

Thirty-fourth Winter Bird Population Study

Edited by Roger L. Boyd and Calvin L. Cink

THIS YEAR 82 studies were submitted, which is a decrease of 11% from last year's total of 92 censuses. A total of 26 states and provinces were represented, one more than last year. California again had the highest total with 21 studies in a wide variety of habitats. Kansas, Minnesota and Ontario were next highest with 6 studies each

Observers reported a total of 1177.3 hours in the field, averaging 14.35 hours per census area. The highest total was 51.3 hours for Mixed Mesophytic

Woods, Field, and Brush in Tennessee. The total area studied this year amounted to 1573.87 hectares (3889 acres) for an average census area of 19.19 ha. The number of birds per km² ranged from 0 (Montana and Minnesota) to 15.814 (Freshwater Pond, CA) and averaged 1183. The total species ranged from 0 (MT and MN) to 101 (Freshwater Marsh, CA).

Thirty-five per cent of the studies are new and provide data from interesting habitats not included before. Twenty per cent of the studies have been con-

ducted 5 or more years. This persistence and dedication are to be commended. The editors again encourage those who have established breeding bird censuses to continue their studies in the winter.

The editors wish to thank all compilers for submission of their studies and their efforts to provide clean copy in the correct format, and to Dawn Bryan and Jan Boyd for their editorial help. The deadline for 1982 reports is June 15, 1982.

—Biology Department, Baker University, Baldwin City, KS 66006.

List of Studies

<i>Habitat</i>	<i>State or Province</i>	<i>Hectares</i>	<i>Birds/ sq. km.</i>	<i>Hrs. Obs.</i>	<i>Species</i>	<i>Yrs. of Study</i>
A. Forest Habitats						
1 Maple–Pine–Oak Second-growth Forest	Massachusetts	11.8	93	24.5	11	5
2 Upland Mixed Pine–Spruce–Hardwood Plantation	New York	16.6	127	14.5	13	8
3 Mixed Hemlock–White Cedar–Hardwood Forest	New York	6.48	31	18.0	8	4
4 Wooded Ravine	New Jersey	2.06	242	4.25	10	1
5 Mixed Hardwood Forest	Maryland	11.3	247	12.5	22	22
		11.3	274	13.0	27	23
6 Mature Deciduous Floodplain Forest	Maryland	17.8	667	20.0	28	30
7 Upland Oak–Hickory Hardwood Forest	Virginia	11.02	136	26.0	19	11
8 Mature Longleaf Pine Forest	Georgia	20.0	325	19.0	31	1
9 Slash Pine	Florida	6.3	1572	25.0	28	1
10 Mixed Forest	Ontario	10.1	188	17.0	10	1
11 Bottomland Oak–Gum–Cypress Forest Recently Disturbed	Mississippi	11.4	703	16.0	37	10
12 Mixed Pine–Deciduous Forest	Louisiana	8.9	618	12.0	25	11
13 Ozark Oak–Hickory Forest—Second Growth	Missouri	7.85	357	21.2	18	2
14 Oak–Hickory Forest I	Kansas	8.1	173	5.25	13	3
15 Oak–Hickory Forest II	Kansas	8.1	185	5.5	15	3
16 Oak–Hickory Forest III	Kansas	8.1	185	7.0	11	3
17 Oak–Hickory Forest IV	Kansas	8.1	49	10.5	13	3
18 Oak–Hickory Forest V	Kansas	8.1	185	10.5	9	3
19 Oak–Hickory Forest VI	Kansas	8.1	210	9.0	11	3
20 Slickrock–Ponderosa Pine–Pygmy Forest–Chaparral	Utah	16.19	37	22.0	9	1
21 Ponderosa Pine–Douglas-Fir Foothills Forest	Washington	11.15	395	15.8	11	6
22 Deciduous Oak Woodland	California	5.67	935	11.5	24	3
23 Mountain Forest	California	10.6	45	36.0	11	1
24 Mixed Conifer–Oak Forest Burned and Logged	California	10.0	390	12.3	27	2
25 Mixed Conifer–Oak Forest I	California	10.0	280	11.5	21	2
26 Mixed Conifer–Oak Forest II	California	10.0	390	12.5	26	2
B. Forest Mixed with Other Habitats						
27 Abandoned Pasture–Young Mixed Forest	New York	3.44	58	5.0	3	4
28 Floodplain Forest and Cultivated Bottomland	New York	51.8	170	12.7	22	10
29 Mixed Upland Habitat	Maryland	16.2	426	10.0	23	13
30 Mixed Upland Habitat	Dist. of Columbia	14.2	558	18.2	31	22
31 Mixed Mesophytic Woods, Fields, and Brush	Tennessee	30.0	307	51.3	33	4
32 Floodplain, Woodland, and Field	Ohio	22.5	156	5.5	16	6
33 Mixed Habitat—Disturbed Bottomland	Oklahoma	40.47	393	24.0	37	9
34 Mixed Habitat—Foothills Grassland, Brushland, Coniferous Forest and Aspen Woodland	Colorado	30.4	26	8.8	16	1

Habitat	State or Province	Hectares	Buds/sq. km.	Hrs Obs.	Species	Yrs of Study
35. Campground in Old Orchards	Utah	10.1	1404	21.8	25	1
36. Red Alder Floodplain Forest	Washington	6.9	1115	19.2	23	1
37. Mixed Habitat: Riparian Woodland and Adjacent Oak Savanna	California	8.76	2169	20.5	39	2
38. Creekside Willow Woodland	California	6.07	2948	15.3	44	1
C. Brush, Grassland and Desert						
39. Brushy Field and Wooded Edge	Pennsylvania	7.54	889	12.1	24	3
40. Old Field with Brush Patches	Indiana	17.05	393	17.6	24	3
41. Grassland Municipal Airport	Louisiana	12.14	140	5.0	7	8
42. Bajada Desert Scrub	Arizona	8.9	505	21.0	24	2
43. Silver Buffaloberry-Red Osier Dogwood Coulee (1980)	Montana	25.0	4	7.2	5	1
44. Silver Buffaloberry-Silver Sagebrush Coulee (1980)	Montana	25.0	<1	5.2	1	1
45. Silver Sagebrush Flat (1980)	Montana	24.0	<1	4.2	1	1
46. Needle-and-thread-Blue Grama Grassland (1980)	Montana	25.0	0	3.2	0	1
47. Western Wheatgrass-Blue Grama Pasture (1980)	Montana	25.0	<1	4.0	2	1
48. Desert Floodplain	California	20.3	660	13.4	26	1
49. Palo Verde-Chuparosa Desert Wash	California	12.6	1168	15.7	23	1
D. Wetlands and Habitats including Open Water						
50. Barrier Beach and Saltwater Estuary	Florida	212.5	1677	33.0	77	4
51. Canal and Associated Spoil Bank	Florida	4.4	3877	25.0	48	1
52. River Bank and River	Pennsylvania	80.0	1149	9.0	25	1
53. Farm with Ponds	Utah	10.52	1159	21.0	37	2
54. Restored Coastal Brackish Marsh	California	8.2	779	25.0	17	1
55. Freshwater Marsh	California	9.71	2821	33.0	101	2
56. Coastal Bay	California	18.2	2240	12.0	19	2
57. Coastal Marsh	California	6.9	2413	15.0	42	2
58. Tidal Channel-Recreation Area	California	15.33	776	5.3	21	2
59. Tidal Lagoon-Park	California	8.09	2174	5.3	20	2
60. Freshwater Pond	California	0.6	15,814	5.0	17	1
61. Young Riparian Floodland and Pond	California	5.3	10,910	14.7	54	1
E. Shelterbelts						
62. Mature (1946) Four-Row Belt	Minnesota	0.7	5028	6.0	12	3
63. Mature (1948) Five-Row Belt	Minnesota	0.7	1278	6.0	8	3
64. Mature (1949) Eight-Row Belt	Minnesota	0.37	1358	6.0	7	3
65. Mature (1951) Three-Row Belt	Minnesota	0.32	309	6.0	6	3
66. Immature (1961) Nine-Row Belt	Minnesota	0.79	382	6.0	4	3
67. Immature (1966) Four-Row Belt	Minnesota	0.3	671	6.0	4	3
68. Immature (1974) Three-Row Belt	Minnesota	0.2	0	6.0	0	3
F. Agricultural Lands						
69. Open Farmland	Connecticut	19.03	4495	16.0	21	2
70. Avocado Grove	Florida	7.95	440	25.0	25	1
71. Corn Stubble, Soy Beans and Short Grass	Pennsylvania	40.47	20	4.9	5	7
G. Urban Habitats						
72. Urban Golf Course	Maryland	25.0	652	20.0	36	1
73. Small Northern Town	Ontario	96.3	251	17.5	11	1
74. City Park with Mature Forest	Ontario	18.5	335	20.7	24	2
75. Suburban River Valley with Woods and Fields	Ontario	20.0	410	14.2	27	2
76. City Ravine	Ontario	20.0	635	12.5	22	2
77. Urban Residential	Ontario	4.05	642	1.5	9	1
78. Urban Mobile Home Parks	Arizona	16.2	927	8.0	20	2
79. Urban Park: Mature Mixed Coniferous Forest	California	8.38	859	17.5	34	1
80. Urban Park—Lake, Marsh and Adjacent Mixed Forest	California	4.99	6273	16.8	50	1
81. Urban Park	California	74.9	2332	18.0	55	1
82. Suburban Nature Center	California	32.38	1630	18.7	71	7

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; 5 consecutive years. **Size:** 11.8 ha = 29.2 acres. **Description of Plot:** See AB 31: 50-51 (1977). **Weather:** During census trips average temperature ranged from 12° to 51°F (mean 30°). Ground bare on 5 trips; snow cover on other trips ranged from 0.5 to 6 in. Sky clear on 9

trips, cloudy or partly cloudy on 6, light snow fell on 1. Weather data for Boston, about 20 mi N, supplied by U.S. Nat'l Weather Service: for Dec., Jan. and Feb., temperature departures from normal were respectively -4.4°, -7.8°, +6.0°; total rainfall equivalent precipitation during census period was 3.70 in., well below normal for Dec. and Jan. **Coverage:** Dec. 13, 15, 21, 26-27, 29; Jan. 2-3, 10, 16, 24; Feb. 7, 14-16, 19. Total, 16 trips, 12 morning and 4 afternoon, between 0900 and 1505, averaging 92 min each. **Count:**

Black-capped Chickadee, 6 (51, 21); Ruffed Grouse, 1 (8, 3); Downy Woodpecker, 1, Blue Jay, 1; Tufted Titmouse, 1; White-breasted Nuthatch, 1; Red-tailed Hawk, +, Hairy Woodpecker, +; Brown Creeper, +, Mockingbird, +; Dark-eyed Junco, + **Average Total:** 11 birds (93/km², 38/100 acres) **Remarks:** Total species, 11. Chickadees were seen on all 16 trips. The E. Red Cedar (*Juniperus virginiana*) berry crop was poor this year. Although the number of species recorded per hour of observation equaled the

five-year low of 0.4, the number of individual birds sighted per hour of observation was a five-year high of 8.6.—**WILLIAME. DAVIS, JR.**, *College of Basic Studies, Boston Univ., Boston, MA 02215.*

2. 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; 8 consecutive years. **Size:** 16.6 ha = 41 acres (roughly rectangular, perimeter measured with tape and compass). **Description of Plot:** See AB 28: 699-700 (1974). **Weather:** Average daily temperatures during Jan. (16.0°F) were 6.5° colder than the 63-year average. Half the censuses were run with temperatures barely above 0°. Total Jan. snowfall was 17.6 in., about 3 in. more than average. **Coverage:** Jan. 6, 8, 10-11, 13-15, 19, 21. Total: 8 trips, all between 0900 and 1550, totaling 14.5 observer-hours. **Count:** Black-capped Chickadee, 9 (54, 22); Blue Jay, 2 (12, 5); Evening Grosbeak, 2; Pine Grosbeak, 2; Turkey, 1 (6, 2); Downy Woodpecker, 1; Red-breasted Nuthatch, 1; Brown Creeper, 1; Golden-crowned Kinglet, 1; Am. Goldfinch, 1; Ruffed Grouse, +; Am. Robin, +; Tree Sparrow, +. **Average Total:** 21 birds (127/km², 51/100 acres). **Remarks:** Total species, 13. Only chickadees were observed on every trip. Two Com. Ravens were heard overhead on one trip. Robin was a new species. At least some portion of the stream remained open during the period. The cone crop was poor but a good ash crop attracted both grosbeak species. The sequence of total birds for the 8-year study period (33, 33, 27, 30, 25, 35.5, 20, 21) shows the unexplained drop for the past 2 years. Most significant declines are in Hairy Woodpecker, chickadee and Golden-crowned Kinglet. Appreciation is extended to Gaylord Rough for weather data collected at the Alfred Cooperative Weather Station and to Reed Van Kaynor whose assistance was part of an Alfred Univ. individual research project in environmental studies.—**ELIZABETH W. BROOKS**, *Waterwells Rd., Alfred Station, NY 14803.*

3. MIXED HEMLOCK-WHITE CEDAR-HARDWOOD FOREST.—**Location:** New York, St. Lawrence Co., St. Lawrence University, Kip Tract; 44°35'N, 75°08'W, Canton Quadrangle, USGS. **Continuity:** Established 1978, 4 years. **Size:** 6.48 ha = 16.0 acres, 5 acres open woodland on W end excluded. **Description of Plot:** See AB 34: 27 (1980). **Weather:** Subzero temperatures in late Dec. and early Jan. with normal snow cover, thereafter little snow cover, temperatures normal, precipitation low. Min. temperature -40°F Jan. 4; max. temperature 62° Feb. 18. **Coverage:** Jan. 6, 27; Feb. 1, 7-8, 10, 14, 16, 22; Mar. 3, 7, 16. Total, 12 trips, 18 hrs. **Count:** Black-capped Chickadee, 2 (31, 13), Ruffed Grouse, +; Hairy Woodpecker, +; Blue Jay, +; White-breasted Nuthatch, +; Red-breasted Nuthatch, +; Brown Creeper, +; Am. Goldfinch, +. **Average Total:** 2 birds (31/km², 13/100 acres). **Remarks:** Total species, 8. Numbers of Hairy and

Downy woodpeckers reduced active Pileated Woodpecker workings observed.—**MELISSA INGLESTROM**, and **KENNETH L. CROWELL**, *Dept. of Biol., St. Lawrence Univ., Canton, NY 13617.*

4. WOODED RAVINE.—**Location:** New Jersey; Somerset Co. about 1 mi N of the center of Bernardsville; 40°43'17"N, 74°33'42"W, Bernardsville Quadrangle, USGS. **Continuity:** New. **Size:** 2.06 ha = 5.1 acres (nearly trapezoidal, with greatest dimensions of about 690 × 390 ft, paced off with a measuring tape.) **Description of Plot:** A heavily forested tract sloping very steeply down to a small stream that runs through the center of the plot. The dominant canopy trees are Tuliptree (*Liriodendron tulipifera*), Mockernut Hickory (*Carya tomentosa*), several types of birches (*Betula* spp.), and lesser numbers of White Oak (*Quercus alba*) and Black Walnut (*Juglans nigra*). The canopy covers virtually the entire forest. The understory is dominated by Spicebush (*Lindera benzoin*), Flowering Dogwood (*Cornus florida*), barberry (*Berberis* sp.), and Winged Euonymus (*Euonymus alatus*). Dead trees and fallen trees are very numerous throughout the ravine. There is also a small shed, which marks the NE border of the plot. **Edge:** Bordered on three sides by similar forest, occasionally broken by a few houses and a school. A fairly quiet road marks the N border of the plot and the forest begins again across this road. **Water:** One section of the stream, about 100 feet long, remained open throughout the study period. **Food:** Barberies were numerous throughout the period but no birds were observed eating them. **Topography:** Elevation about 500 ft. on the N and S ridges, sloping down to about 400 ft. on the NE. **Weather:** A very cold, dry winter with temperatures ranging from -5°F to about 50° during the study. Snow cover, 0-6 in. **Coverage:** Jan. 7, 11-15, 17, 21, 23. Total: 9 trips, 0900-1400, total hrs about 4.25. **Count:** Com. Crow, (97, 39); Black-capped Chickadee, 2; Downy Woodpecker, 1 (49, 20); Turkey Vulture, +; Red-tailed Hawk, +; Pileated Woodpecker, +; Red-bellied Woodpecker, +; Tufted Titmouse, +; White-breasted Nuthatch, +; Brown Creeper, +. **Average Total:** 5 birds (242/km², 98/100 acres). **Remarks:** Total species, 10. The Pileated Woodpecker was seen only once, about 100 ft off the plot, but was included in the count because its workings were evident on dead trees inside the study area. Crows were included if they seemed to be using the plot or the surrounding forest, but not if they were merely flying overhead. Chickadee was recorded on 7 trips, Com. Crow on 6, and Downy Woodpecker on 5. Two White-tailed Deer (*Odocoileus virginianus*) were seen once. Mary and Joann Fantina helped with censusing and measuring the plot. Special thanks to Richard Kane who let me use the land, which is part of the Scherman Wildlife Refuge.—**DAVID FANTINA**, *32 Old Army Road, Bernardsville, NY 07924.*

5. MIXED HARDWOOD FOREST.—**Location:** Maryland, Calvert Co., NW of Plum Point and 1 mi inland from Chesapeake Bay,

on Tobacco Rd between State Rts. 263 and 261. **Size:** 11.3 ha = 28 acres. **Continuity:** Established 1959; 23 consecutive years. **Description of Plot:** See AFN 13: 333, 1959. **Weather, 1980:** The sky was cloudy on two days. The ground was snow-covered on half of the days. The creek was frozen on one trip, while the bog was frozen the last five trips. The temperature was 30°F on two trips but averaged 39°. **Coverage:** Jan. 3, 9, 12, 15, 20, Feb. 3, 7-8, 10, 12. The trips averaged 74 min and started between 1137 and 1410 EST. **Count, 1980:** White-throated Sparrow, 9 (79, 32); Bobwhite, 7 (62, 25); Carolina Chickadee, 2 (18, 7); Mourning Dove, 1 (9, 4), Com. Flicker, 1; Red-bellied Woodpecker, 1, Downy Woodpecker, 1; Com. Crow, 1, Tufted Titmouse, 1; E. Bluebird, 1; Cardinal, 1; Field Sparrow, 1; Song Sparrow, 1; Red-tailed Hawk, +; Am. Kestrel, +; Am. Woodcock, +; Brown Creeper, +; Winter Wren, +; Carolina Wren, +; Yellow-rumped Warbler, +; Am. Goldfinch, +, Rufous-sided Towhee, +. **Average Total, 1980:** 28 birds (247/km², 100/100 acres). **Weather, 1981:** The sky was cloudy, and the ground was snow-covered on half the days, the creek and bog were frozen on all except one. Temperature, 25°-45°F. **Coverage, 1981:** Dec. 28, 31 (1980); Jan. 6, 8, 11, 15, 18, 24-25, 31. The 10 trips averaged 78 min and started between 1102 and 1444 EST. **Count, 1981:** White-throated Sparrow, 19 (168, 68); Bobwhite, 3 (26, 11); Mourning Dove, 3; Red-bellied Woodpecker, 1 (9, 4); Carolina Chickadee, 1; Tufted Titmouse, 1; Cedar Waxwing, 1; Cardinal, 1; Song Sparrow, 1, Cooper's Hawk, +; Red-tailed Hawk, +, Red-shouldered Hawk, +; Am. Woodcock, +; Com. Flicker, +; Hairy Woodpecker, +, Downy Woodpecker, +; Blue Jay, +; Winter Wren, +; Carolina Wren, +; Mockingbird, +; Hermit Thrush, +; Yellow-rumped Warbler, +; Purple Finch, +; Am. Goldfinch, +; Rufous-sided Towhee, +, Dark-eyed Junco, +; Swamp Sparrow, +. **Average Total, 1981:** 31 birds (274/km², 111/100 acres). **Remarks:** Total species, 22 in 1980 (lowest ever), 27 in 1981. The 23-year mean is 25 species, and the total is 54. The 1980 density was also the lowest ever, and the seventh consecutive year with a decline. The 23-year mean is 194 birds/100 acres. The White-throated Sparrow and Bobwhite were the dominant species both years. The Mourning Dove occurred for the fifth time in 1980, and was the third commonest species in 1981, thanks to a single large flock. The Cooper's Hawk occurred for the fourth time and the first since 1965. The Cedar Waxwing was last recorded here in 1972. Flocking was noted on half the 1980 trips, but on only three trips in 1981. Since 1980 two homes have been built and occupied in woods adjacent to the study plot.—**JOHN H. FALES**, *2809 Ridge Rd., Neeld Estate, Huntingtown, MD 20609.*

6. MATURE DECIDUOUS FLOODPLAIN FOREST.—**Location:** Maryland; Montgomery Co., Glen Echo, 2½ miles NW of the District of Columbia, between the C. & O Canal and Potomac River, 38°58'N, 77°8'30"W, Falls Church Quadrangle, USGS. **Continuity:** Established 1948, 30 intermittent years. **Size:** 17.8 ha = 44.1 acres. **Description of Plot:** See AFN 2: 153-156

(1948). **Weather:** Temperature on walks averaged 35°F and one inch of snow was present on two trips. **Coverage:** Jan. 11, 20, 24-25; Feb. 7 (2 trips), 14, 16. Total: 8 trips, 5 between 0730 and 1015 and 3 between 1400 and 1630, totaling 20 man-hours. **Count:** Carolina Chickadee, 23 (129, 52); Starling, 20 (112, 45); Com. Crow, 18 (101, 41); Am. Goldfinch, 14 (78, 32); Purple Finch, 8 (45, 18); Downy Woodpecker, 6 (34, 14); Song Sparrow, 6; Tufted Titmouse, 5 (28, 11); Turkey Vulture, 3 (17, 7); Carolina Wren, 3; Pileated Woodpecker, 2 (11, 5); Red-bellied Woodpecker, 2; Brown Creeper, 2; Cedar Waxwing, 2; Cardinal, 2; White-breasted Nuthatch, 1 (6, 2); Mockingbird, 1; Golden-crowned Kinglet, 1; Black Vulture, +; Cooper's Hawk, +; Mourning Dove, +; Barred Owl, +; Com. Flicker, +; Yellow-bellied Sapsucker, +; Hairy Woodpecker, +; Blue Jay, +; Winter Wren, +; White-throated Sparrow, +. **Average Total:** 119 birds (667/km², 270/100 acres). **Remarks:** Total species, 28, was close to the average for the entire census period. The 199 average total was higher than last year's 109. Since the low point of 84 in the cold winter of 1977 there has been a fairly steady increase in the average total, an increase particularly for the Carolina Wren, Carolina Chickadee, Tufted Titmouse and Song Sparrow.—*J.R. GAUTHEY and JOAN H. CRISWELL (compiler), 3519 Jermantown Rd., Fairfax, VA 22030.*

7. UPLAND OAK-HICKORY HARDWOOD FOREST. — **Location:** Virginia; Fairfax Co. Dranesville District Park, McLean. **Continuity:** Established 1971; 11 years. **Size:** 11.02 ha = 27.2 acres. **Description of Plot:** See AB 25: 636 (1971). **Weather:** Temperatures on the trips varied from 20° to 60°F, with an average of 34°. A light snowfall in early Jan. (about two in.) had disappeared by the end of the month, and there was very little precipitation thereafter. **Coverage:** Jan. 10, 16, 20, 23-24, 28, 31; Feb. 1, 9-10, 14-15 (twice), 18. Total, 14 trips, 0712-1215, averaging 1 hour and 51 min. **Count:** Red-bellied Woodpecker, 3 (27, 11); Com. Crow, 2 (18, 7); Carolina Chickadee, 2; Turkey Vulture, 1 (9, 4); Mourning Dove, 1; Pileated Woodpecker, 1; Hairy Woodpecker, 1; Downy Woodpecker, 1; Tufted Titmouse, 1; White-breasted Nuthatch, 1; Brown Creeper, 1; Black Vulture, +; Red-tailed Hawk, +; Red-shouldered Hawk, +; Blue Jay, +; Winter Wren, +; Golden-crowned Kinglet, +; Purple Finch, +; Am. Goldfinch, +. **Average Total:** 15 birds (136/km², 55/100 acres). **Remarks:** Total species, 19.—*G.H. ESPENSHADE, BEN FERN, C.W. PER-LEE JR., ROBERT J. WATSON (compiler), 2636 Marcey Rd., Arlington, VA 22207.*

8. MATURE LONGLEAF PINE FOREST. — **Location:** Georgia; Thomas Co., Arcadia Plantation, 4 mi SE of the junction of Rts 319 and 212; 30°45'N, 84°00'W, Pine Park and Thomasville Quadrangles, USGS. **Continuity:** New. A WB-PS was conducted in 1979 over a larger area at this location (AB 34: 29-30). **Size:** 20 ha = 49.4 acres. **Description of Plot:** See AB 35: 69 (1981). **Weather:** Aver-

age min-max during census period 31°-46°F. **Coverage:** Jan. 22-25, 27, 29-30; Feb. 1. All trips started within 5 min of sunrise and averaged 143 min. Total hours: 19. **Count:** E. Meadowlark, 10 (50, 20); Red-winged Blackbird, 8 (40, 16); Red-cockaded Woodpecker, 5 (25, 10); Brown-headed Nuthatch, 5; Pine Warbler, 5; Com. Yellowthroat, 5; House Wren, 4 (20, 8); Red-bellied Woodpecker, 3 (15, 6); Blue Jay, 3; White-breasted Nuthatch, 3; Am. Robin, 2 (10, 4); Loggerhead Shrike, 2; Rufous-sided Towhee, 2; Wood Duck, 1 (5, 2); Mourning Dove, 1; Com. Flicker, 1; Yellow-bellied Sapsucker, 1; Hairy Woodpecker, 1; Carolina Wren, 1; E. Bluebird, 1; Palm Warbler, 1; Pileated Woodpecker, +; Downy Woodpecker, +; Carolina Chickadee, +; Tufted Titmouse, +; Red-breasted Nuthatch, +; Ruby-crowned Kinglet, +; Solitary Vireo, +; Com. Grackle, +; Chipping Sparrow, +; Swamp Sparrow, +. **Average Total:** 65 birds (325/km², 132/100 acres). **Remarks:** Total species 31. Thanks to Tall Timbers Research Station for financial support and permission to work at the study site.—*TODD ENGSTROM, Department of Biological Science, Florida St. Univ. Tallahassee, FL 32306.*

9. SLASH PINE. — **Location:** Florida; Dade Co., Everglades Nat'l Park, S of State Rt 27, at park entrance station. 25°23'N, 80°33'W. **Continuity:** New. **Size:** 6.3 ha = 15.56 acres (rectangular 235 m × 268 m). **Description of Plot:** S. Florida Slash Pine Forest, logged in mid-1940s, recovering from prescribed burn in Feb. 1979. The forest consists of three layers: an overstory of 12-15 m tall slash pines (*Pinus elliottii* var. *densa*), a shrub understory of mixed tropical hardwoods, 1 to 3 m height, and a ground cover of grasses and forbs 5-100 cm in height. Shrub cover varies from 100% to 50%, where grasses and forbs cover the remaining 50%. Major shrub species are: *Metopium toxiferum*, *Myrica cerifera*, *Tetrazygia bicolor*, *Bumelia salicifolia*, *Myrsine floridana*, and *Rhus copallina*. Dominant herbaceous plants are: *Andropogon cabinisii*, *Schizachyrium rhizomatum*, and *Muhlenbergia filipes*. *Toxicodendron radicans* is a very abundant vine at this state of recovery from fire. The palm *Serenoa repens* is important in the shrub understory. **Edge:** Similar habitat on N, S, and E. *Muhlenbergia* prairie on W. **Topography:** Flat over solution-pitted limestone. Elevation: About 2 m. **Weather:** Unusually cold. Temperature range: Below 0°-20°C. Jan. 1981 average 4.5° below normal Jan. averages. Sky clear to 80% cloud cover. **Wind:** 0-40 kph. No rain. **Coverage:** Dec. 27; Jan. 2, 7, 9, 12, 16, 20, 23, 27, 31; 0700-0930 (9 censuses), 1530-1800 (1 census) EST. Total man-hours: 25. **Count:** Pine Warbler, 25 (397, 161); Com. Yellowthroat, 23 (365, 148); Yellow-rumped Warbler, 12 (191, 77); House Wren, 9 (143, 58); Red-bellied Woodpecker, 6 (95, 39); Bobwhite, 4 (63, 26); Gray Catbird, 3 (48, 19); Blue-gray Gnatcatcher, 3; Rufous-sided Towhee, 3; Yellow-bellied Sapsucker, 2 (32, 13); Downy Woodpecker, 2; Red-shouldered Hawk, 1 (16, 6); Pileated Woodpecker, 1; Blue Jay, 1; crow sp., 1; Mockingbird, 1; Am. Robin, 1; Palm Warbler, 1; Turkey Vulture, +; Am. Kestrel, +; Com. Flicker, +; Great Crested Flycatcher, +; E.

