

Thirty-sixth Winter Bird — Population Study

Edited by Calvin L. Cink and Roger L. Boyd

THE 109 STUDIES SUBMITTED this year represent the largest number of censuses received since 1978. A total of 22 states and one province is represented, which is about average. Indiana had the highest total with 21 studies, all conducted by J.S. Castrale and R.T. Speer as part of a study to determine the impact of different agricultural techniques. California was second with 16 studies, followed by Pennsylvania with 13.

This past winter can be summarized as *mild*. All study areas that normally have cold weather reported mild conditions, most with less moisture also.

Observers reported a total of 1334¹ hours in the field averaging 12.2 hours

per plot. The highest totals were 58 hours in mixed mesophytic woods, fields and brush in Tennessee and 57 hours in small town, residential and commercial areas in Kansas.

The total area covered this year amounted to 1686.1 hectares (4164.7 acres), for an average census area of 15.5 hectares. The number of birds/km² ranged from 0 (10 different studies) to 4889 (a 1.8 ha suburban ravine in Nebraska) and averaged 482. Total species ranged from 0 (Aspen in Pennsylvania and 2 prairies studies in Nebraska) to 87 (barrier beach and saltwater estuary in Florida) and averaged 17 species for all counts.

A total of 57% of the studies are new this year. Less than 10% have been conducted 10 years or longer. We welcome all new studies and wish to encourage previous contributors to continue contributing. Before submitting your census, compare it with the format of these printed studies. Please submit them to us at the address below before June 15, 1984. Thank you.

1. WB-PS #109 was not included in the editors' statistics.

—Biology Dept., Baker Univ., Baldwin City, KS 66006

List of Studies

Habitat	State or Province	Hectares	Birds/ sq.km.	Hrs. Obs.	Species	Yrs. of Study
A. Forest Habitats						
1. Maple-Pine-Oak Second-growth Forest	Massachusetts	11.8	34	18.9	11	7
2. Oak-Maple Bottomland	Massachusetts	6.7	135	7.2	10	2
3. Upland Oak Forest	New York	11.8	59	12.8	5	8
4. Upland Mixed Pine-Spruce-Hardwood Plantation	New York	16.6	102	11.0	9	10
5. Upland Scotch Pine Plantation	New York	9.3	183	8.0	6	1
6. Oak-Maple Ridge-Top Forest	Pennsylvania	19.4	5	8.4	7	1
7. Oak-Maple Slope Forest	Pennsylvania	16.9	35	11.0	8	1
8. Aspen (Cut 1980-81)	Pennsylvania	4.18	0	5.0	0	2
9. Aspen (Cut 1976-77)	Pennsylvania	4.02	25	5.0	6	2
10. Mixed Oak (Cut 1976-77)	Pennsylvania	3.33	0	5.0	0	2
11. Mature Aspen (Treated Sector)	Pennsylvania	2.61	115	5.0	6	2
12. Mature Mixed Oak (Treated Sector)	Pennsylvania	3.2	62	5.0	6	2
13. Mature Aspen (Untreated Sector)	Pennsylvania	3.0	133	5.0	4	2
14. Sugar Maple-Mixed Hardwood Forest	Pennsylvania	9.74	370	24.0	14	1
15. Deciduous Woodland with Second-growth, Recently Logged	New Jersey	6.88	174	6.0	14	1
16. Mixed Hardwood Forest (1982)	Maryland	11.3	397	14.0	22	24
Mixed Hardwood Forest (1983)	Maryland	11.3	132	12.5	28	25
17. Mature Deciduous Floodplain Forest	Maryland	17.8	510	13.0	27	32
18. Upland Oak-Hickory Hardwood Forest (1982)	Virginia	11.0	154	33.6	19	13
Upland Oak-Hickory Hardwood Forest (1983)	Virginia	11.0	168	18.4	19	14
19. Longleaf Pine-Turkey Oak-Wiregrass 1	North Carolina	4.63	22	2.9	7	1

List of Studies

<i>Habitat</i>	<i>State or Province</i>	<i>Hectares</i>	<i>Birds/ sq. km.</i>	<i>Hrs. Obs.</i>	<i>Species</i>	<i>Yrs of Study</i>
20. Longleaf Pine-Turkey Oak-Wiregrass II	North Carolina	4.63	22	2.9	7	1
21. Longleaf Pine-Turkey Oak-Wiregrass III	North Carolina	5.15	117	5.3	15	1
22. Loblolly Pine Forest Plantation I	North Carolina	2.67	75	2.7	12	1
23. Loblolly Pine Forest Plantation II	North Carolina	4.30	558	3.8	14	1
24. Mixed Pine and Deciduous Forest	Indiana	14.52	234	28.0	26	3
25. Oak-Maple Forest and Forest Edge	Illinois	24.0	126	20.0	25	30
26. Bottomland Oak-Gum-Cypress Forest, Recently Disturbed	Mississippi	11.4	642	16.0	36	12
27. Oak-Hickory Forest I	Kansas	8.1	334	23.8	14	5
28. Oak-Hickory Forest II	Kansas	8.1	469	25.2	17	5
29. Oak-Hickory Forest III	Kansas	8.1	309	12.4	18	5
30. Oak-Hickory Forest IV	Kansas	8.1	346	8.0	16	5
31. Oak-Hickory Forest V	Kansas	8.1	297	8.6	12	5
32. Oak-Hickory Forest VI	Kansas	8.1	309	10.6	13	5
33. Oak-Hickory Forest VII	Kansas	8.1	408	7.0	23	2
34. Douglas Fir-Ponderosa Pine Forest	Colorado	7.5	412	10.6	15	1
35. Deciduous-Coniferous North Slope	Utah	20.23	74	34.3	20	1
36. Slickrock-Ponderosa Pine-Pygmy Forest-Chaparral	Utah	16.2	62	23.0	11	3
37. Ponderosa Pine-Douglas Fir Foothills Forest	Washington	11.15	99	20.25	9	8
38. Black Spruce-Tamarack Bog	New York	4.57	197	15.8	5	8
B. Forest Mixed with Other Habitats						
39. Moist Deciduous Forest-Lake Ontario Wetland	New York	16.2	278	15.0	22	2
40. Floodplain Forest and Cultivated Bottomland	New York	51.8	218	13.0	27	12
41. Mixed Lowland Forest and Meadow with Stream	Pennsylvania	8.1	840	14.0	23	1
42. Mixed Upland Habitat	District of Columbia	14.2	579	20.1	34	24
43. Mixed Mesophytic Woods, Fields, and Brush (1981-82)	Tennessee	27.0	619	57.5	38	6
Mixed Mesophytic Woods, Fields, and Brush (1982-83)	Tennessee	27.0	419	45.0	34	7
44. Mixed Habitat-Disturbed Bottomland	Oklahoma	40.5	250	16.0	31	11
45. Campground in Old Orchards	Utah	10.1	751	24.3	20	3
C. Mixed Riparian Habitats						
46. Riverine and Creekside Riparian Woodlands	California	9.75	1774	25.7	45	1
47. Riverine Willow and Mixed Woodland	California	11.61	1403	28.9	39	1
48. Riverine Willow Woodland with Scattered Cottonwoods	California	12.7	1361	17.3	46	1
49. Narrow Creekside Band of Mixed Riparian Woodland	California	12.95	2046	30.0	57	1
50. Open Creekside Mixed Woodland	California	12.5	1719	27.2	37	1
51. Narrow Riverine Band of Willow and Mixed Woodlands	California	13.16	1399	29.2	45	1
52. Tall Willow Woodland with Patchy Low Ground Cover	California	10.76	1997	23.7	54	1
53. Willow Woodland and with Dense Riparian Understory	California	12.0	1786	16.1	41	1
54. Riverine Woodland with Intermixed Shrublands	California	12.39	1275	26.2	44	1
55. Willow Woodland with Open Poned Water	California	10.6	2480	23.6	47	1
56. Coastal Sage Scrub with Scattered Live Oaks	California	16.27	1063	18.5	40	1
57. Chaparral with a Narrow Band of Canyon-Bottom Woodland	California	24.08	934	25.2	47	1
D. Brush, Grassland and Desert						
58. Old Field with Brush Patches	Indiana	17.05	147	29.0	22	4
59. Tall Grass Prairie I	Nebraska	8.5	0	5.8	0	1
60. Tall Grass Prairie II	Nebraska	4.9	102	6.75	3	1
61. Tall Grass Prairie III	Nebraska	24.0	0	3.75	0	1
62. Scrub Oak-Mountain Mahogany Woodland	Colorado	8.0	324	12.0	13	1
63. Bajada Desert Scrub	Arizona	8.1	618	7.7	22	1
64. Coastal Scrub	California	8.1	1594	18.3	30	3
65. Disturbed Coastal Scrub B	California	8.1	1174	18.5	27	2
66. Burned Disturbed Coastal Scrub	California	8.1	1408	17.7	31	1
E. Habitats including Open Water						
67. Mixed Upland Habitat and Swamp	Connecticut	14.2	56	7.0	14	10
68. River Bank and River	Pennsylvania	4.6	955	9.9	21	8
69. Barrier Beach and Saltwater Estuary	Florida	212.5	1291	42.0	87	6
70. Sewage Lagoons-Riparian Woodland	Utah	24.3	276	11.4	24	3
71. Coastal Salt Marsh	California	6.5	664	16.0	19	2
F. Cultivated Croplands						
72. Rye, Corn Stubble and Short Grass	Pennsylvania	40.5	27	2.2	5	1

List of Studies

Habitat	State or Province	Hectares	Birds/ sq.km.	Hrs. Obs.	Species	Yrs. of Study
73. Corn Residue with Wheat Cover Crop	Indiana	28.1	100	4.6	11	1
74. Corn Residue with Ryegrass Cover Crop	Indiana	5.0	80	2.6	3	1
75. Corn Residue with Crown Vetch Cover Crop I	Indiana	10.4	212	6.0	6	1
76. Corn Residue with Crown Vetch Cover Crop II	Indiana	3.4	265	3.6	6	1
77. Corn Residue I	Indiana	20.7	44	4.8	5	1
78. Corn Residue II	Indiana	26.6	8	5.0	4	1
79. Corn Residue III	Indiana	19.7	76	4.1	12	1
80. Disked Cornfield I	Indiana	19.8	5	4.3	3	1
81. Disked Cornfield II	Indiana	22.8	22	2.5	6	1
82. Disked Cornfield III	Indiana	21.2	9	5.6	2	1
83. Disked Cornfield IV	Indiana	6.2	0	3.6	4	1
84. Disked Cornfield with Wheat Cover Crop	Indiana	28.4	39	4.1	9	1
85. Chisel-Plowed Cornfield	Indiana	8.7	11	3.3	1	1
86. Plowed Cornfield	Indiana	18.9	0	2.0	1	1
87. Chisel-Plowed Soybean Field	Indiana	43.3	9	2.3	1	1
88. Disked Soybean Field	Indiana	10.0	0	4.8	2	1
89. Soybean Residue I	Indiana	24.4	398	3.3	13	1
90. Soybean Residue II	Indiana	10.8	46	4.1	3	1
91. Soybean Residue III	Indiana	36.4	231	3.1	8	1
92. Soybean Residue with Hairy Vetch Cover Crop	Indiana	6.9	0	1.5	1	1
93. Soybean Residue with Grass Cover Crop	Indiana	3.5	0	1.3	1	1
94. Farmstead	Iowa	7.7	1418	5.5	19	1
G. Urban Habitats						
95. Urban Conservation Area-Floodplain and Upland Habitat	Ontario	6.5	201	10.5	13	1
96. Urban Park with Pond	Ontario	14.2	120	13.3	14	2
97. Mesophytic Urban Woodlot I	Ontario	0.81	0	2.0	1	1
98. Mesophytic Urban Woodlot II	Ontario	0.73	412	2.0	4	1
99. Mesophytic Urban Woodlot III	Ontario	1.21	247	2.0	4	1
100. Mesophytic Urban Woodlot IV	Ontario	0.73	1373	2.0	10	1
101. Mesophytic Urban Woodlot V	Ontario	0.73	137	2.0	3	1
102. Mesophytic Urban Woodlot VI	Ontario	1.21	82	2.0	4	1
103. Suburban Cemetery	Alabama	15.0	1636	42.0	40	6
104. Suburban Ravine	Nebraska	1.78	4942	9.0	28	1
105. Small Town, Residential and Commercial Areas	Kansas	66.9	725	55.8	26	2
106. Urban Mobile Home Park	Arizona	11.1	911	6.0	18	1
107. Suburban Bajada Desert Scrub	Arizona	10.12	731	5.7	24	1
H. Unclassified Late Reports						
108. Ozark Oak-Hickory Forest Second-growth	Missouri	7.85	229	19.4	19	4
109. Longleaf Pine Forest	Florida	20.0	585	24.0	19	2

