

Thirty-second Winter Bird-Population Study

Edited by Roger L. Boyd and Calvin L. Cink

THIS YEAR'S 65 censuses have reversed the recent trend of ever increasing numbers of reports. However, a look back at the reports for 1978 shows that there were 65 new reports that year from California alone, most of which were subsidized by the government as impact studies and none of which were submitted again this year. There were 23 states and provinces represented this year, which is the same number as last year. New York had the highest state total of 8 studies, all in different habitats. The states with the next highest numbers of studies were Minnesota with 7 and Kansas with 6.

Observers reported a total of 1016.9

hours in the field, averaging 15.6 hours per census plot. The highest total was 79.6 hours for Mixed-Mesophytic Woods in Tennessee.

The total area studied this year amounted to 1194.7 hectares (2952.1 acres) for an average census area of 18.4 ha. The number of birds per sq. km. ranged from 0 to 7647 (interestingly both figures are from Minnesota shelterbelts) and averaged 713 birds. The total species recorded varied from 1 (Shelterbelt) to 68 (Semi-disturbed Riparian Woodland).

Fifty-one percent of the studies are new. In addition, none the substantial 37 percent of the studies that have been

continued for 5 or more years; a continuity that is so important in assessing population changes in these habitats.

Many compilers reported unusually low temperatures and heavy snowfalls for late December through February.

The editors wish to thank all compilers for submission of their studies and especially those who had obviously compared their reports with previously published Winter Bird-Population Studies for the correct format. It made our task much more enjoyable. The deadline for 1980 reports is June 15, 1980. — *Dept. of Biology, Baker University, Baldwin City, KS 66006.*

List of Studies

Habitat	State or Province	Hec-tares	Birds per sq. km.	Hrs. Obs.	Spe-cies	Yrs. of Study
A. Forest Habitats						
1. Maple-Pine-Oak Second-growth Forest	Massachusetts	11.8	51	20.8	10	3
2. Hemlock-Mixed Hardwood Forest	Connecticut	19.0	95	24.0	10	1
3. Upland Oak Forest	New York	11.8	17	10.2	5	6
4. Upland Mixed Pine-Spruce-Hardwood Plantation	New York	16.6	214	20.3	13	6
5. Mixed Hemlock-White Cedar-Hardwood Wet Forest	New York	4.5	517	21.7	15	2
6. Pitch Pine-Oak Forest I	New Jersey	13.8	225	18.0	8	1
7. Pitch Pine-Oak Forest II	New Jersey	6.1	91	10.5	5	1
8. Mixed Hardwood Forest	Maryland	11.3	327	13.2	31	21
9. Hickory-Oak-Ash Floodplain Forest	Maryland	18.4	521	20.8	31	8
9a. Upland Tulip-tree-Maple-Oak Forest	Maryland	12.0	109	14.5	19	7
10. Mature Deciduous Floodplain Forest	Maryland	17.8	588	10.0	24	28
11. Central Hardwood Forest with Scattered Pine	Dist. of Columbia	26.3	80	15.1	13	24
12. Upland Oak-Hickory Hardwood Forest	Virginia	11.0	145	14.0	14	9
13. Upland Tulip-tree-Oak Forest	Virginia	20.1	175	12.5	14	6
14. Barrier Island Maritime Forest	South Carolina	8.1	778	12.0	23	1
15. Mature Longleaf Pine Forest	Georgia	58.3	331	68.0	32	1
16. Mature Beech-Maple Forest	Ontario	6.1	280	8.0	11	1
17. White Pine-White Birch Coniferous Forest	Ontario	8.4	333	12.0	17	1
18. Old Growth Beech-Tulip-tree-Black Gum Forest	Indiana	10.1	238	16.1	17	4
19. Bottomland Oak-Gum-Cypress Forest Recently Disturbed	Mississippi	11.4	1820	18.3	33	6
20. Mixed Pine-Deciduous Forest	Louisiana	8.9	461	12.0	26	8
21. Oak-Hickory Forest I	Kansas	8.1	605	14.0	16	1
22. Oak-Hickory Forest II	Kansas	8.1	791	11.5	20	1
23. Oak-Hickory Forest III	Kansas	8.1	1186	12.0	23	1
24. Oak-Hickory Forest IV	Kansas	8.1	358	17.0	13	1
25. Oak-Hickory Forest V	Kansas	8.1	235	20.0	13	1
26. Oak-Hickory Forest VI	Kansas	8.1	74	18.0	10	1
27. Ponderosa Pine-Douglas Fir Foothills Forest	Washington	11.2	135	15.8	14	4
28. Oregon White Oak Woodland	Washington	7.5	841	18.7	24	1
29. Semi-disturbed Willow-Cottonwood-Black Walnut Riparian Woodland	California	17.7	1312	29.2	68	1
30. Deciduous Oak Woodland	California	5.7	459	11.0	18	1

<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>
B. Forest Mixed with Other Habitats						
31. Abandoned Pasture-Young Mixed Forest	New York	3.4	145	11.3	6	1
32. Black Spruce-Tamarack Bog	New York	4.6	197	9.8	4	6
33. Riparian Woodland-Floodplain*	New York	13.8	131	12.5	20	4
34. Riparian Woodland-Floodplain	New York	13.8	610	18.0	23	5
35. Mixed Upland Habitat	Dist. of Columbia	14.2	593	23.5	31	20
36. Coastal Disturbed Floodplain	Virginia	8.1	680	18.3	38	15
37. Strip Mine and Deciduous Woodlot	Tennessee	20.1	404	9.0	18	1
38. Deciduous Forest and Contour Strip Mine	Tennessee	23.4	197	7.5	23	1
39. Mixed-Mesophytic Woods, Fields and Brush	Tennessee	30.0	207	79.6	36	2
40. Floodplain Woodland and Field	Ohio	22.5	525	8.5	20	3
41. Woodland along Prairie Stream	Kansas	12.4	583	21.0	31	1
42. Mixed Habitat: Riparian Woodland and Adjacent Oak Savanna	California	8.8	959	10.0	35	1
C. Brush, Grassland and Desert						
43. Brushy Field and Wooded Edge	Pennsylvania	7.5	531	19.7	19	1
44. Grassland: Municipal Airport	Louisiana	12.1	165	5.0	8	1
45. Live Oak-Mesquite Brushland	Texas	12.1	445	10.1	25	13
D. Habitats including Open Water						
46. Mixed Upland Habitat and Swamp	Connecticut	14.2	78	8.0	9	7
47. Lagoon	Virginia	23.5	1227	10.7	18	11
48. Barrier Beach and Saltwater Estuary	Florida	212.5	1015	30.0	64	2
49. River Bank and River	Pennsylvania	4.6	1236	3.4	15	5
		80.0	10	3.3	2	5
50. Sewage Lagoons	Arizona	57.8	1348	27.3	59	2
51. Intertidal Mudflat on Large Bay	California	22.4	3830	12.1	46	1
E. Shelterbelts						
52. Mature (1946) Four-row Shelterbelt	Minnesota	0.70	718	9.5	8	1
53. Mature (1948) Five-row Shelterbelt	Minnesota	0.71	7385	7.5	6	1
54. Mature (1949) Eight-row Shelterbelt	Minnesota	0.37	0	8.0	3	1
55. Mature (1951) Three-row Shelterbelt	Minnesota	0.32	309	5.0	5	1
56. Immature (1961) Nine-row Shelterbelt	Minnesota	0.79	764	7.5	7	1
57. Immature (1966) Four-row Shelterbelt	Minnesota	0.30	336	6.5	3	1
58. Immature (1974) Three-row Shelterbelt	Minnesota	0.21	0	3.8	1	1
F. Croplands						
59. Open Farmland	Connecticut	19.0	5478	8.8	8	1
60. Floodplain Forest and Cultivated Bottomland	New York	51.8	210	13.2	18	8
61. Corn Stubble, Rye, Barley and Short Grass	Pennsylvania	40.5	2	3.0	5	6
G. Urban Habitats						
62. Barrier Island Golf Course Subdivision	South Carolina	8.1	865	12.0	26	1
63. Wooded City Ravine	Ontario	13.2	348	16.0	10	1
64. Suburban Nature Center	California	34.4	1439	18.3	50	5

*Count made in 1978 but not printed in AB 33(1).--Ed.

1. MAPLE - PINE - OAK SECOND-GROWTH FOREST. — **Location:** Massachusetts; Norfolk Co., Town of Foxboro conservation land, off Willow and East Sts.; 42° 04' N, 71° 11' 30' W, Mansfield Quadrangle, USGS. **Continuity:** Established 1977; 3 consecutive years. **Size:** 11.8 ha = 29.2 acres. **Description of Area:** See AB 31:50-51 (1977). **Weather:** During census trips average temperature ranged from 2° to 40°F with an average of 25°F. Ground bare on 6 trips; snow cover on other trips ranged from 1 to 3 in. Sky clear on 8 trips, overcast on 6. Weather data for Boston, about 20 mi N, supplied by U.S. National Weather Service: for Dec., Jan. and Feb., temperature departures from normal were respectively +2.3°, +3.3°, -7.3°F; total rainfall equivalent precipitation during census period was 15.59 in., slightly below average for

Dec. and Feb., 6.86 in. above average for Jan. predominantly rain. **Coverage:** Dec. 10, 11, 14, 18, 26, 28; Jan. 20, 28; Feb. 5, 10, 17, 19, 23; Mar. 3. Total, 14 trips, 12 morning and 2 afternoon, between 0810 and 1535, averaging 89 min each. **Count:** Black-capped Chickadee, 3 (25, 10); Ruffed Grouse, 1 (8, 3); Downy Woodpecker, 1; Dark-eyed Junco, 1; Hairy Woodpecker, +; Tufted Titmouse, +; White-breasted Nuthatch, +; Brown Creeper, +; N. Shrike, +; Cardinal, +. **Average Total:** 6 birds (51/km², 21/100 acres). **Remarks:** Chickadees were seen on 12 trips, Downy Woodpeckers on 7, grouse on 6, Hairy Woodpeckers and titmice on 3, nuthatches, creepers and juncos on 2; 1 shrike and 1 Cardinal were seen. Com. Crows were heard or seen flying over on 7 trips. This was a poor winter for birds; the number of species and total number of birds

were substantially lower than last year. The number of species recorded per hour of observation dropped from 0.7 last winter to 0.5 this year. The number of bird sightings per hour dropped from 7.7 last winter to 4.3 this year. Counts at feeders on nearby Willow and East Sts. were made this winter and last immediately after each census trip; the average feeder count per trip dropped from 60 last winter to 40 this year. Noticeably absent were Blue Jays, which apparently migrated in large numbers following a poor acorn crop. The largest mixed foraging group consisted of 4 chickadees and a single Tufted Titmouse, Brown Creeper, Downy Woodpecker and White-breasted Nuthatch. The shrike was an immature bird. — WILLIAM E. DAVIS, JR., College of Basic Studies, Boston Univ Boston, MA 02215.

2. HEMLOCK - MIXED HARDWOOD FOREST. — **Location:** Connecticut, New London Co., Bolleswood Natural Area of the Conn Arboretum of Conn. College, New London, S of Gallows Lane; 41°22'N, 72°7'W, Uncasville Quadrangle, USGS. **Continuity:** New (Established 1976, 4 consecutive years but first published report. Breeding Bird Censuses on entire natural area intermittent since 1953) **Size:** 19.0 ha = 47 acres (roughly rectangular running N-S; planimeter measurement from aerial photograph tracing). **Description of Area:** See AB 31:57-58 (1977). The study plot is a portion of a larger natural area consisting of semi-open fields, young deciduous forest, and mature oak-hemlock forest. **Topography:** Varied including swamps, ravine, ledges, and rock outcroppings. Avg. elevation 200 ft. **Edge:** Bordered on E by a 1.5 ha pond and pine plantations, S by similar forest and powerline right-of-way, W by young deciduous forest, and N by a road and beyond that wooded wetlands and oak forest **Water:** A small stream (about 5 ft. wide) flows along W boundary but was frozen-over except for a few small open areas. Pond on E boundary and small bog in S portion of plot were completely frozen. There was some standing water along the margin of one of the two Red Maple swamps within the plot. **Food:** Mast crops were unusually low. Scattered dead trees. **Weather:** Temperatures recorded on the plot at the start of each trip averaged in the teens (range 0-33°F). The sky was clear on 6 days, partly cloudy 2 days, and overcast 4 days (snow flurries on 2 of these). Winds were usually 5-10 mph or less but with gusts up to 25 mph on 5 trips. There was no snow cover until the last 6 days when it averaged 1/2 to 3+ inches **Coverage:** Jan. 30, Feb. 1-3, 5-7, 9, 12, 13, 15-16. Total, 12 trips between 0830 and 1145 hours, averaging 2 hours each. Two observers each trip, except once with 9, and once with only 1. Total man-hours: 40. **Count:** Black-capped Chickadee 10 (53, 21); Com. Crow, 5 (26, 11); Starling, 2 (11, 4); Blue Jay, 1 (5, 2), Barred Owl, +; Hairy Woodpecker, +; Downy Woodpecker, +; Tufted Titmouse, +; White-breasted Nuthatch, +; American Robin, +. **Average Total:** 18 birds (95/km², 38/100 acres). **Remarks:** Total species, 10, was down from 20 in 1978, 15 in 1977, and 20 in 1976. Average density was also much lower than the 237 in 1978, 137 in 1977, and 195 in 1976. Only the crow and Black-capped Chickadee have been relatively stable in numbers in the four study years. Blue Jay numbers were unusually low this winter but this seemed to be the case throughout southeastern Connecticut. The scarcity of acorns may have forced Blue Jays to migrate southward. Pine Siskins, which were so abundant last year (26/km² in 1978) were not seen this year, perhaps because the winter farther north was not as severe. The scarcity of Tufted Titmice and White-breasted Nuthatches, and the total absence of Mourning Doves and Cardinals (species that had been seen in all previous surveys) may have been a result of increased feeder activity at the Thames Science Center approximately 200 yds NE of plot. The low temperatures and gusty winds on several trips may have also affected observer efficiency. Barred Owls have been sighted on the plot during 3 of the 4 study years and probably represent a breeding pair. Gulls were seen flying over the plot on every trip but were not using it. This winter census

was conducted by members of the ornithology class A Brash, D Evans, A Kohen, L Langstaff, S. McElheny, A. Pascoe, E. Sherk, D. Tomlinson, and D. Wrightson. — WILLIAM J. BARRY, Dept. of Zoology, Connecticut College, New London, CT 06320.

3. UPLAND OAK FOREST. — **Location:** New York; Delaware Co., about 1.5 miles N of Pine Lake on South Hill and about 2 mi E of West Davenport, 42°28'3"N, 74°56'15"W, West Davenport Quadrangle, USGS. **Continuity:** Established 1972; 6 intermittent years. **Size:** 11.8 ha = 29.1 ± 0.5 acres (nearly square, essentially 6 x 5 units of 208 ft. edge, measured into a grid of one acre units, measured with steel tape). **Description of Area:** See AB 26:661-662 and 941 (1972). **Weather:** Trips were made in all kinds of weather. Trip temperatures averaged about 28°, with snow cover from 0.7 to 1.7 ft., averaging 1.3 ft. The following weather data are for Cooperstown, about 12 mi N, and were supplied by the U.S. National Weather Service. For the months of Jan. and Feb. temperatures ranged from -30° to +52°F with an average of 15.9° and total precipitation 7.66 in. (water equivalent). As compared with other years (30-year period) Jan. and Feb. departed about -6.1° and +2.57 in. precipitation. Feb. departed -11.2°. January precipitation was the highest in 126 years. Oct., Nov., and Dec. temperatures each averaged within 3° of the 30 year average and rainfall was +0.3, -2.1, and +0.7 in. **Coverage:** Jan. 14, 20-21, 27-28; Feb. 3, 18, 22, 24. Total: 9 trips, between 1030 and 1600, mostly early p.m., averaging 68 observer min. each. The method used was the same as described in the 1973 winter count. **Count:** Hairy Woodpecker, 1 (8, 3); Black-capped Chickadee, 1; Pileated Woodpecker, +; White-breasted Nuthatch, +; Brown Creeper, +. **Average Total:** 2 birds (17/km², 7/100 acres). **Remarks:** Chickadee was seen on 2 trips and Hairy Woodpecker (♀) on 4 trips. No birds were seen on 2 trips. This and last year's count are the lowest in numbers. This and the past 2 winters have been unusually severe. As last year, I saw no Downy Woodpecker or Blue Jay in the plot or during the 1.5 mile hike each way to the plot through both deciduous and hemlock forest. Unlike last year, I did see Brown Creepers this year. The count was also very low again in the Black Spruce-Tamarack Bog plot censused for this issue of A.B. — J. ROBERT MILLER, Dept. of Chemistry, HANS GABLER, Hartwick College, Oneonta, NY 13820.

4. UPLAND MIXED PINE - SPRUCE - HARDWOOD PLANTATION. — **Location:** New York; Allegany Co., on the S side of Brown Rd., near intersection with Vandermark Rd., 3.5 mi W of Alfred, 42°7'30"N, 77°45'W; Andover Quadrangle, USGS. **Continuity:** Established 1974; 6 consecutive years. **Size:** 16.6 ha = 41 acres (roughly rectangular, perimeter measured with tape and compass). **Description of Area:** See AB 28:699-700 (1974). **Weather:** Data gathered at the Alfred Cooperative Weather Station indicated that the average mean temperature in January (18.5°F.) was 4° colder than the 63-year average. Total snowfall during January and February was 42.6 in. with 32 in. falling on Dec. 24-25. All trips were made on skis or snowshoes. **Coverage:** Dec. 28-29; Jan. 4-6, 10, 12, 15, 19-20, 23, 25; Feb. 1, 3, 7, 9, 11, 16, 25;

from 0930 to 1615. Total, 8 trips (no more than half the study area could be covered on each visit) totaling 20.25 hours of field work **Count:** Black-capped Chickadee, 13 (78, 32), Evening Grosbeak, 6 (36, 15); Red-breasted Nuthatch, 5 (30, 12); Blue Jay, 4 (24, 10), Golden-crowned Kinglet, 3 (18, 7); Brown Creeper, 1.5 (9, 4); Ruffed Grouse, 1 (6, 2), Downy Woodpecker, 1; White-breasted Nuthatch, 1; Cooper's Hawk, +; Turkey, +, Pileated Woodpecker, +; Hairy Woodpecker, +. **Average Total:** 35.5 birds (214/km², 87/100 acres). **Remarks:** Chickadee, Blue Jay and Red-breasted Nuthatch were observed on every trip. The cone crop was poor; an abundant supply of ash crop attracted Evening Grosbeaks. Total birds was the highest ever after a previous steady decline (33, 33, 27, 30, 25). Appreciation is extended to Gaylord Rough for weather data; to Laura Brooks for assistance on one trip; and to Alyse Gardner whose assistance was part of an Alfred University individual study project. — ELIZABETH W. BROOKS, Waterwells Rd., Alfred Station, NY 14803.

5. MIXED HEMLOCK-WHITE CEDAR-HARDWOOD WET FOREST. — **Location:** New York; St. Lawrence Co., St. Lawrence University, Kip Tract; 44°35'N, 75°08'E. **Continuity:** Established 1978; 2 consecutive years. **Size:** 4.5 ha = 11 acres (twelve plots 200 ft. square, surveyed). **Description of Area:** The dominant canopy trees are E. Hemlock (*Tsuga canadensis*), White Cedar (*Thuja occidentalis*), Red Maple (*Acer rubrum*), Black Ash (*Fraxinus nigra*). Most dominant trees averaged 15 to 24 m in height; dbh of dominant species are 55 cm, 40 cm, and 50 cm, respectively. Understory species and their dbh, in addition to saplings of dominant species, included: Gray Birch (*Betula populifolia*), 13; Poplar (*Populus* sp.), 18; Am. Elm (*Ulmus americana*), 20. Dominant shrub layer included regeneration of tree species, American Yew (*Taxus canadensis*), and Basswood (*Tilia americana*). Planted Red Pine (*Pinus resinosa*), 38.3 cm, at w. end and n.e. corner of census area; also scattered openings associated with large dead elms. **Edge:** Bounded by similar habitat on all sides; Little River to the N, meadow and cornfield 400 ft. to the S, Pike Road 1200 ft. to the E. **Topography:** Flat, gently slopes to the W. **Elevation:** 380 ft. **Food:** Dead trees, especially elm, support large and diverse woodpecker population. **Weather:** -10° to 45°F, light snow cover throughout census period with intermittent rainfall during Feb. **Coverage:** December 4, 6, 9; Jan. 1, 19, 24, 27, 29; Feb. 10, 15-17, 23. Total: 13 trips, all between 0800 and 1400 EST, averaging 100 minutes each. **Census:** Black-capped Chickadee, 14 (314, 127); Evening Grosbeak, 4 (90, 36); Red-breasted Nuthatch, 2 (45, 18); Com. Crow, 1 (22, 9); White-breasted Nuthatch, 1; Purple Finch, 1; Broad-winged Hawk, +; Great Horned Owl, +; Pileated Woodpecker, +; Hairy Woodpecker, +; Downy Woodpecker, +; Blue Jay, +; Tufted Titmouse, +; Pine Siskin, +; White-throated Sparrow, +. **Average Total:** 23 birds (511/km², 209/100 acres). **Remarks:** 15 species. Black-capped Chickadees seen on all trips. Pileated Woodpecker workings were noticed frequently. — MICHAEL HEIDENREICH and DEIDRE HUNGERFORD, St. Lawrence Univ., Canton, NY 13617.

