

29th Winter Bird-Population Study

Edited by Ronald A. and Audrey Ryder

List of Studies

<i>Habitat</i>	<i>State or Province</i>	<i>Hec-tares</i>	<i>Birds per sq. km.</i>	<i>Hrs. Obs.</i>	<i>Spe-cies</i>	<i>Yrs of Study</i>
A. Forest Habitats						
1 Red Pine Plantation	Massachusetts	3.0	100	7.0	4	1
2 Pitch Pine-Scrub Oak Forest, I	Massachusetts	7.5	93	8.2	5	2
3 Pitch Pine-Scrub Oak Forest, II	Massachusetts	7.5	120	11.7	6	2
4 Pitch Pine-Scrub Oak Forest, III	Massachusetts	7.5	13	7.3	2	2
5 Pitch Pine-Scrub Oak Forest, IV	Massachusetts	7.5	27	10.0	4	1
6 Burned Pine-Oak Forest	Massachusetts	22.5	27	19.2	9	1
7 Deciduous-Coniferous Island	Massachusetts	5.1	119	7.2	12	1
8 Black Spruce-Tamarack Bog	New York	4.6	109	9.3	5	4
9 Upland Oak Forest	New York	11.8	102	9.4	7	4
10 Upland Mixed Pine-Spruce-Hardwood Plantation	New York	16.6	163	20.0	16	3
11 Mixed Hardwood Forest	Maryland	11.3	397	16.7	27	18
12 Hickory-Oak-Ash Floodplain Forest	Maryland	18.4	1010	23.8	41	4
13 Upland Tulip-tree-Maple-Oak Forest	Maryland	12.0	175	15.2	27	4
14 Forest Developing after Cultivation	Maryland	8.1	148	12.0	14	8
15 Mature Deciduous Floodplain Forest	Maryland	17.8	661	23.3	29	25
16 Upland Tulip-tree-Oak Forest	Virginia	20.6	150	23.1	18	3
17 Upland Oak-Hickory Hardwood Forest	Virginia	11.0	182	34.0	21	6
18 Hardwood-Softwood Forest	North Carolina	15.0	27	16.0	10	23
19 Disturbed Upland Oak Forest	Pennsylvania	10.1	40	8.0	5	2
20 Elm-Cherry Forest	Pennsylvania	6.1	198	22.0	20	1
21 Mature Hardwood Forest	West Virginia	12.2	165	26.0	17	3
22 Mature Mixed Hardwood Forest	Michigan	9.3	355	8.0	17	2
23 Tamarack Bog and Hardwood Forest	Michigan	8.5	71	13.5	7	1
24 Beech-Maple Swamp Forest Mosaic	Ohio	8.3	410	15.0	18	2
25 Oak-Maple Forest and Forest-Edge	Illinois	22.3	49	14.0	8	28
26 Upland Oak-Maple Forest	Illinois	8.3	156	9.6	14	1
27 Mixed Pine-Deciduous Forest	Louisiana	8.9	1191	12.0	29	6
28 Oak-Hickory Forest	Kansas	9.7	371	16.0	12	2
29 Mixed Pine-Hardwood Forest	Texas	6.3	887	10.0	32	2
30 Ponderosa Pine Forest	Colorado	8.1	272	9.5	14	14
31 Ponderosa Pine-Douglas Fir Foothills Forest	Washington	11.2	825	11.3	15	1
32 Subarctic Taiga: Lowland Seral Birch-Willow	Alaska	10.0	10	16.0	3	1
33 Subarctic Taiga: Lowland White Spruce-Paper Birch Forest	Alaska	10.0	60	31.5	10	1
34 Subarctic Taiga: Lowland Black Spruce Forest	Alaska	10.0	20	19.5	4	1
B. Forest Mixed with Other Habitats						
35 Mixed Habitat: Deciduous Wooded Stream Valley and Meadow	Maryland	35.6	399	29.8	33	4
36 Mixed Upland Habitat	District of Col.	14.2	537	26.0	34	17
37 Coastal Disturbed Floodplain	Virginia	8.1	519	29.0	47	12
38 Pineland, Scrub and Residential	Florida	10.1	820	15.0	41	2
39 Floodplain Woodland and Field	Ohio	22.5	2004	14.5	21	1
40 Mixed Habitat-Disturbed Bottomland	Oklahoma	40.5	376	31.0	43	4
41 Cottonwood Riverbottom Habitat	Colorado	10.9	1226	8.8	27	2
42 Grazed Cottonwood Riverbottom	Colorado	14.2	932	12.8	20	2

<i>Habitat</i>	<i>State or Province</i>	<i>Hec-tares</i>	<i>Birds per sq. km.</i>	<i>Hrs. Obs.</i>	<i>Spe-cies</i>	<i>Yrs of Study</i>
43 Cottonwood-Abandoned Fields Bottomland	Colorado	8.1	1544	8.3	21	2
C. Brush, Grassland and Desert						
44 Old Field with Brush Patches	Indiana	17.0	235	17.5	21	1
45 Live Oak-Mesquite Brushland	Texas	12.1	321	14.5	32	10
46 Mesquite-Juniper Canyon Bottomland	Texas	12.5	1467	20.0	40	9
47 Lower Foothills Brushland-Grassland-Creekbottom Ecotone	Colorado	12.1	898	8.0	19	1
48 Creosote-Mojave Yucca-Cholla Desert Scrub	California	12.0	8	6.8	3	1
49 Creosote-Burrowbush Desert Scrub	California	12.0	8	7.4	2	1
50 Joshua Tree Woodland I	California	16.2	198	20.0	14	1
51 Joshua Tree Woodland, II	California	9.0	89	8.5	6	1
52. Catclaw-Rabbitbrush Desert Wash	California	17.8	449	6.8	16	1
53 Disturbed Floodplain	California	24.1	303	12.9	47	1
54 Pinyon-Juniper Woodland	California	9.0	100	10.7	12	1
55 Western Sycamore-Coast Live Oak Riparian Woodland	California	4.5	2890	14.6	31	2
56 Desert Riparian	California	6.6	775	12.6	26	1
57 Joshua Tree-California Juniper Desert	California	18.2	286	10.0	15	1
58 Coastal Chaparral	California	12.1	404	18.0	11	1
59 Subarctic Taiga: Lowland Tall Shrubs	Alaska	10.0	20	16.0	5	1
D. Habitats Including Open Water						
60. Exposed Cove and Adjacent Ocean	Maine	43.7	263	?	10	7
61 Mixed Upland Habitat and Swamp	Connecticut	14.2	92	9.0	14	4
62 Lagoon	Virginia	23.5	648	10.0	17	8
63 Everglades Marsh	Florida	44.6	379	28.0	38	1
64 Disturbed Oak-Hickory Forest, Pine Stand, Edge and Pond	Ohio	14.2	85	22.0	20	6
65 Urban Cattail Marsh and Cottonwood/Willow Woodland	Colorado	6.1	494	7.0	25	3
66 Open Intertidal Beach	California	11.5	611	5.3	19	1
67 Freshwater Marsh-Riparian Woodland	California	9.3	1794	9.8	53	1
68 Shallow Farm Pond	California	3.0	12651	7.0	16	1
69 Coastal Marsh Mudflat	California	4.0	10131	15.0	28	1
E. Croplands						
70 Abandoned Orchards-Old Fields-Tree Rows	New York	15.5	1281	14.0	23	4
71 Floodplain Forest and Cultivated Bottomland	New York	51.8	554	20.3	33	6
72 Abandoned Field	Maryland	6.1	642	24.0	20	4
73 Abandoned Turf Field	Maryland	6.3	222	4.6	13	1
74 Cornfield, I	Maryland	16.1	826	6.4	23	2
75 Cornfield, II	Maryland	23.8	369	7.9	14	2
76. Cornfield	North Carolina	40.5	30	17.0	14	14
77 Dry Grass Field	California	13.3	1930	20.0	13	1
F. Urban Habitats						
78 Suburban School Park	Florida	8.0	500	12.2	17	8
79 City Park	Ohio	29.3	113	10.0	8	7
80 Grassland Municipal Airport	Louisiana	12.1	181	5.0	5	3
81 Downtown Business District-Residential Area	Colorado	15.4	676	9.0	9	5
82 Urban Park	California	14.4	382	15.0	10	1
83 Urban Nature Center	California	7.3	1785	10.0	29	1
84 Urban Grass Field	California	46.5	404	18.0	17	1

1 RED PINE PLANTATION. — **Location:** Massachusetts; Plymouth Co., Myles Standish State Forest, 2 mi ENE of College Pond; 41°52'N, 70°38'W, Wareham Quadrangle, USGS. **Continuity:** New. (Breeding Bird Census, 1974.) **Size:** 3 ha = 7.41 acres (an irregular right angle polygon with sides running N-S and E-W, surveyed). **Description of Area:** See AB 29:1106, 1975. **Weather:** On Jan. 21 snow cover was 1 in.; 10 in. fell Jan. 22. On Feb. 6, 2 more in. fell, but for the rest of the month temperatures were warm and snow melted rapidly. Temperatures ranged from -7° to 13°C (20° to 56°F) with a mean of 2°C (36°F). Out of ten census trips skies were clear 5 times and partly cloudy 5 times. **Coverage:** Jan. 21, 30; Feb. 4, 7, 8, 10, 12, 15, 19, 23. Total, 10 trips, averaging 42 min. each, from 0950 to 1500. **Count:** (average number of birds, followed in parentheses by birds per square kilometer and birds per 100 acres): Blue Jay, 1 (33:13); Black-capped Chickadee, 1, Red-breasted Nuthatch, 1; Evening Grosbeak, +. **Average Total:** 3 birds (100/km², 40/100 acres). **Remarks:** 5 Blue Jays seen on the Jan. 21 trip were the only ones observed during the census period. Mammals: Red Squirrel (*Tamiasciurus hudsonicus*) and E. Cottontail (*Sylvilagus floridanus*). — STEVEN B. LIGHT, Manomet Bird Observatory, Box 0, Manomet, Mass. 02345.

2. PITCH PINE-SCRUB OAK FOREST, I. MATURE. — **Location:** Massachusetts; Plymouth Co., Myles Standish State Forest, ¾ mi. E of College Pond; 41°52'N, 70°39'W, Wareham Quadrangle, USGS. **Continuity:** Established 1975, second year. **Size:** 7.5 ha = 18.53 acres (rectangle 250 x 300 m, surveyed). **Description of Area:** See AB 27:975 (1973). No appreciable changes. **Weather:** Temperatures during Jan. 6-22 averaged -4°C (25°F), range -11° to 5°C (12° to 41°F). The ground was virtually bare until Jan. 12-13 when 20 cm (8 in.) of snow fell. Rain on Jan. 14-16 reduced snow cover to about 8 cm (3 in.); 25 cm (10 in.) of new snow fell on Jan. 22. The sky was clear on 5 census trips, overcast on 1. Temperature was measured at Manomet Bird Observatory, 11 km (7 mi.) NE of the study area. **Coverage:** Jan. 6, 9, 14, 16, 18, 19. Total, 6 trips, averaging 82 min. each, from 1000 to 1520. **Count:** Black-capped Chickadee, 5 (67, 27); Red-breasted Nuthatch, 2 (27, 11); Ruffed Grouse, +; Downy Woodpecker, +; Blue Jay, +. **Average Total:** 7 birds (93/km², 38/100 acres). **Remarks:** Black-capped Chickadees were seen on all trips. Red-breasted Nuthatches on 5 trips, 4 of which yielded a pair of nuthatches. Mean flock size for chickadees was 5 birds (range 2-7, n=7). A mixed flock of chickadees and nuthatches was observed on 3 visits. They often foraged on needles and the abundant cones of Pitch Pines. Mammals: Red Squirrel (*Tamiasciurus hudsonicus*). This study and the following 2 were done simultaneously, Jan. 6-22. A comparison is made at the conclusion of Plot III. — RICHARD A. LENT, Manomet Bird Observatory, Box 0, Manomet, Mass. 02345.

3 PITCH PINE-SCRUB OAK FOREST, II. REGENERATING. — **Location:** Massachusetts; Plymouth Co., Myles Standish State Forest, 1¼ miles E of College Pond; 41°52'N, 70°38'W, Wareham Quadrangle, USGS. **Continuity:** Established 1975; second year. **Size:** 7.5 ha = 18.53 acres (rectangle 250 x 300

m, surveyed). **Description of Area:** See AB 27:976 (1973). No appreciable changes. **Weather:** See Study No. 2. The sky was clear on 2 trips, overcast on 2, partly cloudy on 2. **Coverage:** Jan. 7, 9, 13, 17, 21. Total, 6 trips, averaging 117 min. each, from 1000 to 1545. **Count:** Black-capped Chickadee, 5 (67, 27); Blue Jay, 2 (27, 11); Red Crossbill, 2; Ruffed Grouse, +; Downy Woodpecker, +; Red-breasted Nuthatch, +. **Average Total:** 9 birds (120/km², 49/100 acres). **Remarks:** Black-capped Chickadees were seen on 5 trips, Blue Jays on 4, Red Crossbills on 1. The crossbills occurred in a 9-bird flock. Mean flock size for chickadees was 6 birds (range 2-9, n = 5). A Downy Woodpecker was seen foraging with chickadees, nuthatches and chickadees were seen together twice. Crossbills, chickadees, and nuthatches foraged on plentiful Pitch Pine cones. On Jan. 13, wing and tail marks of a jay-sized bird were found superimposed on mouse tracks in snow, evidence perhaps of Screech Owl predation. On the same day jays were seen scanning the ground from Scrub Oak perches, alighting, and digging into the snow with their bills; this along with the wing marks remotely suggests jays hunting mice. A comparison of this and 2 other species is made at the conclusion of Plot III. — RICHARD A. LENT, Manomet Bird Observatory, Box 0, Manomet, Mass. 02345.

4. PITCH PINE-SCRUB OAK FOREST, III. RECENTLY BURNED. — **Location:** Massachusetts, Plymouth Co., Myles Standish State Forest, 1¼ mi. SE of College Pond; 41°51'N, 70°39'W, Wareham Quadrangle, USGS. **Continuity:** Established 1975, second year. **Size:** 7.5 ha = 18.53 acres (irregular, surveyed). **Description of Area:** See AB 27:976-977 (1973). No appreciable changes. **Weather:** See Study No. 2. The sky was clear on 4 trips, overcast on 2. **Coverage:** Jan. 7, 9, 14, 16, 19, 22. Total, 6 trips, averaging 73 min. each, from 1045 to 1400. **Count:** Ruffed Grouse, 0.5 (7, 3), Blue Jay, 0.5. **Average Total:** 1 bird (13/km², 5/100 acres). **Remarks:** Grouse and jays were seen on 2 trips each. No birds were detected inside the plot on 3 trips. **Mammals:** E. Cottontail (*Sylvilagus floridanus*). The plot has started to produce a few ripe Pitch Pine cones, 4½ years after being burned. This study and the preceding 2 were done simultaneously during Jan. 6-22. Mature and regenerating forests showed increased bird density over 1975 (93/km² in 1976 versus +/km² in 1975 for mature, 120/km² in 1976 versus 40/km² in 1975 for regenerating); the burn had a decrease in density (40/km² in 1975 versus 13/km² in 1976). As in 1975 the regenerating forest had the most individuals and species. However, this year the burn had the least birds whereas in 1975 the mature forest had the least. It is suggested that this year's abundant cone crop caused birds to concentrate in the two plots containing many seed-bearing Pitch Pines, namely the mature and regenerating. Colder weather this winter [1975 mean temperature 2.2°C, (36°F); 1976 mean -4°C, (25°F)] could also have caused birds to seek a more sheltered habitat than the open air windy burn. The Pitch Pine cones in the regenerating forest probably attracted the Red Crossbills. Black-capped Chickadee was the most common species this year overall; in 1975 Blue Jays were seen most often. Few acorns were produced in the forest, perhaps partially explaining the lower number of jays. My grateful thanks go to the staff of Manomet Bird Observatory for its help

and use of its facilities during the study period. — *RICHARD A. LENT, Manomet Bird Observatory, Box 0, Manomet, Mass. 02345.*

5. PITCH PINE-SCRUB OAK FOREST, IV. 1-YEAR REGENERATION. — **Location:** Massachusetts; Plymouth Co., off Haven Rd., 2¼ mi. ENE of College Pond; 41°53'N, 70°37'W, Manomet Quadrangle, USGS. **Continuity:** New. (Breeding Bird Census 1974, 1975). **Size:** 7.5 ha = 18.53 acres (an irregular right angle polygon with sides running NE-SW and NW-SE, surveyed). **Description of Area:** See AB 29:1101 (1975). **Weather:** Temperatures during the census period ranged from -6° to 7°C (22° to 45°F) with a mean of 2°C (35°F). On two trips there was light snow on the ground. On Jan. 22, 25 cm (10 in.) of new snow fell. The sky was clear on 1 trip, partly cloudy on 4, overcast on 3. **Coverage:** Jan. 21, 22, 26, 29; Feb. 4, 6, 12, 13. Total, 8 trips, averaging 75 min. each, between 0800 and 1630, EST. **Count:** Black-capped Chickadee, 2 (27, 11); Ruffed Grouse, +; Blue Jay, +; Golden-crowned Kinglet, +. **Average Total:** 2 birds (27/km², 11/100 acres). **Remarks:** On 3 visits no birds were seen. Chickadees and Blue Jays were seen on 2 occasions and 1 to 3 grouse on 3 occasions. Small flocks of chickadees were seen outside the census plot in unburned areas on 5 counts. Visibility within the plot was excellent. We are extremely grateful to Mr. Robert J. Fusco for kindly allowing us access to his property. — *ELIZABETH G. CAMMACK & SUSAN A. NAVROTSKY, Manomet Bird Observatory, Box 0, Manomet, Mass. 02345.*

6. BURNED PINE-OAK FOREST. — **Location:** Massachusetts, Plymouth Co., Pine Hills 0.5 mile S of Rt. 3A, 41°56'N, 70°35'W, Manomet Quadrangle, USGS. **Continuity:** New. (Breeding Bird Census 1975). **Size:** 22.5 ha = 55.6 acres (3 adjacent rectangles each 200 x 375 m with sides running N-S and E-W, surveyed). **Description of Area:** See AB 29:1099-1100 (1975). **Weather:** Temperatures during the census period ranged from -9° to 13°C (15° to 55°F) with a mean of 2°C (36°F). The sky was clear on 3 trips, partly cloudy on 3, overcast on 2. Wind was strong during 3 censuses. On 1 trip, 5 cm (2 in.) of snow covered the ground. **Coverage:** Jan. 5, 29; Feb. 2, 3, 9, 11, 19, 20. Total, 8 trips, averaging 144 min. each from 0930 to 1620 EST. **Count:** Black-capped Chickadee, 6 (27, 11); Sharp-shinned Hawk, +; Ruffed Grouse, +; Hairy Woodpecker, +; Blue Jay, +; White-breasted Nuthatch, +; Red-breasted Nuthatch, +; Brown Creeper, +; Red Crossbill, +. **Average Total:** 6 birds (27/km², 11/100 acres). **Remarks:** Chickadees were the sole species seen on every trip. Red-breasted Nuthatches were seen on 2 trips. All other species were seen once. Red-breasted Nuthatch, Brown Creeper and Hairy Woodpecker were seen with chickadees on separate occasions. The hawk was sighted flying through a deciduous area. During one trip a flock of 7 crossbills moved from tree to tree feeding and calling. Mammals sighted within the plot were E. Cottontail (*Sylvilagus floridanus*) and Red Squirrel (*Tamiasciurus hudsonicus*). Deer droppings were seen and a Red Fox (*Vulpes fulva*) sighted outside the plot. We are extremely grateful to Mr. Gordon L. Howland and Mr. Christopher Hussey for kindly allowing us access to their property. — *ELIZABETH G. CAMMACK & SUSAN A. NAVROTSKY, Manomet Bird Observatory, Box 0, Manomet, Mass. 02345.*

7. DECIDUOUS — CONIFEROUS LOW-LYING ISLAND. — **Location:** Massachusetts; Plymouth Co. Halfway Pond, off Mast and Wareham Roads; 41°51'N 70°37'W, Sagamore Quadrangle, USGS. **Continuity:** New. (Breeding Bird Census, 1975). **Size:** 5.06 ha = 12.5 acres (an irregular island in the center of the pond, surveyed). **Description of Area:** See AB 29:1100 (1975). **Weather:** Temperatures during the census period ranged from -4° to 12.5°C (24° to 55°F) with a mean of 7°C (44°F). The ground was bare with the exception of Feb. 10 when there was light snow cover. The sky was clear on 4 trips partly cloudy on 2, overcast on 2. **Coverage:** Jan. 26 Feb 10, 18, 19, 20, 23, 24, 27. Total, 8 trips, averaging 54 min each, between 0700 and 1545, EST. **Count:** Black-capped Chickadee, 4 (79, 32); Golden-crowned Kinglet 1 (20, 8); White-breasted Nuthatch, 1; Great Blue Heron +; Ruffed Grouse, +; Screech Owl, +; Hairy Woodpecker, +; Downy Woodpecker, +; Blue Jay, +, Com. Crow, +; Tufted Titmouse, +; Red-winged Blackbird, +. **Average Total:** 6 birds (119/km², 48/100 acres). **Remarks:** The chickadee was the only species seen on every trip. A mixed flock of chickadees, kinglets and nuthatches was seen on two trips. The single owl sighting was made on the only early morning census. On four occasions Com. Mergansers (max. 55) were seen on the pond. A Red-winged Blackbird was seen on Feb. 20 when large numbers of this species were reported in the area. We are grateful to Mrs. Clarence E. Bird for allowing us access to her property. — *ELIZABETH G. CAMMACK & SUSAN A. NAVROTSKY, Manomet Bird Observatory, Box 0, Manomet, Mass. 02345.*

8. BLACK SPRUCE-TAMARACK BOG. — **Location:** New York; Delaware Co., Mud Lake Bog, about 2 mi. N of Pine Lake on South Hill and about 2 mi. E of West Davenport; 42°29'N, 74°55'45"W, West Davenport Quadrangle, USGS. **Continuity:** Established 1971-1972; 4 intermittent years. **Size:** 4.6 ha = 11.3 acres (1.9 acres of central water not included in plot area; elliptical measured into square grid of 16 one-acre units by steel tape, and many measured vegetation edge points connected to give the vegetation zone ellipses for a plot on graph paper, from which zonal areas and widths were determined). **Description of Area:** See AB 26:659-661 and 959 (1972). **Weather:** Trips were made in all kinds of weather. Trip temperatures averaged about 17°F, with snow cover 16 in. to 24 in., averaging 20 in. For weather data from Cooperstown, about 12 mi. N, see Upland Oak Forest study, No. 9. **Coverage:** Jan. 17, 24, 25, 31; Feb 5, 7, 12, 21. Total, 8 trips, between 0900 and 1500, averaging 70 min. each. The method used was described in the 1973 winter count of this plot. **Count:** Golden-crowned Kinglet, 3 (66, 27); Black-capped Chickadee, 1 (22, 9), Brown Creeper, 1; Downy Woodpecker, +; Pine Grosbeak, +. **Average Total:** 5 birds (109/km², 44/100 acres). **Remarks:** The kinglet was seen on 5 trips, the chickadee on 3 trips, and the creeper on 2 trips. One flock of Evening Grosbeaks was once seen over the plot. Feathered remains of one chickadee, presumably prey of hawk or possibly owl, were found. The density was very low this winter and the chickadee count was drastically down here although abnormally high in the Upland Oak Forest plot about ½ mi. distant. — *J. ROBERT MILLER Dept. of Chemistry, and LOUIS FARLEY III, Hartwick College, Oneonta, N.Y. 13820.*

9. UPLAND OAK FOREST. — **Location:** New York; Delaware Co., about 1.5 mi. N of Pine Lake on South Hill and about 2 mi. E of West Davenport, 42°38'3"N, 74°56'15"W, West Davenport Quadrangle, USGS. **Continuity:** Established 1971-72; 4 intermittent years. **Size:** 11.8 ha = 29.1 ± 0.5 acres (nearly square, essentially 6 x 5 units of 208 ft. edge — *i.e.*, measured into a grid of one-acre units, measured with steel tape). **Description of Area:** See *AB* 26:661-662 and 941 (1972). **Weather:** Trips were made in all kinds of weather. Trip temperatures averaged about 17°, with snow cover from 16 in. to 24 in., averaging 20 in. Weather data for Cooperstown, about 12 mi N, supplied by U.S. National Weather Service: January and February temperatures ranged from -25° to +60°F, with an average of 21.8°, and total precipitation 7.30 in. (water equivalent). Compared with other years January and February departed about -0.2° and +2.2 in. from normal precipitation. However, January temperatures departed by a mean 6.6° lower than normal and February by 6.2° above normal. **Coverage:** Jan. 15, 17, 24, 25, 31; Feb. 5, 7, 12, 21. Total, 9 trips between 0900 and 1400, averaging 63 min. each. The method was described in the 1973 winter count. **Count:** Black-capped Chickadee, 8 (68, 27); Brown Creeper, 2 (17, 7); Hairy Woodpecker, 1 (8.3); Golden-crowned Kinglet, 1; Downy Woodpecker, +; White-breasted Nuthatch, +; Pine Grosbeak, +. **Average Total:** 12 birds (102/km², 41/100 acres). **Remarks:** The Hairy Woodpecker, chickadee, and creeper were noted on 5 trips and the kinglet on 2. There were 2 trips when no birds were seen on the plot. Once a fresh chickadee kill, apparently by a small hawk, was noted. Unusual was the sighting of *no* Blue Jays throughout the count including the one-hour walks each way through both hemlock and deciduous forest to the plot from the road. Brown Creepers were unusually common on the hillside. Also unusual was the high chickadee count (double the previous highest year) and the large average chickadee flock size, 12 (compared to 4 for 1973-4, 2 for 1972-3, and 5 for 1971-2). Is the large average flock size related to subnormal January temperatures, local population changes, and/or local food supply differences? Unusual also was the high density in this plot and the low density in the Black Spruce-Tamarack Bog plot also studied this year. — *J. ROBERT MILLER, Dept. of Chemistry, and LOUIS FARLEY III, Hartwick College, Oneonta, N.Y. 13820.*

10. UPLAND MIXED PINE-SPRUCE-HARDWOOD PLANTATION. — **Location:** New York, Allegany Co., on 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; third consecutive year. **Size:** 16.6 ha = 41 acres (roughly rectangular, perimeter measured with tape and compass). **Description of Area:** See *AB* 28:699-700 (1974). **Weather:** Data from the Alfred Cooperative Weather Station indicated that snowfall during the study period was the highest in 62 years. Total snowfall in January was 37.7 in. (14.34 average) and the mean temperature was 18.25°F, which is 5° colder than the 62-year average. All trips on snowshoes. Some portions of one stream remained open throughout the study period. The cone crop was generally poor. **Coverage:** Dec. 31; Jan. 1, 6-7, 13, 15-16, 18, 26, 30-31; Feb. 1, 3, 8-10, 12, 14.

Total, 8 trips (half the study area was covered on each visit), from 0930 to 1545 and totaling 20 hours. One short trip was made at night to listen for owls. **Count:** Black-capped Chickadee, 12 (72, 29); Red-breasted Nuthatch, 4 (24, 10); Golden-crowned Kinglet, 3 (18, 7); Evening Grosbeak, 3; Blue Jay, 2 (12, 5); Ruffed Grouse, 1 (6, 2); Downy Woodpecker, 1; Brown Creeper, 1; Hairy Woodpecker, +; White-breasted Nuthatch, +; Cardinal, +, Am. Goldfinch, +; Red Crossbill, +; White-winged Crossbill, +; Dark-eyed (Slate-colored) Junco, +; Tree Sparrow, +. **Average Total:** 27 birds (163/km², 66/100 acres). **Remarks:** In the three years this study has been conducted the numbers of the more common species have remained fairly constant with the exception of Golden-crowned Kinglet which was 11 (1974), 0 (1975) and 3 (1976). Turkey was missing this year for the first time. An unidentified owl attempted a rabbit-kill and left a snowprint of a 16 in. wingspread. Chickadees, Red-breasted Nuthatches, and Golden-crowned Kinglets were noted on all trips. Appreciation is extended to Robert Place for weather data. — *ELIZABETH W BROOKS, Water Wells Rd., Alfred Station, N.Y. 14803*

11. MIXED HARDWOOD FOREST. — **Location:** Maryland; Calvert Co., NW of Plum Point and 1 mi inland from Chesapeake Bay, on Tobacco Rd. between State Routes 263 and 261. **Continuity:** Established 1959, 18 consecutive years. **Size:** 11.3 ha = 28 acres. **Description of Area:** See *AFN* 13:333 (1959). **Weather:** Clear on 7 trips, ground snow-covered on 1. High temperatures on census days between 34° and 53°F. creek flowed continually but bog was frozen part of the time. Telephone poles and cable were installed along the road through the plot last summer. **Coverage:** Dec. 22, 27; Jan. 1, 10, 17, 24, 30; Feb. 4, 7, 8. Total, 10 trips, averaging 100 minutes each, between 0949 and 1123 EST. **Count:** Cardinal, 7 (62, 25); Carolina Chickadee, 6 (53, 21); Carolina Wren, 4 (35, 14); White-throated Sparrow, 4; Tufted Titmouse, 3 (26, 11); Golden-crowned Kinglet, 3; Field Sparrow, 3; Downy Woodpecker, 2 (18, 7); Brown Creeper, 2; E. Bluebird, 2; Song Sparrow, 2; Com. Flicker, 1 (9, 4); Red-bellied Woodpecker, 1; Yellow-bellied Sapsucker, 1; Hairy Woodpecker, 1; Red-breasted Nuthatch, 1; Winter Wren, 1; Yellow-rumped Warbler, 1; Am. Kestrel, +; Belted Kingfisher, +, Pileated Woodpecker, +; Blue Jay, +; Com. Crow, +, White-breasted Nuthatch, +; Mockingbird, +; Hermit Thrush, +; Dark-eyed Junco, +. **Average Total:** 45 birds (397/km², 161/100 acres). **Remarks:** The average totals showed that the bird population closely matched that of the year before, when densities were below the 17-year average. The 18-year average is now 60 birds and 215/100 acres. The Cardinal returned as the most abundant species, after being displaced by the Yellow-rumped Warbler last year. The Carolina Chickadee was again second and showed a slight increase. Other increases were Golden-crowned Kinglet, Field Sparrow, and Song Sparrow. The White-breasted Nuthatch returned for the first time since 1971, and the Red-breasted Nuthatch for the first time since 1970. The Am. Kestrel occurred for only the second time, and the Mockingbird for the fourth time. The most notable loss was the Yellow-rumped Warbler and Dark-eyed Junco Finches were completely lacking. Marked flocking was

evident on 7 of the 10 counts. A total of 27 species was recorded. The 18-year average is 25. — *JOHN H. FALES, Ridge Rd., Neeld Estate, Huntingtown, Md. 20639.*

12. HICKORY-OAK-ASH FLOODPLAIN FOREST.
 — **Location:** Maryland; Howard Co., floodplain of Middle Patuxent River due W of Hobbits Glen Golf Course Columbia, 39°13'10"N, 76°54'45"W, Clarksville Quad-