1. MAPLE-PINE-OAK SECOND-GROWTH FOREST. — **Location:** Massachusetts; Norfolk Co., Town of Foxboro conservation land, off Willow and E Sts.; 42°04'N, 71°11'30"W, Mansfield Quadrangle, USGS. **Continuity:** Established 1977; 7 consecutive years. **Size:** 11.8 ha = 29.2 acres **Description of Plot:** See AB 31:50-51 (1977). **Weather:** During census trips average temp ranged from 9° to 47°F with an average of 28° Ground bare on 5 trips; snow cover on other trips ranged from 3 to 15 in. Sky overcast on 5 trips, clear or partly cloudy on 11. Weather data for Boston, about 20 mi N, supplied by U.S. Nat'l Weather Service: for Dec, Jan., and Feb., temp. departures from normal were respectively +6.6°, +1.6°, +2 1°F; rainfall equivalent precipitation departures were respectively -2.97, +1.04, +1 30 in., with a total of 11.2 in. during the census period. **Coverage:** Dec. 12, 14, 22,

29-30; Jan. 1, 22-23, 30; Feb. 5 (2 trips), 8, 13, 21 (2 trips), 27. Total, 16 trips, 10 morning and 6 afternoon, 0815-1545, averaging 71 min. **Count:** Black-capped Chickadee, 2 (17, 7); Blue Jay, 1 (8, 3); Tufted Titmouse, 1; Red-tailed Hawk, +; Ruffed Grouse, +; Downy Woodpecker, +; Am. Crow, +; White-breasted Nuthatch, +; Brown Creeper, +; Golden-crowned Kinglet, +; N. Cardinal, +. **Average Total:** 4 birds (34/km², 14/100 acres). **Remarks:** Total species, 11. Jays were seen on 10 trips, chickadees on 8, titmice, woodpeckers and nuthatches on 3, creepers, crows and grouse on 2, hawk and cardinal on 1. Crows were seen flying or heard calling on 8 trips. On Feb. 21, springtails (*Hypogastrura nivicola*) were observed on most of the census area in concentrations averaging about 50/square meter. No birds were observed utilizing this potential food resource. The largest mixed foraging flock comprised 3

titmice, 3 chickadees, 2 nuthatches, 2 creepers and 1 woodpecker. The number of species recorded per hour of observation was 0.6, the number of individuals sighted per hour was 4.7.—WILLIAM E. DAVIS, JR., *College of Basic Studies, Boston Univ., Boston, MA 02215.*

2. OAK-MAPLE BOTTOMLAND. — **Location:** Massachusetts; Middlesex Co., on the Metropolitan State Hospital land straddling the boundary between towns of Waltham and Belmont; 42°24'08"N, 71°12'19"W Lexington Quadrangle, USGS. **Continuity:** Established 1982, 2 years. **Size:** 6.7 ha = 16.5 acres. **Description of Plot:** See AB 37:31-32 (1983). **Weather:** Records from the Mass. State Climatologist, for Logan Airport (Boston), located approximately 10 mi from the plot and quite similar in climate, indicated an extraordinarily warm (3.4°F above aver-

age) winter with average winds and precipitation in the form of both rain and snow. Sky conditions were mostly clear on 6 of the 8 trips, mostly overcast with active snowfall on the remaining 2. There was snow cover on the ground for the last 4 trips, averaging 13 in., with a max. depth of 24 in. Winds were minimal. **Coverage:** Dec. 12; Jan. 8-9, 14, 16, 30; Feb. 13, 20. Total: 8 trips with single observer, 0655-1120 and averaging 54 min. **Count:** Black-capped Chickadee, 5 (75, 30); Downy Woodpecker, 1 (15, 6); Tufted Titmouse, 1; Brown Creeper, 1; Dark-eyed Junco, 1; Ring-necked Pheasant, +; Hairy Woodpecker, +; White-breasted Nuthatch, +; Golden-crowned Kinglet, +; Am. Tree Sparrow, +. **Average Total:** 9 birds (135/km², 55/100 acres). **Remarks:** Total species, 10. Black-capped Chickadee was seen on 6 of the 8 trips, and Tufted Titmouse on 5. Single individuals of Ring-necked Pheasant and Am. Tree Sparrow were seen only on Dec. 12, rather early in the season. The single occurrence of juncos was a flock actively feeding on seeds during a major snowstorm. Eastern Screech Owl was seen on the only night trip, but not included. Wild food crop was generally fair with the exception of acorns which were absolutely nonexistent. No spring song was detected, even on the comparatively late Feb. 20 trip.—*LEE E. TAYLOR, 92 Brooks Avenue, Arlington, MA 02174.*

3. 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°28'3"N, 74°56'15"W, West Davenport Quadrangle, USGS. **Continuity:** Established 1972; 8 intermittent years. **Size:** 11.8 ha = 29.1 acres. **Description of Plot:** See AB 26:661-662 and 941 (1972). **Weather:** Trips were made in all kinds of weather. Trip temp. averaged about 27°F, with snow cover 0-20 in., averaging 7 in. The following weather data are from the U.S. Nat'l Weather Service at Cooperstown, about 12 mi N. January and Feb. temp. range, -21° + 56°, with an average of 23°; total precipitation, 4.45 in. As compared with 30-yr. period, Jan. and Feb. departed about +1.6° and -0.41 in. in precipitation. **Coverage:** Jan. 13-14, 18, 22-23, 25-26, 28; Feb. 12, 15, 19, 22. Total 12 trips, 0830-1430, mostly 1000-1400, averaging 64 observer min. **Count:** Black-capped Chickadee, 3 (25, 10); White-breasted Nuthatch, 2 (17, 7); Hairy Woodpecker, 1 (8, 3); Brown Creeper, 1; Downy Woodpecker, +. **Average Total:** 7 birds (59/km², 24/100 acres). **Remarks:** 5 species. Chickadee was seen on 6 trips, nuthatch on 7, Hairy on 7, and creeper on 5. On 2 trips no birds were seen.—*J. ROBERT MILLER, Dept. of Chemistry, ANNE RUTKOWSKI, TED GRUEN, Hartwick College, Oneonta, NY 13820.*

4. UPLAND MIXED PINE-SPRUCE-HARDWOOD PLANTATION. — **Location:** New York; Allegany Co., on the S side of Brown Rd., near intersection with Vandermark Rd., 3.5 mi W of Alfred, 42°7'30"N, 77°45'W; Andover Quadrangle, USGS. **Con-**

tinuity: Established 1974, 10 consecutive years. **Size:** 16.6 ha = 41 acres. **Description of Plot:** See AB 28:699-700 (1974). **Weather:** Average daily temp. in Dec. (32.9°F) was 7° warmer than normal, the third warmest Dec. on record, while Jan. (23.2°) was only slightly warmer than normal. Total snowfall in the 2 months was 26.8 in., 3 in. less than normal for the period. On most trips, there was merely a dusting of snow. Streams open during the study period. **Coverage:** Dec. 17, 22, 29; Jan. 1, 4, 8, 11, 17; 0900-1515. Total: 8 trips totaling 11 hours of field work. **Count:** Black-capped Chickadee, 11 (66, 27); Red-breasted Nuthatch, 2 (12, 5); Ruffed Grouse, 1 (6, 2); Blue Jay, 1; Brown Creeper, 1; Dark-eyed Junco, 1; Wild Turkey, +; Hairy Woodpecker, +; Golden-crowned Kinglet, +. **Average Total:** 17 birds (102/km², 41/100 acres). **Remarks:** Total species, 9. Only chickadees were seen on every trip. From Sept. 1981 to March 1983, 45,000 board feet of Red Pine have been harvested from a 12-acre planting resulting in human disturbance and altered habitat in one-third of the study area. Number of species observed was the lowest ever (14 was 9-yr. average) and total birds was the lowest ever (30 was the 9-yr. average). The record low totals may have been a result of the ongoing logging but also may reflect the similar dearth of winter birds in the region. Appreciation to Marty Eddy of the Eddy Lumber Co. for cooperation in providing information on harvested trees and to Gaylord Rough of the Alfred Cooperative Weather Station for weather data.—*ELIZABETH W. BROOKS, Waterwells Rd., Alfred Station, NY 14803.*

5. UPLAND SCOTCH PINE PLANTATION. — **Location:** New York; Allegany Co., 2 mi WSW of Alfred, bordering on the W side of Lake Rd., adjacent to the conifer plantings on the E side of Foster Lake; 42°7'30"N, 77°45'W, Andover Quadrangle, USGS. **Continuity:** New. A BBC has been conducted on this plot for 14 consecutive years. **Size:** 9.3 ha = 23 acres. **Description of Plot:** See AFN 23:743-744 (1969). An updated plot description was carried out in the same manner as described in 1969. The average height of the pine trees this year was 15.6 ft, (range 8-25.5 ft). Based on the maximum spread of each tree in the quadrant, the canopy of the pines spanned approximately 78% of the plot. On about 53% of the trees the branches are sufficiently close to the ground to inhibit the growth of ground cover. **Weather:** During the 32-day study period the temp. remained below freezing on 16 days and was below freezing every night. Temp. range, -4° to 51°F. Snowfall was less than, and average temp. higher than in previous years. There was an average of 6 in. of snow cover on the plot. (Temp. from the Alfred Cooperative Weather Station). **Coverage:** Jan. 12, 15, 29, 30; Feb. 4, 6, 9, 12. Total: 8 trips, 6 during 0900-1000 and 2 in the late afternoon, average 60 min.; total 8 obs.-hours. **Count:** Black-capped Chickadee, 9 (97, 39); Cedar Waxwing, 3 (32, 13); Ruffed Grouse, 2 (21, 9); Am. Tree Sparrow, 2; Wild Turkey, 1 (11, 4); Downy Woodpecker, +. **Average Total:** 17 birds

(183/km², 74/100 acres) **Remarks:** 6 species. Chickadees and Am. Tree Sparrows were noted on every trip; grouse on 5 trips. Cedar Waxwings were in 1 flock of 20 birds. The cone crop was sparse this winter compared to previous years. Both chickadees and Am. Tree Sparrows were observed feeding on goldenrod (*Solidago* spp.). Permission to conduct this study on their land was granted by Phil Foster and Cynthia Clements and I thank Dr. Gaylord Rough for his assistance.—*PETER W. HOULIHAN (compiler), and ELIZABETH W. BROOKS, 1435 Waterwells Rd., Alfred Station, NY 14803.*

