **Coverage:** Some daily except for the period Dec. 16–Jan. 8; the author lived on the census area. Comprehensive counts on Dec. 5, 11, 15; Jan. 11, 19, 30; Feb. 6, 15, 26. **Count:** House Sparrow, 65 (150); Blue Jay, 17 (39); Starling, 17 (39); Mourning Dove, 6 (14); Slate-colored Junco, 4 (9); Cardinal, 3 (7); Tufted Titmouse, 2 (5); White-breasted Nuthatch, 2 (5); Downy Woodpecker, 1 (2); Red-tailed Hawk, +; Com. Crow, +; Com. Grackle, +; Tree Sparrow, +. **Average Total:** 116 birds (267 birds per 100 acres). Flying overhead (may have used area): Sparrow Hawk, Com. Redpoll. **Remarks:** A lone Red-tailed Hawk visited the area frequently, and perched frequently in tall trees within the census area. Judging by kills brought in by our cat, Short-tailed Shrews (*Blarina brevicauda*) were abundant on the plot this winter; however, the Red-tail was observed carrying prey only once—on Dec. 7, when it flew through the backyard carrying a squawking Starling in its talons! The winter census was very disappointing this year, showing an increase in total density but a decline in species from last year. The Tree Sparrow and Com. Grackle represented single occurrences of single

birds, and crows did not become regular visitors until the latter half of February.—*ELLIOT J. TRAMER, Department of Biology, University of Toledo, Toledo, Ohio 43606.*

53. CITY PARK.—**Location:** Grove Ave. and 31st St., Lorain, Ohio. **Size:** 72.3 acres (2100 x 1500 ft.). **Description of Area:** See *AFN* 23:553-555 (1969). **Habitat change:** The waterfall fountain at the northwestern end of the park was removed. **Weather:** The temperature during the study period varied from -5° to 50°F., averaging 25°. There was 2 in. of snow on 2 trips, 1 in. on one, and 3 in. on one. **Coverage:** Dec. 4, 12, 18, 24, 31; Jan. 8, 15, 22, 29; Feb. 5. **Total:** 10 trips, between 9 and 11 a.m., averaging 1.5 hours. **Count:** Starling, 39 (54); Blue Jay, 15 (21); Slate-colored Junco, 5 (7); Rock Dove, 3 (4); Yellow-shafted Flicker, 2 (3); Red-headed Woodpecker, 2 (3); Tree Sparrow, 2 (3); Yellow-bellied Sapsucker, +; Downy Woodpecker, +; House Sparrow, +; Com. Grackle, +. **Average Total:** 68 birds (94 per 100 acres). **Remarks:** Starling and Blue Jay were seen every trip, Red-headed Woodpecker on 9 trips, flicker on 7 trips, Slate-colored Junco on 6 trips, Rock Dove on 5 trips, Tree Sparrow on one trip. Two hundred Ring-billed Gulls flew over the park during the study period. (Lake Erie is 3 miles north.) One crow flew over.—*ZIGMOND and HELENA NAGY, (Elyria Audubon Society), 2332 E. 31st St., Lorain, Ohio 44055.*

54. SUBURBAN WOODLOT.—**Location:** One mile northwest of Deerfield, Illinois (Section 24, T43N, R11E). **Size:** 20 acres (rectangular, 1055 x 830 feet, from plats). **Description of Area:** See *AFN* 22:491-492 (1968). **Weather:** During the 60-day study period temperatures remained below freezing on 35 days and stayed above freezing on 3 days. Extremes were -19° and 47° F. Snow covered the ground on 4 trips, but precipitation totaled less than 3 in. in the entire period. Winds were moderate and southerly through much of the period. In all, a short, open, and ill-defined "winter." **Coverage:** Dec. 19, 26; Jan. 16, 23; Feb. 12, 21, 26. **Total:** 7 trips; mid-morning to early afternoon, averaging 90 minutes. **Count:** In Table 1, figures in parentheses are the average totals per 20 acres for 1971-72; other figures are density per 100 acres for the five winters shown. Species are listed in order of constancy: i.e., those present in all five years first, those present in four years next, and so on. **Remarks:** Seen on all 1972 trips: Hairy Woodpecker, Downy Woodpecker, Blue Jay, Com. Crow, chickadee, Starling, House Sparrow, Cardinal, Am. Goldfinch, junco. A Screech Owl occupied the nesting box for the fourth consecutive winter, and was seen at least twice a week throughout the period. Flickers nested in the box last summer, and two or three of them took turns entering and leaving the box for at least a week after Nov. 14, the date on which the owl was first seen in it. Squirrels began nesting in the box about March 15, and the owl was not seen after that date. The weather was no more changeable than the birds. Daily counts ranged from 82 to 44. Winter finches were varied and plentiful in the area; neighbors frequently reported Com. Redpolls and, occasionally, Pine Grosbeaks. As many as 13 Purple Finches, 5 crossbills, and 4 siskins were seen in the plot at one time. Both the Red-tailed