Table 1. Birds per 100 acres in Hickory-Oak-Ash Floodplain Forest, Study No. 12

Species	5-yr. mean	1972	1973	1974	1975	1976	
Yellow-rumped Warbler	65	119	9	11	42	143	(65)
White-throated Sparrow	31	40	33	20	29	35	(16)
Cardinal	28	37	35	22	22	22	(10)
Downy Woodpecker	26	40	20	24	24	24	(11)
Carolina Chickadee	26	35	22	29	24	22	(10)
Cedar Waxwing	17	—	—	—	86	—	—
Tufted Titmouse	15	13	18	13	13	20	(9)
Red-bellied Woodpecker	12	13	13	11	9	15	(7)
Com. (Yel.-sh.) Flicker	11	15	7	2	13	20	(9)
White-breasted Nuthatch	11	9	9	9	7	20	(9)
Evening Grosbeak	11	24	—	—	9	24	(11)
Carolina Wren	9	4	13	7	9	11	(5)
Purple Finch	9	9	9	+	18	9	(4)
Slate-colored Junco	7	24	2	2	7	—	+
Blue Jay	6	7	7	2	7	9	(4)
Hairy Woodpecker	4	7	4	2	4	4	(2)
Am Goldfinch	4	4	2	7	4	2	(1)
Yellow-bellied Sapsucker	3	7	2	2	2	2	(1)
Golden-crowned Kinglet	3	2	4	7	+	+	+
Rufous-sided Towhee	3	2	4	2	4	2	(1)
Pileated Woodpecker	2	2	2	+	2	4	(2)
Com. Crow	2	2	2	2	2	2	(1)
Brown Creeper	2	4	4	4	—	—	—
Winter Wren	2	+	2	4	2	2	(1)
Eastern Bluebird	2	2	—	+	4	2	(1)
Song Sparrow	2	2	2	4	+	+	+
Red-tailed Hawk	1	—	2	+	+	+	+
Mourning Dove	1	+	2	2	+	—	—
Barred Owl	1	—	+	+	2	2	(1)
Belted Kingfisher	1	+	+	2	2	2	(1)
Am Robin	1	2	+	+	4	+	+
Ruby-crowned Kinglet	1	4	+	+	+	2	(1)
Starling	1	—	+	+	2	2	(1)
Red-winged Blackbird	1	—	4	—	—	—	—
Great Blue Heron	+	+	—	—	—	—	+
Mallard	+	—	—	—	—	2	(1)
Green-winged Teal	+	—	—	+	—	—	—
Wood Duck	+	—	—	—	+	—	+
Turkey Vulture	+	+	+	+	—	—	+
Black Vulture	+	—	—	—	—	—	+
Sharp-shinned Hawk	+	—	—	—	—	—	+
Red-shouldered Hawk	+	+	+	+	+	—	+
Bobwhite	+	—	2	—	—	—	—
Great Horned Owl	+	—	—	—	+	—	—
Black-capped Chickadee	+	—	—	—	—	2	(1)
Mockingbird	+	—	+	+	+	—	+
Gray Catbird	+	—	—	—	—	—	+
Brown Thrasher	+	—	—	—	+	—	—
Hermit Thrush	+	+	—	—	2	—	—
Com. Grackle	+	—	—	+	—	—	—
Tree Sparrow	+	—	+	—	—	—	—
Swamp Sparrow	+	—	—	—	+	—	+
Total birds per 100 acres	325	431	237	191	356	409	
Total birds per sq. km.	803	1064	587	472	880	1010	
Total species	37	33	36	36	39	41	

range. USGS. **Continuity:** Established 1972; 5 consecutive years. **Size:** 18.4 ha = 45.5 acres (L-shaped following the 310-foot contour; surveyed). **Description of Area:** See *AB* 25:963-964 (1971). The dominant canopy trees are Pignut Hickory (*Carya glabra*), Red Oak (*Quercus rubra*), and Green Ash (*Fraxinus pennsylvanica*). Average canopy height, 39 ft. **Weather:** Temperatures close to normal after 3 exceptionally mild winters. There was no more than a trace of snow during the count period, but standing water remained frozen during the entire period. Temperatures on the four morning trips ranged from 10° to 33°F. and temperatures on the afternoon trips ranged from 15° to 45°. Winds exceeded 6 mph on only one trip when a maximum of 12 mph was reached. Skies were clear on six trips and overcast on one morning trip and one afternoon trip. **Coverage:** Jan. 10, 17, 18, 25, 31; Feb. 7, 8, 14. Total, 8 trips averaging 2 hours, 58 min. The four morning trips started between 3 and 12 minutes after sunrise and the four afternoon trips finished between 13 and 17 minutes before sunset. **Count:** See the 5-year summary in Table 1. (Average number of birds in 1976 is in parentheses). **Average Total:** 186 birds (1010/km², 409/100 acres). **Remarks:** Total species, 41. The density of wintering birds in this plot was nearly six times that in the adjacent upland plot (Study No. 13). The crop of native berries, especially Poison Ivy (*Rhus radicans*), Bittersweet (*Celastrus scandens*), Black Haw (*Viburnum prunifolium*), and Japanese Honeysuckle (*Lonicera japonica*), was unusually heavy again this year in this floodplain plot and provided an abundance of food throughout the period of this study. After an ice storm in early February there were more Poison Ivy berries on the ground than in the vines on the trees, and the Yellow-rumped Warbler and other species feeding on the berries were much more difficult to count than they had been earlier. Thirteen species were found on all trips: Com. Flicker, Red-bellied Woodpecker, Yellow-bellied Sapsucker, Hairy Woodpecker, Downy Woodpecker, Blue Jay, Carolina Chickadee, Tufted Titmouse, White-breasted Nuthatch, Carolina Wren, Myrtle Warbler, Cardinal, and White-throated Sparrow. Twenty-six species were found on the plot in all five winters. — *CHANDLER S. ROBBINS, 7902 Brooklyn Bridge Rd., Laurel, Md. 20810.*

13. UPLAND TULIP-TREE-MAPLE-OAK FOREST. — **Location:** Maryland; Howard Co., W edge of Middle Patuxent River Valley, SW of Hobbits Glen Golf Course at Columbia, 39°12'55"N, 76°54'40"W, Clarksville Quadrangle, USGS. **Continuity:** Established 1972; 4 intermittent years. **Size:** 11.98 ha = 29.6 acres (basically rectangular, 1125 ft. N-S by 1000 ft. E-W, but irregularly extending farther in each direction where uniformity of habitat permits). **Description of Area:** See *AB* 25:971 (1971) and 26:665 (1972). The dominant canopy trees are Tulip-tree (*Liriodendron tulipifera*), Red Maple (*Acer rubrum*), White Oak (*Quercus alba*), and Red Oak (*Q. rubra*). **Weather:** Temperatures near normal, in marked contrast to exceptionally mild weather in all previous years of this study. Temperatures ranged from 6° to 28° F on the four morning counts and from 20° to 57° on the four afternoon counts. Winds 0 to 10 mph. Three counts were made under clear skies, 3 under partly cloudy, and 2 on cloudy days. **Coverage:** Jan. 10, 11, 17, 18, 24, 31; Feb 7 12 Total, 8 trips averaging 1 hr 54 min The four

morning trips started at local sunrise and the four afternoon trips ended between 35 and 5 min. before sunset **Count:** Carolina Chickadee, 3 (25, 10); White-throated Sparrow, 3; White-breasted Nuthatch, 2 (17, 7); Carolina Wren, 2; Yellow-rumped Warbler, 2; Cardinal, 2; Com Flicker, 1 (8, 3); Red-bellied Woodpecker, 1; Downy Woodpecker, 1; Black-capped Chickadee, 1; Tufted Titmouse, 1; Hermit Thrush, 1; Purple Finch, 1; Turkey Vulture, +; Black Vulture, +; Red-tailed Hawk, +, Barred Owl, +; Pileated Woodpecker, +; Hairy Woodpecker, +; Blue Jay, +; Com. Crow, +; Red-breasted Nuthatch, +; Brown Creeper, +; E. Bluebird, +; Golden-crowned Kinglet, +; Ruby-crowned Kinglet, +; Am. Goldfinch, +. **Average Total:** 21 birds (175/km², 71/100 acres). **Remarks:** Total species, 27. The number of birds seen per trip ranged from 13 to 50 on the morning counts and from 8 to 18 on the afternoon counts. The population reached a new low this year, 59 per cent below the mean of the three previous winters. The abundance of natural fruits in the adjacent floodplain plot as compared with the scarcity in this upland plot is believed to be an important factor contributing to the low density of winter birds in this plot. The White-breasted Nuthatch was the only species found on all counts; the Carolina Chickadee and Cardinal were found on all counts except one. The Black Vulture, Black-capped Chickadee, Red-breasted Nuthatch, and Ruby-crowned Kinglet were found wintering in the plot for the first time this year. These raised the 4-year cumulative list of wintering birds in this plot to 40 species. — *CHANDLER S. ROBBINS, 7902 Brooklyn Bridge Rd., Laurel, Md. 20810.*

14. FOREST DEVELOPING AFTER CULTIVATION. — **Location:** Maryland; Carroll Co., 5 mi. NE of Hampstead on the watershed of Prettyboy Reservoir, 0.2 mi. NE of Beckleysville crossroads; 39°39'N, 76°47'W, Lineboro Quadrangle, USGS. **Continuity:** Established 1969; 8 consecutive years. **Size:** 8.1 ha = 20 acres. **Description of Area:** See *afn* 23:528 (1969) and *AB* 28:701 (1974). **Weather:** During the 36-day study period there was one night when the temperature did not go below freezing and 17 days on which it did not go above freezing. The range was -2° to 54°F. There were 18 cm of snow which stayed on the ground mostly as ice because of intervening rains. **Coverage:** Dec. 27, 29, 31; Jan. 4, 11, 17, 24, 31. Total, 8 trips, averaging 90 min. each, between 0745 and 1000 EST. **Count:** Chickadee sp., 4 (49, 20); Downy Woodpecker, 2 (25, 10); Blue Jay, 2, Red-breasted Nuthatch 2; Yellow-rumped Warbler, 1 (12, 15); White-throated Sparrow, 1; Yellow-bellied Sapsucker, +; Com. Crow, +; Tufted Titmouse, +; Carolina Wren, +; Am. Robin, +; Hermit Thrush, +, Golden-crowned Kinglet, +; Dark-eyed Junco, + **Average Total:** 12 birds (148/km², 60/100 acres) **Remarks:** Seen flying over: Canada Goose, Turkey Vulture, Starling and Com. Grackle (and additional crows). — *HAVEN KOLB, Rte. 1, Box 147A, Millers, Md. 21107.*

15. MATURE DECIDUOUS FLOODPLAIN FOREST. — **Location:** Maryland, Montgomery Co., Glen Echo, 2½ mi. NW of District of Columbia, between the C. and O. Canal and the Potomac River. **Continuity:** Established 1948; 25 intermittent years **Size:** 17.8 ha =

44.1 acres. **Description of Area:** See *AFN* 2:153-156 (1948). The land is a fairly flat strip along the river, supporting a heavy growth of deciduous hardwoods 80 to 100 ft. **Weather:** The winter was relatively mild with little snow. Temperatures on walks averaged 35°F. **Coverage:** Dec. 25, 28; Jan. 10, 17, 25, 31 (2 trips); Feb. 7, 8, 16. Total, 10 trips averaging 2.33 hours; 9 between 0730 and 1230 and one between 1400 and 1615. **Count:** Starling, 35 (196, 79); Carolina Chickadee, 20 (112, 45); Carolina Wren, 10 (56, 23); Downy Woodpecker, 7 (39, 16); Cardinal, 7; Com. Crow, 6 (34, 14); Tufted Titmouse, 5 (28, 11); White-throated Sparrow, 5; Dark-eyed Junco, 4 (22, 9); Red-bellied Woodpecker, 3 (17, 7); Brown Creeper, 3; Am. Goldfinch, 3; Mourning Dove, 2 (11, 5); White-breasted Nuthatch, 2; Winter Wren, 1 (6, 2); Ruby-crowned Kinglet, 1; Yellow-rumped Warbler, 1; Evening Grosbeak, 1; Purple Finch, 1; Song Sparrow, 1; Turkey Vulture, +; Barred Owl, +; Com. Flicker, +; Pileated Woodpecker, +; Yellow-bellied Sapsucker, +; Hairy Woodpecker, +; Blue Jay, +; Mockingbird, +; Golden-crowned Kinglet, +. **Average Total:** 118 birds (661/km², 268/100 acres). **Remarks:** Seen on or near the water near the area: Pied-billed Grebe, Great Blue Heron, Canada Goose, Mallard, Black Duck, Wood Duck, Bufflehead, Killdeer, Herring Gull, Ring-billed Gull, Belted Kingfisher. Total species, 29. Equal to last year's and slightly above the average of 27. The average total of 118 was below last year's but at about the same level of abundance. — *JOAN CRISWELL (compiler), RICHARD GAUTHEY, DONALD MEHLMAN, MIEKE MEHLMAN, BARBARA MILLER (members of Audubon Naturalist Society, 8940 Jones Mill Rd., Washington, D C 20015).*

16. UPLAND TULIP-TREE — OAK FOREST. — **Location:** Virginia; Fairfax Co., USGS National Center, Reston, 38°56'45"N, 77°21'50"W, Vienna Quadrangle, USGS. **Continuity:** Established 1974; 3 consecutive years. **Size:** 20.6 ha = 50.9 acres. **Description of Area:** See *AB* 28:701-702 and 1003-1004 (1974). **Weather:** The sky was clear on 7 trips and overcast on 5 trips. Temperatures ranged from 23° to 50°F. A light snow cover was present on Jan. 2 and 28. Winds were generally calm except on Jan. 11 and 21 when light snow fell and winds increased during the counts. **Coverage:** Dec. 24, 29; Jan. 2, 10, 11, 21 (2 trips), 24, 28; Feb. 4, 8, 14. Total, 12 trips, 6 between 0745 and 1000 and 6 between 1420 and 1725, totaling 23.1 hours. **Count:** Carolina Chickadee, 6 (29, 12); Dark-eyed Junco, 6; Brown Creeper, 4 (19, 8); Tufted Titmouse, 3 (15, 6); Carolina Wren, 3; Golden-crowned Kinglet, 3; White-breasted Nuthatch, 2 (10, 4); Red-bellied Woodpecker, 1 (5, 2); Downy Woodpecker, 1; Blue Jay, 1; E. Bluebird, 1; Sharp-shinned Hawk, +; Mourning Dove, +; Com. Crow, +; Ruby-crowned Kinglet, +; House Sparrow, +; Cardinal, +; Am. Goldfinch, +. **Average Total:** 31 birds (150/km², 61/100 acres). **Remarks:** Tulip-tree and oak productivity was low in 1975. Brown Creeper was the only bird recorded on every count. — *JOAN C. WOODWARD and PAUL W. WOODWARD, 2433 Southgate Square, Reston, Va. 22091.*

17. UPLAND OAK-HICKORY HARDWOOD FOREST. — **Location:** Virginia; Fairfax Co., Dranesville District Park, McLean. **Continuity:** Established 1971; 6

consecutive years. **Size:** 11.02 ha = 27.2 acres. **Description of Area:** See *AB* 25:636 (1971) and *Atlantic Naturalist* 26 (2):77-78. **Weather:** Temperatures on January trips varied from 8° to 51° (average, 32.4°F) February was noticeably milder, with temperatures ranging from 40° to 79° (average, 54.4°); the combined average temperature for all trips was 41.5°. No precipitation was encountered on any trip and no snow fell during the census period. **Coverage:** Jan. 10, 13 (2 trips), 15, 18, 24 (2 trips), 25, 28, 31; Feb. 8, 9, 14, 17, 21, 25, 28. Total, 17 trips, between 0720 and 1315 or 1245 and 1715, averaging 2 hours. **Count:** Com. Crow, 4 (36, 15); Carolina Chickadee, 4; Red-bellied Woodpecker, 2 (18, 7); Tufted Titmouse, 2; White-breasted Nuthatch, 2; Pileated Woodpecker, 1 (9, 4); Hairy Woodpecker, 1; Downy Woodpecker, 1; Brown Creeper, 1; Carolina Wren, 1; Golden-crowned Kinglet, 1; Red-tailed Hawk, +; Red-shouldered Hawk, +; Mourning Dove, +; Barred Owl, +; Com. Flicker, +; Yellow-bellied Sapsucker, +; Blue Jay, +; Winter Wren, +; E. Bluebird, +; Ruby-crowned Kinglet, +. **Average Total:** 20 birds (182/km², 74/100 acres). — *BOB DITTRICK, BEN FERN, TERRY MOESLEIN, BILL PER-LEE, JIM POMEROY, S. W. TAYLOR, ROBERT J. WATSON (compiler), 2636 Marcey Rd., Arlington, Va. 22207*

18. HARDWOOD-SOFTWOOD FOREST. — **Location:** North Carolina; Wilkes Co., North Wilkesboro. **Continuity:** Established 1954; 23 consecutive years. **Size:** 15.0 ha = 37 acres. **Description of Area:** Fully described in *AFN* 8:280-281 (1954) except that area was doubled the following year. Since then construction of houses and roads has reduced the tract by 3 acres. **Weather:** Average temperature for January was 33.51°F. Precipitation was 3.64 in., almost all in the form of rain. February's average temperature was 49.28° with a total precipitation of 1.48 in. There was no accumulation of snow during the period. **Coverage:** Jan. 7, 12, 21, 28; Feb. 5, 10, 23, 26. Total, 8 trips, averaging 2 hours per trip. **Count:** Mourning Dove, 1 (7, 3); Red-bellied Woodpecker, 1; Com. Crow, 1; Cardinal, 1; Downy Woodpecker, +; Blue Jay, +; Tufted Titmouse, +; Carolina Wren, +; Am. Robin, +; Hermit Thrush, +. **Remarks:** On Jan. 7, 12 and 28, no birds were seen. Only 33 birds were seen during the study. **Average Total:** 4 birds (27/km², 11/100 acres). **Remarks:** Increased growth of White Pine (*Pinus strobus*) over much of the area has eliminated plant growth on ground, so almost no seeds. There are fewer fruit-bearing shrubs, with a poor crop on those remaining. Good crop of acorns and hickory nuts, but they were apparently defective as evidenced by absence of Blue Jays. Finally, resident birds and visitors from the north are less numerous in the region. The Screech Owl, heretofore present in the tract, seems to have disappeared. — *WENDELL P. SMITH, 911 E St., N. Wilkesboro, N C 28659.*

19. DISTURBED UPLAND OAK FOREST. — **Location:** Pennsylvania; Lycoming Co., Williamsport Municipal Watershed, 8 mi. SW of Williamsport, 41°10'N, 77°04'W, Williamsport Quadrangle, USGS. **Continuity:** Established 1975; second year. **Size:** 10.1 ha = 25 acres (irregular, surveyed). **Description of Area:** See *AB* 29:756 (1975). Part of a 104-acre seed-tree regeneration cut; this was the second winter after cutting. Sixty

1/1000 acre plots taken at the end of the 1975 growing season indicated an average of 13,066 seedlings and sprouts/acre; 31% Red Maple (*Acer rubrum*), 23% Chestnut Oak (*Quercus prinus*), 16% sassafras; ; 14 other species comprise the remaining 30%. Most of the reproduction is under 3 ft. and moderately browsed by deer, but there are scattered sprouts over 8 ft. **Weather:** From Williamsport airport; 30 year averages in parentheses, Mean temperatures: Dec. 31.8°F (30.2°), Jan. 22.7° (27.2°); Precipitation: Dec. 3.24 in. (3.10 in.), Jan. 2.73 in. (2.252 in.); Snowfall: Dec. 4.6 in. (9.8 in.), Jan. 11.4 in. (9.4 in.). During counts the temperature varied from 2° to 32° (mean 18°); skies were overcast on 4 trips; ground snow-covered on 7 trips. **Coverage:** Dec. 7, 20; Jan 3 5, 10, 11, 18, 24. Total, 8 trips averaging 60 min. between 0831 and 1426. **Count:** Black-capped Chickadee, 3 (30, 12); Ruffed Grouse, 1 (10, 4); Red-tailed Hawk, +; Downy Woodpecker, +; White-breasted Nuthatch, +. **Average Total:** 4 birds (40/km², 16/100 acres) **Remarks:** No birds were seen on the first 2 trips. The chickadees were seen feeding either in the seed trees or in the scattered small White Pine under 10 ft. The grouse flushed only when the observer was within 50 feet; there may be more birds using the area than indicated. In this vicinity grouse are undergoing a cyclic population increase. White-tailed Deer (*Odocoileus virginianus*) was seen on 7 trips, an average of 6 per trip. Tracks of E. Cottontail (*Sylvilagus floridanus*) and mouse sp. were also noted. Appreciation is extended to the Williamsport Municipal Water Authority for permission to conduct the study on the Watershed. — CHARLES E. SCHWARZ, 1405 Pine Crest Dr., South Williamsport, PA 17701.

20. ELM-CHERRY FOREST. — **Location:** Pennsylvania; Washington Co., 4 mi. SSW of Finleyville in Mingo Creek County Park; 40°11'46"N, 80°02'03"W, Hackett Quadrangle, USGS. **Continuity:** New. (Breeding Bnd Census, 1975). **Size:** 6.07 ha = 15 acres (rectangular 330 x 1980 ft., measured laterally and longitudinally with surveyor's chain). **Description of Area:** See AB 29:1084 (1975). **Weather:** Temperature during census trips averaged 34°F. December, 23°, January, 42°, February (extremes 13° to 55°). The sky was clear on 4 trips, sunny with intermittent clouds on 2 trips, and overcast on 15 trips. It rained on 3 trips, snowed on 2. On 5 trips the ground was covered with ½ to 3 in. of snow; and on 1 trip, everything was ice-covered. On most trips it was slightly breezy. **Coverage:** Dec. 2, 3, 4, 5, 7, 12; Jan. 1, 4, 11, 17, 18, 31; Feb. 1, 7, 12, 13, 15, 16, 21, 22, 26. Total 21 trips, between 0820 and 1700, averaging 63 min. **Count:** chickadee sp., 3 (49, 20); Red-bellied Woodpecker, 1 (16, 7); Downy Woodpecker, 1; Com. Crow, 1; Tufted Titmouse, 1; White-breasted Nuthatch, 1; Brown Creeper, 1; Carolina Wren, 1; Cardinal, 1; Dark-eyed Junco, 1; Sharp-shinned Hawk, +; Red-tailed Hawk, +; Great Horned Owl, +; Pileated Woodpecker, +; Hairy Woodpecker, +; Blue Jay, +; Am. Robin, +; Golden-crowned Kinglet, +; Rufous-sided Towhee, +; White-throated Sparrow, +. **Average Total:** 12 birds (198/km², 80/100 acres). **Remarks:** On several trips both Black-capped and Carolina Chickadees were heard singing. Two Mallards, an Am. Kestrel, 1 Killdeer, and 2 Rock Doves were seen flying over the plot during the study period. Chickadees and Downy Woodpecker were

found on 16 trips; Tufted Titmouse on 14, Sharp-shinned Hawk, Am. Robin, Rufous-sided Towhee, and White-throated Sparrow on only 1 trip. Thanks to Monica Gredesky, Eileen Higbee, Martha Kulp, Louinda Richardson, and Thais Tepper for their help. Special thanks to Glen Phillips for his invaluable advice and assistance. — ROGER V. and MARGARET A HIGBEE, 219 Blue Jay Drive, Canonsburg, PA 15317

21. MATURE HARDWOOD FOREST. — **Location:** West Virginia; Brooke Co., Weimer Nature Trail of Bethany College, Bethany, 40°15'45"N, 80°33'45" to 80°33'55"W; Bethany Quadrangle, USGS. **Continuity:** Established 1973; 3 consecutive years. **Size:** 12.2 ha = 30 acres (square). **Description of Area:** See AB 25 972 (1971). **Coverage:** Jan. 7, 8, 10, 14, 15, 16, 20, 22, 23, 25, 28; Feb. 9, 10. Total, 13 trips, between 0900 and 1700. Trips averaged about 2 hours. **Weather:** High and low temperatures on the count days were 51° and 16°F respectively. There was snow on the ground on 9 trips. On 3 trips it was snowing. **Count:** chickadee sp., 9 (74, 30); Downy Woodpecker, 2 (16, 7); Tufted Titmouse, 2, Com. Flicker, 1 (8, 3); Pileated Woodpecker, 1; Red-bellied Woodpecker, 1; Com. Crow, 1; Winter Wren, 1, Carolina Wren, 1; Starling, 1; Cardinal, 1; Red-tailed Hawk, +; Yellow-bellied Sapsucker, +; Hairy Woodpecker, +; White-breasted Nuthatch, +; Brown Creeper, +; Song Sparrow, +. **Average Total:** 20 birds (165/km², 67/100 acres). — ALBERT R. BUCKELEW, JR., HENRY S. JOHNSTON (compiler) Biology Dept., Bethany College, Bethany, W. Va. 26032.

22. MATURE MIXED HARDWOOD FOREST — **Location:** Michigan; Oakland Co., city of Southfield Civic Center Nature Area, entrance off Evergreen Rd. at Civic Center Dr.; 42°30'N, 83°15'W, Royal Oak Quadrangle, USGS. **Continuity:** Established 1974; 2 years. **Size:** 9.3 ha = 23 acres. **Description of Area:** See AB 28:1005-1006 (1974). **Weather:** Temperatures ranged from 8° to 37°F. Snow cover averaged 12 in. Snow fell on one trip. Wind averaged 10 mph. Weather conditions during the study period were severe with excessive snow wind, and record low temperatures through Feb. 7; then a warming trend. **Coverage:** Jan. 13, 20, 30; Feb. 3, 9, 10, 14, 15. Total, 8 trips, averaging 60 min. each, from 0800 to 1200 EST. **Count:** Starling, 13 (140, 57); Black-capped Chickadee, 5 (54, 22); Com. Crow, 4 (43, 17); Downy Woodpecker, 3 (32, 13); Dark-eyed Junco, 2 (21, 9), Mourning Dove, 1 (11, 4); Hairy Woodpecker, 1; Blue Jay, 1; Cardinal, 1; Pine Siskin, 1; Red-tailed Hawk, +, Ring-necked Pheasant, +; Com. Flicker, +; Tufted Titmouse, +; Com. Redpoll, +; Am. Goldfinch, +; Song Sparrow, +. **Average Total:** 33 birds (355/km², 143/100 acres). **Remarks:** Total species, 17. Downy Woodpecker and Black-capped Chickadee were noted on every trip, Red-tailed Hawk, Com. Flicker, Com. Redpoll, and Am. Goldfinch on only one trip. Starlings were counted on 7 trips; however, the increase over 1975 is a result of large numbers seen on 3 trips. Common Crow and Black-capped Chickadee were more numerous than in 1975 while Am. Robin was absent. One Am. Kestrel and 4 Mallards were seen flying in the area on one trip. — BETTY CHALLIS, Oakland Audubon Society, 2335 Pontiac Lake Rd., Pontiac, Mich. 48054.

23. TAMARACK BOG AND HARDWOOD FOREST. — **Location:** Michigan; Berrien Co., Lincoln Township, 1 mi. SW of Stevensville in Grand Mere State Park, 0.5 mi. N of Willow Dr. on Wishart Rd. 42°00'N, 86°33'W, Bridgman Quadrangle, USGS. **Continuity:** New **Size:** 8.5 ha = 21 acres (rectangular, 1254 x 732 ft., laid out with compass and steel tape). **Description of Area:** Dominant canopy trees are Red Maple (*Acer rubrum*), Tamarack (*Larix laricina*), Tulip-tree (*Liriodendron tulipifera*), White Oak (*Quercus alba*), Black Oak (*Q. velutina*), Silver Maple (*A. saccharinum*). The most prominent shrubs are Com. Spicebush (*Lindera benzoin*), Witch Hazel (*Hamamelis virginiana*). The ground cover is primarily Gold Thread (*Coptis groenlandica*), Partridge Berry (*Mitchella repens*), Wintergreen (*Caultheria procumbens*). A quantitative survey of the vegetation gave the following results: Trees 3 in. dbh and over, based on five 0.1-acre circular samples, 280/acre; total base area, 46.0 sq. ft./acre. Species comprising 90% of the total number of trees (figures after each give number of trees per acre, relative density (%), relative dominance and frequency, in that sequence): Red Maple 82, 30, 27, 60; Tamarack 70, 25, 22, 60; Tulip-tree 38, 14, 13, 80, White Oak 16, 5, 12, 40; Silver Maple 10, 3, 9, 40; dead trees 30, 11, 6, 80. Trees by diameter class (trees per acre, relative density (%), basal area in sq. ft. per acre, and relative dominance, in that order): A (3-6 in.) 55, 39, 5.5, 12; B (6-9 in.) 55, 38, 15.9, 34; C (9-15 in.) 29, 21, 19.2, 42; D (15-21 in.) 3, 3, 5.4, 12. Shrub stems/acre, 92, 075 Ground cover 100%; canopy cover 85%; average canopy height 60 ft. (range 50-65 ft.). Area was heavily logged about 10 years ago, leaving very few trees over one foot in diameter. This accounts for the high number of shrub stems/acre. **Topography:** Bog is flat, with standing water most of the year. West and northwest elevation 590 ft. Section is about 30 ft. higher and flat. **Edge:** Bordered on the west by a dirt road; north, east, and south by similar forest. **Weather:** Temperatures during count hours ranged from 10° to 51°F. Snow cover on all trips but one; maximum snow depth, 16 in. Winds up to 20 mph. Temperature and precipitation about normal. **Coverage:** Dec. 20, 28; Jan. 1, 11, 18, 25; Feb. 8, 15. Total, 8 trips, between 0800 and 1500, averaging 90 min. Total man-hours, 13.5. **Count:** Blue Jay, 2 (24, 10); Downy Woodpecker, 1 (12, 5); Black-capped Chickadee, 1, Tufted Titmouse, 1; White-breasted Nuthatch, 1; Hairy Woodpecker, +; Cardinal, +. **Average Total:** 6 birds (71/km², 29/100 acres). **Remarks:** Blue Jays were seen on all trips. Hairy Woodpecker was seen on 3 trips, in the same tree where he was digging holes. The Tamaracks were full of cones, but no birds were observed in them. Mammals observed during the study period were E Cottontail (*Sylvilagus floridanus*), Fox Squirrel (*Sciurus niger*), and Red Squirrel (*Tamiasciurus hudsonicus*). Fox and deer tracks were seen. This area was made a state park in 1974. It is still being abused by dune buggies and motorcycles in the dunes west and north of the study plot. — ALBERT MORSE, JAMES MULLINS (compiler), 2558 Locust Lane, Stevensville, MI 49127.

24. BEECH-MAPLE SWAMP FOREST MOSAIC. — **Location:** Ohio; Hardin Co., on the S side of County Rd 80 at the intersection of Van Atta Rd., 4 mi. SE of Ada (NW ¼ NW ¼ of Sec. II, T4S, R9E). **Continuity:** Established 1975; 2 consecutive years. **Size:** 8.3 ha = 20.5

acres. **Description of Area:** See AB 29:760-761 (1975) **Weather:** Snow covered the ground during the entire count. On count days, snow depth averaged 12 cm and temperature averaged -3°C. Average temperature for the general area was -6°C with average maximum and minimum temperatures -2°C and -11°C respectively. Total snowfall was 43 cm (16.8 in.) with a snow melt value of 9.0 cm (3.54 in.), (data from Ray Burkholder, U S Weather Observer, Pandora, Ohio). **Coverage:** Dec 31, Jan. 1 (2 trips), 2, 10, 17; Feb. 4, 7, 8. Total, 9 trips (1 morning and 8 afternoons) averaging 100 min. **Count:** Dark-eyed Junco, 10 (121, 49); chickadee sp., 4 (48, 20), Downy Woodpecker, 3 (36, 15); Tufted Titmouse, 3, Blue Jay, 2 (24, 10); White-breasted Nuthatch, 2; Brown Creeper, 2; Com. Flicker, 1 (12, 5); Red-bellied Woodpecker, 1; Hairy Woodpecker, 1; Carolina Wren, 1, House Sparrow, 1; Cardinal, 1; Am. Goldfinch, 1; Song Sparrow, 1; Mourning Dove, +; Great Horned Owl, +, Tree Sparrow, +. **Average Total:** 34 birds (density, 410/km², 166/100 acres). **Remarks:** The average total of birds increased substantially from 20 in 1975 to 34. Increases were noted for most species, but particularly for the juncos, chickadees and titmice. These increases might be partially attributed to the wet and productive summer and the very mild fall. Juncos, chickadees and titmice consistently fed under trees where squirrels had dropped abundant nut particles and in holes in the snow where squirrels had probed for nuts. — NELSON J MOORE, Dept. of Biology, Ohio Northern Univ., Ada, Ohio 45810.