Phoebe, +, *Empidonax* sp., +, Carolina Wren, +; White-eyed Vireo, +; Yellow-throated Warbler, +; Cardinal, +. **Average Total:** 99 birds (1,572/km², 636/100 acres) **Remarks:** Total species, 28. Hundreds of red-winged Blackbirds crossed the study area each morning enroute to feeding areas — *JOHN M. GOOD, National Park Service, South Florida Research Center, P.O. Box 279, Homestead, FL 33030.*

10. MIXED FOREST. — **Location:** Ontario; Haldimand-Norfolk Co., Conc. 3, Lots 15-16, South Walsingham Twp.; 42°40'N, 80°29'W. **Continuity:** New (BBC, 1978) **Size:** 10.1 ha = 25 acres. **Description of Plot:** See AB 32: 64 (1978). **Weather:** Overcast conditions prevailed during 7 of the visits. Light snow fall during 4 trips, heavy snow on 1 trip and showers on 2 (Feb. 20, 24). Temperature ranged from a low of -8°F to 41°. Snow cover ranged from 8-0 in. with a mean of 6 in. **Coverage:** Jan. 27, 29; Feb. 6, 8, 10, 12, 20, 24, 26. Total: 9 trips, 17 man-hours, 1000-1300 EST. **Count:** Black-capped Chickadee, 8 (79, 32); Com. Crow, 3 (30, 12); Ruffed Grouse, 2 (20, 8); Downy Woodpecker, 2, Blue Jay, 2; White-breasted Nuthatch, 2, Screech Owl, +; Horned Lark, +; Golden-crowned Kinglet, +; Am. Goldfinch, +. **Average Total:** 19 birds (188/km², 76/100 acres). **Remarks:** Total species: 10. The Black-capped Chickadee was the only bird seen on every trip. Blue Jay, White-breasted Nuthatch and Downy Woodpecker were noted during at least 6 visits. The Screech Owl (gray phase) was recorded on one occasion only, entering a roosting cavity. A Pileated Woodpecker was seen ¼ km N of the plot and fresh excavations by this species were observed on the plot. Thanks to J. McCracken.—*CHRISTOPHER LEMIEUX, Long Point Bird Observatory, Box 160, Port Rowan, Ont., Canada, NOE 1M0.*

11. BOTTOMLAND OAK-GUM-CYPRESS FOREST RECENTLY DISTURBED. — **Location:** Mississippi, Washington Co., N of St. Rt. 12 in Leroy Percy St Pk., 4 mi W of Hollandale, 33°10'N, 90°56'W, Swan Lake NW Quadrangle USGS, (parts of Sec. 5, 8 and 9; T-15N, R-7W). **Continuity:** Established 1971; 10 years. **Size:** 11.4 ha = 28.1 acres; rectangular in shape 836 × 1463 ft. (measured with compass and steel tape) **Description of Plot:** See AB 25: 638-639 (1971) and AB 32:30 (1978) for description of alterations. **Weather:** Mean high during count period: 48.8°F; mean low: 30.0°; total precipitation: 2.12 in.; previous nine-year averages 50.7°, 33.7° and 8.5 in. respectively. Preceding fall had cooler temperatures and below-average precipitation. **Coverage:** Jan. 10, 11, 17, 18, 24, 31; Feb. 7-8. Total of 8 trips, starting 0732 to 1227 CST; 5 morning, 3 afternoon. average time per trip, 2 man-hours. **Count:** Com. Grackle, 17 (149, 60); Carolina Wren, 8 (70, 28); Yellow-rumped Warbler, 8; Red-bellied Woodpecker, 6 (53, 21); White-throated Sparrow, 6; Blue Jay, 5 (44, 18); Am. Robin, 4 (35, 14); Carolina Chickadee, 3 (26, 11); Dark-eyed Junco, 3, Com. Flicker, 2 (18, 7); Song Sparrow, 2, Pileated Woodpecker, 1 (9, 4); Yellow-bellied Sapsucker, 1; Downy Woodpecker,

1; Tufted Titmouse, 1; Brown Creeper, 1; Brown Thrasher, 1; Hermit Thrush, 1; Golden-crowned Kinglet, 1; Ruby-crowned Kinglet, 1; Starling, 1; House Sparrow, 1; Rusty Blackbird, 1; Cardinal, 1; Am. Goldfinch, 1; Rufous-sided Towhee, 1; Swamp Sparrow, 1; Sharp-shinned Hawk, +; Cooper's Hawk, +; Red-shouldered Hawk, +; Buteo (sp.), +; Bobwhite, +; Hairy Woodpecker, +; Cedar Waxwing, +; Orange-crowned Warbler, +; Red-winged Blackbird, +; Chipping Sparrow, +; Field Sparrow, +. **Average Total:** 80 birds (703/km²; 285/100 acres). **Remarks:** Total species, 37. Seen on 7 or more trips were, flicker, Red-bellied Woodpecker, jay, chickadee, Carolina Wren, Yellow-rumped Warbler, Cardinal, White-throated Sparrow. Flocks of 50 and 75 grackles were seen on two trips. The food supply was only fair with weed seeds, insect larvae, a few flying insects, deciduous holly berries, and poison ivy berries. Open areas created 5 yrs ago by drainage canal construction continue to regenerate with very thick and widespread areas of various species of briars, weeds, and saplings. Common Buttonbush (*Cephalanthus occidentalis*) was also prevalent. The average total was lowest since study was originated, but number of species was next to the highest. Since area disturbance, jay, Carolina Wren, grackle, junco, Swamp and Song sparrows have become more numerous, while Hermit Thrush, Yellow-rumped Warbler, Rusty Blackbird and Cardinal have shown steady declines.—*MR. and MRS. G. E. ALEXANDER, JR., 1749 West Azalea, Greenville, MS 38701.*

12. MIXED PINE-DECIDUOUS FOREST. — **Location:** Louisiana; Natchitoches Par., one mi W of the Northwestern State Univ. campus, within the university's Natural History Reservation, on the S side of Louisiana Rt. 6, 31°44'N, 93°06'W; Provencal Quadrangle, USGS. **Continuity:** Established 1971, 11 consecutive years, 1978 count not published. **Size:** 8.9 ha = 22 acres (L-shaped, measured by pacing with compass). **Description of Plot:** See AB 25: 639-640 (1971) and 26: 699 (1972). **Weather:** During the 28-day study period day temperatures ranged from 33° to 80°F with 5 count days 50° or higher. Night temperature lows ranged from 20° to 55°. Five count days were clear and one was cloudy. Wind on count days ranged from Beaufort 0 to 3. The winter was generally mild and dry. **Coverage:** Feb. 3, 7-8, 24, 26; Mar. 2. Total, 6 trips 0800-1400, averaging 2 hours. **Count:** Blue Jay, 7 (79, 32); White-throated Sparrow, 7; Carolina Chickadee, 5 (56, 23); Com. Grackle, 5; Yellow-rumped Warbler, 4 (45, 18); Red-bellied Woodpecker, 3 (34, 14); Carolina Wren, 3; Ruby-crowned Kinglet, 3; Cardinal, 3; Dark-eyed Junco, 3; Tufted Titmouse, 2 (22, 9); Pine Warbler, 2; Pileated Woodpecker, 1 (11, 5); Yellow-bellied Sapsucker, 1; Downy Woodpecker, 1; Red-breasted Nuthatch, 1; Brown-headed Nuthatch, 1; Mockingbird, 1; Am. Robin, 1; Golden-crowned Kinglet, 1; Hairy Woodpecker, +; Winter Wren, +; Brown Thrasher, +; Hermit Thrush, +; Orange-crowned Warbler, +. **Average total:** 55 birds (618/km²; 250/100 acres). **Remarks:** Total species, 25. Forty-five species have

been observed in the 11 years of study and the 11-year mean is 28. The 1981 average total of 618/km² is less than the 11-year mean of 857/km². The low density of 1981 appeared to be due to reduced numbers of Com. Grackle, Cedar Waxwing and White-throated Sparrow. Other species were near their 11-year mean.—*CHARLIE VIERS, Dept. of Biological Sciences, Northwestern State Univ. of Louisiana, Natchitoches, LA 71457.*

13. OZARK OAK-HICKORY FOREST—SECOND GROWTH. — **Location:** Missouri; St. Louis Co., Washington Univ. Tyson Research Center, on I-44, 8 mi SW of I-270; 38°31'N, 90°34'W, Manchester Quadrangle USGS. **Continuity:** Established 1980, 2 consecutive years. **Size:** 7.85 ha = 19.4 acres, a strip through uniform terrain. **Description of Plot:** See AB 35: 25 (1981). **Weather:** Typical of Jan., but low precipitation; generally clear, occasionally cloudy, (3 trips) or foggy (1 trip); temperature 10-44°F. No significant winds or unusual features. **Coverage:** Jan. 6-7, 10-11, 13, 16, 21, 23, 28, 29, 31. Eleven trips, about 2 hours each 0800-1345; **Count:** Am. Robin, 7 (89, 36); Purple Finch, 4 (51, 21); Blue Jay, 3 (38, 15); Tufted Titmouse, 3; Cedar Waxwing, 3; Red-bellied Woodpecker, 2 (25, 10); chickadee sp. (probably Carolina), 2; Downy Woodpecker, 1 (13, 5); White-breasted Nuthatch, 1; Starling 1; Yellow-rumped Warbler, 1; Red-tailed Hawk, +; Com. Flicker, +; Hairy Woodpecker, +; Com. Crow, +; Hermit Thrush, +; Cardinal, +; Dark-eyed Junco, +. **Average Total:** 28 birds (357/km², 144/100 acres). **Remarks:** Total species, 18. A large flock of robins was roosting in cedar trees about 0.5 mi. SW of census plot. Passing flocks of robins inflated the count for this species. Cedar Waxwings and Starlings were seen as passing flocks, as were a few of the Blue Jays and Purple Finches. Red-bellied Woodpecker was seen on all 11 trips. *ROSE ANN BODMAN, MARY FRANCIS GOODLOE, VI HALLETT, SYLVIA HOSLER, EUGENIA LARSON, CARMEN PATTERSON, WM. RUDEN, PHOEBE SNETSINGER, AND CLAUDIA SPENER, of the Webster Groves Nature Study Society. RICHARD W. COLES, Compiler, Tyson Research Center, P.O. Box 258; Eureka, MO 63025.*

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

The following six studies were conducted for the third consecutive winter on 20-acre stands of oak-hickory forest in s. Douglas County, Kansas. See AB 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 slightly above normal during the study period (30-yr average in parentheses). The mean high for January was 46.1°F (39.9) and for February 49.9° (45.8). The mean lows were 24.5° (20.1) for January and 25.1° (25.1) for February. Only a trace of snow fell in January but 5.5 in. was recorded in February. Total precipitation for the period (.92 in.) was about half of normal (2.28 in.).

Our thanks to the Field Research Committee, Division of Biological Sciences at the Univ. 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.—*ROGER L. BOYD, CALVIN L. CINK, and KENNETH WHITBECK, Biology Dept., Baker Univ. Baldwin City, KS 66606.*

14. OAK-HICKORY FOREST, I. — **Location:** Kansas; Douglas Co., on the Univ. of Kansas Wall Biological Reserve. Predominantly on NW 1/4, SW 1/4, Sec. 28, T14S, R20E, 38°48'N, 95°12'W, Baldwin City Quadrangle, USGS. **Continuity:** Established 1979, 3 years. **Size:** 8.1 ha = 20 acres. **Coverage:** Jan. 6, 11, 14, 19, 27; Feb. 15; Mar. 1. Total 7 trips, 0900-1530, averaging 45 min. **Count:** Downy Woodpecker, 3 (37, 15); Red-bellied Woodpecker, 2 (25, 10); Red-headed Woodpecker, 2; Black-capped Chickadee, 2, White-breasted Nuthatch, 2; Com. Crow, 1 (12, 5); Tufted Titmouse, 1; Dark-eyed Junco, 1; Great Horned Owl, +; Com. Flicker, +; Blue Jay, +; Brown Creeper, +, E. Bluebird, +. **Average Total:** 14 birds (173/km², 70/100 acres). **Remarks:** Total species, 13. Only the Downy Woodpecker was seen on every trip.



Winter Bird-Population Study 14, Oak-Hickory Forest, I. Photo/C. L. Cink.

15. 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, T14S, R20E, 38°48'N, 95°12'W, Baldwin City Quadrangle, USGS. **Continuity:** Established 1979, 3 years. **Size:** 8.1 ha = 20 acres. **Coverage:** Jan. 8, 15, 22, 24; Feb. 21, 28. Total 6 trips, 0740-1545, averaging 55 min. **Count:** Red-headed Woodpecker, 5 (62, 25); Tufted Titmouse, 4 (49, 20); Downy Woodpecker, 2 (25, 10); Com. Crow, 1 (12, 5); Black-capped Chickadee, 1; White-breasted Nuthatch, 1; Dark-eyed Junco, 1; Great Horned Owl, +; Com. Flicker, +; Hairy Woodpecker, +; Blue Jay, +; Brown Creeper, +; Am. Robin, +; E. Bluebird, +; Cardinal, +. **Average Total:** 15 birds (185/km², 75/100 acres). **Remarks:** Total species, 15. Red-headed Woodpeckers were seen on every count. The average total in 1979 was 64 birds (49 of which were Red-headed Woodpeckers and Starlings); in 1980 it was 4 birds, possibly low because of drought conditions. This year's count is probably about normal without the influence of high numbers of woodpeckers and Starlings.

16. OAK-HICKORY FOREST, III. — **Location:** Kansas; Douglas Co., on the Univ. of Kansas Breidenthal Biological Reserve. Predominantly on the NE 1/4, NW 1/4, Sec. 28, T14S, R20E, 38°48'N, 95°11'W, Baldwin City Quadrangle, USGS. **Continuity:** Established 1979, 3 years. **Size:** 8.1 ha = 20 acres. **Coverage:** Jan. 5, 12, 21, 26; Feb. 14, 28; Total 6 trips 0820-1545, averaging 70 min. **Count:** Red-headed Woodpecker, 3 (37, 15); Downy Woodpecker, 3; Tufted Titmouse, 3; White-breasted Nuthatch, 2 (25, 10); Com. Flicker, 1 (12, 5); Black-capped Chickadee, 1, Cardinal, 1; Dark-eyed Junco, 1; Blue Jay, +; Am Robin, +; E. Bluebird, +. **Average Total:** 15 birds (185/km², 75/100 acres). **Remarks:** Total species, 11. Red-headed and Downy woodpeckers and Tufted Titmouse were seen every count. Low numbers may be the result of drought the previous growing season.

17. OAK-HICKORY FOREST, IV. — **Location:** Kansas; Douglas Co., Sturdy's Woods. Predominantly on the NE 1/4, NW 1/4, Sec. 27, T14S, R20E, 38°48'N, 95°10'W, Baldwin City Quadrangle, USGS. **Continuity:** Established 1979, 3 years. **Size:** 8.1 = 20 acres. **Coverage:** Jan. 7, 13, 17; Feb. 7, 15, 21, 28. Total 7 trips, both a.m. and p.m. averaging 1.5 hrs. **Count:** Downy Woodpecker, 2 (25, 10); Red-bellied Woodpecker, 1 (12, 5); Dark-eyed Junco, 1; Red-tailed Hawk, +; Red-headed Woodpecker, +; Hairy Woodpecker, +; Blue Jay, +; Com. Crow, +; Black-capped Chickadee, +; Tufted Titmouse, +; White-breasted Nuthatch, +; Brown Creeper, +; Cardinal, +. **Average Total:** 4 birds (49/km², 20/100 acres). **Remarks:** Total species, 13. Only Downy Woodpeckers were seen on all trips. Although the number of species is the same as the past two winters, the average total individuals dropped over 75%. This was not the result of a large drop in numbers of a

single species as it has been in the past, but was rather evenly distributed among all species present. This may stem in part from a very poor food crop that resulted from the summer drought.

18. OAK-HICKORY FOREST, V. — **Location:** Kansas; Douglas Co., East Beisecker Woods. Predominantly on the NE 1/4, NE 1/4, Sec. 35, T14S, R20E, 38°48'N, 95°09'W, Baldwin City Quadrangle, USGS. **Continuity:** Established 1979, 3 years. **Size:** 8.1 ha = 20 acres. **Coverage:** Jan. 9, 18, 20, 23; Feb. 8, 14, 22. Total 7 trips, both a.m. and p.m., averaging 1.5 hours. **Count:** Red-headed Woodpecker, 4 (49, 20); Bobwhite, 3 (37, 15); Downy Woodpecker, 2 (25, 10); Black-capped Chickadee, 2; Tufted Titmouse, 2; Blue Jay, 1 (12, 5); White-breasted Nuthatch, 1; Great Horned Owl, +; Red-bellied Woodpecker, +. **Average Total:** 15 birds (185/km², 75/100 acres). **Remarks:** Total species, 9. Red-headed and Downy woodpeckers were seen on all trips. The Bobwhites were seen on only three trips but were in a large covey. Red-headed Woodpeckers continue to be common on this study grid even though their numbers are 50% lower than last winter.

19. OAK-HICKORY FOREST, VI. — **Location:** Kansas; Douglas Co., West Beisecker Woods. Predominantly on the SW 1/4, NE 1/4, Sec. 35, T14S, R-20E, 38°48'N, 95°09'W, Baldwin City Quadrangle, USGS. **Continuity:** Established 1979, 3 years. **Size:** 8.1 ha = 20 acres. **Coverage:** Jan. 9, 18, 23; Feb. 8, 15, 22. Total 6 trips, both a.m. and p.m., averaging 1.5 hours. **Count:** Red-headed Woodpecker, 3 (37, 15); Downy Woodpecker, 3; Blue Jay, 3; Bobwhite, 2 (25, 10); Tufted Titmouse, 2; Black-capped Chickadee, 1 (12, 5); White-breasted Nuthatch, 1; Am. Robin, 1; Golden-crowned Kinglet, 1; Great Horned Owl, +; Red-bellied Woodpecker, +. **Average Total:** 17 birds (210/km², 85/100 acres). **Remarks:** Total species, 11. Only Red-headed and Downy woodpeckers and Tufted Titmouse were seen on all trips. The average number of individuals on this grid was higher again this year, a marked contrast with the other grids in which numbers declined. Bobwhites were represented by a single covey roosting in the area on three trips.

20. SLICKROCK-PONDEROSA PINE-PYGMY FOREST-CHAPARRAL. — **Locations:** Utah, Washington Co., Zion Nat'l Pk., unsurveyed area along Zion-Mt. Carmel highway, with S center of plot at the confluence of Pine and Clear Creeks; 37°12'53"N, 112°56'04"W; Zion Nat'l Pk. Topographic Map (Zion Canyon Section), USGS. **Continuity:** New (BBC, 1980). **Size:** 16.19 ha = 40 acres (440 yds², paced). **Description of Area:** See AB 35: 91-92 (1981). **Weather:** Max and min. temperatures averaged 4 to 8°F above normal in both Dec. and Jan. Three in. of snow fell on Jan. 30. **Coverage:** Dec. 5, 15, 21, 28; Jan. 4, 11, 19, 24, 30; Feb. 8; 10 trips averaging 132 min, 0905-1605 MST. **Count:** Dark-eyed Junco, 3 (19, 8); Com. Raven, 1 (6, 3); Plain Titmouse, 1; Gray-headed Junco, 1; Spotted Owl, +;

Cañon Wren, +, Red-breasted Nuthatch, +; Hermit Thrush, +; Townsend's Solitaire, +. **Average Total:** 6 birds (37/km², 15/100 acres). **Remarks:** Total species, 9. No species was found on all 10 trips. Plain Titmouse was found on 7 trips and Com Raven on 4; all other species were seen on 3 or fewer trips. The Hermit Thrush and Townsend's Solitaire, seen in Dec., were probably migrating to the Zion lowlands, where they winter.—*JEROME L. GIFFORD, P. O. Box 85, Springdale, UT 84767.*

21. PONDEROSA PINE-DOUGLAS-FIR FOOTHILLS FOREST. — **Location:** Washington; Spokane Co., 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. 6 years. **Size:** 11.15 ha = 27.55 acres (rectangular, 1600 × 750 ft + the long axis N-S, surveyed by tape and compass.) **Description of Plot:** See AB 30 1051-1052 (1976). **Weather:** Temperature from 16°F to 46°. Cloudy to mostly cloudy, very light rain part of 1 trip. Wind 0-5 mph. Ground bare (7 trips), 1/2 snow-covered with 1 in. snow (1 trip) and up to 1/4 in. snow (1 trip). **Coverage:** Dec. 16, 23, 31; Jan. 7, 14, 21, 28; Feb. 4, 11; 1000-1205. Total hours 15.8. **Count:** Pine Siskin, 25 (224, 91), Red Crossbill, 11 (99, 40); Red-breasted Nuthatch, 6 (54, 22); House Finch, 2 (18, 7), Com. Flicker, +; Black-billed Magpie, +, Com. Raven, +; Mountain Chickadee, +, Am. Robin, +; Golden-crowned Kinglet, +, Cassin's Finch, +. **Average Total:** 44 birds (395/km², 160/100 acres). **Remarks:** Total species, 11. A good cone crop on conifers — *THOMAS H. ROGERS, E. 10820 Maxwell Ave., Spokane, WA 99206.*

22. 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:** Established 1978, 3 years. **Size:** 5.67 ha = 14 acres. **Description of Plot:** See AB 33: 82-83, (1979). The dominant canopy tree is Blue Oak (*Quercus douglasii*). The ground cover is a diverse mixture of grasses and forbs. Average canopy height 25 ft (range 17-30). **Weather:** Temperatures in Jan. and Feb., 29°-77°F. Temperatures were above normal in both months (Jan mean max. 64°, mean min. 40° compared to 40-yr mean max. of 60°, mean min. of 34°, Feb mean max. 63°, mean min. 37° compared to mean max. of 61°, mean min. of 36°). Precipitation was slightly below normal for the 2-month period: 7.21 in. vs 40-yr. mean of 7.74 in. "Season-to-date" precipitation was well below normal: 10.07 in. through Feb compared to mean of 14.70 in. **Coverage:** Jan 8, 12-13, 22, 25, 30-31; Feb. 6, 10, 12; 0730-1100 PST. Total hours: 11.5. **Count:** Dark-eyed Junco, 25 (441, 179); W. Bluebird, 6 (106, 43), Plain Titmouse, 5 (88, 36); Cedar Waxwing, 3 (53, 21); Lesser Goldfinch, 3; White-breasted Nuthatch, 2 (35, 14); Golden-crowned Sparrow, 2; Scrub Jay, 1 (18, 7); Bewick's Wren, 1; Am. Robin, 1; Ruby-crowned Kinglet, 1, Hutton's Vireo, 1; Yellow-rumped Warbler, 1; Brown Towhee, 1; Am. Kestrel, +, Band-tailed Pigeon, +; Anna's Hummingbird, +;

Hairy Woodpecker, +, Downy Woodpecker, +; Nuttall's Woodpecker, +; Bush-tit, +, Hermit Thrush, +; Rufous-sided Towhee, +; Purple Finch, +. **Average Total:** 53 birds (935/km², 379/100 acres). **Remarks:** Total species, 24. Hairy Woodpecker, Downy Woodpecker, Bushtit, Rufous-sided Towhee, and Purple Finch were each seen on only one day while Plain Titmouse, W. Bluebird, and Dark-eyed Junco were seen on all trips. Total densities were up considerably from either of the 2 prior years, primarily because of a larger number of Dark-eyed Juncos wintering on the plot.—**WALTER D. KOENIG and RONALD L. MUMME, Hastings Reservation, Univ. of California, Carmel Valley, CA 93924.**

23. MOUNTAIN FOREST. — **Location:** California; Riverside Co., 2 mi E of Idyllwild, on "Devils Slide Trail", San Jacinto Nat'l Wilderness, 33°48'N, 116°43'W Palm Springs Quadrangle, USGS. **Continuity:** New **Size:** 106 ha = 262 acres (4.8 mi long, 150 yds wide) **Description of Plot:** Lower portions of the route is an open Pine-Oak woodland (80% coverage) with Kelloggs and Canyon Oak (*Quercus kelloggii* and *Q. chrysolepis* respectively) 10-20 ft in height forming the understory and Ponderosa Pine (*Pinus ponderosa*) the canopy. With increasing elevation *P. ponderosa* and *P. jeffryi* form the canopy and Kelloggs and Canyon Oak and some Manzanita (*Arctostaphylos* spp.) form the understory. At 8400 ft elev. Colter Pine (*P. coulteri*) and Lodgepole Pine (*P. contorta*) 54-63 ft in height are the dominant conifers with a dense low-lying understory of Manzanita and White-thorn (spp.). Above 8700 ft elev. Limber Pines (*P. flexilis*) 30-75 ft in height form an open forest. Throughout the study period most of the understory was covered by 1-7 ft of packed snow with 3-5 ft being added during the last two surveys. This forest is relatively undisturbed and has not been subjected to fire for 15 to 25 years. **Topography:** 6480-8100 ft elev on SE slope (Fern Valley) of Mt. San Jacinto (10,804 ft). The elevation increases by approximately 1600 ft in the first 3 mi and then nearly levels to a N-S ridge for the next 1.8 mi to an elevation of 9350 ft. **Edge:** To the W is a steep sloped but densely forested valley. To the E is a heavily forested plateau. **Food:** Seed and nuts, the primary food source, was provided by the various conifers and oaks. Numerous dead trees provided ample opportunity for food storage. **Weather:** Varied. Night-time temperatures dropped well below freezing every night (0-15°F). Day-time temperatures range from 30 to 60°. There was measurable precipitation in the form of snow (1-5 ft) on 3 days; Jan. 15, Feb. 6 & 7. **Coverage:** Dec. 28; Jan. 15, 22-24; Feb. 6-7. Total: 9 trips on 7 days. Coverage was widely varied from sun-up to sun-down. **Census:** Mountain Chickadee, 28 (6, 11); Clark's Nutcracker, 11 (10, 4); Acorn Woodpecker, 3 (3, 1); Steller's Jay, 3; Band-tailed Pigeon, 1 (1, +); Scrub Jay, 1; Com. Raven, 1, Red-tailed Hawk, +; Brown Creeper, +; W. Bluebird, +; Brown Towhee, +. **Average Total:** 48 birds (45/km², 18/100 acres). **Remarks:** Total species, 11. Mountain Chickadee and Clark's Nutcracker were noted on every trip. Band-tailed Pigeon, bluebird and

towhee were noted on only one trip Feb. 6-7 a snowstorm was in progress, and temperatures ranging from 3° to 30°.—**KENT CREWS ARMSTRONG, Dept. of Biology, California State Univ., Long Beach, CA 90840.**