6. PITCH PINE - OAK FOREST, I. —

Location: New Jersey, Ocean Co., 3 mi S of Interchange 74, Garden State Parkway; 39° 48'N, 74°13'W, Forked River Quadrangle, USGS. **Continuity:** New. **Size:** 13.76 ha = 34 acres. **Description of Area:** See 1978 BBC in this issue. **Weather:** During Dec. censuses weather was warm, 40°-55°F; no snow cover. Jan. censuses, 25°-40°, light snow cover. **Coverage:** Dec. 15, 17, 19; Jan. 16-18. Trips averaged 3 hours each, starting between 0800 and 0830, one trip 1330 to 1500. **Count:** Yellow-rumped Warbler, 21 (153, 62); Carolina Chickadee, 5 (36, 15); Dark-eyed Junco, 3 (22, 9); Blue Jay, 1 (7, 3); Com. Crow, 1; Red-tailed Hawk, +; Downy Woodpecker, +; Golden-crowned Kinglet, +. **Average Total:** 31 birds (225/km², 91/100 acres). **Remarks:** Most of the birds regularly observed were moving to and from an Atlantic White Cedar stand nearby. Berry crop in plot appeared poor. This study was funded by Jersey Central Power and Light Company. — ROY S. SLACK and CATHIE B. SLACK, *Terrestrial Environmental Specialists, Inc., Box 388, RD 1, Phoenix, NY 13135.*

7. PITCH PINE - OAK FOREST, II. —

Location: New Jersey; Ocean Co., 3 mi. S. of Interchange 74, Garden State Parkway; 39° 48'N, 74°14'W, Forked River Quadrangle, USGS. **Continuity:** New. **Size:** 6.07 ha = 15 acres. **Description of Area:** See 1978 BBC in this issue. **Weather:** During Dec. censuses weather was warm, 40°-55°F; no snow cover. Jan. censuses, 25°-40°F, light snow cover. **Coverage:** Dec. 15-16, 18, 20; Jan. 16, 18. Total, 7 trips, between 0800-1015, averaging 90 min. each. **Count:** Am. Robin, 3 (49, 20); Carolina Chickadee, 1.5 (25, 10); Dark-eyed Junco, 1 (16, 7); Blue Jay, +; Yellow-rumped Warbler, +. **Average Total:** 5.5 birds (91/km², 37/100 acres). **Remarks:** Berry crop was very low, robins fed along Parkway near plot. This study was funded by Jersey Central Power and Light Company. — ROY S. SLACK and CATHIE B. SLACK, *Terrestrial Environmental Specialists, Inc., Box 388, RD 1, Phoenix, NY 13135.*

8. MIXED HARDWOOD FOREST. —

Location: Maryland; Calvert Co., NW of Plum Point and 1 mi inland from Chesapeake Bay, on Tobacco Road between State Routes 263 and 261. **Size:** 11.3 ha = 28 acres. **Continuity:** Established 1959; 21 consecutive years. **Description of Area:** See AFN 13:333, 1959. **Weather:** The sky was clear each day. The ground was frozen and bare except on the last two days when snow-covered. The creek flowed until the last trip when both it and the bog became frozen. The temperatures were freezing or below on seven of the trips, but it reached 41°F on one occasion. **Coverage:** Jan. 4, 10, 19, 27, 30; Feb. 2-3, 5, 9-10. The trips averaged 72 min and began between 1127 and 1343 EST. **Count:** White-throated Sparrow, 22 (194, 79); Bobwhite, 3 (26, 11); Cardinal, 2 (18, 7); Hairy Woodpecker, 1 (9, 4); Downy Woodpecker, 1; Com. Crow, 1; Carolina Chickadee, 1; Tufted Titmouse, 1; E. Bluebird, 1; Dark-eyed Junco, 1, Field Sparrow, 1; Swamp Sparrow, 1; Song Sparrow, 1; Red-tailed Hawk, +; Red-shouldered Hawk, +; Am. Kestrel, +; Com. Snipe, +; Barred Owl, +; Com. Flicker, +; Red-bellied Woodpecker, +; Yellow-bellied Sapsucker, +; Blue Jay, +; Brown Creeper, +;

Winter Wren, +, Carolina Wren, +, Am Robin, +, Hermit Thrush, +, Ruby-crowned Kinglet, +; Yellow-rumped Warbler, +; Purple Finch, +; Rufous-sided Towhee, +. **Average Total:** 37 birds (327/km², 132/100 acres). **Remarks:** When the area was logged two years ago the bird population was reduced to 29. It increased last year to 38. The 21-year average is 56. The White-throated Sparrow was the dominant species for the past two years. The Bobwhite ranked second owing to the occurrence of two large coveys. The Cardinal continued to decline. All other species were in low numbers. Although the numbers of individuals were low the number of species increased to 31 over last year's 21. The 21-year average is 25. Species occurring for the first time were Com. Snipe and Swamp Sparrow. This apparently reflects the changes in the habitat caused by the logging two years ago. On most days flocking of mixed species was noted. — JOHN H. FALES, 2809 Ridge Rd., Neeld Estate, Huntingtown, MD 20639.

9. HICKORY-OAK-ASH FLOODPLAIN FOREST. —

Location: Maryland; Howard Co., floodplain of Middle Patuxent River due W of Hobbits Glen Golf Course, Columbia; 39°13'10"N, 76°54'45"W, Clarksville Quadrangle, USGS. **Continuity:** Established in 1972; 8 consecutive years. **Size:** 18.4 ha = 45.5 acres (L-shaped following the 310-ft contour; surveyed). **Description of Area:** See AB 25: 963-964 (1971). The dominant canopy trees are Bitternut Hickory (*Carya cordifornis*), Pin Oak (*Quercus palustris*), and Red Ash (*Fraxinus pennsylvanica*). Average canopy height, 39 ft. **Weather:** January was near normal, but February was extraordinarily cold and with record snowfall. The final trip was taken at the beginning of the heaviest February snowfall on record. Temperatures during the four morning trips ranged from an exceptional -17° to 37°F, and temperatures on the afternoon trips ranged from 2° to 39°. Skies were clear on 3 trips, partly cloudy on 2, and overcast on 3. Wind speeds were 1-5 mph, except 10 mph on 1 trip. **Coverage:** Jan. 6, 27; Feb. 3-4, 11, 17, 18 (2). Total: 8 trips, averaging 2 hours, 36 minutes. Morning trips started between 10 and 20 minutes after sunrise, and afternoon trips ended within 20 minutes of sunset (except 45 minutes on the snowy day). **Count:** Yellow-rumped Warbler, 32 (174, 70); Downy Woodpecker, 9 (49, 20); Carolina Chickadee, 9; Com. Flicker, 8 (43, 18); Red-bellied Woodpecker, 6 (33, 13); Tufted Titmouse, 6; Cardinal, 6; Hairy Woodpecker, 4 (22, 9); White-breasted Nuthatch, 3 (16, 7); Blue Jay, 2 (11, 4); White-throated Sparrow, 2; Turkey Vulture, 1 (5, 2); Red-shouldered Hawk, 1; Pileated Woodpecker, 1; Yellow-bellied Sapsucker, 1; Brown Creeper, 1; Carolina Wren, 1; Rusty Blackbird, 1; Evening Grosbeak, 1; Am. Goldfinch, 1; Black Duck, +; Hooded Merganser, +; Sharp-shinned Hawk, +; Belted Kingfisher, +; Com. Crow, +; Gray Catbird, +; Hermit Thrush, +; E. Bluebird, +; Purple Finch, +; Dark-eyed Junco, +; Song Sparrow, +. **Average Total:** 96 birds (521/km², 211/100 acres). **Remarks:** Total species, 31. Winter bird populations were close to normal in spite of this being the third consecutive severe winter. Poison Ivy (*Rhus radicans*) berries were still present in good numbers on the last day of the study. They were heavily used by all 6 species of

woodpeckers as well as by chickadees, titmice, Yellow-rumped Warblers, Cardinals, Evening Grosbeaks, and White-throated Sparrows. Remains of two Tufted Titmice and one White-throated Sparrow were found on the second sub-zero trip. Nine species were found on all trips: Common Flicker, Pileated Woodpecker, Red-bellied Woodpecker, Hairy Woodpecker, Downy Woodpecker, Carolina Chickadee, Tufted Titmouse, Yellow-rumped Warbler, and Cardinal. — CHANDLER S. ROBBINS, 7902 Brooklyn Bridge Road, Laurel, MD 20810.

9a. UPLAND TULIP-TREE - MAPLE - OAK FOREST. —

Location: Maryland, Howard Co., W edge of Middle Patuxent River Valley, SW of Hobbits Glen Golf Course at Columbia, 39°12'55"N, 76°54'40"W, Clarksville Quadrangle, USGS. **Continuity:** Established 1972; 7 intermittent years. **Size:** 11.98 ha = 29.6 acres (basically rectangular, 1125 ft N:S by 1000 ft E:W, but irregularly extending farther in each direction where uniformity of habitat permits). **Description of Area:** See AB 25:971 (1971) and 26:665 (1972). The dominant canopy trees are Tulip-tree (*Liriodendron tulipifera*), Red Maple (*Acer rubrum*), White Oak (*Quercus alba*) and Red Oak (*Q. rubra*). **Weather:** January was near normal but February was extraordinarily cold with record snowfall. Temperatures on the four morning trips ranged from 25° to 39°F, and on the afternoon trips ranged from 14° to 48°. Skies were clear on 5 trips, partly cloudy on 1 and overcast on 2. Winds were 1-5 mph except 10 mph on one trip. **Coverage:** Dec. 23, Jan 27, 31; Feb. 3-4, 11, 17; Mar. 1. Total: 8 trips, averaging 1 hour, 49 minutes. Morning trips started within 20 minutes after sunrise, and afternoon trips ended within 30 minutes before sunset. **Count:** Downy Woodpecker, 3 (25, 10); Red-bellied Woodpecker, 2 (17, 7); Com. Flicker, 1 (8, 3); Pileated Woodpecker, 1; Hairy Woodpecker, 1; Carolina Chickadee, 1; Hermit Thrush, 1; Yellow-rumped Warbler, 1; Cardinal, 1; Purple Finch, 1; Turkey Vulture, +; Red-tailed Hawk, +; Red-shouldered Hawk, +; Blue Jay, +; Com. Crow, +; Tufted Titmouse, +; White-breasted Nuthatch, +; Brown Creeper, +; White-throated Sparrow, +. **Average Total:** 13 birds (109/km², 44/100 acres). **Remarks:** Total species, 19. The winter population was the lowest yet recorded, with Yellow-rumped Warbler, Cardinal and White-throated Sparrow especially scarce. Carolina Wren and Am. Goldfinch were missed for the first time. Snow depth reached 36 in. on Feb. 19, making it necessary to delay the last trip until Mar. 1, on which date only woodpeckers and a chickadee were found. Downy Woodpecker was the only species found on all trips. The Turkey Vulture and Red-tailed Hawk were found on only one trip. — CHANDLER S. ROBBINS, 7902 Brooklyn Bridge Road, Laurel, MD 20810

10. MATURE DECIDUOUS FLOODPLAIN FOREST. —

Location: Maryland, Montgomery Co., Glen Echo, 2½ miles NW of District of Columbia, between C. & O. Canal and Potomac River, Falls Church Quadrangle, USGS. **Continuity:** Established 1948, 28 intermittent years. **Size:** 17.8 ha = 44.1 acres. **Description of Area:** See AFN 2 153-156 (1948). **Weather:** Extremely cold complicated by snow and frequent inaccessibility

of the area owing to flooding. Temperature on walks averaged 25°F. **Coverage:** Jan. 20, Feb. 3 (2 trips); Feb. 11. Total: 4 trips averaging 2.51 hours, 3 between 0745 and 1130 and 1 between 1430 and 1645. **Count:** Carolina Chickadee, 22 (123, 50); Starling, 12 (67, 27); Downy Woodpecker, 9 (50, 20); Com. Crow, 8 (45, 18); Tufted Titmouse, 7 (39, 16); Song Sparrow, 7; Cardinal, 6 (34, 14); White-throated Sparrow, 6; Black Vulture, 5 (28, 11); Turkey Vulture, 4 (22, 9); Carolina Wren, 4; Evening Grosbeak, 4; Red-bellied Woodpecker, 3 (17, 7); Brown Creeper, 3; Mourning Dove, 1 (6, 2); Barred Owl, 1; Pileated Woodpecker, 1; Purple Finch, 1; Dark-eyed Junco, 1. **Com. Flicker, +; Yellow-bellied Sapsucker, +; Hairy Woodpecker, +; Mockingbird, +; Am. Goldfinch, +. Average Total:** 105 birds (588/km², 238/100 acres). **Remarks:** Total species 24, was somewhat below the average of 27 for this tract. The average total of 105 was also somewhat below average and almost the same as the 107 last year. A major part of the relatively low count is the widespread loss of Carolina Wrens in the severe winter of 1977. On this census tract the bird averaged 10 in 1976 as compared with 2 in 1977, 6 in 1978, and 4 in 1979. An unusual occurrence was the appearance of 10 Black Vultures, which grouped in trees on the area Feb. 3. The Barred Owl, on all trips, roosted in the shallow hollow of a broken off Sycamore. This bird is probably present at all times but is usually seen only when pursued by crows. Evening Grosbeaks, uncommon on this tract, appeared in a flock of 16 on one day. — *JOAN H. CRISWELL (compiler), and J. R. GAUTHEY, 3519 Jermantown Rd., Fairfax, VA 22030.*

11. CENTRAL HARDWOOD FOREST WITH SCATTERED PINE. — **Location:** Washington, D.C.; Rock Creek Park, lying S of Military Rd. and W of Rock Creek. **Continuity:** Established 1948; 24 intermittent years. **Size:** 26.3 ha = 65 acres (triangular, surveyed). **Description of Area:** See *AFN* 2:153-154 (1948) and *AFN* 16:369 (1962). **Weather:** Very cold as in 1978 but with less snow. Temperature on walks averaged 28°F. **Coverage:** Dec. 30; Jan. 1, 27, 28; Feb. 4, 5, 11. Total: 7 trips averaging 2.16 hours; between 0755 and 1725. **Count:** Carolina Chickadee, 6 (23, 9); Blue Jay, 3 (11, 5); Tufted Titmouse, 3; Downy Woodpecker, 2 (8, 3); Com. Crow, 2; White-breasted Nuthatch, 2; Pileated Woodpecker, 1 (4, 2); Red-bellied Woodpecker, 1; Hairy Woodpecker, 1; Mourning Dove, +; Brown Creeper, +; Carolina Wren, +; Cardinal, +. **Average Total:** 21 birds (80/km², 32/100 acres). **Remarks:** Total species 13, the same as last year and again below the average of 20 species for this area. The average total of 32 birds per 100 acres was also low as compared with the overall average of 65/100 acres. The area in winter shows a cyclic variation in abundance with a period of about 8 years, and this is not closely related to changes in weather conditions. For instance, in the severe winter of 1961 there were 19 species and 64/100 acres. The present dip is at the lowest point in a cycle. The drop may also be accentuated by movement of birds to feeders maintained in the adjacent Rock Creek Park Nature Center area. — *JOAN H. CRISWELL (compiler), NAOMI CAPLAN, RICHARD FRANKEL, NICK SCHLIAPIN, HOWARD and BARBARA*

WHITE, 3519 Jermantown Rd., Fairfax, VA 22030

12. UPLAND OAK – HICKORY HARDWOOD FOREST. — **Location:** Virginia; Fairfax Co., Dranesville District Park, McLean. **Continuity:** Established 1971; 9 years. **Size:** 11.02 ha = 27.2 acres. **Description of Area:** See *AB* 25:636 (1971). **Weather:** Colder than usual, with more snow than normal. Average temperature on the trips was 31°. Throughout the period, from one to 12 in. of snow covered the ground, but the study was completed before the near-record snowfall of February 18-19. **Coverage:** Jan. 6, 16, 19, 27, 31; Feb. 3, 8, 13. Total, 8 trips, between 0820 and 1245 or 1400 and 1645, averaging 1 hr and 45 min. **Count:** Com. Crow, 6 (55, 22); Red-bellied Woodpecker, 2 (18, 7); Carolina Chickadee, 2; Turkey Vulture, 1 (9, 4); Mourning Dove, 1; Pileated Woodpecker, 1; Tufted Titmouse, 1; White-breasted Nuthatch, 1; Brown Creeper, 1; Com. Flicker, +; Hairy Woodpecker, +; Downy Woodpecker, +; Blue Jay, +; Black-capped Chickadee, +. **Average Total:** 16 birds (145/km², 59/100 acres). — *JON and MARY BAYLESS, SUZANNE DEBLOIS, GILBERT ESPENSHADE, BEN FERN, JESSICA GIUSTI, SHIRLEY MCRAE, TIM STROTHER, ROBERT J. WATSON (compiler), 2636 Marcey Road, Arlington, VA 22207.*

13. UPLAND TULIP-TREE – OAK FOREST. — **Location:** Virginia; Fairfax Co., U.S. Geological Survey National Center, Reston, 38°56'45"N, 77°21'50"W, Vienna Quadrangle, USGS. **Continuity:** Established 1974; 6 years. **Size:** 20.6 ha = 50.9 acres. **Description of Area:** See *AB* 28:701-702 and 1003-1004 (1974). **Weather:** The sky was clear on 4 trips, partly cloudy on 1, and overcast on 3. Temperatures ranged from -4° to 29°F. Winds were calm to moderate. There was a light snow covering on Jan. 19 and Feb. 6 and a moderate one on Jan. 31 and Feb. 14. **Coverage:** Dec. 22, 29; Jan. 5, 10, 19, 31; Feb. 6, 14. Total, 8 trips between 0740 and 0950, totaling 12.5 hrs. **Count:** Tufted Titmouse, 7 (34, 14); Dark-eyed Junco, 7; Blue Jay, 5 (24, 10); Carolina Chickadee, 5; Red-bellied Woodpecker, 2 (10, 4); White-breasted Nuthatch, 2; Brown Creeper, 2; Evening Grosbeak, 2; Downy Woodpecker, 1 (5, 2); Com. Crow, 1; Cardinal, 1; Purple Finch, 1; Mockingbird, +; House Finch, +. **Average Total:** 36 birds (175/km², 71/100 acres). **Remarks:** The average total decreased from last winter by 1 bird. Red-bellied Woodpeckers and Blue Jays increased this year. Apparently these species cycle with the acorn crop and are more abundant every other year. Titmice reached an all-time high of 7, outnumbering chickadees for the first time. Downy Woodpeckers decreased by 50% and were seen on only 3 counts compared to all morning counts last year. This was the first year neither Carolina Wrens nor Golden-crowned Kinglets were recorded on these counts. Evening Grosbeaks were seen on only 1 count. — *JOAN C. WOODWARD and PAUL W. WOODWARD, 4117 Virginia St., Fairfax, VA 22030.*

14. BARRIER ISLAND MARITIME FOREST. — **Location:** South Carolina; Charleston Co., Kiawah Island; 32°38'N, 80°03'W; Kiawah Island Quadrangle, USGS.

Continuity: New. **Size:** 8.1 ha = 20 acres (rectangular, 325 yards × 298 yards, surveyed). **Description of Area:** This is a typical undisturbed Maritime Forest (Shore Woods) as found on Barrier Islands along the South Carolina coast (Hunt, K. W. 1947. *Amer. Midl. Natur.* 37:677). It consists of a dense forest with an almost closed canopy and a thick understory. Tree composition was sampled with ten 50 X 50 yard quadrats. The dominant species included: Loblolly Pine (*Pinus taeda*) with 30 trees/acre; Live Oak (*Quercus virginiana*), 8; Cabbage Palmetto (*Sabal palmetto*), 6; and Turkey Oak (*Q. laevis*), 2. The dominant shrubs were: Red Bay (*Persea borbonia*) with 25/acre; Dwarf Palmetto (*S. minor*), 18; Yaupon (*Ilex vomitoria*), 10; and Wax Myrtle (*Myrica cerifera*), 5. Ground cover was sparse and consisted of small clumps of Broom Sedge (*Andropogon virginicus*), Partridge Berry (*Mitchella repens*), and *Erianthus* sp. Canopy height was from 20 to 60 ft and irregular. Resurrection Fern (*Polypodium polypodioides*) and Spanish Moss (*Tillandsia usneoides*) were common epiphytes on Live Oaks. **Topography:** Flat, elevation 10 feet. **Edge:** The area is bounded on the E by a tidal inlet; on the N by salt marsh; the W and S by dirt roads. **Water:** The only water present was a drainage ditch which bisected the area, and salt marsh on the n. border. **Food:** There was an abundant crop of acorns. **Weather:** A normal winter. Temperatures went below freezing on four days. Average high was 63°F; and the average low, 35°F. **Coverage:** Dec. 6, 9, 28, Jan. 3-4, 6, 23, 30. Total, 8 trips between 0900 and 1500, averaging 90 min. **Count:** Ruby-crowned Kinglet, 18 (222, 90); Carolina Chickadee, 14 (173, 70); Cardinal, 7 (86, 35); Com. Crow, 5 (62, 25); Tufted Titmouse, 5; Yellow-rumped Warbler, 5; Pine Warbler, 4 (49, 20); Carolina Wren, 2 (25, 10); Pileated Woodpecker, 1 (12, 5); Red-bellied Woodpecker, 1; White-throated Sparrow, 1; Turkey Vulture, +; Marsh Hawk, +; Belted Kingfisher, +; Com. Flicker, +; Yellow-bellied Sapsucker, +; Hairy Woodpecker, +; Downy Woodpecker, +; Blue Jay, +; White-breasted Nuthatch, +; White-eyed Vireo, +; Solitary Vireo, +; N. Parula, +. **Average Total:** 63 (778/km², 315/100 acres). **Remarks:** Compare with the census on a Barrier Island Golf Course Subdivision. Construction activity on the last count greatly reduced bird numbers. We wish to thank T. Sasser and the Kiawah Island Company for access to the study area. — *BEN A. COCKFIELD, JAMES B. TORMEY and DENNIS M. FORSYTHE, Dept. of Biology, The Citadel, Charleston, SC 29409.*