25. OAK-MAPLE FOREST AND FOREST-EDGE. — **Location:** Illinois; Champaign Co., Trelease Woods, 6 mi. NE of Champaign-Urbana. **Continuity:** Established 1948; 28 consecutive years. **Size:** 22.3 ha = 55 acres plus 2.0 km (1.25 mi.) of forest-edge. **Description of Area:** See AFN 2:151-152 (1948). **Coverage:** Dec. 9, 20; Jan. 13, 28, Feb. 11, 25. Total, 6 trips, 14 hours. **Count:** Forest Interior Species: Downy Woodpecker, 4 (18, 7); Red-bellied Woodpecker, 2 (9, 4); Brown Creeper, 2; Great Horned Owl, 1 (4, 2); White-breasted Nuthatch 1, Carolina Wren, 1; Carolina Chickadee, +; Golden-crowned Kinglet, +. Forest-edge Species (individuals per kilometer and per mile in parentheses): Starling, 29 (14, 23); Dark-eyed Junco, 8 (4, 6); Blue Jay, 7 (4, 6); Red-headed Woodpecker, 3 (2, 2); Cardinal, 2 (1, 2); Mourning Dove, 1 (1, 1); Com. Grackle, 1; Tree Sparrow, 1, Song Sparrow, 1; Red-tailed Hawk, +; Ring-necked Pheasant, +; Com. Crow, +; Am. Robin, +; House Sparrow, +. **Average Total:** Forest interior, 11 birds (49/km², 20/100 acres); Forest-edge, 53 birds (26/km², 42/mi.) **Remarks:** Late autumn migrants: Yellow-bellied Sapsucker, 1 (Dec. 9). Early spring migrants: Am. Robin, 2 (Feb. 11); Hermit Thrush, 1; E. Bluebird, 2; Com Grackle, 480+; Red-winged Blackbird, ±110; Rusty Blackbird, ±260; (all Feb. 25). — JOHN M. EDGINGTON and S. CHARLES KENDEIGH, Vivarium Bldg., Wright and Healey Sts., Champaign, IL 61820

26. UPLAND OAK-MAPLE FOREST. — **Location:** Illinois; DeKalb Co., Johnson's Mount County Forest Preserve, 5 mi. W of Geneva; Sec. 15, T39N, R7E. **Continuity:** New. **Size:** 8.36 ha = 20.6 acres (rectangular, 400 x 250 yards, measured by pacing with compass). **Descip-**

tion of Area: Partially virgin woodland of northern Illinois; trees average 50 to 60 ft. and 1 to 2 ft. dbh. Sugar Maple (*Acer saccharum*), 30%; Bur Oak (*Quercus macrocarpa*), 18%; White Oak (*Q. alba*), 15%; Blue Ash (*Fraxinus quadrangulata*), 13%; miscellaneous hardwood species, 24%. The forest canopy is partially closed with an open understory of largely Sugar Maple saplings averaging 8 to 12 ft. There are isolated blackberry (*Rubus* sp.) and gooseberry (*Ribes* sp.) patches and, rarely, Multiflora Rose (*Rosa multiflora*). Very little herbaceous ground cover present. Sources for plant names were *Textbook of Dendrology* (Harlow and Harar) and *A Field Guide to Trees and Shrubs* (Petrides). Three acres were surveyed for snags and logs >4 in. dbh. There was an average of 29 logs (range, 27 to 30) and 9 snags (range, 2 to 18). A narrow road curves through the plot; a picnic shelter and 2 small buildings are in the SE corner. **Topography:** NW side of a large glacial mound. Contains the top of the mound, two ridges, and adjacent low areas. **Edge:** Part of an 80-acre woodland; all plot borders at least 100 ft. from forest edge. Top of mound partially cleared and maintained in grass. **Water:** Small, intermittent stream 200 ft. N of plot. **Weather:** During the 61-day study period, the temperature stayed below freezing on 47 days and above freezing on 13 nights. One day and eleven nights were recorded with sub-zero (F) temperatures. The temperature range was -15° to 62°F. On all trips, the ground was covered with between less than ½ in. to 8 in. of snow. Winds varied from northerly (40% of trips) to southerly (60%) and ranged from 8—24 mph. **Coverage:** Dec. 12, 24, Jan. 5, 7, 12, 26; Feb. 4, 10. Total, 7 completed trips, all between 1045 and 1615, averaging 82 min. **Count:** Com Crow, 4 (48, 19); Black-capped Chickadee 4; Downy Woodpecker, 2 (24, 10); Red-bellied Woodpecker, 1 (12, 5); White-breasted Nuthatch, 1; Brown Creeper, 1; Rough-legged Hawk, +; Great Horned Owl, +; Red-headed Woodpecker, +; Hairy Woodpecker, +; Blue Jay, +; Starling, +; Cardinal, +; Dark-eyed Junco, +. **Average Total:** 13 birds (156/km², 63/100 acres). **Remarks:** The Downy Woodpecker was observed on 6 trips, the crow, chickadee and Red-bellied Woodpecker on 4 trips, and the nuthatch and creeper on 2 trip. The pair of owls utilized the entire woodland. At least 2 Rough-legged Hawks flew over or through the plot. Pheasant tracks were occasionally seen although no pheasants were observed. (Robert L. Zepp, Jr., described the vegetation). — LYNN BRABAND. *Equitable Environmental Health, Inc., P.O. 247, Batavia, Ill. 60510.*

27. MIXED PINE-DECIDUOUS FOREST. — **Location:** Louisiana; Natchitoches Parish, one mi. W of the Northwestern State Univ. campus, within the university's Natural History Reservation, on the S side of Louisiana Hwy 6 (Sec. 81, R7W, T9N). **Continuity:** Established 1971, 6 consecutive years. **Size:** 8.9 ha = 22 acres (L-shaped, measured by pacing with compass). **Description of Area:** See AB 25:639-640 (1971) and 26:669 (1972). **Weather:** During the 47-day study period day temperatures ranged from 32° to 80°F with all count days 50° or higher. Night temperatures ranged from 15° to 60°. Three count days were clear and three were cloudy. **Wind** on count days ranged from 0 to 3 on the Beaufort scale. The weather during the study period was drier than normal. **Coverage:** Dec. 29; Jan. 30; Feb. 5, 8, 12, 13. Total,

6 trips, between 0900 and 1700 averaging 2 hours Total man-hours, 12. **Count:** Com. Grackle, 29 (326, 132); White-throated Sparrow, 18 (202, 82); Ruby-crowned Kinglet, 11 (124, 50); Blue Jay, 5 (56, 23); Pine Warbler, 5; Carolina Chickadee, 4 (45, 18); Carolina Wren, 4, Red-bellied Woodpecker, 3 (34, 14); Tufted Titmouse, 3, Am. Robin, 3; Yellow-rumped Warbler, 3; Cardinal, 3, Dark-eyed Junco, 3; Golden-crowned Kinglet, 2 (22, 9), Am. Goldfinch, 2; Bobwhite, 1 (11, 5); Com. Flicker, 1, Yellow-bellied Sapsucker, 1; Downy Woodpecker, 1, E Phoebe, 1; Red-breasted Nuthatch, 1; Brown Creeper, 1, Hermit Thrush, 1; Hairy Woodpecker, +; Brown Thrasher, +; Blue-gray Gnatcatcher, +; Orange-crowned Warbler, +; Summer Tanager, +; Pine Siskin, +. **Average Total:** 106 birds (1191/km², 482/100 acres) **Remarks:** Total species seen, 29. The number of species seen in previous winters ranged from 27 to 31. An increase in density from 1975 is attributed to the Com Grackle. A Summer Tanager has been observed on two consecutive winter counts. — CHARLES E. VIERS. *Dept. of Biological Sciences, Northwestern State Univ., Natchitoches, LA 71457.*

28. OAK-HICKORY FOREST. — **Location:** Kansas, Jefferson Co., on the University of Kansas' Rocketfeller Tract and the Nelson Environmental Studies Area. Predominantly on the SW ¼, NW ¼, Sect. 3, T11S, R20E, Midland Quadrangle, USGS. **Continuity:** Established 1975, 2 consecutive years. **Size:** 9.7 ha = 24.0 acres (rectangular 359.7 x 270.1 mi.). **Description of Area:** See AB 28:1090-1011 (1974). **Weather:** Average temperature during studies was 30.4°F (range 20-39°F) January temperatures were above average. Light snow covered the area on study days. Precipitation during the study period (0.18 in.) was nearly an inch below the average (1.17 in.) and January is the driest month in Kansas. The creek through the area was dry this year. **Coverage:** Jan. 10, 11, 14, 17, 24, 30; Feb. 7, 8. Total, 8 trips, both A.M. and P.M., averaging 1½ hours each. Total, 16 man-hours. **Count:** Red-headed Woodpecker, 11 (113, 46); Black-capped Chickadee, 6 (62, 25); Tufted Titmouse, 6; Blue Jay, 4 (41, 17); White-breasted Nuthatch, 3 (31, 13); Red-bellied Woodpecker, 2 (21, 8), Downy Woodpecker, 2; Dark-eyed Junco, 2; Red-tailed Hawk, +; Great Horned Owl, +; Hairy Woodpecker, +, Brown Creeper, +. **Average Total:** 36 birds (371/km² 150/100 acres). **Remarks:** Total species seen, 12. The presence and number of Red-headed Woodpeckers wintering was unusual. Last year none were on the plot. No increased mast crop was apparent. It is possible that mild weather allowed them to winter farther north than usual. The large number of Red-headed Woodpeckers didn't seem to decrease the densities of other woodpeckers on the area except that of the Hairy Woodpecker, which was seen only twice. Black-capped Chickadee, Tufted Titmouse and Blue Jay were more abundant this year. The Carolina Wren was absent this year, perhaps a reflection of the absence of water in the creek. Black-capped Chickadee, Red-headed Woodpecker, Downy Woodpecker and White-breasted Nuthatch were seen on all trips. Blue Jay and Tufted Titmouse were seen on 6 trips. Foraging associations of titmice, chickadees and nuthatches which were noted often last year (and predominantly on the W ½ of the area) were noted on only two trips this year. The assistance of my wife, Mary

Jo, on several counts is much appreciated. — CALVIN L. CINK, *Museum of Natural History and Dept. of Systematics and Ecology, the Univ. of Kansas, Lawrence, KS 66045.*

29. MIXED PINE-HARDWOOD FORESTS. —

Location: Texas; Angelina Co., on Angelina College property, 1.6 mi. S of intersection of Loop 287 and US 59, 31°17'34"N, 94°44'1"W, Lufkin Quadrangle, USGS. **Continuity:** Established 1975; 2 consecutive years. **Size:** 6.31 ha = 15.6 acres (irregular). **Description of Area:** See AB 28:1016 (1974). **Weather:** Temperatures ranged from 30° to 75°F. Five count days were clear and five were overcast. Winds were light on most count days. Very little precipitation during the count period. **Coverage:** Jan. 3, 4, 11, 16, 23, 30; Feb. 13, 25; Mar. 1, 10. Total, 10 trips, 9 between 0800 and 0900, 1 trip between 1300 and 1400, averaging 60 min. each. **Count:** Yellow-rumped Warbler, 16 (253, 103); Ruby-crowned Kinglet, 8 (127, 51); Cardinal, 7 (111, 45); Carolina Chickadee, 4 (63, 26); Carolina Wren, 4; Blue Jay, 2 (32, 13); Tufted Titmouse, 2; Am. Robin, 2; Pine Warbler, 2; Com. Flicker, 1 (16, 6); Pileated Woodpecker, 1; Yellow-bellied Sapsucker, 1; Com. Crow, 1; Brown Thrasher, 1; Hermit Thrush, 1; Golden-crowned Kinglet, 1; Purple Finch, 1; Am. Goldfinch, 1; Great Blue Heron, +; Wood Duck, +; Red-shouldered Hawk, +; Red-bellied Woodpecker, +; Hairy Woodpecker, +; Downy Woodpecker, +; E. Phoebe, +; Winter Wren, +; Solitary Vireo, +; Orange-crowned Warbler, +; Red-winged Blackbird, +; Com. Grackle, +; Rufous-sided Towhee, +, White-throated Sparrow, +. **Average Total:** 56 birds (887/km², 359/100 acres). **Remarks:** Total species, 32. Birds seen on all count days included the Carolina Chickadee, Carolina Wren, Ruby-crowned Kinglet, Yellow-rumped (Myrtle) Warbler and Cardinal. Birds seen only once during the count period included the Great Blue Heron, Wood Duck, Red-shouldered Hawk, Hairy Woodpecker, E. Phoebe, Solitary Vireo, Red-winged Blackbird, Com. Grackle, Rufous-sided Towhee and White-throated Sparrow. New species added to the winter study list were Great Blue Heron, Wood Duck, E. Phoebe, Winter Wren, Purple Finch and Rufous-sided Towhee. The cumulative list for the two year period now stands at 38 species. Total densities were down from 436/100 acres in 1975 to 359/100 acres in 1976. The Yellow-rumped Warbler showed the greatest increase from an average total of 2 in 1975 to 16 in 1976. Other species showing significant increases were Ruby-crowned Kinglet and Cardinal. White-throated Sparrow, second in abundance last year at 10, registered only a plus this year. — LOUIS DEBETAZ (compiler). CARROLL MOORE and CATHY TURNEY, *Science Div., Angelina College, Lufkin, Tex. 75901.*

30. PONDEROSA PINE FOREST. —

Location: Colorado; Boulder Co., in the lower foothills 0.5 mi. S of Baseline Rd., Boulder; in the eastern part of S1, T1S, R71W, 6th PM. **Continuity:** Established 1953-54; 14 intermittent years. **Size:** 8.1 ha = 20 acres. **Description of Area:** Situated in the NE corner of a pine-covered mesa, at an elevation of 5900 ft. See AFN 8:372 (1954). **Weather:** Snowfall was below average and these months were mild and windy. Snow partially or wholly covered the plot on 8 trips; maximum 5 in. Mar. 7. Temperatures

ranged from 15° to 50°F. **Coverage:** Oct. 26; Nov. 2, 16, 23; Dec. 7, 26; Jan. 4, 11, 25; Feb. 8, 29; Mar. 7. Total, 12 trips, between 0727 and 1000, totaling 9.5 hours. **Count:** Pygmy Nuthatch, 6 (74, 30); Mountain Chickadee, 5 (62, 25); Steller's Jay, 3 (37, 15); White-breasted Nuthatch, 2 (25, 10); Brown Creeper, 2; junco sp., 2, Black-billed Magpie, 1, (15, 5); Gray-headed Junco, 1, Hairy Woodpecker, +; Downy Woodpecker, +, Am. Robin, +; Townsend's Solitaire, +; Golden-crowned Kinglet, +; Pine Siskin, +; Dark-eyed Junco, +. **Average Total:** 22 birds (272/km², 110/100 acres). **Remarks:** This winter population was below average. No Com. Flicker, Com. Raven, Com. Crow, Clark's Nutcracker, Red-breasted Nuthatch, Evening Grosbeak, Cassin's Finch, House Finch, or Red Crossbill was seen. Brown Creepers were twice as numerous as last year, but Pygmy Nuthatches and Mountain Chickadees were drastically down. Thanks to Elizabeth Mekkelsen and Art Wainwright. — LOUISE HERING, 568 Marine, Boulder, Colo. 80302.

31. PONDEROSA PINE — DOUGLAS-FIR FOOT-

HILLS FOREST. — Location: Washington; Spokane Co., Dishman Hills of Browne Mt., 2 mi. E of Spokane, SE ¼ Sect. 19, T25N, R44E; 47°39'N, 117°17'W Spokane Quadrangle, USGS. **Continuity:** New. **Size:** 11.15 ha = 27.55 acres (rectangular, 1600 x 750 ft., the long axis N-S, surveyed by tape and compass). **Description of Area:** The forest is about 95% Ponderosa Pine (*Pinus ponderosa*) and about 5% Douglas Fir (*Pseudotsuga menziesii*), second growth, with closed to broken canopy and many openings occupied by bunchgrasses and other herbs and scattered shrubs. Tree size varies from seedling to 60 cm dbh (rarely), average estimated at 15 cm dbh. A detailed vegetation survey will be made during the summer. A lightly used foot trail enters the census area from the E, forks go WNW and SW across the area, the latter trail again forking, forming a trail veering S and E out of the area. The census area is entirely within the natural area of The Nature Conservancy, and Ina H. Johnston Natural Area. **Topography:** Irregularly sloping down toward NE, with scattered granite outcroppings. **Water:** A small intermittent stream flows during late winter and spring from near the west center of the area and seepage from it emerges as a permanent spring about 600 ft. E of the NE part of the area. Another permanent spring is about 720 ft. E of the SE part of the area. **Food:** The Ponderosa Pine cone crop was very sparse but larger Douglas Firs had cones. **Elevation:** About 2130-2350 ft. **Edge:** Study area is surrounded by similar habitat, but residential, commercial and a small amount of farmland lie about ½ mile to the E, N, and W. **Weather:** Temperatures ranged from 28° to 45°F. Light snow Dec. 23 and Jan. 7. Clear Dec 27, cloudy all other trips except cloudy-to-clear Feb 19. Calm or nearly so except SW wind 5-15 mph Dec. 27 and S wind 15-20 mph Feb. 10; wind noticeable mostly at treetop level. Usually no snow cover but up to 5 in. Jan 7. **Coverage:** Dec. 23, 27; Jan. 7, 16, 23, 31; Feb. 10, 19. Trips between 0900 and 1200. Total hours 11.3. **Count:** Bohemian Waxwing, 76 (682, 276); Com. Redpoll, 3 (27, 11); chickadee, sp., 2 (18, 7); Am. Robin, 2; Golden-crowned Kinglet, 2; Red Crossbill, 2; Black-capped Chickadee, 1 (9, 4); Mountain Chickadee, 1; Pygmy Nuthatch, 1; Brown Creeper, 1; Pine Siskin, 1; Ruffed

Grouse, +; Com. Flicker, +; Black-billed Magpie, +; Red-breasted Nuthatch, +; Evening Grosbeak, +. **Average Total:** 92 birds (825/km², 334/100 acres). **Remarks:** Robins, Bohemian Waxwings, Com. Redpolls, Pine Siskins and Red Crossbills were not seen to stop in the area. The first four species occurred in unusually large numbers in the area surrounding the Browne Mt.-Dishman Hills area during the winter. — THOMAS H. ROGERS, E. 10820 Maxwell Ave., Spokane, WA 99206.

32. SUBARCTIC TAIGA: LOWLAND SERAL BIRCH-WILLOW. — **Location:** Alaska; Fairbanks-North Star Borough, center of Fairbanks Wildlife Management Area; 64°52'N, 148°43'W, Fairbanks D-2 Quadrangle, USGS. **Continuity:** New. **Size:** 10 ha = 24.7 acres (square, surveyed). **Description of Area:** Typical Paper Birch-Willow fire sere with thermokarst topography characteristic of burned-over habitats in the interior Alaskan muskeg. The stand consists of patchy Paper Birch (*Betula papyrifera*) forest, 67%; open willow brush, (mostly *Salix hebbiana* and *S. arbusculoides*,) 29%; occasional larger birches and White Spruce (*Picea glauca*), interspersed. The average canopy height is 4.4 m (13.4 ft) with taller trees extending to 9 m (28 ft.). **Topography:** Flat, elevation 137 m (450 ft.), underlain by continuous permafrost with extensive polygonization. A fire 50 years ago caused differential melting of the ground ice, with the resulting humps, depressions, and thaw ponds known as thermokarst topography. **Edge:** The plot adjoins similar habitat on the south and east. The north border grades into a treeless bog of *Eriophorum vaginatum* tussocks and ericaceous low shrubs. The west border is an alder-lined creek, with similar tussock bog west of the creek. **Water:** Numerous thaw ponds, up to 30 m (100 ft.) across and water-filled ice-polygon troughs dot the habitat. **Food:** Other than birch seeds, willow catkins and buds, occasional overwintering insects in the bark and twigs, and scattered grass and weed seed heads above the snow, there is very little available because of the snow cover. **Weather:** On study days, the temperature ranged from -37.2°C (-35°F) to -5.6°C (22°F). The weather was clear on 6 count days, and cloudy on 2. Snow depth on the plot averaged 0.8 m (2.5 ft.). Temperatures from Alaska Dept. of Fish and Game Headquarters 1.0 km SW. **Coverage:** Feb. 2, 12, 21, 24, 26, 28; Mar. 7, 15. Total, 8 trips, two morning (0930-1130) and six afternoon (1130-1330), averaging two hours each. **Count:** Hoary Redpoll, 1 (10, 4); Black-capped Chickadee, +; Com. Redpoll, +. **Average Total:** 1 bird (10/km², 4/100 acres). **Remarks:** This habitat had the second lowest usage of five taiga habitats studied. A boggy habitat (not reported here), the *Eriophorum* tussock bog to the north and west of this plot, received no bird usage during seven winter counts. Such low densities, and sporadic appearances of flocking species such as redpolls and chickadees are typical for open muskeg habitats in interior Alaska in winter. Redpolls observed were predominantly "Hoary types." — MICHAEL A. SPINDLER, Alaska Cooperative Wildlife Research Unit, Univ. of Alaska, Fairbanks, AK 99701.

33. SUBARCTIC TAIGA: LOWLAND WHITE SPRUCE-PAPER BIRCH FOREST. — **Location:** Alaska; Fairbanks-North Star Borough, north boundary of Fairbanks Wildlife Management Area; 64°54'N,

148°45'W, Fairbanks D-2 Quadrangle, USGS. **Continuity:** New. **Size:** 10 ha = 24.7 acres (square, surveyed) **Description of Area:** Typical mixed White Spruce-Paper Birch forest bordering the permafrost-underlain Black Spruce lowlands of interior Alaska. Forest composition 48% White Spruce (*Picea glauca*); 24% Black Spruce (*P. mariana*); 9% Paper Birch (*Betula papyrifera*); 8% Thinleaf Alder (*Alnus incana*); 11% willow (mostly *Salix hebbiana* and *S. planifolia*). The forest is generally closed mature White Spruce, with intergrades of Black Spruce Alder thickets line a small creek which traverses the plot. **Topography:** Elevation 152 m (500 ft.), mildly sloping (2.5-5%) southward exposure. **Edge:** Habitats 0.5 km to the north are upland Paper Birch and Quaking Aspen, to the south are Black Spruce-Sphagnum bogs, *Eriophorum vaginatum* tussock bogs, and alder thickets. A dog-sled trail adjoins the east boundary. **Water:** A small intermittent stream bisects the plot. **Food:** Abundant spruce cones, birch and alder seeds, willow buds, and an occasional grass or weed seed head above the snow. Overwintering insects on twigs and bark are probably abundant. **Weather:** On count days the temperatures ranged from -26.6°C (-16°F) to -0.6°C (31°F). There were clear skies on 9 days, cloudy skies 3 days, and snow 3 days. Snow cover underneath the coniferous forest was 0.5 m (1.6 ft.). A tremendous amount of snow is held on the branches of taiga spruce trees in winter, and at times may hinder foraging birds. Temperatures from Alaska Dept. of Fish and Game Headquarters, 2.4 km (1.5 mi S). **Coverage:** Jan. 25, 26; Feb. 7, 8, 15, 22; Mar. 5, 8, 9, 10, 12, 13, 14, 15. Total, 14 trips, 6 between 0800-1200, 8 between 1200-1700, averaging 2 hrs. 15 min. each. **Count:** Boreal Chickadee, 3 (30, 12); Hoary Redpoll, 2 (20, 8); Pine Grosbeak, 1 (10, 4); Hairy Woodpecker, +, N. Three-toed Woodpecker, +; Gray Jay, +; Com Raven, +; Black-capped Chickadee, +; Bohemian Waxwing, +; Com. Redpoll, +. **Average Total:** 6 birds (60/km², 24/100 acres). **Remarks:** This habitat had the greatest bird density and diversity of the five taiga habitats studied, with a total estimated density of 75 birds/km². Reporting procedures for the Winter Bird Population Study do not adequately accommodate reports from habitats with inherently low densities, even if the methods and sample size of the study are designed to reckon with it. Estimated densities for the other regular species on the habitat are: Gray Jay, Com Raven, and Black-capped Chickadee all 0.4 (4), and N Three-toed Woodpecker 0.2 (2). Such low densities are characteristic of winter bird populations in the taiga. Density estimation is further complicated by the sporadic occurrences of flocking species such as crossbills, redpolls, and chickadees. — MICHAEL A. SPINDLER, Alaska Coop. Wildlife Research Unit, Univ. of Alaska, Fairbanks, AK 99701.

34. SUBARCTIC TAIGA: LOWLAND BLACK SPRUCE FOREST. — **Location:** Alaska; Fairbanks-North Star Borough, north boundary of Fairbanks Wildlife Management Area; 64°53'N, 148°46'W, Fairbanks D-2 Quadrangle, USGS. **Continuity:** New. **Size:** 10 ha = 24.7 acres (square, surveyed). **Description of Area:** Typical interior Alaskan Black Spruce-Sphagnum bog-forest, with 71% Black Spruce (*Picea mariana*), 26% Tamarack (*Larix laricina*), and 3% White Spruce (*P. glauca*). The plot has two vegetation types: stunted, open

Black Spruce-Tamarack-Sphagnum bog with trees averaging 4.7 m (15 ft.) on the west, and a more vigorous, closed Black Spruce-White Spruce forest averaging 10 m (34 ft.) on the E. **Topography:** Flat, elevation 137 m (450 ft.) underlain by permafrost. **Edge:** The plot adjoins similar habitat on all sides except the east, where the vegetation changes to nearly pure Tamarack forest, and then grades into *Eriophorum* tussock bog. **Water:** A chain of medium sized (2-3 ha) ponds is located 0.5 km to the north. **Food:** Other than spruce cones, overwintering insects in the trees and bark, and an occasional grass or weed seed head rising above the snow, there is little available. **Weather:** On census days the temperature ranged from -34.4°C (-30°F) to -4.4°C (24°F). Clear weather was observed on 10 study days, cloudy skies on 2 days, and snow on 1 day. Snow depth on the plot averaged 0.8 m (2.5 ft.). Temperatures from Alaska Dept. of Fish and Game Headquarters 1.6 km SE. **Coverage:** Feb. 1, 10, 17, 24; Mar. 3, 5, 7, 8, 9, 10, 12, 14, 15. Total, 13 trips, 5 between 1000-1130 and 8 between 1230-1400, averaging 90 min. **Count:** Gray Jay, 1 (10, 4); N. Three-toed Woodpecker, 0.2 (2, 0.8); Black-capped Chickadee, 0.2, Boreal Chickadee, 0.2. **Average Total:** 2 birds (20/km², 8 birds per 100 acres). **Remarks:** Census results like these are typical for open habitats in the Alaskan taiga in the dead of winter. Indeed, not a single bird was observed on five separate counts on the plot! This habitat had the second greatest number of species (4) and third greatest density of the five taiga habitats studied. — **MICHAEL A. SPINDLER**, *Alaska Cooperative Wildlife Research Unit, Univ. of Alaska, Fairbanks, AK 99701*.

35. MIXED HABITAT: DECIDUOUS WOODED STREAM VALLEY AND MEADOW. — Location: Maryland; Montgomery Co., Potomac, 39°2'40"N, 77°13'50"W, Rockville Quadrangle, USGS. **Continuity:** Established 1973; 4 consecutive years. **Size:** 35.6 ha = 88 acres, (from contour map by planimeter). Boundary of survey area follows that proposed for Nature Study Center "Adventure" in future stream valley park. **Description of Area:** See *AB 27:702-703* (1973). **Weather:** Temperatures ranged from 8° to 45°F. Winds ranged from 0 to 18 mph, with greater than 10 mph on three counts. There were 4 clear days, 2 partly cloudy days, and 2 heavily overcast days. **Coverage:** Dec. 21; Jan 11, 15, 18, 25 (½), 29 (½); Feb. 8, 10. Total, 7 trips, averaging 4¼ hrs. **Count:** Starling, 27 (76, 31); Carolina Chickadee, 16 (45, 18); Dark-eyed Junco, 15 (42, 17); Com. Crow, 11 (31, 13); Cardinal, 10 (28, 11); White-throated Sparrow, 10; Carolina Wren, 8 (22, 9); Field Sparrow, 8; Tufted Titmouse, 5 (14, 6); Blue Jay, 4 (11, 5); Golden-crowned Kinglet, 4; Song Sparrow, 4; Downy Woodpecker, 3 (8, 3); Mockingbird, 3; Bobwhite, 2 (6, 2); Red-bellied Woodpecker, 2; White-breasted Nuthatch, 2, House Sparrow, 2; Mourning Dove, 1 (3, 1); Pileated Woodpecker, 1; Brown Creeper, 1; Sharp-shinned Hawk, +; Red-tailed Hawk, +; Red-shouldered Hawk, +; Barred Owl, +; Belted Kingfisher, +; Com. Flicker, +; Yellow-bellied Sapsucker, +; Hairy Woodpecker, +; Black-capped Chickadee, +; Winter Wren, +; Yellow-rumped Warbler, +; Am. Goldfinch, +. **Average Total:** 142 birds (399/km², 161/100 acres). **Remarks:** Total species, 33. On two counts a Turkey Vulture flew over the study area and a Ring-billed Gull flew over once. — **JOHN BAINES, MORRILL DONNARD, KENNETH**

LABORDE, JANNINE NORVELL, JOHN NORVELL (compiler), Rt. 5, Box 169B, Mt. Airy, Md. 21771, Montgomery County Chapter, Maryland Ornithological Society.

36. MIXED UPLAND HABITAT. — Location: District of Columbia; the central 1/3 of Glover Archbold Park, a long, narrow stream valley park in NW District of Columbia. **Continuity:** Established 1960; 17 consecutive years. **Size:** 14.2 ha = 35 acres. **Description of Area:** See *AFN 14; 502-503* (1960). **Weather:** Clear on 12 trips, cloudy on 3, light rain on 2. One day was icy. Average temperature was 38°F. Wind was calm on 10 trips, slight on 1, from 10-20 mph on 5, and 20-30 mph on 1. **Coverage:** Jan. 10, 15, 18, 24, 25 (2 trips), 28, 29, Feb. 7, 8, 9, 11, 14 (3 trips), 15 (2 trips). Hours ranged from 0830 to 1710, about evenly balanced between morning and afternoon coverage. A total of 26 hrs. 30 min spent on 17 trips gave 14 complete coverages of the area. Average time for each coverage was 1.89 hrs. **Count:** Carolina Chickadee, 12 (85, 34); Com. Crow, (71, 29), Am. Goldfinch, 7 (49, 20); Blue Jay, 5 (35, 14); Tufted Titmouse, 5; Cardinal, 5; Dark-eyed Junco, 5; Downy Woodpecker, 4 (28, 11); Starling, 4; Mourning Dove, 3 (21, 9); Red-bellied Woodpecker, 3; Carolina Wren, 3; White-throated Sparrow, 3; White-breasted Nuthatch, 2 (14, 6); Purple Finch, 2; Herring Gull, 1 (7, 3); Rock Dove, 1; Mockingbird, 1; Turkey Vulture, +; Black Vulture, +; Red-tailed Hawk, +; Bobwhite, +; Ring-billed Gull, +; Pileated Woodpecker, +; Yellow-bellied Sapsucker, +; Hairy Woodpecker, +; Fish Crow, +; Brown Creeper, +; House Finch, +; Rufous-sided Towhee, +; White-crowned Sparrow, +; Fox Sparrow, +; Song Sparrow, +. Just south of the census area Golden-crowned Kinglets and Winter Wrens were found. **Average Total:** 76 (537/km², 217/100 acres). **Remarks:** Total species, 34. Despite good coverage and relatively normal weather, we had one of the lowest totals of individual birds this year. (There were 73 in 1962, 78 in 1968). Number of species was at a high level, only exceeded by 36 last year. Had the Golden-crowned Kinglets and Winter Wrens strayed over the southern boundary of the tract, we could have equalled that. Last year a temporary Starling roost in the area made the total count and that for Starlings unusually high, at 70, but this year's 4 is the lowest on record. The average from 1960 through 1974 is 12.3. The Fox Sparrow is an addition to the cumulative list. None of the other figures are notably far from the average, so we have a general small decrease that brings down the total. A review of past years' weather, coverage, and number of participants gives no clue to explain the drop. — **SHIRLEY A. BRIGGS**, (compiler), 7605 Honeywell Lane, Bethesda, Md. 20014, **OLIVE HOLBROOK, MICHAEL READY and EDGAR H. SMITH**, (members Audubon Naturalist Society, Washington, D.C. 20015).