24. MIXED CONIFER-OAK FOREST BURNED AND LOGGED. — **Location:** California; Riverside Co., W slope of San Jacinto Mts., 6 air mi NW of Idyllwild; 33°49'N, 116°46'W; NE ¼, NW ¼, Sec. 21, T4S, R2E, Lake Fulmor Quadrangle. USGS. **Continuity:** Established 1980, 2 consecutive years. **Size:** 10.0 ha = 24.7 acres. **Description of Plot:** See AB 35: 27-28 (1980). **Food:** Warm weather and less-than-average snowfall made food abundant and accessible. **Weather:** During the 43-day study period weekly high temperatures ranged 52-74°F and weekly low temperatures 12-33°F. Total precipitation for the period was 7.18 in. compared to 25.55 for the same period last year. Total precipitation, season to date, was 11.10 in. compared to 33.44 in. last year. Snowfall for the period was 19.5 in. compared to 2.5 in. last year. (Weather data from Idyllwild Fire Station, 5400 ft. elev.) Snow cover 10 in. deep was encountered on 1 trip and patchy snow 1-4 in. was present on 4 trips. Skies were clear on 5 trips and partly cloudy on 3. Wind was light on all trips. **Coverage:** Jan. 25; Feb. 2, 12, 14, 22-23, 27; Mar. 8. Total: 8 trips, 5 between 0800 and 1150 and 3 between 1200 and 1550, averaging 92 min. Total hours: 12.3. **Count:** Dark-eyed Junco, 16 (160, 65); W. Bluebird, 4 (40, 16); Rufous-sided Towhee, 4; Acorn Woodpecker, 2 (20, 8); Bushtit, 2; Wrentit, 2; Bewick's Wren, 2; Ruby-crowned Kinglet, 2; Band-tailed Pigeon, 1 (10, 4); Scrub Jay, 1; Com. Raven, 1; Plain Titmouse, 1; White-breasted Nuthatch, 1; Am. Kestrel, +; Mountain Quail, +; Mourning Dove, +; Anna's Hummingbird, +; Com. Flicker, +; Nuttall's Woodpecker, +; Steller's Jay, +; Mountain Chickadee, +; California Thrasher, +; Hermit Thrush, +; Starling, +; Yellow-rumped Warbler, +; Golden-crowned Sparrow, +; Fox Sparrow, +. **Average Total:** 39 birds (390/km²; 158/100 acres). **Remarks:** Total species, 27. Bewick's Wren was observed on all trips and Dark-eyed Junco and Ruby-crowned Kinglet on all but one. Am. Kestrel, Anna's Hummingbird, Nuttall's Woodpecker, Steller's Jay, Mountain Chickadee, California Thrasher, Hermit Thrush, Starling, Yellow-rumped Warbler, and Fox Sparrow were observed on only one trip. Average total down from 46 last year, total species up from 22 last year. Species not observed last year are Scrub Jay, Mourning Dove, Anna's Hummingbird, Nuttall's Woodpecker, California Thrasher, Hermit Thrush, Yellow-rumped Warbler, Golden-crowned Sparrow and Fox Sparrow. Species observed last year but not this year are Pine Siskin, Hairy Woodpecker, Am. Robin, and White-crowned Sparrow.—**KEN S. BERG, James San Jacinto Mountains Reserve, Dept. of Biology, Univ. of California, Riverside, CA 92521.**

25. MIXED CONIFER-OAK FOREST I. — **Location:** California; Riverside Co., W slope of San Jacinto Mts., 6 air mi NW of

Idyllwild, 33°49'N, 116°46'W, NW ¼, SW ¼, Sec. 22, T4S, R2E, Lake Fulmor Quadrangle, USGS. **Continuity:** Established 1980, 2 consecutive years. **Size:** 10.0 ha = 24.7 acres. **Description of Plot:** See AB 35: 28 (1980). Some selective logging occurred within 300m of the plot between July and Dec. 1980. **Food:** Warmer weather and less-than-average snowfall made food abundant and accessible. **Weather:** Essentially the same as for Study 24. Patchy snow 1-6 in. deep was encountered on 5 trips. Skies were clear on 4 trips, partly cloudy on 3, and overcast on 1. Wind was light on all trips except one when a mild Santa Ana condition occurred. **Coverage:** Jan. 25; Feb. 14, 21, 23, Mar. 8, 12, 14-15. Total 8 trips, 6 between 0918 and 1237 and 2 between 1252 and 1447, averaging 86 min. Total hours: 11.5. **Count:** Mountain Chickadee, 5 (50, 20); Dark-eyed Junco, 4 (40, 16); Band-tailed Pigeon, 3 (30, 12); Acorn Woodpecker, 3; Plain Titmouse, 2 (20, 8); Brown Creeper, 2; Ruby-crowned Kinglet, 2; Mountain Quail, 1 (10, 4); Nuttall's Woodpecker, 1; Steller's Jay, 1; Bushtit, 1; White-breasted Nuthatch, 1; W. Bluebird, 1; Rufous-sided Towhee, 1; Cooper's Hawk, +; Anna's Hummingbird, +; White-headed Woodpecker, +; Scrub Jay, +; Wrentit, +; Pygmy Nuthatch, +; Bewick's Wren, +. **Average Total:** 28 birds (280/km², 113/100 acres). **Remarks:** Total species, 21. No species was observed on all trips. Mountain Chickadee and Band-tailed Pigeon were observed on all but one. Cooper's Hawk, Anna's Hummingbird, White-headed Woodpecker, Scrub Jay, Bushtit, and Bewick's Wren were observed on only one trip. Average total and total species both up from 20 last year. Species not observed last year are Mountain Quail, Nuttall's Woodpecker, Rufous-sided Towhee, Cooper's Hawk, and Bewick's Wren. Species observed last year but not this year are Com. Raven, Red-tailed Hawk, Com. Flicker, and Hairy Woodpecker.—**KEN S. BERG, James San Jacinto Mountains Reserve, Dept. of Biology, Univ. of California, Riverside, CA 92521.**

26. MIXED CONIFER-OAK FOREST II. — **Location:** California; Riverside Co., W slope of San Jacinto Mts., 6 air mi NW of Idyllwild; 33°49'N, 116°46'W; SE ¼, NW ¼, Sec. 22, T4S, R2E, Lake Fulmore Quadrangle, USGS. **Continuity:** Established 1980, 2 consecutive years. **Size:** 10.0 ha = 24.7 acres. **Description of Plot:** See AB 35: 28-29 (1980). Between July and Dec. 1980 a total of 35 tree trunks were removed from the plot. Numbers after each species give number of trunks removed; range of stump diameters in inches. California Black Oak, 17; 9-35; Yellow Pine, 14; 10-33; Interior Live Oak, 3; 4-6; Incense Cedar, 1; 7. Total number by size class removed: 3-6 in. dia. - 3; 6-9 in. - 2; 9-15 in. - 8; 15-21 in. - 10; 21-27 in. - 5; 27-33 in. - 5; over 33 in. - 2. **Food:** Warm weather and less-than-average snowfall made food abundant and accessible. **Weather:** Essentially the same as for Study 24. Snow cover of 12 in. was present on 2 trips, patchy cover 1-3 in. on 2 trips and a trace on 2 trips. Skies were clear on 6 trips and partly cloudy on 2. Wind was light on all trips. **Coverage:** Jan. 24, 26,

Feb 2-3, 22-23, Mar 14-15 Total 8 trips, 7 between 0818 and 1155 and 1 between 1355 and 1530, averaging 94 min. Total hours, 12.5. **Count:** Acorn Woodpecker, 7 (70, 28); Dark-eyed Junco, 6 (60, 24); Mountain Chickadee, 5 (50, 20); Steller's Jay, 4 (40, 16); Mountain Quail, 3 (30, 12); Band-tailed Pigeon, 3; Plain Titmouse, 2 (20, 8); Ruby-crowned Kinglet, 2; Rufous-sided Towhee, 2; White-breasted Nuthatch, 1 (10, 4); Pygmy Nuthatch, 1; Brown Creeper, 1; W. Bluebird, 1; *Carpodacus* finches (Cassin's and Purple), 1; Cooper's Hawk, +; Red-tailed Hawk, +; Anna's Hummingbird, +; Com. Flicker, +; Yellow-bellied Sapsucker, +; Williamson's Sapsucker, +; Nuttall's Woodpecker, +; White-headed Woodpecker, +; Com. Raven, +; Hermit Thrush, +; Black-throated Blue Warbler, +; Townsend's Warbler, +. **Average Total:** 39 birds (390/km²; 158/100 acres). **Remarks:** Total species, 26. Steller's Jay was observed on all trips and Band-tailed Pigeon, Dark-eyed Junco, Acorn Woodpecker and Mountain Chickadee on all but one. Hermit Thrush, Townsend's Warbler, Black-throated Blue Warbler, Williamson's Sapsucker, Com. Raven, Cooper's Hawk and Red-tailed Hawk were observed on only one trip. The ♂ Black-throated Blue Warbler was seen with a ♂ Townsend's Warbler Jan. 26 feeding on sapsucker workings in a Canyon Live Oak tree. A Yellow-bellied Sapsucker was present at the time. The Black-throated Blue Warbler was seen again Jan. 27 (not a count), but not after a snowstorm that evening. Average total was up from 22 last year, total species up from 18 last year. Species not observed last year are Mountain Quail, Rufous-sided Towhee, *Carpodacus* finches, Cooper's Hawk, Red-tailed Hawk, Com. Flicker, Williamson's Sapsucker, Nuttall's Woodpecker, Hermit Thrush, Black-throated Blue Warbler, and Townsend's Warbler. Species observed last year but not this year are Hairy Woodpecker, Wrentit, and Black-throated Gray Warbler.—*KEN S. BERG, James San Jacinto Mountains Reserve, Dept. of Biology, Univ. of California, Riverside, CA 92521.*

27. ABANDONED PASTURE-YOUNG MIXED FOREST. — **Location:** New York; St. Lawrence Co., ¼ mi E of Howardville Rd., ¼ mi SW of RTE 68; 44°33'N, 75°03'W, Pierrepont Quadrangle, USGS. **Continuity:** Established 1978, 4 years. **Size:** 3.44 ha = 8.5 acres. **Description of Plot:** See AB 32: 74 (1978). **Weather:** Average daily min-max temperature and precipitation were: Jan. -9.2° to 16°F, .62 in; Feb., 18° to 43.4°, .88 in; Mar. 1-15, 25.6° to 40.3°, 1.68 in. **Coverage:** Jan. 2, 26; Feb. 2, 14, 23. 5 trips, 5 hrs. **Count:** Ruffed Grouse, 1 (29, 12); Black-capped Chickadee, 1; Blue Jay, +. **Average Total:** 2 birds (58/km², 24/100 acres). **Remarks:** Total species, 3. Signs of Downy Woodpecker activity in small dead elms. Pileated Woodpecker and Red-tailed Hawk observed near plot.—*KENNETH L. CROWELL, Dept. of Biol., St. Lawrence Univ., Canton, NY 13617.*

28. FLOODPLAIN FOREST AND CULTIVATED BOTTLAND. — **Location:** New York; Allegany Co., N of and adjacent to Scio, 42°10'N, 77°59'W, Wellsville Quad-

rangle, USGS **Continuity:** Established 1971, 10 intermittent years (1978 omitted). **Size:** 51.8 ha = 128 acres. **Description of Plot:** See AB 25: 644-645 (1971). A few small alders, in cover now well developed along the river, were cut down by beavers. Cultivated area: 40 acres freshly plowed, a source of grit; 35 acres hay; 13 acres corn harvested during the study period. **Food:** Abundant corn gleanings and fruit of Box-elder; fair wild grape supply; no top dressings; rabbits abounding but mice and voles well protected by 8 in. snow cover until final trip. **Weather:** Lake Erie, 60 mi NW of Scio, froze Dec. 28, about a week early. While for Jan., precipitation was 1.7 in. below normal with very little snowfall, temperatures for the month averaged 6.1°F. below normal with the mean for beginning of trips 20.6°. The Genesee River was icebound except for a narrow channel at the upper and lower ends of the plot, and only a small spring-fed area of the slough pools was open. (Weather data courtesy of Ken Johnson, Wellsville Water and Light, and WIVB-TV, Buffalo.) **Coverage:** Jan. 3, 7, 10, 14, 16, 19, 23, 26. Eight trips, averaging 95 min 0820-1230 EST. Total 12.7 hours. **Count:** House Finch, 23 (44, 18); Rock Dove, 22 (42, 17); Evening Grosbeak, 13 (25, 10); Cedar Waxwing, 7 (14, 5); Com. Crow, 4 (8, 3); Black-capped Chickadee, 3 (6, 2); Tree Sparrow, 3; Downy Woodpecker, 2 (4, 2); Cardinal, 2; Am. Goldfinch, 2; Mourning Dove, 1 (2, 1); Belted Kingfisher, 1; Blue Jay, 1; White-breasted Nuthatch, 1; House Sparrow, 1; Dark-eyed Junco, 1; White-throated Sparrow, 1; Com. Merganser, +; Red-tailed Hawk, +; Herring Gull, +; Am. Robin, +; Starling, +. **Average Total:** 88 birds (170/km², 69/100 acres). **Remarks:** Total species, 22. New this year were the Am. Robin and Cedar Waxwing. Comparing 1981 with the 1971-80 average (in parentheses): Species, 22 (27); Average Total, 88 (184); Com. Crow, 4 (89), and excluding Com. Crow and Snow Bunting, 84 (91). Seen on every trip were the Com. Crow and Evening Grosbeak. The Tree Sparrow appeared on every trip but one. The House Finches regularly at a feeder at the edge of the plot used the brush along the river on the plot for cover. Down river from the study area Great Blue Herons, Mallards, Black Ducks, Com. Goldeneyes and Com. Mergansers were seen. Thanks to Charles Maybee, owner, for permission to use the property.—*VIVIAN MILLS PITZRICK, Amity Lake, Belmont, NY 14813.*

29. MIXED UPLAND HABITAT. — **Location:** Maryland; Montgomery Co., Chevy Chase, Woodend Sanctuary, 8940 Jones Mill Rd., 38°59'N, 77°5'W., Washington W Quadrangle, USGS. **Continuity:** Established 1969: 13 years. Census reported in *Atlantic Naturalist*, 1969-1976 and also in AB 28:708-709 (1974). **Size:** 16.2 ha = 40 acres. **Description of plot:** See AFN 23:538-539 (1969). **Edge:** Bordered on all but one side by housing development; that one side by Rock Creek Park. **Weather:** Most of the trips occurred on days when visibility was good and there was little or no wind. On Jan. 11 the ground was covered with 1-2 in. of snow. Average temperature was 35°F. **Coverage:** Jan. 11, 25; Feb 28, Mar. 8. Total: 4 trips,

10 hours total **Count:** Rock Dove, 13 (80, 33); Mourning Dove, 7 (43, 18), Starling, 7; Com. Crow, 6 (37, 15); Carolina Chickadee, 4 (25, 10); House Sparrow, 4, Cardinal, 4; White-throated Sparrow, 4, Blue Jay, 3 (19, 8); Tufted Titmouse, 3; Ring-billed Gull, 2 (12, 5); Red-bellied Woodpecker, 2, Mockingbird, 2; Dark-eyed Junco, 2; Turkey Vulture, 1 (6, 3); Downy Woodpecker, 1, White-breasted Nuthatch, 1; Am. Robin, 1, Com. Grackle, 1; Song Sparrow, 1, Red-tailed Hawk, +; Com. Flicker, +; Purple Finch, +; **Average Total:** 69 birds (426 km², 173/100 acres). **Remarks:** Total species, 23. There was a significant reduction from previous years in the number of species observed (23 vs 32 in 1979 and 29 in 1980) and in the average number of birds counted per trip (69 vs 138 in 1979 and 118 in 1980). There is no obvious explanation for this decline. Hours of observation and weather conditions were essentially similar in 1981 to those in 1979 and 1980.—*VINCENT C. JONES, 7706 Meadow Lane, Chevy Chase, MD 20815*

30. MIXED UPLAND HABITAT. — **Location:** District of Columbia, the central third of Glover-Archbold Park, a long, narrow stream valley park, 38°55'N, 77°05'W, Washington W Quadrangle, DC-MD-VA, USGS **Continuity:** Established 1960: 22 years **Size:** 14.2 ha = 35 acres. **Description of plot:** see AFN 14:502-503 (1960). **Weather:** Average temp. 41°F, 3 trips with light snow cover, 7 clear, 4 cloudy or partly so, wind calm except for 2 trips with 10 mph, 1 with 20-30 mph, generally average conditions. **Coverage:** Jan 3, 17-18, 20, 22, 24, 28, Feb. 1, 14-15. Total 11 trips, giving 10 total coverages of area, 0840-1715, 4 in morning, 7 in afternoon, averaging 109 min. **Count:** Com. Crow, 15 (106, 43); Carolina Chickadee, 13 (92, 37); Rock Dove, 9 (64, 26); Starling 6 (42, 17); House Sparrow, 6; Tufted Titmouse, 5 (35, 14), Cardinal, 5; Downy Woodpecker, 4 (28, 11), Am. Goldfinch, 3 (21, 9); Dark-eyed Junco, 3; Red-bellied Woodpecker, 2 (14, 6), Blue Jay, 2; White-breasted Nuthatch 2; Turkey Vulture, 1 (7, 3); Mourning Dove, 1; Carolina Wren, 1; White-throated Sparrow, 1; Black Vulture, +; Red-tailed Hawk, +; Herring Gull, +; Ring-billed Gull, +; Great Horned Owl, +; Com. Flicker, +; Pileated Woodpecker, +; Hairy Woodpecker, +; Brown Creeper, +; Winter Wren, +; Mockingbird, +; Am. Robin, +; Purple Finch, +, Song Sparrow, +. **Average Total:** 79 birds (558/km², 226/100 acres). **Remarks:** Total species, 31. One addition to the cumulative list, the Great Horned Owl, brings it to 65 for 22 years. The count of birds/100 acres is among the lowest, but with the species count is in line with recent winters. The overall range has been from 219 to 505 birds/100 acres, average 380; species have been between 21 and 37, average 30. Tufted Titmouse and Cardinal dropped below norm this year, Com. Crow increased — *SHIRLEY A. BRIGGS (compiler), B CHANCE, OLIVE HOLBROOK, G.T and SUSAN HUNT, EDGAR H. SMITH 7605 Honeywell Lane, Bethesda, MD 20014*

31. MIXED MESOPHYTIC WOODS, FIELDS, AND BRUSH. — **Location:** Tennessee; Putnam Co., about 5 mi WNW of Mon-

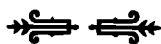
terey, in Barnes Hollow to NW of Lee Knob, 36°9'45"N, 85°22'W, Monterey Quadrangle, USGS. **Continuity:** Established 1978; 4 years. **Size:** 30.0 ha = 74 acres. **Description of Plot:** See AB 32:80 (1978) and 33:79 (1979). (Formerly called Mixed Habitat: Mixed-mesophytic woods, pastures, and brush.) **Changes:** Few since last spring. About an acre of weedy field mostly N of the house was mowed late in the autumn. **Water:** Often unavailable on plot. **Food:** Tuliptree fruits good, Poison Ivy, Smooth Sumac, Hackberry, Japanese Honeysuckle fruits fair; weed seeds good; acorns and Flowering Dogwood fruits very poor. Seeds of Purple-top (*Triodia flava*), an additional abundant grass species, good. Mixed bird seed and sunflower seed put out almost daily since early Dec. Wheat grains in straw mulch were also important. **Weather:** Little snow this winter, which was drier than normal and cold at times (lowest temperature -1°F.). Temperatures during trips ranged from 15-66°F. **Coverage:** Dec. 5-6, 10, 12, 23, 27, 29; Jan. 3, 6, 9, 14, 20, 26, 31; Feb. 7. Total, 15 trips, averaging 205 min, 0630-1717 CST. **Count:** Purple Finch, 23 (77, 31); Carolina Chickadee, 9 (30, 12); Dark-eyed Junco, 9; Field Sparrow, 9; Cardinal, 7 (23, 9); Am. Goldfinch, 7; White-throated Sparrow, 5 (17, 7); Tufted Titmouse, 3 (10, 4); Am. Robin, 3; Song Sparrow, 3; White-breasted Nuthatch, 2 (7, 3); Cedar Waxwing, 2; Com. Flicker, 1 (3, 1); Pileated Woodpecker, 1; Red-bellied Woodpecker, 1; Downy Woodpecker, 1; Com. Crow, 1; Brown Creeper, 1; Carolina Wren, 1; E. Bluebird, 1; Golden-crowned Kinglet, 1; Fox Sparrow, 1; Sharp-shinned Hawk, +; Red-tailed Hawk, +; Hairy Woodpecker, +; E. Phoebe, +; Blue Jay, +; Red-breasted Nuthatch, +; Winter Wren, +; Loggerhead Shrike, +; Yellow-rumped Warbler, +; Pine Siskin, +; White-crowned Sparrow, +. **Average Total:** 92 birds (307/km², 124/100 acres). **Remarks:** Total species, 33. The following were observed on all 15 trips: Carolina Chickadee, Tufted Titmouse, White-breasted Nuthatch, Cardinal, Purple Finch, Dark-eyed Junco, Field, White-throated, and Song sparrows. Carolina Chickadee showed a marked increase, Carolina Wren and the various winter finches also increased. Purple Finch peaked at 90+ on Jan. 9; goldfinch peaked at 70+ in mid-Mar. Present this winter but absent in 1979-80 were Sharp-shinned Hawk, Brown Creeper, Golden-crowned Kinglet, Loggerhead Shrike, Pine Siskin, and Fox Sparrow, also two species new to this count, Red-breasted Nuthatch and White-crowned Sparrow. On the other hand, the Ruffed Grouse, Brown Thrasher, Hermit Thrush, Ruby-crowned Kinglet, and Rufous-sided Towhee were not observed on the plot this winter season (towhee returned late in Feb.). Also notably low this winter were Blue Jay, E. Bluebird, Starling, and Yellow-rumped Warbler, possibly because of the poor acorn and wild fruit crops.—**RICHARD W. SIMMERS, JR.**, Route 6, Box 170, Cookeville, TN 38501.

32. 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 1975; 6 years. **Size:** 22.5 ha. = 55.5 acres. **Description of Plot:** See AB 30:1055 (1976). **Weather:** Temp. 10°-29°F, average 21°. Snow cover 70-90% on all trips, creek never frozen completely. **Coverage:** Jan. 11, 18, 25; Feb. 1, 8-9. Total, 6 trips, averaging 55 min, 0900-1200 EST. **Count:** Dark-eyed Junco, 8 (36, 14); House Sparrow, 6 (27, 11); Tree Sparrow, 6; Song Sparrow, 4 (18, 7); Brown Creeper, 3 (13, 5); Downy Woodpecker, 2 (9, 4); Blue Jay, 2; Cardinal, 2; Screech Owl, 1 (4, 2); Am. Goldfinch, 1; Mourning Dove, +; Belted Kingfisher, +; Com. Crow, +; Tufted Titmouse, +; White-breasted Nuthatch, +; Am. Robin, +. **Average Total:** 35 birds (156/km², 63/100 acres). **Remarks:** Total species 16. Lowest numbers since the study was started, reasons unknown. Two major changes should be noted. About 3-4 acres of field have grown into a small forest of Box-elder (*Acer negundo*), ranging up to 15 ft. Another 5 acres of former field are now a parking lot and a new YMCA building. The Screech Owl is new to the count.—**JAMES COFFMAN and H. THOMAS BARTLETT (compiler)**, 3443 East Co. Rd. 36, Tiffin, OH 44883.

33. MIXED HABITAT—DISTURBED BOTTOMLAND. — **Location:** Oklahoma: Washington Co., Dewey, 2 mi W of intersection of 9th St and Hwy 75, 0.3 mi N on E bank of Caney River, 36°38'N, 95°58'W, Tulsa Quadrangle, USGS. **Continuity:** Established 1972; 9 consecutive years. **Size:** 40.47 ha = 100 acres (irregular rectangle roughly 600 × 800 yds; from SCS aerial map). **Description of Plot:** See AB 26: 976-977 (1972). **Weather:** Drought with temperatures averaging above normal. **Coverage:** Dec. 23, 30; Jan. 6, 14, 22, 27; Feb. 3, 9. Eight trips between 0745 and 1135; total, 24 hours. **Count:** Blue Jay, 22 (54, 22); Carolina Chickadee, 16 (40, 16); Dark-eyed Junco, 14 (35, 14); Red-bellied Woodpecker, 11 (27, 11); Red-headed Woodpecker, 10 (25, 10); Tree Sparrow, 10; Am. Robin, 8 (20, 8); Tufted Titmouse, 7 (17, 7); Cardinal, 7; Song Sparrow, 7; E. Bluebird, 6 (15, 6); Bobwhite, 5 (12, 5); Com. Flicker, 5; Downy Woodpecker, 5; E. Meadowlark, 5; White-breasted Nuthatch, 3 (7, 3); Am. Goldfinch, 3; Red-tailed Hawk, 2 (5, 2); Brown Creeper, 2; Barred Owl, 1 (2, 1); Pileated Woodpecker, 1; Hairy Woodpecker, 1; Com. Crow, 1; Mockingbird, 1; Golden-crowned Kinglet, 1; Evening Grosbeak, 1; Purple Finch, 1; Fox Sparrow, 1; Marsh Hawk, +; Mourning Dove, +; Great Horned Owl, +; Yellow-bellied Sapsucker, +; Brown Thrasher, +; Loggerhead Shrike, +; Yellow-rumped Warbler, +; Rufous-sided Towhee, +. **Average Total:** 159 birds (393/km², 159/100 acres). **Remarks:** Total species, 37. Food supply for finches was poor. Species that depended on trees for food had average or above populations. Mourning Dove, Yellow-rumped Warbler and Evening Grosbeak, each seen on only one trip, were new species for the plot. The dry marsh and ponds were probably partly responsible for low finch numbers.—**ELLA DELAP**, 409 N. Wyandotte, Dewey, OK 74029.

34. MIXED HABITAT-FOOTHILLS GRASSLAND, BRUSHLAND, CONIFEROUS FOREST AND ASPEN WOODLAND. — **Location:** Colorado; Douglas Co., Bald Mt., 1 mi NE of Interstate 25 and El Paso Co line; Sec. 35, T10S, R67W; 39°08'N, 104°51'30"W, Greenland Quadrangle, USGS. **Continuity:** New. **Size:** 30.4 ha = 75 acres; a triangular area from the W end of Bald Mt. W down steep slopes into bordering grassland. **Description of Plot:** Bald Mt. is one of several sedimentary mesas of Dawson Arkose extending E onto the Great Plains from the main Rocky Mountain Front Range, just N of the S Platte-Arkansas Divide. The site is unique because in a small area there are five distinct ecosystems from the plains to the top of the mesa: Grassland (mixed and grazed), Brushland (mainly Scrub Oak, *Quercus gambelii*), Ponderosa Pine forest (S-facing slope), Douglas-fir (*Pseudotsuga menziesii*) forest (N-facing slope), and Quaking Aspen (*Populus tremuloides*) (a restricted stand in a northwest draw). Altitude, 7300-7800 ft.; the various exposures produce quite different microenvironments. For example, there may be a temperature difference of 17°F between Ponderosa forest and Douglas-fir forest on a winter day. Winter understory is relatively sparse in all areas; there is little plant food available; no permanent water on the mesa. **Edge:** The mesa slopes into grazed grassland in all directions but the E, where there is an extension of the five ecosystems to the end of the next mesa (True Mountain), and a continuation of pines into the elevated Black Forest. **Weather:** Relatively mild, dry and windy; but with a great range of temp. from -17° to 71°F. Heavy snows only after the census period. **Coverage:** Jan. 13, 21, 26, Feb. 7, 13, 20; Mar. 1. Total, 7 trips, both a.m. and p.m. averaging 75 min. **Count:** Black-capped Chickadee, 3 (10, 4); Rough-legged Hawk, 1 (3, 1); Steller's Jay, 1; Black-billed Magpie, 1; Com. Raven, 1; Mountain Chickadee, 1; Red-tailed Hawk, +; Golden Eagle, +; Great Horned Owl, +; Com. Flicker, +; White-breasted Nuthatch, +; Brown Creeper, +; Mountain Bluebird, +; Townsend's Solitaire, +; Pine Siskin, +; Dark-eyed Junco, +. **Average Total:** 8 birds (26/km², 11/100 acres). **Remarks:** Total species, 16. The ecological diversity of the site would suggest an associated bird diversity and abundance. But the relatively high altitude, isolation, lack of water bodies, limited food resources, and winter climate limit the bird population mainly to transients, especially birds of prey and scavengers. No species was strictly resident on the plot; the smaller birds ranged E into similar habitats. The Black-capped Chickadees were most frequently encountered, which is unusual at an altitude and in habitats where the Mountain Chickadee would be more typical. Bald Mountain is part of the proposed Greenland Ranch development; hopefully its ecological uniqueness will encourage its preservation.—**RICHARD BEIDLEMAN (compiler)**, ELIZABETH BRIGHAM, WILFRIDO DAVID, MARK GREENBERGER, TEDD HAMAKER, MATTHEW HOLLAND, CARENCE JENKINS, CAROL LOVEJOY, KAREN MacDONALD, BRIAN MURRAY, MARGARET ORMES, CHRISTINE POTTLE, AND JUDY SONDERMANN (Field Zoology Class), Dept. of Biology, Colorado College, Colorado Springs, CO 80903.