15. MATURE LONGLEAF PINE FOREST. — **Location:** Georgia; Thomas Co., Mill Pond Plantation, 4 mi SE of Route 319 and 212; 30°45'N, 84°00'W, Pine Park and Thomasville Quadrangles, USGS. **Continuity:** New. **Size:** 58.3 ha = 144 acres. **Description of Plot:** The plot is one of the few tracts of undisturbed Longleaf Pine forest remaining in the Southeast. A very small number of trees have been selectively cut over the years but the ground cover and forest are essentially intact. Some of the trees are estimated to be between 200 and 300 years old. The tree canopy is Longleaf Pine (*Pinus palustris*) with a few scattered Bitternut Hickory (*Carya cordiformis*) and oak (*Quercus* sp.). This habitat lacks an understory because of a long history of

annual prescribed burning. A narrow strip of Little-leaf Titi (*Cyrilla parvifolia*) with some Sweetgum (*Liquidambar styraciflua*) and Swamp Tupelo (*Nyssa biflora*) occurs in a wet area in the center of the study area. This titi "stringer" and a few patches of sumac (*Rhus* sp.) and hickory (*Carya* sp.) constitute the only shrubby areas on the plot. The ground cover is primarily Wiregrass (*Aristida stricta*), Bracken Fern (*Pteridium aquilinum*) and Running Oak (*Quercus pumila*). A quantitative survey of the vegetation gave the following results: Trees 3-in. diameter and over, based on 18 circular samples, 63/acre; total basal area 75.9 ft.²/acre. Longleaf Pine comprised 96% of the total number of trees. Longleaf Pine (*Pinus palustris*) 63, 96, 96, 94. Trees by diameter class (trees/acre, relative density (%), basal area in ft.²/acre, and relative dominance): A (3-6 in.) 13, 19, 1.2, 2; B (6-9 in.) 9, 14, 2.7, 4; C (9-15 in.) 17, 26, 14, 18; D (15-21 in.) 22, 33, 39, 51; E (21-27 in.) 4, 7, 14, 18; F (27-33 in.) 1, 2, 5.4, 4.7. Shrub cover, 1228 stems/acre, however, it should be noted that shrubs were very patchy in an otherwise uniform habitat. Ground cover, 100%; Canopy cover, 53%. Average canopy height — 90 ft (27.4 m) range 116-80 ft. (35.4 - 24.4 m). Tree names are from H. Kurz and R. K. Godfrey, *Trees of Northern Florida*. **Edge:** Similar habitat on all sides, except 25 m of N edge and SW corner are within 50 meters of open crop fields. The SE corner borders an open plowed field. No shrubs or vegetational changes were associated with this edge. **Topography:** Plot formed a wide basin with an intermittent creek in the center of the area. Typical karst topography. Elevation: 180-250 ft. **Weather:** Variable. Temperature 20°-50°F. Both overcast and clear. **Coverage:** Due to the large size of the plot, two days were required to complete one survey. Nine complete censuses were made in 18 trips. Jan. 11-12, 15-17, 19-20, 22, 25-26, 28-29; Feb. 1-3, 8-10. All trips were conducted between 0700 and 1130. Total man-hours: 68. **Census:** Red-winged Blackbird, 60 (103, 42); Red-cockaded Woodpecker, 17 (29, 12); Rufous-sided Towhee, 17; Common Yellowthroat, 12 (21, 8); Pine Warbler, 11 (19, 8); House Wren, 9 (15, 6); Red-bellied Woodpecker, 8 (14, 6); White-breasted Nuthatch, 8; Brown-headed Nuthatch, 8; Am. Robin, 8; E. Meadowlark, 5 (9, 3); Com. Flicker, 4 (7, 3); Yellow-bellied Sapsucker, 4; Carolina Wren, 4; E. Bluebird, 3 (5, 2); Mourning Dove, 2 (3, 1); Blue Jay, 2; Loggerhead Shrike, 2; Yellow-rumped Warbler, 2; Palm Warbler, 2; Great Horned Owl, 1 (2, 1); Solitary Vireo, 1; Cardinal, 1; Am. Goldfinch, 1; Swamp Sparrow, 1; Wood Duck, +; Red-tailed Hawk, +; Pileated Woodpecker, +; Hairy Woodpecker, +; Downy Woodpecker, +; E. Phoebe, +; Ruby-crowned Kinglet, +. **Average Total:** 193 (331/km², 134/100 acres). **Remarks:** Total species, 32. The Great Horned Owls were nesting on the plot during the survey. White-tailed Deer were seen occasionally. — **TODD ENGSTROM**, Dept. Bio. Sci., Florida S.U., Tallahassee, FL 32306.

16. MATURE BEECH-MAPLE FOREST.

— **Location:** Canada; Ontario, at the northeast corner of the intersection of Rondeau Park Road and Gardiner Avenue, approximately 2 mi S of Rondeau Park, Rondeau Provincial Park (295 812 Standard Military Grid Reference on sheet Ridgetown 40 1/5

west half, edition 4) **Continuity:** New **Size:** 6.1 ha = 15 acres (808 × 808 ft, paced) **Description of Area:** Beech-Maple forest with "Carolinean components." Trees average about 60 ft high and about 1 ft dbh: Am. Beech (*Fagus grandifolia*) 21%, Sugar Maple (*Acer saccharum*) 16%, dead trees 14%, White Ash (*Fraxinus americana*) 10%, Basswood (*Tilia americana*) 7%, Tulip-tree (*Liriodendron tulipifera*), 6%, Blue Beech (*Carpinus caroliniana*) 5%, miscellaneous hardwood species 21%. The forest canopy is somewhat open, with an understory of shrubs and saplings averaging 8-10 ft high. Owing to recent blow-downs, there are numerous young trees. There are some grasses and herbs present. Severe wind and ice storms of 1974, 1976-78 have caused many of the largest trees to topple over. **Topography:** Very flat, with no more than 3 ft of relief; elevation is approximately 578 ft. **Edge:** The study plot is part of a 2500-acre forest within a provincial park. **Water:** The water table is quite high, with 3 water-filled sloughs traversing the plot in a N-S direction. **Food:** There was a fairly heavy crop of beechnuts this year. Dead trees, both standing and fallen, provided numerous beetles and grubs. **Weather:** During the 6-week study period, the temperature remained below freezing most of the time. The temperature ranged from -15° to +6°C. The ground was covered with 15-20 cm. of snow during the entire period. (Temperatures were from an in-park thermometer.) **Coverage:** Jan. 18, 26; Feb. 2, 7, 20; Mar. 2. Total of 6 trips, all between 1015-1230 or 1400-1600, averaging about 80 minutes each. **Count:** Downy Woodpecker, 4 (66, 27); Hairy Woodpecker, 2 (33, 13); Blue Jay, 2; White-breasted Nuthatch, 2; Evening Grosbeak, 2; Great Horned Owl, 1 (16, 7); Pileated Woodpecker, 1; Com. Crow, 1; Black-capped Chickadee, 1; Am. Goldfinch, 1; Red-headed Woodpecker, +. **Average Total:** 17 birds (280/km², 113/100 acres). **Remarks:** Downy and Hairy woodpeckers were noted on every trip; Blue Jay and Great Horned Owl on 4 trips; Pileated Woodpecker and White-breasted Nuthatch on 3 trips, and Com. Crow on 2. The Evening Grosbeaks were passing through the area in one flock of 10 and were feeding on buds. The Am. Goldfinch and Black-capped Chickadee were both in groups of 3 and were seen only once. The Red-headed Woodpecker was seen only once. — **P. ALLEN WOODLIFFE**, Rondeau Provincial Park, R.R. #1, Morpeth, Ont. N0P 1X0.

17. WHITE PINE - WHITE BIRCH CONIFEROUS FOREST.

— **Location:** Canada; Ontario, Ottawa-Carleton Region; West Carleton Township; SW of Fitzroy Harbour; 31 F/8 (Arnprior) 046348; Chats Falls Generating Station. **Continuity:** New. **Size:** 8.4 ha = 20.8 acres (rectangular, 240 × 350 m measured with tape on ground). **Description of Area:** See 1978 BBC in this issue. **Food:** The cone crop was excellent. **Weather:** Average monthly temperature and total monthly precipitation at Ottawa International Airport with 30 year (1941-71) averages in parentheses. Temperature in °C — Nov. 0.4 (1.4); Dec. -7.6 (-7.7). Precipitation in mm — Nov. 72.0 (78.5); Dec. 89.3 (77.0). The average temperature on the plot during the trips was -15°C. No precipitation fell during the days of coverage and approximately 1 m of snow covered the ground. **Coverage:** Dec. 27-29. Total,

6 trips, three between 0715 and 0940 and three between 1440 and 1650, averaging 120 min each. **Count:** Black-capped Chickadee, 7 (83, 34); Red-breasted Nuthatch, 6 (71, 29); Evening Grosbeak, 6; Com. Redpoll, 3 (36, 15), Blue Jay, 2 (24, 10); Brown Creeper, 2; Ruffed Grouse, 1 (12, 5); Am. Goldfinch, 1; Great Horned Owl, +; Great Gray Owl, +; Pileated Woodpecker, +; Hairy Woodpecker, +, Downy Woodpecker, +; Black-backed Three-toed Woodpecker, +; Purple Finch, +, Pine Grosbeak, +; Pine Siskin, +. **Average Total:** 28 birds (333/km², 135/100 acres). **Remarks:** The Black-capped Chickadee, Red-breasted Nuthatch, and Brown Creeper were recorded on all trips. The Ruffed Grouse was observed on 5 trips and the Blue Jay on 4. The Evening Grosbeak was recorded on all morning runs but not on any of the afternoon ones. A flock of 11 Com. Redpolls was seen. The Pileated Woodpecker was included solely on the basis of a feeding hole that was bored subsequent to the first run. Single Snow Buntings were heard flying over the plot on 3 trips. An average of one unidentified finch (either Pine Siskin or Common Redpoll) per trip was recorded. Mammals observed during the census were Snowshoe Hare (*Lepus americanus*), Red Squirrel (*Tamiasciurus hudsonicus*), Porcupine (*Erethizon dorsatum*), Red Fox (*Vulpes vulpes*). This survey was conducted as part of a baseline study associated with the development of a proposed Ontario Hydro Generating Station at Chats Falls on the Ottawa River. Thanks to Ontario Hydro for permission to publish their data. — **TERRY N TOBIAS**, Envirocon Ltd., 2300 Yonge St., Toronto, Ont. M4P 2W6, and **ROB R EVANS**, The Proctor & Redfern Group, 75 Eglinton Avenue E., Toronto, Ont. M4P 1H3

18. OLD GROWTH BEECH - TULIP-TREE-BLACK GUM FOREST.

— **Location:** Indiana; Jefferson Co., South Officer's Woods, 1 mi SE of Volga, 38°46'N, 85°30'W. Volga Quadrangle, USGS. **Continuity:** Established 1972; 4 intermittent years. **Size:** 10.08 ha = 24.9 acres. **Description of Area:** See AB 25:979-980 (1971). **Weather:** A severe winter, with snow cover lasting longer than usual. On count days, snow cover varied from none (twice) to 8 in. Temperatures during daytime counts ranged from 6 to 44°F; wind from various quarters, 0-12 mph; sky clear twice, overcast 4 times, and partly cloudy twice, a brief snow flurry once was the only precipitation during counts. **Coverage:** Dec. 26; Jan. 6, 17-18; Feb. 1, 11, 14, 21, 28 (night). 8 daylight (4 morning and 4 afternoon) trips averaging 138 min. and ranging from 128 to 154 min, plus one night trip of 42 min. **Count:** Cardinal, 10 (99, 40); Tufted Titmouse, 4 (40, 16), Carolina Chickadee, 3 (30, 12); Red-bellied Woodpecker, 2 (20, 8); Pileated Woodpecker, 1 (10, 4); Downy Woodpecker, 1; Blue Jay, 1, Com. Crow, 1; White-breasted Nuthatch, 1, Red-tailed Hawk, +; Barred Owl, +; Hairy Woodpecker, +; Brown Creeper, +; Golden-crowned Kinglet, +; Ruby-crowned Kinglet, +; Rufous-sided Towhee, +; Dark-eyed Junco, +. **Average Total:** 24 birds (238/km², 96/100 acres). **Remarks:** Only the titmouse, chickadee, and Cardinal were noted on all 8 daylight trips; in contrast the hawk, Ruby-crowned Kinglet, towhee, and junco were noted only once. Jackson Webster and John Davis assisted with some of the counts, but their time was not

included above — DAN WEBSTER, *Hanover College, Hanover, IN 47243*

19. BOTTOMLAND OAK - GUM - CYPRESS FOREST RECENTLY DISTURBED. — **Location:** Mississippi; Washington Co., N of State Highway 12 in LeRoy Percy S.P., 4 mi W of Hollandale (parts of Sec. 5, 8, & 9; T15N, R7W). **Continuity:** Established 1971, 6 years (1976 omitted because of inaccessibility during construction). **Size:** 11.4 ha = 28.1 acres; rectangular in shape, 836 × 1463 ft (measured with compass and steel tape). **Description of Area:** See AB 25:638-639 (1971) and AB 32:30 (1978) for description of alterations. **Weather:** Mean high during count period 40.5°F; mean low: 27.5°; total precipitation: 9.6 in. Previous 7-year averages: 51.6°, 33.9°, and 9.2 in. respectively. Preceding fall had normal temperatures and below normal precipitation. Dec. through Feb. had below-normal temperatures and above-normal precipitation. **Coverage:** Jan. 7, 14, 20, 27-28; Feb. 3-4, 11. Total of 8 trips; starting times: 0930 to 1250 CST; 4 morning, 4 afternoon trips. Average time per trip: 137 obs.-min. **Count:** Com. Grackle, 110 (967, 391); Dark-eyed Junco, 20 (176, 71); White-throated Sparrow, 10 (88, 36); Cardinal, 8 (70, 28); Am. Robin, 6 (53, 21); Blue Jay, 5 (44, 18); Red-winged Blackbird, 5; Rusty Blackbird, 5; Red-bellied Woodpecker, 4 (35, 14); Com. Flicker, 3 (26, 11); Carolina Chickadee, 3; Carolina Wren, 3; Yellow-rumped Warbler, 3; Swamp Sparrow, 3; Song Sparrow, 3; Yellow-bellied Sapsucker, 2 (18, 7); Downy Woodpecker, 2; Tufted Titmouse, 2; Ruby-crowned Kinglet, 2; Am. Goldfinch, 2; Pileated Woodpecker, 1 (9, 4); Hairy Woodpecker, 1; Hermit Thrush, 1; Golden-crowned Kinglet, 1; Starling, 1, Field Sparrow, 1; Marsh Hawk, +; Brown Creeper, +; Winter Wren, +; Brown Thrasher, +; Orange-crowned Warbler, +; Com. Yellowthroat, +; Fox Sparrow, +. **Average Total:** 207 (1820/km², 737/100 acres). **Remarks:** Total species, 33. Seen on 7 or more trips were: flicker, Red-bellied Woodpecker, sapsucker, Downy Woodpecker, Blue Jay, chickadee, titmouse, Carolina Wren, robin, Yellow-rumped Warbler, Cardinal, White-throated Sparrow and Song Sparrow. A Red-shouldered Hawk was heard just off the tract one day. Two separate flocks of about 400 grackles each were observed on one day. On almost every count the ground was extremely wet under foot. There was an excellent supply of food in the form of Poison Ivy berries, abundant weed seeds, insect larvae, and a few flying insects. Since area disturbance three years ago, some trends are beginning to develop: grackles and Blue Jays are continuing a sharp increase, Red-winged Blackbirds are beginning to rise, Yellow-rumped Warblers are continuing a decline, and woodpeckers are continuing stable. Field, Swamp and Song sparrows increased quickly after disturbance, and now seem to be stabilizing. — MR. & MRS. G. E. ALEXANDER, JR., 1749 W. Azalea, Greenville, MS 38701.

20. MIXED PINE - DECIDUOUS FOREST. — **Location:** Louisiana; Natchitoches Parish, 1 mi W of the Northwestern State University campus, within the University's Natural History Reservation, on the S side of Louisiana Hwy. 6. (Sec. 81, R7W, T9N). **Continuity:** Established 1971; 8 years, not published in 1978. **Size:** 8.91 ha = 22 acres

(L-shaped, measured by pacing with compass) **Description of Area:** See AB 25 639-640 (1971) and 26:699 (1972). **Weather:** During the 15-day study period, day temperatures ranged from 32° to 70°F. Night temperatures ranged from 15° to 45°. Three count days were clear and 3 were cloudy. Wind on count days ranged from 0 to 2 on the Beaufort Scale. **Coverage:** Feb. 1, 7, 9-10, 12, 15. Total, 6 trips between 0900 and 1600 averaging 2 hours. Total man-hours, 12. **Count:** Dark-eyed Junco, 10 (112, 45); Ruby-crowned Kinglet, 5 (56, 23); Red-bellied Woodpecker, 3 (34, 14); Blue Jay, 3; Yellow-rumped Warbler, 3; Carolina Chickadee, 2 (22, 9); Carolina Wren, 2; Am. Robin, 2; Cardinal, 2; Com. Flicker, 1 (11,5); Yellow-bellied Sapsucker, 1; Tufted Titmouse, 1; Mockingbird, 1; Hermit Thrush, 1; Cedar Waxwing, 1; Pine Warbler, 1; Rufous-sided Towhee, 1; White-throated Sparrow, 1; Red-shouldered Hawk, +; Am. Woodcock, +; Hairy Woodpecker, +; Downy Woodpecker, +; Brown Creeper, +; Winter Wren, +; Brown Thrasher, +; Solitary Vireo, +. **Average Total:** 41 birds (461/km², 186/100 acres). **Remarks:** Total species, 26. The total species in previous winters has ranged from 27 to 31 and 42 have been observed in the 9 years of the study. The mean total per km² decreased to 461 from a mean of 1004 for 1971-77. The most abundant species in previous winters have been Com. Grackle, White-throated Sparrow and Ruby-crowned Kinglet. These species were absent or greatly reduced from previous counts. Most other species were near their previous count means. — CHARLES E. VIERS, *Dept. of Biological Sciences, Northwestern State University of Louisiana, Natchitoches, LA 71457.*

WINTERING BIRD POPULATIONS OF SELECTED OAK-HICKORY FORESTS IN NORTHEASTERN KANSAS

The following six censuses were conducted in 20-acre stands of oak-hickory forest in s. Douglas County, Kansas in an area known locally as "Baldwin Woods." These are the first winter censuses on areas established for breeding bird censuses in 1978 (see *Am. Birds* 33:66-67, 1979, for a description of vegetation and topography).

Weather data from a climatological station at the Univ. of Kansas at Lawrence, 12 mi. NW of the study areas, show temperatures considerably below normal during the study period (30-year averages shown in parentheses). The mean high for January was 24°F (39.9) and for February 28° (45.8). The mean lows were 8°F (20.6) for January and 11° (25.1) for February. Snowfall was one of the highest ever recorded; 22 in. for January and 2 in. in early February. In addition, 8 in. of snow fell December 31. Snow covered the ground throughout January, with the highest amount being 18 to 22 in. Most of the ground remained snow covered throughout the remainder of the census period.

Our thanks to the Field Research Committee, Division of Biological Sciences, at the University of Kansas for use of research areas under their control and to Mr. Frank Sturdy, Mr. and Mrs. Thomas Beisecker, and Mr. and Mrs. Earl Cutler for access to study areas on their properties. — CALVIN L. CINK and ROGER L. BOYD, *Biology Department, Baker University, Baldwin City, KS 66006.*

21. OAK - HICKORY FOREST, I. — **Location:** Kansas, Douglas Co., on the Univ of Kansas Wall Biological Reserve. Predominantly on the NW 1/4, SW 1/4, Sec. 28, T-14S, R-20E, Baldwin City Quadrangle, USGS. **Size:** 8.1 ha = 20 acres (4 × 5 acres, surveyed). **Coverage:** Jan. 17, 23, 25, 27-28, 30; Feb. 4, 11. Total, 8 trips, both a.m. and p.m., averaging 2 hrs. **Count:** Red-headed Woodpecker, 32 (395, 160); Brown Creeper, 6 (74, 30); Blue Jay, 5 (62, 25); Downy Woodpecker, 4 (50, 20); Red-tailed Hawk, 1 (12, 5); Black-capped Chickadee, 1; Bobwhite, +; Hairy Woodpecker, +; Com. Crow, +; Tufted Titmouse, +; Golden-crowned Kinglet, +; Cedar Waxwing, +; Starling, +; Cardinal, +; Am. Goldfinch, +; Dark-eyed Junco, +. **Average Total:** 49 birds (605/km², 245/100 acres). **Remarks:** Total species seen, 16. A considerable number of white oaks (*Quercus alba*) on the area were virtually stripped of all bark by the large number of foraging Red-headed Woodpeckers.

22. OAK - HICKORY FOREST, II. — **Location:** Kansas; Douglas Co., on the Univ of Kansas Breidenthal Biological Reserve and Cedar Crest Wildlife Refuge (Cliff Woods) Predominantly on the NE 1/4, NW 1/4, Sec. 28, T-14S, R-20E, Baldwin City Quadrangle, USGS. **Size:** 8.1 ha = 20 acres (4 × 5 acres, surveyed). **Coverage:** Jan. 7, 13, 27; Feb. 3, 10, 20. Total, 6 counts, between 0800-1225, averaging 2 hrs. **Count:** Red-headed Woodpecker, 38 (469, 190); Starling, 11 (136, 55); Blue Jay, 5 (62, 25); Brown Creeper, 3 (37, 15); Am Robin, 2 (25, 10); Hairy Woodpecker, 1 (12, 5); Downy Woodpecker, 1; Tufted Titmouse, 1; White-breasted Nuthatch, 1; Cardinal, 1, Red-tailed Hawk, +; Barred Owl, +; Horned Lark, +; Com. Crow, +; Black-capped Chickadee, +; Cedar Waxwing, +; Red-winged Blackbird, +; Am. Goldfinch, +; Dark-eyed Junco, +; White-throated Sparrow, +. **Average Total:** 64 birds (791/km², 320/100 acres). **Remarks:** Total species, 20. Red-headed Woodpeckers and Blue Jays were observed on all trips and Downy Woodpecker, Tufted Titmouse and Brown Creeper on all but one. Most of the White Oaks on the area were stripped of nearly all bark by the unusually large number of feeding Red-headed Woodpeckers.