37. COASTAL DISTURBED FLOODPLAIN. — Location: Virginia; Gloucester Co., part of Beaverdam Swamp, bounded by Route 14 on the SE. Gloucester Sanitary District sewer line on the SW, extending approx. 0.53 km upstream within 10-ft. contour, 37°25'60"N, 76°31'25"W, Gloucester Quadrangle, USGS. **Continuity:** New (began 1965, unpubl.). **Size:** 8.09 ha =

20 acres (irregular, from contour map by planimeter). **Description of Area:** Plot varied with 12-20 ft. wide creek dividing middle of area and bounding it on SW side above and NE side below. "Pine 1" borders creek mid-way, covers about 1.5 acres, has large Loblolly Pines 40-90 ft. tall and 4-28 in. dbh. Sewer line cut in 1960 has lost edge effect due to growth of willows and now maples. Ash veneer logs were cut in 1962 on ca. 2 acres. Greatest disturbance has been by Beavers cutting smaller trees and girdling larger ones. Wettest areas about fastland, due to springs and seeps. Natural levees border creek, except at beaver-cut canals. Barbed wire fence remnants remain. Old roadbed (ca. 100 ft) supports ancient Red Cedars (*Juniperus virginiana*) now mostly dead. Pastured wood covers 1½ acres at NE end. Trees, 3-in. diameter and over, based on 0.1 acre circular samples, 269/acre; total basal area 140.8 sq. ft./acre. Species comprising 90% of the total number of trees [figures after each give number of trees/acre, relative density (%), relative dominance, frequency, in that sequence]: Red Maple (*Acer rubrum*) 71, 26, 36, 100; Am. Elm (*Ulmus americana*) 36, 13, 9, 90; Red Ash (*Fraxinus pennsylvanica*) 34, 13, 11, 90; Ironwood (*Carpinus caroliniana*) 31, 12, 4, 70; Sweet-gum (*Liquidambar styraciflua*) 18, 7, 7, 80; River Birch, (*Betula nigra*) 17, 6, 8, 50; red oak group, (*Quercus* spp.) 15, 6, 8, 50; Tulip-tree (*Liriodendron tulipifera*) 6, 2, 3, 20. Trees by diameter size class [figures after each class give number of trees/acre, relative density (%), basal area in square feet/acre, relative dominance]: A (3-6 in.) 105, 35, 10.5, 7; B (6-9 in.) 86, 29, 25.8, 17; C (9-15 in.) 83, 28, 66.4, 44; D (15-21 in.) 21, 7, 37.8, 25; E (21-27 in.) 3, 1, 9.3, 6. Shrub stems/acre 4300, ground cover, 50%; canopy, 71%; average canopy height, 62 ft., (range 20-96 ft.). Shrubs were mostly Swamp

Dogwood (*Cornus stricta*), Tag Alder (*Alnus serrulata*) Ironwood, Black Haw (*Viburnum prunifolium*), Red Maple and Pawpaw (*Asimina triloba*). Ground cover was mainly Japanese Honeysuckle (*Lonicera japonica*) Poison Ivy (*Rhus radicans*), Golden Ragwort (*Senecio aureus*), Frost Aster (*Aster pilosus*), *Carex* spp. (14 iden by A. M. Harvill, who also iden. *Scirpus fontinalis* (3rd Va. record), and grasses. Dominating small areas were New York Fern (*Thelypteris noveboracensis*), Jewelweed (*Impatiens capensis*), Turtlehead (*Chelone obliqua*) and Water Cress (*Nasturtium officinale*). Arrow Arum has spread rapidly, evidently through Beaver action and highway work. Lianas: Poison Ivy, grapes (*Vitis* spp.) Cross Vine (*Anisotichus capreolata*), Trumpet Vine (*Campsis radicans*) and greenbrier (*Smilax* spp.) seem more important than shrubs or ground cover. Plant names from *Manual of the Vascular Flora of the Carolinas* by Radford, et al. **Edge:** Bordered by Rt. 14 at lower end for 150 ft. and recently disturbed there; mixed upland forest borders long axis, upper end bounded by pasture and creek. **Water:** Creek always flows, but flow is much greater in leafless months; spring tides reach through area. Permanent half-acre pond made by high way action in 1974. Old half-acre borrow pit pond adjoins pine island. Spring feeds muck sinkhole in Red Maple area. Flooding of approx. ⅓ of area occurs ca. 10 times/yr. Entire area submerged every 2 or 3 years. **Topography:** All below 10 ft., most below 5 ft. level. Soil alluvial and organic, except at pine island and spring heads. **Weather:** Unusually warm, continuing rise begun in 1971. Extremes of 2° and 81°F. occurred, averaging 49° peak for counts. Ground was frozen twice; snow skim fell once. Eleven count days were clear, 4 hazy and 1 rainy. Winds topped 5 mph only 7 times, and 15 once but 1 count was redone the day after only 4 birds showed in a chill mid-day wind. **Coverage:** Dec. 1, 7, 13, 21, 27 Jan. 3, 11, 19, 25, 31; Feb. 6, 15, 21, 28, 29. Total, 15 trips, 10 in the forenoon, 2 at mid-day and 3 in the afternoon, averaging 1 hr. 56 min. **Count:** Yellow-rumped Warbler, 7 (86, 35); Am. Robin, 4 (49, 20); Tufted Tit mouse, 3 (37, 15); Purple Finch, 3; Red-bellied Wood pecker, 2 (25, 10); Carolina Chickadee, 2; Winter Wren 2; Carolina Wren, 2; Ruby-crowned Kinglet, 2; White throated Sparrow, 2; Song Sparrow, 2; Red-shouldered Hawk, 1 (12, 5); Bob-white, 1; Belted Kingfisher, 1; Com Flicker, 1; Pileated Woodpecker, 1; Hairy Woodpecker 1; Downy Woodpecker, 1; Blue Jay, 1; Com. Crow, 1 White-breasted Nuthatch, 1; Hermit Thrush, 1; Golden crowned Kinglet, 1; Cardinal, 1; Am. Goldfinch, 1 Swamp Sparrow, 1; Gadwall, +; Wood Duck, +; Turkey Vulture, +; Sharp-shinned Hawk, +; Am. Woodcock, + Mourning Dove, +; Barred Owl, +; Yellow-bellied Sap sucker, +; E. Phoebe, +; Red-breasted Nuthatch, + Brown Creeper, +; House Wren, +; Mockingbird, + Brown Thrasher, +; Cedar Waxwing, +; Pine Warbler +; Red-winged Blackbird, +; Evening Grosbeak, + House Finch, +; Rufous-sided Towhee, +; Field Spar row, +. **Average Total:** 42 birds (519/km², 210/100 acres). **Remarks:** Total species, 47. Yellow-rumped Warbler and Carolina Wren occurred on all counts. Ten species occurred on ⅓ of the counts, and 10 were found only one day. Dark-eyed Junco was absent first time in 12 years. Elm seeds became edible Feb. 21, and 80% of Purple Finches were seen then or later. Poison Ivy berries were nearly gone by mid-December. Holly fruit was heav



Study 37. Coastal Disturbed Floodplain, Virginia, the creek. Photo/Marvin L. Wass.

rest in 12 years. Andy and Jeff Brown, Barry, Gerry and Loina Wass helped with vegetation studies and some counts. — MARVIN L. WASS, Box 752, Gloucester, VA 23061

38. PINELAND, SCRUB AND RESIDENTIAL. — **Location:** Florida; Dade Co.; 1 mi. N of Homestead; 25°29'N, 80°29'W. **Continuity:** Established 1975; 2 years. **Size:** 10.1 ha = 25 acres. **Description of Area:** See AB 29 770 (1975), plus 2.02 ha = 5 acres planted to seedling avocados. **Weather:** Coolest January in Dade County in 16 years. Temperatures ranged from 38° to 68°F. Clear 7 trips, wind a factor on 2 days. **Coverage:** Dec. 29, 31; Jan. 4, 9, 10, 11, 18, 27; Feb. 3, 4. Total, 10 trips, averaging 1.5 hrs. each, daily observation of feeders and local grounds. **Count:** Killdeer, 12 (119, 48); Gray Catbird, 12; House Sparrow, 10 (99, 40); Tree Swallow, 7 (69, 28); Smooth-billed Ani, 5 (49, 20); Painted Bunting, 5; Indigo Bunting, 4 (40, 16); Mourning Dove, 3 (30, 12); Yellow-rumped Warbler, 3; Cardinal, 3; Am. Kestrel, 2 (20, 8); Blue Jay, 2; Mockingbird, 2; Blue-gray Gnatcatcher, 2; Turkey Vulture, 1 (10, 4); Sharp-shinned Hawk, 1; Ground Dove, 1; Ruby-throated Hummingbird, 1; Carolina Wren, 1; Brown Thrasher, 1; Am. Robin, 1; White-eyed Vireo, 1; Am. Redstart, 1; E. Meadowlark, 1; Rufous-sided Towhee, 1; Great Blue Heron, +; Green Heron, +; Cattle Egret, +; Black Vulture, +; Red-tailed Hawk, +; Screech Owl, +; Whip-poor-will, +; Belted Kingfisher, +; Red-bellied Woodpecker, +; Great Crested Flycatcher, +; Least Flycatcher, +; Black-and-white Warbler, +; Pine Warbler, +; Palm Warbler, +; Ovenbird, +; Com. Yellowthroat, +. **Average Total:** 83 birds (820/km², 332/100 acres). **Remarks:** Total species down 10 from 1975. A feeder at one residence changed observations of buntings only and is typical of land use. Except for 2 Mourning Doves, no birds were seen on horse pastures (barn cats?). Killdeer and meadowlark were only in the avocado field; Pine Warbler, Screech Owl, Whip-poor-will, Red-bellied Woodpecker, Black-and-white Warbler in pine hammocks only; herons and kingfisher at canal only. Other species ranged all habitats. Goldfinch was notably absent, and Yellow-rumped Warblers and robins, though present, were not in their usual abundant numbers. Populations and observations were undoubtedly affected by 3 Sharp-shinned Hawks. Two were early caught and deported; a female was present through the study. — ERMA J. FISK, 17101 S. W. 284 St., Homestead, FL 33030.

39. FLOODPLAIN WOODLAND AND FIELD. — **Location:** Ohio; Seneca Co., Heidelberg College land formally known as the Lewis Farm, Tiffin, along Rock Creek between Main St. and Hedges-Boyer Park; 41°05'N, 83°09'W. **Continuity:** New. **Size:** 22.5 ha = 55.5 acres. **Description of Area:** Most of the area is a floodplain for Rock Creek which flows through Tiffin. The elevation is about 750 ft. Much of the area borders private backyards. About 20% of the area is a football practice field, 30% a field of which 1/3 is garden plots and 2/3 wild field covered mainly with goldenrod (*Solidago* sp.) and burdock (*Arctium minus*), 30% wooded bordering Rock Creek, 10% Rock Creek, and 10% plowed field. The tree species in order of abundance: Boxelder (*Acer negundo*), willow (*Salix* sp.), Cottonwood (*Populus deltoides*), Wild Black Cherry (*Prunus serotina*), Hack-

berry (*Celtis occidentalis*), Sycamore (*Platanus occidentalis*), Mulberry (*Broussonetia papyrifera*), and Red Pine (*Pinus resinosa*). The major understorey species are Raspberry (*Rubus odoratus*) and wild grape (*Vitis* sp). **Weather:** The temperature range was 8° to 40°F with the average of 23°F. Only once was the temperature above 32°. The ground was snow-covered on all but one trip and the creek was never completely frozen over. There were cloudy skies on all but one trip. **Coverage:** Jan. 3, 7, 8, 15, 18, 23, 25; Feb. 1, 8. Total, 9 trips, averaging 105 min each; 3 trips between 1400 and 1600 EST, 6 between 0900 and 1200 EST. **Count:** Dark-eyed Junco, 236 (1051, 425); Tree Sparrow, 120 (534, 216); Mourning Dove, 29 (129, 52); Song Sparrow, 18 (80, 32); Starling, 9 (40, 16); House Sparrow, 9; Cardinal, 9; Blue Jay 3 (13, 5); Black-capped Chickadee, 3; Tufted Titmouse, 3; Downy Woodpecker, 2 (9, 4); White-breasted Nuthatch, 2, Am Robin, 2; Am. Goldfinch, 2; Carolina Wren, 1 (4, 2), Swamp Sparrow, 9; Belted Kingfisher, +; Yellow-bellied Sapsucker, +; Brown Creeper, +; Com. Redpoll, +, White-throated Sparrow, +. **Average Total:** 450 (2004/km², 811/100 acre). **Remarks:** Crows flew over the plot regularly. A female Marsh Hawk flew over once. This was the coldest January in years. — JAMES COFFMAN and H. THOMAS BARTLETT (compiler), P O Box 303, Tiffin, Ohio 44883.

40. MIXED HABITAT-DISTURBED BOTTOMLAND. — **Location:** Oklahoma; Washington Co., Dewey, 2 mi. W of intersection of Ninth St. and Hwy 75, 0.3 mi. N on E bank Caney River, 36°48'N, 95°58'W, Tulsa Quadrangle, USGS. **Continuity:** Established 1972, 4 consecutive years. **Size:** 40.47 ha = 100 acres (irregular rectangle roughly 600 x 800 yds.; from SCS aerial map) **Description of Area:** See AB 26:976-977 (1972) **Weather:** 8 clear days; 2 cloudy; temperatures, 20 to 55°F; no precipitation in January. **Coverage:** Dec. 22, 31, Jan. 5, 13, 18, 26, 29; Feb. 3, 6, 9. Total, 10 trips, 3 between 1245 and 1610; 7 between 0800 and 1150; total, 31 hours. **Count:** Blue Jay, 17 (42, 17); Song Sparrow, 14 (35, 14); E. Bluebird, 11 (27, 11); Bobwhite, 10 (25, 10), Carolina Chickadee, 10; Am. Robin, 10; Red-headed Woodpecker, 9 (22, 9); Red-winged Blackbird, 9; Tufted Titmouse, 8 (20, 8); Cardinal, 6 (15, 6); Red-bellied Woodpecker, 5 (12, 5); Downy Woodpecker, 5; Rusty Blackbird, 5; Red-tailed Hawk, 3 (7, 3); Com. Flicker, 3, Starling, 3; E. Meadowlark, 3; Carolina Wren, 2 (5, 2), Cedar Waxwing, 2; Am. Goldfinch, 2; Swamp Sparrow, 2; Great Blue Heron, 1 (2, 1); Pileated Woodpecker, 1, Com. Crow, 1; White-breasted Nuthatch, 1; Brown Creeper, 1; Bewick's Wren, 1; Mockingbird, 1; Brown Thrasher, 1; Golden-crowned Kinglet, 1; House Sparrow, 1; Dark-eyed Junco, 1; Tree Sparrow, 1; Fox Sparrow, 1; Am. Bittern, +; Rough-legged Hawk, +; Marsh Hawk, +; Barred Owl, +; Yellow-bellied Sapsucker, +, Hairy Woodpecker, +; Rufous-sided Towhee, +; White-throated Sparrow, +; Lincoln's Sparrow, +. **Average Total:** 152 birds (376/km², 152/100 acres). **Remarks:** Very dry winter; the only water on the plot was in the purification ponds. Finches and sparrows found few seeds, but Red-headed Woodpeckers thrived on a large nut crop. The hawk population included a Krider's race Red-tailed Hawk. Present on all counts: Red-tailed Hawk, Com Flicker, Red-bellied, Red-headed and

Downy Woodpeckers, Blue Jay, Carolina Chickadee, Tufted Titmouse, Cardinal, Song Sparrow. American Bittern and Brown Thrasher were new species. — *ELLA DELAP*, 409 N. Wyandotte, Dewey, Okla. 74029.

41. COTTONWOOD RIVERBOTTOM HABITAT.

— **Location:** Colorado; Larimer Co., Fort Collins, S bank of the Cache La Poudre River, south of Colo. Hwy. 14; 40°34'N, 105°03'W, Fort Collins Quadrangle, USGS. **Continuity:** Established 1975; second consecutive year. **Size:** 10.9 ha = 27 acres. **Description of Area:** See *AB 29(3):772*. **Weather:** It was a warm month with only sporadic light snowfall. Temperatures on days spent in the field ranged from 1° to 13°C, with a mean of 7°C. **Coverage:** Jan. 31; Feb. 1, 8, 15, 23, 29. Total, 6 trips, 4 between sunrise and 1100, one at 1330, one at 1700, averaging 88 min. each. **Count:** Canada Goose, 15 (137, 56); Com. Snipe, 15; Black-billed Magpie, 15; Red-winged Blackbird, 15; Starling, 11 (101, 41); House Sparrow, 9 (82, 33); White-crowned Sparrow, 8 (73, 30); House Finch, 7 (64, 26); Mallard, 6 (55, 22); Dark-eyed Junco, 6; Killdeer, 5 (46, 19); Com. Flicker, 5; Am. Goldfinch, 5; Song Sparrow, 4 (37, 15); Black-capped Chickadee, 3 (27, 11); Great Blue Heron, 1 (9, 4); Belted Kingfisher, 1; Downy Woodpecker, 1; Blue Jay, 1; Com. Crow, 1; W. Meadowlark, 1; Harris' Sparrow, 1; Red-tailed Hawk, +; Am. Kestrel, +; Am. Robin, +; Evening Grosbeak, +; Purple Finch, +. **Average Total:** 134 birds (1226/km², 496/100 acres). **Remarks:** 27 species. Killdeer, Com. Snipe, Black-billed Magpie, Black-capped Chickadee, Starling, House Sparrow, and Song Sparrow, seen on all six trips. Five other species seen on 5 trips. High counts of Red-winged Blackbird and Canada Goose can be attributed to the presence of large flocks late in the period. Two Purple Finches on Feb. 1, 27 Am. Goldfinches Feb. 8, and 3 Harris' Sparrows Feb. 29 are noteworthy, as is the high count of 22 Com. Snipe on Feb. 8 and Feb. 29. — *DANIEL C. BUTLER*, Dept. of Fishery and Wildlife Biology, Colorado State Univ., Ft. Collins, Colo. 80523.

42. GRAZED COTTONWOOD RIVERBOTTOM.

— **Location:** Colorado; Larimer Co., 3 mi. E. 1.5 mi. S of Fort Collins, on S bank of Cache la Poudre River; 40°33'N, 105°01'W, Fort Collins Quadrangle, USGS. **Continuity:** Established 1975; 2 consecutive years. **Size:** 14.2 ha = 35 acres. **Description of Area:** See *AB 29(3):772-773*. The area received higher human use this year. Two to 4 people were seen on 4 counts. Fresh motorcycle tracks were always obvious along the old and present river bed. **Weather:** Temperatures were mild during the 30-day study period. Temperatures ranged from -3° to 17°C. There was little precipitation, but on 2 trips the ground was covered with 2 to 6 in. of snow. Wind was strong (30-40 mph) during one count. **Coverage:** Feb. 7, 14, 15, 26, 28, 29. Total, 6 trips between 0920 and 1300, averaging 128 min. **Count:** Red-winged Blackbird, 56 (395, 160); Com. Crow, 19 (134, 54); Starling, 18 (127, 51); Dark-eyed Junco, 10 (71, 29); Black-capped Chickadee, 8 (56, 23); Mourning Dove, 6 (42, 17); Com. Flicker, 4 (28, 11); House Sparrow, 4; Mallard, 2 (14, 6); Black-billed Magpie, 2; W. Meadowlark, 2; Belted Kingfisher, 1 (7, 3); Great Blue Heron, +; Goshawk, +; Bald Eagle, +; Killdeer, +; Downy Woodpecker, +; Brown Creeper, +; Tree Sparrow, +;

Song Sparrow, +. **Average Total:** 132 birds (932/km², 377/100 acres). **Remarks:** The large numbers of Red-winged Blackbirds, Com. Crows and Starlings were the result of large flocks seen on 3 trips. Their presence can be attributed to the adjacent feedlot. Common Flickers and Mallards were seen on every count; Belted Kingfishers and juncos were seen on 5 counts. The decrease in numbers and species present could possibly be attributed to the higher human use. — *MARILYN ALLEN*, Dept. of Fishery & Wildlife Biology, Colorado State Univ., Ft. Collins, Colo. 80523.

43. COTTONWOOD-ABANDONED FIELDS BOT-

TOMLAND. — **Location:** Colorado; Larimer Co., 1 mi NW of Fort Collins, SW junction of Shields St and Cache La Poudre River; 40°36'N, 105°06'W (Sect. 3, T7N, R69W), Fort Collins Quadrangle, USGS. **Continuity:** Established 1975; 2 consecutive years. **Size:** 8.1 ha = 20 acres (approximately rectangular, 1026 x 146m, by aerial photograph and planimeter). **Description of Area:** See *AB 29:773* (1975). **Weather:** Generally partly cloudy with some snow accumulation. Average cloud cover on census days was 42%. Temperatures ranged from -3° to 41°F, with a mean of 29°F. Below freezing temperatures were recorded 3 times accompanied by 2 snowstorms yielding 5 in. and 1 in. snow. The river remained partially ice-free throughout the census period, while all the lakes within the general area were completely frozen. Winds up to 30 mph occurred on one day. **Coverage:** Dec. 29, Jan. 7, 9, 16, 30; Feb. 27. Total trips, 6, averaging 83 min. each between 0735 and 1015. **Count:** Tree Sparrow, 32 (395, 160); Mallard, 28 (346, 140); Song Sparrow, 13 (161, 65); Canada Goose, 11 (136, 55); Com. Snipe, 9 (111, 45); Killdeer, 7 (86, 35); Black-billed Magpie, 5 (62, 25); Starling, 4 (49, 20); Com. Flicker, 3 (37, 15); Am. Goldfinch, 3; Belted Kingfisher, 2 (25, 10); Com. Crow, 2; Black-capped Chickadee, 2; House Finch, 2; Downy Woodpecker, 1 (12, 5); Red-winged Blackbird, 1; Winter Wren, +; N. Shrike, +; W. Meadowlark, +; Brewer's Blackbird, +; White-crowned Sparrow, +. **Average Total:** 125 (1544/km², 625/100 acres). **Remarks:** Both the numbers seen and individuals within each population decreased significantly from last year, with the exception of Mallards and Canada Geese which showed a marked increase. All the Mallards and Canada Geese observed were utilizing the ice-free sections of the river. This suggests that their increased numbers over last year were the result of the lack of open water. Of those species declining in numbers compared to last year's census, Tree Sparrows declined the most from 667/km² to 395/km², while no raptorial species were seen this year. — *THEODORE BODNER*, Dept. of Fishery & Wildlife Biology, Colorado State Univ., Fort Collins, Colo. 80523.

44. OLD FIELD WITH BRUSH PATCHES.

— **Location:** Indiana; Jefferson Co., Clifty Falls State Park NW corner of plot 38°45'11''N, 85°24'52''W; in Sect. 33, T4N, R10E, Clifty Falls Quadrangle, USGS. **Continuity:** New. **Size:** 17.05 ha = 42.13 acres. Irregular rectangle, measured with steel tape and compass. **Description of Area:** Most of the area was plowed and cropped until 1966, when it was taken into the park. Since then it has succeeded to tall herbs with patches of brush and widely

scattered saplings. A ravine area of about 1 acre had been a young forest, but nearly all the trees were knocked down by the 1974 tornado and that area is now mostly dense brush with fallen trees. Herbs were mainly Nimbewill (*Muhlenbergia schreberi*), Broomsedge (*Andropogon virginicus*), Com. Milkweed (*Asclepias syriaca*), White Heath Aster (*Aster pilosus*), Queen Anne's Lace (*Daucus carota*), Field Goldenrod (*Solidago nemoralis*), Whorled Milkweed (*Asclepias verticillata*), Thistle (*Cirsium* sp.), Slender Rush (*Juncus tenuis*), Wormwood (*Artemisia caudata*), Heal-all (*Prunella vulgaris*), and Evening Primrose (*Oenothera biennis*), in approximately that order of abundance. Dr. James H. Maysilles identified the herb specimens, for which I thank him. A transect census of trees and shrubs counted all stems over 6 ft. tall (maximum was 15 ft.) on a strip 20 ft. by 2200 ft. There were 200 woody plants: 22% Red Cedar (*Juniperus virginiana*), 18% Osage Orange (*Maclura pomifera*), 15% Am. Elm (*Ulmus americana*), 15% Multiflora Rose (*Rosa multiflora*), 11% Ash (*Fraxinus* sp.), 7% Apple (*Pyrus malus*), 5% Choke Cherry (*Prunus virginiana*), 3% Common Elderberry (*Sambucus canadensis*), 1% or less of Slippery Elm (*U. rubra*), Peach (*P. persica*), Pear (*Pyrus communis*), Persimmon (*Diospyros virginiana*), Am. Plum (*P. americana*), and Com. Privet (*Ligustrum vulgare*). Woody plant names from Petrides, G.A. 1972. *A Field Guide to Trees and Shrubs*, 2nd ed. There was a dense sod but most of the grasses and forbs were 3 ft. tall. **Topography:** Elevation 830 ft. at the highest points in the N corners; relief 60 ft. to bottom of ravine at S. Gentle slopes, except for steep-sided ravine near center of S boundary. **Soil:** Two kinds of Silt Loam — Rossmoyne on the higher part and Cincinnati elsewhere. **Water:** Throughout the census period there was running water in the ravine, but other rivulets and puddles were usually dry or frozen. **Edge:** Surrounded on all sides by similar old fields, but along W edge a paved road (light traffic) and along the N edge an abandoned dirt road. **Weather:** A mild winter except for January and the first half of February. On counts, temperatures ranged from 13° to 50°F, winds from 1-15 mph from varied directions, sky from clear (3 times) to partly cloudy (4 times) to overcast (once). Snow cover was absent except once of 3 in. and twice spotty. No precipitation during counts. **Coverage:** Jan 3 (partial), 10, 14, 24, 31; Feb. 4, 7, 14, 20 (partial), 22 Total, 8 daylight (4 morning and 4 afternoon) trips averaging 131 min. each and ranging from 123 to 144 min. In addition, one 30-minute night trip, one 15-minute day trip, and 5 hours spent in surveying boundary and plants were not included. **Count:** White-throated Sparrow, 6 (35, 14); Tree Sparrow, 5 (29, 12); Song Sparrow 5; Bobwhite, 4 (23, 9); E. Bluebird, 4; Am. Robin, 3 (18, 7); Cardinal, 3; Mockingbird, 2 (12, 5); Dark-eyed Junco 2; Carolina Chickadee, 1 (6, 2); Carolina Wren, 1; E Meadowlark, 1; Am. Goldfinch, 1; Rufous-sided Towhee, 1; White-crowned Sparrow, 1; Great Horned Owl, +, Red-bellied Woodpecker, +; Downy Woodpecker, +; Tufted Titmouse, +; Harris' Sparrow, +; Fox Sparrow, + **Average Total:** 40 birds (235/km², 95/100 acres). **Remarks:** Only Mockingbird, White-throated Sparrow, Tree Sparrow, and Song Sparrow were noted on all 8 daylight trips. Keith Gehring, Thomas Pray, and Juanita Webster assisted with the count, although their time was not calculated above. — DAN WEBSTER, *Hanover College, Hanover Ind 47243*

45. LIVE OAK-MESQUITE BRUSHLAND. — **Location:** Texas; Bexar Co., NE Preserve, city park of San Antonio, 2 mi. NE of San Antonio International Airport; 29°33'N, 98°27'W, Longhorn Quadrangle, USGS Study area is along the N boundary of the park, extending 660 yds. ESE of Jones-Maltsberger Rd. and 220 yds SSW of the fence. **Continuity:** Established 1967; 10 consecutive years. **Size:** 12.1 ha = 30 acres, based on survey stakes along the fence and measured outward 220 yards by steel tape. **Description of Area:** See AFN 21 472 (1967). Major change is 400 yds. of running stream across the area and about 3 yds. wide, effluent from sewage plant several miles NW. **Weather:** November and December were dry, the only significant rainfall being 1.37 inches Dec. 24. January continued dry with no growth of winter grasses or leaves on the White Bush **Coverage:** Dec. 31; Jan. 7, 15, 23, 27, 31; Feb. 2. Total, 7 trips, averaging 124 min. each, between 0805 and 1210 CST. **Count:** Cardinal, 6 (49, 20); Rufous-sided Towhee 6; White-throated Sparrow, 6; Black-crested Titmouse, 5 (41, 17); Bewick's Wren, 4 (33, 13); Am. Robin, 3 (25, 10); Ruby-crowned Kinglet, 2 (16, 7); Fox Sparrow, 2, Bobwhite, 1 (8, 3); Carolina Chickadee, 1; Brown Creeper, 1; Hermit Thrush, 1; Cedar Waxwing, 1; Turkey Vulture, +; Killdeer, +; Mourning Dove, +; Great Horned Owl, +; Com. Flicker, +; Golden-fronted Woodpecker, +; Ladder-backed Woodpecker, +; E. Phoebe +; Carolina Wren, +; Mockingbird, +; Brown Thrasher +; Long-billed Thrasher, +; Solitary Vireo, +; Yellow-rumped Warbler, +; meadowlark, sp., +; Great-tailed Grackle, +; Am. Goldfinch, +; Lincoln's Sparrow + Song Sparrow, +. **Average Total:** 39 birds (321/km², 130/100 acres). **Remarks:** 32 species. Owing to dry conditions the average total dropped to the second lowest for the count after the high total of 135 last year. The number of species was near average but included 19 species seen on only one trip. Only the Black-crested Titmouse, Bewick's Wren, Cardinal and Rufous-sided Towhee were found on all trips. The Song Sparrow, new for the count, was found along the new stream. — PAUL GLOWIENKA, STEVEN HAWKINS, and JAMES A. MIDDLTON, (compiler). *San Antonio Audubon Society, San Antonio Garden Center, 3310 N. New Braunfels, San Antonio, Tex. 78209.*

46. MESQUITE-JUNIPER CANYON BOTTOMLAND. — **Location:** Texas; 12 mi. E of Canyon, 4 mi from entrance to Palo Duro Canyon State Park (first water crossing); 34°57'N, 101°40'W, Fortress Cliff Quadrangle, USGS. **Continuity:** Established 1967, 9 years. **Size:** 12.5 ha = 31 acres. Steel tape and compass (rectangular). **Description of Area:** See AFN 21:659-661 (1967). **Weather:** During the 78-day study period the temperature remained below freezing on 5 days. The range of temperature was from 1° to 82°; average, 41°F. The days of greatest precipitation in the form of snow or sleet were Dec. 28 (1.0 in.), and 29 (.7 in.). The average wind speed was 13.2 mph. (Data from Amarillo Air Terminal, approximately 18 mi. N of the study area). **Coverage:** Dec. 7, 14, 25; Jan. 4, 11, 18, 25; Feb. 8, 15, 22. Total, 10 trips between 0800 and 1012 CST, averaging 120 min. each. **Count:** Dark-eyed Junco, 44 (351, 142); Am. Robin, 36 (287, 116); Tree Sparrow, 11 (88, 35); Starling, 9 (72, 29); White-crowned Sparrow, 9; Song Sparrow, 9; Cedar Waxwing, 8 (64, 26); House

Sparrow, 7 (56, 23); Cardinal, 6 (48, 19); Bewick's Wren, 5 (40, 16); Pine Siskin, 5; Am. Goldfinch, 5; Golden-fronted Woodpecker, 4 (32, 13); Com. Flicker, 3 (24, 10); Black-crested Titmouse, 3; Rufous-sided Towhee, 3; Rufous-crowned Sparrow, 3; Harris' Sparrow, 2 (16, 6); Scaled Quail, 1 (8, 3); Belted Kingfisher, 1; Ladder-backed Woodpecker, 1; Bushtit, 1; Brown Creeper, 1; Mockingbird, 1; Brown Thrasher, 1; Ruby-crowned Kinglet, 1; Evening Grosbeak, 1; Field Sparrow, 1; White-throated Sparrow, 1; Lincoln's Sparrow, 1; Green-winged Teal, +; Am. Wigeon, +; Am. Kestrel, +; Mourning Dove, +; Roadrunner, +; Yellow-bellied Sapsucker, +; Verdin, +; Cañon Wren, +; Rock Wren, +; Loggerhead Shrike, +; Brown-headed Cowbird, +. **Average Total:** 184 birds (1467/km², 594/100 acres). **Remarks:** The flicker, Golden-fronted Woodpecker, titmouse, Bewick's Wren, Starling, House Sparrow, Cardinal, junco, and White-crowned and Song Sparrows were seen on every trip, the Rufous-crowned Sparrow on 9 trips. The teal, wigeon, dove, Roadrunner, sapsucker, Verdin, Bushtit, Rock Wren, shrike, cowbird, and grosbeak were seen only on 1 trip. On almost every trip 30 to 50 Mountain Bluebirds were observed drinking and bathing in the stream approximately 50 yards from the count area. About 5 acres in the heart of the count area are being developed as a campground for mobile units. This has entailed the clearing of brush and trees, the construction of shelters with concrete bases, hard-topped roads and a parking area, a rest station with showers, and the laying of water and sewage lines. — KENNETH D. SEYFFERT, 2709 S. Fairfield St., Amarillo, Tex. 79103.