35. CAMPGROUND IN OLD ORCHARDS.—**Location:** Utah, Washington Co., Zion Nat'l Park, Watchman campground, loops A, B and C; 37°12'N, 113°00'W; Zion Nat'l Park Topographic Map (Zion Canyon Section), USGS. **Continuity:** New. **Size:** 10.1 ha = 25 acres (roughly rectangular, 600 × 200 yards, paced. **Description of Plot:** A campground in an area previously covering three farm homesteads and about 20 acres of farmland. Existing trees, including apple and pecan orchards, were incorporated in the campground; additional trees have been planted in areas that were cultivated fields. An apple orchard, with trees 35 ft apart, covers 1.7 acres, and an 0.8-acre pecan orchard has trees spaced at 40-ft intervals. Fruit and nut trees are: Apple (*Malus sylvestris*), Pecan (*Carya illinoensis*), Red Mulberry (*Morus rubra*), almond (*Prunus amygdalus*) and Apricot (*P. armeniaca*). Native trees planted in the campground and growing on the river bank are: Fremont Cottonwood (*Populus fremontii*), 52%; Velvet Ash (*Fraxinus velutina*), 34%; miscellaneous trees, 14%, including Box-elder (*Acer negundo*), Netleaf Hackberry (*Celtis reticulata*) and Black Willow (*Salix nigra*). The most common herbaceous species are Foxtail Barley (*Hordeum jubatum*), Prairie Junegrass (*Koeleria cristatum*), Orchardgrass (*Dactylis glomerata*), Madder (*Rubia tinctorum*) and Puncture Vine (*Tribulus terrestris*). **Topography:** A gentle slope toward the Virgin River, which runs along the W side of the campground. A dike, about 6 ft. high, parallels the river. Elevation: about 3960 ft. **Weather:** Max.-min. temperatures averaged 4 to 8°F above normal in both Dec. and Jan. Two inches of snow fell on Jan. 30. **Coverage:** Dec. 8, 13, 20, 24; Jan. 3, 10, 17, 23; Feb. 1, 6; 10 trips averaging 131 min.; 0850-1525 MST. **Count:** Dark-eyed Junco, 45 (445, 180); Starling, 34 (336, 136); White-crowned Sparrow, 34; House Finch, 14 (138, 56); Com. Flicker, 3 (30, 12); Ruby-crowned Kinglet, 2 (20, 8); Great Blue Heron, 1 (10, 4); Am. Kestrel, 1; Belted Kingfisher, 1; Hairy Woodpecker, 1; Com. Raven, 1; Am. Robin, 1; Cassin's Finch, 1; Gray-headed Junco, 1; Lincoln's Sparrow, 1; Song Sparrow, 1; Red-tailed Hawk, +; Prairie Falcon, +; Peregrine Falcon, +; Mourning Dove, +; Yellow-bellied Sapsucker, +; Black-capped Chickadee, +; Hermit Thrush, +; Townsend's Solitaire, +; Green-tailed Towhee, +. **Average Total:** 142 birds (1404/km², 568/100 acres). **Remarks:** Total species, 25. No species was found on all 10 trips; Com. Flicker and Ruby-crowned Kinglet were found on 9 and Starling and Dark-eyed Junco on 8. With the exception of the kestrel, the raptors were seen on only one trip. They were assumed to be hunting as they flew over the plot.—**JEROME L. GIFFORD, P.O. Box 85, Springdale, UT 84767.**

36. RED ALDER FLOODPLAIN FOREST-FARMLAND.—**Location:** Washington; Whatcom Co., 3.5 mi SE of Acme, in the S Fork Nooksack floodplain; 48°40'42"N, 122°9'6"W, Wickersham Quadrangle, USGS. **Continuity:** New. (BBC, 1980). **Size:** 6.9 ha =

17.07 acres. **Description of Plot:** See AB 35:89-90, 104 (1981). Forest and forest edge account for 54% of the acreage; cleared farmland 46%. **Weather:** Temp. during counts, 28-52°F. Snow fell Dec. 2-8 (7 in.) and Feb. 9 (0.06 in.). Rainfall caused standing water in sloughs until Feb. 1. Date from Bellingham (12 mi W of Acme) showed temperatures were above the 50-yr average Dec.-Feb. Precipitation was above the 50-yr average Dec. and Feb., but below average in Jan. **Coverage:** Dec. 8, 15, 21, 29; Jan. 5, 12, 19, 28; Feb. 2, 9. Total: 10 trips, 0845-1200, averaging 115 min. **Count:** Dark-eyed Junco, 19 (275, 111); Golden-crowned Kinglet, 10 (145, 59); Pine Siskin, 10; Steller's Jay, 9 (130, 53); Black-capped Chickadee, 7 (101, 41); Winter Wren, 5 (72, 29); Chestnut-backed Chickadee, 4 (58, 23); Song Sparrow, 4; Rufous-sided Towhee, 3 (43, 18); Ruby-crowned Kinglet, 2 (29, 12); Mallard, 1 (14, 6); Bald Eagle, 1; Bewick's Wren, 1; Varied Thrush, 1; Red-tailed Hawk, +; Am. Kestrel, +; Ruffed Grouse, +; Com. Snipe, +; Com. Flicker, +; Hairy Woodpecker, +; Downy Woodpecker, +; Purple Finch, +; Fox Sparrow, +. **Average Total:** 77 birds (1115/km², 451/100 acres). **Remarks:** Total species, 23. Birds seen per trip ranged from 17 during the coldest trip (6 in. snow, 28°F) to 151 during the warmest trip (52°F). Winter Wrens and Steller's Jays were seen on all 10 trips. Steller's Jay numbers probably reflect availability of chicken food on a neighboring farm. They were often seen flying to and from that location. Out of 778 sightings, only 5 were of birds utilizing field areas. A Red-tailed Hawk and Com. Snipe each accounted for 1 sighting; on 3 occasions a Bald Eagle flew over the fields in a searching pattern. Comparison with BBC showed 34% of the breeding species wintered on the study plot.—**JOANNE AND DAVE SCHUETT-HAMES, 6192 Saxon Rd., Acme, WA 98220.**

37. MIXED HABITAT: RIPARIAN WOODLAND AND ADJACENT OAK SAVANNA.—**Location:** California; Monterey Co. Hastings Reservation, 2.5 mi E Jamesburg; 36°23'N, 121°33'W, Rana Creek Quadrangle, USGS. **Continuity:** Established 1979; 2 intermittent years. **Size:** 8.76 ha = 21.65 acres. **Description of Plot:** See AB 34:35-36 (1980). An intermittent stream runs the length of the plot; water is usually present Dec.-June. Riparian vegetation along the creek is bordered by grassland and savanna. At both long edges the ground slopes steeply, covered with mixed evergreen forest to the E and foothill woodland and some chaparral to the W. **Weather:** Essentially the same as Study 22. The creek began running in mid-Feb. **Coverage:** Jan. 10, 16, 20, 28, 31; Feb. 4, 12, 16-17, 27; 0800-1445 PST. Total hours: 20.5. **Count:** Dark-eyed Junco, 43 (491, 199); Lesser Goldfinch, 27 (308, 125); Bushtit, 23 (263, 106); Golden-crowned Sparrow, 13 (148, 60); Scrub Jay, 9 (103, 42); Ruby-crowned Kinglet, 9; Rufous-sided Towhee, 8 (91, 37); Brown Towhee, 8; Plain Titmouse, 7 (80, 32); Hutton's Vireo, 6 (68, 28); California Quail, 5 (57, 23); Bewick's Wren, 4 (46, 18); Acorn Woodpecker, 3 (34, 14); Steller's Jay, 3; Wrentit, 3; Nuttall's Woodpecker, 2 (23, 9); Am. Robin, 2; W. Bluebird, 2; Cedar Waxwing, 2; Yellow-rumped Warbler, 2; An-

na's Hummingbird, 1 (11, 5); Com. Flicker, 1; Chestnut-backed Chickadee, 1; White-breasted Nuthatch, 1; Hermit Thrush, 1; Purple Finch, 1; Lawrence's Goldfinch, 1; White-crowned Sparrow, 1; Song Sparrow, 1; Cooper's Hawk, +; Red-tailed Hawk, +; Red-shouldered Hawk, +; Am. Kestrel, +; Mountain Quail, +; Black Phoebe, +; Yellow-billed Magpie, +; California Thrasher, +; Varied Thrush, +; Townsend's Warbler, +. **Average Total:** 190 (density 2169/100 ha, 878/100 acres). **Remarks:** Total species, 39. Acorn Woodpecker, Steller's Jay, Scrub Jay, Plain Titmouse, White-breasted Nuthatch, Bewick's Wren, Ruby-crowned Kinglet, Hutton's Vireo, Yellow-rumped Warbler, Lesser Goldfinch, Rufous-sided Towhee, Brown Towhee, Dark-eyed Junco, and Golden-crowned Sparrow were seen on all trips. Cedar Waxwing, Townsend's Warbler, and Lawrence's Goldfinch were seen on only one trip. Densities of several species, most notably Bushtit, Lesser Goldfinch, and Dark-eyed Junco, increased noticeably from the previous two years. Free standing water was scarce on the Reservation owing to the below-normal rainfall, and the presence of the creek on the plot probably attracted birds from surrounding areas. A greater number of wintering Dark-eyed Juncos was also noted on another nearby census plot. Thanks to Pamela Williams for assistance.—**NANCY E. JOSTE, Hastings Reservation, University of California, Star Route Box 80, Carmel Valley, CA 93924.**

38. CREEKSIDE WILLOW WOODLAND.—**Location:** California; Orange Co., Aliso Creek along the NE flank of Sheep Hills, from the N edge of a short section of concrete and riprap near the junction of Aliso Creek Rd and Alicia Pkwy, N; located 7.5 km (4.5 mi) from creek mouth at the Pacific Ocean; 33°33'45"N, 117°43'W, San Juan Capistrano Quadrangle, USGS. **Continuity:** New. **Size:** 6.07 ha = 15 acres (sinuous belt, approximately 725m long, 40m to 100m wide, planimetric measurements for area from 1:10,500 scale aerial photo). **Description of Plot:** A narrow belt of willow (*Salix* spp.) woodland and associated habitats oriented roughly N-S. Flowing water was present in the creek during the entire study period. The study plot included approximately 12.4% water course, 81.6% adjacent bottomlands, and 6% steep eroded bank or low bordering slope (all quantified data based upon 7-2m wide belt transects run perpendicularly across creek at 100m intervals along plot; total of 872m² of transect). Plant cover was sparse within the water course and included widely spaced small clumps of Water-cress (*Rorippa nasturtium-aquaticum*), Redtop (*Agrostis stolonifera*), *Paspalum dilatatum*, and Sprangletop (*Leptochloa uninervia*). The bottomlands are described below by zones that were generally indicated by dominant plant cover type. These zones and the percent of each comprising the bottomlands were reed 9.1%, barren sand flat 5.1%, herbaceous 14.7%, shrub/subshrub 18.7%, and willow woodland 52.4%. The reed zone spanned the interface of the water course and the dry ground surface of the bottomlands. The reed belt was narrow, ranging 2.5m-7.0m in width (n = 7, x = 4.7m), highly discontinu-

ous along the creek (present in 6 of 7 transects), and usually developed along only one side of the creek. Total plant cover was estimated at 76% and was contributed by 10 species including *Scirpus olneyi* 39.3%, *Typha domingensis* 25.4%, *T. latifolia* 8.1%, willow sprouts 1.5%, *Heleocharis parishii* 0.8%, *Sonchus oleraceus* 0.4%, and *Xanthum strumarium* 0.3%. About half of the reed cover was contributed by dead and matted stems. In the herbaceous zone, plant growth was low and open. The cover varied 15-53% ($x = 35.6\%$) and was contributed by 29 species including (first 90% of cover) *Baccharis glutinosa* 25.3 (% of ground cover), *Melilotus albus* 24.4, *Salix* spp. 9.0, *Polypogon monspeliensis* 6.2, *M. indicus* 5.6, *P. dilatatum* 5.6, *Apium graveolens* 5.1, *Brassica nigra* 3.7, *Arundo donax* 2.8, Watercress 2.2. Plant cover in the shrub/subshrub zone was estimated at 80.7% and was contributed largely by 16 species including (first 90%) *B. glutinosa* 47.2 (% of ground cover), *M. albus* 28.5, *Urtica holosericea* 4.6, *S. laevigata* 4.6, *B. nigra* 4.3. Approximately 43% of the willow woodland sampled had attained a height just greater than 6m; the remaining 57% varied from 2m to just less than 6m. Canopy cover in the woodland ranged 70%-95%. Plant cover in the upper story was just greater than 100% and was contributed by *S. lasiolepis* 48.6% (the proportions of the three species of willow are approximate), *S. laevigata* 39.4%, *B. glutinosa* 5.4%, *S. gooddingii* 4.4%, and *A. donax* 3.2%. There was an average of 259 willow stems/100m² and 28 *Baccharis* stems/100m². The woodland understory was very sparse. Total cover contributed by the 19 species observed was only 7.3%. The major understory cover contributors were *M. albus* 3.3%, *Artemisia douglasii* 1.0%, *Baccharis* sprouts 0.6%, *Apium graveolens* 0.5%, and willow sprouts 0.4%. The litter layer was very thin, was comprised only of leaves, and provided an average ground cover of 77%. Only one deadfall was encountered along the transects. The bordering banks comprised a narrow transitional area between the riparian and adjacent upland habitats. Plant cover on the slopes averaged 92.6% and was largely contributed by 12 species including (first 90%) *Haplopappus venetus* 42.1 (% of ground cover), *S. lasiolepis* 20.2, *M. albus* 12.2, *Distichlis spicata* 10.9, Redtop 3.7. Edge the S half of the E boundary of the plot is bordered by a paved road and the grounds of the federal building. The N half borders a grassy field and low hill with abundant plants including *Bromus mollis*, *B. diandrus*, *Brassica* spp., *Chenopodium* spp., and a few widely spaced *B. glutinosa*. The W boundary of the plot borders a grassy field used intermittently by grazing cattle. The field plants include very dense *Hordeum vulgare* with less abundant *Avena fatua*, *Lolium perenne*, *Anthemis cotula*, and *Melilotus* spp. **Topography:** The plot slopes gradually from 180 ft (55m) on the N to 155 ft (47m) on the S. **Weather:** Typical for this season except below-average rainfall. The sky was overcast with low clouds and some fog at the beginning of two counts but eventually cleared. Temperatures (estimated) ranged from a low of 46°F in early morning to 72° by late morning. **Coverage:** Dec. 9, 18, 23, 30; Jan. 8, 20; Feb. 6 Total: 7 trips, 0640-1030, averaging

131 min, additional 2 visits after dark, averaging 40 min. **Count:** White-crowned Sparrow, 21 (346, 140); Song Sparrow, 21; Ruby-crowned Kinglet, 20 (329, 133); Yellow-rumped Warbler, 18 (297, 120); Bushtit, 17 (280, 113); Com. Yellowthroat, 16 (264, 107); House Finch, 16; Water Pipit, 8 (132, 53); Anna's Hummingbird, 7 (115, 47); Long-billed Marsh Wren, 5 (82, 33); Black Phoebe, 3 (49, 20); Com. Raven, 3; Bewick's Wren, 3; Lesser Goldfinch, 3; White-tailed Kite, 2 (33, 13); Killdeer, 2; Mourning Dove, 2; Com. Flicker, 2; Starling, 2; Brown Towhee, 2; Am. Kestrel, 1 (16, 7); Barn Owl, 1; Say's Phoebe, 1; House Wren, 1; Orange-crowned Warbler, 1; Red-winged Blackbird, 1; Great Blue Heron, +; Am. Bittern, +; Turkey Vulture, +; Sharp-shinned Hawk, +; Cooper's Hawk, +; Red-tailed Hawk, +; Osprey, +; California Quail, +; Sora, +; Com. Snipe, +; Greater Yellowlegs, +; Rock Dove, +; Hermit Thrush, +; Loggerhead Shrike, +; Wilson's Warbler, +; Brown-headed Cowbird, +; Fox Sparrow, +; Lincoln's Sparrow, +. **Average Total:** 179 birds (2948/km², 1193/100 acres). **Remarks:** Total species, 44. Ten species were seen on every trip: White-tailed Kite, Anna's Hummingbird, Black Phoebe, Com. Raven, Long-billed Marsh Wren, Ruby-crowned Kinglet, Yellow-rumped Warbler, Com. Yellowthroat, White-crowned Sparrow, and Song Sparrow.—**RICHARD ZEMBAL, GARY P. WHEELER, and DALE A. PIERCE, U.S. Fish and Wildlife Service, 24000 Avila Road, Laguna Niguel, CA 92677.**

39. BRUSHY FIELD AND WOODED EDGE. — **Location:** Pennsylvania; Cumberland Co., 1 mi NE of Carlisle, 0.3 mi NNW of U.S. Rt 11, off Cavalry Rd, on Nat'l Guard property; 40°12'N, 77°10'W, Carlisle Quadrangle, USGS. **Continuity:** Established 1979; 3 consecutive years. **Size:** 7.54 ha = 18.62 acres. **Description of Plot:** See AB 33: 74 (1979). **Weather:** Very little precipitation throughout winter, but Dec., Jan., and first week of Feb. were colder than normal. Temperatures well above normal in second and third weeks of Feb. Temp. during visits, -12°C to 8°, averaging -2°. Snow cover on 4 trips, but never more than 2 in. **Coverage:** Dec. 25, 29, 31; Jan. 4, 17, 28-29; Feb. 15, 17. Total, 9 trips, 5 between 0700 and 1030 and 4 between 1300 and 1630, averaging 81 min; total observer-hours, 12.1. **Count:** House Finch, 12 (159, 64); Dark-eyed Junco, 12; White-throated Sparrow, 9 (119, 48); Cardinal, 6 (80, 32); Tree Sparrow, 6; Starling, 5 (66, 27); Am. Goldfinch, 3 (40, 16); Mourning Dove, 2 (27, 11); Downy Woodpecker, 2; chickadee sp., 2; Ring-necked Pheasant, 1 (13, 5); Blue Jay, 1; Com. Crow, 1; Brown Creeper, 1; Carolina Wren, 1; Mockingbird, 1; Am. Robin, 1; Song Sparrow, 1; Hairy Woodpecker, +; Tufted Titmouse, +; White-breasted Nuthatch, +; House Sparrow, +; Brown-headed Cowbird, +; Purple Finch, +. **Average Total:** 67 birds (889/km², 360/100 acres). **Remarks:** Total species, 24. Species total highest in three years, and many species up in number from previous two studies. Several very warm days resulted in unusually high counts for doves, Starlings, finches, and sparrows, as well as

appearance of robins. Accipiter sp., Red-tailed Hawk, Am. Kestrel, Rock Dove, Com. Flicker, and Com. Grackle seen flying over area.—**BRIAN F. ROLLFINKE, 1013 Harriet St., Carlisle, PA 17013.**

40. OLD FIELD WITH BRUSH PATCHES. — **Location:** Indiana; Jefferson Co., Clifty Falls St. Park. NW corner of plot 38°45'11"N, 85°24'52"W; in Sec. 33 T4N, R10E, Clifty Falls Quadrangle, USGS. **Continuity:** Established 1976; 3 intermittent years. **Size:** 17.05 ha = 42.13 acres. Irregular rectangle, measured with steel tape and compass. **Description of Plot:** See AB 30: 1056-57 (1976) and 31: 61-62 (1977). Succession in 6 years has decreased grass coverage considerably and increased large herbs and shrubs. A new transect census of trees and shrubs counted all stems over 6 ft tall (max was 15 ft) on a strip 20 × 1400 ft. There were 223 woody plants: 21% Osage Orange (*Maclura pomifera*), 16% *Rosa multiflora*, 14% Ash (*Fraxinus* sp.), 12% Red Cedar (*Juniperus virginiana*), 9% Am. Elm (*Ulmus americana*), 6% Apple (*Pyrus malus*), 6% Blackberry (*Rubus* sp.), and 4% or less of Sassafras (*Sassafras albidum*), Black Cherry (*Prunus serotina*), Com. Elderberry (*Sambucus canadensis*), Black Locust (*Robinia pseudoacacia*), Pear (*Pyrus communis*), Persimmon (*Diospyros virginiana*), and Slippery Elm (*U. rubra*). **Water:** Through Jan. 17 the creek in the ravine was frozen or dry, but on subsequent trips it was trickling, providing the only water on the plot. **Weather:** A mild winter, with little of either rain or snow. On counts, temp. 7°-53°F.; winds 1-15 mph (over 5 mph only twice); sky clear (5 times) to overcast (once); no precipitation; snow cover from none (4 times) to 3 in. (twice). **Coverage:** Dec. 29 (partial); Jan. 10, 17, 24, 28; Feb. 4, 7, 14, 21. Total, 8 daylight (5 morning and 3 afternoon) trips averaging 139 min. plus a partial morning trip of 150 min. Two trips by two observers and 7 trips by one (25 man hours total). **Count:** Am. Robin, 22 (129, 52); Starling 9 (53, 21); White-throated Sparrow, 8 (47, 19); Cedar Waxwing, 8; Cardinal, 5 (29, 12); Tree Sparrow, 3 (18, 7); Com. Crow, 2 (12, 5); Bobwhite, 1 (6, 2); Downy Woodpecker, 1; Blue Jay, 1; Carolina Chickadee, 1; Tufted Titmouse, 1; Mockingbird, 1; E. Bluebird, 1; Purple Finch, 1; Am. Goldfinch, 1; Song Sparrow, 1; Sharp-shinned Hawk, +; Red-tailed Hawk, +; Marsh Hawk, +; Am. Kestrel, +; Rock Dove, +; Great Horned Owl, +; Red-bellied Woodpecker, +; Yellow-bellied Sapsucker, +; Brown-headed Cowbird, +; Dark-eyed Junco, +; White-crowned Sparrow, +. **Average Total:** 67 birds (393/km², 159/100 acres). **Remarks:** Total species, 28. Only the White-throated Sparrow and Cardinal were noted on all 8 complete trips. This count includes birds noted in flight over the area. Thanks to Richard O. Davis and Jackson R. Webster for their assistance.—**DAN WEBSTER, Hanover College, Hanover, IN 47243.**

41. GRASSLAND MUNICIPAL AIRPORT. — **Location:** Louisiana; Natchitoches Par., municipal airport of Natchitoches, 31°44'N, 93°06'W; Provencal Quadrangle, USGS. **Continuity:** Established 1974; 8 con-

secutive years, 1978 study not published. **Size:** 12.14 ha = 30 acres (rectangular, 1320 × 990 ft. measured with steel tape). **Description of Plot:** See AB 28: 711-712 (1974). **Weather:** During the 44-day study period day temp. highs ranged from 33° to 80°F. with all count days 50° or higher. Night lows ranged from 20° to 55°. Two count days were cloudy and 4 were clear. All count days had winds up to Beaufort 3. The winter was generally drier and milder than average. **Coverage:** Jan. 18; Feb. 13, 15, 27-28; Mar. 2. Total: 6 trips between 1000 and 1530 CST, averaging 50 min; total hours, 5. **Count:** Savannah Sparrow, 5 (41, 17); E. Meadowlark, 4 (33, 13); Sprague's Pipit, 3 (25, 10); Am. Robin, 3; Le Conte's Sparrow, 2 (16, 7); Marsh Hawk, +; Short-eared Owl, +. **Average Total:** 17 birds (140/km², 57/100 acres). **Remarks:** Total species, 7. The average total of 140/km² was down from the 8-year mean of 269/km². The Savannah Sparrow, Am. Robin and E. Meadowlark decreased in density, whereas, other species were near their mean density. The grass was shorter and the dry conditions could have made the area less attractive. The Marsh Hawk and Short-eared Owl were observed on one count and all others were observed on all counts.—**CHARLIE VIERS, Dept. of Biological Sciences, Northwestern State Univ. of Louisiana, Natchitoches, LA 71457.**

42. BAJADA DESERT SCRUB. — **Location:** Arizona; Pima Co., Red Hills Information Center, Tucson Mountain Unit, Saguaro Nat'l Mon.; 32°15'N, 111°12'W; Avra Quadrangle, USGS. **Continuity:** Established 1980, 2 years. **Size:** 8.9 ha = 22 acres. **Description of Plot:** See AB 35: 33 (1981). **Weather:** The temperatures for Dec.-Feb. were 5°F above average while the precipitation was 60% of average. **Coverage:** Dec. 6; Jan. 23, 30; Feb. 6-7, 14, 20, 25. Trips about 1 hr each. In addition 13 nights were spent in the area listening for owls. **Count:** Gambel's Quail, 19 (213, 86); Verdin, 5 (56, 23); Gila Woodpecker, 3 (34, 14); Curve-billed Thrasher, 3; Brown Towhee, 3; House Finch, 2 (22, 9); Mourning Dove, 1 (11, 5); Great Horned Owl, 1; Com. Flicker, 1; Say's Phoebe, 1; Bewick's Wren, 1; Cactus Wren, 1; Rock Wren, 1; Black-tailed Gnatcatcher, 1; Cardinal, 1; Black-throated Sparrow, 1; White-winged Dove, +; Roadrunner, +; Screech Owl, +; Costa's Hummingbird, +; Ladder-backed Woodpecker, +; Phainopepla, +; White-crowned Sparrow, +; Golden-crowned Sparrow, +. **Average Total:** 45 birds (505/km², 205/100 acres). **Remarks:** Total species, 24. In contrast to last year, few Black-throated Sparrows were seen in the area although they were present in other parts of the Monument. The White-crowned and Golden-crowned Sparrows were seen feeding together on Jan. 30. The White-winged Dove arrived in late Jan. The only Screech Owls were 2 that called in early evening, Feb. 27.—**JOAN C. and ROBERT C. TWEIT, 4100 North Romero Rd., #108, Tucson AZ 85705.**

WINTER BIRDS OF PRAIRIE GRASSLAND AND SHRUBLAND HABITATS IN NORTHEASTERN MONTANA

The five plots described below are located on the Dreyer Brothers Ranch near the center of McCone County, Montana, approximately 33.8 km WNW of the town of Circle. Winter surveys were conducted in 1980 as part of a baseline wildlife study and monitoring program in connection with a proposed lignite mine. The plots sample the predominant grassland and shrubland habitats of the dissected uplands characteristic of the area. Breeding Bird Censuses were conducted on these same plots in 1977 and 1978 (see AB 32:107-109; 33:88-89).