23. OAK - HICKORY FOREST, III. — **Location:** Kansas; Douglas Co., on the Univ. of Kansas Breidenthal Biological Reserve. Predominantly on the NE 1/4, NE 1/4, Sec. 28, T-14S, R-20E, Baldwin City Quadrangle, USGS. **Size:** 8.1 ha = 20 acres (4 × 5 acres, surveyed). **Coverage:** Jan. 6, 13, 27; Feb. 6, 10, 17. Total, 6 counts between 0750-1330, averaging 2 hrs. **Count:** Red-headed Woodpecker, 37 (457, 185); Starling, 25 (309, 125); Blue Jay, 9 (111, 45); Downy Woodpecker, 4 (49, 20); Bobwhite, 3 (37, 15); White-breasted Nuthatch, 3; Brown Creeper, 3; Dark-eyed Junco, 3; Am. Robin, 2 (25, 10); Com. Flicker, 1 (12, 5); Hairy Woodpecker, 1; Horned Lark, 1; Black-capped Chickadee, 1; Tufted Titmouse, 1; Golden-crowned Kinglet, 1; Cardinal, 1; Red-tailed Hawk, +; Am. Kestrel, +; Great Horned Owl, +; Red-bellied Woodpecker, +; Com. Crow, +; Cedar Waxwing, +; Am. Goldfinch, +. **Average Total:** 96 birds (1186/km², 480/100 acres). **Remarks:** Total species seen, 23. Red-headed and Downy Woodpeckers were observed on all trips and Hairy Woodpecker, Blue Jay, White-breasted Nuthatch, Brown

Creeper and Am Robin were seen on all but one Many White Oaks on this area, as in the two previous counts, were denuded of bark by the large population of Red-headed Woodpeckers.

24. OAK - HICKORY FOREST, IV. — Location: Kansas; Douglas Co., Sturdy's Woods. Predominantly on the NE 1/4, NE 1/4, Sec. 27, T-14S, R-20E, Baldwin City Quadrangle, USGS. **Size:** 8.1 ha = 20 acres (4 × 5 acres, surveyed). **Coverage:** Jan. 12, 21, 23, 25, 27, 30; Feb. 1, 11. Total 8 trips, both a.m. and p.m., averaging 2 hrs each. **Count:** Red-headed Woodpecker, 16 (198, 80); Brown Creeper, 4 (49, 20); Blue Jay, 3 (37, 15); White-breasted Nuthatch, 3; Downy Woodpecker, 2 (25, 10); Black-capped Chickadee, 1 (12, 5); Sharp-shinned Hawk, +; Red-bellied Woodpecker, +; Hairy Woodpecker, +; Tufted Titmouse, +; Starling, +; Am. Goldfinch, +; Dark-eyed Junco, +. **Average Total:** 29 birds (358/km², 145/100 acres). **Remarks:** Species seen. 13. Red-headed Woodpeckers, Brown Creepers, nuthatches and chickadees were seen on all trips. A single Sharp-shinned Hawk was seen attacking a goldfinch during one trip.

25. OAK - HICKORY FOREST, V. — Location: Kansas; Douglas Co., East Beisecker Woods. Predominantly on the NE 1/4, NE 1/4, Sec. 35, T-14S, R-20E, Baldwin City Quadrangle, USGS. **Size:** 8.1 ha = 20 acres (4 × 5 acres, surveyed). **Coverage:** Jan. 18, 22, 24, 26, 31; Feb. 3, 10, 17. Total, 8 trips, both a.m. and p.m., averaging 2 hrs each. **Count:** Red-headed Woodpecker, 5 (62, 25); Downy Woodpecker, 3 (37, 15); Blue Jay, 3; Brown Creeper, 3; Black-capped Chickadee, 2 (25, 10); Tufted Titmouse, 2; White-breasted Nuthatch, 1 (12, 5); Red-tailed Hawk, +; Com. Flicker, +; Hairy Woodpecker, +; Com. Crow, +; Cardinal, +; Am. Goldfinch, +. **Average Total:** 19 birds (235/km², 95/100 acres). **Remarks:** Total species, 13. Red-headed Woodpeckers were seen on all trips and Downy Woodpeckers, Blue Jays and Brown Creepers on all but one. Am. Goldfinches were observed as one foraging flock. A Merlin was seen flying through the area on one trip. Most foraging was concentrated on the bottom of the slope near the creek bottom where it was less windy. Note the smaller number of Red-headed Woodpeckers on this plot compared to the first 4 study areas.

26. OAK - HICKORY FOREST, VI. — Location: Kansas; Douglas Co., West Beisecker Woods. Predominantly on the SW 1/4, NE 1/4, Sec. 35, T-14S, R-20E, Baldwin City Quadrangle, USGS. **Size:** 8.1 ha = 20 acres (4 × 5 acres, surveyed). **Coverage:** Jan. 18, 22, 24, 26, 31; Feb. 3, 10, 17. Total, 8 trips, both a.m. and p.m., averaging 2 hrs each. **Count:** Downy Woodpecker, 2 (25, 10); Blue Jay, 2; White-breasted Nuthatch, 1 (12, 5); Brown Creeper, 1; Red-tailed Hawk, +; Red-headed Woodpecker, +; Com. Crow, +; Tufted Titmouse, +; Am. Robin, +; Dark-eyed Junco, +. **Average Total:** 6 birds (74/km², 30/100 acres). **Remarks:** Downy Woodpeckers and Blue Jays were observed on all trips. Juncos were observed as a flock of 6 on only one trip, and a flock of 5 robins was observed once. Total species, 10. Note the difference between the density of birds on this count on a W-facing slope and

that found in the preceding count on an E-facing slope

27. PONDEROSA PINE-DOUGLAS FIR FOOTHILLS FOREST. — Location: Washington; Dishman Hills of Browne Mt., 2 mi E of Spokane; SE 1/4 of Sec. 19, T25N, R44E; 47°39'N, 117°17'W, Spokane Quadrangle, USGS. **Continuity:** Established 1975, 4 intermittent years. **Size:** 11.15 ha = 27.55 acres (rectangular, 1600 × 750 ft., the long axis N-S, surveyed by tape and compass). **Description of Area:** See AB 30:1051-1052 (1976). **Weather:** Temperatures from about +11° to +35°F. Cloudy or snowing on 6 trips, clear to partly cloudy on 1 trip. Mostly calm but up to 10 mph wind on 1 trip. Snow cover 8 to 19 in. **Coverage:** Dec. 16, 27; Jan. 3, 15, 23, 29; Feb. 6. Trips between 1000 and 1247. Total hours, 15.8. **Count:** Red Crossbill, 6 (54, 22); Mountain Chickadee, 2 (18, 7); Red-breasted Nuthatch, 2; Pygmy Nuthatch, 2; Ruffed Grouse, 1 (9, 4); Com. Flicker 1; Dark-eyed Junco, 1; Great Horned Owl, +; Black-billed Magpie, +; Com. Raven, +; Black-capped Chickadee, +; Varied Thrush, +; Golden-crowned Kinglet, +; Evening Grosbeak, +. **Average Total:** 15 birds (81/km², 55/100 acres). **Remarks:** On the Dec. 16 trip 2 Com. Crows heard and about 50 Bohemian Waxwings flying over were not believed to be using the area. Results of a Feb. 14 visit were omitted because of the appearance of several species that apparently were spring migrants (Am. Robin, Evening Grosbeak, Cassin's Finch, Pine Siskin and Dark-eyed Junco). Varied Thrush (1), Evening Grosbeak (10), and Dark-eyed Junco (8), found only Dec. 16, apparently were late migrants. These species wintered in nearby valley areas. — THOMAS H. ROGERS, E. 10820 Maxwell Ave., Spokane, WA 99206.

28. OREGON WHITE OAK WOODLAND. — Location: Washington; Thurston Co., 5 miles S on Case Rd. from The Maytown Exit on Interstate-5; 46°49'N, 123°00'W, Tenino SW Quadrangle, USGS. **Continuity:** New (Breeding Bird Census, 1978). **Size:** 7.5 ha = 18.5 acres (roughly rectangular with an E-W long dimension, aerial photograph). **Description of Area:** See AB 33:82 (1979). The plot can be roughly divided into 3 habitat types. Near-mature oak woodland constitutes approximately 65% of the study area. It is a fairly dense stand of medium to large size oaks with a few Douglas Firs. There is minimal understory and a shrub layer ranging from sparse to very dense. About 25% of the area consists of an open stand of young oak with a few slightly larger Douglas Firs. This habitat has not developed a canopy cover and has a 70% cover in the shrub layer. The third habitat, constituting about 10% of the plot, is near-mature riparian woodland. The dominant canopy tree is Oregon Ash, but many oaks are found along the creek also. A slightly more open canopy than that of the near-mature oak woodland, an extensive understory, and a dense shrub layer characterize this habitat. **Weather:** Unusually bitter, with temperatures occasionally dropping below 10°F for several days at a time. Precipitation was a little below average. The mean temperature during census trips was 35°F (range 24-50). Overcast or mostly overcast on 11 field days; clear or mostly clear 3 days. Light snow fell on one day, light rain on another. **Coverage:** Dec. 19, 21, 27;

Jan 2, 4, 10, 17, 19, 23-24, 29, Feb 2, 7, 9 Total, 14 trips, between 0830 and 1230, lasting 75-85 minutes. Total hours, 20. **Count:** Golden-crowned Kinglet, 21 (280, 114); Song Sparrow, 7 (93, 38); Black-capped Chickadee, 6 (80, 32); Chestnut-backed Chickadee, 4 (53, 22); Dark-eyed Junco, 4; Winter Wren, 3 (41, 16); Rufous-sided Towhee, 3; Brown Creeper, 2 (27, 11); Bewick's Wren, 2; Ruby-crowned Kinglet, 2; Yellow-rumped Warbler, 2; Purple Finch, 2; Great Blue Heron, 1 (13, 5); Downy Woodpecker, 1; Bushtit, 1; White-breasted Nuthatch, 1; Am. Robin, 1; Sharp-shinned Hawk, +; Red-tailed Hawk, +; Com. Flicker, +; Steller's Jay, +; Varied Thrush, +; Hermit Thrush, +; Fox Sparrow, +. **Average Total:** 63 birds (84/km², 341/100 acres). **Remarks:** Total species, 24. Song Sparrows and Rufous-sided Towhees were seen on every trip. Bush-tits were observed only on Dec. 19 in a flock of 22 birds. Dark-eyed Juncos were seen on 4 occasions in flocks of 13-17 individuals. A Sharp-shinned Hawk partially resided in the study area for at least 9 days. The population of Winter Wrens steadily decreased throughout the winter, dropping from 8 birds to only 1. Ruby-crowned Kinglets and Purple Finches were most notably affected by the icy weather neither species was noted during the cold month of January. Yellow-rumped Warblers and Purple Finches showed a marked preference for the ash along the creek. One or two Great Blue Herons occasionally roosted in the area, attracted by the adjacent creek. In late December many feathers of a Long-eared Owl were found on a patch of ground in the plot. Several species were observed in flight over the area: Mallard, Bufflehead, Marsh Hawk, Am Kestrel, Glaucous-winged Gull, California Gull, Mew Gull, Com. Crow, Red-winged Blackbird, Evening Grosbeak and Pine Siskin. Thanks to Cathy Orlins and Rick Knight for their assistance. — CHRISTOPHER B CHAPPELL, Dept. of Life Sciences, Fort Steilacoom Community College, 9401 Farwest Dr. S.W., Tacoma, WA 98498. Present address Dept. of Fisheries and Wildlife, Oregon State Univ., Corvallis, OR 97331.

29. SEMI-DISTURBED WILLOW-COTTONWOOD-BLACK WALNUT RIPARIAN WOODLAND. — Location: California; Tehama Co., on the W bank of the Sacramento R., N edge of Red Bluff (NW 1/4 of NW 1/4 of Sec 20, T27N, R3W), 40°11'N, 122°14'W, Red Bluff Quadrangle, USGS. Part of Dog Island and Samuel Ayer City Park. **Continuity:** Established 1978. **Size:** 17.7 ha = 43.7 acres. **Description of Area:** See AB 33:24-25. **Weather:** Very cold and dry Dec. and early Jan. Late Jan. and Feb rainy and warm. Rainfall was near average for the period. **Coverage:** Dec. 6, 14, 19, 28, Jan 5, 17, 24, 31; Feb. 7, 14, 21, 28. Total of 12 trips, between 0740 and 1135 PST, averaging 146 min each. **Count:** Ruby-crowned Kinglet, 22 (124, 50); Dark-eyed "Oregon" Junco, 22, Bushtit, 19 (107, 43); White-crowned Sparrow, 19; Cedar Waxwing, 16 (90, 37); Scrub Jay, 11 (62, 25); Am. Robin, 9 (51, 21); Yellow-rumped "Audubon's" Warbler, 8 (45, 18), Orange-crowned Warbler, 8; Am. Goldfinch, 8; Com. Flicker, 7 (40, 16); Bewick's Wren, 6 (34, 14); Golden-crowned Kinglet, 6; Lesser Goldfinch, 6; Song Sparrow, 6; Nuttall's Woodpecker, 5 (28, 11); Downy Woodpecker, 4 (23, 9); Plain Titmouse, 4; Rufous-sided Towhee, 4; White-breasted Nuthatch, 3 (17,

7), Hermit Thrush, 3, Starling, 3, Brown Towhee, 3, Pied-billed Grebe, 2 (11, 5), Am Coot, 2; Anna's Hummingbird, 2; Black Phoebe, 2; Com. Crow, 2; Great Blue Heron, 1 (6, 2), Green Heron, 1; Canada Goose, 1; Am. Wigeon, 1; Wood Duck, 1; Turkey Vulture, 1; Red-shouldered Hawk, 1; Killdeer, 1; Ring-billed Gull, 1; Belted Kingfisher, 1; Yellow-bellied Sapsucker, 1; Tree Swallow, 1; Winter Wren, 1; Mockingbird, 1; W. Bluebird, 1; Hutton's Vireo, 1; Yellow-rumped (Myrtle) Warbler, 1; House Finch, 1; Golden-crowned Sparrow, 1; Fox Sparrow, 1; Mallard, +; Com. Goldeneye, +; Bufflehead, +; Ruddy Duck, +; Cooper's Hawk, +; Am. Kestrel, +; California Quail, +; Com. Snipe, +; Spotted Sandpiper, +; Rock Dove, +; Mourning Dove, +; Great Horned Owl, +; Acorn Woodpecker, +; Yellow-billed Magpie, +; Varied Thrush, +; Water Pipit, +; W. Meadowlark, +; Red-winged Blackbird, +; N. "Bullock's" Oriole, +; Brewer's Blackbird, +; Dark-eyed "Slate-colored" Junco, +; Lincoln's Sparrow, +. **Average Total:** 232 birds (1312/km², 531/100 acres) **Remarks:** Total; 68 species and 2 subspecies. Band-tailed Pigeons, Evening Grosbeaks, and Pine Siskins, 3 of the most common species last year, were not recorded this winter, and Varied Thrushes were much lower. With these irruptive species subtracted from last year's census, the count is comparable to this year's, with an average of 248 birds/census. The area was flooded several times between censuses and several counts were made wading in water up to three feet deep. Thanks to Karen Cartier for assistance on several censuses — *STEPHEN A. LAYMON, 3290 Ackley Road, Lakeport, CA 95453.*

30. DECIDUOUS OAK WOODLAND. — **Location:** California; Monterey Co., Hastings Reservation, 2.5 mi E Jamesburg; 36°23'N, 121°33'W, Rana Creek Quadrangle, USGS. **Continuity:** New (Breeding Bird Survey 1978). **Size:** 5.67 ha = 14 acres (irregular area surveyed with a hand-held compass and measured with steel tape). **Description of Area:** See *AB* 33:82-83. The dominant canopy tree is Blue Oak (*Quercus douglasii*) with very little understory. The ground cover is a diverse mixture of grasses and forbs. Average canopy height 25 ft. (range 17-30). **Weather:** During Jan and Feb. there were 4 snowfalls, totaling 4.5 in. with the snow staying on the ground for 4 of the 11 censuses. Temperatures were colder than normal with minimum temperatures of 32°F or below on 27 days in the two months. Precipitation was normal for the season by the end of Feb. **Coverage:** Jan. 2, 10-11, 19, 26, 28; Feb. 1-3, 17, 27. 11 trips averaging 60 min each. **Count:** Dark-eyed Junco, 12 (212, 86); Ruby-crowned Kinglet, 3 (53, 21); Plain Titmouse, 2 (35, 14); W. Bluebird, 2; Anna's Hummingbird, 1 (18, 7); Com. Flicker, 1; White-breasted Nuthatch, 1; Cedar Waxwing, 1; Hutton's Vireo, 1 (18, 7); Purple Finch, 1; Golden-crowned Sparrow, 1; Nuttall's Woodpecker, +; Scrub Jay, +; Yellow-billed Magpie, +; Bewick's Wren, +; Am. Robin, +; Yellow-rumped Warbler, +; Lesser Goldfinch, +. **Average Total:** 26 birds (459/km², 186/100 acres) **Remarks:** Total, 18 species. The Cedar Waxwings were in a flock and seen only once. The crop of Toyon berries (*Heteromeles arbutifolia*) was heavy and probably accounts for the regularity of Purple Finches on the plot. Lesser Goldfinch, Am. Robin, Bewick's Wren

and Yellow-billed Magpie were only seen on one count. No migration and no appreciable singing were noted during the study period. — *PAMELA L. WILLIAMS, Hastings Reservation, Univ. of California, Star Route Box 80, Carmel Valley, CA 93924.*

31. ABANDONED PASTURE - YOUNG MIXED FOREST. — **Location:** New York; St. Lawrence Co.; 0.25 mi E. of Howardville Rd.; 0.25 mi SW of Rte. 68; 44°33'N, 75°03'W, Pierrepont Quadrangle, USGS. **Continuity:** Established 1976. **Size:** 3.44 ha = 8.5 acres. **Description of Area:** See *AB* 32:74 (1978). **Weather:** Partly sunny, temp. (4 days) 10°F, (4 days) 35°F; wind NW 5-15 mph. **Coverage:** Dec. 5, 10, 15, 17; Jan. 2; Feb. 28; Mar. 2, 5, 8; trips 0800-1600. Avg. 1 1/4 hr/visit. **Count:** Black-capped Chickadee, 2 (58, 24); Ruffed Grouse, 1 (29, 12); Blue Jay, 1; Evening Grosbeak, 1; Pileated Woodpecker, +; Slate-colored Junco, +. **Average Total:** 5 birds (145/km², 59/100 acres). **Remarks:** Species total: 6. Grouse (or tracks) were seen on 6 of 8 trips. Grosbeaks were seen in a flock on only one trip. Chickadees were seen on 4 visits. Pileated Woodpecker, seen once, apparently worked on elms adjacent to censused plot. Fresh coyote tracks seen on 4 visits, cottontail tracks also abundant. — *KENNETH L. CROWELL and NANCY J. CLUM, Dept. of Biology, St. Lawrence Univ., Canton, NY 13617.*

32. BLACK SPRUCE - TAMARACK BOG. — **Location:** New York; Delaware Co., Mud Lake Bog, about 2 mi N of Pine Lake on South Hill and about 2 mi E of West Davenport; 42°29'N 74°55'W, West Davenport Quadrangle, USGS. **Continuity:** Established 1972; 6 intermittent years. **Size:** 4.6 ha = 11.3 acres (1.9 acres of central water not included in plot area; elliptical, measured into 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 on graph paper, from which zonal areas and widths were determined). **Description of Area:** See *AB* 26:659-661 and 959 (1972). **Weather:** Trips were made in all kinds of weather. Temperatures averaged about 28°F, with snow cover 1.7-2.2 ft. The following weather data are for Cooperstown, about 12 mi N, and were supplied by the U.S. Nat'l Weather Service. For the months of Jan. and Feb. temperatures ranged from -30° to +52° with an average of 15.9° and total precipitation 7.66 in. (water equivalent). As compared with other years (30-year period) Jan. and Feb. departed about -6.1° and +2.57 in. precipitation. Feb. departed -11.2°. Jan. precipitation was the highest in 126 years. Oct., Nov., and Dec. temperatures each averaged within 3° of the 30 year average and rainfall was +0.3, -2.1, and +0.7 in. **Coverage:** Jan. 27-28; Feb. 3, 18, 22-24. Total: 7 trips, mostly between 1200 and 1530, averaging 84 min each. The method was the same as described in the 1973 winter count of this plot. **Count:** Given first for the 11.3 acre plot. The number in parentheses is the average density using only the actual foraging area — i.e., shrub (II) and tree (III) zones (8.7 acres). Evening Grosbeak, 8 (174, 71) [227, 92]; Black-capped Chickadee, 1 (22, 9) [28, 11]; Hairy Woodpecker, +; White-breasted Nuthatch, +. **Average Total:** 9 birds (197/km², 80/100 acres) [256/km², 103/100 acres]. **Remarks:** Grosbeaks and chickadees

were seen on only 3 trips. No birds were seen on 2 trips. Two Barred Owls were heard nearby on the Feb. 24 trip. The density this year was again low. Chickadees again low. See the Upland Oak Forest plot study No. 3 in this issue of *AB* for comments on abnormally low numbers of other species in this area. — *J. ROBERT MILLER, Dept. of Chemistry, and HANS GABLER, Hartwick College, Oneonta, NY 13820.*

33. RIPARIAN WOODLAND - FLOODPLAIN. — **Location:** New York; Chautauqua Co., Canadaway Creek Nature Sanctuary of Nature Conservancy, 1.25 mi W of Dunkirk, 42°28'30"N, 79°22'W, Dunkirk Quadrangle, USGS. **Continuity:** Established 1975; 4 years. **Size:** 13.8 ha = 34 acres (roughly rectangular, irregular in E portion). **Description of Area:** See *AB* 29:768-769. **Weather:** Average Jan temperature 20.4°F — 3.3° below normal, average Feb. temperature 15.5° — 8.9° below normal. Snowfall did not approach the nearly 200 in. of the previous winter but 110 in. had fallen by the end of January and the below normal temperatures permitted little thawing. Below 0° temperatures were recorded in early Feb., and the temperature did not go above freezing on any day that month. Ground was snow-covered on all trips. **Coverage:** Dec. 23, 30; Jan. 7, 15; Feb. 4, 1978. Total 5 trips, averaging 150 min, all between 0900 and 1300. **Count:** Black-capped Chickadee, 5 (36, 15), Cardinal, 5; Am. Goldfinch, 3 (22, 9); Downy Woodpecker, 1 (7, 3); White-breasted Nuthatch, 1; Carolina Wren, 1; Tree Sparrow, 1; Song Sparrow, 1; Great Blue Heron, +; Mallard, +; Black Duck, +; Com. Goldeneye, +; Rough-legged Hawk, +; Belted Kingfisher, +; Com. Crow, +; Brown Creeper, +; Winter Wren, +; Pine Siskin, +; Dark-eyed Junco, +; White-throated Sparrow, +. **Average Total:** 18 birds (131/km², 53/100 acres). **Remarks:** 17 species were observed on the first count but only three species on the fourth, and 4 species on the last count. The bitter cold of early February apparently resulted in the low count. — *FRANCES M. REW, 129 Arbour Lane, Buffalo, NY 14220.*