and Cooper's Hawks were observed more than once on perches in the plot, and the latter was once seen chasing a jay. Herring Gulls flew over the plot during all but one trip, and a Canada Goose passed over during the first count. A Yellow-bellied Sapsucker was seen in the plot on a day when no count was made. Reviewing Table 1, the numbers and variety of species show a remarkable consistency over the five winters. More than half of the species were seen each year. Accuracy of counts was increased by having several observers check feeders at

the same time other areas in the plot were being surveyed. The plot has remained almost completely unchanged since 1967, and there are still five houses rather evenly distributed in the 20 acres. In 1972, a sixth house will be added, several sewer lines will be laid through the plot, and surrounding areas are being extensively built up. Effects upon the very stable winter bird population will be watched for in succeeding years.—*DALE E. MILLER and WILLIAM B. MILLER (compiler), 1900 Robinwood Lane, Riverwoods, Ill. 60015.*

TABLE 1
Birds Per 100 acres in Suburban Woodlot, Study No. 54.

	5-yr. avg.	1967- 68	1968- 69	1969- 70	1970- 71	1971- 72
House Sparrow	49	55	30	60	70	30 (6)
Slate-colored Junco	48	60	45	45	60	30 (6)
Am. Goldfinch	36	10	35	35	40	60 (12)
Starling	22	20	30	30	30	25 (5)
Black-capped Chickadee	16	20	10	20	15	15 (3)
Cardinal	15	10	25	10	20	10 (2)
Mourning Dove	14	+	+	+	50	20 (4)
Downy Woodpecker	12	15	10	15	10	10 (2)
Com. Crow	12	15	15	10	10	10 (2)
Hairy Woodpecker	10	10	10	10	10	10 (2)
Purple Finch	10	25	+	10	+	15 (3)
White-breasted Nuthatch	6	5	10	5	5	5 (1)
Red-bellied Woodpecker	5	5	5	10	5	+
Blue Jay	5	10	+	+	5	10 (2)
Screech Owl	4	+	5	5	5	5 (1)
Tufted Titmouse	4	10	5	+	+	5 (1)
Tree Sparrow	4	+	10	5	5	+
Yellow-shafted Flicker	+	+		5	+	5 (1)
Cooper's Hawk	+	+	+		+	
Red-tailed Hawk	+	+			+	+
Brown Creeper	+	+		+	+	
Com. Grackle	+			+	+	+
Evening Grosbeak	+		+	+		+
Red-breasted Nuthatch	+		5	+		
Myrtle Warbler	+	±		5		
Pine Siskin	+		5			5 (1)
Oregon Junco	+	+	+			
Yellow-bellied Sapsucker	+					+
Carolina Wren	+		+			
Golden-crowned Kinglet	+			5		
White-winged Crossbill	+					5 (1)
White-throated Sparrow	+			5		

55. CITY PARK.—**Location:** Des Moines, Iowa. **Size:** 33 acres. **Description of Area:** See *AFN* 23:555 (1969). **Weather:** December was warm and dry for the first half, but rainy later. January was mild and open for three weeks, after which it was much colder than normal and a series of snow storms began. The first part of February was a succession of sub-zero days with more snow. The snow cover was 5 in. as late as Feb. 20 when warmer weather set in. Temperatures during the hours of the counts ranged from 18° to 38° F. with a mean of 31°. **Coverage:** Dec. 11, 13, 21, 24, 29, 31; Jan. 7, 9, 17, 22, 31; Feb. 1, 15, 22, and 24. Total: 15 counts, between 9 and 10 a.m., averaging 50 minutes each.

Count: Starling, 5 (15); Slate-colored Junco, 5 (15); Black-capped Chickadee, 3 (9); White-breasted Nuthatch, 3 (9); House Sparrow, 3 (9); Blue Jay, 2 (6); Downy Woodpecker, 1 (3); Tufted Titmouse, 1 (3); Cardinal, 1 (3); Yellow-shafted Flicker, +; Red-bellied Woodpecker, +; Hairy Woodpecker, +; Com. Crow, +; Purple Finch, +; Am. Goldfinch, +. **Average Total:** 24 (73 per 100 acres). **Remarks:** With the cold weather late in January there was an influx of Evening Grosbeaks, Com. Redpolls, and Pine Siskins at feeders, and there were at least two small flocks of White-winged Crossbills in parks and cemeteries, but none of these was found in the census area. Purple Finches, although

fairly common in the city, were seen only three times for a total of 6. This is the 18th consecutive count in the area. The identical route was covered each day to limit the variables to temperature and cloud cover. The trees in the area are predominantly White Oak, and the removal of a few more dead Am. Elms was the only physical change.—*WOODWARD H. BROWN, 432 Tona-wanda Drive, Des Moines, Iowa, 50312.*