6. OAK-MAPLE RIDGE-TOP FOREST. — **Location:** Pennsylvania; Berks Co., Hawk Mountain Sanctuary, S slope of Hemlock Heights; 40°44'N, 75°50'W, New Ringgold Quadrangle, USGS. **Continuity:** New. **Size:** 19.4 ha = 47.8 acres (rectangular, measured with tape and compass). **Description of Plot:** See AB 37:55 (1983). **Weather:** Generally mild, temp. range 26°-50°F, averaging 38°. Snow, 3-5 in., was present on 3 of the trips. **Coverage:** Dec. 16, 29; Jan. 7, 26, Feb. 4, 10, 23; Mar. 3. Eight trips, 0900-1600 hrs., averaging 63 min. **Count:** Black-capped Chickadee, 1 (5, 2); Ruffed Grouse, +; Downy Woodpecker, +; Tufted Titmouse, +; Brown Creeper, +; Golden-crowned Kinglet, +; Dark-eyed Junco, +. **Average Total:** 1 bird (5/km², 2/100 acres). **Remarks:** 7 species. The ridge-top forest is quite sparsely populated during the winter months. This is probably owing to the lack of cover in the forest. Excluding a group of 3 chickadees, all other observations were of single birds. Although only spotted once, the snow revealed the tracks of numerous Ruffed Grouse — *BRAD ANDRES, SETH BENZ, STAN SENNER, Hawk Mountain Sanctuary, Route 2, Kempton, PA 19529.*

7. OAK-MAPLE SLOPE FOREST. — **Location:** Pennsylvania; Berks Co., Hawk Mountain Sanctuary, N side of the River of Rocks, 40°44'N, 75°50'W, New Ringgold Quadrangle, USGS. **Continuity:** New. **Size:** 16.9 ha = 41.8 acres (rectangular, measured with tape and compass). **Description of Plot:** See AB 37:55 (1983). **Weather:** Generally mild, temp. range, 26°-50°F, averaging 38°. Snow, 3-5 in., was present on 3 trips. **Coverage:** Dec. 16, 29; Jan. 7, 26; Feb. 4, 10, 23, Mar. 3. Eight trips, 0900-1600 hrs., averaging 83 min. **Count:** Downy Woodpecker, 2 (12, 5); Golden-crowned Kinglet, 2; Black-capped Chickadee, 1 (6, 2); Brown Creeper, 1; N. Goshawk, +; Ruffed Grouse, +; Tufted Titmouse, +; White-breasted Nuthatch, +. **Average Total:** 6 birds (35/km², 14/100 acres). **Remarks:** 8 species. The higher winter population of the slope plot over the ridge-top plot is probably due to the more diverse vegetation. This higher diversity could provide more food and cover. The goshawk, an immature, was seen only on the first trip. Most species were observed in mixed flocks.—*BRAD ANDRES, SETH BENZ, STAN SENNER, Hawk Mountain Sanctuary, Route 2, Kempton, PA 19529.*

WINTER (1983) BIRDS OF THE BARRENS GROUSE MANAGEMENT AREA

The following 6 censuses were conducted in 6 habitat types at the Barrens Grouse Management Area (BGMA), State Game Lands 176, in Centre County, Pennsylvania. Each habitat type was initially censused in 1982 (see AB 37:32-34, 1983). The BGMA consists of approximately 2,880 acres, one half is being managed by the Pennsylvania Game Commission for Ruffed Grouse habitat, using an even-aged management system. The 6 habitat types totaled 50.3 acres and included: 1) 4 aspen patches (each patch at BGMA = approximately 2.5 acres in size) cut in winter 1980-81, 2) 4 aspen patches cut in winter 1976-77, 3) 3 mixed-oak patches cut in winter 1976-77, 4) 3 mature (uncut) aspen patches in the treated (managed) sector, 5) 3 mature (uncut) mixed-oak patches in the treated sector, and 6) a mature aspen stand in the control (unmanaged) sector of the BGMA. The sixth habitat type was a rectangular (100 × 300 m) plot (see AB 37:32-34, 1983 for detailed descriptions).

Coverage of all habitat types was Dec. 30; Jan. 6, 13, 18, 26; Feb. 1, 9, 15, 22; Mar. 1. Total trips per habitat type was 10, all between sunrise and 1100 hours. Time spent per trip in each habitat type varied from 24 to 36 min. Mean minimum temp. during census trips was 23°F (range = 8-32°F), and snow depth ranged 0-7 in. Snow depth was 5 in. and 7 in. on Jan. 18 and Feb. 15 trips, respectively; snow depth on the remaining trips never exceeded 2 in. Snow flurries occurred on 3 trips. A total of 8 bird species was seen at the BGMA in one or more habitat types during the winter trips compared to 11 species in the previous winter (see AB 37:33, 1983). Hairy Woodpeckers occurred this winter in the habitat types but were not recorded last winter. Species observed at the BGMA during the trips but not in the 6 habitat types included Red-tailed Hawk, Great Horned Owl, Pileated Woodpecker, Blue Jay, Am. Crow, Com. Raven, Brown Creeper, N. Cardinal, Dark-eyed Junco and Am. Goldfinch. This study was supported by the Pennsylvania Agricultural Experiment Station and the Max McGraw Wildlife Foundation.—*RICHARD H. YAHNER, Forest Resources Lab., Penn. State Univ., University Park, PA 16802.*

8. ASPEN (CUT 1980-81). — **Location:** Pennsylvania; Centre Co., State Game Lands 176, Barrens Grouse Management Area (BGMA); 40°47'N, 78°58'W (patches 49B, 50B), 40°46'30"N, 77°57'30"W (patch 75B); 40°47'N, 77°57'W (patch 79B); Julian Quadrangle, USGS. **Continuity:** Established 1982, 2 years. **Size:** Four patches totaling 4.18 ha = 10.2 acres (measured). **Description of Plot:** See AB 37:33 (1983). **Count:** 0 birds. **Remarks:** No birds recorded in previous winter as well.

9. ASPEN (CUT 1976-77). — **Location:** Pennsylvania; Centre Co., State Game Lands 176, Barrens Grouse Management Area

(BGMA), 40°47'N, 78°58'W (patches 50A, 51A); 40°46'30"N, 77°57'30"W (patch 76A); 40°47'N, 77°57'W (patch 80A); Julian Quadrangle, USGS. **Continuity:** Established 1982, 2 years. **Size:** Four patches totaling 4.02 ha = 9.93 acres (measured). **Description of Plot:** See AB 37:33 (1983). **Count:** Black-capped Chickadee, 1 (25, 10); Ruffed Grouse, +; Downy Woodpecker, +; Tufted Titmouse, +; White-breasted Nuthatch, +; Am. Tree Sparrow, +. **Average Total:** 1 bird (25/km², 10/100 acres). **Remarks:** Total species 6. Only 4 species were observed last winter.

10. MIXED-OAK (CUT 1976-77). — **Location:** Pennsylvania; Centre Co., State Game Lands 176, Barrens Grouse Management Area (BGMA); 40°47'N, 78°58'W (patches 42A, 43A); 40°46'30"N, 77°57'30"W (patch 84A); Julian Quadrangle, USGS. **Continuity:** Established 1982, 2 years. **Size:** Three patches totaling 3.33 ha = 8.23 acres (measured). **Description of Plot:** See AB 37:33 (1983). **Count:** Downy Woodpecker, +; Black-capped Chickadee, +; Tufted Titmouse, +. **Average Total:** 0 birds. **Remarks:** 3 species observed versus 4 species last winter.

11. MATURE ASPEN (TREATED SECTOR). — **Location:** Pennsylvania, Centre Co., State Game Lands 176, Barrens Grouse Management Area (BGMA); 40°47'N, 78°58'W (patches 50C, 51C); 40°47'N, 77°57'W (patch 80D); Julian Quadrangle, USGS. **Continuity:** Established 1982, 2 years. **Size:** Three patches totaling 2.61 ha = 6.45 acres (measured). **Description of Plot:** See AB 37:33 (1983). **Count:** Black-capped Chickadee, 2 (77, 31); Downy Woodpecker, 1 (38, 16); Ruffed Grouse, +; Hairy Woodpecker, +; White-breasted Nuthatch, +; Am. Tree Sparrow, +. **Average Total:** 3 birds (115/km², 47/100 acres). **Remarks:** Total species 6. Only 4 were noted last winter.

12. MATURE MIXED-OAK (TREATED SECTOR). — **Location:** Pennsylvania; Centre Co., State Game Lands 176, Barrens Grouse Management Area (BGMA); 40°47'N, 78°58'W (patches 41B, 42B); 40°46'30"N, 77°57'30"W (patch 83B); Julian Quadrangle, USGS. **Continuity:** Established 1982, 2 years. **Size:** Three patches totaling 3.2 ha = 8.0 acres (measured). **Description of Plot:** See AB 37:33 (1983). **Count:** Downy Woodpecker, 1 (31, 13); Black-capped Chickadee, 1; Hairy Woodpecker, +; Tufted Titmouse, +; White-breasted Nuthatch, +; Golden-crowned Kinglet, +. **Average Total:** 2 birds (62/km², 25/100 acres). **Remarks:** 6 species observed in both winter 1982 and winter 1983.

13. MATURE ASPEN (UNTREATED SECTOR). — **Location:** Pennsylvania; Centre Co., State Game Lands 176, Barrens Grouse Management Area (BGMA); 40°45'30"N, 77°58'W; Julian Quadrangle, USGS. **Continuity:** Established 1982, 2

years. **Size:** 3.0 ha = 7.41 acres (measured). **Description of Plot:** See AB 37:34 (1983). **Count:** Black-capped Chickadee, 2 (67, 27); Downy Woodpecker, 1 (33, 13); Golden-crowned Kinglet, 1; White-breasted Nuthatch, +. **Average Total:** 4 birds (133/km², 54/100 acres). **Remarks:** Total species, 4. Six species were found last winter.