47. LOWER FOOTHILLS BRUSHLAND-GRASSLAND-CREEKBOTTOM ECOTONE. — **Location:** Colorado; El Paso Co., Bear Creek County Park SW of Colorado Springs, 38°50'N, 104°53'W, Colorado Springs Quadrangle, USGS. **Continuity:** New. **Size:** 12 14 ha = 30 acres (measured from map); narrowly rectangular. **Description of Area:** A lower foothills ecotonal area of north-facing brush-covered slopes and ravines, with a scattering of conifers (50%); creekbottom with deciduous trees and shrubs and intermittent creek (35%); and interspersed overgrazed grassland (15%). The dominant brush is Scrub Oak (*Quercus gambelii*), which may form dense copses, with lesser amounts of Skunkbush (*Rhus trilobata*) and Mountain Mahogany (*Cercocarpus montanus*). Conifers include Ponderosa Pine (*Pinus ponderosa*), Red Cedar (*Juniperus scopulorum*), and Douglas-fir (*Pseudotsuga menziesii*). The main creekbottom tree is Narrowleaf Cottonwood (*Populus angustifolia*), with some River Birch (*Betula fontinalis*), Rocky Mountain Maple (*Acer glabrum*), Locust (*Robinia neo-mexicana*), a few planted Apples (*Pyrus*); an understory of, particularly, Snowberry (*Symphoricarpos occidentalis*), with Com. Gooseberry (*Ribes nermis*), Golden Currant (*Ribes aurium*), Wild Rose (*Rosa* sp.), Choke Cherry (*Prunus virginiana*), and shrubby Willow (*Salix* sp.), and dense tangles of the vine Virgin's Bower (*Clematis* sp.). The dominant grass is Blue Grama (*Bouteloua gracilis*), intermixed with much disclimax Pasture Sage (*Artemisia frigida*). A solar-heated visitor center for this new county park, with parking lot and entrance road, has just been completed at the northwest corner of the site. **Elevation:**

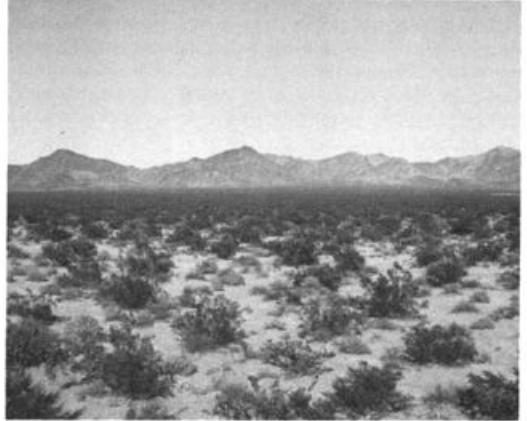
About 6400 ft. **Edge:** The wooded creekbottom continues to E and W, while grass flats and brushy slopes extend to the S. On the N pediment is an extensive gravel quarry. Farther to the W rise the granite foothills of the Southern Rocky Mountains. **Weather:** Somewhat milder and drier than normal, continuing a two-year drought pattern. Average temperature was 34°F, with a range from -5° to 67°F. Snowfall totaled 13.6 in., but the water equivalent was only .72 in. Ground was generally clear of snow except in early January, early February, and early March. Bear Creek was mostly dry. **Coverage:** Jan. 7, 11, 12, 19, 24; Feb. 15, 29; Mar. 7 Total, 8 trips averaging 1 hour each, both morning and afternoon. **Count:** Dark-eyed Junco, 27 (222, 90); Com. Crow, 20 (165, 67); Cassin's Finch, 13 (107, 43), Rufous-sided Towhee, 11 (91, 37); Scrub Jay, 9 (74, 30), Steller's Jay, 7 (58, 23); Am. Robin, 6 (49, 20); Black-billed Magpie, 5 (41, 17); Black-capped Chickadee, 4 (33, 13); Com. (Red-shafted) Flicker, 2 (16, 7); Downy Woodpecker, 1 (8, 3); Mountain Chickadee, 1; House Finch, 1; Dark-eyed Junco, 1; Tree Sparrow, 1; Red-tailed Hawk, +; Pine Siskin, +; Gray-headed Junco, +, Song Sparrow, +. **Average Total:** 109 birds (898/km², 363/100 acres). **Remarks:** The winter population here is predictably comparable to that of similar foothills sites (such as the extensively studied area to the south — AFN 22:494-496 [1968]), with the species diversity reflecting the ecotonal situation. The densely vegetated creekbottom, with a variety and diversity of cover and food, and occasional water, is, ecologically, this site's most valuable asset and accounts for its bird density and diversity. Steller's Jays were abundant because of the proximity of the main coniferous forest to the W and the ready availability of food (a good acorn crop, among other things). High populations of crows and Cassin's Finches were a result of large flocks on a few occasions. Mild weather accounted for the high winter population of towhees (all males) and the presence of robins. There were two species association groups in the creekbottom (juncos and associated small birds), one at the W end and the other at the E end. — RICHARD BEIDLEMAN and CAROL GREGORY (compilers), THOMAS BOHANON, HOWARD KELLOGG, LINDA LEAVENWORTH, and DAVID PHILLIPS (Field Zoology Class), Dept. of Biology, Colorado College, Colorado Springs, Colo. 80903.

48. CREOSOTE — MOJAVE YUCCA — CHOLLA DESERT SCRUB. — **Location:** California; San Bernardino Co., Ivanpah Valley 4.5 mi. SW of junction of Ivanpah Mountain Pass and Cima-Nipton roads, on the Cima-Nipton road; NW corner of the plot is about 50 meters from the dirt road (which goes north to Allured Mine and Oro Wash), 4.2 mi. from the junction; the plot is 6.5 mi. W and 1.3 mi. N of Ivanpah; NW ¼ of Sect 30, T15N, R15E, Ivanpah Quadrangle USGS. **Continuity:** New. **Size:** 12 ha = 29.65 acres (rectangular, 300 m x 400 m paced). **Description of Area:** Typical plant association of large areas of the Eastern Mojave Desert of California. **Vegetation:** Four 100 point pace transects and four 2 m x 100 m transects were made to determine percent cover, species composition, and number of shrubs. The substratum is composed of 51.25% small rocks (<5 cm), 3% large rocks (>5 cm), 33.25% bare ground, 7.25% litter of dead bushes, and 5.25% shrub

stems. The canopy cover of 21% is composed of 12% Mojave Yucca (*Yucca schidigera*), 43% Creosote Bush (*Larrea tridentata*), 18% Burro Bush (*Ambrosia dumosa*), 12% Little-leaved Ratany (*Krameria parvifolia* var. *imparata*), 6% Darning Needle Cactus (*Opuntia ramosissima*), 5% Nevada Joint Fir (*Ephedra nevadensis*), and lesser amounts of Staghorn Cholla (*Opuntia acanthocarpa*), Paperbag Bush (*Salazaria mexicana*), Silver Cholla (*O. echinocarpa*), Anderson Thornbush (*Lycium andersonii*), and dead shrubs. Grasses include Big Galleta (*Hilaria rigida*) and Fluff Grass (*Erioneuron pulchellum*). There are 5363 shrubs and tree yuccas per hectare (2171 per acre). The composition is 12% Creosote Bush, 60% Burro Bush, 9% dead bushes, 3.2% Mojave Yucca, 3.9% Little-leaved Ratany, 2.3% Darning Needle Cactus, 2.1% Nevada Joint Fir, and lesser amounts of Paperbag Bush, Goldenhead, Fluff Grass, Anderson Thornbush, and Silver and Golden Chollas. The study site has a history of cattle grazing. Composition of vegetation has been affected by heavy and continued use. The NE edge of the site also shows evidence of use from military maneuvers, probably 30 or more years ago. **Edge:** There is a lightly travelled paved road 0.3 mi. S and a seldom used dirt road 50 mi. N; otherwise the plot is surrounded by many square kilometers of similar habitat in all directions. **Topography:** Slightly sloping; elevation 3200-3240 ft. (970-982 m); the plot is traversed by several small washes; slopes of the Ivanpah Mts. are about 2.5 mi. W. **Water:** The nearest known permanent water is Mineral Spring, 4 mi. N. **Weather:** During the study, temperatures ranged from 30° to 70°F. No precipitation was recorded. **Coverage:** Dec. 30; Jan. 7, 21, 22, 27; Feb. 18; Mar. 3. Total, 7 trips, 3 between 0800 and 1200 and 4 between 1445 and 1615, averaging 58 min. each. **Count:** Sage Sparrow, 1 (8, 3); Ladder-backed Woodpecker, +; Loggerhead Shrike, +. **Average Total:** 1 bird (8/km², 3/100 acres). **Remarks:** Species composition and bird densities in this community are about the same as on the Creosote-Burrobrush (Study No. 49) plot except that the addition of the yuccas and higher densities of chollas adds the Ladder-backed Woodpecker. An average of 0.7 Black-tailed Jackrabbits (*Lepus californicus*) were counted per census, giving a density of 6 or 2/100 acres. We would like to thank William Radtkey for assistance with the plant transects. — J. V. REMSEN, JR., EDWIN WESSMAN, and KRISTIN H. BERRY, Desert Plan Staff, Bureau of Land Management, 1695 Spruce, Riverside, CA 92507.

49. CREOSOTE-BURRO BUSH DESERT SCRUB.

— **Location:** California; San Bernardino Co., 10.75 mi. E and 2 mi. S of the center of Baker on Kelbaker Rd., the plot is 11.5 mi. from the bridge on I-10 at Baker, about 100 m E of the road, and about 200 m N of Indian Creek Wash; SE ¼ of Sect. 2, T13N, R10E, Old Dad Mountain Quadrangle USGS. **Continuity:** New. **Size:** 12 ha = 29.65 acres (rectangular 300 x 400 m, paced). **Description of Area:** Typical plant association of vast areas of the eastern Mojave Desert of California. **Vegetation:** Two 100 point pace transects and four 2 m x 100 m transects were made to determine percent cover, species composition, and number of shrubs. The substratum is composed of 36.5% small rocks (<5 cm), 5% large rocks (>5 cm), 53.5% bare ground, 4% litter of dead bushes, and



Study 49. Creosote scrub, Piute Valley, Calif. Photo/J.V. Remsen, Jr.

1% stems of shrubs. Creosote Bush (*Larrea tridentata*) and Burro Bush (*Ambrosia dumosa*) form a canopy cover of 8% of which 59% is Creosote and 41% Burro Bush. There are 2610 shrubs per hectare (1056 per acre). Of these, 13% are Creosote Bush, 41% Burro Bush, 4% Cheesebush (*Hymenoclea salsola*), 2% Darning Needle Cholla (*Opuntia ramosissima*), 2% Silver Cholla (*O. echinocarpa*), 37% dead shrubs, and smaller percentages of Thurber Sandpaper Plant (*Petalonyx thurberi*), Barrel Cactus (*Ferocactus acanthodes*), and Anderson Thornbush (*Lycium andersonii*). Cattle and feral burros graze in the area; numbers of burros are increasing. As numbers of large herbivores increase, the percent cover will decrease and species composition change. **Edge:** A lightly travelled paved road is 100 m west of the road, otherwise many kilometers of similar habitat surround the plot in every direction. **Topography:** Slightly sloping, elevation 2000-2040 ft. (606-624 m); the plot is traversed by several small washes; the closest small mountains are about 1 mi. north. **Water:** The nearest known permanent water is an unnamed spring 4.75 mi. E (1 mi. E of Indian Spring, which is dry). **Weather:** Study period lasted 30 days, during which the temperature ranged from about 30° to 70°F. No precipitation fell during the study period. **Coverage:** Dec. 29, 30; Jan. 5, 6, 22, 27. Total, 6 trips, 3 between 0800 and 1030 and 3 between 1420 and 1700, averaging 74 min. each. **Count:** Sage Sparrow, 1 (8, 3), Loggerhead Shrike, +. **Average Total:** 1 bird (8/km², 3/100 acres). **Remarks:** Sage Sparrow and Loggerhead Shrike are the only two species normally found in this habitat at this time of year, except for an occasional Red-tailed Hawk or Golden Eagle. An average per census of 1.2 Black-tailed Jackrabbits (*Lepus californicus*) was recorded, giving a density of 10/km² or 4/100 acres. A White-tailed Antelope Squirrel (*Ammospermophilus leucurus*) was seen once, and a Side-blotched Lizard (*Uta stansburiana*) was seen on Jan. 27. We thank William Radtkey for assistance with the plant transects. — J. V. REMSEN, JR., EDWIN WESSMAN, and KRISTIN H. BERRY, Desert Plan Staff, Bureau of Land Management, 1695 Spruce, Riverside, CA 92507.

50. JOSHUA TREE WOODLAND, I. — **Location:** California; San Bernardino Co., 1.4 mi. N on I St. from Main St., 0.1 mi. W on Mauna St. (dirt road) to SW corner of plot, Hesperia; Sect. 15, T4N, R4W. **Continuity:** New. **Size:** 16.2 ha = 40 acres (square, measured with calibrated stride). **Description of Area:** The plot is mostly flat, uniform high desert area, within the city limits of Hesperia. Dirt roads surround the plot on the E and S sides, with another dirt road bisecting the plot N-S. An infrequently used paved road borders the N edge of the plot. The dirt roads on the sides and bisecting the plot are rarely used. The principal vegetation consists of Joshua Tree (*Yucca brevifolia*), Our Lord's Candle (*Yucca whipplei*), Rabbit Brush (*Chrysothamnus* sp.) and miscellaneous shrubs and grasses. Vegetation covers about 50% of the high desert floor on the plot. The immediate area of the plot is seldom used. Plant names from P. A. Munz, *A Flora of Southern California*, 1974. **Topography:** The plot slopes gently down W to E. There is one small shallow gully in the northern central area of the plot. **Elevation:** 3190 ft. (972 m). **Edge:** Although the plot is within the city limits of Hesperia, the surrounding areas are almost identical with that of the plot, with exception of occasional, dispersed homes. **Water:** A small natural seepage wells up on the SE border, being prevalent for approximately 10 yards. **Food:** The majority appears to be insects and seeds in litter on the desert floor for the ground-feeding birds. **Weather:** Warm and dry, driest winter in several years for all of southern California. A cooling trend and rain came in the first week of February with accumulation of 2.55 in. rain recorded in the Hesperia area. The temperature ranged from 34° to 75°F from Jan. 18 through the rainy period to Feb. 15. Average temperature during survey periods was 66°F. Wind speed averaged 4 mph. **Coverage:** Jan. 18, 19 (2), 20, 31; Feb. 1 (2), 15. Total, 8 trips, all between 0600 and 1330 PST. Trips averaged 150 min. each. **Count:** White-crowned Sparrow, 15 (93, 38); Com. Raven, 9 (56, 23), House Finch, 7 (43, 18); Cactus Wren, 1 (6, 3); Red-shouldered Hawk, +; Harris' Hawk, +; Am. Kestrel, +; Com. Flicker, +; Ladder-backed Woodpecker, +; Le Conte's Thrasher, +; Mountain Bluebird, +; Black-tailed Gnatcatcher, +; Starling, +; W. Meadowlark, +. **Average Total:** 32 birds (198/km², 80/100 acres). **Remarks:** White-crowned Sparrows were sighted on every trip. House Finches were noted on 5 trips. Cactus Wrens and Le Conte's Thrasher were noted only in the shallow gully on the north end of the plot. A Red-tailed Hawk was sighted above the boundaries of the plot, but only on one day. Total Com. Ravens sighted was approximately 580, but most were observed flying over the plot. Only those landing on the plot were counted. One Red-shouldered Hawk and one Am. Kestrel were also sighted once each. A Harris' Hawk was also observed on the plot for two hours, but was probably an escapee. An old, broken-down shack and debris (wood and rubbish) are located on the E border of the plot. White-tailed Antelope Squirrel (*Ammospermophilus leucurus*), and Black-tailed Jackrabbit (*Lepus californicus*) were both noted on the plot at numerous times. — **JERRY T. HER-RING**, Dept. of Biology, California State Univ., Long Beach, and 918 Freeman St., Long Beach, CA 90804.

51. JOSHUA TREE WOODLAND, II. — **Location:** California; San Bernardino Co., 2.2 mi. N and 0.6 mi. E

of Cima, the southwest corner is about 100 m E of Cima Rd., SW ¼ of Sect. 29, T14N, R14E, Mescal Range Quadrangle USGS. **Continuity:** New. **Size:** 9 ha = 22.24 acres (square, 300 x 300 meters, paced). **Description of Area:** The Cima Dome area is famous for its dense and exceptionally tall stands of Joshua Trees. **Vegetation:** Four 100 point pace transects, four 2 m x 100 m transects, and twenty-five 0.1 acre (0.04 hectare) circles were made to determine per cent cover, species composition, number of shrubs and trees, and size classes of trees. Joshua Trees were measured at 50 cm above ground because excessive branching above that level made dbh measurements difficult. Joshua Trees (*Yucca brevifolia*) 7.6 cm (3-in.) in diameter and over based on twenty-five 0.04 ha circular samples: 174 trees/ha (70.4/acre), total basal area 8.72 sq. m/ha (37.7 sq. ft./acre). Numbers of trees and basal area by diameter size class, respectively A (7.6-15.2 cm or 3-6 in.) 85, .789 sq. m (8.5 sq. ft.), B (15.2-22.9 cm or 6-9 in.) 36, 1.003 sq. m (10.8 sq. ft.), C (22.9-38.1 cm or 9-15 in.) 33, 2.45 sq. m (26.4 sq. ft.), D (38.1-53.3 cm or 15-21 in.) 12, 2.01 sq. m (21.6 sq. ft.), E (53.3-68.6 cm or 21-27 in.) 7, 2.01 sq. m (21.7 sq. ft.), F (68.6-83.8 cm or 27-33 in.) 1, .455 sq. m (4.9 sq. ft.) Canopy cover 3%; average canopy height 5 m (range 15 to 7.5 m). The shrub cover of 25% is composed of 20% Paperbag Bush (*Salazaria mexicana*), 19% Spanish Bayonet (*Yucca baccata*), 13% Nevada Joint Fir (*Ephedra nevadensis*), 10% Cooper Goldenbush (*Haplopappus cooperi*), 8% Spiny Menodora (*Menodora spinescens*), 8% Cheesebush (*Hymenoclea salsola*), 7% *Thamnosma* (*Thamnosma montana*), and lesser amounts of Spiny Hopsage (*Grayia spinosa*), Anderson Thornbush (*Lycium andersonii*), Staghorn Cholla (*Opuntia acanthocarpa*), Goldenhead (*Acamptopappus sphaerocephalus*), and Great Basin Blue Sage (*Salvia dorrii*). Perennial bunch grasses form 3% of the ground cover: Bush Muhly (*Muhlenbergia porteri*), Black Grama (*Bouteloua eriopoda*), Pine Blue Grass (*Poa scabrella*), Desert Needlegrass (*Stipa speciosa*), and Big Galleta (*Hilaria rigida*). There are 11,525 shrubs/ha (4666/acre), of which 31.4% are Cooper Goldenbush, 12.6% *Thamnosma*, 11.1% Nevada Joint Fir, 8% Spanish Bayonet, 5.3% dead shrubs, and lesser amounts of the above named species. Perennial grasses are numerous: 14,800 bunches/ha. Long-term livestock grazing has altered the composition of shrubs and grasses to favor less palatable species of shrubs. **Edge:** A lightly travelled paved road runs N-S just W of the plot. Otherwise, similar habitat surrounds the plot for at least a kilometer in any direction, although the Joshua Trees become much smaller and more scattered to the SE. **Topography:** Slightly sloping, elev 4440 to 4500 ft. (1346-1364 m); the nearest mountain slopes are 1.2 mi. N on the Ivanpah Mts. **Water:** The nearest known permanent water is at White Rock Spring, 1.9 mi W. **Weather:** Temperatures during the census period ranged from 20° to 65°F; no precipitation was recorded. **Coverage:** Dec. 30; Jan. 6, 22, 23, 27, 28, 29. Total, 7 trips, 6 between 0800 and 1130, 1 from 1552 to 1652, averaging 73 min. each. **Count:** Sage Sparrow, 7 (78, 31), Ladder-backed Woodpecker, 1 (11, 4); Red-tailed Hawk, +; Com. (Gilded) Flicker, +; Cactus Wren, +; Black-throated Sparrow, +. **Average Total:** 8 (89/km², 36/100 acres). **Remarks:** Golden Eagle, Bewick's Wren, and Loggerhead Shrike were recorded near the census plot in similar habitat. Twelve Piñon Jays flew over the plot on

Jan 22 and were seen foraging in similar habitat in the vicinity. Average totals of some mammals per census were Antelope Ground Squirrel (*Ammospermophilus leucurus*), 2.0; Black-tailed Jackrabbit (*Lepus californicus*), 1.7 (19/km², 8/100 acres); and Desert Cottontail (*Sylvilagus auduboni*), 0.6 (7/km², 3/100 acres). We thank William Radtkey for assistance with the plant transects. — J. V. REMSEN, JR., KRISTIN H. BERRY, and EDWIN WESSMAN, Desert Plan Staff, Bureau of Land Management, 1695 Spruce, Riverside, CA 92507.

52. CATCLAW-RABBITBRUSH DESERT WASH.

— **Location.** California; San Bernardino Co.; Piute Wash in Piute Valley, about 8 mi. N of Arrowhead Junction on US Hwy. 95, a powerline road crosses the highway and intersects Piute Wash 0.2 mi. W. The study plot begins north of the powerpoles and follows the wash 1.5 mi. N, the northern boundary of the plot is 8.2 mi. E and 3.3 mi. S of Fort Piute Ruins; the plot begins in the NE ¼ of Sect. 5, T11N, R20E, Homer Mtn. Quadrangle, USGS. **Continuity:** New. **Size:** 17.8 ha = 44.0 acres (rectangular 2375 x 75 meters, paced). **Description of Area:** A typical wash type of the central and eastern Mojave Desert. **Vegetation:** Piute Wash varies considerably in composition of vegetation and per cent cover from place to place because it receives heavy flows of water from time to time. Six 100 point pace transects and twelve 2 m x 75 m transects were made to determine per cent cover, species composition, and numbers of shrubs. The substratum was composed of 12% small rocks (< 5 cm), 0.5% large rocks (> 5 cm), 70.6% bare ground, 13.2% litter, and 3.7% shrub stems. The shrub cover of 25.5% was made up of 39.2% Catclaw (*Acacia greggii*), 30.1% Black-banded Rabbitbrush (*Chrysothamnus paniculatus*), 17.0% Creosote Bush (*Larrea tridentata*), 7.1% Cheesebush (*Hymenoclea salsola*), 1.3% Desert Brickellia (*Brickellia desertorum*), and 0.65% each of Burrobush (*Ambrosia dumosa*) and Peachthorn (*Lycium cooperi*). There are 1561 shrubs/ha (632/acre), of which 47.3% are Black-banded Rabbitbrush, 12.1% dead bushes, 11.0% Creosote, 9.6% Catclaw, 8.9% Cheesebush, 4.6% Silver Cholla (*Opuntia echinocarpa*), 3.6% Tooth Leaf (*Stillingia paucidentata*), and 2.5% Desert Brickellia. **Topography:** Very slightly sloping; elevation 1860-1900 ft. (564-576 m); nearest mountain slopes are on Homer Mt. 3.75 mi. W of the plot. **Water:** The nearest permanent water is at Fort Piute (see Study 56). A Fish and Game Dept "guzzler" 3.6 mi. SW of the plot may provide permanent water. **Edge:** The plot is bounded on all sides by Creosote-Burrobush scrub, with some Mojave Yucca near the southwest edge. **Weather:** Temperatures during the study period ranged from 30° to 70°F; no precipitation was recorded. **Coverage:** Jan. 8, 14, 15; Feb. 3, 4, 5. Total 6 trips, 1 from 1515 to 1625 and 5 between 0720 and 0940, averaging 82 min. each. **Count:** Phainopepla, 43 (241, 97); Sage Sparrow, 11 (62, 25); W. Bluebird, 9 (51, 20); Verdin, 5 (28, 11); White-crowned Sparrow, 4 (22, 9); Mockingbird, 2 (11, 5); Crissal Thrasher, 2; Bewick's Wren, 1 (6, 2); Sage Thrasher, 1; Black-tailed Gnatcatcher, 1; House Finch, 1; Red-tailed Hawk, +; Roadrunner, +; Rock Wren, +; Le Conte's Thrasher, +; Loggerhead Shrike, +. **Average Total:** 80 (449/km², 182/100 acres). **Remarks:** Bird density in washes is 50-60 times that of surrounding open desert communities (See

Studies Nos. 48 and 49). The Phainopeplas, W. Bluebirds, and Mockingbirds were all feeding on mistletoe (*Phoradendron*) berries in the acacias. These 3 species accounted for 65% of the birds on the plot. Sage Thrashers and House Finches may also have been feeding mainly on mistletoe, which would raise the percentage of frugivores to 68%. Even without the mistletoe, bird density would be at least 19 times as great as surrounding open desert. Sex ratio in Phainopeplas was consistently 1.6 to 1 in favor of females. Phainopeplas and Mockingbirds were inter- and intraspecifically territorial among themselves and with W. Bluebirds. It is interesting to note that the highly territorial frugivores in California (Mockingbird, Phainopepla, and Townsend's Solitaire) have conspicuous white wing flashes (which presumably increase visual impact in territorial conflicts), and that the flocking, non-territorial frugivores (Cedar Waxwing, Am. Robin, Western Bluebird) lack these patches. The exception is the Hermit Thrush, which is territorial but lacks wing patches; however, it is only intra- and not interspecifically territorial (S F Bailey, pers. comm.). A migrant Violet-green Swallow was seen over the plot Feb. 3. The winter study period was terminated Mar. 3 when 24 migrant Sage Thrashers were seen. Phainopeplas also may have begun to nest by that time. An average of 1.2 Desert Cottontails (*Sylvilagus auduboni*) were seen per census (7/km², 3/100 acres). Two Black-tailed Jackrabbits (*Lepus californicus*) and 2 White-tailed Antelope Squirrels (*Ammospermophilus leucurus*) were recorded on the counts. We thank William Radtkey for assistance in the plant transects. — J. V. REMSEN, JR., KRISTIN H. BERRY, and EDWIN WESSMAN, Desert Plan Staff, Bureau of Land Management, 1695 Spruce, Riverside, CA 92507.

53. DISTURBED FLOODPLAIN WOODLAND. —

— **Location.** California; Sutter Co., southern portion of National Audubon Society's Bobelaine Audubon Sanctuary, 11 mi. SSE of Yuba City, 38°58'N, 121°39'W. **Continuity:** New. **Size:** 24.08 ha = 59.5 acres (irregular shape; acreage calculated from triangles superimposed over large-scale aerial photograph of area). **Description of Area:** On W bank of Feather River, approximately 1 mi. SSW of confluence of Feather and Bear Rivers. Surrounding region generally agricultural land; remaining floodplain woodland now restricted to the narrow strip of land bounded by State flood control levees and the banks of the Feather River. Plot consists mainly of open woodland, in which understorey vegetation is primarily limited to those areas either presently or previously associated with high moisture conditions. Patches of brush are irregularly distributed throughout; as are open grassy areas, especially in the N portion. Dominant tree species are Valley Oak (*Quercus lobata*), approximately 55% of the woodland vegetation; Fremont Cottonwood (*Populus fremontii*), 15%; Sycamore (*Platanus racemosa*), 10%, willow (*Salix* spp.), 10%; miscellaneous species (including numerous cottonwood snags), 10%. Approximate average sizes of the four dominant canopy species are: Valley Oak, 40 ft., 22 in. dbh; Fremont Cottonwood, 55 ft, 28 in.; Sycamore, 50 ft., 26 in.; willow, 20 ft., 8 in. Shade tolerant understorey species include: Box Elder (*Acer negundo*), Oregon Ash (*Fraxinus latifolia*), Black Walnut (*Juglans nigra*), Blue Elderberry (*Sambucus caerulea*), Wild Grape (*Vitis californica*), and blackberry (*Rubus*

spp.). In more open areas, California Wild Rose (*Rosa californica*) forms nearly impenetrable thickets; however, these have been limited by heavy grazing, present since the 1930s. Wild Rose is extremely abundant, mainly occurring as close-cropped ground cover, 4 to 8 in. high. Planned elimination of grazing within the sanctuary, will undoubtedly change the vegetational structure, especially with reference to Wild Rose. Vegetational disturbance has also resulted from limited logging activities, most recently in 1959. Although this area is not in a totally pristine condition, it remains one of the prime sites of preserved floodplain woodland habitat along the lower Feather River. **Topography:** Elevation approximately 90 ft.; study area essentially flat, with some low mounding at the S end of the plot. A 12 ft. deep, 20 ft. wide gully transects the S portion of the plot, probably an old river channel. **Edge:** Bounded on W by flooded borrow pit, with vegetational characteristics similar to low drainage areas in other parts of plot. A narrow strip (50 to 200 ft.) of woodland continuous with that of the study plot occurs along the E edge and extends to the river bank. More or less continuous habitat extends N and S of plot boundaries. **Water:** Abundant water is found on the eastern and western boundaries, and limited amounts along the old river channel. **Food:** Insect food presumably abundant due to mild winter; mistletoe berries in good supply. **Weather:** Temperatures were unusually mild and virtually no precipitation occurred (approximately 8 in. below average rainfall for this season). Temperatures during counts varied from 42° to 69°, average temperature was 62°F. **Coverage:** Jan. 11, 15, 17, 31; Feb. 1, 7. Total, 6 trips, between 1055 and 1620, averaging 129 minutes each. **Count:** Golden-crowned Sparrow, 78 (324, 131); White-crowned Sparrow, 48 (199, 81); Scrub Jay, 34 (141, 57); Cedar Waxwing, 26 (108, 44); Starling, 26; Rufous-sided Towhee, 19 (79, 32); Yellow-billed Magpie, 17 (71, 29); Dark-eyed Junco, 17; Plain Titmouse, 16 (66, 27); Bushtit, 16; California Quail, 15 (62, 25); Com. Flicker, 13 (54, 22); Acorn Woodpecker, 12 (50, 20); Lesser Goldfinch, 11 (46, 18), W. Bluebird, 9 (37, 15); Brown Towhee, 8 (33, 13); Red-tailed Hawk, 7 (29, 12); Ruby-crowned Kinglet, 7; Nuttall's Woodpecker, 6 (25, 10); White-breasted Nuthatch, 6; Yellow-rumped (Audubon's) Warbler, 6; Com. Crow, 5 (21, 8); Downy Woodpecker, 4 (17, 7); Hermit Thrush, 4; Bewick's Wren, 3 (12, 5); Golden-crowned Kinglet, 3; Killdeer, 2 (8, 3); Great Horned Owl, 2; Mockingbird, 2; Pine Siskin, 2; Turkey Vulture, 1 (4, 2); Mourning Dove, 1; Barn Owl, 1; Tree Swallow, 1; Brown Creeper, 1; Wrentit, 1; Phainopepla, 1; Orange-crowned Warbler, 1; Yellow-rumped (Myrtle) Warbler, 1; House Finch, 1; Fox Sparrow, 1; White-tailed Kite, +; Sharpshinned Hawk, +; Marsh Hawk, +; Am. Kestrel, +; Yellow-bellied Sapsucker, +; Black Phoebe, +; White-throated Sparrow, +; Song Sparrow, +. **Average Total:** 73 birds (303/km², 123/100 acres). **Remarks:** Species total, 47 (1 additional race). Twenty-five species were observed on all trips. On 3 days large numbers of crows were observed (60, 27, 128); however, these flocks appeared to be merely in transit through the study area and were not included in the computations. Bluebirds and waxwings were normally observed feeding on mistletoe berries. *Zonotrichia* flocks were concentrated in Wild Rose thickets. On Jan. 31 and Feb. 1, Tree Swallows were observed over the study plot; presumably these were early

migrants. By the end of the study period, Yellow-billed Magpies had entered the early stages of their breeding activities. The White-throated Sparrow, unusual in California, was observed twice. Species flying over the study plot but primarily associated with adjacent river or agricultural habitats and not included in the census results: Great Blue Heron, Canada Goose, White-fronted Goose, Snow Goose, Mallard, Pintail, Am. Wigeon, Wood Duck, Greater Yellowlegs, California Gull, Belted Kingfisher, Horned Lark, Water Pipit, Red-winged Blackbird, and Brewer's Blackbird. — JONATHAN ATWOOD, Dept. of Biology, California State Univ., Long Beach, and 555 Audubon Place, Sacramento, CA 95825.