All surveys were conducted Jan. 29-Feb. 2, 1980. Snow cover was very light during this period; roughly 85 per cent of the area had snow cover < 3 cm, 10 per cent had 3-10 cm of snow, and 5 per cent had drifts > 10 cm (mostly downwind of steep coulee walls and roadcuts). The study period included part of one of the few very cold periods in an otherwise mild and open winter. Winds were generally from the W at 15-30 km/hr, but some calm periods were experienced late in the week. Temperatures were very cold during the first few days of the survey (-29° to -19° C, with a wind chill factor as low as -35°) but slowly moderated to 0° to 2° by Feb. 2. Skies were mostly clear except on Feb. 1, when approximately 2 cm of snow fell.

The low densities of birds observed on the plots are apparently characteristic of adjacent areas as well; during 9 man-days of field work on foot and skis in an 86 km² study area including the study plots, only the following were seen in addition to registrations made in the plots: Golden Eagle, 1; Sharp-tailed Grouse, about 90 (mostly in large flocks near ranch houses); Gray Partridge, 4; Ring-necked Pheasant, 5; Short-eared Owl, 1; Black-billed Magpie, 5; Starling, 2; House Sparrow, 2; and Snow Bunting, about 80 (one lone bird and two large flocks).

The apparent absence of Horned Larks from the study area is amazing, since this species is normally the most abundant bird in the study area at all seasons, and large flocks have been seen during the two previous winters. Horned Larks were apparently uncommon and widely dispersed statewide during this winter; only 22 were reported on the 1979 Glasgow Christmas Bird Count (M. Alderhold, *pers. comm.*), which was conducted about 80 km NNW of the study area.

This study was funded by Dreyer Brothers, Inc. Dana Schmidt shared observations for areas adjacent to the plots—**LARRY S. THOMPSON, Montana Department of Natural Resources and Conservation, 32 South Ewing, Helena, MT 59601.** [This study was submitted in 1980 but was omitted from the other censuses. We apologize for any inconvenience.—**CLC.**]

43. SILVER BUFFALOBERRY-RED OSIER DOGWOOD COULEE. — **Location:** Montana; McCone Co.; overlaps boundary of Sec. 3 and 10, T20N, R45E; 47°31'N, 105°58'W; AMS, Glendive (NL 13-2). **Continuity:** New (BBC 1977 and 1978). **Size:** 25 ha = 61.8 acres. **Description of Plot:** See AB

32:108 (1978) **Coverage:** Jan 29–Feb 2, two trips/day except Jan. 29, Feb. 2. Total 8 trips between 0750 and 1714 averaging 54 min. **Count:** Snow Bunting, 1 (4, 2); Golden Eagle, +; Sharp-tailed Grouse, +, Great Horned Owl, +; Black-billed Magpie, + **Average Total:** 1 bird (4/km², 2/100 acres) **Remarks:** Total species, 5. The lone Snow Bunting was seen repeatedly on the wind-swept hillside above the head of the coulee. The Great Horned Owl was flushed twice from its daytime roost in Silver Buffaloberry (*Shepherdia argentea*) near the head of one of the coulee arms. A group of at least 13 Sharp-tailed Grouse were frequently seen feeding on a grassy ridge about 100m from the plot; the abundance of tracks on the plot indicates possible nocturnal use by these birds. A dead Golden Eagle, probably killed 1-2 weeks earlier, was found on the coulee bottom. Mammal tracks identified include Coyote, Red Fox, Long-tailed Weasel, White-tailed Jackrabbit, Porcupine, Deer Mouse. Groups of 7 and 6 Mule Deer were seen on the plot on Jan. 29 and 30, respectively.

44. SILVER BUFFALOBERRY-SILVER SAGEBRUSH COULEE. — **Location:** Montana, McCone Co.; overlaps border of Sec 19 and 20, T20N, R45E; 47°28'N, 106°1'W, AMS, Jordan (NL 13-1). **Continuity:** New (BBC 1977 and 1978). **Size:** 25 ha = 61.8 acres. **Description of Plot:** See AB 32:108-9 (1978). **Coverage:** Jan. 29–Feb. 1; 2/day Total, 8 trips between 0924 and 1546 averaging 39 min. **Count:** Golden Eagle, +. **Remarks:** The Golden Eagle was observed on Jan 31 flying low over the plot and apparently hunting. Tracks identified included: Sharp-tailed Grouse, Coyote, Red Fox, White-tailed Jackrabbit, Desert Cottontail, Deer Mouse. A Porcupine was feeding on the bark of a Silver Buffaloberry shrub within the plot on Jan. 29-30.

45. SILVER SAGEBRUSH FLAT. — **Location:** Montana, McCone Co.; SE quarter of Sec. 31, T20N, R45E; 47°25'N, 106°1'W, AMS, Jordan (NL 13-1). **Continuity:** New (BBC 1977 and 1978). **Size:** 24 ha = 59.3 acres. **Description of Plot:** See AB 32:107-8 (1978). **Coverage:** Jan. 29-Feb. 1; 8 trips (2/day) between 0818 and 1455 averaging 31 min. **Count:** Short-eared Owl, +. **Remarks:** Mammal tracks were very abundant on the plot, and included those of: Coyote, Red Fox, Long-tailed Weasel, Desert Cottontail, White-tailed Jackrabbit, Deer Mouse. The absence of Sharp-tailed Grouse tracks was surprising, as the plot supported wintering grouse during the two previous winters

46. NEEDLE - AND - THREAD - BLUE GRAMA GRASSLAND. — **Location:** Montana; McCone Co.; borders center of E boundary of Sec. 25, T20N, R44E; 47°27'N, 106°2'W; AMS, Jordan (NL 13-1) **Continuity:** New (BBC 1977 and 1978). **Size:** 25 ha = 61.8 acres. **Description of Plot:** See AB 32:109 (1978). **Coverage:** Jan. 29–Feb 1, 8 trips (2/day) between 0900 and 1507, averaging 24 min. **Count:** No birds seen. **Remarks:** Coyote and Red Fox tracks were observed on the plot.

47. WESTERN WHEATGRASS-BLUE GRAMA PASTURE. — **Location:** Montana; McCone Co.; Sec. 23 T20N, R44E; 47°28'N, 106°3'W; AMS Jordan (NL 13-1). **Continuity:** New (BBC 1977 and 1978). **Size:** 25 ha = 61.8 acres **Description of Plot:** See AB 32:109 (1978) **Coverage:** Jan. 29–Feb. 1; 8 trips (2/day) between 0952 and 1630 averaging 30 min **Count:** Golden Eagle, +; Snow Bunting, +. **Remarks:** The Golden Eagle flew over the plot on Jan. 30 and perched on a scoria butte about 500m from the plot. The lone Snow Bunting was seen on two occasions feeding on Western Wheatgrass seedheads protruding above the snow. Tracks of Coyote, Red Fox, and Long-tailed Weasel were observed on the plot.

48. DESERT FLOODPLAIN. — **Location:** California; Riverside Co., E flank of Santa Rosa Mts. on the floodplain of Magnesia Spring Canyon, S of the city of Rancho Mirage, center W 1/2 Sec. 13, T5S, R5E, 33°44'10"N, 116°25'18"W Rancho Mirage Quadrangle, USGS. **Continuity:** New. **Size:** 20.3 ha = 50.2 acres (irregular in shape, roughly square; planimetric measurements from 1:14,000 scale aerial photo). **Description of Plot:** Roughly the N-central third of what remains undeveloped of the floodplain above the city of Rancho Mirage. An earthen levee and channel now conduct all but the extremely highest flood flows away from the natural floodplain. A centrally located boulder-strewn mound of rocky alluvium and a narrower belt of identical substrate along the NW border comprise about 55% of the plot. The remainder is made up of lower lying sandy deposits and wash bottom. The composition of perennial plants was estimated with a total of 200-100m line intercept transects, 10 along the sandier substrate and washes and 10 on the rocky alluvium. Shrubs occurred in clumps in the wash and the clumps were somewhat regularly spaced, whereas on the rocky alluvium, individual shrubs were regularly spaced. Total cover contributed by perennials on the sandy alluvium was 19% as compared to 8% on the rocky alluvium. The dominant species on the sandy alluvium were (figures following each species are % cover, % relative frequency): Cheesebush (*Hymenoclea salsola*) 6.3, 31; Indigo Bush (*Dalea schottii*) 2.1, 7.9; *Brandegea bigelovii* 2, 8.6; Sweet Bush (*Bebbia juncea*) 1.9, 13.2; Desert Lavender (*Hyptis emoryi*) 1.2, 4.6; Creosote (*Larrea tridentata*) 0.8, 2; Catclaw (*Acacia greggii*) 0.7, 3.3; Silver Cholla (*Opuntia echinocarpa*) 0.3, 4; Smoke Tree (*D. spinosa*) 0.2, 2; and dead perennials 3, 21.2. The dominant species on the rocky alluvium were: Creosote 2.6, 18.8; Cheesebush 1.8, 20.8; Sweetbush 1.1, 13.9; *Hoffmannseggia microphylla* 0.7, 7.9; Indigo Bush 0.5, 5; Burrobush (*Ambrosia dumosa*) 0.2, 2; Desert-straw (*Stephanomeria pauciflora*) 0.1, 2; and dead perennials 1.5, 25.7 The only abundant low herbaceous cover was contributed by Sand-mat (*Euphorbia polycarpa*) which was abundant over the entire plot. Cover contributed by Sand-mat was estimated at 7.4% (from one 25m stretch of line intercept). An abandoned well was located near the center of the NE boundary of the plot. A ring of 50 tamarisk trees

(*Tamarix* sp.) rims the well site, enclosing an area of about 32m by 21m. The trees were only sparsely foliated but did provide some cover and perches to about 9m high. Two dirt roads parallel along the length of the central alluvial mound with several short spur roads connecting the two near the NE boundary of the plot. The roads are little traveled and partially overgrown. Minor vehicle travel occurs in the SE wash. **Edge:** Similar on three sides. A dirt road and earthen channel maintained for flood control purposes, border the NW side of the plot. Beyond this disturbed area, the hills rise abruptly. Creosote scrub occurs on the hillsides with abundant perennials including Creosote, Brittle-bush (*Encelia farinosa*), Burrobush, and Six-week Three-awn (*Aristida adscensionis*). Arrow leaf (*Pleurocoronis pluriseta*), Linear-leaved Goldenbush (*Haplopappus linearifolius*), Desert Tobacco (*Nicotiana trigonophylla*), Rock Daisy (*Perityle emoryi*), and Desert Fir (*Peucephyllum schottii*) were particularly abundant on rock outcrops and steeper rocky slopes. **Water:** for some species was probably available in the city of Rancho Mirage. The nearest houses were located just 100m NE of the plot. Pooled and running water were available during the entire study period at the lower Magnesia Spring, located approximately 1km SW of the plot center. **Topography:** The terrain slopes gently from the SW at approximately 440 ft (134m) to the NE at 360 ft (110m). **Weather:** Rain threatened during one count but conditions were otherwise clear and sunny. Temperature varied from approximately 42°F in the early morning to 81° by late morning. **Coverage:** Dec. 3-4; Jan. 13-15; Feb. 11. Total: 6 trips, averaging 121 min; 3 early morning and 3 mid-morning counts, all 0720-1215 hrs; additional 2 visits after dark, averaging 40 min. **Count:** Gambel's Quail, 53 (261, 106); White-crowned Sparrow, 16 (79, 32); Rock Wren, 9 (44, 18); House Finch, 9; Black-throated Sparrow, 8 (39, 16); Verdin, 6 (30, 12); Mourning Dove, 4 (20, 8); W. Bluebird, 4; Black-tailed Gnatcatcher, 4; Yellow-rumped Warbler, 4; Costa's Hummingbird, 3 (15, 6); Bewick's Wren, 3; Say's Phoebe, 2 (10, 4); Cactus Wren, 2; Cooper's Hawk, 1 (5, 2); Red-tailed Hawk, 1; Com. Raven, 1; Sage Thrasher, 1; Ruby-crowned Kinglet, 1; Loggerhead Shrike, 1; Lesser Goldfinch, 1; Prairie Falcon, +; Am. Kestrel, +; Great Horned Owl, +; Com. Flicker, +; Blue-gray Gnatcatcher, +. **Average Total:** 134 birds (660/km², 267/100 acres). **Remarks:** Total species, 26. Nine species were seen on all trips: Mourning Dove, Costa's Hummingbird, Say's Phoebe, Verdin, Bewick's Wren, Rock Wren, Black-tailed Gnatcatcher, House Finch, and Black-throated Sparrow. Four species were observed only once, Prairie Falcon, Am. Kestrel, Great Horned Owl, Blue-gray Gnatcatcher. The study was supported by U.S. Fish and Wildlife Service, Ecological Services Office, Laguna Niguel and by U.S. Army Corps of Engineers, Los Angeles District.—**RICHARD ZEMBAL, U.S. Fish and Wildlife Service, 24000 Avila Road, Laguna Niguel, CA 92677.**

49. PALO VERDE-CHUPAROSA DESERT WASH. — **Location:** California; Riverside Co., E wash of Bear Creek on E flank of

Santa Rosa Mts, SE 1/4 Sec. 13, T6S, R6E 33°38'40"N, 116°18'30"W La Quinta Quadrangle, USGS. **Continuity:** New. **Size:** 12.6 ha = 31.1 acres (roughly rectangular, approximately 780 m long; planimetric measurements of 1:13000 aerial photo). **Description of Plot:** Desert woodland occurring along a sandy wash. There are 130 Palo Verde trees (*Cercidium floridum*) on the plot. The average height and canopy diameter (every fifth tree was measured) were 5.1 m and 8.5 m respectively, with a stem count of 10.3/ha and canopy cover of 5.8% for the entire plot. Six 2 m wide belt transects, covering a total of 1822 m², were utilized to estimate the composition of perennial plants. Total cover contributed by perennials was 23%. the dominant species (first 90% of cover) were (figures are % of ground cover): Palo Verde 23.0, Cheesebush (*Hymenoclea salsola*) 22.2; Chuparosa (*Beloperone californica*) 11.7; Smoketree (*Dalea spinosa*) 7.7; Catclaw (*Acacia greggii*) 7.5; Creosote (*Larrea tridentata*) 7.3; Sweet Bush (*Bebbia juncea*) 5.3; Desert Lavender (*Hyptis emoryi*) 3.8; Brandegea (*Brandegea bigelovii*) 2.7. The shrubs occurred mostly in dense clumps that measured to several m. across. Although there is some evidence of human use, the plot is relatively undisturbed. A dirt road runs the length of the plot and there is minor vehicle travel along the wash bottom. A small area at the N end of the plot has been disturbed by the dumping of refuse. **Edge:** The wash continues to the N and S. The flood plain on the W lacks Palo Verde but supports a more widely spaced growth including the other species cited above with dominant Creosote, Cheesebush, Sweet Bush, Brittle Bush (*Encelia farinosa*), and Cholla (*Opuntia* spp.). Rocky hills rise abruptly on the E with abundant Creosote, *Fagonia laevis*, Indigo Bush, *Ambrosia dumosa*, *Aristida adscensionis*, and *Krameria grayi*, with less common Ocotillo (*Fouquieria splendens*) and Barrel Cactus (*Ferocactus acanthodes*) **Water:** Permanent water is present on the NE margin of the plot from a closed storage tank that provides water for the city of La Quinta. A leak in the tank supported a small pool and the tank periodically overflowed, providing abundant but very intermittent water. Additional water may have been available beginning approximately 100 m N of the plot where the S-most residence of La Quinta are located. **Food:** Chuparosa was in heavy flower during the entire study period. The abundance of blossoms had just begun to decline by the time of the last count. **Topography and Elevation:** The plot slopes gradually from 400 ft on the S to 300 ft on the N **Weather:** The weather was clear and warm on each visit. Temperatures varied from about 42°F in the early morning to 81° by late morning. **Coverage:** Dec. 3-4; Jan. 14-15, Feb. 10-11. Total: 6 trips, averaging 144 min, 3 early morning and 3 mid-morning counts, all 0655 to 1215; additional 2 visits after dark, averaging 40 min. **Count:** Gambel's Quail, 36 (286, 116); Costa's Hummingbird, 28 (222, 90); Verdin, 18 (143, 58); House Finch, 13 (103, 42); Black-tailed Gnatcatcher, 11 (87, 35); Bewick's Wren, 6 (48, 19); White-crowned Sparrow, 5 (40, 16); Mourning Dove, 4 (32, 13); Anna's Hummingbird 4; Black-throated Sparrow, 4; Rock Wren, 3 (24, 10); Yellow-rumped Warbler, 2 (16, 6),

Cooper's Hawk, 1 (8, 3), Red-tailed Hawk, 1, Ground Dove, 1; Say's Phoebe, 1; Com. Raven, 1; Cactus Wren, 1; Mockingbird, 1; W. Bluebird, 1; Blue-gray Gnatcatcher, 1; Ruby-crowned Kinglet, 1; Phainopepla, 1; Loggerhead Shrike, 1; Lesser Goldfinch, 1; Roadrunner, +; Com. Flicker, +; Le Conte's Thrasher, +. **Average Total:** 147 birds (1168/km², 473/100 acres). **Remarks:** Total species, 28. Ten species were seen on every trip: Gambel's Quail, Mourning Dove, Costa's Hummingbird, Anna's Hummingbird, Verdin, Bewick's Wren, Rock Wren, Mockingbird, Black-tailed Gnatcatcher, and Black-throated Sparrow. The study was supported by U.S. Fish and Wildlife Service, Ecological Services Office, Laguna Niguel and U.S. Army Corps of Engineers, Los Angeles District.—**RICHARD ZEMBAL**, *U.S. Fish and Wildlife Service, 24000 Avila Road, Laguna Niguel, CA 92677.*

50. BARRIER BEACH AND SALTWATER ESTUARY. — **Location:** Florida; Duval Co., on N side of St. John's River, where it meets the sea, and S side of Ft. George River, immediately S of Little Talbot Island State Park. 30°25'N, 81°25'W. Area is 1 mi N of Mayport Naval Base and is known locally as the North Jetties Area, Mayport Quadrangle, USGS. **Continuity:** Established 1978, 4 consecutive 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: 47-48 (1979). **Water:** The inlet continues to shallow and the salt marsh vegetation continues to encroach, especially on the W side of the inlet. **Weather:** This was a very cold winter in Jacksonville. Temperatures ranged from 82° to 13° F. Monthly averages were below normal: 2.7° below in Dec., 8.1° in Jan., and 0.9° in Feb. (Weather data from Jacksonville Int'l Airport, 15 mi inland.) **Coverage:** Dec. 4, 7, 14, 25, 28; Jan. 2, 11, 18, 25, 31; Feb. 15. Total, 11 trips from 0800 to 1750, on all tides, averaging 3 hrs. **Count:** Herring Gull, 966 (455, 184); Ring-billed Gull, 401 (189, 76); Laughing Gull, 296 (139, 56); Royal Tern, 257 (121, 49); Black Skimmer, 228 (107, 43); Red Knot, 195 (92, 37); Sanderling, 184 (87, 35); Dunlin, 166 (78, 32); Semipalmated Plover, 134 (63, 26); Great Black-backed Gull, 98 (46, 19); Short-billed Dowitcher, 86 (40, 16); Ruddy Turnstone, 79 (37, 15); W. Sandpiper, 71 (33, 14); Double-crested Cormorant, 69 (32, 13); Tree Swallow, 63 (30, 12); Brown Pelican, 56 (26, 11); Forster's Tern, 39 (18, 7); Red-breasted Merganser, 35 (16, 7); Black-bellied Plover, 28 (13, 5); Bonaparte's Gull, 20 (9, 4); Willet, 15 (7, 3); Savannah Sparrow, 12 (6, 2); Lesser Scaup, 9 (4, 2); Am. Robin, 9; Piping Plover, 6 (3, 1); Marbled Godwit, 6; Wilson's Plover, 4 (2, 1); Horned Grebe, 3 (1, 1); "peep", 3; Caspian Tern, 3; Sandwich Tern, 2 (1, +); Mourning Dove, 2; Boat-tailed Grackle, 2; Great Blue Heron, 1 (+, +); Little Blue Heron, 1; Greater Scaup, 1; Turkey Vulture, 1, Am. Oystercatcher, 1; Killdeer, 1; Long-billed Curlew, 1; Least Sandpiper, 1; Purple Sandpiper, 1; Glaucous Gull, 1; Com. Ground Dove, 1; Starling, 1; Yellow-rumped Warbler, 1; E. Meadowlark, 1; Red-winged Blackbird, 1; Snow Bunting, 1; Com. Loon,

+; Gannet, +; Great Cormorant, +; Great Egret, +; Snowy Egret, +; Louisiana Heron, +; Bufflehead, +; Oldsquaw, +; Com. Merganser, +; Sharp-shinned Hawk, +; Marsh Hawk, +; Osprey, +; Am. Kestrel, +; Whimbrel, +; Lesser Yellowlegs, +; jaeger sp., +; Iceland Gull, +; Black-legged Kittiwake, +; Belted Kingfisher, +; Com. Flicker, +; Com. Crow, +; Palm Warbler, +; Com. Grackle, +; Am. Goldfinch, +; Seaside Sparrow, +; Vesper Sparrow, +; Swamp Sparrow, +; Song Sparrow, +; Lapland Longspur, +. **Average Total:** 3563 (1677/km², 679/100 acres). **Remarks:** Total species, 77. After declining 3 years in a row, the average total shot up to the highest ever, more than double last year's. This increase is due almost entirely to large numbers of gulls. All species of gulls except Laughing were higher than ever before. This may be correlated with the cold weather, since the Laughing Gull is the only "southern" nester recorded. The others are "northern" nesters, though some have been pressing steadily southward in recent years. Red Knot were up considerably, but this is largely owing to a flock of 1466 seen on Feb. 15. Black Skimmer numbers were very low on most visits, but one flock of 1088 on Dec. 28. swelled the average. The small brackish marsh on the W side of the study area has all but filled in with drifting sand. The State Road Department has constructed a small rock jetty on the W side of the area to try to protect Highway A1A from the force of the waves. The hook continues to build toward the N as the S end of Little Talbot Island, just outside the study area, continues to erode. Large sand bars have built up in the mouth of the inlet where large numbers of pelicans, gulls and terns often loaf. These flocks are quite distant and difficult to count accurately. The grassy flats are diminishing as the dunes drift over them, making less habitat for passerines.—**JOSEPH WILSON**, 2635 Oak Summit Dr., Jacksonville, FL 32211 and **ROBERT W. LOFTIN**, Univ. of North Florida, Box 17074, Jacksonville, FL 32216.

51. CANAL AND ASSOCIATED SPOIL BANK. — **Location:** Florida; Dade Co., Canal 103, 2 km N of Homestead between McMinn Ave. and Biscayne Drive. 25°36'N, 80°34'W. **Continuity:** New. **Size:** 4.4 ha = 10.9 acres (sinuous 1160 m × 38 m measured). **Description of Plot:** Canal (10 m wide) including both vertical banks of exposed limestone 1 m high, grassy area (8 m wide) to N, and spoil bank. Spoil bank covered with dense, brushy vegetation, principally fruiting Brazilian Pepper (*Schinus terebinthifolius*) 4 to 10 m high, and Lantana (*Lantana involucrata*) 0.5 to 1.5 m high. Isolated fig trees (*Ficus* sp.). **Topography:** Spoil bank 1-3 m high, canal banks 1 m high, grassy area flat. **Elevation:** about 3 m. **Edge:** Harvested cornfield to N, pine woods, an avocado grove, a tree nursery, an open field of high grass and shrub to S, roads to E and W. **Weather:** Unusually cold. Temperature range: Below 0° to 20°C. Jan. 1981, average 4.5° below normal. Sky clear to 80% cloud cover. Wind: 0 to 40 kph. No rain. **Coverage:** Dec. 26, 30; Jan. 3, 10, 15, 20, 22, 25, 28, 31; 0700-0930 EST. Total man-hours: 25. **Count:**

Yellow-rumped Warbler, 53 (1,201, 486), Blue-gray Gnatcatcher, 24 (546, 220), Palm Warbler, 22 (499, 202); Com. Yellowthroat, 14 (317, 128); House Wren, 10 (227, 92), Gray Catbird, 8 (181, 73); Cardinal, 7 (159, 64), Painted Bunting, 7; Killdeer, 4 (91, 37), Mockingbird, 3 (68, 28); Pied-billed Grebe, 2 (45, 18); Great Blue Heron, 1 (23, 9); Green Heron, 1; Cattle Egret, 1; Sharp-shinned Hawk, 1; Red-shouldered Hawk, 1, Am Kestrel, 1; Am. Coot, 1; Mourning Dove, 1, Com. Ground Dove, 1; Smooth-billed Ani, 1, Belted Kingfisher, 1; Red-bellied Woodpecker, 1; White-eyed Vireo, 1; Prairie Warbler, 1; Am. Redstart, 1; Indigo Bunting, 1, Rufous-sided Towhee, 1; Double-crested Cormorant, +; Great Egret, +; Turkey Vulture, +; Cooper's Hawk, +; Bobwhite, +, Com Gallinule, +; White-winged Dove, +, Canary-winged Parakeet, +; Ruby-throated Hummingbird, +; Com. Flicker, +; Downy Woodpecker, +; W. Kingbird, +; Great Crested Flycatcher, +; E. Phoebe, +, *Empidonax* sp., +; Tree Swallow, +; Brown Thrasher, +; Am. Robin, +; Cedar Waxwing, +; Yellow-throated Warbler, + **Average Total:** 171 birds (3877/km², 1569/100 acres). **Remarks:** Total species, 48 Tree Swallows and Turkey Vultures were frequently seen above the study plot. This is a common habitat combination in Dade, Broward, and Palm Beach Co.—**JOHN M GOOD**, *Nat'l Park Serv., South Florida Research Center, P.O. Box 279, Homestead, FL 33030.*

52. RIVER BANK AND RIVER. — **Location:** Pennsylvania; Clinton Co., 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; 6 intermittent years. **Size:** River Bank, approximately 4.6 ha = 11.4 acres. River, 80 ha = 197.7 acres of water. See AB 29 780 (1975) for measuring technique. **Description of Plot:** See AB 29: 780 (1975). **Weather:** The mean temperature during the trips was 27°F. The ground had snow cover on all trips of 2-9 in. Ice cover on the river was from 75% on one trip to 95%+ on all other trips. **Coverage:** Jan. 15, 20, 30 (two trips each); Feb. 6. Total, 7 trips averaging 77 min, 0945-1315. **Count:** **River Bank:** Black-capped Chickadee, 10 (217, 88); Tree Sparrow, 6 (130, 53), Am Robin, 5 (108, 44); Cardinal, 5; Dark-eyed Junco, 4 (87, 35); Downy Woodpecker, 3 (65, 26); White-breasted Nuthatch, 3; Evening Grosbeak, 3; Field Sparrow, 3; Blue Jay, 2 (43, 18); Com. Crow, 2; Song Sparrow, 2, Hairy Woodpecker, 1 (22, 9); Cedar Waxwing, 1; Starling, 1; Am. Goldfinch, 1; White-throated Sparrow, 1; Am. Kestrel, +, Pileated Woodpecker, +; Com. Raven, +, Brown Creeper, +. **River:** Red-necked Grebe, +; Mallard, +; Black Duck, +, Canvasback, +. **Average Total:** River Bank 53 birds (1149/km², 465/100 acres); River + **Remarks:** Total species 25.—**PARKER PEER**, **GLENNA** and **PAUL SCHWALBE** (compiler, *Dept. of Biol. Science, Lock Haven State College, Lock Haven, PA 17745*), (members of the West Branch Bird Club and Ornithological Society).