14. SUGAR MAPLE-MIXED HARDWOOD FOREST. — **Location:** Pennsylvania; Washington Co., 1.5 mi SE of intersection of Routes 79 and 40; 40°08'N, 80°11'W, Washington East Quadrangle, USGS. **Continuity:** New. **Size:** 9.74 ha = 24.07 acres (rectangular, 1254 × 836 ft, measured by pacing and compass). **Description of Plot:** See AB 37:55-56 (1983). **Weather:** During the 40-day study period the temp. remained below freezing on 12 days and remained above freezing on 5 nights. Temp. range, 3°-52°F. Total snow accumulation was about 5 in. with the ground snow covered on 10 days. **Coverage:** Dec. 31; Jan. 3, 8, 14, 21, 25, 28, Feb. 3. Total: 8 trips, 0745-1115, averaging 180 min. **Count:** Tufted Titmouse, 11 (113, 46); White-breasted Nuthatch, 8 (82, 33); Carolina Chickadee, 5 (51, 21); Downy Woodpecker, 4 (41, 17); Black-capped Chickadee, 3 (31, 12); Red-bellied Woodpecker, 1 (10, 4); Pileated Woodpecker, 1; Brown Creeper, 1; N. Cardinal, 1; White-throated Sparrow, 1; Cooper's Hawk, +; Ruffed Grouse, +; Blue Jay, +; Am. Crow, +. **Average Total:** 36 birds (370/km², 150/100 acres). **Remarks:** Total species, 14. The Tufted Titmouse, White-breasted Nuthatch, and chickadee sp. were noted on every trip, and the Downy Woodpecker was noted on 7 trips. The White-throated Sparrows were in a flock that was seen only once. Both chickadee species were present on the plot; however, the ratio used in the count was calculated from winter banding data for the area. Seven White-tailed Deer (*Odocoileus virginianus*) were observed once. Thanks to Ernest Abernathy for the use of his property.—*ROY A. ICKES, Biol. Dept., Washington and Jefferson College, Washington, PA 15301.*

15. DECIDUOUS WOODLAND WITH SECOND-GROWTH, RECENTLY LOGGED. — **Location:** New Jersey; Somerset Co., just NW of Veterans Administration Hospital. 40°43'N; 74°28'W, Bernards Quadrangle, USGS. **Continuity:** New. **Size:** 6.88 ha = 17 acres (measured with tape). **Description of Plot:** The woodland was logged in 1980 and many dead and fallen trees remained. There are not many tall trees on the plot, but the ones that are present are mainly Sassafras, Black Oak, and Mockernut Hickory. The understory is dominated by Am. Beech, Flowering Dogwood and blackberry. Young Tulip-trees are also common in the understory. The undergrowth is very heavy and tends to overrun the paths. **Edge:** Bordered on the W by similar habitat, with clumps of larger trees. On the S by the same, but runs into a residential community several hundred feet away. The N edge is a group of E. Redcedar; also, the forest becomes less dense and there is

a fairly steep ridge on the N border below the Red Cedars. The NE is bordered by a bare area, used for logging purposes and is revegetating with grass. **Topography:** Elev. 360-400 ft. Top of the ridge on the S is 400 ft. **Weather:** Warm winter with temp. 26°-54°F during the trips. Snow cover was 0-2 in. on the trips. Of the 8 trips, 4 were sunny, 1 had light rain, and 3 were cloudy. **Coverage:** Dec. 25, 27, 30 (1982); Jan. 8, 30; Feb. 6, 26; Mar. 5 (1983). Total: 8 trips, 6 hrs. Averaging 45 min. **Count:** Am. Crow, 4 (58, 24); Black-capped Chickadee, 3 (44, 18); Tufted Titmouse, 2 (29, 12); Downy Woodpecker, 1 (15, 6); White-breasted Nuthatch, 1; Dark-eyed Junco, 1; Ruffed Grouse, +; Hairy Woodpecker, +; N. Flicker, +; Gray Catbird, +; N. Cardinal, +; White-throated Sparrow, +; Purple Finch, +; Am. Goldfinch, +. **Average Total:** 12 birds (174/km², 71/100 acres). **Remarks:** Total species: 14. The chickadee was seen on all 8 trips. The Downy Woodpecker was seen 6 times, the last trip being the only one with more than one Downy. Seed and berry crops were poor. The catbird was seen on Dec. 25 in a thicket near the NE edge. Seen near the plot on Feb. 6, but not on it were N. Mockingbird and four Yellow-rumped Warblers. On the last 3 trips the chickadees, titmice, nuthatches and Downy Woodpeckers were in a mixed foraging flock. A Red-tailed Hawk and a Great Horned Owl were seen or heard around or in the plot, but not during a trip. Overhead were 10 Am. Robins on Dec. 25. White-tailed Deer were seen 3 times. Thanks to Jack Sobocinski for his help and assistance during the census.—*STEVE SOBOCINSKI, 38 Dryden Road, Basking Ridge, NJ 07920.*

16. MIXED HARDWOOD FOREST. — Location: Maryland; Calvert Co., NW of Plum Point and 1 mi inland from Chesapeake Bay, on Tobacco Road between State Routes 263 and 261; 38°37'N, 76°30'W. **Size:** 11.3 ha = 28 acres. **Continuity:** Established 1959; 24 consecutive years. **Description of Plot:** See *AFN* 13:333, 1959. **Weather 1982:** The sky was clear on all except one day. The ground was snow covered, and the creek and low area were frozen on one-half of the trips. Temp., 24°-58°F. **Coverage 1982:** Jan. 5, 7, 20, 22, 26-27, 30; Feb. 2, 4, 7. The trips averaged 84 min, 0950-1523 EST. **Count 1982:** White-throated Sparrow, 18 (159, 64); Eur. Starling, 7 (62, 25); N. Cardinal, 4 (35, 14); Rufous-sided Towhee, 3 (26, 11); Am. Crow, 2 (18, 7); Am. Robin, 2; N. Bobwhite, 1 (9, 4); Red-bellied Woodpecker, 1; Yellow-bellied Sapsucker, 1; Carolina Chickadee, 1; Tufted Titmouse, 1; Hermit Thrush, 1; Cedar Waxwing, 1; Dark-eyed (Slate-col.) Junco, 1; Pine Siskin, 1; N. Flicker, +; Pileated Woodpecker, +; Blue Jay, +; Carolina Wren, +; Brown Thrasher, +; Yellow-rumped Warbler, +; Song Sparrow, +. **Average Total:** 45 birds (397/km², 161/100 acres). **Weather 1983:** Cloudiness occurred on 6 of the 10 counts; and the ground was bare each day. The creek and bog were never frozen. High temperatures, 32°-60°F. **Coverage 1983:** Dec. 22, 24, 27, 28, 30; Jan. 3, 4, 6, 11, 13. The

trips averaged 75 min and started between 0929 and 1120 hrs. **Count 1983:** White-throated Sparrow, 3 (26, 11); Am. Crow, 2 (18, 7); Red-bellied Woodpecker, 1 (9, 4); Downy Woodpecker, 1; N. Flicker, 1; Pileated Woodpecker, 1; Blue Jay, 1; Carolina Chickadee, 1; Tufted Titmouse, 1; E. Bluebird, 1; Yellow-rumped Warbler, 1; N. Cardinal, 1; Sharp-shinned Hawk, +; Red-tailed Hawk, +; Am. Kestrel, +; N. Bobwhite, +; Am. Woodcock, +; Barred Owl, +; Yellow-bellied Sapsucker, +; Hairy Woodpecker, +; Brown Creeper, +; Carolina Wren, +; Ruby-crowned Kinglet, +; Hermit Thrush, +; Am. Robin, +; Field Sparrow, +; Dark-eyed Junco, +; Purple Finch, +. **Average Total:** 15 birds (132/km², 54/100 acres). **Remarks:** 22 species in 1982, 28 in 1983; average, 25. After a partial recovery in 1982, following several below-average years, the 1983 population hit an all-time low for no apparent reason. The 25-year average is 187 birds/100 acres. The White-throated Sparrow was the most common bird both years, but dropped from 64 to only 11 birds/100 acres in 1983. The starling appeared for the first time in 1982. In 1982 the Pine Siskin appeared for the fourth time and the Brown Thrasher for the second time. There were very low counts on the last 3 days in 1982, following a period of severe cold and snow.—*JOHN H. FALES, 2809 Ridge Road, Neeld Estate, Huntingtown, MD 20639.*

17. MATURE DECIDUOUS FLOODPLAIN FOREST. — Location: Maryland; Montgomery Co., Glen Echo, 2½ mi NW of the District of Columbia, between the C. & O. Canal and Potomac River, 38°58'N, 77°8'30"W, Falls Church Quadrangle, USGS. **Continuity:** Established 1948, 32 intermittent years. **Size:** 17.8 ha = 44.1 acres. **Description of Plot:** See *AFN* 2:153-156 (1948). **Weather:** One of warmest winters on record. Temp. averaged 32°-44°F during census; wind 0-5 mph; clear to partly cloudy. An 18 in. snowfall on Feb. 11 left 1-4 in. snow cover Feb. 19-21. **Coverage:** Jan. 8, 15; Feb. 19-21. Total: 5 trips between 0715 and 1115, totaling 13 hours. **Count:** Carolina Chickadee, 24 (134, 54); Eur. Starling, 12 (67, 27); Purple Finch, 7 (39, 16); Tufted Titmouse, 6 (34, 14); Am. Goldfinch, 6; Downy Woodpecker, 5 (28, 11); Song Sparrow, 5; Carolina Wren, 4 (22, 9); N. Cardinal, 4; Red-bellied Woodpecker, 3 (17, 7); Am. Crow, 3; Yellow-rumped Warbler, 3; Pileated Woodpecker, 2 (11, 5); Sharp-shinned Hawk, 1 (6, 2); Barred Owl, 1; N. Flicker, 1; Blue Jay, 1; Brown Creeper, 1; Winter Wren, 1; White-throated Sparrow, 1; Great Blue Heron, +; Red-tailed Hawk, +; Mourning Dove, +; Hairy Woodpecker, +; White-breasted Nuthatch, +; E. Bluebird, +; Golden-crowned Kinglet, +. **Average Total:** 91 birds (510/km², 206/100 acres). **Remarks:** Total species, 27. Fifteen-year average: 118 birds of 27 species. This year's 91 was second lowest with low numbers of Downy Woodpecker, crow and starling. Most significant changes were decrease in Blue Jay, starling and junco and increase in Purple Finch.—*S. PARCELLS*

and *I R GAUTHEY* (compiler), 6603 Reynard Dr., Springfield, VA 22152.

18. UPLAND OAK-HICKORY HARDWOOD FOREST. — Location: Virginia, Fairfax Co., Dranesville District Park, McLean. Along Route 193, approximately 0.75 mi W of Exit 13, Capital Beltway (Interstate 495); 38°57'N, 77°12'W, Falls Church Quadrangle, USGS. **Continuity:** Established 1971; 13 years. **Size:** 11.0 ha = 27.2 acres. **Description of Plot:** See *AB* 25:636 (1971). **Weather:** Mean temp. for Jan. and Feb. were 28.1°F and 38.1° in 1982 and 38.1° and 38.7° in 1983, compared with a 40-year average of 35.6° and 37.7°. Precipitation totalled 5.60 in in 1982 and 4.16 in in 1983. In 1982, 9 in of snow fell Jan. 13 and remained until early Feb. Twenty-one in. of snow fell in early Feb 1983. Temp. during censuses ranged 23°-62° in 1982 and 30°-59° in 1983. **Coverage:** Dec 20; Jan. 9, 20, 22, 26, 28, 30(2); Feb. 1(2), 3-4(2), 7, 11, 14-15, 21(2), 24, 1982; Total trips, 20, 0754-1200 and 1230-1630, averaging 1 hr. 41 min.; Dec. 30; Jan. 9, 15, 24, 26, 29, 31; Feb. 19, 21, 1983; Total trips, 12, 0755-1230 or 1420-1705, averaging 1 hr and 32 min. **Count 1982:** Red-bellied Woodpecker, 4 (36, 15); Carolina Chickadee, 3 (27, 11), Am. Crow, 2 (18, 7); Tufted Titmouse, 2, White-breasted Nuthatch, 2; Turkey Vulture, 1 (9, 4); Downy Woodpecker, 1; Pileated Woodpecker, 1; Com. Grackle, 1; Black Vulture, +; Mourning Dove, +; Hairy Woodpecker, +; N. Flicker, +; Blue Jay, +, Brown Creeper, +; Carolina Wren, +; Winter Wren, +; Am. Robin, +; N. Cardinal, +. **1983:** Carolina Chickadee, 4; Am. Crow, 3.5 (32, 13); White-breasted Nuthatch, 2 (5, 2); Downy Woodpecker, 2; Tufted Titmouse, 2; Turkey Vulture, 1; Red-bellied Woodpecker, 1; Hairy Woodpecker, 1, Brown Creeper, 1; Pileated Woodpecker, 0 (5, 2); Black Vulture, +; Red-tailed Hawk, +; Mourning Dove, +; N. Flicker, +, Fish Crow, +; Carolina Wren, +; Am. Robin, +, Yellow-rumped Warbler, +; N. Cardinal, +. **Average Total 1982:** 17 birds (154/km², 63/100 acres). **1983:** 18.5 birds (168/km², 68/100 acres). **Remarks:** 19 species both years.—*G. H. ESPENSHADE, BEN FERN, JESSICA GIUSTI, NORMAN ORR, C W PER-LEE JR., ROBERT J. WATSON* (compiler), 2636 Marcey Rd., Arlington, VA 22207