56. SUBURBAN NATURE CENTER.—Location: El Dorado Nature Center, Long Beach, California. Bounded on the north by Spring Street, south by Willow Street, east by the Long Beach Tree Farm, west by the San Gabriel River. **Size:** 85 acres, rectangular, ½ mile north-south, ¼ mile east-west. **Description of Area:** See *AB* 25:656 (1971), census no. 39 (Ponds in Irrigated Park). **Weather:** Winters are clement, night temperatures rarely below freezing, usually above 45°F., day temperatures up to 75° but usually around 60°. Rain-fall variable in winter but can be expected in December and January in the form of storms which drop 2-5 in. in several days. This year there was heavy rain during the last week in December and none in January. **Coverage:** Dec. 11; Jan. 5, 12, 19, 25; Feb. 2, 9. Total: 7 trips, all between 8 and 11 a.m., averaging 150 minutes each.

Count: House Finch, 51 (60); Am. Coot, 31 (36); White-crowned Sparrow, 30 (35); Am. Widgeon, 23 (27); Shoveler, 22 (26); Mallard, 16 (19); Canvasback, 13 (15); Ruddy Duck, 13 (15); W. Meadowlark, 12 (14); Am. Goldfinch, 11 (13); Lesser Goldfinch, 10 (12); Pied-billed Grebe, 6 (7); Pintail, 6 (7); Anna's Hummingbird, 6 (7); Red-shafted Flicker, 5 (6); Audubon's Warbler, 5 (6); Song Sparrow, 5 (6); Gadwall, 4 (5); Spotted Dove, 4 (5); Loggerhead Shrike, 4 (5); Yellowthroat, 4 (5); Ring-necked Duck, 3 (4); Cinnamon Teal, 2 (2); Sparrow Hawk, 2 (2); Killdeer, 2 (2); Mourning Dove, 2 (2); Hermit Thrush, 2 (2); Starling, 2 (2); Green Heron, 1 (1); California Quail, 1 (1); Ring-necked Pheasant, 1 (1); Belted Kingfisher, 1 (1); Black Phoebe, 1 (1); Com. Crow, 1 (1); Mockingbird, 1 (1); Robin, 1 (1); Blue-gray Gnatcatcher, 1 (1); Snowy Egret, +; Redhead, +; White-tailed Kite, +; Sharp-shinned Hawk, +; Cooper's Hawk, +; Red-tailed Hawk, +; Red-shouldered Hawk, +; Sora Rail, +; Com. Gallinule, +; Com. Snipe, +; Long-billed Marsh Wren, +; Ruby-crowned Kinglet, +; Orange-crowned Warbler, +; Red-winged Blackbird, +; Rufous-sided Towhee, +; Golden-crowned Sparrow, +; Lincoln's Sparrow, +. **Average Total:** 304 birds (density, 358 per 100 acres).—*BARBARA W. MASSEY, 1825 Knoxville Ave., Long Beach, Calif. 90815.*

AN APPRAISAL OF THE WINTER BIRD-POPULATION STUDY TECHNIQUE

*Chandler S. Robbins**

INTRODUCTION

In the July 1947 issue of *Audubon Field Notes* (1:165-166), the first announcement was made of the National Audubon Society's Winter Bird-Population Study. The stated objective was to determine the number of birds wintering in a measured area of a certain type of habitat, using standardized procedures. Instructions for cooperating in this activity and for reporting results were included in the announcement. Studies were conducted on 20 plots during the winter of 1947-48, and the results were published in the May 1948 issue. Revised instructions appeared in 1950 (*AFN* 4:183-187), and these instructions are still in effect.

Now that these winter counts have been conducted for 25 years, it would seem appropriate that some studies be conducted on the effectiveness of the method and thought be given to possible improvements in the procedures used.

The purpose of this paper is to review some of the variables that influence the counts and to dis-

cuss the results of counts taken in two plots under standardized conditions, with special reference to the number of trips required.

STUDY PLOTS

The two plots selected for this appraisal are Numbers 8 and 9 in this issue of *American Birds*. The plots are adjacent to each other along the Middle Patuxent River valley at Columbia, Howard County, situated in the Piedmont of central Maryland. Plot No. 8 is a Hickory—Oak—Ash Floodplain Forest, and Plot No. 9 is an Upland Tulip-tree—Maple—Oak Forest.

Both plots are in fairly mature hardwood forest so that most of the species found in one plot also occur, though in different density, in the other plot. Thus, the relative conspicuousness on morning versus afternoon counts for most species can be studied independently on both plots.

Since the two plots are contiguous, the birds on them are subject to the same weather conditions; thus, any early singing or courtship behavior should begin on both plots at about the same time. Another advantage in having the two plots adjacent to each other is that while censusing one

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