34. RIPARIAN WOODLAND - FLOODPLAIN. — **Location:** New York; Chautauqua Co., Canadaway Creek Nature Sanctuary of Nature Conservancy, 1.25 mi W of Dunkirk, 42°28'30"N, 79°22'W, Dunkirk Quadrangle, USGS. **Continuity:** Established 1975; 5 years. **Size:** 13.8 ha = 34 acres (roughly rectangular, irregular in E portion). **Description of Area:** See *AB* 29:768-769. **Weather:** Average Jan temperature 20.5°F — 3.2° below normal. Average Feb. temperature 14.9° — 9.5° below normal. For 21 days Jan. 31 — Feb. 20, temperatures were 38% colder than normal and no day had a temperature above 32°. Snowfall for the count period was 62 in., slightly above average. Ground was snow covered on all but first trip, greatest depth 20 in. on Feb. 10. **Coverage:** Dec. 31; Jan. 6, 19 (2 trips), 20; Feb. 3-4, 10, 1979. Total 8 trips averaging 135 minutes, usually between 0900 and 1400. **Count:** Am. Robin, 37 (268, 109); Starling, 19 (138, 56); Black-capped Chickadee, 6 (44, 18); Cardinal, 6; Downy Woodpecker, 4 (29, 12); Blue Jay, 2 (15, 6); White-breasted Nuthatch, 2, Am. Goldfinch, 2; Com. Flicker, 1 (7, 3); Com. Crow, 1; Dark-eyed Junco, 1; Tree Sparrow, 1, White-throated Sparrow, 1; Song Sparrow, 1,

Hairy Woodpecker, +, Cooper's Hawk, +, Red-tailed Hawk, +, Am. Kestrel, +, Ring-necked Pheasant, +; Winter Wren, +; House Sparrow, +; Com. Grackle, +; Evening Grosbeak, +. **Average Total:** 84 birds (610/km², 247/100 acres). **Remarks:** Flocks of robins were present on every trip, feeding on the excellent wild grape crop, as were numerous Starlings. A grackle seen on Dec. 31 was probably a late migrant. Common wintering species appeared to have made a good recovery after the previous two winters, record breaking for their snowfall and prolonged cold. — *FRANCES M. REW, 129 Arbour Lane, Buffalo, NY 14220.*

35. MIXED UPLAND HABITAT. — **Location:** District of Columbia; the central third (35 acres) of Glover-Archbold Park, a long, narrow stream-valley park in NW of D.C. **Continuity:** Established 1960; 20 years. **Size:** 14.2 ha = 35 acres. **Description of Area:** See *AFN 14:502-503* (1960). **Weather:** Colder than usual for this area, but somewhat warmer than last year, which was the coldest in the history of this study. Temperature this year averaged 33°F, while last year was 30.3°F. On 5 trips there was about 10% snow cover, 2 others had light snow or sleet and ice, the last 2 had 6 in. of snow and ice. The heaviest snow since 1922, 24 in., fell on Feb. 19, past the end of the count period. It was windier than usual, with only 2 calm trips, 6 with 5-10 mph, 3 with 10-16, and 3 at 20-30, 1 with gusts to 40 mph. **Coverage:** Jan. 6, 14-15, 17-18, 26-27, 30-31; Feb. 3 (2 trips)-4, 10, 18. Hours ranged from 0830 to 1810, with 2 in the morning, 3 spanning the noon hour, and 9 in the afternoon. A total of 23 hours, 31 minutes was spent on the 14 trips, which gave 12 complete coverages of the area. Average time for each coverage was 2 hours. **Census:** Carolina Chickadee, 11 (78, 31); Cardinal, 8 (56, 23); Com. Crow, 7 (49, 20); White-throated Sparrow, 7; Starling, 6 (42, 17); Rock Dove, 5 (35, 14); Tufted Titmouse, 5; Dark-eyed Junco, 5; Downy Woodpecker, 4 (28, 11); Red-bellied Woodpecker, 3 (21, 9); Blue Jay, 3; White-breasted Nuthatch, 3; Mourning Dove, 2 (14, 6); House Sparrow, 2; Turkey Vulture, 1 (7, 3); Red-tailed Hawk, 1; Herring Gull, 1; Ring-billed Gull, 1; Com. Flicker, 1; Pileated Woodpecker, 1; Brown Creeper, 1; Carolina Wren, 1; Mockingbird, 1; Purple Finch, 1; House Finch, 1; Am. Goldfinch, 1; Rufous-sided Towhee, 1; Black Vulture, +; Red-shouldered Hawk, +; Hairy Woodpecker, +; Cedar Waxwing, +. **Average Total:** 84 birds (593/km², 240/100 acres). **Remarks:** Species total: 31. Only two other years had lower counts of individual birds, 73 in 1962, and 78 in 1968. Species held up better, however, exceeded in only 6 of the 20 years, all since 1972, with the high count, 37, last year. The lowest count was 21 in 1968. The records of comparable coverage correlate with species number, only 6 coverages were done in 1968, and the difference is clearly owing to the amount of observation in the area needed to find the scarcer species. There was little variation in normal numbers of each species this year (Carolina Chickadees were up marginally over last year, as were White-throated Sparrows.) Purple Finches dropped from 12 last year to 1 this year, but they are erratic, as are Am. Goldfinches, whose pattern was similar. Carolina Wrens, that had built up to a wintering population of 4 in 1974 and 1975,

have remained at 1 the past 3 severe winters — *SHIRLEY A BRIGGS (compiler), OLIVE HOLBROOK, G. T. and SUSAN HUNT, and EDGAR H. SMITH, 7605 Honeywell Lane, Bethesda, MD 20014.*

36. COASTAL DISTURBED FLOOD-PLAIN. — **Location:** Virginia; Gloucester Co., Beaverdam Swamp, bounded on SE by Rte 14 and 10-ft contour to 0.53 km upstream. **Continuity:** Begun 1965, first published 1976, 15 years. **Size:** 8.09 ha = 20 acres. **Description of Area:** See *AB 30:1053-1055* (1976). **Weather:** Cold, 16-56°F, average 36°. Snow cover crusted in late Jan., again Feb. 10-11. Only 2 clear days. Swamp wet late in Jan. and Feb. **Coverage:** Nov. 26; Dec. 10, 24; Jan. 6, 15, 28; Feb. 3, 10-11, 18; Mar. 3. Total, 11 trips averaging 100 min between 0715 and 1620. **Count:** Com. Grackle, 32 (396, 160); Yellow-rumped Warbler, 8 (99, 40); Red-bellied Woodpecker, 2 (25, 10); Tufted Titmouse, 2; Am. Robin, 2; Am. Goldfinch, 2; White-throated Sparrow, 2; Bobwhite, 1 (12, 5); Carolina Chickadee, 1; Winter Wren, 1; Swamp Sparrow, 1; Song Sparrow, 1; Great Blue Heron, +; Mallard, +; Turkey Vulture, +; Red-shouldered Hawk, +; Am. Woodcock, +; Belted Kingfisher, +; Com. Flicker, +; Pileated Woodpecker, +; Hairy Woodpecker, +; Downy Woodpecker, +; E. Phoebe, +; Com. Crow, +; White-breasted Nuthatch, +; Brown Creeper, +; Carolina Wren, +; Mockingbird, +; Hermit Thrush, +; E. Bluebird, +; Golden-crowned Kinglet, +; Ruby-crowned Kinglet, +; Rusty Blackbird, +; Red-winged Blackbird, +; Cardinal, +; Purple Finch, +; Dark-eyed Junco, +; Field Sparrow, +. **Average Total:** 55 birds (680/km², 275/100 acres). **Remarks:** 38 species. Only species added to all-time count list begun in 1965 was the Mallard; a pair landed on largely frozen creek. Fair Poison Ivy crop lasted to mid-January. Possum Haw (*Ilex decidua*) berries preferred by robins over Am. Holly (*I. opaca*) about half a mile away. Tertiary aided flushing of Bobwhites and woodcock. Winter Wren likely under-censused; 3 seen flying into tipped tree stump at dusk. Phoebe may have perished from lack of flying insects and iced twigs. Common Grackles scratched through all snow-free swamp springs on Feb. 11, accounting for half of total numbers for the period. Red-bellied Woodpecker was only species seen on all counts. — *MARVIN L. WASS, Virginia Inst. of Marine Science, Gloucester Point, VA 23062.*

37. STRIP MINE AND DECIDUOUS WOODLOT. — **Location:** Tennessee; Scott Co., 3.7 km NW of Winfield, 36°34'23"N, 84°29'13"W; Winfield Quadrangle, USGS. **Continuity:** New. **Size:** 20.1 ha = 49.6 acres (measured by planimeter from aerial photo). **Description of Area:** See *AB 33:79* (1979). **Weather:** Temperature during censuses averaged 21°F, ranging from 10 to 35°F. Winds ranged up to 15 mph, with no wind on 2 visits. Snow cover was present on all visits, with maximum depth of 20 cm on Feb. 9. Ponds frozen on all visits. **Coverage:** Jan. 9, 15, 23, 31; Feb. 9, 14. Total 6 trips, between 0745 and 1015, averaging 90 min. **Count:** Am. Robin, 44 (219, 89); Dark-eyed Junco, 11 (55, 22); E. Bluebird, 7 (35, 15); Cardinal, 4 (20, 8); Am. Goldfinch, 4; Field Sparrow, 4; Red-tailed Hawk, 1 (5, 2); Pileated Woodpecker, 1; Hermit Thrush, 1; Cedar Waxwing, 1; Song Sparrow, 1; Bob-

white, +, Com. Flicker, +, Downy Woodpecker, +, White-throated Sparrow, +, Fox Sparrow, +. **Average Total:** 81 birds (404/km², 163/100 acres). **Remarks:** Species total 18. No robins were observed on the first two visits; then large numbers were present feeding on Staghorn Sumac (*Rhus typhina*) berries. Cardinal, junco, and Song Sparrow were present on all visits, robin and bluebird on 4. The Red-tailed Hawk roosted on the plot on 3 mornings and left when censuses began. This study was funded by an orphan mine reclamation project coordinated by the Tennessee Valley Authority. — *CHARLES P. NICHOLSON, P.O. Box 402, Norris, TN 37828.*

38. DECIDUOUS FOREST AND CONTOUR STRIP MINE. — **Location:** Tennessee; Campbell Co., on SE slope of Walnut Mountain, 5.0 km NW of LaFollette, 36°24'30"N, 84°09'53"W; Ivydell Quadrangle, USGS. **Continuity:** New. **Size:** 23.4 ha = 57.8 acres (measured with planimeter from aerial photo). **Description of Area:** See *AB 33:78-79* (1979). **Weather:** Average temperature during censuses 19°F, range 2 to 28°F. Snow cover present on 3 censuses, partial cover on 2. Maximum depth 8 in. **Coverage:** Dec. 27; Jan. 10, 22, 30; Feb. 5-6. Total, 6 trips, between 0750 and 1115, averaging 75 min. **Count:** Dark-eyed Junco, 22 (94, 38); White-throated Sparrow, 6 (26, 10); Carolina Chickadee, 4 (17, 7); Pileated Woodpecker, 2 (9, 3); Downy Woodpecker, 2; Song Sparrow, 2; Ruffed Grouse, 1 (4, 2); Com. Crow, 1; Tufted Titmouse, 1; White-breasted Nuthatch, 1; Am. Robin, 1; Cardinal, 1; Purple Finch, 1; Field Sparrow, 1; Com. Flicker, +; Hairy Woodpecker, +, E. Phoebe, +; Blue Jay, +; Brown Creeper, +, Winter Wren, +; Hermit Thrush, +; Golden-crowned Kinglet, +; Am. Goldfinch, +. **Average Total:** 46 birds (197/km², 80/100 acres). **Remarks:** Species total: 23. Chickadee, junco, and White-throated and Song sparrows seen on all trips, Pileated on 5 visits, and Downy Woodpecker, robin, and Cardinal on 4 trips. The oak-hickory mast crop of the previous fall failed. This study was funded by an orphan mine reclamation project coordinated by the Tennessee Valley Authority. — *CHARLES P. NICHOLSON, P.O. Box 402, Norris, TN 37828.*

39. MIXED - MESOPHYTIC WOODS, FIELDS, AND BRUSH. — **Location:** Tennessee; Putnam Co., about 5 mi WNW of Monterey, in Barnes Hollow to NW of Lee Knob, 36°9'45"N, 85°22'W, Monterey Quadrangle, USGS. **Continuity:** Established 1978, 2 years. **Size:** 30 ha = 74 acres. **Description of Area:** See *AB 32:80* (1978) and *33:79* (1979). (Formerly called Mixed Habitat: Mixed-mesophytic woods, pastures, and brush.) Changes About ½ acre of pastureland was graded early in autumn for house construction (which continued all winter when the weather permitted) and a garden; another ¼ acre planted to rye, and a small pond dug. **Water:** Often available at creek bed or at pond. **Food:** Acorns, wild grapes, and Red Cedar fruits very scarce. Good crops on Tulip-trees, sumacs, Hackberries, Poison Ivy, and broomsedge. Mixed bird seed was put out during January and February at one spot. **Weather:** Temperatures during trips ranged from 15°-60°F; about half the trips had sunny weather. December mild, January and February colder and more snow than

normal, about 6 in of wet snow on Jan 21 did much damage to evergreens **Coverage:** Dec 2, 6, 10, 12, 17, 20, 22, 25, 27, 29; Jan. 3, 9-10, 12-13, 15, 17, 27; Feb. 12, 15, 19, 22. Total, 22 trips, av. 217 min. Hours 0711 to 1600 CST. **Count:** Field Sparrow, 14 (47, 19); Purple Finch, 7 (23, 9); Dark-eyed Junco, 7; Cardinal, 6 (20, 8), White-throated Sparrow, 4 (13, 5); Tufted Titmouse, 3 (10, 4); Carolina Chickadee, 2 (7, 3), Am. Robin, 2; Golden-crowned Kinglet, 2; Song Sparrow, 2; Com. Flicker, 1 (3, 1); Pileated Woodpecker, 1; Red-bellied Woodpecker, 1; Hairy Woodpecker, 1; Downy Woodpecker, 1; Blue Jay, 1; White-breasted Nuthatch, 1; Brown Creeper, 1; Winter Wren, 1, E Bluebird, 1; Ruby-crowned Kinglet, 1; Yellow-rumped Warbler, 1; Am. Goldfinch, 1, Turkey Vulture, +; *Accipiter*, sp., +; Red-tailed Hawk, +; Am. Kestrel, +; Ruffed Grouse, +; Mourning Dove, +; Com. Crow, +; Carolina Wren, +; Hermit Thrush, +; Loggerhead Shrike, +; Rufous-sided Towhee, +; Fox Sparrow, +; Swamp Sparrow, +. **Average Total:** 62 birds (207/km², 84/100 acres). **Remarks:** Species total, 36. Most species, except for the corvids, mimids, E. Bluebird, Starling, grackle, siskin, towhee, and Fox Sparrow, increased or remained about the same. Seven species (Field, White-throated and Song sparrows, junco, Cardinal, and both parids) were observed on all trips. The Field Sparrow peaked at 55+ on Feb. 19. The seedeaters were affected by the supplemental feeding; the nuthatch and Red-bellied Woodpecker were the most consistent visitors. Many of these species fed heavily on Tulip-tree samaras in December. The thrushes fed on the sumac, Poison Ivy, and Hackberry fruits; their numbers were very variable, with 3 Hermit Thrushes seen on one (non-count) day with snow flurries, 8 bluebirds seen one rainy day in February, and up to 10 robins seen. Most species, including both wrens and the Golden-crowned Kinglet, survived the winter. — RICHARD W. SIMMERS, JR., Route 6, Box 211-C, Cookeville, TN 38501.

40. FLOODPLAIN WOODLAND AND FIELD. — **Location:** Ohio; Seneca Co.; Heidelberg College land known as the Lewis Farm, Tiffin; along Rock Creek between Main St and Hedges-Boyer Park; 41°05'N, 83°09'W **Continuity:** Established 1976; 3 yrs. **Size:** 22.5 ha = 55.5 acres. **Description of Area:** See AB 30:1055 (1976). **Weather:** Temp. ranged from -5° to 40°F, average 24°F. Snow cover 50% below normal, creek open on 2 trips but 95-100% frozen on all others. **Coverage:** Dec 16; Jan. 2, 13; Feb. 2, 10, 12. Total, 6 trips, averaging 85 min, 3 between 0900 and 1200 EST and 3 between 1300 and 1530 EST. **Count:** House Sparrow, 42 (187, 76); Dark-eyed Junco, 19 (85, 34); Tree Sparrow, 13 (58, 23), Starling, 11 (49, 20); Mourning Dove, 7 (31, 13); Cardinal, 6 (27, 11); Song Sparrow, 5 (22, 9), Blue Jay, 4 (18, 7); Am. Goldfinch, 4; Downy Woodpecker, 2 (9, 4); White-breasted Nuthatch, 1 (4, 2); Brown Creeper, 1; Am. Robin, 1; Brown-headed Cowbird, 1; Swamp Sparrow, 1; Red-tailed Hawk, +; Am. Kestrel, +; Horned Lark, +; Black-capped Chickadee, +, Tufted Titmouse, +. **Average Total:** 118 birds (525/km², 213/100 acres). **Remarks:** This was the lowest average total in the 4 years. The food crop in the county was the best in years so this may explain the lack of bird concentration on the plot. Robins were new to

the count area — JAMES COFFMAN and H THOMAS BARTLETT (compiler), 3443 East C.R. 36, Tiffin, OH 44883.

41. WOODLAND ALONG PRAIRIE STREAM. — **Location:** Kansas; Lyon Co., 3 mi NNE of Allen; 38°42'N, 96°09'W, Allen Quadrangle, USGS. **Continuity:** Established 1978; first winter survey. **Size:** 12.44 ha = 30.74 acres (an elongated S shape following 142 Mile Creek). **Description of Area:** See AB 33:81 (1979). The dominant canopy trees are Black Walnut (*Juglans nigra*), Hackberry (*Celtis occidentalis*), and Green Ash (*Fraxinus pennsylvanica*). **Weather:** The coldest winter on record at Topeka, 32 mi NE of study area. Dec. through Feb. registered an average temperature of 20.3°F. January averaged 11.8°, 16.2° below normal. February temperatures averaged 19.2° or 14.1° below normal. Temperatures on census days ranged from -13° on January 2 to 30° on January 21. A record 34.3 in. of snow fell Dec.-Feb. at Topeka. Snow was on the ground for all counts; depths ranged from 1 in. Dec. 10 to more than 21 in. Feb. 3. **Coverage:** Dec. 10; Jan. 2, 7, 21, 27; Feb. 3, 10-11, 18. Total 9 trips, 6 in the a.m. and 3 in the p.m., av. 2 hrs, 20 min. **Count:** Black-capped Chickadee, 14 (113, 46); Tree Sparrow, 13 (105, 42); Dark-eyed Junco, 12 (96, 39); Downy Woodpecker, 6 (48, 20); Bobwhite, 3.5 (28, 11); Brown Creeper, 3 (24, 10); Mourning Dove, 2 (16, 7); Red-bellied Woodpecker, 2; Blue Jay, 2; Com. Crow, 2; Brown-headed Cowbird, 2; blackbird, sp., 2; Cardinal, 2; Tufted Titmouse, 1.5 (12, 5); Am. Robin, 1.5; Barred Owl, 1 (8, 3); Com. Flicker, 1; White-breasted Nuthatch, 1; Starling, 1; Sharp-shinned Hawk, +; Red-tailed Hawk, +; Marsh Hawk, +; Great Horned Owl, +; Belted Kingfisher, +; Hairy Woodpecker, +; House Sparrow, +; E. Meadowlark, +; Rusty Blackbird, +; Am. Goldfinch, +; Rufous-sided Towhee, +; Harris' Sparrow, +; Song Sparrow, +. **Average Total:** 72.5 birds (583/km², 236/100 acres). **Remarks:** Total species not counting blackbird sp., 31. Seen on all trips were Red-bellied Woodpecker, Downy Woodpecker, Black-capped Chickadee, Dark-eyed Junco, and Tree Sparrow. Absent after the first census were Mourning Dove and Rufous-sided Towhee. The Belted Kingfisher was absent after Jan. 2. Notable species missing were E. Bluebird, Golden-crowned Kinglet and White-throated Sparrow. Twenty-eight per cent of the S portion of the study area was converted into a feedlot after trip 3. Similar stream border habitat of equal size was then added on to the N in order to make up the difference. After trip 7 permission was given to walk through the cattle in order to census the original study area. Bur Oak (*Quercus macrocarpa*) is present to some extent in the new section; it is not found in the original study area. Blackbirds did not congregate at the new mid-winter feedlot; resident species, on the other hand, readily accepted the new food source. — LARRY HERBERT, Box 2, Allen, KS 66833.