19. LONGLEAF PINE-TURKEY OAK-WIREGRASS I. — Location: North Carolina; Hoke Co., McCain, between N branch of Mountain Creek and SR 1225; 35°04'N, 79°22'W, Sanatorium Quadrangle, USGS. **Continuity:** New. **Size:** 4.63 ha = 11.45 acres (rectangular 271m × 171m). **Description of Plot:** Disturbed Sandhill Longleaf Pine forest. The forest consists of an open canopy of Longleaf Pines 30-60 ft tall. Bulldozing and removal of many of the Turkey Oaks have opened the understory considerably (Red-cockaded Woodpecker habitat management). Wiregrass (*Aristida stricta*) occurs in the undisturbed areas. Habitat alteration occurred in 1979. **Edge:** Bordered on W. and S. by small dirt road. Across the N



WB-PS 19, McCain, N.C. Longleaf Pine-Turkey Oak-Wiregrass I. Photo/G. Grant.

boundary is additional similar disturbed habitat, while the other 3 boundaries are adjacent to undisturbed Longleaf Pine-Turkey Oak-Wiregrass communities. The S. boundary is adjacent to an undisturbed Longleaf Pine community (see census #20). **Topography:** Flat. Elevation about 390 ft. **Weather:** Mild winter, temp. range during trips, 40-70°F. Sky clear (2 trips) to overcast (2 trips) with light rain (3 trips). Winds 5-20 mph. **Coverage:** Jan. 19, 26, 27; Feb. 10-11, 28; Mar. 1. Total of 7 censuses, 1003-1713, averaging 25 min. **Count:** Brown-headed Nuthatch, 1 (22, 9); Mourning Dove, +; Downy Woodpecker, +; Carolina Chickadee, +; Carolina Wren, +; Hermit Thrush, +; Pine Warbler, +. **Average Total:** 1 bird (22//km², 9/100 acres). **Remarks:** Total species 7. One Red-cockaded Woodpecker nest tree on plot but no birds seen near it.—GILBERT S. GRANT, N.C. State Museum of Natural History, P.O. Box 27647, Raleigh, NC 27611.

20. LONGLEAF PINE-TURKEY OAK-WIREGRASS II. — **Location:** North Carolina; Hoke Co., McCain, between N branch of Mountain Creek and SR 1225; 35°04'N, 79°22'W, Sanatorium Quadrangle, USGS. **Continuity:** New. **Size:** 4.63 ha = 11.45 acres (rectangular 271m × 171m). **Description of Plot:** Sandhill Longleaf Pine forest. The forest consists of three layers: an open canopy of Longleaf Pines 60-105 ft tall, sparse to dense understory of Turkey Oaks 6-25 ft high, and a ground cover dominated by pine straw and/or wiregrass (*Aristida stricta*). **Edge:** Bordered on W and N by small dirt roads. W, E, and S borders are of similar vegetation. North boundary is adjacent to an altered Longleaf Pine-Turkey Oak-Wiregrass community (see census #19) where oaks have been destroyed by bulldozing to manage Red-cockaded Woodpecker habitat. **Topography:** Flat to undulating sand hills. Elevation 370-390 ft. **Weather:** Mild winter, temp. range during trips 40-56°F. Sky clear (2 trips) to

overcast (2 trips) with light rain (3 trips). Winds 5-20 mph. **Coverage:** Jan. 19, 26, 27; Feb. 10-11, 28; Mar. 1. Total of 7 censuses, 1022-1727, averaging 25 min. **Count:** Carolina Chickadee, 1 (22, 9); Mourning Dove, +; Downy Woodpecker, +; Tufted Titmouse, +; Golden-crowned Kinglet, +; Yellow-rumped Warbler, +; Pine Warbler, +. **Average Total:** 1 bird (22/km², 9/100 acres). **Remarks:** 7 species.—GILBERT S. GRANT, N.C. State Museum of Natural History, P.O. Box 27647, Raleigh, NC 27611.



WB-PS 20, McCain, N.C. Longleaf Pine-Turkey Oak-Wiregrass II. Photo/G. Grant.

21. LONGLEAF PINE-TURKEY OAK-WIREGRASS III. — **Location:** North Carolina; Hoke Co., McCain, immediately W of pond on N fork of Mountain Creek; 35°04'N, 79°21'W, Sanatorium Quadrangle, USGS. **Continuity:** New. **Size:** 5.15 ha = 12.72 acres (rectangular 271m × 190m). **Description of Plot:** Sandhill Longleaf Pine forest. The forest consists of three layers: an open canopy of Longleaf Pines 60-105 ft tall, moderately dense understory of Turkey Oaks 6-25 ft high, and a ground cover dominated by pine straw and/or wiregrass (*Aristida stricta*). **Edge:** Bordered on the S side by a small dirt road. Otherwise, continuous habitat on all 4 sides of the plot. **Topography:** Flat to slightly undulating hills on a sand base. Elevation 370-380 ft. **Weather:** Mild winter, temp. range during trips 40-65°F. Sky clear (2 trips) to overcast (3 trips) with light rain (2 trips). Winds 5-15 mph. **Coverage:** Jan. 19, 26-27; Feb. 10-11, 28; Mar. 1. Total of 7 censuses, 0914-1802, averaging 46 min. **Count:** Brown-headed Nuthatch, 2 (39, 16); Red-cockaded Woodpecker, 1 (19, 8); Carolina Chickadee, 1; Am. Robin, 1; Pine Warbler, 1; Red-bellied Woodpecker, +; Yellow-bellied Sapsucker, +; Downy Woodpecker, +; Tufted Titmouse, +; White-breasted Nuthatch, +; Brown Creeper, +; Golden-crowned Kinglet, +; Hermit Thrush, +; Yellow-rumped Warbler, +; Am. Goldfinch, +. **Average Total:** 6 birds (117/km², 47/100 acres). **Remarks:** 15 species.—GILBERT S. GRANT, N.C. State Museum of Natural History, P.O. Box 27647, Raleigh, NC 27611.

22. LOBLOLLY PINE FOREST PLANTATION I. — **Location:** North Carolina; Hoke Co., McCain, between Mountain Creek and Hwy 211; 35°04'N, 79°21'W, Sanatorium Quadrangle, USGS. **Continuity:** New. **Size:** 2.67 ha = 6.6 acres (nearly square 167m × 160m). **Description of Plot:** Loblol-

ly Pine forest, planted in early 1930s; limited selective logging has occurred on plot. The forest consists of three layers: a closed canopy of Loblolly Pines 60-90 ft tall, sparse to moderately dense shrubs 3-12 ft high, and a ground cover of pine straw with few herbaceous plants. Shrub layer species are Flowering Dogwood, Sweetgum, *Smilax* sp., Japanese Honeysuckle, and *Rubus* sp. **Edge:** Bordered on S and E by narrow dirt roads with similar vegetation across these roads. N and W borders are continuous similar vegetation. **Topography:** Flat over clay soil. Elevation about 360 ft. **Weather:** Mild winter, temp. range, 40-67°F. Sky clear (1 trip) to overcast (1 trip) with light rain and/or light snow (4 trips). Winds 0-15 mph. **Coverage:** Jan. 26-27; Feb. 10-11, 28; Mar. 1. Total of 6 censuses, 0741-1616, averaging 27 min. **Count:** Carolina Wren, 1 (37, 15); Golden-crowned Kinglet, 1 (37, 15); Mourning Dove, +; Downy Woodpecker, +; Carolina Chickadee, +; Ruby-crowned Kinglet, +; Hermit Thrush, +; Yellow-rumped Warbler, +; Pine Warbler, +; Song Sparrow, +; White-throated Sparrow, +; Purple Finch, +. **Average Total:** 2 birds (75/km², 30/100 acres). **Remarks:** 12 species.—GILBERT S. GRANT, N.C. State Museum of Natural History, P.O. Box 27647, Raleigh, NC 27611.

23. LOBLOLLY PINE FOREST PLANTATION II. — **Location:** North Carolina; Hoke Co., McCain, between Mountain Creek and Hwy 211; 35°04'N, 79°21'W, Sanatorium Quadrangle, USGS. **Continuity:** New. **Size:** 4.30 ha = 10.63 acres (nearly square 219.5m × 196m). **Description of Plot:** Loblolly Pine forest, planted in early 1930s; limited selective logging has occurred on plot. The forest consists of three layers: a closed canopy of Loblolly Pines 60-90 ft tall, sparse density of shrubs 3-12 ft high, and a ground cover of pine straw with few herbaceous plants. Shrub layer primarily Flowering Dogwood, Sweetgum, and *Smilax* sp. Moderate density of Japanese Honeysuckle vines extend up to the lower branches of the pine canopy. **Edge:** Bordered on N, E, and W by small dirt roads. S boundary is contiguous forest. Similar forest exists on all sides of the plot. **Food:** Honeysuckle fruit attracted several species. **Topography:** Flat over clay soil. Elevation about 370 ft. **Weather:** Mild winter; temp. range, 41-60°F. Sky clear (1 trip) to overcast (2 trips) with light rain and/or light snow (3 trips). Winds 0-15 mph. **Coverage:** Jan. 26-27; Feb. 10-11, 28; Mar. 1. Total of 6 censuses, 0808-1648, averaging 38 min. **Count:** Cedar Waxwing, 7 (163, 66); Golden-crowned Kinglet, 5 (116, 47); Purple Finch, 5; Carolina Chickadee, 2 (46, 19); Am. Robin, 2; Yellow-rumped Warbler, 2; Ruby-crowned Kinglet, 1 (23, 9); Red-bellied Woodpecker, +; Downy Woodpecker, +; Tufted Titmouse, +; Brown Creeper, +; Carolina Wren, +; Hermit Thrush, +; Pine Warbler, +. **Average Total:** 24 birds (558/km², 226/100 acres). **Remarks:** 14 species.—GILBERT S. GRANT, N.C. State Museum of Natural History, P.O. Box 27647, Raleigh, NC 27611.