53. FARM WITH PONDS. — **Location:** Utah, Washington Co., Springdale Town (Springdale Development Corp. properties); 37°10'N, 113°00'W; Zion Nat'l Park Topographic Map (Zion Canyon Section), USGS. **Continuity:** Established 1980, 2 consecutive years. **Size:** 10.52 ha = 26 acres. **Description of Plot:** See AB 31:79, 1977. **Weather:** Temp. averaged 4 to 8°F above normal in both Dec. and Jan. Two in. of snow fell on Jan. 30. **Coverage:** Dec. 17, 27, 30; Jan. 11, 14, 18, 23, 30, 31, Feb. 4; 10 trips averaging 126 min; 0945-1515 MST. **Count:** Starling, 41 (390, 158), Mallard, 17 (162, 65); Ring-necked Duck, 12 (114, 46); Am. Wigeon, 10 (95, 38); White-crowned Sparrow, 10; Virginia Rail, 4 (38, 15); Dark-eyed Junco, 4; House Finch, 3 (29, 12); Great Blue Heron, 2 (19, 8); Com. Flicker, 2; Red-winged Blackbird, 2; Brewer's Blackbird, 2; Song Sparrow, 2; Green-winged Teal, 1 (10, 4); Canvasback, 1; Red-tailed Hawk, 1; Belted Kingfisher, 1; Hairy Woodpecker, 1; Black Phoebe, 1; Say's Phoebe, 1; Long-billed Marsh Wren, 1; Ruby-crowned Kinglet, 1; Cassin's Finch, 1; Lincoln's Sparrow, 1; Pied-billed Grebe, +; Sharp-shinned Hawk, +; Peregrine Falcon, +; Sora, +; Killdeer, +; Great-Horned Owl, +; Downy Woodpecker, +; Black-capped Chickadee, +; Winter Wren, +; Am. Robin, +; W. Bluebird, +; Mountain Blue Bird, +; Townsend's Solitaire, +. **Average Total:** 122 birds (1159/km², 469/100 acres) **Remarks:** Total species: 37. The average total dropped 23% below last year's, with smaller numbers of Mallard, Am. Wigeon, Starling and Dark-eyed Junco. Song Sparrow was the only bird seen on all 10 trips; Great Blue Heron, Com. Flicker and Starling were found on 9.—*JEROME L. GIFFORD, P.O. Box 85, Springdale, UT 84767.*

54. RESTORED COASTAL BRACKISH MARSH. — **Location:** California; Humboldt Co., 1 mi. S of Eureka on SE corner of the intersection of U.S. Hwy 101 and the Elk River, 40°45'N, 124°11'W Eureka Quadrangle, USGS. **Continuity:** New; BBC 1980. **Size:** 8.2 ha = 20.3 acres (triangular, planimetered). **Description of Plot:** See AB 35 101-102 (1980). In early 1980, the California Department of Transportation acquired 17.43 acres of the study site for a salt marsh restoration project as an environmental mitigation effort. Consequently, the dike separating the site from tidewater influence via the Elk River was reached in two locations on Sept. 17, 1980. In addition, the flap was removed from a tide gate between the site and the river. Vegetation still similar to original analysis. **Weather:** During the 28-day study period, temp. 35-75°F. There were 12 days with at least 0.01 in. precipitation and a total precipitation of 5.37 in. (Temperatures and precipitation data from Eureka.) **Coverage:** Dec. 29, 31; Jan. 2, 5, 8, 15, 24-25; 0730-1215 Each trip averaged about 3 hours for 25 total person-hours. **Count:** Long-billed Marsh Wren, 27 (329, 133); Song Sparrow, 16 (195, 79); Yellow-rumped Warbler, 6 (73, 30); Com. Snipe, 5 (61, 25); Ruby-crowned Kinglet, 5, White-crowned Sparrow, 2 (24, 10); White-tailed Kite, 1 (12, 5); Am. Robin, 1; House Finch, 1; Great Blue Heron, +; Black-crowned Night Heron, +; Cooper's Hawk, +; Marsh Hawk, +; Short-eared

Owl, +, Com. Flicker, +, Black Phoebe, +, Fox Sparrow, +. **Average Total:** 64 birds (779/km², 315/100 acres). **Remarks:** Total species, 17. Raptors were counted only if perched or actively hunting over the area. During the coverage period, only the Cooper's Hawk and Short-eared Owl were sighted as perched on the study site. Species seen on all 8 trips: Com. Snipe, Long-billed Marsh Wren, Ruby-crowned Kinglet, Song Sparrow. I wish to thank Paul F. Springer and Richard E. Genelly for advisory assistance throughout the study. This study is part of an ongoing investigation of the biological aspects of the marsh rehabilitation. The project is being funded by the California Dept. of Transportation.—*DANA L. BASE, 1198 Oasis St., Arcata, CA 95521.*

55. FRESHWATER MARSH. — **Location:** California; Los Angeles Co., 2 mi W of Wilmington, N side of Anaheim St. between Vermont Ave and State Freeway 11, Harbor Lake. 33°46'30"N, 118°18'24" W, Torrance Quadrangle, USGS. **Continuity:** Established 1977, second count. **Size:** 9.71 ha = 24 acres. **Description of Plot:** See AB 32:45 (1978). **Weather:** Temp. was below 50°F on 5 days, 60° or above on 5 days, and on Feb. 18 it was 77° at 1000; the average temp. was 55°. Between Dec. 15 and Feb. 8, there were 4 days on which a light rain fell. **Coverage:** Dec. 15; Jan. 5, 7-8, 14, 18; Feb. 4, 8, 10-11, 18. Eleven trips, averaging 180 min. **Count:** Am. Coot, 20 (206, 83); White-crowned Sparrow, 18 (185, 75); Ring-billed Gull, 17 (175, 71); Bush-tit, 17; Ruddy Duck, 15 (157, 63); Bonaparte's Gull, 15; Yellow-rumped Warbler, 15; Mallard, 13 (134, 54); Red-winged Blackbird, 12 (124, 50); Pintail, 11 (113, 46); Mourning Dove, 11; Song Sparrow, 11; Starling, 10 (103, 42); House Finch, 9 (93, 38); Killdeer, 8 (82, 33); Long-billed Marsh Wren, 7 (72, 29); Brewer's Blackbird, 6 (62, 25); Pied-billed Grebe, 5 (51, 21); W. Sandpiper, 5; Brown Towhee, 5; Long-billed Dowitcher, 4 (41, 17); W. Meadowlark, 4; Lesser Goldfinch, 4; Green Heron, 3 (31, 13); Snow Egret, 3; N. Shoveler, 3; Double-crested Cormorant, 2 (21, 8); Green-winged Teal, 2; Cinnamon Teal, 2; Forster's Tern, 2; Anna's Hummingbird, 2; Mockingbird, 2; Blue-gray Gnatcatcher, 2; Hutton's Vireo, 2; Savannah Sparrow, 2; Golden-crowned Sparrow, 2; Eared Grebe, 1 (10, 4); Western Grebe, 1; Great Blue Heron, 1; Short-billed Dowitcher, 1; W. Gull, 1; California Gull, 1; Rock Dove, 1; Say's Phoebe, 1; Scrub Jay, 1; Com. Crow, 1; Ruby-crowned Kinglet, 1; Loggerhead Shrike, 1; Tricolored Blackbird, 1; Red-throated Loon, +; Cattle Egret, +; Great Egret, +; Black-crowned Night Heron, +; Least Bittern, +; Am. Bittern, +; Gadwall, +; Am. Wigeon, +; Canvasback, +; Lesser Scaup, +; Bufflehead, +; White-tailed Kite, +; Sharp-shinned Hawk, +; Red-tailed Hawk, +; Red-shouldered Hawk, +; Marsh Hawk, +; Am. Kestrel, +; Virginia Rail, +; Sora Rail, +; Com. Gallinule, +; Semipalmated Plover, +; Black-bellied Plover, +; Ruddy Turnstone, +; Com. Snipe, +; Long-billed Curlew, +; Willet, +; Greater Yellowlegs, +; Lesser Yellowlegs, +; Least Sandpiper, +; Dunlin, +; Marbled Godwit, +; Sanderling, +;

Black-necked Stilt, +, Herring Gull, +, Mew Gull, +; Caspian Tern, +; Spotted Dove, +; White-throated Swift, +; Belted Kingfisher, +; Com. Flicker, +; Cassin's Kingbird, +; Black Phoebe, +; Rough-winged Swallow, +; Barn Swallow, +, Com. Raven, +; Bewick's Wren, +; Am. Robin, +; Water Pipit, +; Orange-crowned Warbler, +; Yellow Warbler, +; Com. Yellowthroat, +; House Sparrow, +. **Average Total:** 274 birds (2821/km², 1142/100 acres) **Remarks:** Total species, 101. Mallard, Ruddy Duck, Am. Coot, Bonaparte's Gull, Yellow-rumped Warbler, Red-winged Blackbird, and White-crowned Sparrow were seen every trip.—*JOHN J. ISITT, California St Univ., Long Beach and 2716 S. Carolina St., San Pedro, CA 90731 and DIANE VAN DE WATER, California St. Univ. and 6421 Via Canada, Rancho Palos Verdes, CA 90274*

56. COASTAL BAY. — **Location:** California; Los Angeles Co., Long Beach; 33°45'N, 118°07'W, Long Beach Quadrangle, USGS. **Continuity:** Established 1980. Second count. **Size:** 18.2 ha = 45 acres. **Description of Plot:** See AB 35: 38, 1981. **Weather:** During surveys temp. 50-75°F, cloud cover range 0-75%. No precipitation during censuses. **Coverage:** Jan. 31; Feb. 1, 3, 5-6, 10, 16-17. Total: 8 trips, averaging 90 min, 5 trips, 0730-1100; 1, 1200-1345, and 2, 1540-1700. **Count:** Surf Scoter, 245 (1345, 544); Ring-billed Gull 93, (511, 207); W. Grebe, 39 (214, 87); W. Sandpiper, 6 (33, 13); Eared Grebe, 5 (27, 11); Marbled Godwit, 5; W. Gull, 5; Willet, 3 (16, 7); Double-crested Cormorant, 2 (11, 4), Black-bellied Plover, 2; Forster's Tern, 2, Heermann's Gull, 1 (5, 2); Com. Loon, +, Red-throated Loon, +; Horned Grebe, +, Pied-billed Grebe, +; Snowy Egret, +; Mallard, +; Bonaparte's Gull, +. **Average Total:** 408 birds (2240/km², 907/100 acres). **Remarks:** Total species, 19. Surf Scoter, Ring-billed and W. gulls, W. and Eared Grebe, cormorants and plovers were noted on almost every trip. Shorebirds were most numerous during low tide and left the bay at high tide. All species with + were seen on 4 or fewer trips. On Feb. 16, the lowest count, the only birds observed were 40 W. Grebes, 28 Ring-billed Gulls, 12 Surf Scoters, and 1 W. Gull. This count was during mid-day, a holiday, with a tremendous amount of boat traffic and human activity near and within the bay. During the highest mid-morning count 693 Surf scoters, 120 Ring-billed Gulls, 56 W. Grebes, and 8 other species were seen.—*PAMELA GUNTHER, Dept. of Biol., California St. Univ., Long Beach, CA 90840.*

57. COASTAL MARSH. — **Location:** California; Los Angeles Co., Long Beach, 1 mi. S of California St. Univ.; (Sec. 2, T5S, R12W), 33°45'N, 118°07'W. Long Beach Quadrangle, USGS. **Continuity:** A portion of this area was surveyed in 1976 (AB, 30: 1069, 19). **Size:** 6.9 ha = 17 acres (paced). **Description of Area:** A tidal saltwater marsh (connected to larger components of the Alamitos Bay wetlands (see AB 35: 38, 1981) complex by the Los Cerritos Channel) about evenly comprised of bare mud flats and vegetated marsh. The marsh vegetation is heavily dominated

(60%) by Pickleweed (*Salicornia virginica*), but also includes (30%) Sea Blite (*Suaeda californica*), Salt Cedar (*Monanthochloe littoralis*), Alkali Heath (*Frankenia grandiflora*), Sea Lavender (*Limonium californicum*), and, in the lower littoral subzone especially, Cordgrass (*Spartina foliosa*) (10%). Flotsam and jetsam, brought in with the tide, are distributed through the area. **Topography:** Flat, sea level. **Edge:** Separated from adjacent weed-filled fields to the E and N by artificial riprap (chunks of concrete); other man-made elements are two chain-link fences extending into the marsh. Bounded on the N by Los Cerritos Channel, with a housing development beyond; on the E by Studebaker Rd., with a steam plant beyond; on the S by an oil field, with Westminster Blvd. beyond; and on the W by a marina, and Pacific Coast Highway. **Water:** At the highest tide, c. 90% of the mud flats and 33% of the marsh are totally submerged. At the lowest tide, the water recedes into very narrow channels. **Food:** Algae, grasses, mussels—Ribbed Mussel (*Modiolus demissus*)—and other shellfish, snails including California Hornsnail (*Cerithidea californica*), insects, spiders, isopods; small fish were observed being taken by terns. **Weather:** There was no significant precipitation during Jan. and none at all during any of the trips. For the period Jan. 4-10, avg. high = 73°F, avg. low = 46°; for Jan. 18-31, avg. high = 67°, avg. low = 47°. **Coverage:** Jan. 4, 6-7, 9-10, 18, 21-22, 24, 31. Total, 10 trips, 9 mid-morning and 1 late afternoon, averaging 90 min. **Count:** W. Sandpiper, 59 (858, 347); Willet, 44 (640, 259); Great Blue Heron, 7 (102, 41); Long-billed Dowitcher, 7; Savannah Sparrow, 6 (87, 35); Ring-billed Gull, 5 (73, 29); W. Meadowlark, 5; Pintail, 4 (58, 24); Red-breasted Merganser, 4; Long-billed Marsh Wren, 4; Long-billed Curlew, 2 (29, 12); Dunlin, 2; Pied-billed Grebe, 1 (5, 6); Great Egret, 1, Snowy Egret, 1; Mallard, 1; Com. Goldeneye, 1; Bufflehead, 1; Osprey, 1; Am. Kestrel, 1; Whimbrel, 1; Killdeer, 1; Com. Snipe, 1; Least Sandpiper, 1; Marbled Godwit, 1; Forster's Tern, 1; Caspian Tern, 1; Burrowing Owl, 1; Belted Kingfisher, 1; Com. Loon, +; Double-crested Cormorant, +; Am. Wigeon, +; Turkey Vulture, +; White-tailed Kite, +; Red-tailed Hawk, +; Black-bellied Plover, +; Greater Yellowlegs, +; Am. Avocet, +; Black-necked Stilt, +; W. Gull, +; Royal Tern, +; Loggerhead Shrike, +; **Average Total:** 166 birds (2413/km², 976/100 acres). **Remarks:** Total species, 42. Although the most numerous on the average, W. Sandpipers were seen on only 3 surveys. Only 2 species, Willet and Great Blue Heron, were observed on all 10 trips. Seen 9 out of 10 times were the Savannah Sparrows, these are the endangered Belding's subspecies, which undoubtedly nest in the *Salicornia*. The single late-afternoon survey revealed a relative predominance of W. Meadowlarks at that time. No other simple relationships between time-of-day, tide, species composition and/or numbers were immediately evident. Only 4 Black-Bellied Plovers were observed during the course of this survey, while in 1976 they were the second most numerous species seen in this area.—DENNIS MINSKY, Dept. of Biology, California St. Univ., Long Beach, and 3444 McNab Av., Long Beach, CA 90808.

58. TIDAL CHANNEL-RECREATION AREA. — **Location:** California; Los Angeles Co., Long Beach, L. B. Marine Stadium. 33°45'N, 118°07'W, Long Beach Quadrangle, USGS. **Continuity:** Established 1980, second year. **Size:** 15.33 ha = 37.88 acres. **Description of Plot:** See AB 38. **Weather:** During the survey, the weather was mostly warm and clear with no rain. Average daily temperature was 57°F. **Coverage:** Jan. 8-9, 12, 14, 16, 18, 30. Seven trips of approximately 45 min, 0700-1000. **Count:** Surf Scoter, 34 (222, 90); W. Sandpiper, 22 (144, 58); Ring-billed Gull, 18 (117, 48); W. Grebe, 8 (52, 21); Semipalmated Plover, 7 (46, 18); Willet, 7; Eared Grebe, 4 (26, 11); Ruddy Turnstone, 3 (20, 8); Black-bellied Plover, 2 (13, 5); Spotted Sandpiper, 2; Sanderling, 2; W. Gull, 2; California Gull, 2; Forster's Tern, 2; Pied-billed Grebe, 1 (7, 3); Mallard, 1; Least Sandpiper, 2; Caspian Tern, 1; Double-crested Cormorant, +; Snowy Egret, +; Lesser Scaup, +; Belted Kingfisher, +. **Average Total:** 119 birds (776/km², 314/100 acres). **Remarks:** Total species, 22. Ruddy Turnstones were seen on only 3 days. On Jan. 18, a group of 27 Semipalmated Plovers and 61 W. Sandpipers were observed. Semipalmated Plovers were noted on 3 days, W. Sandpipers on 4 days. A group of 41 W. Sandpipers was seen on Jan. 8. 6 Mallards were observed on only 1 day.—TOM HARRINGTON, Department of Biology, California St. Univ., Long Beach, CA 90840.

59. TIDAL LAGOON-PARK. — **Location:** California; Los Angeles Co., Long Beach, Colorado Lagoon. 33°45'N, 118°07'W, Long Beach Quadrangle, USGS. **Continuity:** Established 1980, second year. **Size:** 8.09 ha = 20.0 acres. **Description of Plot:** See AB 35: 38 (1981). **Weather:** During the survey, the weather was mostly warm and clear with no rain. Average daily temperature was 57°F. **Coverage:** Jan. 8-9, 12, 14, 16, 18, 30. Seven trips of approximately 45 min, 0700-1000. **Count:** Am. Coot, 68 (840, 340); Ring-billed Gull, 48 (593, 240); California Gull, 16 (198, 80); Mallard, 11 (136, 55); Semipalmated Plover, 10 (124, 50); Pied-billed Grebe, 5 (62, 25); Black-bellied Plover, 5; Willet, 3 (37, 15); Double-crested Cormorant, 2 (25, 10); W. Sandpiper, 2; Sanderling, 2; Eared Grebe, 1 (12, 5); Lesser Scaup, 1; Spotted Sandpiper, 1; Marbled Godwit, 1; Snowy Egret, +; Killdeer, +; W. Gull, +; Heermann's Gull, +; Belted Kingfisher, +. **Average Total:** 176 birds (2174/km², 880/100 acres). **Remarks:** Total species, 20. 11 Mallards were seen on all days. Semipalmated Plovers were seen on 6 days, a group of 53 was seen Jan. 8.—TOM HARRINGTON, Department of Biology, California St Univ., Long Beach, CA 90840.

60. FRESHWATER POND. — **Location:** California; Los Angeles Co., Long Beach, less than 1 mi. S of California State Univ.; (SE ¼ of Sec. 2, T5S, R12W): 33°45'N, 118°07'W, Long Beach Quadrangle, USGS. **Continuity:** New. **Size:** 0.61 ha = 1.5 acres (Rangefinder). **Description of Plot:** A small freshwater pond, which may have one time been part of the contiguous Alamitos Bay Wetlands. (See AB, 35: 38, 1981). Cattails (*Typha* sp.) are the dominant vegetation,

with willows (*Salix* sp.), *Baccharis* sp., Tree Tobacco (*Nicotiana glauca*), and Castor Bean (*Ricinus communis*) growing along the edge of the pond. **Topography:** Sea level, flat. **Edge:** Only a chain link fence separates the pond on its NE side from the Pacific Coast Highway. It is otherwise surrounded by a rapidly developing housing complex, with degraded wetlands beyond. The effects of the ongoing construction activity and probable siltation must be taken into account here. **Water:** Probably strictly fresh, nontidal, with considerable runoff from the nearby construction and the highway. **Food:** Algae, grasses, shellfish, fish, insects (observed one large goldfish near surface). **Weather:** For the period Jan. 6-10, a mean high temp. of 75°F., and a mean low of 44°, for the period Jan. 18-Feb. 2, a mean high of 70°, and a mean low of 47°; no significant precipitation. **Coverage:** Jan. 6-7, 9-10, 18, 21, 24, 31; Feb. 1-2. Ten trips, 8 mid-morning and 2 late-afternoon, averaging 30 min. **Count:** Lesser Scaup, 59 (9719, 3933), Ruddy Duck, 10 (1647, 667); Canvasback, 8 (1318, 533); Am. Coot, 6 (988, 400); Ring-billed Gull, 5 (823, 333); Pied-billed Grebe, 3 (494, 200); Mallard, 3; Double-crested Cormorant, 1 (165, 67); Green Heron, 1; Great Egret, +; Snowy Egret, +; Pintail, +; Cinnamon Teal, +; Wood Duck, +; Sora, +; Caspian Tern, +; Long-billed Marsh Wren, +. **Average Total:** 96 birds (15,814/km², 6400/acres). **Remarks:** Total species, 17. Only the Pied-billed Grebe, Lesser Scaup, Ruddy Duck, and Am. Coot, were seen on all 10 trips, the Canvasback and Ring-billed Gulls were seen on 9 trips; the Double-crested Cormorant and Mallard on 8 trips. The ♂ Wood Duck was seen on 2 trips—both times chasing ♂ and ♀ Mallards. Future surveys of this area would surely reveal the effects of human disturbance.—DENNIS MINSKY, Dept. of Biology, California State Univ., Long Beach, and 3444 McNab Ave., Long Beach, CA 90808.

61. YOUNG RIPARIAN WOODLAND AND POND. — **Location:** California; Orange Co., Costa Mesa, Victoria Pond, SE corner of Brookhurst and Hamilton (= Victoria St.), 33°39'N 117°57'W, Newport Beach Quadrangle. **Continuity:** New. **Size:** 6.3 ha = 13 acres. **Description of Plot:** A temporary county fence marks the perimeter of the plot, somewhat rectangular. Following the perimeter is a single row of Mulefat (*Baccharis glutinosa*) and a denser scattering of Mulefat in the SE corner; 40% coverage. Interspersed with the Mulefat are less than 20 young willows (*Salix* spp. including *S. laevigata*). Two clusters are up to 20 ft tall in the SE corner. The remainder, 8-15 ft, are evenly distributed around the perimeter. There is no canopy. To the N a brackish pond occupies 6 acres with one dense and three small patches of California Bulrush (*Scirpus californicus*) at its edge. The S bank of the pond is free of vegetation and opens into an unsheltered S area within the *Baccharis* border. This area was dry wetland during most of the count but a shallow pond was formed by the rain of Jan. 28 to make the total area of water about 8 acres (not continuous). Partly covering the wetland area is Pickleweed (*Salicornia virginica*) comprising 25% of the total plot. Among the Mulefat near the fence

there is a 7% covering of Australian Saltbush (*Atriplex semibaccata*) with other mixed vegetation, including Tamarisk sp., Tree Tobacco (*Nicotiana glauca*), Cocklebur (*Xanthum strumarium*) and Pampas Grass (*Cortaderia atacamensis*). Inside the S border of Mulefat along the edge of wetland are dense patches of California Bulrush interspersed with cattail (*Typha sp.*) and Sedge (*Scirpus robustus*). **Topography:** Flat; mean elevation 3.5 ft. Edge: Greenville-Banning Channel parallels the W edge of the plot, which is directly bordered by the Santa Ana River. N is 4-lane Victoria St; E is a dirt road bordered by upland cliff of ruderal and coastal sage scrub vegetation. S is an extensive meadow; 1200 ft. SE is a mature riparian habitat bordered on the E by new urban development. **Food:** *Baccharis* flowers, Pacific Treefrog (*Hyla regilla*), Beechey Ground Squirrel (*Citellus beecheyi*), small mice, cottontail rabbits, turtles fish, flying insects. **Weather:** Unusually warm and dry Dec. to mid-Jan.; up to 90°F. Average high during count was 64°, average low 53°, range 45°-68°. Total rainfall for the count was 0.59 in. **Coverage:** Jan 18-21, 23-24, 26-27, 29, 31. Total: 10 trips, 0800-1645; average 88 min. **Count:** Bonaparte's Gull, 425 (8078, 3269); Bushtit, 27 (513, 208); Am. Coot, 15 (285, 115); Pintail, 9 (171, 69); Ruddy Duck, 9; unidentified imm gulls, 9; White-crowned Sparrow, 9; Am Wigeon, 8 (152, 62); Canvasback, 8; Song Sparrow, 8; Ring-billed Gull, 4 (76, 31); Anna's Hummingbird, 4; Cinnamon Teal, 3 (57, 23); N. Shoveler, 3; Lesser Scaup, 3; Blue-gray Gnatcatcher, 3; Yellow-rumped Warbler, 3; Com. Yellowthroat, 3; House Finch, 3; Com. Crow, 2 (38, 15); Pied-billed Grebe, 1 (19, 8); Double-crested Cormorant, 1; Great Egret, 1; Black-crowned Night Heron, 1; Gadwall, 1; Green-winged Teal, 1; Red-breasted Merganser, 1; Turkey Vulture, 1; Killdeer, 1; Marbled Godwit, 1; Black-necked Stilt, 1; Mew Gull, 1; Mourning Dove, 1; Black Phoebe, 1; Say's Phoebe, 1; Ruby-crowned Kinglet, 1; Great Blue Heron, +; Green Heron, +; Snowy Egret, +; White-tailed Kite, +; Sharp-shinned Hawk, +; Cooper's Hawk, +; Rough-legged Hawk, +; Marsh Hawk, +; Am. Kestrel, +; Willet, +; dowitcher sp., +; W. Gull, +; Forster's Tern, +; Caspian Tern, +; Belted Kingfisher, +; House Wren, +; Hermit Thrush, +; Loggerhead Shrike, +; Red-winged Blackbird, +; Green-tailed Towhee, +. **Average Total:** 574 birds (10,910/km², 4415/100 acres). **Remarks:** Total species, 54. The gull counts are a modest approximation as the Bonaparte's Gulls constantly flew in and out between the large pond and the adjacent Santa Ana River, with a few other gulls mixed within the large flocks. Ruddy Ducks and Canvasbacks remained consistent; other ducks varied in number each day. A few Pintails were present most counts but a single count of 42 weighted the average. A small flock of Great Egret, Black-crowned Night Heron, Red-breasted Merganser, Gadwall, and Black-necked Stilt were observed on single counts only. Egrets often flew outside the boundaries but only once flew directly over the plot. Black-crowned Night Herons flew over and circled the pond but did not land. The shallow new S pond attracted Black-necked Stilts, a Willet, and Killdeer.—*MARY K.*

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WINTERING BIRDS OF MINNESOTA SHELTERBELTS

The following seven censuses were conducted for the third consecutive year at the Univ. of Minnesota's Rosemount Agricultural Experiment Station, Dakota Co., Minnesota. Each shelterbelt was censused initially in 1979 (see AB 34:38-39, 1980). Mean minimum temp. during study periods was 26°F (range = -4 - 46), and snow depth ranged from 0 to 1 in. This winter was atypical with warm temperatures and little precipitation. Coverage of all shelterbelts was Dec. 26, 31; Jan. 6, 13-14, 21, 27-28; Feb. 4, 16, 18, 24-25; Mar. 3-4. Total trips per shelterbelt was 15, 0715-1030 and averaging 13 to 35 min per shelterbelt. A total of 17 species was seen in winter 1981 compared to 13 and 16 in 1979 and 1980, respectively. Species recorded in winter 1981 but not in 1979 and 1980 included Cooper's Hawk, Red-breasted Nuthatch, Pine Siskin, and Song Sparrow. This study was supported by funds from the Minnesota Agricultural Experiment Station, the Graduate School of the Univ. of Minnesota, the National Rifle Association of America, the Max McGraw Wildlife Foundation, and the Frank M. Chapman Memorial Fund.—*RICHARD H. YAHNER, Dept. of Entomology, Fisheries, and Wildlife, Univ. of Minnesota, St. Paul, MN 55108.*

62. MATURE (1946) FOUR ROW BELT. — **Location:** Minnesota; Dakota Co., Univ. of Minn. Rosemount Agricultural Experiment Sta., Poultry Section, 0.8 mi S of County Rd 42: 44°43'W, 93°03'W, Coates Quadrangle, USGA. **Size:** 0.698 ha = 1.72 acres (14.0 × 498.4 m, measured). **Description of Plot:** See AB 34:38 (1980). As a consequence of destruction by a summer 1980 storm, the density of the following trees was decreased from that in winter 1979: rows 1 and 2, Am. Elm (*Ulmus americana*), from 415/acre to 402/acre; row 3, Jack Pine (*Pinus banksiana*), from 267/acre to 263/acre; rows 3 and 4, White Spruce (*Picea glauca*), from 356/acre to 352/acre; row 4, White Cedar (*Thuja occidentalis*), from 296/acre to 295/acre (see AB 34:72, 1980). **Counts:** Dark-eyed Junco, 10 (1437, 581); Starling, 9 (1293, 523); Pine Siskin, 8 (1146, 465); Com. Crow, 5 (718, 291); Downy Woodpecker, 1 (144, 58); Red-breasted Nuthatch, 1; House Sparrow, 1; Cooper's Hawk, +; Ring-necked Pheasant, +; Great Horned Owl, +; Blue Jay, +; Song Sparrow, +. **Average Total:** 35 birds (5028/km², 2035/100 acres). **Remarks:** Total species, 12. The number of species ranged from 2 to 9, and the number of individuals was 2 to 112; both species and individuals seen per trip were much higher than previous winters. The high average number of birds seen per trip was attributed partially to 2 large flocks of Starlings (64 and 72 individuals) and to 3 large flocks of Com. Crows

(12, 15, and 42 individuals). Flocks of Starlings fed on waste grain in adjacent fields that were now snow covered, and Com. Crows often mobbed a nesting pair of Great Horned Owls. Com. Crows probably were responsible for destroying the owl's eggs. This was the third consecutive year that a pair of Great Horned Owls nested unsuccessfully in this shelterbelt.