42. MIXED HABITAT: RIPARIAN WOODLAND AND ADJACENT OAK SAVANNA. — **Location:** California; Monterey Co., Hastings Reservations, 2-1/2 miles E Jamesburg; 36°23'N, 121°33'W, Rana Creek Quadrangle, USGS. **Continuity:** New. **Size:** 8.76 ha = 21.65 acres (nearly rectangular area, 2400 ft by roughly 400 ft, surveyed with hand-

held compass and measured with steep tape) **Description of Area:** An intermittent stream cuts through the plot in a NE-SW direction, water usually present Dec.-June. There are 2 different zones. **Zone 1:** Riparian vegetation along the creek. A quantitative survey of the vegetation gave the following results: Trees 8 cm diameter and over, based on four circular 0.1 acre circles, 124/ha; total basal area 37.3 m²/ha. Species comprising 100% of the total number of trees (figures after each give the total number of trees/hectare, relative density (%), relative dominance, and frequency): Willow (*Salix* spp.) 62, 50, 33, 75; dead Willow 18.5, 15, 2, 25; Coast Live Oak (*Quercus agrifolia*) 18.5, 15, 38, 50; Blue Oak (*Q. douglasii*) 6.2, 5, 1, 25; dead Blue Oak 6.2, 5, 0.002, 25; Sycamore (*Plantanus racemosa*) 6.2, 5, 19, 25; Valley Oak (*Q. lobata*) 6.2, 5, 7, 25. Trees by diameter size class (figures after each class give number of trees/hectare, relative density (%), relative dominance and frequency): A (8-15 cm) 25, 20, 1, 50; B (15-23 cm) 12, 10, 1, 25; C (23-38 cm) 25, 20, 5, 50; D (38-53 cm) 18.5, 15, 9, 50; E (53-68 cm) 0; F (68-83 cm) 31, 25, 35, 75; G (83-100 cm) 0; H (100+ cm) 12, 10, 49, 25. Canopy cover 46%; average canopy height 9.15 m (range 0-18.3 m), ground cover 100%, shrub stems/ha 3922 **Zone 2:** The savanna/grassland borders of the riparian zone. Trees 8 cm and over based on four 0.1 acre circular samples 43/ha (all found in one circle). Total basal area 5.29 m²/ha Coast Live Oak comprised 100% of the trees (43/ha, 100% rel. density, 100% rel. dominance, 25% frequency). Trees by diameter size class: A (8-15 cm) 12, 29, 3, 25; B (15-23 cm) 12, 29, 8, 25; C (23-38 cm) 12, 29, 15, 25; D (38-53 cm) 0; E (53-68 cm) 0; F (68-83 cm) 0; G (83-100 cm) 6, 14, 74, 25. Canopy cover 9%; average canopy height 12 m (range 0-9.15 m), shrub stems/ha 167 (ground cover not given—Ed.). **Edge:** Bordered by a dirt road and then mixed evergreen forest on one long side with oak savanna along the other long side. Chaparral touches the plot at one point. The creek cuts across the short sides of the plot. **Topography:** The plot is flat with a 2% slope to the SW and a dip of 1-10 ft in the actual creek bed. Near either long edge of the plot the ground starts sloping upward. **Elevation:** 1600 ft. **Weather:** Temperatures ranged from 24° to 80°F. Temperatures were colder than normal in February with a mean temperature of 44.8°, compared to a mean of 48.3° for the last 10 yrs. March temperatures were normal (mean 49.7° compared to 48.8° for the last 10 yrs.). There were 7 days with below freezing temperatures. Precipitation was near normal. **Coverage:** Feb. 4, 15, 18, 23-24; Mar. 4, 9-10. Total: 10 trips averaging 60 min each, 0800 to 1400. **Count:** California Quail, 27 (308, 125); Dark-eyed Junco, 7 (80, 32); Scrub Jay, 6 (68, 28); Ruby-crowned Kinglet, 6; Brown Towhee, 6; Golden-crowned Sparrow, 6; Plain Titmouse, 3 (34, 14); Rufous-sided Towhee, 3; Steller's Jay, 2 (23, 9); Bushtit, 2; Bewick's Wren, 2; Am. Robin, 2; Hutton's Vireo, 2; Com. Flicker, 1 (11, 5); Nuttall's Woodpecker, 1; Acorn Woodpecker, 1; White-breasted Nuthatch, 1; House Wren, 1; Cedar Waxwing, 1; Yellow-rumped Warbler, 1; Lesser Goldfinch, 1; Lark Sparrow, 1; Lincoln's Sparrow, 1; Cooper's Hawk, +; Sharp-shinned Hawk, +; Red-tailed Hawk, +; Mountain Quail, +; Anna's Hummingbird, +; "Red-breasted" Sapsucker, +; Violet-green Swallow, +; W. Bluebird, +;

Orange-crowned Warbler, +, Purple Finch, +, White-crowned Sparrow, +, Song Sparrow, +. **Average Total:** 84 birds (density 959/km², 388/100 acres). **Remarks:** Total species, 35. Violet-green Swallows, House Wrens, and Orange-crowned Warblers were early spring migrants seen on 1, 3, and 2 trips respectively, but no appreciable singing was noted. Species seen on every trip were Scrub Jay, Plain Titmouse, Bewick's Wren, Ruby-crowned Kinglet, Rufous-sided Towhee, Brown Towhee, and Dark-eyed Junco. Species seen on only one trip were Sharp-shinned Hawk, Mountain Quail, Violet-green Swallow, W. Bluebird, Cedar Waxwing, White-crowned Sparrow and Song Sparrow. Special thanks to W. D. Koenig for assistance with mapping and quantitative habitat description. — PAMELA L. WILLIAMS, Hastings Reservation, Univ. of California, Star Route Box 80, Carmel Valley, CA 93924.

43. BRUSHY FIELD AND WOODED EDGE. — **Location:** Pennsylvania; Cumberland Co., 1 mi NE of Carlisle, 0.3 mi NNW of U.S. Rte 11, off Cavalry Rd., on National Guard property; 40°12'N, 77°10'W, Carlisle Quadrangle, USGS. **Continuity:** New. **Size:** 7.54 ha = 18.62 acres (roughly rectangular, approximately 210 × 359 m, paced). **Description of Area:** See AB 33:74-75 (1979). About 10% of vegetation, mainly tall weeds and small shrubs, was cleared during fall of 1978. **Weather:** Temperatures during visits ranged from -7°C to 5°C, averaging -1°C. No snow cover on first three visits. Up to 3 in. of snow existed on last 7 visits. More rain than usual fell in January, but no large amounts of snow fell during study period. Temperatures during the period were slightly below average. **Coverage:** Dec. 22, 26, 29; Jan. 6, 11, 14, 22, 26-27; Feb. 4. Total, 10 trips, 5 between 0700 and 1100 and 5 between 1330 and 1730, all averaging 118 minutes. **Count:** Dark-eyed Junco, 8 (106, 43); White-throated Sparrow, 6 (80, 32); House Finch, 5 (66, 27); Mourning Dove, 4 (53, 21); Cardinal, 3 (40, 16); Tree Sparrow, 3; Com. Crow, 2 (27, 11); Starling, 2; Ring-necked Pheasant, 1 (13, 5); Downy Woodpecker, 1; Mockingbird, 1; Am. Robin, 1; Com. Grackle, 1; Am. Goldfinch, 1; Song Sparrow, 1; *Accipiter* sp., +; Blue Jay, +; Brown Creeper, +; Field Sparrow, +. **Average Total:** 40 birds (531/km², 215/100 acres). **Remarks:** Species total, 19. Cardinal and White-throated Sparrow observed on every trip. Rock Doves, Evening Grosbeaks, and Brown-headed Cowbirds were seen flying over the area but not in it. Several small feeders were maintained just outside of the area, but few birds used them. House Finches were seen mostly in flocks along the SW side of the area on the last 3 trips; a total of five was seen on the first 7 trips, but a total of 41 was sighted on the last 3 visits. Eastern Cottontails were abundant throughout the area. — BRIAN F. ROLLFINKE, 1013 Harriet St., Carlisle, PA 17013.

44. GRASSLAND: MUNICIPAL AIRPORT. — **Location:** Louisiana; Natchitoches Par., municipal airport of Natchitoches, 31°44'N, 93°66'W, Provencal Quadrangle, USGS. **Continuity:** Established 1974; 5 years, not published in 1978. **Size:** 12.14 ha = 30 acres (rectangular, 1320 × 990 ft, measured with steel tape). **Description of Area:** See AB 28:

711-712 (1974) **Weather:** During the 19-day study period, day temperatures ranged from 35° to 70°F. with all count days 45° or higher. Night temperatures ranged from 20° to 50°. Three count days were clear and 3 were partly cloudy. All count days had winds up to 3 on the Beaufort Scale. **Coverage:** Feb. 11, 25-28 and Mar. 1. Total, 6 trips, between 0830 and 1630, averaging 50 min; total man-hours, 5. **Count:** E. Meadowlark, 8 (66, 27); Savannah Sparrow, 7 (58, 23); Am. Robin, 2 (16, 7); Le Conte's Sparrow, 2; Sprague's Pipit, 1 (8, 3); Red-tailed Hawk, +; Marsh Hawk, +; Am. Kestrel, +. **Average Total:** 20 birds (165/km², 67/100 acres). **Remarks:** Species total, 8. The mean total per km² decreased to 165 from a mean of 317 for 1974-1978. This decrease appeared to be a result of late mowing of the study area which resulted in less available cover and food. The E. Meadowlark, Savannah Sparrow and Le Conte's Sparrow were observed on all counts, Sprague's Pipit on 4 counts, Am. Robin on 2 counts and all others on 1 count. — CHARLES E. VIERS, Dept. of Biological Sciences, Northwestern St. Univ. of Louisiana, Natchitoches, LA 71457.

45. LIVE OAK - MESQUITE BRUSHLAND. — **Location:** Texas; Bexar Co., W. W. McAllister Park of San Antonio, 2 mi NE of San Antonio Int'l Airport; 29°33'N, 98°27'W, Longhorn Quadrangle, USGS. Study area is along the N boundary of the park, extending 660 yds ESE of Jones-Maltsberger Rd., and 220 yds SSW of the fence. **Continuity:** Established 1967; 13 consecutive years. **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 and a few joggers use the main trail but still no picnic areas have been built. **Weather:** Rainfall of 1.09 in. in Dec. was below normal while 4.07 in. in Jan. was above normal. Average temperature of 43.7°F in Jan. was 7.0° below normal. **Coverage:** Jan. 3, 8, 15, 23, 31; Feb. 16. Total 6 trips, averaging 101 min, between 0800 and 1145 CST. **Count:** Am. Robin, 12 (99, 40); White-throated Sparrow, 10 (83, 33); Cardinal, 5 (41, 17); Rufous-sided Towhee, 5; Black-crested Titmouse, 3 (25, 10); Cedar Waxwing, 3; Am. Goldfinch, 3; Carolina Chickadee, 2 (17, 7); Ruby-crowned Kinglet, 2; Mourning Dove, 1 (8, 3); Golden-fronted Woodpecker, 1; Bewick's Wren, 1; Carolina Wren, 1; Hermit Thrush, 1; Yellow-rumped (Myrtle) Warbler, 1; Chipping Sparrow, 1; Fox Sparrow, 1; Lincoln's Sparrow, 1; Black Vulture, +; Am. Woodcock, +; Yellow-bellied Sapsucker, +; E. Phoebe, +; House Wren, +; Orange-crowned Warbler, +; Vesper Sparrow, +. **Average Total:** 54 birds (446/km², 180/100 acres). **Remarks:** 25 species. Ruby-crowned Kinglet, Cardinal, Rufous-sided Towhee, and White-throated Sparrow seen on all trips. Count low possibly a result of dry December and cold January. — STEVEN HANSELMANN, STEVEN A. HAWKINS, JAMES A. MIDDLETON (compiler), San Antonio Audubon Society, San Antonio Garden Center, 3310 N. New Braunfels, San Antonio, TX 78209.

46. MIXED UPLAND HABITAT AND SWAMP. — **Location:** Connecticut; Fairfield Co., Newtown, intersection of Rte. 34 and Zoar Rd.; 41°24'10"N, 73°14'10"W, Derby Quadrangle, USGS. **Continuity:** Established

1968, 7 intermittent years **Size:** 14.2 ha = 35 acres (irregular, greatest dimensions 653 × 364 yds., surveyed). **Description of Area:** See AFN 22:714-715 (1968). Disregard 1968 coordinates. **Weather:** Temperature during count hours ranged from 5° to 45°F. Wind W to NW and once NE, calm 2 days, light breeze to 10 mph 6 days. Overcast 3 days, clear 5 days No snow cover on 4 trips; snow cover 2-4 in on 4 trips. **Coverage:** Dec. 23, 29; Jan. 3, 10, 24, Feb. 10, 17, 25. Total 8 trips, between 0915 and 1600, averaging 1 hr each. **Count:** Black-capped Chickadee, 3 (21, 9); Evening Grosbeak, 3; Hairy Woodpecker, 1 (7, 3); Downy Woodpecker, 1; Com. Crow, 1; White-breasted Nuthatch, 1; Dark-eyed Junco, 1; Blue Jay, +, Tufted Titmouse, +; Cardinal, +; Purple Finch, +. **Average Total:** 11 birds (78/km², 31/100 acres). **Remarks:** The Black-capped Chickadee and the Downy Woodpecker were seen on every trip except 2. The Blue Jay, Cardinal, Evening Grosbeaks, Purple Finches, and Dark-eyed Juncos were seen on only one trip. Scarcity of wild food and an increase in the number of bird feeders in areas adjacent to the study area probably had an influence on the total population observed. — LEON L. BARKMAN, Western Connecticut Bird Club, P.O. Box 542, Woodbury, CT 06798.

47. LAGOON. — **Location:** Virginia; Arlington Co., Roaches Run Waterfowl Sanctuary, Arlington; 38°52'N, 77°02'30"W, Alexandria Quadrangle, USGS. **Continuity:** Established 1968, 11 intermittent years. **Size:** 23.5 ha = 58 acres. **Description of Area:** See AB 27:691 (1973). **Weather:** The sky was clear on 5 trips, partly cloudy on 2 trips, and overcast on 5 trips. Temperatures ranged from 18° to 47°F. Lagoon was completely open on Dec. 20, 26, Jan. 3, 9, 25, 30; one-half frozen on Dec 30, Jan. 14, 19, Feb. 4; and mostly frozen on Feb 8, 13. **Coverage:** Dec. 20, 26, 30; Jan. 3, 9, 14, 19, 25, 30; Feb. 4, 8, 13. Total: 12 trips, totaling 10.7 hours between 1035 and 1555. **Count:** Ring-billed Gull, 86 (366, 148); Mallard, 68 (290, 117); Pintail, 49 (209, 84); Herring Gull, 46 (196, 79); Am. Wigeon, 15 (64, 26); Great Black-backed Gull, 11 (47, 19); Bonaparte's Gull, 3 (13, 5); Great Blue Heron, 2 (9, 3); Black Duck, 2; Com. Merganser, 2; Pied-billed Grebe, 1 (4, 2); Com. Goldeneye, 1, Com. Snipe, 1; Belted Kingfisher, 1; Horned Grebe, +; Hooded Merganser, +; Killdeer, +, Lesser Black-backed Gull, +. **Average Total:** 288 birds (1227/km², 497/100 acres) **Remarks:** There was an 8.6% decrease from last year's average total population. Significant individual changes were a 47.3% decrease in Mallards, a 25.8% decrease in Pintails, and a 115% increase in Ring-billed Gulls. An influx of 35 Bonaparte's Gulls on Jan. 3 resulted in a high total for this species. The sex ratio of Pintails reached an all time low of 1.2 males to each female, continuing a trend which began in 1976. — PAUL W. WOODWARD, 4117 Virginia St., Fairfax, VA 22030.

48. BARRIER BEACH AND SALT-WATER ESTUARY. — **Location:** Florida, Duval Co., on N side of St. John's River, where it meets the sea, and S side of the Ft. George River, immediately S of Little Talbot Island State Park. Area is 1 mi N of the Mayport Naval Base; 30°25'N, 81°25'W, Mayport Quadrangle, USGS. **Continuity:** Established

1978, 2 years **Size:** 212.5 ha = 525 acres (Two triangles, one 5900 × 6400 × 5300 ft, the other 5300 × 5000 × 3400 ft, calculated from USGS map). **Description of Area:** See AB 33:47 (1979). **Weather:** Temperatures ranged from 19° to 83°F. Monthly averages were below normal: 0.3° in December, 6.7° in January, and 4.3° in Feb. Rainfall during the study period was below normal in December, 0.75 in, and above normal, 3.50 in. in January, 0.17 in February. (Weather data for Jacksonville International Airport, 15 mi inland.) **Coverage:** Dec. 2, 9, 17, 31; Jan. 7, 13, 21, 28; Feb. 4, 18. Total, 10 trips, from 0720 to 1545, on all tides, averaging 3 hrs each. Census methods were the same as in 1978. **Count:** Laughing Gull, 446 (210, 85); Black Skimmer, 284 (134, 54); Dunlin, 224 (105, 43); W. Sandpiper, 186 (88, 35); Herring Gull, 173 (81, 33); Sempalmated Plover, 148 (70, 28); Royal Tern, 121 (57, 23); Ring-billed Gull, 95 (45, 18); Sanderling, 88 (41, 17); Brown Pelican, 64 (30, 12); Short-billed Dowitcher, 49 (23, 9); Ruddy Turnstone, 45 (21, 9); Great Black-backed Gull, 38 (18, 7); Black-bellied Plover, 35 (16, 7); Red Knot, 34 (16, 6); Forster's Tern, 32 (15, 6); Lesser Scaup, 17 (8, 3); sandpiper spp., 10 (5, 2); Willet, 8 (4, 2); Bonaparte's Gull, 8; Caspian Tern, 8; Piping Plover, 6 (3, 1); Double-crested Cormorant, 5 (2, 1); Red-breasted Merganser, 4 (2, 1); Horned Grebe, 3 (1, 1); Sandwich Tern, 3; Great Blue Heron, 2 (1, +); Am. Oystercatcher, 2; Wilson's Plover, 2; Purple Sandpiper, 2; Little Blue Heron, 1 (+, +); Snowy Egret, 1; Greater Scaup, 1; Com. Merganser, 1; Clapper Rail, 1; Killdeer, 1; Com. Snipe, 1; Long-billed Curlew, 1; Marbled Godwit, 1; Mourning Dove, 1; Starling, 1; Yellow-rumped Warbler, 1; Boat-tailed Grackle, 1; Savannah Sparrow, 1; Com. Loon, +; Great Egret, +; Louisiana Heron, +; White Ibis, +; Blue-winged Teal, +; Turkey Vulture, +; Osprey, +; Merlin, +; Am. Kestrel, +; Am. Coot, +; Glaucous Gull, +; Com. Tern, +; Loggerhead Shrike, +; Com. Yellowthroat, +; Palm Warbler, +; E. Meadowlark, +; Red-winged Blackbird, +; Brown-headed Cowbird, +; Seaside Sparrow, +; Snow Bunting, + **Average Total:** 2156 birds (1015/km², 411/100 acres). **Remarks:** Species total: 64. Greater Scaup were not seen until Feb. Am. Coots, Palm Warbler, and E. Meadowlark were seen only on the first trip in December. Clapper Rail and Com. Snipe were seen only in the small brackish marsh, Purple Sandpipers were seen only at the base of the rock jetty. Sandwich Terns were seen on the first 3 trips in December but not thereafter. Blue-winged Teal were seen Feb. 18 only. — JOSEPH L. WILSON (compiler), 2635 Oak Summit Dr., Jacksonville, FL 32211, and LESLIE THOMPSON, 115 Azalea Pl., Neptune Beach, FL 32233.

49. RIVER BANK AND RIVER. — Location: Pennsylvania; Center under the McElhattan bridge on the N bank of the W branch of the Susquehanna River, 0.8 km (1/2 mi) NW of BM 571 in McElhattan; 41°09'57"N, 77°22'22"W, Jersey Shore Quadrangle, USGS. **Continuity:** Established 1975; 5 consecutive years **Size:** River Bank, 3.2 km (2 mi) long, from 9 to 33 m wide, mean width, ca. 14.3 m, approximately 4.6 ha = 11.4 acres. The mean river width is about 250 m, which for 3.2 km would be 80 ha = 197.7 acres of water. **Description of Area:** See AB 29:780 (1975).

Weather: January's mean high and low was 33.3°F and 20.1°F, with precipitation of 6.36 in. The ground had 1 to 4 in. of snow on 5 trips. Ice cover on the river was less than 10% except for one trip which had 98% ice cover. Wind was about 15 mph or more on two trips. **Coverage:** Jan. 4, 11, 18, 27 (two trips); Feb. 11. Total, 6 trips, averaging 67 min. each, between 1000 and 1430. **Count:** *River Bank:* Evening Grosbeak, 33 (715, 289); Dark-eyed Junco, 4 (87, 35); Tree Sparrow, 4; Song Sparrow, 3 (65, 26); Rock Dove, 2 (43, 18); Com. Crow, 2; White-breasted Nuthatch, 2; Com. Starling, 2; White-throated Sparrow, 2; Black-capped Chickadee, 1 (22, 9); Cardinal, 1; Field Sparrow, 1; Red-tailed Hawk, +; Downy Woodpecker, +; House Sparrow, +. *River:* Black Duck, 8 (173, 70); Ring-billed Gull, +. **Average Total:** *River Bank,* 57 birds (1236/km², 500/100 acres); *River:* 8 birds (10/km², 4/100 acres of water). **Remarks:** For the river bank the number of species seen on each trip was from 0 to 9 and the number of individuals was from 0 to 108. — JOHN LUNDY, PARKER PEER, PAUL SCHWALBE (compiler, Dept. of Biological Sciences, Lock Haven St. College, Lock Haven, PA 17745), JAMES VANEMON (members of the West Branch Bird Club and Ornithological Society).