24. MIXED PINE AND DECIDUOUS FOREST. — **Location:** Indiana; Jefferson Co., 7 mi W of Hanover. SE corner at intersection of county roads 1066 W and 250 S; 38°42'0"N, 85°35'6"W. Kent Quadrangle, USGS. **Continuity:** Established 1977; 3 intermittent years. **Size:** 14.52 ha = 35.87 acres. **Description of Plot:** See AB 32:27-28 (1978). Little change is obvious in 5 years, but several of the large pines have fallen or died standing. **Water:** The 2 small creeks were running each count day. **Weather:** Feb. was average, but Dec. and Jan. were colder than usual. During counts, temp. range, 5-45°F, winds 1-20 mph from varied directions, sky from clear (2) to partly clear (6) to overcast (1). The only precipitation during counts was light snow for an hour once. Snow cover on count days varied from none (2), patchy (2), to complete (1-3 in. in depth, 5 times). **Coverage 1981-82:** Dec. 19, 24; Jan. 2 (partial), 9, 23, 28; Feb. 4, 6, 13, 20. Total, 9 complete daylight trips of 124-168 min. and averaging 142 min, with 2 observers on 2 trips and 1 observer on 7 trips, with an abbreviated day trip (2 observers). Total: 28 obs.-hours. **Count:** N. Cardinal, 4 (28, 11); Blue Jay, 3 (21, 8); Am. Crow, 3; Carolina Chickadee, 3; Tufted Titmouse, 3; Eur. Starling, 3; Yellow-rumped Warbler, 3; Red-breasted Nuthatch, 2 (14, 6); White-breasted Nuthatch, 2; Golden-crowned Kinglet, 2; Red-bellied Woodpecker, 1 (7, 3); Downy Woodpecker, 1; Pileated Woodpecker, 1; Cedar Waxwing, 1; Dark-eyed Junco, 1; Purple Finch, 1; Red-shouldered Hawk, +; Red-tailed Hawk, +; Red-headed Woodpecker, +; Yellow-bellied Sapsucker, +; Hairy Woodpecker, +; N. Flicker, +; Brown Creeper, +; Am. Robin, +; Am. Goldfinch, +. **Average Total:** 34 birds (234/km², 95/100 acres). **Remarks:** 26 species. Only the jay, titmouse, kinglet, and N. Cardinal were noted on all 9 trips. Fresh remains were found of a Downy Woodpecker and a Blue Jay, indicating the feeding of a hawk (sp.) on the plot during the count period. Dwight Chamberlain and Jackson Webster assisted.—**DAN WEBSTER, Hanover College, Hanover, IN 47243.**

25. OAK-MAPLE FOREST AND FOREST EDGE. — **Location:** Illinois; Champaign Co., Trelease Woods, 6 mi NE of Champaign, 40°10'N, 88°12'W. **Continuity:** Established 1948; 30 intermittent years (last censused 1977). **Size:** 24 ha = 59.3 acres of forest plus 2.0 km or 1.25 mi of forest edge. **Description of Plot:** See AFN 2:151-152 (1948). **Weather:** Average temp. (°F) for Dec., Jan., and Feb. (departure from normal in parentheses) 26° (+4.3), 29° (+1.6), 34° (+2.9); total snowfall for the period Dec. through Feb. was 7 in. (-1 in.) with more than a trace of snow on only 6 days. **Coverage:** Dec. 20-21; Jan. 14, 21, 26; Feb. 11, 14, 17; 20 man-hours; all censuses between 0700 and 1000 hrs CST. **Count:** *Forest Interior Species:* Downy Woodpecker, 8 (33, 14); Brown Creeper, 8; Red-bellied Woodpecker, 4 (17, 7); White-breasted Nuthatch, 3 (13, 5); Hairy Woodpecker, 2 (8, 3); Great Horned Owl, 1 (4, 2); Winter Wren, +. *Forest-edge Species:*

Eur. Starling, 21 (11, 17); Dark-eyed Junco, 3 (2, 2); Purple Finch, 3; Blue Jay, 2 (1, 2); N. Cardinal, 2; Am. Tree Sparrow, 2; Ring-necked Pheasant, 1 (1, 1); Song Sparrow, 1; Red-tailed Hawk, +; Mourning Dove, +; Red-headed Woodpecker, +; N. Flicker, +; Am. Crow, +; Am. Robin, +; Swamp Sparrow, +; White-crowned Sparrow, +; Com. Grackle, +; House Sparrow, +. **Average Total:** *Forest Interior,* 26 birds (108/km², 44/100 acres); *Forest-edge,* 35 birds (18/km, 28/mi). **Remarks:** Number of forest interior birds was approx. twice the average of the most recent five-year period (1973-1977). This was due to an increase among members of the bark-foraging guild. Brown Creepers, Downy Woodpeckers, White-breasted Nuthatches, and Hairy Woodpeckers were the highest recorded in 47, 23, 18, and 14 years, respectively. Forest-edge total was approx. one-half of the five-year average. Numbers of Am. Tree Sparrows and Dark-eyed Juncos were particularly low. This may be owing to the omission of a narrow strip of edge vegetation along the S end of the woods which was included in previous censuses. Blue Jay numbers were the lowest since 1969. Purple Finches had not been reported since 1961.—**DAVID J. TAZIK, Sheldahl Vivarium, 606 E Healey Street, Champaign, IL 61820.**

26. BOTTOMLAND OAK-GUM-CYPRESS FOREST RECENTLY DISTURBED. — **Location:** Mississippi; Washington Co., N of State Highway 12 in Leroy Percy State Park, 4 mi W of Hollandale (parts of Sec. 5, 8 and 9; T-15N, R-7W) 33°10'N, 90°56'W, Swan Lake NW Quadrangle, USGS. **Continuity:** Established 1971; 12 intermittent years (1976 omitted because of inaccessibility during construction). **Size:** 11.4 ha = 28.1 acres. **Description of Plot:** See AB 25:638-639 (1971) and AB 32:30 (1978) for description of alterations. **Weather:** Mean high during count period: 50.1°F; mean low: 34.1°; total precip.: 7.53 in.; previous 10-year averages: 50.1°F, 33.0° and 7.78 in. Preceding fall had average temp. and much above average precipitation December rainfall was greatest of record for any month since 1915. **Coverage:** Jan. 9, 15, 23, 29, 30; Feb. 6, 19-20; total of 8 trips; starting times 0910 to 1220; 4 a.m., 4 p.m., averaging 120 min. **Count:** Com. Grackle, 16 (141, 57); Am. Robin, 9 (79, 32); House Sparrow, 8 (70, 28); White-throated Sparrow, 6 (53, 21); N. Cardinal, 4 (35, 14); Carolina Chickadee, 3 (26, 11); Tufted Titmouse, 3; Red-bellied Woodpecker, 2 (18, 7); Carolina Wren, 2; Golden-crowned Kinglet, 2; Ruby-crowned Kinglet, 2; Yellow-rumped Warbler, 2; Dark-eyed Junco, 2; Rusty Blackbird, 2; Yellow-bellied Sapsucker, 1 (9, 4); Downy Woodpecker, 1; Hairy Woodpecker, 1; N. Flicker, 1; Pileated Woodpecker, 1; Blue Jay, 1; Cedar Waxwing, 1; Rufous-sided Towhee, 1; Song Sparrow, 1; Swamp Sparrow, 1; Red-tailed Hawk, +; *Buteo* (sp.), +; Am. Woodcock, +; E. Phoebe, +; Brown Creeper, +; Winter Wren, +; N. Mockingbird, +; Brown Thrasher, +; Hermit Thrush, +; Eur. Starling, +; Red-winged Blackbird, +; Am. Goldfinch, +. **Average**

Total: 73 birds (642/km², 260/100 acres) **Remarks:** Total species, 36. Seen on 7 or more trips were: Red-bellied Woodpecker, Yellow-bellied Sapsucker, Downy Woodpecker, Blue Jay, Carolina Chickadee, Tufted Titmouse, Carolina Wren, Am. Robin, Yellow-rumped Warbler, House Sparrow, N. Cardinal, White-throated Sparrow. A contingent of House Sparrows has taken up residence in the Park Maintenance Building in the tract. The food supply was below average, and consisted of weed seeds, insect larvae, deciduous holly berries (through Jan.), and flying insects (on the last 2 count days). Poison Ivy berries, heretofore a staple, were totally non-existent during the count period. The cleared areas of 7 years ago continue to regenerate. The Park Management is keeping the spoil banks and roadsides clear of growth, creating a certain "edge" effect. The average total was very near the 1981 figure. Total species was up from 1982.—**G. E. ALEXANDER, JR., 930 South Washington Avenue, Greenville, MS 38701.**

OAK-HICKORY FORESTS IN NORTHEASTERN KANSAS

The following 6 studies represent the fifth consecutive winter of research on birds in 20-acre plots of oak-hickory forest in S. Douglas, Kansas. See AB 33:66-67, 1979, for a description of vegetation and topography.

Weather data from the climatological station at the Univ. of Kansas at Lawrence, 12 mi NW of the study areas, indicate a very mild winter. The average highs for Jan. and Feb. were 38.7°F and 44.3°, both within 1 degree of the 30-yr. average. The total precipitation of 1.7 in. for the period is low. The ground was snow-free throughout most of the census period except for 6+ in. of snow on the ground Feb. 2-9.

Red-headed Woodpeckers and Golden-crowned Kinglets both increased over previous years and Downy Woodpeckers continued a declining trend, first noticed 3 years ago.

Our thanks to the Field Research Committee, Division of Biological Sciences, at the Univ. of Kansas for use of research areas under their control and to Mr. and Mrs. Tom Manson (Sturdy Woods), Mr. and Mrs. Thomas Beisecker, and Mr. and Mrs. Earl Cutler (portion of Cliff Woods) for access to their properties.—**ROGER L. BOYD, CALVIN L. CINK, and TIMOTHY WAGNER, Biol Dept., Baker Univ., Baldwin City, KS 66606**

27. OAK-HICKORY FOREST I. — **Location:** Kansas; Douglas Co., on the Univ. of Kansas Wall Biological Reserve. Predominantly on the NW¼, SW¼, Sec. 28, T14S, R20E, 38°48'N, 95°12'W, Baldwin City Quadrangle, USGS. **Size:** 8.1 ha = 20 acres **Coverage:** Jan. 4, 6, 10-11, 13-14, 18-19, 21 **Total:** 9 counts, 1 between 1450-1645 and 8 between 0800-1145, averaging 84 min **Count:** Red-headed Woodpecker, 12 (148, 60); Tufted Titmouse, 3 (37, 15); Dark-eyed Junco, 3; Blue Jay, 2 (25, 10); White-breasted Nuthatch, 2; Golden-crowned Kinglet, 2, N Bobwhite, 1 (12, 5); Downy Woodpecker, 1,

Black-capped Chickadee, 1, Red-bellied Woodpecker, +, Yellow-bellied Sapsucker, +, Hairy Woodpecker, +; N. Flicker, +; Brown Creeper, +. **Average Total:** 27 birds (334/km², 135/100 acres). **Remarks:** Total species, 14. Species number is average. Average total below 5-yr. average owing to decrease from last year of Red-headed Woodpecker, Blue Jay and Tufted Titmouse. Downy Woodpecker has experienced a continued decrease.

28. OAK-HICKORY FOREST II. —

Location: Kansas; Douglas Co., on the Univ. of Kansas Breidenthal Biological Reserve and Cedar Crest Wildlife Refuge (Cliff Woods). Predominantly on the NE¹/₄, Sec. 28, T14S, R20E, Baldwin City Quadrangle, USGS. **Size:** 8.1 ha = 20 acres. **Coverage:** Jan. 6-7, 10, 12-13, 17-18, 20-21. Total 9 counts, 1 during 1530-1650 and 8 during 0830-1155; average 89 min. **Count:** Red-headed Woodpecker, 14 (173, 70); Tufted Titmouse, 7 (86, 35), Golden-crowned Kinglet, 3 (37, 15); N. Bobwhite, 2 (25, 10); Black-capped Chickadee, 2, White-breasted Nuthatch, 2; Red-bellied Woodpecker, 1 (12, 5); Downy Woodpecker, 1; N. Flicker, 1; Blue Jay, 1; Brown Creeper, 1; N. Cardinal, 1; Dark-eyed Junco, 1, Am. Goldfinch, 1; Red-tailed Hawk, +; E. Bluebird, +; Am. Robin, +. **Average Total:** 38 birds (469/km², 190/100 acres). **Remarks:** Total species, 17. Species number is average. Average total higher owing to increases in Red-headed Woodpecker, Tufted Titmouse and Golden-crowned Kinglet. Blue Jay was lower than previous years.