54. PINYON-JUNIPER WOODLAND. — **Location:** California; San Bernardino Co., Mid Hills, about 0.5 mi due E of the entrance to Mid Hills Campground, and about 100 m W of a poor dirt road that runs N to Cedar Canyon; SE ¼ of Sect. 13, T12N, R14E, Mid Hills Quadrangle, USGS. **Continuity:** New. **Size:** 9 ha = 22.24 acres (square, 300 x 300 m, paced). **Description of Area:** Three 100 point pace transects and five 2 m x 100 m transects were made to determine per cent cover, species composition and number of shrubs. The substratum is composed of 14.9% bare ground, 33.3% small rocks (< 5 cm), 4.4% large rocks (> 5 cm), 42.9% litter and 4.5% tree trunks and shrub stems. One-leaved Pinyon Pine (*Pinus monophylla*) 7.6 cm (3-in.) in diameter and over 80 trees/ha (32/acre); total basal area 0.21 sq. m/ha (2.3 sq. ft./acre). Number of trees and basal area by diameter size class (dbh), respectively: A (7.6-15.2 cm or 3-6 in.) 3, .027 sq. m (.3 sq. ft.); B (15.2-22.9 cm or 6-9 in.) 4, 11 sq. m (1.2 sq. ft.); C (22.9-38.1 cm or 9-15 in.) 1, .074 sq. m (.8 sq. ft.); 17 are under 7.62 cm. Canopy cover of pinyons and shrubs 38.3%; estimated average canopy height 3-6 m (range 2.5-12 m). The canopy cover of 38.3% is composed of 22.6% Pinyon, 46.9% Utah Juniper (*Juniperus osteosperma*), 8.6% Big Sagebrush (*Artemisia tridentata*), 5.2% Spanish Bayonet (*Yucca baccata* var. *baccata* and var. *vespertina*), 3.5% Antelope Brush (*Purshia glandulosa*), 2.6% each of Nevada Joint Fir and Mountain Joint Fir (*Ephedra nevadensis*, *E. viridis*), 1.7% each of California Buckwheat (*Eriogonum fasciculatum*) and Old Man Cactus (*Opuntia erinacea*), and 4.3% dead shrubs. There are 619 shrubs/ha (250/acre) of which 20.2% are Spanish Bayonet, 11.5% *Thamnosma* (*Thamnosma montana*), 10% Big Sagebrush, 8.5% dead bushes, 6% unid. bush buckwheat (*Eriogonum* sp.), 5.7% Mountain Joint Fir, 5.5% Linearleaved Goldenbush (*Haplopappus linearifolius*), 4.4% Nevada Joint Fir, 2.9% each Utah Juniper and Antelope Brush, 2.7% Desert Almond (*Prunus fasciculata*), 2.3% Old Man Cactus, 1.9% Snake Weed (*Gutierrezia* sp.), and lesser amounts of Mound Cactus (*Echinocereus triglochidiatus*), Anderson Thornbush (*Lycium andersonii*), Great Basin Blue Sagebrush (*Salvia dorrii*), Staghorn Cholla (*Opuntia acanthocarpa*), and Giant Four O'clock (*Mirabilis multi-flora*). Perennial grasses form 10.3% of the cover: Desert Needle Grass (*Stipa speciosa*), Rye Grass (*elymus* sp.), and Brome Grass (*Bromus richardsonii*?). **Topography:** Rolling hills, elevation ranging from 5520 to 5600 ft. (1672-1696 m). **Edge:** A seldom-used dirt road parallels the W edge of the plot, 100 m from the boundary. Similar Pinyon-Juniper habitat surrounds the plot except on the

E, where the trees become very scattered and where there are fairly dense thickets of sagebrush. **Water:** Nearest permanent water is probably at Big Cottonwood Spring 0.8 mi. W, but the spring is not on USGS maps and has not been visited recently to determine if there is still available water. Silver Lead Spring 2 mi. SW apparently does have available surface water. There are two State Fish and Game wildlife guzzlers with semi-permanent water near the plot, one N and the other NE. **Weather:** Study period temperatures ranged from about 15° to 65°F. The only precipitation recorded was about 4 in. of snow in the first week of February. **Coverage:** Dec. 17; Jan. 7, 8, 22; Feb. 17, 18; Mar. 26. Total, 7 trips, 5 between 0830 and 1130, 2 between 1310 and 1650, averaging 92 min. each. **Count:** Bushtit, 6 (67, 27); Plain Titmouse, 2 (22, 9); Scrub Jay, 1 (11, 4); Cooper's Hawk, +; Red-tailed Hawk, +; Great Horned Owl, +; Williamson's Sapsucker, +; Ladder-backed Woodpecker, +; Mountain Chickadee, +; Bewick's Wren, +; Ruby-crowned Kinglet, +; Dark-eyed Junco, +. **Average Total:** 9 (100/km², 40/100 acres). **Remarks:** Cattle grazing has modified composition and density of shrubs and perennial grasses. Five Black-tailed Deer were seen on the plot on Feb. 18. An average of 1.0 Black-tailed Jackrabbits were recorded on the censuses, giving an average density of 4 per 100 acres. In mid-January 2 large dead junipers and 2 live ones were cut and removed by unknown persons. One of the 3 Dark-eyed Juncos recorded was of the Slate-colored race. Ladder-backed Woodpeckers are a regular component of Pinyon-Juniper woodlands in this area. The Williamson's Sapsucker was only seen once, on Mar. 26, and may have been a northbound migrant, although it has been recorded as a winter resident in Cedar Canyon, 3 mi. N. The Mountain Chickadee, seen just once, is the first winter report of this species from the Providence and New York Mountains area. We thank William Radtkey for assistance with the plant transects. — J. V. REMSEN, JR., EDWIN WESSMAN, and KRISTIN H. BERRY, Desert Plan Staff, Bureau of Land Management, 1695 Spruce, Riverside, CA 92507.

55. WESTERN SYCAMORE-COAST LIVE OAK RIPARIAN WOODLAND. — **Location:** California; Santa Barbara Co.; El Capitan State Beach, along El Capitan Creek, 9 mi. W of Goleta, 34°27'30"N, 120°01'21"W, Tajiguas Quadrangle, USGS. **Continuity:** Established 1975; two consecutive years. **Size:** 4.5 ha =. **Description of Area:** The plot is the lower portion of a riparian woodland growing along El Capitan Creek. See AB 29(3): 765-766 (1975). El Capitan Creek flowed continuously throughout 1975 and into 1976. **Weather:** 0.36 in. of rain was recorded at El Capitan State Beach in Dec., no rainfall in Jan. and 5.86 in. during Feb. The 3-month total of 6.22 in. was less than half of last year's 13.91 in. during the same period. Daytime temperatures were in the 50s and 60s. All census trips were undertaken on clear, windless days. **Coverage:** Jan. 8, 9, 15, 16, 29; Feb. 10, 20. Total, 7 trips, between 0950 and 1220 PST, averaging 125 min. each. **Count:** Bushtit, 35 (772, 312); White-crowned Sparrow, 17 (375, 152); Lesser Goldfinch, 14 (309, 125); House Finch, 10 (221, 89); Ruby-crowned Kinglet, 6 (132, 54); Brown Towhee, 6; Song Sparrow, 6; Starling, 5 (110, 45); Brewer's Blackbird, 5; Wrentit, 4 (88, 36); Acorn Woodpecker, 3 (66, 27); Anna's Hummingbird, 2 (44, 18); Black Phoebe, 2;

Scrub Jay, 2; Plain Titmouse, 2; Bewick's Wren, 2; Yellow-rumped Warbler, 2; Rufous-sided Towhee, 2; California Quail, 1 (22, 9); Com. Flicker, 1; Nuttall's Woodpecker, 1; California Thrasher, 1; Hermit Thrush, 1; Com. Yellowthroat, 1; White-tailed Kite, +; Cooper's Hawk, +; Am. Kestrel, +; Allen's Hummingbird, +; Downy Woodpecker, +; Orange-crowned Warbler, +; Golden-crowned Sparrow, +. **Average Total:** 131 birds (2890/km², 1170/100 acres). **Remarks:** Species total, 31. Twenty-five species were observed on 2 or more study trips. Fifteen of the 18 most abundant species (2 or more birds per trip) were seen on all 7 trips. The Plain Titmouse, Yellow-rumped Warbler, and Brewer's Blackbird were observed on 6 trips. Three species were observed only once (one individual seen) Am. Kestrel, Allen's Hummingbird, and Orange-crowned Warbler. A flock of California Quail on one study trip constituted the only observation of this species. White-tailed Kites and Golden-crowned Sparrows were observed on one study trip each. The White-tailed Kite, California Quail, and Allen's Hummingbird were new species for the census plot (cumulative total, 40). Large increases over 1974-75 in the number of birds per trip occurred in the Bushtit (24 to 35), Starling (2 to 5), and Lesser Goldfinch (2 to 14). A large decrease in number per trip from 1974-75 to 1975-76 occurred in the Brewer's Blackbird (14 to 5). — JOHN R. GUSTAFSON, *Refugio State Beach, Route 1, Box 257, Goleta, CA 93017.*

56. DESERT RIPARIAN. — **Location:** California, San Bernardino Co., east slopes of the Piute Range, adjacent to the ruins of Fort Piute; 21.75 mi. W and 19.25 mi. N of Needles Post Office; from NW ¼ of Sec. 24 to SE ¼ of Sec. 13, T12N, R18E, Homer Mt. Quadrangle, USGS. **Continuity:** New. **Size:** 6.58 ha = 16.26 acres (1970 meters long, paced following path of stream; width paced at 25 m intervals to give a mean of 33.4 m). Width varied from 2 to 75 m, depending upon extent of riparian habitat. **Description of Area:** Plot begins at Piute Spring where water begins to flow on the surface and the first willows and Baccharis grow; it ends several hundred m below the Fort Piute ruins where the groves of willows are no longer continuous. A permanent stream, which maintains a steady flow even during dry months, flows through most of the area. There is one section 200 m or more in length where water disappears underground. The stream is usually less than one m in width and about 2-6 cm deep. Vegetation can be divided into two groups: trees and shrubs in the stream bed; and shrubs and plants on the dry stream banks. The composition of the vegetation and height of canopy vary considerably from place to place. An absolute count was made of all the willows (primary *Salix goodingii*, some *S. exigua*) and cottonwoods (*Populus fremontii*) with a dbh of 7.6 cm (3-in.) and over: 1205 trees/study plot (183/ha or 73/acre); total basal area 4.42 sq. m/ha (19.5 sq. ft./acre) in the plot. *Salix* and *Populus* by diameter size class (figures after each class give number of trees in the study plot and basal area in sq. m): A (7.6-15.2 cm or 3-6 in.) 676, 6.28 sq. m (67.6 sq. ft.) for *Salix* and 1, .0093 sq. m (.1 sq. ft.) for *Populus*; B (15.2-22.9 cm or 6-9 in.) 394, 10.3 sq. m (118 sq. ft.) for *Salix* and 2, .056 sq. m (.6 sq. ft.) for *Populus*; C (22.9-38.1 cm or 9-15 in.) 115, 8.54 sq. m (92 sq. ft.) for *Salix* and 5, .37 sq. m (4 sq. ft.) for *Popu-*

lus, D (38.1-53.3 or 15-21 in.) 3, .86 sq. m (9.3 sq. ft.) for *Salix* and 5, 1.4 sq. m (15.5 sq. ft.) for *Populus*; E (53.3-68.6 cm or 21-27 in.) 2, .58 sq. m (6.2 sq. ft.) for *Salix* and 1, .29 sq. m (3.1 sq. ft.) for *Populus*; F (68.6-83.8 cm or 27-33 in.) 1, .46 sq. m (4.9 sq. ft.) for *Populus*. The largest cottonwoods had heights estimated at 20 m. All grew in 2 areas of the upper stream bed. Absolute counts were also made of shrubs having both a basal stem diameter > 15 cm and a height of 2 m. Using these criteria, there were 74 Honey Mesquite (*Prosopis glandulosa*), 55 Desert Willows (*Chilopsis linearis*), 27 Catclaw (*Acacia greggii*), and 27 Tamarisk (*Tamarix sp.*). In addition to numerous smaller individuals of the above species, there is a dense understory of Mule Fat (*Baccharis glutinosa*) and some Arrow-weed (*Pluchea sericea*). Emory Baccharis (*B. emoryi*) is present but scarce. Tall Cat-tail (*Typha domingensis*) and Bulrush (*Scirpus olneyi*) occur in dense clumps. Watercress (*Rorippa nasturtium-aquaticum*) is common in some sections of stream; Bermuda Grass (*Cynodon dactylon*) is occasional. Plants along the dry walls of the arroyo include: Common Allscale (*Atriplex polycarpa*), Prince's Plume (*Stanleya pinnata*), Nightshade (*Solanum nodiflorum*), Jimson Weed (*Datura meteloides*), and Palmate-leaved Gourd (*Cucurbita palmata*). Area is subject to frequent and severe scouring by flash-floods, which fell *Salix* and *Baccharis* and destroy much of the dense undergrowth. The most recent flood occurred Sept. 1975. Lower third of the area is regularly used by human beings and cattle. Human beings have cut many willows and mesquites for firewood. Cattle have grazed and trampled the undergrowth and polluted the few standing pools of water in the lower portion of the stream. **Topography:** The stream flows through a steep, rocky gorge. The stream falls from an elevation of 3000 ft to 2720 ft (909-824 m). **Edge:** The surrounding rocky slopes are dotted with Barrel-cactus (*Ferocactus acanthodes*), Mojave Yucca (*Yucca schidigera*) and Staghorn Cholla (*Opuntia acanthocarpa*). The northeastern edge is less sloping and has Creosote Bush (*Larrea tridentata*). Above the spring, the gorge becomes very narrow and steep-walled. Below the census plot, there are scattered willows, Desert Willows, Tamarisks and Catclaw in the stream bed; willows disappear where the stream goes underground several hundred meters below the study plot. The wash is a tributary of Piute Wash (see Catclaw-Rabbitbrush Study, #52). The nearest riparian woodland is at the Colorado River 17 mi. E. **Weather:** Temperatures ranged from 30° to 65°F, and no precipitation fell during the study period. **Coverage:** Dec. 31, Jan. 9, 14, 21; Feb. 3, 4. Total, 6 trips, 5 between 0825 and 1315, 1 from 1415 to 1604, averaging 126 min. each. **Count:** Dark-eyed Junco, 13 (198, 80); Sage Sparrow, 12 (182, 74); Ruby-crowned Kinglet, 9 (137, 55); Black-throated Sparrow, 6 (91, 37); Gambel's Quail, 2 (30, 12); Chukar, 2; Cooper's Hawk, 1 (15, 6); Com. Snipe, 1; Verdin, 1; House Wren, 1; W. Bluebird, 1; Rufous-sided Towhee, 1; White-crowned Sparrow, 1; Sharp-shinned Hawk, +; Golden Eagle, +; Great Horned Owl, +; Bewick's Wren, +; Rock Wren, +; Crissal Thrasher, +; Am Robin, +; Townsend's Solitaire, +; Black-tailed Gnatcatcher, +; Phainopepla, +; House Finch, +; Lesser Goldfinch, +; Brewer's Sparrow, +. **Average Total:** 51 birds (775/km², 314/100 acres). **Remarks:** Sage Sparrow, Black-throated Sparrow, and Chukar used the area primarily for drinking and not for feeding. At least one of

the Dark-eyed Juncos wintering on the plot was of the Slate-colored race. Ruby-crowned Kinglets declined steadily through the study period from 14 on Dec. 31 to 6 on Feb. 4. Woodpeckers were inexplicably absent from the plot; Com. Flickers, Yellow-bellied Sapsuckers, and Ladder-backed Woodpeckers winter in the area but were not recorded on or near the study plot. The study period was terminated Mar. 5 when 5 Lincoln's Sparrows and 1 Yellow-rumped Warbler, both early migrants, were recorded. A single Sharp-shinned Hawk Dec. 31 was probably a very late southbound migrant. I thank Andrew Sanders for plant identifications, and Edwin Wessman for assistance on one count. — J. V. REMSEN, JR., and KRISTIN H. BERRY, Desert Plan Staff, Bureau of Land Management, 1695 Spruce, Riverside, CA 92507.

57. JOSHUA TREE — CALIFORNIA JUNIPER DESERT. — **Location:** California; San Bernardino Co., 5.2 mi. SE of Hesperia, 200 yds. W of Arrowhead Lake Rd. (S2, T3N, R4W). **Continuity:** New. **Size:** 18.2 ha = 45 acres (square, measured by calibrated stride). **Description of Area:** Study area contains a variety of plants common to the Mojavian desert shrub community. Bare ground comprises 40% of the surface area. Dominant plants were California Juniper (*Juniperus californica*), Our Lord's Candle (*Yucca whipplei*) and Joshua Tree (*Yucca brevifolia*). The remaining low-lying shrub was primarily Rabbit Brush (*Chrysothamnus sp.*), with Desert Trumpet (*Eriogonum inflatum*) and miscellaneous shrubs, grasses, and cactus. Taxonomic reference: Munz, *A Flora of Southern California*, 1973. The area is moderately isolated but there is some motorcycle activity, mostly on weekends. There are numerous spent shotgun shells and some scattered litter on the ground. **Topography:** Rolling terrain on a ridge that drops off to a dry riverbed (Mojave River) to the SE. The S corner includes two steep gullies running parallel. There are dirt roads on the N and S borders, and another running through the middle that connects with these. **Elevation:** 3300 ft. **Edge:** Study area is part of a vast Joshua Tree-California Juniper interface on the desert slopes east of the San Bernardino Mts. (i.e., farther E on the desert is mostly flat and junipers are not found). **Water:** None on plot. **Food:** Seeds from shrubs; insects in the air and in shrub litter (primarily flies, midges, and beetles). **Weather:** Area was extremely dry from severe drought this winter. First rain (2.55 in.) fell Jan. 5-8; ground was wet on last trip made and the temperature was 55°F. Otherwise all trips were made on sunny days with an average temperature of 70°F. Twenty-four hour temperature range was 34-75°F. Wind averaged 3 mph and was a factor on only one trip. **Coverage:** Jan 18, 19(2), 20; Feb. 1, 2(2), 15. Total, 8 trips, averaging 150 minutes each; total observation time was 20 hours. Time of day surveys were made varied; bird activity seemed to be constant throughout the daylight hours. **Count:** White-crowned Sparrow, 32 (176, 71); W. Bluebird, 4 (22, 9); Com. Bushtit, 3 (16, 7); Mountain Bluebird, 3; Vesper Sparrow, 3; Dark-eyed (Oregon) Junco, 2 (11, 4); Com. Flicker, 1 (5, 2); Bewick's Wren, 1; Ruby-crowned Kinglet, 1; Loggerhead Shrike, 1; W. Meadowlark, 1, Red-tailed Hawk, +; Roadrunner, +; Townsend's Solitaire, +; Yellow-rumped Warbler, +. **Average Total:** 52 birds (286/km², 116/100 acres). **Remarks:** Total

species, 15. White-crowned Sparrow flocks foraged primarily at the base of junipers. Most members were not readily visible in the low brush and were continually hopping and flying for short distances. An exact count could not be obtained; thus the figure listed is the maximum number seen on several occasions. White-crowned Sparrow and Loggerhead Shrike were seen on each trip. The Dark-eyed Juncos, Mountain Bluebirds, and Com. Bush-tits were seen in flocks, but each on only one occasion. The juvenile Red-tailed Hawk was seen flying over the plot. The Vesper Sparrows were seen twice, both times foraging near the White-crowned Sparrows; they avoided the junipers and tended to remain on the ground in the low-lying brush. Mammals common to the plot are the White-tailed Antelope Squirrel (*Ammospermophilus leucurus*); Wood Rat (*Neotoma sp.*); Coyote (*Canis latrans*); Valley Pocket Gopher (*Thomomys bottae*); Black-tailed Jack-rabbit (*Lepus californicus*); and Cottontails (*Sylvilagus sp.*). — DENNIS FEES, Dept. of Biology, California State Univ., Long Beach, and 6790 Curtis Ave., Long Beach, CA 90805.

58. COASTAL CHAPARRAL. — **Location:** California; Los Angeles Co., NE side of forest route 5N26 ½ mi. NW of the Wagonwheel Ranch, in the Angeles National Forest. Area is comprised of acreage in Sections 13, 14, 23, and 24, T4N, R12W. **Continuity:** New. **Size:** 12.1 ha = 30 acres. The configuration of the area was determined by taking bearings on visible landmarks with a compass and transferring these bearings to a USGS Pacifico Mountain Quadrangle, 7.5 Minute Series, topographic map. The study area is trapezoidal in shape. **Description of Area:** The study plot contains the variety of plants normally associated with the chaparral areas of southern California. The sometimes open, often dense, areas of vegetation contain mostly shrubs varying in height from less than 2 ft to more than 8 ft. The primary species present were: Chamise (*Adenostoma fasciculatum*), 25%; Ceanothus (*Ceanothus spp.*), 25%; Manzanita (*Arctostaphylos spp.*), 15%; Scrub Interior Live Oak (*Quercus wislizenii*), 10%. Also present were: Creosote Bush (*Larrea divaricata*); Spanish Bayonet (*Yucca whipplei*); Douglas Fir (*Pseudotsuga menziesii*); Incense-cedar (*Libocedrus decurrens*); miscellaneous grasses. An estimated 10% of the ground within the study plot is bare. A road meanders across the width of the plot in the NE corner and provides access to the power lines used as an edge of the plot. The remainder of the area is apparently undisturbed by man. **Topography:** Rolling hills traversed by several dry, intermittent stream beds. **Elevation:** Varies from 3680 to 3880 ft. **Edge:** The area is part of hundreds of acres of Angeles National Forest. The general habitat is similar for miles. The forest road, power lines and maintenance road already mentioned were used as boundaries for the study area. **Water:** A small intermittent stream on the SE boundary of the plot still contained some moisture at the time of the study. Some birds utilized this source while most used an intermittent stream on the opposite side of the forest road. **Food:** Food appeared to be plentiful. The Manzanita bushes still had berries and some flowers hanging from their branches. Other plants held a variety of seeds and nuts. **Weather:** Southern California was in the midst of one of the worst droughts in recent history during this study. Temperatures on the trips reached the high 70s or

low 80s. **Coverage:** Jan. 4, 5, 11, 18, 25; Feb. 1. Total, 6 trips, between 1130 and 1430 except Jan. 11, 25 and Feb. 1 when two counts were made; one between 0900 and 1200, the other between 1300 and 1600. Average count 180 min. **Count:** Dark-eyed Junco, 19 (156, 63); White-crowned Sparrow, 17 (140, 57); Scrub Jay, 8 (66, 27); Anna's Hummingbird, 3 (25, 10); Mountain Quail, 1 (8, 3); Plain Titmouse, 1 (8, 3); Sharp-shinned Hawk, +, Verdin, +; Ruby-crowned Kinglet, +; House Finch, +, Rufous-crowned Sparrow, +. **Average Total:** 49 birds (404/km², 163/100 acres). **Remarks:** The junco, White-crowned Sparrow, Scrub Jay and Anna's Hummingbird were seen on every count. The Plain Titmouse was seen on four counts. Rufous-crowned Sparrow, House Finch and Sharp-shinned Hawk were seen on only one count. Three Black-billed Magpies and two ravens were seen flying over the study area. The total population of this area is probably higher, but density of the brush at times made silent movement impossible. This undoubtedly moved some birds from my immediate vicinity so they were not detected. — REVIS JOHNSTON, Dept. of Biology, California State University, Long Beach, and 4555 Goldfield Ave., Long Beach, CA 90807.

59. SUBARCTIC TAIGA: LOWLAND TALL SHRUBS. — **Location:** Alaska; east boundary of Fairbanks Wildlife Management Area; 62°52'N, 148°42'W, Fairbanks D-2 Quadrangle, USGS. **Continuity:** New. **Size:** 10 ha = 24.7 acres (square, surveyed). **Description of Area:** Typical alder-willow tall shrub community characteristic of permafrost-underlain interior Alaskan muskeg. Impressively large (13 cm dbh) and old (up to 45 years) Thinleaf Alders (*Alnus incana*) dominate the stand (67%), where they grow on the edges of water-filled ice-wedge polygonal troughs. On the drier portions Bebb Willow (*Salix bebbiana*) (13%), Paper Birch (*Betula papyrifera*), Black Spruce (*Picea mariana*), and White Spruce (*P. glauca*) are also present. The shrubs average 3.7 m (12.3 ft.), with occasional spruces reaching 10 m (30.4 ft.). **Topography:** Flat, elevation 137 m (450 ft), underlain by permafrost with extensive polygonization. **Edge:** The plot adjoins similar brushy muskeg N and W, Black Spruce forest to the east, and mixed White Spruce-Paper Birch forest to the south. A dog-sled trail bisects the plot. **Water:** A summer snow-melt stream (Isabella Creek) crosses the plot diagonally. Its waters fill nearly every polygonal trough with up to 1 m depth water. **Food:** Alder, birch, willow, and spruce seeds, and willow buds. **Weather:** On study days, temperatures ranged from -37.2°C (-35°F) to 2.8°C (38°F). The weather was clear on 5 days, overcast 3, with snow on 2 days. Snow depth on the plot averaged 0.8 m (2.5 ft.). Temperatures from Alaska Dept. of Fish and Game headquarters 1.6 km W. **Coverage:** Jan. 27; Feb. 9, 16, 23, 26, 28; Mar. 3, 6. Total, 8 trips, 2 between 0930-1200, and 6 between 1230-1430, averaging two hours each. **Count:** Hoary Redpoll, 1 (10, 4); Boreal Chickadee, 1 (10, 4); Com. Raven, +, Pine Grosbeak, +; Com. Redpoll, +. **Average Total:** 2 (20/km², 8/100 acres). **Remarks:** This habitat had the second greatest winter bird density, and the third greatest number of species of the five taiga habitats studied. Not a single bird was observed on four of the eight study days, a typical pattern in interior Alaska in winter. Mixed flocks of redpolls foraged on alder and birch seeds. — MICHAEL A. SPINDLER, Alaska Coop

60. EXPOSED COVE AND ADJACENT OCEAN. —

Location: Maine; Hancock Co., Schoodic Point section of Acadia National Park, Winter Harbor, 44°20'N, 68°04'W, Chart 306 USC&GS. **Continuity:** Established 1968; 7 years. **Size:** 43.7 ha = 108 acres (irregular shape). **Description of Area:** See *AFN* 23:545 (1969). Area remains unchanged. **Weather:** Colder than average with intermittent snow cover not exceeding 6 in. Average temperatures measured at the study site: Dec. 28°; Jan. 17°; Feb. 23°F. Average temperature during the study period is 14% colder than last year and 11% colder than the 25-year average for the area. A major storm on Feb. 2 produced the strongest winds (110 mph) and highest surf in the past century. All boundaries of the study area not composed of solid ledge were altered. It is probable that most bottom characteristics were changed, especially mussel beds and other food sources. Investigations concerning this will be made in summer. **Coverage:** Dec. 7, 14, 21, 28; Jan. 1, 2, 18, 25, 28, 31; Feb. 2, 8, 15, 22, 29. Total, 15 trips, all in A.M., lasting from ½ to 1 hour. **Count:** Com. Eider, 42 (96, 39); Herring Gull, 28 (64, 26); Oldsquaw, 18 (41, 17); Great Black-backed Gull, 12 (27, 11); Black Guillemot, 4 (9, 4); Com. Loon, 3 (7, 3); Horned Grebe, 3; Red-breasted Merganser, 3; Bufflehead, 2 (5, 2); White-winged Scoter, +. **Average Total:** 115 birds (263/km², 106/100 acres). **Remarks:** Figures prior to the storm were higher than the totals indicate. Numbers of birds feeding in the study area were reduced sharply, in some cases nearly to zero after the storm. In addition, the colder-than-average temperatures caused freezing of intertidal flats, thus displacing species such as the Black Duck. The lower numbers of birds in the study area reflect bird counts made in other parts of the eastern coastal areas this winter. — WILLIAM C. TOWNSEND, Marine Biology Instructor, Sumner High School, East Sullivan, ME 04607.

61. MIXED UPLAND HABITAT AND SWAMP. —

Location: Connecticut; Fairfield Co., Newtown, intersection of Rte. 34 and Zoar Rd.; 41°24'10"N, 73°14'10"W, Derby Quadrangle, USGS. **Continuity:** Established 1968; 4 intermittent years. **Size:** 14.2 ha = 35 acres (irregular, greatest dimensions 653 x 364 yds., surveyed). **Description of Area:** See *AFN* 22:714-715 (1968). Disregard 1968 coordinates. **Weather:** Temperatures during count hours ranged from 14° to 46°F. Winds SW-NW; calm 3 days, light to moderate breezes 6 days. Overcast 6 days, clear 3 days. No snow cover on one trip; snow cover irregular 10 in. or less, 8 trips. **Coverage:** Dec. 24, 29; Jan. 5, 10, 24, 30; Feb. 8, 14, 21. Total, 9 trips, between 0950 and 1615, averaging 1 hour each. **Count:** Black-capped Chickadee, 6 (42, 17); Blue Jay, 2 (14, 6); White-breasted Nuthatch, 2; Downy Woodpecker, 1 (7, 3); Golden-crowned Kinglet, 1; Dark-eyed Junco, 1; Red-tailed Hawk, +; Hairy Woodpecker, +; Com. Crow, +; Tufted Titmouse, +; Brown Creeper, +; Hermit Thrush, +; E. Bluebird, +; Cardinal, +. **Average Total:** 13 birds (92/km², 37/100 acres). **Remarks:** The Black-capped Chickadee was seen on all trips. Red-tailed Hawk, Hairy Woodpecker, crow, and Brown Creeper were seen on only one trip. — LEON L. BARKMAN, Science Dept., Housatonic Community College, Bridgeport, CT 06608.