50. SEWAGE LAGOONS. — Location: Arizona; Santa Cruz Co., Nogales, 8.8 mi N of the international boundary, adjacent to Potrero Creek, Santa Cruz River and the S. P. Railroad; 31°30'N, 111°00'W, Nogales Quadrangle, USGS. **Continuity:** Established 1978; 2 years. **Size:** 57.8 ha = 142.8 acres. **Description of Area:** See AB 33:49 (1979). **Weather:** Estimated temperatures during count days ranged from -4° to 80°F. Precipitation was unusually heavy during this period with approximately 9 in. of snow on the ground at one time. **Coverage:** Nov. 17, 20, 22, 25-26; Dec. 2, 13, 20, 30; Jan. 4; Feb. 3, 9, 13. Between 0830 and 1700, averaging 126 min. each. **Count:** Am. Coot, 168 (291, 118); Ruddy Duck, 104 (180, 73); Brewer's Blackbird, 79 (137, 55); Eared Grebe, 68 (118, 48); Ring-necked Duck, 65 (112, 46); Am. Wigeon, 61 (106, 43); Starling, 54 (93, 38); Least Sandpiper, 43 (74, 30); N. Shoveler, 31 (54, 22); Red-winged Blackbird, 28 (48, 20); Gadwall, 21 (36, 15); White-crowned Sparrow, 19 (33, 13); Pintail, 11 (19, 8); Green-winged Teal, 5 (9, 4); Lesser Scaup, 5; raven sp., 5; Brown-headed Cowbird, 5; Canvasback, 4 (7, 3); Ring-billed Gull, 4; Redhead, 2 (3, 1); Killdeer 2; Spotted Sandpiper, 2; W. Sandpiper, 2; Long-billed Dowitcher, 2; Canada Goose, 1 (2, 1); Snow Goose, 1; Ross' Goose, 1; Blue-winged Teal, 1; Bufflehead, 1; Red-tailed Hawk, 1; Com. Snipe, 1; Say's Phoebe, 1; Tree Swallow, 1; Water Pipit, 1; Com. Loon, +; Great Blue Heron, +; Cattle Egret, +; Cinnamon Teal, +; Com. Goldeneye, +; merganser sp., +; Sharp-shinned Hawk, +; Marsh Hawk, +; Am. Kestrel, +; Gambel's Quail, +; N. Phalarope, +; California Gull, +; Bonaparte's Gull, +; Mourning Dove, +; Roadrunner, +; Belted Kingfisher, +; Black Phoebe, +; Vermilion Flycatcher, +; Violet-green Swallow, +; Bewick's Wren, +; House Finch, +; Savannah Sparrow, +; Vesper Sparrow, +; Lark Sparrow, +. **Average Total:** 800 birds (1384/km², 560/100 acres). **Remarks:** Species total: 58. Ruddy Duck, Brewer's Blackbird, Ring-necked Duck,

N Shoveler, and Gadwall were observed on all trips. Land and water habitats were not separated for bird densities as many of the birds utilized both habitats. **Correction:** Count total are incorrect in WB-PS #103, AB 33:49 (1979). Count totals given are a summation of all 8 counts and not the average number of individuals per trip. Densities per km² and 100 acres should also be adjusted accordingly. — JOHN BELL and RANDALL MADDING (compiler), 1400 Bristol Dr., Nogales, AZ 85621.

51. INTERTIDAL MUDFLAT ON LARGE BAY. — Location: California; Alameda Co., the E shore of South San Francisco Bay, Hayward Landing, 3 km N of the San Mateo Bridge, Hayward Quadrangle, USGS, 37°39'N, 122°9'W. **Continuity:** New. **Size:** 22.4 ha = 55.35 acres (surveyed with compass, measured and gridded with tall wooden stakes); rectangular, 400 m along shore and 600 m perpendicular to the shoreline; a 2.6 ha roughly square peninsula juts into the E portion of the plot and was deleted from all censuses. **Description of Area:** Entire area consists of varying amounts of shallow bay water over an intertidal soft mud substrate. No vegetation except a film of diatoms and bits of drifting algae. Two low rock jetties approximately 3 m wide extend N from the peninsula 200 m in the E half of the plot. A row of old dock pilings runs W approximately 35 m out onto the mud from the SW corner of the peninsula and a shorter row into the NE corner of the plot. Effluent from a secondary sewage treatment plant enters the SE portion of the plot and cuts a channel (3.5 m wide) out onto the mud. **Tidal Cycle:** Tides ranged from -1.3 ft to +8.9 ft during the count period. Counts were made at various times of tide, with varying amounts of mudflat exposed (0-90%) and in such a way that when all data are combined and averaged they approximate the average numbers of birds using the plot at all levels of the tide. **Adjacent Habitat:** Similar intertidal mudflat for 25+ km to the N and S; open, shallow bay extends 21.5 km to the W, a narrow fringe of which is exposed at the lowest tides; to the E the peninsula and a 5-60 m wide fringe along other parts of the plot is short salt marsh (nearly all *Salicornia virginica*); above the salt marsh a dike runs parallel to shore and beyond the marsh to the SE is a land-filled area. **Food:** Benthic invertebrates comprise a major food source for most of the birds using the plot. Vasallo (Veliger 1969, Vol. 11:223-234) sampled the mudflat 2 km S of this plot and the results of her study and from 17 mud-core samples collected from this plot on Jan. 26, 1979 show predominant species to be: Molluscs — *Macoma balthica*, *Gemma gemma* and *Nassarius obsoletus*; Annelids — *Mediomastus californiensis*, *Heteromastus filiformis*, *Neanthes succinea* and *Tharyx parvus*; Crustaceans — *Ampelisca milleri* (abundant in surface detritus of lower tide levels only) and *Hemigrapsus oregonensis* (along edges of marsh). Several other small polychaete worms and, in the present plot, an oligochaete worm were unidentified. The presence of the latter species probably reflects the locally reduced salinity from the wastewater effluent. When the tideflat is covered by bay waters, planktonic crustacea (chiefly copepods in February 1979) are abundant and small fishes are food for some birds and competitors

for others. An otter trawl sample on Feb 27 from waters over and near the plot included 9 species of fish. **Weather:** Cloudy, windy weather typified most censuses. Temperatures ranged from 34° to 62°F and averaged 45°F. The sky was always overcast and cloud cover averaged 75%. Northerly winds averaged 7 mph. and created whitecaps on Jan. 27 that interfered with identification and accuracy of counts made of distant birds on the water. Fog on Feb. 6 and 10 hindered counts, although light rain which fell twice (Jan. 30 and Feb. 1) did not. Specific weather data from Oakland International Airport, 10 km NW. **Coverage:** Jan. 27, 30-31; Feb. 1, 2 (two trips), 3 (two trips), 5-8, 10-11. Total 14 trips, averaging 52 min. from 0745-1705. Five counts with tide 0.1-2.0 ft (35-90% plot exposed); 4 counts with tide 2.3-4.0 ft (10-25% exposed); and 5 counts with tide greater than 5.0 ft (0% exposed). **Count:** W. Sandpiper, 200 (893, 361); dowitcher, *spp.*, 177 (790, 320); scaup, *spp.*, 176 (786, 318); Dunlin, 103 (460, 186); Marbled Godwit, 52 (232, 94); Willet, 42 (188, 76); Am. Wigeon, 15 (67, 27); Pintail, 13 (58, 24); Red Knot, 12 (54, 22); Black-bellied Plover, 10 (45, 18); Ruddy Duck, 9 (40, 16); Starling, 8 (36, 15); Canvasback, 8; Least Sandpiper, 5 (22, 9); Am. Avocet, 5; Ring-billed Gull, 4 (18, 7); gull, *spp.*, 4; Glaucous-winged Gull, 3 (13, 5); W. Grebe, 2 (9, 4); Long-billed Dowitcher, 2; Lesser Scaup, 1 (4, 2); Black-necked Stilt, 1; Killdeer, 1; Long-billed Curlew, 1; Ruddy Turnstone, 1; Black Turnstone, 1; Short-billed Dowitcher, 1; California Gull, 1; Horned Grebe, +; Double-crested Cormorant, +; Great Blue Heron, +; Great Egret, +; Snowy Egret, +; Green-winged Teal, +; Cinnamon Teal, +; N. Shoveler, +; Greater Scaup, +; Surf Scoter, +; Bufflehead, +; duck, *spp.*, +; Marsh Hawk, +; W. Gull, +; Herring Gull, +; Thayer's Gull, +; Forster's Tern, +; Water Pipit, +. **Average Total:** 858 birds (3830/km², 1550/100 acres). **Remarks:** Species total, ±42. Most ducks and all diving birds foraged over the plot during high tides and moved to the W during low tides. Shorebirds begin to move onto the plot as soon as ebbing high tide waters expose narrow stretches of mud and they follow the receding waters out through the low tide period until forced off the plot by incoming waters. During high tides shorebirds roosted on salt evaporator ponds and dikes 1.5-5.0 km SE of the plot. The greatest density occurred when tide height was 1.5 ft. and half of the mudflat was exposed. Over 50% of all birds were counted on 5 censuses when 30-50% of the plot was exposed. Comparison of these results with those from a study conducted in 1965 and 1966 (AFN 19:427-429; 20:477-478) on a 40.7 ha plot 2 km S of the present site indicates similar overall densities. However, the abundance of certain species does differ between the two studies. American Avocet numbers were much lower than in the '65-'66 study. The high numbers of dowitcher and Red Knot may be the result of early migratory movement. Western Sandpiper and Dunlin numbers are high, as in the earlier study and together these species comprise 35% of all birds counted. Many of the shorebirds showed a preference for feeding along the edges and delta of the effluent outflow, which is probably related to the increased nutrient supply. The dock pilings and rock jetties provided suitable habitat for the two species of turnstone and a large flock of Starlings that visited on one cen-

sus. At tide heights of 4.5 ft or greater the entire mudflat is covered with water and most of the shorebird component is exchanged for one consisting of ducks, other diving birds and terns. Scaup (probably mostly Lesser), Am. Wigeon and Pintail were the most numerous duck species, but they did not use the same areas of the plot. Two-thirds of the scaup were 400-600 m from shore while the Am. Wigeon (64%) and Pintail (66%) foraged mostly within 200 m of shore. Canvasbacks were counted in small numbers on 11 censuses and were much less numerous than the average density on the '65-'66 plot, 232/km². Ruddy Ducks used the plot consistently through the tide cycle by foraging in the outflow channel at low tides. Gulls frequently flew over the plot in transit between a large disposal site 8.5 km to the N and roost areas 2-7 km SE on salt evaporator dikes. Only those gulls that were either cruising low (foraging) or actually on the plot were counted, and much greater numbers were recorded during low than high tide. A foraging Marsh Hawk caused large groups of feeding shorebirds to fly up and resettle elsewhere on two occasions. — CHRISTOPHER W. SWARTH and HOWARD L. COGSWELL, Dept. of Biol. Sciences, Calif. St. Univ., Hayward, CA 94542.

52. MATURE (1946) FOUR-ROW SHELTER BELT. — **Location:** Minnesota; Dakota Co., Univ. of Minn. Rosemont Agricultural Experiment Sta., Poultry Section, 0.8 mi S of County Rd 42; 44°43'N, 93°03'W. Coates Quadrangle, USGS. **Continuity:** New. **Size:** 0.698 ha = 1.72 acres (14.0 × 498.4 m ft. measured). **Description of Area:** The belt is L-shaped, oriented E-W and N-S. Row 1, Cottonwood (*Populus deltoides*), av. height 71 ft, density 78/acre; rows 1 and 2, Am. Elm (*Ulmus americana*), 28 ft, 415/acre; row 2, Red Pine (*Pinus resinosa*), 36 ft, 207/acre; row 3, Jack Pine (*Pinus banksiana*), 35 ft, 267/acre; rows 3 and 4, White Spruce (*Picea glauca*), 34 ft, 356/acre, and Colorado Blue Spruce (*Picea pungens*), 24 ft, 52/acre; row 4, White Cedar (*Thuja occidentalis*), 26 ft, 296/acre. Dominant understory growth consists of grasses. Black Raspberry (*Rubus occidentalis*), and Red-berried Elder (*Sambucus pubens*); ground cover 70%; canopy cover 58%. Plant names (Studies 52-58) are from Rosendahl, 1975, *Trees and Shrubs of the Upper Midwest*. **Edge:** Bordered on the N, S, and W by plowed fields, and on the E by a plowed field, a mowed lawn, and farm buildings. **Topography:** Flat, elevation 951 ft. **Weather:** Mean temperature during census periods, 18°F (range -29°-33°); snow depth ranged from 8 to 26 in. with occasional drifts of 3 ft. **Coverage:** Jan. 10, 12, 17-18, 22, 31; Feb. 5-7, 19-20, 26-28; Mar. 6. Total 15 trips, all between 0730 and 1230, averaging 38 min. each. **Count:** House Sparrow, 2 (300, 116); Dark-eyed Junco, 2; Com. Crow, 1 (150, 58); Ring-necked Pheasant, +; Gray Partridge, +; Great Horned Owl, +; Hairy Woodpecker, +; Downy Woodpecker, +. **Average Total:** 5 birds (718/km², 291/100 acres). **Remarks:** Species total: 8. A flock of 16 Com. Crows observed during one trip. The number of species seen per trip ranged from 0 to 5 and the number of individuals was 0 to 27. — RICHARD H. YAHNER, Dept. of Entomology, Fisheries and Wildlife, Univ. of Minn., St. Paul, MN 55108.

53. MATURE (1948) FIVE-ROW SHELTER BELT. — **Location:** Minnesota; Dakota Co., Univ. of Minn. Rosemont Agricultural Experiment Sta., North Beef Section, 0.5 mi S of County Rd 42; 44°44'N, 93°05'W. Coates Quadrangle, USGS. **Continuity:** New. **Size:** 0.706 ha = 1.74 acres (21 × 336 m measured). **Description of Area:** The belt is L-shaped oriented E-W and N-S; all sectors of the belt except about 1/2 of the E-W sector are regularly mowed. Row 1, Colorado Blue Spruce (*Picea pungens*), av. height 13 ft, density 120/acre; rows 1 and 2, Green Ash (*Fraxinus pennsylvanica*), 34 ft, 388/acre; rows 2 and 3, Silver Maple (*Acer saccharinum*), 36 ft, 323/acre; rows 3 and 4, Cottonwood (*Populus deltoides*), 41 ft, 170/acre; row 4, Caragana (*Caragana arborescens*), 11 ft, 906/acre; row 5, Ural Willow (*Salix purpurea*), 12 ft, 798/acre. Dominant understory growth consists of grasses. Black Raspberry (*Rubus occidentalis*), and Box Elder (*Acer negundo*); ground cover 73%, canopy cover 29%. **Edge:** Bordered on the N and the E by farm buildings and on the S and the W by plowed fields. **Topography:** Flat, elevation 953 ft. **Weather:** see Study 52. **Coverage:** Jan. 10, 12, 17-18, 22, 31; Feb. 5-7, 19-20, 26-28; Mar. 6. Total 15 trips, all between 0730 and 1230, averaging 30 min each. **Count:** House Sparrow, 48 (6817, 2759); Ring-necked Pheasant, 2 (284, 115); Starling, 2, Hairy Woodpecker, +; Blue Jay, +; Dark-eyed Junco, +. **Average Total:** 52 birds (7385/km², 2989/100 acres). **Remarks:** Species total 6. 100+ House Sparrows present in belt and around adjacent farm buildings; 40± Rock Doves observed in and around farm buildings. The number of species seen per trip ranged from 1 to 3 and the number of individuals was 5 to 96. — RICHARD H. YAHNER, Dept. of Entomology, Fisheries and Wildlife, Univ. of Minn., St. Paul, MN 55108.

54. MATURE (1949) EIGHT-ROW SHELTER BELT. — **Location:** Minnesota, Dakota Co., Univ. of Minn. Rosemont Agricultural Experiment Sta., Sewage Section, 3.7 miles S of County Rd 42; 44°41'N, 93°05'W. Coates Quadrangle, USGS. **Continuity:** New. **Size:** 0.37 ha = 0.91 acres (23 × 162 m measured). **Description of Area:** The belt runs in a N-S direction. Rows 1 and 2, Caragana (*Caragana arborescens*), av. height 11 ft, density 190/acre; rows 3 and 4, Cottonwood (*Populus deltoides*), 78 ft, 94/acre; row 5, Green Ash (*Fraxinus pennsylvanica*), 28 ft, 132/acre, rows 6 and 7, Red Pine (*Pinus resinosa*), 35 ft, 108/acre; row 8, White Spruce (*Picea glauca*), 37 ft, 64/acre. Dominant understory growth consists of grasses; ground cover 53%; canopy cover 77%. **Edge:** Bordered on the N and the S by plowed fields, on the E by a dirt road, a small woodlot, and a mowed lawn, and on the W by a plowed field, a mowed lawn, and 2 sewage sludge ponds. **Topography:** Essentially flat, elevation 983 ft. **Weather:** see Study 52. **Coverage:** Jan. 10, 12, 17-18, 22, 31; Feb. 5-7, 19-20, 26-28; Mar. 6. Total: 15 trips, all between 0730 and 1230, averaging 32 min each. **Count:** Ring-necked Pheasant, +, Downy Woodpecker, +; Blue Jay, +. **Average Total:** 0 birds. **Remarks:** The number of species seen per trip ranged from 0 to 1 and the number of individuals was 0 to 2 — RICHARD H. YAHNER, Dept. of Entomology, Fisheries and Wildlife, Univ. of Minnesota, St. Paul, MN 55108.

55. MATURE (1951) THREE-ROW SHELTER BELT. — **Location:** Minnesota, Dakota Co., Univ. of Minn. Rosemount Agricultural Experiment Sta., Forestry Section, 1.5 mi S of County Rd 42; 44°43'N, 93°06'W, Coates Quadrangle, USGS. **Continuity:** New. **Size:** 0.324 ha = 0.80 acres (14.8 × 219.2 m, measured). **Description of Area:** The belt runs in an E-W direction, and a nature trail traverses the E half between rows 2 and 3. Row 1, Tartarian Honeysuckle (*Lonicera tatarica*), av. height 8 ft, density 72/acre; row 2, Ponderosa Pine (*Pinus ponderosa*), 23 ft, 102/acre; row 3, Colorado Blue Spruce (*Picea pungens*), 44 ft, 56/acre. Dominant understory growth consists of grasses, and a few Siberian Elm (*Ulmus pumila*) occur in row 3; ground cover 27%; canopy cover 22%. **Edge:** Bordered on the N by a conifer block planting, on the E by a row of shrubs and the Station Office, on the S by a secondary road and a plowed field, and on the W by a dirt road and a mowed field. **Topography:** Flat, elevation 948 ft. **Weather:** see Study 52. **Coverage:** Jan. 10, 12, 17-18, 22, 31; Feb. 5-7, 19-20, 26-28; Mar. 6. Total 15 trips, all between 0730 and 1230, averaging 20 min each. **Count:** Ring-necked Pheasant, 1 (313, 125), Gray Partridge, +; Blue Jay, +; Black-capped Chickadee, +; Dark-eyed Junco, +. **Average Total:** 1 bird (313/km², 125/100 acres). **Remarks:** Species total: 5. A flock of 13 Ring-necked Pheasants was observed during one trip. The number of species seen per trip ranged from 0 to 3 and the number of individuals was 0 to 13. — **RICHARD H. YAHNER**, Dept. of Entomology, Fisheries and Wildlife, Univ. of Minnesota, St. Paul, MN 55108.

56. IMMATURE (1961) NINE-ROW SHELTER BELT. — **Location:** Minnesota; Dakota Co., Univ. of Minn. Rosemount Agricultural Experiment Sta., Agricultural Engineering Section, 1.5 mi. S of County Rd 42; 44°43'N, 93°05'W, Coates Quadrangle, USGS. **Continuity:** New. **Size:** 0.787 ha = 1.94 acres (26.7 × 294.6 m, measured). **Description of Area:** The belt runs in an E-W direction. Row 1, Tartarian Honeysuckle (*Lonicera tatarica*), av. height 11 ft, density 27/acre, and Amur Maple (*Acer ginnala*), 13 ft, 63/acre; row 2, Com Lilac (*Syringa vulgaris*), 11 ft, 129/acre; row 3, Honey Locust (*Gleditsia triacanthos*), 24 ft, 51/acre; rows 3 and 7, Green Ash (*Fraxinus pennsylvanica*), 20 ft, 90/acre; rows 4 and 5, Cottonwood (*Populus deltoides*), 39 ft, 25/acre, row 6, Silver Maple (*Acer saccharinum*), 21 ft, 56/acre; row 8, Ponderosa Pine (*Pinus ponderosa*), 19 ft, 72/acre; row 9, White Spruce (*Picea glauca*), 17 ft, 45/acre. Dominant understory growth consists of grasses; ground cover 74%; canopy cover 61%. **Edge:** Bordered on the N by a plowed field, on the E by an old field, on the S by a secondary road and a plowed field, and on the W by an apple orchard. **Topography:** Flat, elevation 950 ft. **Weather:** see Study 52. **Coverage:** Jan. 10, 12, 17-18, 23, 31, Feb. 5-7, 19-20, 26-28; Mar. 6. Total 15 trips, all between 0730 and 1230, averaging 30 min each. **Count:** Dark-eyed Junco, 5 (637, 258); Blue Jay, 1 (127, 52); Downy Woodpecker, +; Com Crow, +; Black-capped Chickadee, +; Brewer's Blackbird, +; Tree Sparrow, +. **Average Total:** 6 birds (764/km², 309/100 acres). **Remarks:** Species total: 7. A flock of 26 Dark-eyed Juncos was observed during one trip. The number of species seen per trip ranged from 0 to 3 and the number of individuals was

0 to 28 — **RICHARD H. YAHNER**, Dept. of Entomology, Fisheries and Wildlife, Univ. of Minnesota, St. Paul, MN 55108.

57. IMMATURE (1966) FOUR-ROW SHELTER BELT. — **Location:** Minnesota; Dakota Co., Univ. of Minn. Rosemount Agricultural Experiment Sta., Plant Pathology Section, 2.6 mi S of County Rd 42; 44°41'N, 93°06'W, Coates Quadrangle, USGS. **Continuity:** New. **Size:** 0.298 ha = 0.736 acres (13 × 229.3 m, measured). **Description of Area:** The belt is L-shaped oriented E-W and N-S; the N-S sector is regularly mowed. Row 1, Laurel-leaved Willow (*Salix pentandra*), av. height 17 ft, density 13/acre; rows 1 and 2, Buffalo Berry (*Shepherdia argentea*), 9 ft, 24/acre, Chokecherry (*Prunus virginiana*), 15 ft, 158/acre, and Red-osier Dogwood (*Cornus stolonifera*), 11 ft, 14/acre; row 2, Gray Dogwood (*Cornus racemosa*), 5 ft, 26/acre, and High-bush Cranberry (*Viburnum trilobum*), 9 ft, 13/acre; rows 2 and 3, Russian Olive (*Elaeagnus angustifolia*), 14 ft, 36/acre, and Southern Arrowwood (*Viburnum dentatum*), 8 ft, 35/acre; row 3, Green Ash (*Fraxinus pennsylvanica*), 21 ft, 27/acre, and Amur Maple (*Acer ginnala*), 16 ft, 43/acre; row 4, Ponderosa Pine (*Pinus ponderosa*), 16 ft, 22/acre, Colorado Blue Spruce (*Picea pungens*), 16 ft, 30/acre, and Black Hills Spruce (*Picea glauca albertiana*), 16 ft, 53/acre. Dominant understory growth consists of grasses; ground cover 87%; canopy cover 44%. **Edge:** Bordered on the N by a plowed field, on the E by a mowed lawn and farm buildings, on the S by a small plowed field and 2 rice ponds, and on the W by a plowed field. **Topography:** Flat, elevation 951 ft. **Weather:** see Study 52. **Coverage:** Jan. 10, 12, 17-18, 22, 31; Feb. 5-7, 19-20, 26-28; Mar. 6. Total 15 trips, all between 0730 and 2130, averaging 26 min each. **Count:** Ring-necked Pheasant, 1 (336, 136); Blue Jay, +; House Sparrow, +. **Average Total:** 1 bird (336/km², 136/100 acres). **Remarks:** Species total: 3. A flock of 12 Ring-necked Pheasants was observed during one trip. The number of species seen per trip ranged from 0 to 2 and the number of individuals was 0 to 12. — **RICHARD H. YAHNER**, Dept. of Entomology, Fisheries and Wildlife, Univ. of Minnesota, St. Paul, MN 55108.