29. OAK-HICKORY FOREST III. —

Location: Kansas; Douglas Co., on the Univ. of Kansas Breidenthal Biological Reserve. Predominantly on the NE¹/₄, NE¹/₄, Sec. 28, T14S, R20E, Baldwin City Quadrangle, USGS. **Size:** 8.1 ha = 20 acres. **Coverage:** Jan. 5, 7, 11-12, 14, 17, 19-20, 22. Total, 9 counts, 1 during 1430-1600 and 8 during 0800-1105, averaging 83 min. **Count:** Golden-crowned Kinglet, 4 (49, 20); Black-capped Chickadee, 3 (37, 15); White-breasted Nuthatch, 3; Purple Finch, 3; Red-headed Woodpecker, 2 (25, 10); Tufted Titmouse, 2; N. Cardinal, 2; Red-bellied Woodpecker, 1 (12, 5), Downy Woodpecker, 1; N. Flicker, 1; Blue Jay, 1; Brown Creeper, 1; E. Bluebird, 1, Hairy Woodpecker, +; Am. Crow, +; Carolina Wren, +; Am. Robin, +; Am. Goldfinch, +. **Average Total:** 25 birds (309/km², 125/100 acres). **Remarks:** Total species, 18. Species number is average. Average total decreased mainly owing to declines of Red-headed Woodpecker, titmouse and junco. Blue Jay and Downy Woodpeckers continued their decrease from previous years.

30. OAK-HICKORY FOREST IV. —

Location: Kansas; Douglas Co., Sturdy's Woods. Predominantly on the NE¹/₄, NW¹/₄, Section 27, T14S, R20E, 38°48'N, 95°10'W, Baldwin City Quadrangle, USGS. **Continuity:** Established 1979, 5 years. **Size:** 8.1 ha = 20 acres. **Coverage:** Jan. 5, 7, 10, 13, 20, 28; Feb. 3, 10. Total 8 trips, 0800-1550, averag-

ing 60 min. **Count:** Red-headed Woodpecker, 10 (124, 50), Tufted Titmouse, 4 (49, 20), Dark-eyed Junco, 4; Blue Jay, 2 (25, 10); Golden-crowned Kinglet, 2; N. Bobwhite, 1 (12, 5); Red-bellied Woodpecker, 1; Downy Woodpecker, 1; Black-capped Chickadee, 1; White-breasted Nuthatch, 1; Brown Creeper, 1; Hairy Woodpecker, +; N. Flicker, +; Am. Crow, +; Am. Robin, +; N. Cardinal, +. **Average Total:** 28 birds (346/km², 140/100 acres). **Remarks:** Total species, 16. Many Red-headed Woodpeckers were seen on all trips and were largely responsible for the density increase of over 100% over the winter of 1982. Juncos were seen in small flocks on three occasions. A covey of N. Bobwhite was observed on one trip.

31. OAK-HICKORY FOREST V. —

Location: Kansas; Douglas Co., East Beisecker Woods. Predominantly on the NE¹/₄, NE¹/₄, Section 35, T14S, R20E, 38°48'N, 95°09'W, Baldwin City Quadrangle, USGS. **Continuity:** Established 1979, 5 years. **Size:** 8.1 ha = 20 acres. **Coverage:** Jan. 4, 12, 17, 22, 29; Feb. 5, 12-13. Total 8 trips, 0830-1150, averaging 1.2 hours. **Count:** Red-headed Woodpecker, 7 (86, 35); Dark-eyed Junco, 4 (49, 20); Tufted Titmouse, 3 (37, 15); Black-capped Chickadee, 2 (25, 10); Golden-crowned Kinglet, 2; Am. Robin, 2; N. Flicker, 1 (12, 5); Blue Jay, 1; White-breasted Nuthatch, 1; Brown Creeper, 1; Red-bellied Woodpecker, +; Downy Woodpecker, +. **Average Total:** 24 birds (297/km², 120/100 acres). **Remarks:** Total species, 12. Red-headed Woodpeckers were more abundant this year and along with Tufted Titmouse were seen on all trips. Downy Woodpeckers have declined over the past year and were seen on only 2 of 8 trips.

32. OAK-HICKORY FOREST VI. —

Location: Kansas; Douglas Co., West Beisecker Woods. Predominantly on the SW¹/₄, NE¹/₄, Section 35, T14S, R20E, 38°48'N, 95°09'W, Baldwin City Quadrangle, USGS. **Continuity:** Established 1979, 5 years. **Size:** 8.1 ha = 20 acres. **Coverage:** Jan. 4, 12, 17, 22, 29; Feb. 5, 12-13. Total 8 trips, 0830-1150, averaging 1.3 hours. **Count:** Red-headed Woodpecker, 8 (99, 40); Tufted Titmouse, 5 (62, 25); Am. Robin, 4 (49, 20); Blue Jay, 3 (37, 15); White-breasted Nuthatch, 2 (25, 10); Red-bellied Woodpecker, 1 (12, 5); N. Flicker, 1; Golden-crowned Kinglet, 1; Sharpshinned Hawk, +; Red-tailed Hawk, +; Great Horned Owl, +; Downy Woodpecker, +; Hairy Woodpecker, +. **Average Total:** 25 birds (309/km², 125/100 acres). **Remarks:** Total species, 13. After a marked decline last winter, this plot showed a dramatic increase by tripling its density. Red-headed Woodpeckers showed a major increase. Downy Woodpeckers in contrast, declined and were seen on only 2 trips.

33. OAK-HICKORY FOREST VII. —

Location: Kansas; Douglas Co., Priestley's Woods. Predominantly on NW¹/₄, SW¹/₄, Sec. 22, T14S, R20E, 38°48'N, 95°12'W, Baldwin City Quadrangle, USGS. **Continuity:** Established 1982, 2 years. **Size:** 8.1 ha = 20 acres. **Description of Plot:** See AB 36.85 (1982). **Weather:** Relatively mild temperatures. Average temperatures at beginning of trips 34°F (range 28°-48°). There was 8-10 in. of snow with more falling on the first trip, but most was gone by the third trip. Raining once, just cloudy once, partly cloudy twice, and clear once. **Coverage:** Feb. 5, 11-12, 19-20, 26. Total 6 trips, 0730-1055, averaging 70 min. **Count:** Black-capped Chickadee, 6 (74, 30); Blue Jay, 5 (62, 25); N. Cardinal, 3 (37, 15); Dark-eyed Junco, 3; Downy Woodpecker, 2 (25, 10); Hairy Woodpecker, 2; Am. Crow, 2; Tufted Titmouse, 2; White-breasted Nuthatch, 2; Brown Creeper, 2; Red-tailed Hawk, 1 (12, 5); Red-bellied Woodpecker, 1, E. Bluebird, 1; Am. Robin, 1; N. Goshawk, +; Red-headed Woodpecker, +; Yellow-bellied Sapsucker, +; N. Flicker, +; Winter Wren, +; Golden-crowned Kinglet, +; Lincoln's Sparrow, +; Purple Finch, +; Am. Goldfinch, +. **Average Total:** 33 birds (408/km², 165/100 acres). **Remarks:** 23 species. Average total is much lower than last year owing to significant decreases in robin, chickadee, junco, and crow. The goshawk was representative of an invasion in E. Kansas this winter. My thanks to Nellie Holmes and Martha Buller for permission to conduct the study on their land.—ROGER L. BOYD, *Biol. Dept., Baker Univ., Baldwin City, KS 66006*

34. DOUGLAS FIR-PONDEROSA PINE FOREST. —

Location: Colorado; El Paso Co., 0.7 mi E of Univ. of Colorado campus, 1000 ft. N of end of Flintridge Dr.; 38°52'N, 104°47'W, Pikeview Quadrangle, USGS. **Continuity:** New (BBC 1982). **Size:** 7.5 ha = 18.6 acres. **Description of Plot:** See AB 37:87-88 (1983). **Weather:** More than average snowfall during Dec.-Mar. resulted in a continuous 50-70% snow cover on the plot which is a NW-facing slope and has an almost complete tree cover. Average temp. were 35-45°F during the day and lows of 20-35° at night during Jan.-Mar. **Coverage:** Jan. 28-30, Feb. 11, 13, 20, 25; Mar. 14. 8 trips, both a.m. and p.m., averaging 1.3 hours. **Count:** Dark-eyed Junco, 9 (120, 48); Black-billed Magpie, 6 (80, 32); Mountain Chickadee, 4 (53, 22); Am. Robin, 3 (40, 16); Scrub Jay, 2 (27, 11); Townsend's Solitaire, 2; Cooper's Hawk, 1 (13, 5); Downy Woodpecker, 1, Hairy Woodpecker, 1; White-breasted Nuthatch, 1; House Finch, 1; Steller's Jay, +, Am. Crow, +; Brown Creeper, +; Am. Goldfinch, +. **Average Total:** 31 birds (412/km², 167/100 acres). **Remarks:** Total species, 15. Magpies and Dark-eyed Juncos were seen on every trip. At least as many as recorded on the study area were seen flying in small groups (2-3) up to flocks of 18-20 over the top of the bluff. Scrub Jays, Am. Robins and Townsend's Solitaires were seen on all but 1 trip and Mountain Chickadees and White-breasted Nuthatches on all but 2. One Steller's Jay was seen on each of 4 trips and is the only true montane indicator species recorded for this isolated montane forest stand.—DON VAN HORN (compiler) and REBECCA HOLMES, *Univ. of Colorado, Colorado Springs, CO 80907*.