63. MATURE (1948) FIVE-ROW BELT. — **Location:** Minnesota; Dakota Co., Univ. of Minn. Rosemount Agricultural Experiment Sta., North Beef Section, 0.5 mi S of County Rd 42; 44°44'N, 93°05'W, Coates Quadrangle, USGS. **Size:** 0.706 ha = 1.74 acres (21.0 × 336.0 m, measured). **Description of Plot:** See AB 34:38 (1980). As a consequence of destruction by a summer 1980 storm, the density of the following trees was decreased from that in winter 1979: rows 1 and 2, Green Ash (*Fraxinus pennsylvanica*), from 388/acre to 386/acre; rows 2 and 3, Silver Maple (*Acer saccharinum*), from 323/acre to 315/acre; rows 3 and 4, Cottonwood (*Populus deltoides*), from 170/acre to 166/acre (see AB 34:72, 1980). **Count:** House Sparrow, 5 (710, 287); Dark-eyed Junco, 3 (426, 172); Starling, 1 (142, 57); Hungarian Partridge, +; Hairy Woodpecker, +; Downy Woodpecker, +; Blue Jay, +; Com. Crow, +. **Average Total:** 9 birds (1278/km², 517/100 acres). **Remarks:** Total species, 8. Average number of House Sparrows seen per trip decreased from 49 and 20 in winters 1979 and 1980, respectively (see AB 35:39, 1981). The number of species seen were trip ranged from 0 to 5, and the number of individuals was 0 to 29.

64. MATURE (1949) EIGHT-ROW BELT. — **Location:** Minnesota; Dakota Co., Univ. of Minn. Rosemount Agricultural Experiment Sta., Sewage Section, 3.7 mi S of County Rd 42; 44°41'N, 93°05'W, Coates Quadrangle, USGS. **Size:** 0.37 ha = 0.91 acres (23.0 × 162.0 m, measured). **Description of Plot:** See AB 34:38 (1980). **Counts:** Dark-eyed Junco, 5 (1358, 549); Ring-necked Pheasant, +; Great Horned Owl, +; Downy Woodpecker, +; Blue Jay, +; Com. Crow, +; Black-capped Chickadee, +. **Average Total:** 5 birds (1358/km², 549/100 acres). **Remarks:** Total species, 7. The number of species seen per trip ranged from 0 to 4, and the number of individuals was 0 to 16. During last winter, only 4 species were observed and large flocks (maximum = 14 birds in 1981) of Dark-eyed Juncos were not present (see AB 35:39, 1981).

65. MATURE (1951) THREE-ROW 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. **Size:** 0.324 ha = 0.80 acres (14.8 × 219.2 m, measured). **Description of Plot:** See AB 34:39 (1980). **Count:** Dark-eyed Junco, 1 (309, 125); Cooper's Hawk, +; Ring-necked Pheasant, +; Black-capped Chickadee, +; Cedar Waxwing, +; Tree Sparrow, +. **Average Total:** 1 bird (309/km², 125/100 acres). **Remarks:** Total species, 6. The number of species seen per trip ranged from 0 to 3, and the number of individuals was 0 to 8.

66. IMMATURE (1961) NINE-ROW BELT. — **Location:** Minnesota; Dakota Co., Univ. of Minn. Rosemont Agricultural Experiment Sta., Agricultural Engineering Section, 1.5 mi S of County Rd 42; 44°43'N, 93°05'W, Coates Quadrangle, USGS. **Size:** 0.787 ha = 1.94 acres (26.7 × 294.6 m, measured). **Description of Plot:** See AB 34:39 (1980). **Counts:** Dark-eyed Junco, 2 (255, 103); Black-capped Chickadee, 1 (175, 52); Ring-necked Pheasant, +; Blue Jay, +. **Average Total:** 3 birds (382/km², 155/100 acres). **Remarks:** Total species, 4. During the previous winter, 9 species were observed (see AB 35:39, 1981). The number of species seen per trip ranged from 0 to 2, and the number of individuals was 0 to 9.

67. IMMATURE (1966) FOUR-ROW BELT. — **Location:** Minnesota; Dakota Co., Univ. of Minn. Rosemont Agricultural Experiment Sta., Plant Pathology Section, 2.6 mi S of County Rd 42; 44°41'N, 93°06'W, Coates Quadrangle, USGS. **Size:** 0.298 ha = 0.736 acres (13.0 × 229.3 m, measured). **Description of Plot:** See AB 34:39 (1980). As a consequence of destruction by a summer 1980 storm, the density of the following trees was decreased from that in winter 1979: row 1, Laurel-leaved Willow (*Salix pentandra*), from 13/acre to 4/acre; rows 2 and 3, Russian Olive (*Elaeagnus angustifolia*), from 36/acre to 33/acre (see BBC AB 34:72, 1980). **Count:** House Sparrow, 1 (336, 136); Dark-eyed Junco, 1; Ring-necked Pheasant, +; Black-capped Chickadee, +. **Average Total:** 2 birds (671/km², 272/100 acres). **Remarks:** Total species, 4. The number of species seen per trip ranged from 0 to 2, and the number of individuals was 0 to 6.

68. IMMATURE (1974) THREE-ROW BELT. — **Location:** Minnesota; Dakota Co., Univ. of Minn. Rosemont Agricultural Experiment Sta., Sheep Swine Section, 0.4 mi S of County Rd 42; 44°44'N, 93°05'W, Coates Quadrangle, USGS. **Size:** 0.21 ha = 0.515 acres (10.3 × 202.2 m measured). **Description of Plot:** See AB 34:39 (1980). **Count:** 0 species. **Remarks:** Only a single House Sparrow and 8 Am. Goldfinch seen in the 2 previous winters.

69. OPEN FARMLAND. — **Location:** Connecticut; Tolland Co., E. of Horse Barn Hill in Storrs; encompassing Univ. of Conn.'s livestock barns and adjacent fields. **Continuity:** Established 1979; 2 intermittent years. **Size:** 19.03 ha = 47 acres (measured from aerial photographs with planimeter). **Description of Plot:** See AB 34: 39-40 (1980). **Weather:** Sky conditions were sunny on 7 trips, mostly cloudy on 2 trips, and cloudy with showers on 1 trip. During the first 5 trips temp. 38°-40°F., winds from the W, NW, or N at 3-30 mph, water 60% frozen, and 0-8 in. of snow cover. On the last 5 trips temp. 41°-63°, winds SW, 0-13 mph, water becoming completely open, no snow cover, and some lowland flooding. 6.5 in. of rain fell during this latter period. **Coverage:** Feb. 6, 9-10, 12-13, 17-19, 26-27. Total, 10 trips; 1130-1645, ave 100 min each. Total: 16 hours. **Count:** Starling, 308 (1619, 655); Rock Dove, 182 (957, 387); House Sparrow, 154 (810, 328); Brown-headed Cowbird, 77 (405, 164); Red-

winged Blackbird, 73 (384, 155), Mourning Dove, 29 (152, 62); Mallard, 8 (42, 17); Com. Grackle, 6 (32, 13); Horned Lark, 5 (26, 11); Com. Crow, 5; Dark-eyed Junco, 4 (21, 9); Song Sparrow, 2 (11, 4); Black Duck, 1 (5, 2); Cardinal, 1; Red-tailed Hawk, +; Blue Jay, +; Tufted Titmouse, +; White-breasted Nuthatch, +; Mockingbird, +; Tree Sparrow, +; White-throated Sparrow, +. **Average Total:** 855 birds (4495/km², 1819/100 acres). **Remarks:** Total species, 21. The cowbirds, blackbirds, and grackles first appeared on Feb. 17, evidently as a result of the exceptionally warm weather, and remained through the rest of the period, increasing steadily in number. The mild weather conditions, lack of significant snow cover, and abundance of food all combined to produce a higher count this year than in 1979. Reduced Starling numbers seem to be part of an overall recent trend, although no cause has been determined. The Horned Larks were seen on 1 visit.—**DAVID P. ROSGEN, 70 Willington Oaks, Storrs, CT 06268.**

70. AVOCADO GROVE. — **Location:** Florida; Dade Co., 1.6 km N of Homestead at NW corner of McMinn Ave. and Biscayne Drive. 25°30'N, 80°34'W. **Continuity:** New. **Size:** 7.95 ha = 19.65 acres. (rectangular, 194 × 410 m measured). **Description of Area:** Commercial grove of mature (70%) and over-mature (30%) Avocado Trees (*Persea americana*). Trees topped at about 5 m, planted on 3 m and 4 m centers, respectively. Canopy cover: 50-70%. No flowers or fruit present. About 30% of ground surface covered with tall grass; remainder bare earth and rock. **Topography:** Flat. Elevation about 3 m. **Edge:** Roads on S and E; cultivated fields on N and W. **Weather:** Unusually cold. Temp. range: below 0°-18°C, Jan. average 4.5° below normal. Sky clear to 50% cloud cover. Winds 0-40 kph. **Coverage:** Dec. 25, 29; Jan. 4, 11, 14, 21, 24, 26, 29-30; 0700-0930 EST. Total man-hours: 25. **Count:** Palm Warbler, 16 (201, 81); Mourning Dove, 7 (88, 36); Blue-gray Gnatcatcher, 5 (63, 25); Red-bellied Woodpecker, 2 (25, 10); Red-shouldered Hawk, 1 (13, 5); Killdeer, 1; White-winged Dove, 1; Ground Dove, 1; *Empidonax* sp., 1; Sharp-shinned Hawk, +; Am. Kestrel, +; Screech Owl, +; Com. Flicker, +; Yellow-bellied Sapsucker, +; Great Crested Flycatcher, +; E. Phoebe, +; Tree Swallow, +; Mockingbird, +; Am. Robin, +; White-eyed Vireo, +; Black-and-white Warbler, +; Yellow-throated Warbler, +; Ovenbird, +; Cardinal, +; Rufous-sided Towhee, +. **Average Total:** 35 birds (440/km², 178/100 acres). **Remarks:** Total species, 25. During the year this grove is sprayed frequently with insecticides, herbicides, and fertilizers although only one application of fertilizer was made during the period of observation.—**JOHN M. GOOD, Nat'l Park Service, South Florida Research Center, P.O. Box 279, Homestead, FL 33030.**

71. CORN STUBBLE, SOY BEANS AND SHORT GRASS. — **Location:** Pennsylvania; Lycoming Co., 0.5 mi S of Jersey Shore, 41°11'05"N, 77°15'10"W. Jersey Shore Quadrangle USGS. **Continuity:** Established 1974; 7 intermittent 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, 22 ha (55%), soy bean, 14 ha (35%); and short grass, 4 ha (10%). **Weather:** The mean temperature during the trips was 19.6°F. Snow was on the ground on all trips, and was from a trace to 12 in. deep. Wind was up to 20 mph on three trips. **Coverage:** Dec. 31; Jan. 3, 5, 11, 13, 19, 21, 26. Total: 8 trips, averaging 37 min 0932-1729. **Count:** Snow Bunting, 6 (15, 6), E Meadowlark, 2 (5, 2); Marsh Hawk, +, Horned Lark, +; Swamp Sparrow, +. **Average Total:** 8 birds (20/km², 8/100 acres). **Remarks:** Total species 5. No birds were seen on more than three of the eight trips — **GLENNA SCHWALBE, PAUL SCHWALBE (compiler), Dept. of Biol. Sc., Lock Haven St. College, Lock Haven, PA 17745**

72. URBAN GOLF COURSE. — **Location:** Maryland; Prince George's Co., Univ of Maryland golf course bounded by Metzert Rd., Adelphi Rd., and Univ. Blvd., College Park. 39°00'N, 76°57'30"W Washington E, DC-MD Quadrangle, USGS. **Continuity:** New. **Size:** 25 ha = 61.8 acres (square, measured with steel tape and compass). **Description of Plot:** The study area consists of several distinct habitat types; fairways and greens (43%), fairway woods (lacking a shrub layer) between adjacent fairways (26%), dense mixed hardwoods and pines that border some fairways (21%), a small lake (7%), and roads and buildings (3%). Trees 3 in. or over in diameter were sampled in the fairway woods and dense mixed woods using 5, random, 0.1-acre circular samples for each habitat. **Fairway woods:** Tree density 84/acre; total basal area 154.4 ft²/acre. Species comprising 88% of the total number of trees (figures after each give number of trees/acre, relative density (%), relative dominance (%), frequency (%)): S. Red Oak (*Quercus falcata*) 22, 26, 28, 80; Virginia Pine (*Pinus virginiana*) 16, 19, 10, 80; White Oak (*Q. alba*) 12, 14, 20, 60; Black Tupelo (*Nyssa sylvatica*) 8, 10, 4, 40; Willow Oak (*Q. phellos*) 6, 7, 6, 20; N. Red Oak, (*Q. rubra*) 6, 7, 14, 40; Black Oak (*Q. velutina*) 4, 5, 12, 20. Trees by diameter size class (figures after each give number of trees/acre, relative density (%), basal area in ft²/acre, relative dominance (%)): A(3-6 in.) 0; B(6-9 in.) 6, 14, 1 8, 1; C(9-15 in.) 38, 90, 30.4, 20; D(15-21 in.) 26, 62, 46.8, 30; E(21-27 in.) 6, 14, 18.6, 12, F(26-33 in.) 0; G(33-40 in.) 8, 19, 56.8, 3.7. Shrub stems/acre 10,000; ground cover 90%, canopy cover 73%; average canopy height 79 ft, range 70-95 ft. **Dense mixed Hardwood and Pines:** Tree density 230 trees/acre, total basal area 169.6 ft²/acre. Species comprising 90% of total number of trees: Am. Beech (*Fagus grandifolia*) 40, 17, 21, 80; Red Maple (*Acer rubrum*) 30, 13, 5, 80; Tulip-tree (*Liriodendron tulipifera*) 28, 12, 23., 40, White Oak 20, 9, 6, 60; Sweetgum (*Liquidambar styraciflua*) 16, 7, 13, 60, Am Holly (*Ilex opaca*) 14, 6, 0.8, 40; Virginia Pine 14, 6, 6, 60; dead trees 14, 6, 3, 60, White Oak group 12, 5, 3, 60; Black Oak group 10, 4, 6, 60; Black Oak 8, 3, 7, 40. Trees by diameter size class: (A)82, 36, 8.2, 5; (B)44, 19, 13.2, 8; (C)72, 31, 57.6, 34; (D)18, 8, 32, 4, 19, (E) 8, 3, 24.8, 15; (F) 4, 2, 19.2, 11; (G) 2, 1, 14.2, 8. Shrub stems/acre 28,000; ground

cover 52%, canopy cover 89%, average canopy height 76 ft; range 70-80 ft. A maintenance road runs N-S through the E side of the study area. Another service road runs just outside of the N boundary. Several golf cart paths are also on the study area. A small shelter is located near the center. **Topography:** Gently rolling hills, low point 114 ft at the lake's edge, high point 177 ft at the maintenance buildings NE of the lake. **Edge:** The study area is immediately surrounded by the remainder of the golf course. To the SE 500 m is the College Park campus of the Univ. of Maryland. To the S and NE 500 m are residential areas. W and N 500-1000 m lies less developed land that is mostly mixed hardwoods and pines. A trash dump is located approximately 800 m to the NW. **Water:** Too small sluggish streams, one from the N and the other from the W, converge to empty into the lake (1.7 ha). **Food:** Several species of plants within the study area provide winter food for several species of birds. Among these are pines, greenbrier (*Smilax*), Am. Beech, oaks, Tulip-tree, Sweetgum, Am. Holly, Virginia Creeper (*Parthenocissus*), Black Tupelo, Flowering Dogwood (*Cornus florida*), Japanese Honeysuckle (*Lonicera japonica*), and Poison Ivy (*Rhus radicans*). Acorns were abundant during the winter. **Weather:** Jan. was colder than normal by an average of 5.7°F while Feb. was warmer than normal by an average of 2.6°. Temp. in Jan. were 22-39°; Feb. 21-55°. Wind speeds, 0-10 mph. The sky was clear on 7 days and overcast on 3. Weather data was from the College Park campus station. **Coverage:** Jan. 22, 26, 29-30, Feb. 5-6, 9, 13, 16, 20. 10 trips averaging 2 hours. All trips started at 0730 except 1st and 3rd which began at 0940; 2 observers were present on all trips. **Count:** Dark-eyed Junco, 29 (116, 47); Carolina Chickadee, 20 (80, 32); Tufted Titmouse, 19 (76, 31); Starling, 16 (64, 26); Am. Robin, 12 (48, 19); Blue Jay, 12; Com. Crow, 10 (40, 16); Mourning Dove, 9 (36, 15), Com. Flicker, 6 (24, 10); Red-bellied Woodpecker, 6; Cardinal, 4 (16, 6), Mallard, 3 (12, 5); Downy Woodpecker, 3; Brown Creeper, 3; House Sparrow, 2 (8, 3); White-throated Sparrow, 2; Song Sparrow, 2, Red-breasted Nuthatch, 1 (4, 2); Mockingbird, 1, Cedar Waxwing, 1; Com. Grackle, 1; Brown-headed Cowbird, 1; Cooper's Hawk, +, Red-tailed Hawk, +; Am. Kestrel, +; Ring-billed Gull, +; Pileated Woodpecker, +, Red-headed Woodpecker, +; Yellow-bellied Sapsucker, +; Hairy Woodpecker, +, White-breasted Nuthatch, +; Carolina Wren, +; Hermit Thrush, +; Golden-crowned Kinglet, +; Rusty Blackbird, +; Purple Finch, +. **Average Total:** 163 birds (652/km², 264/100 acres). **Remarks:** Total species, 36. Species seen on all 10 counts were Com. Flicker, Red-bellied Woodpecker, Downy Woodpecker, Blue Jay, Carolina Wren, Tufted Titmouse, Cardinal, and Dark-eyed Junco. We thank Dr. Don Messersmith and Mr. John Webb for their invaluable aid in this study.—**ROLAND S. SHOOK and JOE ENGLER, Univ. of Maryland Univ. College, College Park, MD 20742**

73. SMALL NORTHERN TOWN — Location: Canada; Ontario, Ignace; 49°20'N, 97°40'W. **Continuity:** New. **Size:** 96.3 ha = 238 acres; irregular shape. **Description of**

Plot: Most of the built-up area of town, about 65% residential; 360 single homes, about 250 built after 1970, and 7 small apartment blocks; about 15% commercial: 1 small shopping center, 16 stores, 2 motels, 6 garages, 4 restaurants, 1 recreation centre, 1 medical clinic, 1 library and 3 churches. The vegetation of the older area of town is dominated by scattered Manitoba Maple (*Acer negundo*), with many hedges and shrubs. The newer areas of town are dominated by scattered Jack Pine (*Pinus banksiana*), Quaking Aspen (*Populus tremuloides*), and White Birch (*Betula papyrifera*). Recently developed mobile home parks have few trees or shrubs. About 15% of the total area is small woodlots of Jack Pine (a 50-acre woodlot within the boundaries was excluded from the count) and 5% of the area is small lake. **Edge:** mainly Jack Pine forest. **Elevation:** 424 m (1400 ft). **Topography:** Essentially flat. **Weather:** Temperatures ranged from -22° to 29°F, averaging 16°; conditions were overcast on 6 surveys, with light snow once, and sunny on 1 survey; winds were generally light; ground was snow-covered on all surveys. **Coverage:** Nov. 13, 26; Dec. 7; Jan. 2, 25; Feb. 14, 28. Seven trips averaging 2 hours 30 min, 0745-1015 CST. **Count:** House Sparrow, 126 (131, 53); Rock Dove, 45 (47, 19); Com. Raven, 41 (43, 17); Evening Grosbeak, 10 (10, 4); Pine Grosbeak, 6 (6, 3); Blue Jay 5 (5, 2); Black-capped Chickadee, 5; Hairy Woodpecker, 2 (2, 1); Starling, 2; Gray Jay, +; redpoll sp., +. **Average Total:** 242 birds (251/km², 102/100 acres). **Remarks:** Total species, 11. Com. Raven, House Sparrow, Blue Jay and Black-capped Chickadee were seen on all surveys, Pine Grosbeaks on 6 surveys, Rock Doves and Evening Grosbeaks on 5 surveys, and the woodpecker and Starling on 2 surveys. The sparrow population was supported mainly by a bird feeder near the railway yards. The density of ravens was highest in the commercial area of town and ravens were the only birds seen in the new mobile home park.—**BRUCE D. RALPH, P.O. Box 1096, Ignace, Ontario, Canada, POT 1T0.**

WINTER BIRD COMMUNITIES IN URBAN SOUTHERN ONTARIO

The following four censuses are part of the Toronto Bird Observatory's program to study avian communities in urban areas (see *AB* 35: 41-44). This is the second year for three of the study sites. This will allow assessment of the importance of temporal variation within our larger study framework. Another source of variation, observer differences, was tested for its relative importance within our studies. Three observers conducted separate WB-PSs in Sherwood Park, standardizing times and route. These results will be published at a later time. Preliminary analysis indicates that observer variation is not a significant component of variance within our studies.

Inter-year differences in individual species' abundances were tested for statistical significance using the Mann-Whitney U test ($\alpha = .05$). Differences in diversity (H'), species richness, evenness (J') and total density were tested using Analysis of Variance ($\alpha = .05$).

Both average species richness and total density were significantly higher this year on all three sites. Diversity (H') and evenness (J') were not significantly different on an individual site level. Diversity was, however, significantly higher this year overall (based on a two-way ANOVA with site and year as factors). The increase in density resulted from both addition of new species and increased abundance of species present in both years (ANOVA with site and year as factors and richness as a covariate). Several species increased significantly on each site, a few declined and some finch species appeared after an absence last year.

Weather conditions were more typical this winter than last. Average temp. (and 20-year averages): Nov., 3.5°C (4.8°); Dec., -4.3° (-1.8°); Jan., -7.9° (-4.4°); Feb., -0.4° (-3.8°). Total snowfall (and 20-year averages): Nov., 10.9 cm (10.2); Dec., 28.3 (28.7), Jan., 27.0 (37.1); Feb., 24.0 (33.3).—**PAUL SMITH, School of Planning, Faculty of Environmental Studies, Univ. of Waterloo, Ontario N2L 3G1.**

74. CITY PARK WITH MATURE FOREST. — Location: Ontario; Toronto, Sherwood Park, between Mt. Pleasant Road on the W, Bayview Ave. on the E, Blythwood Road on the N and Mt. Hope Cemetery on the S; 43°N, 79°23'W. **Continuity:** Established 1980; 2 consecutive years. **Size:** 18.5 ha. = 45.7 acres (Measured from aerial photograph using a planimeter). **Description of Plot:** See *AB* 35: 43 (1981). **Weather:** Mean temperature during counts -6.9°C. Extremes +5° and -23°. Record low temperatures in early January did not result in low bird counts. The ground was snow-covered except on the last trip. **Coverage:** Dec. 21, Jan. 1, 4, 10, 18, 25; Feb. 1, 8, 14, 22. Total, 10 trips, 9 between 0700 and 1100, one between 1400 and 1600, averaging 124 min. **Count:** Mourning Dove, 12 (65, 26); Dark-eyed Junco, 10 (54, 22); Black-capped Chickadee, 8 (43, 18); Pine Siskin, 6 (32, 13); Starling, 4 (22, 9); Cardinal, 4; White-breasted Nuthatch, 3 (16, 7); Am. Robin, 3; Downy Woodpecker, 2 (11, 4); Com. Crow, 3; Com. Redpoll, 2; Red-tailed Hawk, 1 (5, 2); Screech Owl, 1; Hairy Woodpecker, 1; Blue Jay, 1; Am. Goldfinch, 1; White-throated Sparrow, 1; Mallard, +; Rock Dove, +, Pileated Woodpecker, +; Red-breasted Nuthatch, +; Cedar Waxwing, +; House Sparrow, +. **Average Total:** 62 (335/km², 136/100 acres). **Remarks:** Total species, 23 Black-capped Chickadee, White-breasted Nuthatch, Cardinal, and Dark-eyed Junco were noted on all trips. A pair of Screech Owls (gray phase) was resident on the plot. The Mourning Doves roosted on the plot at night and dispersed during the day. The weather was much more severe than the previous winter, which may account for the presence of flocks of Pine Siskins and Common Redpolls which were missing last year. Average diversity (H') was 2.100 and average evenness (J') was 0.8249. Black-capped Chickadee, White-breasted Nuthatch, Am. Robin and Cardinal numbers were significantly higher ($p \leq .05$) than last year — **GEORGE M. FAIRFIELD, 332 Sheldrake Blvd., Toronto, Ontario M4P 2B8.**

75. SUBURBAN RIVER VALLEY WITH WOODS AND FIELD. — **Location:** Ontario, Toronto, on N side of Finch Ave. E., between Bayview Ave. and Leslie St. 43°47'30"N, 79°22'40"W. **Continuity:** Established 1980, second year. **Size:** 20 ha = 49.4 acres, approximately rectangular (about 520 × 410 m). **Description of Plot:** See AB 35: 43, Study 86. **Weather:** Temp. -10–+4°C. Snow cover, 2-8 in. **Coverage:** Dec. 22, 27; Jan. 1, 14, 25; Feb. 8, 15. Total, 7 trips. 0900-1130, averaging 122 min. **Count:** Black-capped Chickadee, 12 (60, 24); Starling, 9 (45, 18); Am. Robin, 8 (40, 16); Dark-eyed Junco, 8; Mourning Dove, 7 (35, 14); Am. Goldfinch, 6 (30, 12); House Sparrow, 4 (20, 8); Cardinal, 4; Pine Siskin, 4; Ring-necked Pheasant, 3 (15, 6); Blue Jay, 3; White-breasted Nuthatch, 3; Downy Woodpecker, 2 (10, 4); Cedar Waxwing, 2; Song Sparrow, 2; Mallard, 1 (5, 2); Rock Dove, 1; Hairy Woodpecker, 1; Com. Crow, 1; Com. Redpoll, 1; Red-tailed Hawk, +; Am. Kestrel, +; Screech Owl, +; Com. Flicker, +; Winter Wren, +; Purple Finch, +; Tree Sparrow, + **Average Total:** 82 birds (410/km²; 166/100 acres). **Remarks:** Total species, 27. Downy Woodpecker, Black-capped Chickadee, White-breasted Nuthatch, Starling, House Sparrow, Cardinal, Com. Redpoll, Am. Goldfinch and Dark-eyed Junco were recorded on every trip; present on six trips were Mourning Dove, Am. Robin, Pine Siskin and Song Sparrow. Unlike last winter, several feeders on the valley slopes were well patronized, probably because of heavier snow cover this winter. Average diversity (H') was 2.472 and average evenness (J') was 0.8765. Mallard numbers were significantly lower ($p \leq .05$) than last year, probably because of increased ice cover on the river. Mourning Dove, Black-capped Chickadee, White-breasted Nuthatch, Am. Goldfinch and Dark-eyed Junco numbers were all significantly higher than last year.—DONALD E. BURTON, 4 Donna St., Wiltondale, Ontario M2M 208.