58. IMMATURE (1974) THREE-ROW SHELTER BELT. — **Location:** Minnesota; Dakota Co., Univ. of Minn. Rosemount Agricultural Experiment Sta., Swine Sheep Section, 0.4 mi S of County Rd 42; 44°44'N, 93°05'W, Coates Quadrangle, USGS. **Continuity:** New. **Size:** 0.21 ha = 0.515 acres (10.3 × 202.2 m, measured). **Description of Area:** The belt runs in an E-W direction; mowed between rows. Row 1, Douglas Fir (*Pseudotsuga taxifolia*), av. height 7 ft, density 148/acre; row 2, Norway Spruce (*Picea abies*), 8 ft, 171/acre; row 3, White Cedar (*Thuja occidentalis*), 6 ft, 163/acre. Dominant understory growth consists of grasses; ground cover 89%; canopy cover 1%. **Edge:** Bordered on the N by a plowed field, on the E by a paved secondary road, and on the S and the W by farm buildings and mowed lawns. **Topography:** Flat, elevation 953 ft. **Weather:** see Study 52. **Coverage:** Jan. 10, 12, 17-18, 22, 31; Feb. 5-7, 19-20, 26-28; Mar. 6. Total 15 trips, all between 0730 and 1230, averaging 15 min. each. **Count:** House Sparrow, +. **Average Total:** 0 birds. **Remarks:**

A single House Sparrow was observed during one trip, Rock Doves, Starlings, and House Sparrows commonly seen S of belt in sheep yards where artificial food resources were available. — **RICHARD H. YAHNER**, Dept. of Entomology, Fisheries and Wildlife, Univ. of Minnesota, St. Paul, MN 55108.

59. OPEN FARMLAND. — **Location:** Connecticut; Tolland Co., E of Horse Barn Hill in Storrs; encompassing Univ. of Conn.'s livestock barns and adjacent fields. **Continuity:** New. **Size:** 19.03 ha = 47 acres (measured from aerial photographs with planimeter). **Description of Area:** Open farmland containing clustered livestock barns, pastureland and a cornfield. The livestock barns include a beef barn connected to a sheep barn, an open horse shelter, two swine barns, and a heifer barn (all comprising an area of 3056.4 m²). About 1858 m² are divided equally between beef and sheep stock yards, and the swine feedlot contains 17.8 m² divided among 3 open pens and feed troughs. Two barns had openings between roof and sides through which birds flew at will. A large (27.8 m²) feed trough is associated with the beef barn and a large (139.4 m²) silage pit is near the heifer barn. Between the beef and swine barns is a polo field with side boards. The primary vegetation on the area is pasture, with 20-25 Sugar Maple (*Acer saccharum*), Pignut Hickory (*Carya glabra*), White Ash (*Fraxinus americana*), Red Oak (*Quercus rubra*) and White Oak (*Q. alba*) growing on the lawns by the barns. Dbh's range from 14 to 30 in. By the first swine barn is a 10 ft diameter bramble of *Rosa* sp. A 76.2 m hedge of sparsely foliated Eastern Hemlock (*Tsuga canadensis*), 6.1 m tall, grows by the polo field. A 9.1 m hedge of *Forsythia* sp. grows behind the heifer barn. A 7-acre cornfield also lies by the heifer barn. **Topography:** The elevation varies from 550 ft to 700 ft. The land slopes sharply as the paved road forming one border veers from the N to the W. **Edge:** The area is part of 275 acres of open farmland with forest bordering the N, S and E sides. The Univ. of Conn. campus forms the W border. An area of about one acre within the study plot was omitted because of its marked difference in habitat (mainly young second growth trees and shrubs) from the rest of the plot. **Water:** Sources include a ¼ acre pond behind the swine barns, water troughs in several locations and several watering pans at the horse shelter. **Food:** Sources include grain and silage in the feed troughs, feed inside the barns, and piles of barn sweepings and manure. **Weather:** During the study the temperature averaged 4°F, with a mean daily range of -10.5°-0°. The ground was covered by 4-5 in. of snow but near the end of the study there were bare patches of ground. The only precipitation occurred on Feb. 15-16, when less than an inch of snow fell. (Weather data from Univ. of Conn. weather station). **Coverage:** Feb. 10, 14-19. Total, 7 trips, all between 0800 and 1015, averaging 75 min. **Count:** Starling, 850 (4467, 1809); Rock Dove, 150 (789, 319); House Sparrow, 30 (157, 64); Horned Lark, 6 (32, 13); Dark-eyed Junco, 2 (11, 4); Com. Crow, 2; Cardinal, 1 (5, 2); Tree Sparrow, 1. **Average Total:** 1042 birds (5478/km², 2217/100 acres). **Remarks:** The crow was seen on 6 visits, the Horned Lark and Cardinal on 3, the junco on 2 and the Tree Sparrow on 1

visit — DAVID LEE, Ruby Rd., W. Willington, CT 06279.

60. FLOODPLAIN FOREST AND CULTIVATED BOTTOMLAND. — **Location:** New York; Allegany Co., N of and adjacent to Scio, 42°10'N, 77°59'W, Wellsville Quadrangle, USGS. **Continuity:** Established 1971; 8 intermittent years (1978 omitted). **Size:** 51.8 ha = 128 acres. **Description of Area:** See AB 25:644-645 (1971). The hay storage barn near the E edge of the plot burned in 1977 and the site is leveled for crops. Cultivated area: 75 acres plowed corn stubble, 13 acres hay stubble. **Food:** In abundance: fruits of Box-elder, Sycamore, White Ash and wild grape; very few rabbits or weed seeds, and no top dressings or corn gleanings; mice and voles well protected by the 8 to 25 in. (20.3 to 63.5 cm) of snow cover. **Weather:** Although Lake Erie froze about on time, Jan. 4, for the 21-day study period temperatures were 4°F. (2.2°C.) below normal with coverage conducted during an average 17F. (-8.5°). When high water receded from a thaw and heavy 1.5-inch (3.8 cm) rain on Jan. 24, bare ground along the river and slough provided good feeding for birds, particularly for the flock of 278 Com. Crows counted on Jan. 30. The river and slough pools were open for most of the study. (Weather data by courtesy of Ed Curtis, Wellsville Water and Light Plant.) **Coverage:** Jan. 18, 20, 23, 25, 30; Feb. 1, 6, 8. Eight trips, averaging 99 min. each, all between 0800 and 1130 EST. Total 13.2 hrs. **Count:** Com. Crow, 73 (141, 57); Evening Grosbeak, 14 (27, 11); Rock Dove, 10 (19, 8); Blue Jay, 3 (6, 2); Starling, 3; Com. Merganser, 2 (4, 2); Red-breasted Merganser, 1 (2, 1); Mourning Dove, 1; Cardinal, 1; Am. Goldfinch, 1; Great Blue Heron, +; Mallard, +; Cooper's Hawk, +; Belted Kingfisher, +; Downy Woodpecker, +; White-breasted Nuthatch, +; Tree Sparrow, +; White-throated Sparrow, +. **Average Total:** 109 birds (210/km², 85/100 acres). **Remarks:** Comparing 1979 with 1971-1977 average (in parentheses): Species total: 18 (29); total birds, 109 (210); Com. Crow, 73 (102); and excluding Com. Crow and Snow Bunting, 36 (107). Seen on every trip were the Com. Crow and Evening Grosbeak, and the Blue Jay appeared on every trip but one. House Finches came regularly to a feeder outside the plot to the S. This is the lowest winter bird population since inception of this study, attributed to persistent snow cover, lack of corn gleanings and top dressings, as well as to too few trees, shrubs and dead snags remaining. Thanks are extended to Charles Maybee, owner, for permission to use the property. — VIVIAN MILLS PITZ-RICK, Amity Lake, Belmont, NY 14813.

61. CORN STUBBLE, RYE, BARLEY AND SHORT GRASS. — **Location:** Pennsylvania; Lycoming Co.; one-half mile S of Jersey Shore, 41°11'05"N, 77°15'10"W, Jersey Shore Quadrangle, USGS. **Continuity:** Established 1974; 6 consecutive years. **Size:** 40.47 ha = 100 acres (rectangular). **Description of Area:** See AB 28:722-723 (1974). This winter the fields were composed of corn stubble, 30 ha (75%); rye, 6 ha (15%); barley, 3 ha (7.5%); and short grass, 1 ha (2.5%). **Weather:** January's mean high and low were 33.3°F and 20.1°, with precipitation of 6.36 in. Wind was up to 25 mph on two trips. The ground was 50% ice-covered on one trip, and had 3 in. or

less of snow on the other trips. **Coverage:** Dec 28, Jan. 4, 6, 9, 29. Total. 5 trips, averaging 36 minutes each between 0940 and 1224. **Count:** Com. Crow, 1 (2, 1); Rough-legged Hawk, +; Mourning Dove, +; Horned Lark, +; Com. Raven, +. **Average Total:** 1 bird (2/km², 1/100 acres). **Remarks:** This is the lowest average total for the 6 years of the study. The previous low was 31 in 1977. — GLENNA P. SCHWALBE, PAUL W. SCHWALBE (compiler), Dept. of Biological Sciences, Lock Haven St. College, Lock Haven, PA 17745.

62. BARRIER ISLAND GOLF COURSE SUBDIVISION. — **Location:** South Carolina; Charleston Co., Kiawah Island; 32°38'N, 80°03'W; Kiawah Island Quadrangle, USGS. **Continuity:** New. **Size:** 8.1 ha = 20 acres (rectangular, 325 × 95 yds, surveyed). **Description of Area:** Kiawah is a typical barrier island which was developed as a residential resort in 1976. The study site, formerly covered by Maritime Forest, was made into a golf course subdivision in 1977-78. The site is open and covered by cultivated grasses, and scattered trees and shrubs along the edge of the site. About 80% of the area is golf course; 15% houses; and 5% trees and shrubs, remnants of the original forest. The main tree species were Loblolly Pine (*Pinus taeda*) and Live Oak (*Quercus virginiana*). The main shrubs were Wax Myrtle (*Myrica cerifera*) and Yaupon (*Ilex vomitoria*). **Topography:** Flat to slightly rolling sand dunes, elevation 5-15 ft. **Edge:** Bounded on all four sides by similar habitat. **Water:** A man-made 1-acre pond was in the center of the area. The Atlantic Ocean is ½ mi to the S; and the Kiawah River and *Spartina* salt marsh is 100 yds to the N of the study area. **Weather:** A normal winter. Temperatures went below freezing on four days. The average high was 63°F and the average low 35°. Temperatures ranged from 22° to 68°. **Coverage:** Dec. 6, 9, 28; Jan. 3-4, 6, 23, 30. Total, 8 trips between 0900 and 1500, averaging 90 min. **Count:** Red-winged Blackbird, 28 (346, 140); Ruby-crowned Kinglet, 9 (111, 45); Yellow-rumped Warbler, 6 (74, 30); Pine Warbler, 6; Red-bellied Woodpecker, 3 (37, 15); Fish Crow, 3; Carolina Wren, 3; Pied-billed Grebe, 2 (25, 10); Killdeer, 2; Pileated Woodpecker, 2; Carolina Chickadee, 2; Am. Kestrel, 1 (12, 5); Mourning Dove, 1; Tufted Titmouse, 1; Cardinal, 1; Com. Egret, +; Forster's Tern, +; Com. Flicker, +; Hairy Woodpecker, +; Downy Woodpecker, +; E. Phoebe, +; White-breasted Nuthatch, +; Brown Creeper, +; White-eyed Vireo, +; Black-and-white Warbler, +; N. Parula, +. **Average Total:** 70 birds (864/km², 350/100 acres). **Remarks:** Species total: 26. Compare with the census in a Barrier Island Maritime Forest. A single Am. Kestrel was seen on 6 trips and two on 1 trip. Thanks to Tommy Sasser and the Kiawah Island Company for access to the study area. — JAMES B. TORMEY, BEN A. COCKFIELD, and DENNIS M. FORSYTHE, Dept. of Biology, The Citadel, Charleston, SC 29409.

63. WOODED CITY RAVINE. — **Location:** Ontario; York Co., Moore Park Ravine, Toronto, between Moore Avenue and the Canadian Pacific Railway bridge; 43°41'N, 79°22'30"W. **Continuity:** New for winter count. **Size:** 13.2 ha = 32.7 acres. The section S of the CPR bridge was eliminated owing to time con-

straints. **Description of Area:** See AB 25 993, 1971. **Weather:** Temperatures ranged from -11°C to -4°. The ground was snow-covered during all trips. Mild early winter, average Nov. and Dec. temperatures were 0.2° and 1.0° above normal, respectively. Much colder late winter, average Jan. and Feb. temperatures 1.6° and 5.1° below normal, respectively. **Coverage:** Jan. 6, 9-10, 12, 15-16, 22, 30. The trips averaged 2 hours in length, all between 0930 and 1230. **Count:** Am. Goldfinch, 20 (152, 61); Downy Woodpecker, 8 (61, 24), Black-capped Chickadee, 8; Blue Jay, 3 (23, 9); Mourning Dove, 2 (15, 6); Cardinal, 2; Red-tailed Hawk, 1 (8, 3); White-breasted Nuthatch, 1 (8, 3); Dark-eyed Junco, 1; Great Horned Owl, +. **Average Total:** 46 birds (348/km², 141/100 acres). **Remarks:** Total species, 10. Three species were seen on all counts: Downy Woodpecker, Blue Jay and Black-capped Chickadee. Four others were on six of the eight counts: Red-tailed Hawk, Cardinal, Am. Goldfinch and White-breasted Nuthatch. Dark-eyed Juncos were observed on one occasion and the Mourning Doves 3 times at a particular feeder. Great Horned Owls were observed twice. Owing to the difficulty of locating roosts it is believed that they may have been present on other occasions as well. Starlings and Rock Doves were noted on the edges of the ravine and flying over but never within its boundaries. Rain and freezing rain between the seventh and eighth counts reduced numbers observed by 53%. — PAUL SMITH, 822 Broadview Ave., Toronto, Ont. M4K 2P7

64. SUBURBAN NATURE CENTER. — **Location:** California; Los Angeles Co., El Dorado Nature Center, Long Beach. Bounded on the N by Spring St., S by Willow St., E by the Long Beach Tree Farm, W by the San Gabriel River. 33°47'N, 118°08'W. **Continuity:** Established 1971. Five surveys conducted since 1971. **Size:** 34.4 ha = 85 acres (roughly rectangular, approximately 1/4 mi E-W and 1/2 mi N-S). **Description of Area:** See AB 25 656 (1971), Census 39 (Ponds in Irrigated Park). **Weather:** During the 22-day study period, the mean high temperature was 63°F and the mean low was 46°F; extreme temperatures were 37°F and 71°. Rain fell on 6 days during the period and during the last 20 min on the Jan. 18 count. **Coverage:** Jan. 7, 10, 12, 14, 17-19, 26-28. Total: 10 trips, all between 0800 and 1130, averaging 110 min each. **Count:** House Finch, 110 (320, 129); Am. Wigeon, 74 (215, 87); Am. Goldfinch, 49 (142, 58), White-crowned Sparrow, 49; Yellow-rumped Warbler, 29 (84, 34); Bushtit, 25 (73, 29), Mallard, 23 (67, 27); N. Shoveler, 14 (41, 16), Green-winged Teal, 11 (32, 13); Anna's Hummingbird, 11; Mockingbird, 10 (29, 12), Canvasback, 9 (26, 11); Song Sparrow, 8 (23, 9), Mourning Dove, 7 (20, 8); Com. Flicker, 7, Loggerhead Shrike, 7; Cinnamon Teal, 5 (15, 6); Ring-necked Duck, 5; Am. Coot, 5; Starling, 5; Pied-billed Grebe, 4 (12, 5); Ruddy Duck, 3 (9, 4); Scrub Jay, 3; Blue-gray Gnatcatcher, 3, Com. Yellowthroat, 3; Black Phoebe, 2 (6, 2), Lesser Goldfinch, 2; Chipping Sparrow, 2, Double-crested Cormorant, 1 (3, 1); Pintail, 1, Gadwall, 1; Sharp-shinned Hawk, 1; Red-tailed Hawk, 1; Red-shouldered Hawk, 1, Com. Gallinule, 1; Caspian Tern, 1; Ruby-crowned Kinglet, 1; Orange-crowned Warbler, 1; Green Heron, +; Am. Bittern, +; Blue-

winged Teal, +, European Wigeon, +, Turkey Vulture, +, Cooper's Hawk, +, Am Kestrel, +, Spotted Dove, +; Varied Thrush, +; Hermit Thrush, +; Brazilian Cardinal, +; Purple Finch, +. **Average Total:** 495 (1439/km², 582/100 acres). **Remarks:** Species total: 50. The

House Finch, Am Goldfinch and White-crowned Sparrow were seen on all trips, the Am. Wigeon on 9 trips. Two Brazilian Cardinals are now resident at the nature center. Since 1971, the W. Meadowlark has decreased and this year did not appear, while the Mock-

ingbird has steadily increased, perhaps the latter because of increasing availability of Toyon, *Cotoneaster* and *Pyracantha* species. — *DOROTHY D. RYPKA, Dept. of Biology, California St. Univ., Long Beach and 16818 S. Bety Avenue, Cerritos, CA 90701.*

Forty-third Breeding Bird Census

Edited by Willet T. Van Velzen

List of Censuses

Habitat	State or Province	Hec-tares	Birds per sq. km.	Hrs. Obs.	Spe-cies	Yrs. of Study
A. Eastern-Deciduous Forest						
1 Sugar Maple Forest	New Brunswick	10.5	467	22	16	1
2 Birch-Maple-Oak Forest	Connecticut	13.9	603	18	32	4
3 Second-growth Hardwood Forest	Connecticut	10.1	979	14	36	13
4 Maple-Oak Forest	New York	72.8	486	45	69	3
5 Young Red Maple-Gray Birch Forest	New York	8.1	1198	12	38	4
6 Young White Ash-Basswood Forest	New York	8.1	1149	11	33	4
7 Mature Deciduous Floodplain Forest	Maryland	7.6	909	37	24	27
8 Mixed Hardwood Forest	Maryland	11.3	1218	22	46	19
9 Mixed Upland Habitat	Dist. of Columbia	14.2	713	31	21	20
10 Beech-Tulip-tree-Basswood Forest	West Virginia	6.1	527	10	16	1
11 Hemlock-Black Cherry-Birch Forest	West Virginia	6.1	380	12	18	1
12 Maple-Cherry-Birch Forest	West Virginia	6.1	313	9	20	1
13 Maple-Tulip-tree-Red Oak Forest	West Virginia	6.1	659	8	20	1
14 Oak-Beech-Tulip-tree Forest	West Virginia	6.1	708	14	17	1
15 Oak Forest	West Virginia	6.1	280	14	13	1
16 Red Oak Forest	West Virginia	6.1	486	13	20	1
17 Red Maple-Black Gum-Mixed Hardwoods	Virginia	10.1	623	37	16	2
18 Upland Oak-Hickory Forest	Virginia	11.0	854	71	22	7
19 Upland Tulip-tree-Oak Forest	Virginia	20.6	228	11	19	6
20 Floodplain Forest	North Carolina	13.0	481	19	20	3
21 Mixed Deciduous Forest	North Carolina	12.6	582	23	26	4
22 Hardwood Swamp Forest	South Carolina	8.1	1483	40	29	1
23 Virgin Hardwood Swamp Forest	South Carolina	8.9	1634	40	28	1
24 Largetooth Aspen-Sugar Maple Forest*	Ontario	10.0	310	18	20	1
25 Red Oak-Sugar Maple Savannah	Ontario	7.5	1316	35	18	1
26 Wooded City Ravine	Ontario	20.0	210	21	16	10
27 Aspen Forest (19 Yr.)	Minnesota	7.1	282	10	15	1
28 Birch-Elm-Ash Forest	Minnesota	8.7	1529	18	22	1
29 Mature Aspen-Northern Hardwoods Forest	Minnesota	12.5	392	16	23	2
30 Young Aspen Forest	Minnesota	6.4	331	13	17	1
31 Upland Maple-Oak Forest	Wisconsin	5.4	260	11	13	3
32 Mature Mixed Hardwood Forest	Michigan	9.3	779	15	24	6
33 Oak-Hickory-Maple Forest	Illinois	13.0	293	15	25	4
34 Black Oak-Sassafras Woods	Indiana	22.2	203	64	19	6
35 Mixed Hardwood Regenerating	Ohio	20.2	282	22	34	4
36 Neotoma Valley	Ohio	20.2	465	115	37	2
37 Virgin Beech-Maple Forest	Ohio	6.1	840	32	24	6
38 Green Ash-Box-elder Forest	Manitoba	15.0	943	25	22	1
39 River Bottom Forest	Manitoba	14.0	543	24	23	3
40 Cottonwood Floodplain I	North Dakota	19.0	668	37	28	1
41 Cottonwood Floodplain II	North Dakota	13.0	886	34	26	1
42 Ash-Cottonwood Draw	North Dakota	3.0	868	10	9	1
43 Ash-Elm Hardwood Draw	North Dakota	2.9	1027	10	14	1
44. Deciduous Floodplain Forest	Oklahoma	6.7	1637	78	26	1