62. LAGOON. — Location: Virginia, Arlington Co. Roaches Run Waterfowl Sanctuary, Arlington; 38°52'N 77°02'30"W, Alexandria Quadrangle, USGS. **Continuity:** Established 1968; 8 intermittent years. **Size:** 23.5 ha = 58 acres. **Description of Area:** See *AB* 27:691 (1973). **Weather:** The sky was clear on 3 trips, partly cloudy on 1 trip, and overcast on 8 trips. Temperatures ranged from 27° to 47°F. Most of the water was frozen on Jan. 11, 21, 25 and partially frozen on Jan. 7, 30, Feb. 6. **Coverage:** Dec. 19, 24, 29; Jan. 3, 7, 11, 16, 21, 25, 30; Feb. 6, 11. Total, 12 trips, totalling 10 hours, between 1015 and 1615. **Count:** Ring-billed Gull, 54 (230, 93); Mallard, 33 (141, 57); Herring Gull, 24 (102, 41); Am. Wigeon, 10 (43, 17); Pintail, 9 (38, 16); Great Black-backed Gull, 7 (30, 12); Com. Snipe, 6 (26, 10); Killdeer, 5 (21, 9); Com. Goldeneye, 3 (13, 5); Com. Merganser, 2 (9, 3); Pied-billed Grebe, 1 (4, 2); Great Blue Heron, 1; Belted Kingfisher, 1; Horned Grebe, +; Black Duck, +; Lesser Scaup, +; Hooded Merganser, +. **Average Total:** 152 birds (648/km², 262/100 acres). **Remarks:** This was the first winter since 1970-71 that most of the water was frozen. In part, this caused the 31.5% decrease from last year's average total population. Pintails reached an all-time low of 9 compared to a previous low of 30. Common Snipe reached an all-time high of 6 compared to a previous high of 2. — PAUL W. WOODWARD, 2433 Southgate Square, Reston, Va. 22091.

63. EVERGLADES MARSH. — Location: Florida; Dade Co., Everglades National Park, approximately 30 mi. W of Miami; SW corner at 25°38'10"N, 80°44'20"W, Everglades East Quadrangle, USGS. **Continuity:** New. **Size:** 44.6 ha = 110.2 acres (generally square, measured from aerial photo). **Description of Area:** Typical southern Everglades vegetation. Predominantly Sawgrass marsh (28.0 ha) composed of Sawgrass (*Cladium jamaicensis*) with Blechnum Fern (*Blechnum serrulatum*) and Buttonbush (*Cephalanthus occidentalis*). Marsh prairie covered 13.3 ha and was composed of Spike Rush (*Eleocharis cellulosa*), Maidencane (*Panicum hemitomon*) and Beak Rush (*Rhynchospora tracyi*) with nearly 100% coverage of floating Bladderwort (*Utricularia purpurea*) and associated periphytic algae. Six ponds in area cover 0.6 ha. Two ponds are bordered by Sawgrass; four ponds are in willowhead swamps covering 0.9 ha, which include willow (*Salix caroliniana*), Pond Apple (*Annona glabra*), Leather Fern (*Acrostichum danaeae-folium*), Pickerel-



Study 63. Everglades Marsh, Florida. Photo/James A Kushlan.

weed (*Pontederia lanceolata*) and Spatterdock (*Nuphar luteum*). Four small bayheads of swamp hardwoods including Red Bay (*Persea borbonia*), Cocoplum (*Chryso-balanus icaco*), willow, Sweet Bay (*Magnolia virginiana*), Pond Apple, and Waxmyrtle (*Myrica cerifera*) cover 1.8 ha **Topography:** Flat. **Elevation:** About 1.5 m MSL. **Coverage:** Jan. 21, 26, 29, 30; Feb. 1, 5, 8, 9. Eight trips averaging 3.5 hours each, 3 counts A.M., 3 P.M., 1 night, 1 aerial. **Count:** Black-crowned Night Heron, 29 (65, 26); Com Yellowthroat, 19 (43, 17); White Ibis, 15 (34, 14); Palm Warbler, 14 (31, 13); Tree Swallow, 9 (20, 8); Turkey Vulture, 7 (16, 6); Red-winged Blackbird, 7; Am. Bittern, 6 (13, 5); Long-billed Marsh Wren, 5 (11, 5); Yellow-rumped Warbler, 5; Green Heron, 4 (9, 4); King Rail, 4; Purple Gallinule, 4; Blue-gray Gnatcatcher, 4; Pied-billed Grebe, 3 (7, 3); Anhinga, 3; Limpkin, 3; Belted Kingfisher, 3; White-eyed Vireo, 3; Boat-tailed Grackle, 3; Great Blue Heron, 2 (4, 2); Great Egret, 2; Black Vulture, 2; Com. Gallinule, 2; Whip-poor-will, 2; Little Blue Heron, 1 (2, 1); Louisiana Heron, 1; Wood Stork, 1; Red-shouldered Hawk, 1; Sora, 1; Barred Owl, 1, E. Phoebe, 1; Carolina Wren, 1; Black-and-white Warbler, 1; Mottled Duck, +; Red-tailed Hawk, +; Am. Coot, +; Com. Crow, +. **Average Total:** 169 (379/km², 153/100 acres). **Remarks:** Total species, 38. Two Purple Gallinules around each of 2 largest willow ponds. Common Gallinules, Yellow-rumped Warblers, Palm Warblers, Com. Yellowthroats, Blue-gray Gnatcatchers, White-eyed Vireos, Long-billed Marsh Wrens, Carolina Wren in willow ponds. Common Yellowthroats, Palm Warblers, Long-billed Marsh Wrens, Red-winged Blackbirds in Sawgrass marsh. Wading birds feed in marshes and around ponds, roost in willow heads; 800 Tree Swallows flew overhead on one day. — JAMES A. KUSHLAN and MARILYN S. KUSHLAN, U.S. National Park Service, Everglades National Park, Homestead, Fla. 33030.

64. DISTURBED OAK-HICKORY FOREST, PINE STAND, EDGE, AND POND. — **Location:** Ohio; Licking Co., Camp Falling Rock, Eden Township, 1.2 mi. NNE of intersection of County Rte. 210 and Ste. Rte. 79, 40°11'N, 82°18.5'W, Newark Quadrangle, USGS. **Continuity:** Established 1968; 6 intermittent years. **Size:** Approximately 14.2 ha = 35 acres (correction from 1974 study). **Description of Area:** See *AFN* 22:719-721 (1968) and other numbers related to Breeding Bird Censuses of the area (1937-1975). **Weather:** Fall and early winter remained mild. Both November and December had above-normal temperatures (+6.2° and +3.4°F). Precipitation in November was 1.20 in. below normal; December and January were about normal. February and March, however, were the warmest in 27 years. March was almost 7° above normal and precipitation was about 3.56 in. above normal (2.97 approx.). The first three months of 1976 had rainfall of about 2 in. above normal (7.23 in. approx.). March 4 and 5 were two days of record high temperatures (73° and 66°). A ground cover of 3 in. of snow Jan. 5 was the only occurrence on count dates. **Coverage:** Nov. 20; Dec. 4, 14, 18; Jan. 5, 15, 30; Feb. 13, 26, March 12, 24, 26. Total hours, 22. **Count:** Carolina Wren, 2 (14, 6); Cardinal, 2; Dark-eyed Junco, 2; Screech Owl, 1 (7, 3); Pileated Woodpecker, 1; Red-bellied Woodpecker, 1; Downy Woodpecker, 1; Com. Crow, 1;

Song Sparrow, 1; Turkey Vulture, +; Red-tailed Hawk, +; Mourning Dove, +; Great Horned Owl, +; Belted Kingfisher, +; Com. Flicker, +; Hairy Woodpecker, +, E. Phoebe, +; Am. Robin, +; Golden-crowned Kinglet, +; Com. Grackle, +. **Average Total:** 12 birds (85/km², 34/100 acres). **Remarks:** No unusual species or numbers of birds could be attributed to the mild early winter. Although their flight-lines criss-crossed the census area, no grackles were observed in the census area until Mar 12. By Mar. 24, pairing and nest construction were underway by grackles and doves. On the same date a phoebe was recorded. The only other March date in my records is 1938, when a pair had a nest nearly completed by the 25th. Abundant phenological data relative to other fauna and to flora attest to the abnormality of the late winter months. Since their significance to a winter bird population is not easily apparent, they are not included in this report. An even lower density than last year is puzzling. Absence of the Carolina Chickadee, White-breasted Nuthatch, and Tufted Titmouse might be a random event which only a longer series of counts would clarify. Analysis of some of the long-term winter counts might contribute data to indicate whether these periods of absence are cyclic or non-cyclic, governed by weather regimes, food supply, individual species characteristics, etc. No accipitrine hawks were observed nor evidence of predation. Observations in areas bordering the study tract indicated a similar low population. *A H CLAUGUS*, 228 S. Lake St., Carey, Ohio 43316.

65. URBAN CATTAIL MARSH AND COTTON-WOOD-WILLOW WOODLAND. — **Location:** Colorado; El Paso Co., along the N side of Fountain Creek W of Tejon St. in S. Colorado Springs. **Continuity:** Established 1974; 3 consecutive years. **Size:** 6.07 ha = 15 acres; narrowly rectangular. **Description of Area:** See *AB* 29:787-788 (1975). **Weather:** The period was somewhat milder and drier than normal, continuing a two-year drought pattern. Average temperature was 35°F, with a range from -3° to 67°. Snowfall totaled 13.6 in. (water equivalent, 0.72 in.). Ground generally clear of snow except in early January, early February, and early March; water bodies were rarely frozen. **Coverage:** Jan 8, 11, 12, 14, 19, 24; Feb. 4, 6, 9, 14, 19, 21, 28; Mar 6 Total, 14 trips averaging 30 min. each, both A.M and P.M. **Count:** Dark-eyed (Oregon) Junco, 9 (148, 60), Red-winged Blackbird, 6 (99, 40); Song Sparrow, 5 (82, 33); Rock Dove, 3 (49, 20); Black-billed Magpie, 2 (33, 13); Mallard, 1 (16, 7); Com. Crow, 1; Starling, 1; Dark-eyed (Slate-colored) Junco, 1; Tree Sparrow, 1, Am Wigeon, +; Sharp-shinned Hawk, +; Red-tailed Hawk, +; Am. Kestrel, +; Killdeer, +; Com. Snipe, +; Com (Yellow-shafted) Flicker, +; Com. (Red-shafted) Flicker, +; Downy Woodpecker, +; Black-capped Chickadee, +, Mountain Chickadee, +; Winter Wren, +; Am. Robin, +; House Sparrow, +; House Finch, +; Pine Siskin, +, Am. Goldfinch, +. **Average Total:** 30 birds (494/km², 200/100 acres). **Remarks:** The winter resident population here appears relatively stable. The kingfisher was missing for the first time in three years; but Red-winged Blackbirds, not recorded before, were frequent visitors, probably because of the mild weather. It now appears that this urban marsh-woodland will become a wildlife refuge under joint supervision of the county park depart-

ment and the local Aiken Audubon Society. — *CAROL GREGORY and RICHARD BEIDLEMAN (compilers), ANNE BRADLEY, and CHRIS MOULDING (Field Zoology Class), Dept. of Biology, Colorado College, Colorado Springs, CO 80903.*

66. OPEN INTERTIDAL BEACH. — **Location:** California; San Diego Co., Torrey Pines State Beach, approximately 3.2 mi. S of Del Mar (Del Mar 7.5 min. Quadrangle). From Flat Rock to S side of Mussel Rocks, and from foot of bluffs to approximate low tide line. **Continuity:** New. **Size:** 11.5 ha = 28.3 acres (rectangular, 980 x 140 yds., paced with measured step). **Description of Area:** Open, unsheltered, natural beach front with no vegetation other than washed-up algae. Scattered erratically about the fine sand beach are piles of worn rocks. **Topography:** Flat, sea level. **Edge:** On the shoreward E edge of the study plot sandstone cliffs rise abruptly to heights of 40 to 100 ft., making a decisive vertical wall between the beach and the chaparral environment on top of the cliffs. The west side of the area is uninterrupted open ocean; continuous beach habitat extends to the north and south. **Water:** At extreme high tide the plot is completely inundated, while at low tide waves lap at the fringe of the area. No creeks nor rivers come down to the coast in the study plot. **Food:** Numerous species of gastropods, mollusks, insects, and fish present in the various intertidal zones are available food sources for the species found on the plot, with both variety and abundance dependent upon the height of the tide. **Weather:** During the period between Jan. 24 and Feb. 1, 1976, night temperatures 31°-53°; and day temperatures 60°-82°F were recorded. No precipitation. Unusually dry and balmy for this time of the year. Data from Del Mar Surfcomber Press. **Coverage:** Jan. 24, 25, 30; Feb. 1. Two counts each day for a total of eight trips. Five were taken in the afternoon and three in the morning, at times ranging from 0930 to 1630, averaging 40 min. each. **Count:** Sanderling 16 (140, 57); Black Turnstone, 12 (105, 42); Marbled Godwit, 10 (87, 35); Ring-billed Gull, 6 (52, 21); Willet, 5 (44, 18); Black-bellied Plover 4 (35, 14); Semipalmated Plover 3 (26, 11); Snowy Plover, 3; Whimbrel, 2 (17, 7); Spotted Sandpiper, 2; Wandering Tattler, 2; Ruddy Turnstone, 1 (9, 4); Surf-bird, 1; W. Gull, 1; Water Pipit, 1; Song Sparrow, 1; Black Phoebe, +; Rock Wren, +; Yellow-rumped Warbler, +. **Average Total:** 70 (611/km², 247/100 acres). **Remarks:** The Sanderlings and Black Turnstones were present on all 8 counts. Sanderlings were scattered about the sand beach in varying groups from one to a dozen, but turnstones were never in more than two large separate flocks, always inhabiting the rocky areas. The Surf-birds, Whimbrels, and Ruddy Turnstones, when present, were associated with the Black Turnstones, but their occurrence was comparatively irregular. The remainder of the shorebirds were noted in all parts of the plot, and with the exception of the Ring-billed and W. Gulls and Snowy Plovers, were present during every count. The four passerine species were noted only on the uppermost reaches of the study plot, around the decaying algae at the base of the bluffs where several species of Diptera appeared abundant. — *JIM FOLSOM, Dept. of Biology, Calif. State Univ., Long Beach, and 2015 Volk Avenue, Long Beach, CA 90815.*

67. FRESHWATER MARSH-RIPARIAN WOODLAND. — **Location:** California; Riverside Co., Rubidoux, Santa Ana River Regional Park. **Continuity:** New. **Size:** 9.3 ha = 23 acres (irregular, 700 x 1300 ft., determined by aerial photo and steel tape). **Description of Area:** Freshwater marsh with associated open mature riparian woodland; most trees about 50 ft. with 1 ft dbh. Fremont Cottonwood (*Populus fremontii*), willows (*Salix sp.*) Mule Fat (*Baccharis viminea*), Giant Reed (*Arundo donax*), Common Cattail (*Typha latifolia*), Olney Bulrush (*Scirpus olneyi*), Common Tule (*S. acutus*), Saltgrass (*Distichlis spicata*), Watercress (*Nasturtium officinale*). Woodland 50%, seasonal marsh 35%, perennial marsh 15%. Plant names from Munz, P. A., 1973, *A California Flora and Supplement*, Univ of California Press. **Edge:** Pastureland and a sewage treatment plant border the study area to the west, more pastureland to the east, with ponds, marsh, and riparian woodland to the north and south. **Topography:** Elevation approximately 730 ft. **Water:** Perennial water flows from N to S; 10-60% of the flow is sewage effluent, depending on season of year (during count about 20%). **Food:** Large amounts of seed remained on dry annuals with good numbers of insects present. Deadwood containing wood-boring insects is common. **Weather:** The first half of the study was cool (mid 20s to low 50s); unusually high temperatures followed (mid 40s to high 80s). Fog was present on 4 mornings during count. Weather bureau at Riverside Airport, about 2.5 mi. from site. **Coverage:** Jan 8 11 (2), 14 (2), 16 (2), 24 (2). Total, 9 trips, between 0800 and 1300, averaging 65 min. each. **Count:** White-crowned Sparrow, 50 (537, 217); Mallard, 17 (183, 74), Lesser Goldfinch, 14 (150, 61); House Finch, 11 (118, 48), Red-winged Blackbird, 9 (97, 39); Am. Coot, 8 (86, 35), N. Shoveler, 7 (75, 30); Bewick's Wren, 5 (54, 22), Starling, 5; Savannah Sparrow, 5; Mourning Dove, 3 (32, 13), Com. Crow, 3; Song Sparrow, 3; Green-winged Teal, 2 (21, 9); Ring-necked Pheasant, 2; Long-billed Dowitcher, 2; Black Phoebe, 2; Golden-crowned Sparrow, 2, Am Bittern, 1 (11, 4); Gadwall, 1; Cinnamon Teal, 1; Ruddy Duck, 1; Red-tailed Hawk, 1; Red-shouldered Hawk, 1, Com. Gallinule, 1; Belted Kingfisher, 1; Nuttall's Woodpecker, 1; White-breasted Nuthatch, 1; House Wren, 1; W. Bluebird, 1; Blue-gray Gnatcatcher, 1, Ruby-crowned Kinglet, 1; Yellow-rumped Warbler, 1, Am. Goldfinch, 1; Brown Towhee, 1; Pied-billed Grebe, +; Great Blue Heron, +; Green Heron, +; Snowy Egret, +; Cooper's Hawk, +; Virginia Rail, +; Sora, +; Com Snipe, +; Spotted Dove, +; Anna's Hummingbird, +, Scrub Jay, +; Sage Thrasher, +; Loggerhead Shrike, +, Com. Yellowthroat, +; House Sparrow, +, W Meadowlark, +; Rufous-sided Towhee, +; Vesper Sparrow, +. **Average Total:** 167 birds (1794/km², 726/100 acres). **Remarks:** 53 species. The total for Red-winged Blackbird is due, mainly, to two large flocks seen on two counts. These birds roosted in the study area, but fed off the plot. — *DOUGLAS B. HAY, Dept. of Biology, California State Univ., Long Beach and 2000 Chota Rd., La Habra, CA 90631.*

68. SHALLOW FARM POND. — **Location:** California; Riverside Co., 3.5 mi. N, 1.0 mi. W of Hemet Post Office, San Jacinto, 37°47'N, 116°59'W, San Jacinto Quadrangle, USGS. **Continuity:** New. **Size:** 3.0 ha = 7.5 acres, from original construction plans. **Description of**

Area: The pond is intermittently bordered by tules (*Typha* sp.) on the N, E, and W, and by bare ground on the S. This area is, in turn, surrounded on all sides by cultivated fields heavily utilized by waterfowl. Dominant field crops are Alfalfa (*Medicago sativa*) and barley (*Hordeum* sp.). The pond is oblong in shape and contains two small islands, one completely devoid of vegetation and one intermittently covered with tules. The pond is shallow, max. depth 6.1 m (20 ft.) and contains little emergent vegetation. This pond receives little human use and, along with the numerous duck clubs and reservoirs in the area, provides important habitat for migrating waterfowl. **Weather:** The weather was clear and sunny on 4 trips, overcast on 2 trips. Temperature data not available. **Coverage:** Jan. 24, 25, 31; Feb. 1, 14, 16. Total, 6 trips, taken between 1000 and 1200, averaging 70 min. each. **Count:** Am. Wigeon, 208 (6853, 2773); Ruddy Duck, 48 (1581, 640); N. Shoveler, 36 (1186, 480); Am. Coot, 33 (1087, 440); Canada Goose, 28 (923, 373); Pintail, 13 (428, 173); Cinnamon Teal, 8 (264, 107); Green-winged Teal, 4 (132, 53); Bufflehead, 3 (99, 40); Killdeer, 3 (99, 40); Eared Grebe, +; Ring-necked Duck, +; Canvasback, +; Lesser Scaup, +; Spotted Sandpiper, +; Willet, +. **Average Total:** 384 birds (12651/km², 5120/100 acres). **Remarks:** Canada Goose, Cinnamon Teal, Am. Coot, Ruddy Duck, N. Shoveler, Am. Wigeon seen on all trips. Bufflehead seen 5 trips. Killdeer were seen 2 trips, with a flock of 16 flying over on 1 trip. Eared Grebe, Ring-necked Duck, Lesser Scaup, Spotted Sandpiper, Willet seen on 1 trip. Male and female Marsh Hawk seen on 2 trips; on one occasion, the female was feeding on an Am. Coot she had killed. American Kestrel, Red-tailed Hawk, Loggerhead Shrike seen 1 trip. Mr. Jerry Moran graciously allowed me to use his pond as a study area; Vernon C. Bleich helped with the observations. — KATHLEEN M. BLEICH, Dept. of Biology, California St. Univ., Long Beach, and P.O. Box 1741, Hemet, CA 92343.

69. COASTAL MARSH MUDFLAT. — **Location:** California; Los Angeles Co., Long Beach, 1 mi. S of California State University; (Sec. 2, T5S, R12W). **Continuity:** New. **Size:** 4 ha = 10 acres (paced). **Description of Area:** A salt water mudflat surrounded by a marsh. Vegetation sparse within the study area, consisting of Filamentous Algae, 70%; and cordgrass (*Spartina* sp.), 30% (Plant identification from Reish, *Marine Life of Southern California*, 1972). **Topography:** Flat, elevation sea level. **Edge:** The mudflat is part of the last existing marshland of Alamitos Bay. Vegetation within the marsh is composed of Pickleweed (*Salicornia* sp.), 50%; cordgrass, 40%; and various grasses, 10%. To the S is an oil field and Westminster Blvd.; on the W is a marina and Pacific Coast Highway; to the E is Studebaker Rd. and a steam electric plant; to the N is the Cerritos Channel and a housing tract. **Water:** The tidal cycle is not interrupted, the mudflat being completely submerged at high tide. **Food:** Mudflats support a large invertebrate population on which the birds may feed. Invertebrates collected here were the Smooth Cockle (*Chione fluctifraga*); the California Jackknife Clam (*Tagelus californianus*); the Ribbed Horse Mussel (*Modiolus demissus*); the Littleneck Clam (*Protothaca staminea*); the California Hornsnail (*Cerithidea californica*); and the Mud Crab (*Hemigrapsus oregonensis*). Schools of small fish are also pres-

ent, some being trapped in small ponds formed at low tide. California Killfish (*Fundulus parvipinnis*) was collected. **Weather:** The sky was clear on all trips. Temperatures for Dec. 26 - Jan. 6 averaged a high of 64° and a low of 45°F. Temperatures for Jan. 7-20 averaged a high of 75° and a low of 51°. The highest temperature recorded was 90° and the lowest 41°. Temperatures from the CSULB weather station, 1 mi. N. **Coverage:** Dec. 26, 29, 30, 31; Jan. 2, 5, 8, 13, 19, 20. Total, 10 trips, all mid-afternoon, averaging 90 min. each. **Count:** W. Sandpiper, 231 (5708, 2310); Black-bellied Plover, 54 (1334, 540); Willet, 19 (469, 190); Green-winged Teal, 13 (321, 130); Semipalmated Plover, 13; Dunlin, 12 (287, 120); Least Sandpiper, 11 (272, 110); dowitcher sp., 11, Am Avocet, 10 (247, 100); Marbled Godwit, 8 (198, 80); Pintail, 7 (173, 70); Killdeer, 7; Snowy Egret, 3 (74, 30); Ring-billed Gull, 3; *Larus* sp., 3; Forster's Tern, 2 (49, 20); Savannah Sparrow, 2; Caspian Tern, 1 (25, 10); Great Blue Heron, +; Great Egret, +; Blue-winged Teal, +; Cinnamon Teal, +; Ruddy Duck, +; Turkey Vulture, +; White-tailed Kite, +; Red-tailed Hawk, +; Ruddy Turnstone, +; Long-billed Curlew, +; Greater Yellowlegs, +. **Average Total:** 410 birds (10,131/km², 4100/100 acres). **Remarks:** The study was carried out at mid to low tides. Only those birds observed on the mud flat were counted (except for the hawks, kites, and vultures which flew directly over the study area). Other birds present in the general area but not on the mudflat include the Loggerhead Shrike, Spotted Dove, and W Meadowlark. The Savannah Sparrow appears to be the Belding's form, which has endangered status in California.— RICKY C. JAMES, Dept. of Biology, California State Univ., Long Beach, and 1365½ Prospect Ave., Long Beach, CA 90804.

70. ABANDONED ORCHARDS-OLD FIELDS-TREE ROWS. — **Location:** New York; Rockland Co., about 4½ mi. NE of Suffern. 41°09'15"N, 74°05'40"W. **Continuity:** Established 1973; 4 consecutive years. **Size:** 15.5 ha = 38.4 acres (roughly rectangular, measured with steel tape and compass). **Description of Area:** See AB 27:693-694 (1973). Black Locust, shrub dogwoods, Red Cedar and other secondary succession pioneers have increased their invasion of the plot. Most striking is the spread of shrub dogwoods to cover 2000 sq. ft. in Zone 2. Horse trails were established this year and are used year-round. **Food:** The apple crop was excellent, with a number of trees holding apples throughout the winter. Partially decomposed apples were present under every tree. Rose hips and sumac berries were in large supply, but poison ivy berries were scarce. **Weather:** All trips, except Jan. 11, were made in dry weather. Temperatures ranged from 5 to 50°F; during counts the range was 15 to 40°F, while wind speeds varied from 0-25 mph. Snow cover, 4 in. declining to 1 in., lasted from Dec. 23 - Jan. 10. After Jan. 11, snow cover was 7 in. It was much colder during this study period than during any of the 3 previous studies. **Coverage:** Dec. 20, 23, 29, 31; Jan. 1, 2, 4, 7, 9, 11-13. Total, 12 trips, all between 0730 and 1000, except for afternoon trips Jan. 7, 9, 12; averaging 70 min each. **Count:** Starling, 141 (907, 367); Am. Robin, 18 (116, 47); White-throated Sparrow, 10 (64, 26); Dark-eyed Junco, 5 (32, 13); Black-capped Chickadee, 4 (26, 10); Cardinal, 3 (19, 8); Tree Sparrow, 3; Com. Flicker, 2 (13, 5); Com. Crow, 2; Mockingbird, 2; House Finch, 2,

Mourning Dove, 1 (6, 3); Downy Woodpecker, 1; Blue Jay, 1, Tufted Titmouse, 1; Yellow-rumped Warbler, 1; Evening Grosbeak, 1; Purple Finch, 1; Am. Goldfinch, 1, Sharp-shinned Hawk, +; Red-tailed Hawk, +; Am. Kestrel, +; Red-winged Blackbird, +. **Average Total:** 199 birds (1281/km², 518/100 acres). **Remarks:** The excellent apple crop again almost exclusively supported large numbers of Starlings and robins. Dark-eyed Junco and Tree Sparrow populations were much lower than previous years but this appears to be a widespread — not localized — reduction. Single flocks of Red-winged Blackbirds and Evening Grosbeaks accounted for the above numbers. Tracks of a single Ruffed Grouse were seen on one count. Birds observed overhead, but not using the plot, included Herring Gulls (5-20), Mourning Doves (3-6) and Com. Crows (5-15). Species seen every trip were Starling, Am. Robin and Com. Flicker. Apples were eaten by Starling, Am. Robin, Downy Woodpecker and White-throated Sparrow; rose hips by robin, Mockingbird and Starling. Mammals observed were White-tailed Deer, E. Cottontail, Meadow Vole. Track and scat evidence revealed the presence of a Red Fox. — *BRUCE B EDINGER, 48 Ecology House, Cornell Univ., Ithaca, N Y 14853.*

71. FLOODPLAIN FOREST AND CULTIVATED BOTTOMLAND. — **Location:** New York; Allegany Co., N of and adjacent to Scio, 42°10'N, 77°59'W, Wellsville Quadrangle, USGS. **Continuity:** Established 1971; 6 consecutive years. **Size:** 51.8 ha = 128 acres. **Description of Area:** See AB 25:644-645 (1971). Cultivated area; 75 acres ear-corn, 13 acres hay. **Food:** Plentiful Box Elder, sycamore and locust fruits, duckweed, minnows and rabbits. Weed seeds were scarce by Jan. 15. Abundant corn gleanings, two top dressings and a large mouse population were covered with an average 14.8 in. snow, Jan. 10 - Feb. 12. **Weather:** Average January temperature was 17.4°F (6° below normal, coldest since 1970). Lake Erie, 60 mi NW of Scio, froze Jan. 10, a month earlier than last year. The ground was bare on all but one trip, Feb. 19, during the unseasonably warm last 2 weeks of February, which raised the month's average temperature to 30.7°F (8° above normal). Temperatures were near 32°F. on 2 trips and -6° to 18° on 8 trips. Winds were calm to light. For the 48-day study period, the Genesee River and slough were open. Data from CBS-TV, Buffalo, and Wellsville Water and Light plant. **Coverage:** Jan. 3, 10, 15, 17, 24, 31; Feb. 6, 12, 14, 19. Total, 10 trips, 9 between 0755 and 1100, and one between 1110 and 1320 EST, averaging 122 min. **Count:** Com. Crow, 164 (317, 128), Snow Bunting, 35 (68, 27); Rock Dove, 27 (52, 21); Evening Grosbeak, 22 (42, 17); Black Duck, 8 (15, 6); Mourning Dove, 8; Com. Merganser, 2 (4, 2); Downy Woodpecker, 2; Blue Jay, 2; Starling, 2; Cardinal, 2; Am. Goldfinch, 2; Great Blue Heron, 1 (2, 1); Mallard, 1; Red-breasted Merganser, 1; Herring Gull, 1; Belted Kingfisher, 1; Black-capped Chickadee, 1; White-breasted Nuthatch, 1; House Sparrow, 1; Dark-eyed (Slate-col.) Junco, 1; Tree Sparrow, 1; Song Sparrow, 1; Green-winged Teal, +; Com. Goldeneye, +; Hooded Merganser, +; Cooper's Hawk, +; Red-tailed Hawk, +; Killdeer, +; Hairy Woodpecker, +; Horned Lark, +; White-throated Sparrow, +; Swamp Sparrow, +. **Average Total:** 287 birds (554/km², 224/100 acres). **Remarks:** Comparing this year with 1971-1975 average

(in parentheses): Total species, 33 (28); birds/trip: 287 (214); Com. Crow, 164 (103), and excluding both Com. Crow and Snow Bunting, 88 (107). The Com. Crow and Evening Grosbeak appeared on every trip; Belted Kingfisher, on every trip but one, and Snow Bunting as a single flock of 350. Green-winged Teal was new. Decrease in total bird numbers, other than Com. Crow and Snow Bunting, reflects the persistent deep snow conditions and early depletion of weed seeds. Thanks are extended to Donald and Charles Maybee, owners, for permission to use the property, and to Raymond and Michael Pitzrick for help on 2 counts. — *VIVIAN MILLS PITZRICK, Amity Lake, Belmont, N.Y. 14813*

72. ABANDONED FIELD.—**Location:** Maryland, Accokeek, Prince George's Co., Piscataway Park, Potomac River, 3 mi. W of intersection of Rte. 210 and Bryan Point Rd.; 38°41'N, 77°4'W, Mt. Vernon Quadrangle, USGS. **Continuity:** Established 1973, 4 consecutive years. **Size:** 6.1 ha = 15.0 acres (irregular parallelogram, delineated by steel stakes into one-half acre plots using steel tape). **Description of Area:** See AB 26:995-996 (1972). **Weather:** The winter of 1976 was a mild one. Temperatures ranged from 12° to 40°F on census days. **Coverage:** Dec. 23, 30; Jan. 2, 5, 7, 11, 13, 15, 19, 23, 29; Feb. 3. Total, 12 trips, 11 between 0745 and 1110 and one between 1410 and 1615, averaging 2 hrs each. **Count:** Swamp Sparrow, 9 (148, 60); Song Sparrow, 6 (99, 40); White-throated Sparrow, 4 (66, 27); Carolina Wren, 3 (49, 20); Savannah Sparrow, 3; Field Sparrow, 3, Bobwhite, 2 (33, 13); Am. Goldfinch, 2; Carolina Chickadee, 1 (16, 7); E. Bluebird, 1; E. Meadowlark, 1; Cardinal, 1; Dark-eyed Junco, 1; Tree Sparrow, 1; Marsh Hawk, +; Am. Kestrel, +; Downy Woodpecker, +; House Wren, +; Mockingbird, +; Com. Yellowthroat, +. **Average Total:** 39 (642/km², 260/100 acres). **Remarks:** Total species, 20. The species total and average total remained fairly constant over the past three years. Only one new species was recorded, House Wren. Eight species remained stable; four increased (E. Bluebird, Carolina Wren, Swamp and Field Sparrows); three decreased (Savannah and Tree Sparrows and Bobwhite Common Flicker, Red-tailed Hawk, Tufted Titmouse, and Ruby-crowned Kinglet were absent. Food and cover remain as the primary attractants to birds in this field. — *KATHLEEN KLIMKIEWICZ (compiler), 13117 Larchdale Rd. #2, Laurel, Md. 20811 and LEONARD TEUBER (field work).*

73. ABANDONED TURF FIELD. — **Location:** Maryland; Montgomery Co., McKee-Beshers Wildlife Management Area, 39°04'32"N, 77°23'18"W, Sterling Quadrangle, USGS. **Continuity:** New. **Size:** 6.3 ha = 15.6 acres. **Description of Area:** See AB 29:1140 (1975). **Weather:** Clear sky on 4 trips, partly cloudy on 2 trips, and overcast on 4 trips. Temperatures ranged from 16° to 49°F. There was no snow cover. **Coverage:** Jan. 6, 10, 13, 20, 23, 27; Feb. 7, 9, 13, 15. Total, 10 trips, between 1010 and 1220, totaling 4.6 hrs. **Count:** Field Sparrow, 4 (63, 26); Cardinal, 3 (48, 19); Tree Sparrow, 3; E. Meadowlark, 2 (32, 13); Starling, 1 (16, 6); Savannah Sparrow, 1, White-throated Sparrow, 1; Song Sparrow, 1; Black-capped Chickadee, +; Tufted Titmouse, +; Carolina Wren, +; Am. Goldfinch, +; Dark-eyed Junco, +

Average Total: 14 birds (222/km², 90/100 acres). **Remarks:** Birds rarely fed in this field. Most individuals recorded were resting along the N edge after feeding in the adjacent harvested cornfield. — PAUL W. WOODWARD, 2433 Southgate Square, Reston, Va. 22091.