76. CITY RAVINE. — **Location:** Ontario; Toronto, Cedarvale Ravine, from Heath St. to Cedarvale Park; 43°43'N, 79°25'W. **Continuity:** Established 1979 (BBC), second WB-PS. **Size:** 20.0 ha = 49.4 acres. **Description of Plot:** See AB 34: 64 (1980). **Weather:** Mean temp. during counts, -6.0°C; extremes, -15° and 5°. Four clear days, 2 partly cloudy. Virtually complete snow cover on all counts. **Coverage:** Jan. 2, 12, 17, 21-22; Feb. 14, 0930-1130, average length 125 min. **Count:** Starling, 41 (205, 83); Dark-eyed Junco, 16 (80, 32); Black-capped Chickadee, 13 (65, 26); Cardinal, 10 (50, 20); Cedar Waxwing, 8 (40, 16); Song Sparrow, 8; Blue Jay, 6 (30, 12); House Sparrow, 6; Mourning Dove, 4 (20, 8); White-throated Sparrow, 4; Am. Robin, 3 (15, 6); Downy Woodpecker, 2 (10, 4); Com. Flicker, 1 (5, 2); Hairy Woodpecker, 1; Com. Crow, 1; White-breasted Nuthatch, 1; Am. Goldfinch, 1; Pine Siskin, 1, Red-tailed Hawk, +; Am. Kestrel, +; Red-breasted Nuthatch, +; Winter Wren, + **Average Total:** 127 birds (635/km², 257/100 acres). **Remarks:** Total species, 22. No species were seen on all counts. Average diversity (H') was 2.149 and average evenness (J') was 0.7962. Numbers of Mourning Doves were significantly lower ($p \leq .05$) than

last year, while numbers of Black-capped Chickadees, Cardinals and Dark-eyed Juncos were significantly higher than last year.—DONNA C. KNAUBER and PAUL SMITH (compiler), School of Planning, Faculty of Environmental Studies, Univ. of Waterloo, Waterloo, Ontario N2L 3G1.

77. URBAN RESIDENTIAL. — **Location:** Ontario; Guelph; 80°15'30"N, 43°32'30"W. **Continuity:** New. **Size:** 4.05 ha = 10 acres. **Description of Plot:** Plot consists of belt transects of Northumberland and Durham Streets between Dublin and Yorkshire Streets and vice versa. The area is one of the older residential areas in Guelph, consisting entirely of single-family dwellings. Housing density is 15.9 buildings/ha. Traffic volume is very low. Shrub cover is minimal consisting mostly of barberry (*Berberis* sp.) and cedar (*Thuja* sp.) hedges and some yew (*Taxus* sp.). Shade tree density is 9/ha, predominantly Sugar Maple (*Acer saccharum*), a few Blue Spruce (*Picea pungens*) and a couple of White Oaks (*Quercus alba*). There is some patchiness in the spatial distribution of tree cover. **Edge:** Bordered on three sides by similar areas and by a large church and a factory on the fourth side. **Topography:** The plot is oriented with its long axis in roughly a E-W direction. It is located between two drumlins and has a mean elevation of 324 m. **Weather:** Mean temp. during counts, -4.17°C; extremes, -14° and 4°. Four overcast days and two clear. Average snow cover 80%. **Coverage:** Jan. 19-20, 22, 30; Feb. 2, 4; 0945-1000, average length 14 min. **Count:** House Sparrow, 11 (272, 110); Starling, 8 (198, 80); Rock Dove, 3 (74, 30); Black-capped Chickadee, 2 (49, 20); White-breasted Nuthatch, 1 (25, 10); Cardinal, 1; Downy Woodpecker, +; Com. Crow, +; Dark-eyed Junco, +. **Average Total:** 26 birds (642/km², 260/100 acres). **Remarks:** Total species, 9. House Sparrow, Starling, and Rock Dove were seen on all counts. Average diversity (H') was 1.258 and average evenness (J') was 0.8324.—PAUL SMITH, School of Planning, Faculty of Environmental Studies, Univ. of Waterloo, Ontario N2L 3G1.

78. URBAN MOBILE HOME PARKS. — **Location:** Arizona; Pima Co., Tucson, Westward Ho and Tucson Mobile Estates; 32°15'30"N, 111°W; Jaynes and Tucson N Quadrangles, USGS. **Continuity:** Established 1980; 2 years. **Size:** 16.2 ha = 40.0 acres. **Description of Plot:** AB 35:44 (1981). **Weather:** The winter was about 5°F warmer than average and precipitation for Dec.-Feb. was about one-half average. **Coverage:** Quantitative figures are based on complete surveys on Dec. 22; Jan. 1, 20, 22, 26; and Feb. 16, 19, 26. The 8 trips were about one hour each; half morning and half afternoon. Some additional species are from partial surveys. **Count:** House Sparrow, 75 (463, 188); Inca Dove, 41 (253, 103); House Finch, 18 (111, 45); Mockingbird, 5 (31, 13); Cactus Wren, 2 (12, 5); Starling, 2; Bronzed Cowbird, 2; Mourning Dove, 1 (6, 3); Gila Woodpecker, 1; Yellow-rumped Warbler, 1; Great-tailed Grackle, 1; Cardinal, 1; Sharp-shinned Hawk, +; Am. Kestrel, +; Killdeer, +; Rock Dove, +; Say's Phoebe, +; Curve-

billed Thrasher, +, W Meadowlark, +, White-crowned Sparrow, +. **Average Total:** 150 birds (927/km², 375/100 acres) **Remarks:** Total species, 20. House Finches did not move into the parks in force until mid-Feb. when the mulberry trees began to bloom, in contrast to the previous year when their numbers were high all winter. None were trapped until late Feb. when several of last year's birds were recaptured. Bronzed Cowbirds also arrived about mid-Feb. Three Inca Doves were sitting on nests on the last census.—JOAN C. and ROBERT C. TWEIT, 4100 North Romero Rd., #108, Tucson AZ 85705.

79. URBAN PARK: MATURE MIXED CONIFEROUS FOREST. — **Location:** California; City and County of San Francisco, Golden Gate Park, W of the 43rd Ave and Fulton St. entrance to the Park; 37°46'N, 122°30'W, San Francisco N Quadrangle, USGS. **Continuity:** New. **Size:** 8.38 ha = 20.7 acres (irregular plot measured from a map of Reforestation Unit 6 in the "Reforestation Practices and Procedures; Golden Gate Park, San Francisco, CA, 8/26/80). **Description of Plot:** The forest is dominated by a variety of coastal conifers. The closed canopy, abundance of dead and diseased branches and the presence of large numbers of dead trees suggest the forest is too dense for optimum growth. Young trees have been planted in two sites during the past year and provide the only new growth. Shrubs appear only at a single point in the center of the plot and along the edges. Ground cover is almost exclusively grass. None of the vegetation is native to the area. The soil is sand with virtually no duff or topsoil. A single gardeners' shed (17 × 24 ft) is located at the SW corner of the plot. A quantitative survey of the vegetation gave the following results. Trees 3-in. diameter and over, based on 6 circular samples, 82/acre; total basal area 196.8 ft.²/acre. Species comprising 90% of the total number of trees, followed by number of trees/acre, relative density (%), relative dominance (%), frequency (%), in that sequence were: Maritime Pine (*Pinus pinaster*) 30, 37, 19, 67; Monterey Pine (*P. radiata*), 21, 25, 33, 67; Monterey Cypress (*Cupressus macrocarpa*), 13, 16, 30, 50; Blue Gum (*Eucalyptus globulus*), 6, 8, 6, 17; dead trees, 11, 14, 12, 67. Trees by diameter size class, followed by trees/acre, relative density (%), basal area (ft.²/acre), and relative dominance (%): A (3-6 in.) 2, 2, 0, 2, 0.1; B (6-9 in.) 3, 4, 1.2, 0.3; C (9-15 in.) 27, 33, 27.2, 7.2; D (15-21 in.) 21, 25, 46.8, 12.4; E (21-27 in.) 13, 16, 49.6, 13.2; F (27-33 in.) 11, 14, 68.6, 18.2; G (33-40 in.) 5, 6, 42.6, 11.3. Shrub stems per acre, 0; ground cover 87.5%; canopy cover 78%; mean canopy height, 41 ft. (range 20-63). **Edge:** To the N is Fulton St. and a residential district known as the Richmond District. To the W is the Archery Field, a grassy meadow. The S edge is a golf course with numerous groves of cypress and pine. To the E is Chain of Lakes Drive W and N Lake. **Topography:** The plot is flat at 75 ft elevation over most of its E and central area but gently slopes to 50 ft at the W edge. **Weather:** Moderate with temp. ranging 43°-68°; average 54°F. Clear skies prevailed most of the time and it rained during one

survey Wind with gusts to 15 mph estimated on only 3 days, and winds of 0-5 mph estimated on 12 visits. **Coverage:** Nov. 1, 2, 9, 22, Dec. 5, 24, 31; Jan. 10-11, 24, 31; Feb. 7, 13-14, 20, 22. Visits at all hours between 0850 and 1730 with the majority in early and mid-mornings. Total, 16 trips averaging 65 min. **Count:** Dark-eyed Junco, 24 (286, 116); Pygmy Nuthatch, 7 (4, 34); Mourning Dove, 6 (72, 29); Golden-crowned Sparrow, 6; Chestnut-backed Chickadee, 5 (60, 24); Bushtit, 5; White-crowned Sparrow, 4 (48, 19), Anna's Hummingbird, 2 (24, 10); Am Robin, 2; Ruby-crowned Kinglet, 2; Yellow-rumped Warbler, 2; Com. Flicker, 1 (12, 5); Downy Woodpecker, 1; Red-breasted Nuthatch, 1; Brown Creeper, 1; Golden-crowned Kinglet, 1; Brown Towhee, 1, Fox Sparrow, 1; Sharp-shinned Hawk, +; Cooper's Hawk, +; Am. Kestrel, +; Rock Dove, +; Allen's Hummingbird, +; Black Phoebe, +; Scrub Jay, +; White-breasted Nuthatch, +; Varied Thrush, +; Hermit Thrush, +; Townsend's Warbler, +; Hermit Warbler, +; Brewer's Blackbird, +; House Finch, +; Pine Siskin, +; Song Sparrow, +. **Average total:** 72 birds (859/km², 348/100 acres) **Remarks:** Total species, 34. Owl pellets (assumed from Great Horned) were found at three locations during the period. A single Red Crossbill was noted overhead on two occasions. The presence of the single White-breasted Nuthatch throughout the period was the first confirmed all-winter park record for that species. This study represents an effort to establish a data base for comment on a long range reforestation plan for the Golden Gate Park. It will also provide data on an artificial environment that was created about a century ago to meet the needs of park planners. Trees are typical of those planted in W Europe during and before the 19th century to control coastal dunes. The forest has reached its climax and is declining, with numbers of dead and diseased trees, and no natural regeneration of any of the trees in the plot, or the rest of the park, with the exception of Eucalyptus. The area is therefore slated for extensive reforestation with two plots already planted and three additional ones marked and ready for clearing and planting within the next year. The reforested plots are designed to afford optimum growth potential for the newly planted trees. Like the existing forest, the newly planted one will continue to function as a windbreak and a barrier to shifting coastal sands.—**DANIEL P. MURPHY, 2945 Ulloa St., San Francisco, CA 94116.**

80. URBAN PARK—LAKE, MARSH AND ADJACENT MIXED FOREST. — **Location:** California; City and County of San Francisco, Golden Gate Park, North Lake, S of the 43rd. Ave. and Fulton St. entrance to the park, 37°46'N, 122°30'W, San Francisco N Quadrangle, USGS. **Continuity:** New. **Size:** 4.99 ha = 12.33 acres, irregularly oblong plot **Description of Plot:** Dominated by a natural lake which was dredged and graded in 1898-99, to form the present 4.29 acre (1.74 h) lake According to the San Francisco Rec. & Park Dept., it has an average depth of 4 ft 5 in. An extensive bulrush marsh (*Scirpus* sp.) with bamboo (*Bambusa* sp.) and Pampas Grass (*Cortaderia selloana*) provides much

of the rest of the vegetation The four islands in the lake have lost definition because of sedimentation and encroaching marsh. Bald Cypress (*Taxodium distichum*), willow (*Salix* sp.), and blackberry (*Rubus* sp.) comprise the dominant vegetation on the islands. Extensive reclamation is planned for the fall of 1981, in which sediment will be removed, the islands redefined, and the marsh intrusion curtailed or even reduced to clumps. The lake is circled by a 6-ft wide paved path and features one 25 × 6 ft bridge. A road circles the plot. Three lawns form the break in the surrounding eucalyptus-dominated forest. Ground cover is composed primarily of grasses both cultivated and wild, California Manroot (*Marah fabaceus*), English Ivy (*Hedera helix*), German Ivy (*Senecio mikanoides*), and blackberry. There is virtually no native vegetation in the plot. The soil is sandy. A quantitative survey of the vegetation gave: Trees 3 in. diameter and over, 55 acre; total basal area, 71.6 ft.²/acre. Species comprising 90% of the total number of trees, followed by the number of trees/acre, relative density (%), relative dominance (%), frequency (%), in that sequence were: Blue Gum (*Eucalyptus globulus*), 19, 26, 76, 67; Am. Linden (*Tilia americana*), 14, 20, 3, 17; Portugal Laurel (*Prunus lusitanica*), 14, 20, 3, 17; Mayten Tree (*Matenus boaria*), 11, 15, 1, 17; Monterey Pine (*Pinus radiata*), 5, 7, 14, 33; willow (*Salix* sp.), 5, 7, 2, 17; locust (*Robinia* sp.), 3, 4, 1, 17; Australian Tea Tree (*Leptospermum laevigatum*), 2, 2, 1, 17. Trees by diameter size class, followed by trees/acre, relative density (%), basal area (ft.²/acre), and relative dominance (%): A (3-6 in.) 29, 39, 2.9, 3; B (6-9 in.) 16, 22, 6.2, 5; C (9-15 in.) 14, 20, 8.3, 7; D (15-21 in.) 3, 4, 5.8, 5; E (21-27 in.) 2, 2, 5, 4; F (27-33 in.) 2, 2, 7.8, 7; G (33-40 in.) 5, 7, 34.1, 29; H (> 40 in.) 3, 4, 44.5, 39. Shrub stems per acre, 4092 (est.); ground cover 55%, canopy cover 69%; Mean canopy height, 61 ft. (range 23-87). **Edge:** The entire plot is circled by a road. To the N is Fulton Street and a residential area. The remainder of the plot is edged by forested parklands beyond the roads encircling the plot. **Topography:** Essentially flat at 75 ft elev. with a low ridge along the S extremity. **Weather:** Moderate, with temp. 43°-70°; skies varied from clear to foggy to cloudy with light rain on 3 occasions. Wind reached 15 mph twice. **Coverage:** Nov. 1, 9-11, 22; Dec. 6, 18, 24, 31; Jan. 10-11, 19, 25, 31; Feb. 7 (am), 7 (pm), 13-14, 21; 0775-1725; 2/3 of the trips were in the morning. Total, 19 visits averaging 53 min. **Count:** Mallard, 82 (1643, 665); Am. Coot, 81 (11623, 657); Am. Wigeon, 40 (802, 324); Mew Gull, 29 (581, 235); Rock Dove, 18 (361, 146); N. Shoveler, 13 (261, 105); Yellow-rumped Warbler, 9 (180, 73); Song Sparrow, 4 (80, 32); Chestnut-backed Chickadee, 3 (60, 24); Bushtit, 3; Am. Robin, 3; Ruby-crowned Kinglet, 3; Fox Sparrow, 3; Wood Duck, 2 (40, 16); Anna's Hummingbird 2; Pine Siskin 2; Dark-eyed Junco 2; White-crowned Sparrow 2; Pied-billed Grebe, 1 (20, 8); Pintail, 1; Ruddy Duck, 1; W. Gull, 1; California Gull, 1; Mourning Dove, 1; Downy Woodpecker, 1; Black Phoebe, 1; Pygmy Nuthatch, 1; Hermit Thrush, 1; Red-winged Blackbird, 1; Golden-crowned Sparrow, 1; Black-crowned Night Heron, +; Cinnamon Teal, +; Ring-necked Duck, +; Com. Goldeneye,

+; Cooper's Hawk, +; California Quail, +; Sora, +; Com. Gallinule, +; Ring-billed Gull, +; Allen's Hummingbird, +; Com. Flicker, +; Red-breasted Nuthatch, +; Brown Creeper, +; Winter Wren, +; Golden-crowned Kinglet, +; Hutton's Vireo, +; Townsend's Warbler, +; Com. Yellowthroat, +; Brewer's Blackbird, +; House Finch, +. **Average Total:** 313 birds (6273/km², 2538/100 acres). **Remarks:** Total species, 50. Red Crossbill was noted only once when 5 flew over, Jan. 11. This study was undertaken to provide baseline data on a lake in Golden Gate Park which was known to be an excellent fall, winter and spring habitat for birds. It was also designed to provide comparative data with another study of a coniferous monoculture section of the park. Although the lake comprises only about one-third of the plot it is the dominant feature and virtually all birds recorded were at or near it. At 2100 on Jan. 10 there were > 500 ducks roosting in the bulrushes. Apparently ducks from nearby lakes utilize this lake extensively, thus providing an added dimension to its value. Thanks to Jim Cooney, Urban Forester of the San Francisco Rec. & Park Dept. for help in identifying exotic plants.—**DANIEL P. MURPHY, 2945 Ulloa St., San Francisco, CA 94116**

81. URBAN PARK. — **Location:** California; Los Angeles Co., Long Beach, El Dorado Park Area III; 33°49'N, 118°5'W, Los Alamitos Quadrangle, USGS. **Continuity:** New (BBC, 1980). **Size:** 74.9 ha = 185 acres. **Description of Plot:** See AB 35: 93 (1981). **Weather:** Temp. 50°-65°F. Visibility varied from foggy to nearly unlimited. Overall weather was mild for winter. Very little rain fell during this study. **Coverage:** Jan. 14-15, 19, 22, 27; Feb. 2, 4. Six trips, all between 0700 and 1000. **Count:** Am. Coot, 721 (963, 389); Am. Wigeon, 319 (426, 172); Starling, 130 (172, 70); Yellow-rumped Warbler, 119 (159, 64); Ruddy Duck, 106 (142, 57); Brewer's Blackbird, 46 (61, 25); Mallard, 42 (56, 23); Water Pipit, 38 (51, 21); Mourning Dove, 34 (45, 18) House Finch, 21 (28, 11); Black-bellied Plover, 15 (20, 8); Whimbrel, 12 (16, 6); Loggerhead Shrike, 11 (15, 6); Lesser Goldfinch, 11; domestic goose, 10 (13, 5); N. Shoveler, 10; Pied-billed Grebe, 9 (12, 5); Canvasback, 9; Marbled Godwit, 9; W. Meadowlark, 9; Double-crested Cormorant, 6 (8, 3); Spotted Dove, 6; Killdeer, 5 (7, 3); Com. Crow, 5; Red-winged Blackbird, 5; Muscovy Duck, 4 (5, 2); Pintail, 3 (4, 2); Cinnamon Teal, 3; Bufflehead, 3; Caspian Tern, 3; Anna's Hummingbird, 3; Black Phoebe, 3; Orange-crowned Warbler, 3; Eared Grebe, 2 (3, 1); Snowy Egret, 2; Am. Kestrel, 2; Tree Swallow, 2; Mockingbird, 2; Canada Goose, 1 (1, 1); Spotted Sandpiper, 1; House Sparrow, 1; Green Heron, +; Black-crowned Night Heron, +; Sharp-shinned Hawk, +; Red-tailed Hawk, +; *Falco* sp., +; Com. Flicker, +; Say's Phoebe, +; Scrub Jay, +; Long-billed Marsh Wren, +; Cedar Waxwing, +; Yellow Warbler, +; Com. Yellowthroat, +; Tricolored Blackbird, +; White-crowned Sparrow, +. **Average Total:** 1746 birds (2332/km², 944/100 acres). **Remarks:** Total species, 55. A single Long-billed Marsh Wren, Green Heron, and

Com. Flicker were seen on 5 of the 6 trips. The Red-tailed Hawk was seen on the study area 3 times. Black-bellied Plover, Whimbrel, Tree Swallow, Com. Crow, Starling, and Lesser Goldfinch were recorded only at the end of the survey period; but Com. Crow was seen on every trip in adjacent areas. Waterfowl were concentrated on the 40-acre lake. The *Falco* sp., a Prairie or Peregrine, was distantly seen once. Approximately half the Mallards were wild-type birds while the rest were white "Peking" or intermediate types. The Anna's Hummingbird and Loggerhead Shrike were showing signs of territoriality.—**BRAD R. BLOOD**, *Dept. of Biology, Calif. St. Univ., Long Beach, CA 90840*, and **JANET L. VIERHELLER**, *5368 La Pasada St., Long Beach, CA 90815*.

82. SUBURBAN NATURE CENTER. — **Location:** California; Los Angeles Co., El Dorado Nature Center, Long Beach. Bounded on N by Spring St., S by Willow St., E by Long Beach Tree Farm, W by San Gabriel River. 33°47'N, 118°08'W, Quadrangle, USGS. **Continuity:** Established 1971; 7 years. **Size:** 32.38 ha = 80 acres (rectangu-

lar, ½ mi N-S, ¼ mi E-W). **Description of Plot:** See AB 25: 656 (1971). **Weather:** Mild during the survey with a mean high of 70°F and a mean low of 48° (range 38-89°). Precipitation totaled 3.55 in., including 2.35 on Jan. 28-29. **Coverage:** Dec. 23; Jan. 14, 20, 26, 29; Feb. 4, 11, 16. Eight trips, 0700-1130, averaging 140 min each. **Count:** White-crowned Sparrow, 68 (210, 85); Yellow-rumped Warbler, 52 (161, 65); Am. Goldfinch, 42 (130, 53); Bushtit, 36 (111, 45); Cedar Waxwing, 36; House Finch, 31 (96, 29); Anna's Hummingbird, 21 (65, 26); Am. Wigeon, 20 (62, 25); Lincoln's Sparrow, 16 (49, 20); Mockingbird, 15 (46, 19); Ruby-crowned Kinglet, 14 (43, 18); Song Sparrow, 14; Hermit Thrush, 12 (37, 15); Am. Robin, 10 (31, 13); Lesser Goldfinch, 10; Blue-gray Gnatcatcher, 9 (28, 11); Com. Yellowthroat, 9; Mallard, 7 (22, 9); Am. Coot, 7; Orange-crowned Warbler, 7; Fox Sparrow, 7; Gadowall, 5 (15, 6); Scrub Jay, 5; N. Shoveler, 4 (12, 5); Canvasback, 4; Ruddy Duck, 4; Mourning Dove, 4; Pied-billed Grebe, 3 (9, 4); Com. Flicker, 3; Black Phoebe, 3; House Wren, 3; Loggerhead Shrike, 3; Starling, 3; Purple Finch, 3; Chipping Sparrow, 3;

Golden-crowned Sparrow, 3; Double-crested Cormorant, 2 (6, 3); Cinnamon Teal, 2; Spotted Dove, 2; Tree Swallow, 2; Brown Towhee, 2; Great Egret, 1 (3, 1); Green-winged Teal, 1; Sharp-shinned Hawk, 1; Red-tailed Hawk, 1; Red-shouldered Hawk, 1; Am. Kestrel, 1; Caspian Tern, 1; Belted Kingfisher, 1; Com. Crow, 1; Yellow-rumped Warbler, 1; Black-throated Gray Warbler, 1; Townsend's Warbler, 1; House Sparrow, 1; Great Blue Heron, +; Green Heron, +; Snowy Egret, +; Am. Bittern, +; Pintail, +; Ring-necked Duck, +; White-tailed Kite, +; Greater Yellowlegs, +, *Selasphorus* sp., +; Com. Flicker, +, W Flycatcher, +; Bewick's Wren, +; Long-billed Marsh Wren, +; Red-winged Blackbird, +; Brazilian Cardinal, +; Rufous-sided Towhee, +; Swamp Sparrow, + **Average Total:** 519 birds (1603/km², 649/100 acres). **Remarks:** Total species, 71. On Feb 16, 121 Am. Wigeons were seen, the previous high was 6. A group of 12 Tree Swallows were seen on Feb. 11, the only time they were recorded.—**BRIAN E. DANIELS**, *Dept. of Biol., California St. Univ. and 3471 Lama, Long Beach, CA 90808*.

Forty-fifth Breeding Bird Census

Edited by Willet T. and Aldeen C. Van Velzen

List of Censuses

Habitat	State or Province	Hec-tares	Pairs per sq. km.	Hrs. obs.	Spe-cies	Yrs of study
A. Eastern—Deciduous Forest						
1. Birch-Maple Forest I	Nova Scotia	12.8	923	43	25	1
2. Birch-Maple Forest II	Nova Scotia	7.2	764	22	13	1
3. Birch-Maple Forest III	Nova Scotia	5.6	1128	21	23	1
4. Second-growth Hardwood Forest	Connecticut	10.1	988	11	37	15
5. Beech-Maple-Birch Forest	New York	20.0	563	47	21	1
6. Beech-Maple Forest	New York	6.5	499	7	19	1
7. Young Mixed Forest	New York	4.4	589	8	27	5
8. Young Red Maple-Gray Birch Forest	New York	8.1	1001	14	31	6
9. Mature Deciduous Floodplain Forest	Maryland	7.6	797	27	30	31
10. Mixed Hardwood Forest	Maryland	11.3	918	16	45	17
11. Mixed Upland Habitat	Dist. of Columbia	14.2	801	26	25	22
12. Beech-Cherry-Basswood	West Virginia	6.1	370	8	11	1
13. Black Cherry-Red Maple Forest	West Virginia	6.1	288	9	9	1
14. Maple-Beech-Birch Forest	West Virginia	6.1	445	10	16	1
15. Oak-Maple-Hickory Forest	West Virginia	6.1	420	9	13	3
16. Red Oak-Hickory Forest	West Virginia	6.1	498	10	20	2
17. Red Oak-Red Maple	West Virginia	6.1	461	7	26	3
18. White Oak-Hickory Forest	West Virginia	6.1	313	7	10	3
19. Mixed Oak and Pine Forest	Virginia	8.1	272	13	18	1
20. Oak-Hickory-Tulip-tree Forest	Virginia	13.5	326	18	17	3
21. Upland Oak-Hickory Forest	Virginia	11.0	718	66	22	9
22. Floodplain Forest	North Carolina	13.0	593	19	27	5
23. Mixed Deciduous Forest	North Carolina	8.8	374	28	16	8
24. Mixed Deciduous Forest	North Carolina	12.6	526	19	26	6
25. Hardwood Swamp Forest	South Carolina	8.1	1476	17	24	2
26. Swamp Hardwood Forest I	South Carolina	8.1	1075	24	21	1
27. Swamp Hardwood Forest II	South Carolina	8.1	1174	24	21	1
28. Swamp Hardwood Forest III	South Carolina	8.1	1297	24	20	1
29. Swamp Hardwood Forest IV	South Carolina	8.1	1124	24	21	1
30. Virgin Hardwood Bottomland Swamp Forest	South Carolina	8.1	741	32	22	2
31. Mature Beech-Magnolia Forest	Florida	15.8	530	25	30	2
32. Silver Maple Swamp	Ontario	9.9	616	22	31	1
33. Upland Maple Forest	Ontario	10.0	350	20	22	1