74. CORNFIELD, I. — **Location:** Maryland; Montgomery Co., McKee-Beshers Wildlife Management Area, 39°04'15"N, 77°23'42"W, Sterling Quadrangle, USGS. **Continuity:** Established 1975; 2 years. **Size:** 16.1 ha = 39.8 acres. **Description of Area:** See AB 29:784 (1975). This winter the area consisted of 6 E-W strips of various crops and natural vegetation. Number in parentheses is the width of the strip. From the S, these strips were (1) Winter Wheat (*Triticum* sp.) (67 yds.); (2) weedy strip of mainly Giant Ragweed (*Ambrosia trifida*), Small White Aster (*Aster vimineus*), and Jimsonweed (*Datura stramonium*) with some Horseweed (*Erigeron canadensis*) and Evening Primrose (*Oenothera biennis*) and a sparse ground cover of various herbs (62 yds.); (3) Corn (*Zea mays*) stubble (58 yds.); (4) weedy strip of Horseweed and Jimsonweed (3 yds.); (5) weedy strip of mainly Jimsonweed and Small White Aster with some Giant Ragweed and Horseweed. At the W and E ends, there was a growth of Tickseed Sunflower (*Bidens* sp.) and Swamp Smartweed (*Polygonum coccineum*); there was a fairly dense ground cover of Fescue grass (*Festuca* sp.) (120 yds.) **Weather:** The sky was overcast on 3 trips, partly cloudy on 3 trips, and clear on 2 trips. There was little wind except on Feb. 9 and 15. Temperatures ranged from 26° to 35°F. There was no snow cover. **Coverage:** Dec 28; Jan. 6, 13, 20, 27; Feb. 4, 9, 15. Total, 8 trips, all between 0920 and 1135, totaling 6.4 hrs. **Count:** White-throated Sparrow, 59 (366, 148); Mourning Dove, 13 (81, 33); Cardinal, 12 (75, 30); Song Sparrow, 8 (50, 20); Tree Sparrow, 7 (43, 18); Savannah Sparrow, 6 (37, 15); Black-capped Chickadee, 5 (31, 13); Field Sparrow, 5; Purple Finch, 4 (25, 10); Am. Goldfinch, 4; Bobwhite, 1 (6, 3); Com. Flicker, 1; Downy Woodpecker, 1; Carolina Chickadee, 1; Tufted Titmouse, 1; E. Meadowlark, 1; Red-winged Blackbird, 1; Rusty Blackbird, 1; Dark-eyed Junco, 1; Swamp Sparrow, 1; Blue Jay, +; Com. Crow, +; Brown-headed Cowbird, +. **Average Total:** 133 birds (826/km², 334/100 acres). **Remarks:** Average number of individuals per count increased 165.3% over 1975 when the area was planted only in corn. Most of the birds were found in the two weedy strips, especially the southern one — PAUL W. WOODWARD, Dept. of Zoology, Univ. of Maryland, College Park, Md. 20742.

75. CORNFIELD, II. — **Location:** Maryland, Montgomery Co., McKee-Beshers Wildlife Management Area, 39°04'43"N, 77°23'37"W, Sterling Quadrangle, USGS. **Continuity:** Established 1975; 2 years. **Size:** 23.8 ha = 58.9 acres. **Description of Area:** See AB 29:784-785 (1975) This winter the area consisted of 10 E-W strips of various crops and natural vegetation. Number in parentheses is the width of the strip. From the S these strips were (1) Winter Wheat (*Triticum* sp.) (53 yds.); (2) weedy strip of very dense Fall Panic-grass (*Panicum dichotomiflorum*) and Swamp Smartweed (*Polygonum coccineum*) with some Horseweed (*Erigeron canadensis*) (53 yds.); (3) Fescue grass (*Festuca* sp.) with some Broomsedge (*Andropogon virginicus*) (28 yds.); (4) Soybean (*Glycine*

max) stubble (64 yds.); (5) weedy strip of Fall Panic-grass and Horseweed (6 yds.); (6) Winter Wheat (43 yds.), (7) Fescue grass and Broomsedge with a dense growth of Small White Aster (*Aster vimineus*), Tickseed Sunflower (*Bidens* sp.), and Early Goldenrod (*Solidago juncea*) at the east end (28 yds.); (8) Soybean stubble; (9) weedy strip of Horseweed, Panic-grass, and Evening Primrose (*Oenothera biennis*) (8 yds.); and (10) Winter Wheat (83 yds.) **Weather:** The sky was overcast on 4 trips, partly cloudy on 2 trips, and clear on 2 trips. There was little wind except on Jan. 10 and Feb. 7. Temperatures ranged from 16° to 49°F. There was no snow cover. Frozen floodponds were present on Jan. 30 and Feb. 7. **Coverage:** Dec 25, Jan. 2, 10, 16, 23, 30; Feb. 7, 13. Total, 8 trips, all between 0910 and 1115, totaling 7.9 hrs. **Count:** Song Sparrow, 38 (159, 65); Swamp Sparrow, 17 (71, 29); Savannah Sparrow, 10 (42, 17); E. Meadowlark, 7 (29, 12); Starling, 5 (21, 9); Field Sparrow, 5; Dark-eyed Junco, 2 (8, 3); Marsh Hawk, 1 (4, 2); E. Bluebird, 1, Am. Goldfinch, 1; Tree Sparrow, 1; Black Duck, +, Am. Kestrel, +, Cardinal, +. **Average Total:** 88 birds (369/km², 149/100 acres). **Remarks:** Average number of individuals per count decreased 87% from 1975, mainly because there were no Com. Grackles. Most of the birds recorded were in the southern weedy strip. — PAUL W. WOODWARD, Dept. of Zoology, Univ. of Maryland, College Park, Md. 20742.

76. CORNFIELD. — **Location:** North Carolina, Wilkes Co., just W of North Wilkesboro. **Continuity:** Established 1963; 14 consecutive years. **Size:** 40.5 ha = 100 acres. **Description of Area:** Level land except for an abandoned river channel. Boundaries formed by Reddies and Yadkin Rivers, a 100-acre field, some farm and business buildings. **Weather:** Temperature for January averaged 33.51°F., with precipitation of 3.64 in., February's average temperature was 49.28°, and precipitation was 1.46 in. No snow cover. **Coverage:** Jan 13, 20; Feb. 4, 12, 16, 25. Six trips, between 0930 and 1700, totaling 17 hrs. **Count:** Starling, 5 (12, 5); Rock Dove, 2 (5, 2); Mourning Dove, 2; Com. Crow, 2; Song Sparrow, 1 (2, 1); Bobwhite, +; Killdeer, +; Ring-billed Gull, +; Com. Flicker, +; Carolina Wren, +, E. Meadowlark, +; Cardinal, +; White-throated Sparrow, +; Fox Sparrow, +. **Average Total:** 12 birds (30/km², 12/100 acres). **Remarks:** Some 50 acres were planted to soybeans during first week of July. This destroyed many weeds, with a second crop thinner and producing fewer seeds. Beans matured late and were not all harvested. Only birds seen feeding on the tract were one Bobwhite and a few Mourning Doves. Fewer and more slender stalks of Giant Ragweed were flattened early, affording less cover and less food. Most of the remaining 50 acres were in hay with 2 crops harvested, leaving almost no cover nor food. Seeds of Sycamore were less plentiful, so there was less food for Evening Grosbeaks and Purple Finches. Northern finches were less common throughout the countryside. Since less land was in corn, crows were not attracted in the usual numbers. — WENDELL P. SMITH, 911 E St., N. Wilkesboro, NC 28659.

77. DRY GRASS FIELD. — **Location:** California, Orange Co., Costa Mesa. A portion of Fairview Regional Park bordered to the W by the Greenville-Banning

Channel and to the S by a dirt road and telephone lines; 33°40' N, 116°57' W, Newport Beach Quadrangle, USGS. The study area is bordered to the E by two dirt roads (separated by a dry creek) and a high bluff. There is a small dirt road on the N edge of the field. **Continuity:** New. **Size:** 13.3 ha = 32.9 acres. **Description of Area:** Once part of a salt-marsh floodplain before the Santa Ana River Channel was cut through, this section of Fairview Park now remains mostly dry except during rainfall periods. The area is covered by foot-high dry grass interspersed with a few common weeds, grass (*Hordeum* sp.), 80%; Telegraph Weed (*Heterotheca grandiflora*), 10%; mint (*Marrubium* sp.), 5%; Pigweed (*Chenopodium* sp.), 4%; Indian Tobacco (*Nicotiana glauca*), less than 1%. On W edge of the field, Pigweed occurs as many large, dense bushes growing close together. Field bordered W and E for most of its length by smaller Pigweed bushes. Indian Tobacco stands out as the only few tall plants (Dr. P. C. Baker, C.S.U.L.B.). **Topography:** Flat. **Elevation:** 10 ft. **Edge:** The field extends N and S beyond the dirt road boundaries. There are bamboo thickets along the E side. **Food:** Various seeds are probably available in quantity. **Weather:** During the twelve-day study period daytime temperature averaged about 70°F. Eight days were clear, two were overcast. **Coverage:** Jan. 16, 17, 18, 20, 21, 22, 23, 24, 25, 27. Total, 10 trips, between 0800 and 1030, averaging 120 min. each. **Count:** House Finch, 180 (1352, 547); White-crowned Sparrow, 57 (428, 173); Mourning Dove, 5 (38, 15); W. Meadowlark, 5; California Quail, 3 (23, 9); White-tailed Kite, 2 (15, 6); Red-tailed Hawk, 1 (8, 3); Am. Kestrel, 1; Anna's Hummingbird, 1; Logger-

head Shrike, 1; Starling, 1; Com. Crow, +; House Wren +. **Average Total:** 257 birds (1930/km², 781/100 acres) **Remarks:** House Finch, White-crowned Sparrow Mourning Dove, and W. Meadowlark were noted on all trips; Loggerhead Shrike on 9 trips. Com. Crow and a single House Wren were noted on only one trip. The White-crowned Sparrows were very difficult to see because they tended to remain hidden in the dense strands of Pigweed; their count is considered a minimum. (Only birds positively identified are included in the count). Two White-tailed Kites were seen together on 7 trips and appeared to be paired. Two Am. Kestrels seen together on 4 trips, also seemed to be paired. The telephone lines along the S boundary of the field were used extensively as perches by White-tailed Kite, Am Kestrel, and large numbers of House Finches. The Red-tailed Hawks kept to the periphery of the plot most of the time. There seems to be a large population of rodents On 6 trips, at least one Jackrabbit was seen. — JOHN G. FRAZIER, Dept. of Biology, Calif. State University, Long Beach and 7890 Ring St., Long Beach, CA 90808.

78. SUBURBAN SCHOOL PARK. — **Location:** Florida; Broward Co., Deerfield Beach, between N.E. 6th and 9th Aves., Hillsboro Blvd., and N.E. 2nd St., 26°19' N, 80°05' W. USCG&GS Nautical Chart No. 1248. **Size:** 8.0 ha = 19.77 acres (rectangular, 1127 x 764 ft.). **Continuity:** Established 1969; 8 consecutive years. **Description of Area:** See *AFN* 23:552 (1969). In 1975, the third driest year since 1941, grass and forbs diminished, exposing more sand. Another basketball court has been



Study 77. Dry Grass Field, California. Looking west across south end of field. Photo/John Frazier.

added. **Weather:** During the 35-day study period, temperatures ranged from 40° to 79°F; precipitation was 2.8 in. Starting temperature on count mornings averaged 61°. On 7 trips the weather was sunny; on 3, cloudy. Winds varied from calm to 15 mph, being over 5 mph on 6 trips. **Coverage:** Dec. 28, 31; Jan. 1-4, 11, 24, 25, 31. Total, 10 trips, between 0805 and 0940 EST, averaging 73 min. each. **Count:** Mourning Dove, 16 (200, 81); House Sparrow, 9 (112, 46); Starling, 4 (50, 20); Mockingbird, 2 (25, 10); Cattle Egret, 1 (12, 5); Am. Kestrel, 1; Rock Dove, 1; Red-bellied Woodpecker, 1; Yellow-bellied Sapsucker, 1; Yellow-rumped Warbler, 1; Palm Warbler, 1; Boat-tailed Grackle, 1; Com. Grackle, 1; Marsh Hawk, +; Ground Dove, +; Gray Catbird, +; Blue-gray Gnatcatcher, +. **Average Total:** 40 birds (500/km², 202/100 acres). **Remarks:** Total, 17 species. Kestrel was seen on 8 visits, Com. Grackle on 7, Rock Dove and Red-bellied Woodpecker on 6, Yellow-rumped Warbler on 1. — LAURA H. MOSELEY, 1083 Hillsboro Blvd., Pompano Beach, Fla. 33062.

79. CITY PARK. — **Location:** Ohio, Lorain Co., Grove Ave. and 31st St., Lorain. **Continuity:** Established 1969, 7 consecutive years. **Size:** 29.3 ha = 72.3 acres (2100 by 1500 ft.). **Description of Area:** See AFN 23:553-555 (1969). **Weather:** Temperatures during study period varied from 10° to 50°F; averaging 26°F. Snow cover on 7 trips from 1 to 6 in.; averaging 3.1 in. **Coverage:** Dec. 6, 13, 20, 26; Jan. 3, 10, 17, 24, 31; Feb. 7. Total, 10 trips, between 0900 and 1000, averaging 1 hr. **Count:** Starling, 28 (96, 39); Blue Jay, 5 (17, 7); Rock Dove, +; Mourning Dove, +; Red-headed Woodpecker, +; Downy Woodpecker, +; White-breasted Nuthatch, +; Song Sparrow, +. **Average Total:** 33 birds (113/km², 46/100 acres). **Remarks:** Starling and Blue Jay were seen on every trip. Mourning Dove, Red-headed Woodpecker, Downy Woodpecker, White-breasted Nuthatch, and Song Sparrow each on 1 trip. Seen flying over the site: Rock Dove and Ring-billed Gull (Lake Erie is 3 mi. north). — ZIGMOND and HELENA NAGY, (Black River Audubon Society), 2332 E. 31 St., Lorain, Ohio 44055.

80. GRASSLAND MUNICIPAL AIRPORT. — **Location:** Louisiana; municipal airport of Natchitoches Parish, 31°44'N, 93°66'W, Provencal Quadrangle, USGS. **Continuity:** Established 1974; 3 consecutive years. **Size:** 12.14 ha = 30 acres (rectangular, 1320 x 990 ft, measured with steel tape). **Description of Area:** See AB 28:711-712 (1974). **Weather:** During the 46-day study period day temperatures ranged from 32° to 80°F, with 5 count days 60° or higher. Night temperatures ranged from 15° to 60°. Four count days were clear and 2 were cloudy. The period was drier than normal. All count days had winds up to 3 on the Beaufort scale. **Coverage:** Jan. 6, 9, 23; Feb. 1, 19, 20. Total, 6 trips all between 1000 and 1600, averaging 50 min.; total man-hours 5. **Count:** Savannah Sparrow, 12 (99, 40); Am. Robin, 4 (33, 13); E. Meadowlark, 3 (25, 10); Sprague's Pipit, 3; Killdeer, +. **Average Total:** 22 birds (181/km², 73/100 acres). **Remarks:** The average total decreased from 50 in 1975 and 28 in 1974 to 22 in 1976. The Am. Robin decreased from 28 birds/count in 1975 to 4 in 1976. A decrease was also noted in the E. Meadowlark. The Savannah Sparrow, E. Meadowlark and Sprague's Pipit were seen on all

counts and the Am. Robin was seen on 2 counts — CHARLES E. VIERS, Dept. of Biological Sciences, Northwestern State Univ., Natchitoches, LA 71457.

81. DOWNTOWN BUSINESS DISTRICT-RESIDENTIAL AREA. — **Location:** Colorado; El Paso Co., Downtown Colorado Springs. **Continuity:** Established 1969; 5 intermittent years. **Size:** 15.38 ha = 38 acres. **Description of Area:** See AFN 23:558-560 (1969) and 24:569-570 (1970). Since the last winter population-study in 1972-73, two of the site's business blocks have been razed in part and replaced by asphalt parking lots. **Weather:** The period was somewhat milder and drier than normal, continuing a two-year drought pattern. Average temperature was 33°F, ranging -5° to 67°. Snowfall totaled 17 in. (water equivalent 0.94 in.) Ground was generally clear of snow except in early January, early February, and early March. **Coverage:** Dec. 30; Jan. 6, 12, 14, 19, 25; Feb. 14, 26; Mar. 5. Total, 9 trips, averaging 1 hr. each. **Count:** House Sparrow, 77 (501, 203); Rock Dove, 16 (104, 42); House Finch, 7 (46, 18); Starling, (20, 8); Com. Crow, 1 (7, 3); Com. Flicker, +; Downy Woodpecker, +; Mountain Chickadee, +; Dark-eyed Junco, +. **Average Total:** 104 birds (676/km², 274/100 acres). **Remarks:** Since 1969 this eight-block urban site has been converted on the N from mainly residential to mainly business, and now on the S end from business to urban-renewal paved parking lots. The greatest species diversity occurred in the remaining residential portion, especially where there were backyard trees, shrubs, and bird feeders. Formerly productive residential sites, such as a landscaped house with large blue spruce where 8 species were recorded in the past, now attracted, after removal of house and most landscaping, no birds. On the other hand, in a business block which used to have few or no birds, there was now a high population of House Sparrows, primarily because someone was regularly putting bird seed at the base of a sidewalk tree. The Sparrows were feeding here and roosting in trees and juniper hedges in a parking lot on the other side of the block. In part, the increased numbers of House Sparrows over previous years (77 in 1976 compared with 27 in 1973 and 35 in 1971) is a result of immigration from blocks in and surrounding the study area which have been converted to less suitable habitat. European "exotics" occurred in both business and residential areas, but native species were recorded only in the residential section. Of the nine species this winter, only two (House Sparrow and Rock Dove) were consistently in the downtown core. — RICHARD BEIDLEMAN (compiler), KATHLEEN LEECH, CHRISTA RHEINDT, and MARY RUGLOSKI (Field Zoology Class), Dept. of Biology, Colorado College, Colorado Springs, CO 80903

82. URBAN PARK. — **Location:** California; Orange Co., Mile Square Regional Park, Fountain Valley. **Continuity:** New. **Size:** 14.4 ha = 35.6 acres (300 x 175 + 300 x 400 yards, paced). **Description of Area:** Park grasses include Rye Grass (*Lolium perenne*), Blue Grass (*Poa annua*), Bermuda Grass (*Cynodon dactylon*), Crabgrass (*Digitaria sanguinalis*), and various types of common weeds. Trees are mainly Lemon Eucalyptus (*Eucalyptus citriodora*), Sweetgum (*Liquidambar styraciflua*), and *Eucalyptus polyanthemus*. A small patch of cattails (*Typha latifolia*) grows in SW corner of plot. All trees are

young, averaging 20 ft. **Topography:** Flat. **Elevation:** 10 ft. **Edge:** Study area nearly in center of 80-acre park, bordered by residential areas. Plot bordered on S by drainage canal, on W by golf course, on E by park road and on N by bike trail. **Water:** Canal on S border maintains at least 4 in. water continuously and is 3 ft. wide. Three-acre lake 100 yds. from plot. **Food:** Chiefly grass seeds and insects. **Weather:** Temperatures ranged from 40° to 88°F during study period. No precipitation. Dense morning fog on 5 days. **Coverage:** Jan. 4, 6, 9, 11, 13, 16, 18, 23, 27, 28. On Jan. 6 and 13 from 0730 to 0900, remaining trips between 1600 and 1730. Total, 10 trips, averaging 90 min. each. **Count:** Vesper Sparrow, 30 (208, 84), W. Meadowlark, 6 (42, 17); Whimbrel, 4 (28, 11); Com Crow, 4; House Sparrow, 4; House Finch, 3 (21, 8); Willet, 2 (14, 6); Loggerhead Shrike, 2; Turkey Vulture, +, Tree Swallow, +. **Average Total:** 55 (382/km², 154/100 acres). **Remarks:** Vesper Sparrows were in a single flock that foraged throughout park and were seen on every trip. Crows were numerous in the park area but frequently left and entered the study area, staying only briefly. Turkey Vultures were seen flying over plot on 2 occasions. Tree Swallows were seen once near the canal. Mallards, Pintails, coots, and gulls from lake and nearby ocean foraged throughout park but were not observed in study area during study periods. — MARK NOEL, Dept. of Biology, Calif. State Univ., Long Beach and 11086 Lavender Ave., Fountain Valley, CA 92708.

83. URBAN NATURE CENTER. — **Location:** California; Orange Co., Shipley Nature Center, Huntington Beach. **Continuity:** New. **Size:** 7.3 ha = 18 acres (from city parks department figures); broadly rectangular. **Description of Area:** The main portion of the tract is a thicket of Red Willow (*Salix laevigata*) to 40 or 50 ft and Arroyo Willow (*S. lasiolepis*) to 10 to 20 ft., with associated small willows and brush, including Tamarisk (*Tamarix* sp.) and Tree Tobacco (*Nicotiana glauca*). A small, permanent pond is partly rimmed by reeds forming a thick patch on one side. Water level is maintained by occasional pumping. The S edge of the tract and an area extending into the willow thicket support a thick herbaceous growth, primarily of nettle and hemlock, most of which had been mowed. The N end is mostly grass of mixed, introduced species, also mowed. Recent plantings of eucalypts and conifers in clusters in the grassy areas are still too small to be significant to bird life. The pond has been deepened in the past by bulldozing. **Topography:** Flat, with a rise of about 10 ft. at the S end. **Elevation:** About 50 ft. **Edge:** The tract is bordered on the N and E by recently built housing tracts, on the W by a large, newly landscaped city park including a pond, and on the S by a city street. South of the street is another large park containing a shallow pond with meandering edges containing natural marsh vegetation. **Food:** The area contains much insect life in the shrubby vegetation. Seeds remain from the herbs and grasses. The pond probably holds less quantity and variety of food than might be expected because the water was allowed to drop quite low before being replenished by pumping during the survey. **Weather:** This area has long, dry summers and normally cool winters with intermittent, heavy rains. Frost is very rare; daytime winter temperatures usually range from about 45° to 75°F. This year a long drought was not broken until February, and winter temperatures

were unusually warm. **Coverage:** Jan. 23, 30; Feb. 5, 7, and 11. Total, 5 trips, all between 0900 and 1200, averaging 2 hrs. each. **Count:** *Agelaius* blackbirds, 38 (522, 211); House Finch, 22 (302, 122); White-crowned Sparrow, 19 (261, 106); Cinnamon Teal, 14 (192, 78); Mourning Dove, 10 (137, 56); Song Sparrow, 6 (82, 33); Anna's Hummingbird, 5 (69, 28); Willet, 3 (41, 17); Ruby-crowned Kinglet, 3; Am. Coot, 2 (27, 11); Ring-necked Pheasant, 1 (14, 6); Com. Flicker, +; Black Phoebe, 1, Mockingbird, 1; Blue-gray Gnatcatcher, 1; Loggerhead Shrike, 1; W. Meadowlark, 1; Lesser Goldfinch, 1, White-tailed Kite, +; Sharp-shinned Hawk, +; Am Kestrel, +; Black-necked Stilt, +; Long-billed Curlew, +, Marbled Godwit, +; Spotted Dove, +; Hermit Thrush, +, Warbling Vireo, +; Yellow-rumped Warbler, +. **Average Total:** 130 birds (1785/km², 722/100 acres). **Remarks:** Black-necked Stilts were seen only once, before the water level of the pond was raised, roosting on a tiny mud island which was later inundated. The Willets, Marbled Godwit, and Long-billed Curlew comprised a flock seen only once feeding on a newly disturbed grassy area. Both Red-winged and Tricolored Blackbirds were present but most could not be seen well enough for species identification. The ratio of Red-winged to Tricolored among the birds which could be identified varied widely on different visits. — KRISTEN BENDER, Dept. of Biology, California State Univ., Long Beach, and 21142 Shepherd Lane, Huntington Beach, CA 92646.

84. URBAN GRASS FIELD. — **Location:** California, Los Angeles Co., Torrance, N side of Sepulveda Blvd., bounded by Maple Ave. to the W, Monterey and Toledo Sts. to the N, and Crenshaw Blvd. to the E. 33°49'30"N, 118°20'W, Torrance Quadrangle, USGS. **Continuity:** New. **Size:** 46.5 ha = 115 acres (irregular trapezoid, dimensions measured from scaled USGS map). **Description of Area:** Typical urban grassy field; grasses, having been cut, measure about 3 in. Wild Oat (*Avena fatua*), 80%; Bermuda Grass (*Cynodon dactylon*), 15%; Common Foxtail (*Hordeum leporinum*), 5%. The E and W boundaries are lined with eucalyptus trees (*Eucalyptus rostrata*), with a few more elsewhere on the study plot, having an average height of about 60 ft. A dirt road loops through the field servicing 17 oil pumps. Railroad tracks run roughly E to W along the N portion of the field. Numerous telephone poles dot the area. Recently, 12 acres of the E part of the field have been planted with strawberries (*Fragaria* sp.) and 5.5 more acres are being prepared for planting. **Topography:** Flat, with the N edge raised slightly. **Elevation:** 90 ft. **Edge:** The study plot is bordered on N, S, and E by residential, industrial, and commercial property. To the west are 54 acres of open grass and marsh land known as the Madrona Marsh. **Water:** The main source of water is the Madrona Marsh, however, recent irrigation of strawberries makes some water available on the study site. **Food:** Grass seeds and insects constitute the major food supply. Numerous rodents, jackrabbits, and other small mammals are present. **Weather:** January was extremely dry with no recorded precipitation. Average temperature during the census was 59.5°F. (maximum range 42°-79°). **Coverage:** Jan. 8, 13, 20, 22, 25, 26, 31; Feb. 1 (2). Total: 9 trips, 6 between 1530 and 1730, 3 between 0730 and 1030, averaging 2 hrs. each. **Count:** W. Meadowlark, 75 (161, 65); Mourning Dove, 32 (69, 28); House Finch, 25 (54,

22), Rock Dove, 16 (34, 14); Com. Crow, 12 (34, 14); Kestrel, 11 (24, 10); Loggerhead Shrike, 9 (19, 8); Red-tailed Hawk, 3 (6, 3); Anna's Hummingbird, 2 (4, 2); Com Flicker, 1 (2, 1); Brewer's Blackbird, 1; Savannah Sparrow, 1; Killdeer, +; Long-billed Curlew, +; Spotted Dove, +; Starling, +; Sage Sparrow, +. **Average Total:** 188 birds (404/km², 163/100 acres). **Remarks:** All of the principal species were seen on each census with the following exceptions: Com. Flicker noted on seven trips;

Brewer's Blackbird and Savannah Sparrow on one trip. The Sage Sparrow was one found dead. This was the first Sage Sparrow recorded in the immediate vicinity. An uncharacteristic high of 102 House Finches and 65 crows on one census raised their averages appreciably. Very few birds utilized the newly cultivated areas. — *DAVID C ROELEN, Dept. of Biology, Calif. State Univ., Long Beach and 24211 Adolph Ave., Torrance, CA 90505*

Notes on a Winter Bird-Population Study: Observations versus Netting

*Erma J. Fisk**

To avoid duplication in counting Gray Catbirds during my Winter Bird-Population Study, my method of tabulation has been to survey my study area both at dawn and at dusk, listening to the calls that indicate locations of roosts. Since the entire study area cannot be covered in the rapidly changing light I have pin-pointed some roosts on one count day, others in the tract on other days, rechecking as possible. With Cardinals, which also appear to move about constantly during the daytime, the same method has been used in combination with recording the maximum numbers seen at one time at my feeders.

Early in the study period, 1975, ten nets were set up, with the somewhat surprising result that 20 catbirds were netted in three afternoon hours as against only five that had been aurally and visually counted. On four subsequent days both netting, aural and visual observation were used to determine numbers of the species present. Table 1 indicates the disparity. It lists only those species with stable winter populations, often retrapped, except for the Least Flycatcher and the warblers.

The results shown seem to indicate that there are usually more birds in the bush than the observer will normally record by eye or ear alone.

[Inherent in any method of data gathering there is a degree of possible error. Therefore, in employing the results of surveys, censuses, and counts, careful consideration should be given to calculating or estimating the percentage of possible error and adjusting the conclusions accordingly — Ed.]

**Table 1. Numbers of birds
traditionally observed and netted in same area**

<i>Species</i>	<i>Observed</i>	<i>Netted same day</i>	<i>Netted Jan. 4-Feb 4</i>
Gray Catbird	5	20	90
	6	21	(81 new, 9
	8	18	returns
	8	5	from previous
	7	17	years)
Least Flycatcher	0	1	renetted
White-eyed Vireo	0	3	7
Bl. & w. Warbler	0	1	2
Yel.-r. Warbler	0	5	0
Ovenbird	0	1	2
Cardinal	1-5 daily		15
Painted Bunting	4-9 daily		21
Indigo Bunting	4-7 daily		10

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