35. DECIDUOUS - CONIFEROUS NORTH SLOPE. — **Location:** Utah, Washington Co., Zion Nat'l Park, S side of Heaps' Canyon; 37°15'30"N, 112°57'30"W; Zion Nat'l Park Topo Map, USGS. **Size:** 20.23 ha = 50 acres (rectangular, 275 × 880 yards, measured on map). **Continuity:** New (BBC, 1982). **Description of Plot:** See AB 37:90 (1983). **Weather:** Dry and warmer than usual during first half of period; frequent rain and some snow after mid-Jan. **Coverage:** Dec. 17, 26; Jan. 1, 8, 15, 22, 27; Feb. 4, 13, 15; 10 trips averaging 206 min., 1020-1605 MST. **Count:** Bushtit, 4 (20, 8); Plain Titmouse, 3 (15, 6); Golden-crowned Kinglet, 3; Scrub Jay, 1 (5, 2); White-breasted Nuthatch, 1; Winter Wren, 1; Ruby-crowned Kinglet, 1; Townsend's Solitaire, 1; Red-tailed Hawk, +; N. Saw-whet Owl, +; Yellow-bellied Sapsucker, +; Downy Woodpecker, +; Steller's Jay, +; Com. Raven, +; Clark's Nutcracker, +; Black-capped Chickadee, +; Mountain Chickadee, +; Brown Creeper, +; Am. Dipper, +; Rufous-sided Towhee, +. **Average Total:** 15 birds (74/km², 30/100 acres). **Remarks:** Total species, 20. The plot is shielded from direct sunlight during most of the day, is much colder than the surrounding areas, and so offers little for wintering birds. Most species were found in the oak-maple portions of the plot.—*JEROME L. GIFFORD, P. O. Box 85, Springdale, Utah 84767.*

36. SLICKROCK - PONDEROSA PINE-PYGMY FOREST-CHAPARRAL. — **Location:** Utah, Washington Co., Zion Nat'l Park, unsurveyed area along the Zion-Mt. Carmel highway, with S center of plot at the confluence of Pine and Clear Creeks; 37°12'53"N, 112°56'04"W; Zion Nat'l Park Topo Map (Zion Canyon Section), USGS. **Size:** 16.2 ha = 40 acres. **Continuity:** Established 1981, 3 years. **Description of Plot:** See AB 35:91-92 (1981). **Weather:** Warm and dry during Dec. and early Jan., frequent rain and snow after mid-Jan. **Coverage:** Dec. 18, 24; Jan. 3, 7, 12, 21, 26; Feb. 4, 8, 12; 10 trips averaging 138 min., 0920-1500 MST. **Count:** Dark-eyed Junco, 4 (25, 10); Plain Titmouse, 2 (12, 5); White-breasted Nuthatch, 2; Com. Raven, 1 (6, 3); W. Bluebird, 1; Yellow-bellied Sapsucker, +; Scrub Jay, +; Pygmy Nuthatch, +; Bewick's Wren, +; Hermit Thrush, +; Yellow-rumped Warbler, +. **Average Total:** 10 birds (62/km², 25/100 acres). **Remarks:** Total species, 11. The average total increased from 6 the 2 previous years, probably owing to the warm and dry weather during the first half of the period.—*JEROME L. GIFFORD, P. O. Box 85, Springdale, Utah 84767.*

37. PONDEROSA PINE-DOUGLAS FIR FOOTHILLS FOREST. — **Location:** Washington; Spokane Co.; Dishman Hills of Browne Mt., 2 mi E of Spokane, SE ¼ of Sec. 19, T25N, R44E, 47°39'N, 117°17'W, Spokane Quadrangle, USGS. **Continuity:** Established 1975, 8 intermittent years. **Size:** 11.15 ha = 27.55 acres (rectangular, 1600 × 750 ft, the long axis N-S, surveyed by tape and compass.) **Description of Plot:** See AB

30 1051-52 (1976) **Weather:** Temp +19° to +43°F, 32°F or above every trip except one. Cloudy to mostly cloudy (8 trips), mostly cloudy to mostly clear (1 trip), clear (1 trip). Wind 0-8 mph (up to 5 mph or more on 5 trips). Snow depth 0-6 in. (ground bare on 5 trips, 50% bare on 1 trip). **Coverage:** Dec. 15, 22, 27; Jan. 4, 12, 18, 25; Feb. 2, 8, 14. Trips 0955-1213. Total obs. hours 20.25. **Count:** Red Crossbill, 5 (45, 18); Red-breasted Nuthatch, 2 (18, 7); Ruffed Grouse, 1 (9, 4); Com. Raven, 1; Mountain Chickadee, 1; Pygmy Nuthatch, 1; N. Flicker, +; Black-capped Chickadee, +; chickadee sp., +; Golden-crowned Kinglet, +. **Average total:** 11 (99/km², 40/100 acres). **Remarks:** 9 species. A poor conifer seed crop.—*THOMAS H. ROGERS, E. 10820 Maxwell Ave., Spokane, WA 99206.*

38. BLACK SPRUCE-TAMARACK BOG. — **Location:** New York; Delaware Co., Mud Lake Bog, about 2 mi E of West Davenport; 42°29'N, 74°45'W, West Davenport Quadrangle, USGS. **Continuity:** Established 1972; 8 intermittent years. **Size:** 4.57 ha = 11.3 acres (1.9 acres central water not included in plot area). **Description of Plot:** See AB 26:659-661 and 959 (1972). **Weather:** Same as #3 Upland Oak Forest. **Coverage:** Jan. 13-14, 22-23, 25-28; Feb. 12, 15, 19, 22. **Total:** 12 trips, 0830-1600, mostly 1000-1600, averaging 79 obs. min. **Count:** Black-capped Chickadee, 6 (131, 53); Golden-crowned Kinglet, 3 (66, 27); Hairy Woodpecker, +; White-breasted Nuthatch, +; Brown Creeper, +. **Average Total:** 9 birds (197/km², 80/100 acres). **Remarks:** 5 species. Chickadee and kinglet were each seen on 10 trips.—*J. ROBERT MILLER, Dept. of Chemistry, ANNE RUTKOWSKI, TED GRUEN, Hartwick College, Oneonta, N.Y. 13820.*

39. MOIST DECIDUOUS FOREST-LAKE ONTARIO WETLAND. — **Location:** New York; Oswego Co., 4 miles W of SUNY Oswego campus on Lake Ontario shore; 43°26'N, 76°35'W; Oswego West Quadrangle, USGS. **Continuity:** Established 1982, 2 yrs. **Size:** 16.2 ha = 40 acres. **Description of Plot:** See AB 37:32 (1983). **Weather:** Average diurnal temp. on days during trip was 37°F, during Jan. 24°, and during Feb. was 28°. No snow cover in Dec. with 1 in. average cover in Jan. and Feb. Skies were clear on 5 days, partly cloudy on 4, overcast on 5, and snow fell on 2 days. **Coverage:** Dec. 14, 16-17, 19, 26-27, 29; Jan. 13, 15, 22, 26, 29; Feb. 6, 12, 22. Total 15 trips averaging 1 hr, 0800-1700. **Count:** Cedar Waxwing, 17 (105, 43); Black-capped Chickadee, 10 (62, 25); House Finch, 5 (31, 13); Am. Robin, 3 (19, 8); Eur. Starling, 3; N. Cardinal, 2 (12, 5); Ring-billed Gull, 1 (6, 3); Downy Woodpecker, 1; Blue Jay, 1; Am. Crow, 1; Com. Redpoll, 1; Cooper's Hawk, +; Ruffed Grouse, +; Herring Gull, +; Red-bellied Woodpecker, +; Hairy Woodpecker, +; N. Flicker, +; White-breasted Nuthatch, +; Am. Tree Sparrow, +; White-throated Sparrow, +; Dark-eyed Junco, +; Am.

Goldfinch, + **Average Total:** 45 birds (278/km², 113/100 acres). **Remarks:** Total species, 22.—*GEORGE R. MAXWELL, Dept. of Zoology, Rice Creek Biological Field Station, St. Univ. College, Oswego, N.Y. 13126*

40. 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; 12 intermittent years (1978 omitted) **Size:** 51.8 ha = 128 acres. **Description of Plot:** See AB 25:644-645 (1971). Changes in the plot include backhoe work to straighten Dry Brook along the N border, erosion of about 25 ft of riverbank in the middle of the W side, and destruction by beavers in the felling or girdling of 13 4-14-in. cottonwood trees. Cultivated area: 13 acres oat stubble; 75 acres corn stubble. **Food:** Abundant corn gleanings, and fruit of Boxelder, Am. Sycamore and sumac; fair numbers of rabbits and voles, few squirrels and no wild grapes or top dressings, a flying squirrel was seen on 2 trips, tracks of a fox on 1 and a rabbit in the talons of a Great Horned Owl on another. **Weather:** Lake Erie, 60 mi NW of Scio, and the Genessee River were unfrozen and the ground was nearly bare throughout the study with only 1-2 in. of snow on the last 2 trips. Slough pools were open until the fifth trip. For Jan., precip. was 1.5 in. below normal and temp. averaged 2.5°F above normal with mean for beginning of trips 21.6°F. All but the first were on calm days (Weather data from WKBW-TV, Buffalo) **Coverage:** Dec. 19; Jan. 1, 6, 8-9, 13, 15, 22. Eight trips averaging 97.5 min. 0750-1059. Total obs.-hours 13. **Count:** House Finch, 37 (71, 29); Evening Grosbeak, 14 (27, 11); Black-capped Chickadee, 8 (15, 6); Mourning Dove, 7 (14, 5); House Sparrow, 7; Am. Tree Sparrow, 6 (12, 5); Am. Crow, 5 (10, 4); Downy Woodpecker, 4 (8, 3); White-breasted Nuthatch, 4; Am. Goldfinch, 3 (6, 2); Ring-billed Gull, 2 (4, 2); Rock Dove, 2; Blue Jay, 2; Eur. Starling, 2; Song Sparrow, 2; Com. Merganser, 1 (2, 1); Herring Gull, 1; Cedar Waxwing, 1; N. Cardinal, 1; Field Sparrow, 1; White-throated Sparrow, 1; Dark-eyed Junco, 1; Purple Finch, 1; Cooper's Hawk, +; Great Horned Owl, +; Belted Kingfisher, +; Tufted Titmouse, +. **Average Total:** 113 birds (218/km², 88/100 acres). **Remarks:** Total species, 27. New this year was the Tufted Titmouse. Comparing 1983 with the 1971-82 average (in parentheses): Species, 27 (26) Average Total, 113 (176); Am. Crow, 5 (74), and excluding Am. Crow and Snow Bunting, 108 (99). Seen on every trip were the Black-capped Chickadee, House Sparrow and House Finch. On every trip but 1 were the Downy Woodpecker, Am. Crow, White-breasted Nuthatch and Evening Grosbeak. The Com. Merganser, Cooper's Hawk, Great Horned Owl, Belted Kingfisher, Tufted Titmouse and Cedar Waxwing appeared only once. Thanks is extended to Charles Maybee, owner, for permission to use the property.—*VIVIAN MILLS PITZRICK, Amity Lake, Belmont, NY 14813.*

41 MIXED LOWLAND FOREST AND MEADOW WITH STREAM. — Location:

Pennsylvania; Erie Co., 0.3 mi S of the Borough of Edinboro on W side of State Highway 99; extends S through the Big Conneauttee Creek Valley, 41°51'30"N, 80°07'30"W, Cambridge Springs Quadrangle, USGS. **Continuity:** New. **Size:** 8.1 ha = 20 acres (rectangular), 1205 ft N-S by 723 ft. E-W. **Description of Plot:** See AB 37:75 (1983). **Weather:** The temp. averaged 11.2°F above normal in Dec. and 6.0° above normal in Jan. Precip. was 0.5 in. above normal in Dec. and 1.0 in. below normal in Jan. Snow cover was present except during the first week of the study and accumulated to a maximum depth of 12 in. during the latter part. Temp. range during the study period was -10°-+39°F. The stream flowing through the area is the outlet for Edinboro Lake and does not freeze over during the winter. **Coverage:** Jan. 2, 5, 7, 13, 17-18, 23, 29. Total: 8 trips averaging 1 hr. 45 min., 0800-1600. **Count:** Am. Goldfinch, 8 (99, 40); Black-capped Chickadee, 7 (86, 35); Am. Tree Sparrow, 7; N. Cardinal, 6 (74, 30); Purple Finch, 6; Dark-eyed Junco, 5 (62, 25); House Sparrow, 4 (49, 20); Mallard, 3 (37, 15); Song Sparrow, 3; House Finch, 3; Belted Kingfisher, 2 (25, 10); Downy Woodpecker, 2; Blue Jay, 2; Am. Crow, 2; White-breasted Nuthatch, 2; Great Blue Heron, 1 (12, 5); Red-shouldered Hawk, 1; Am. Kestrel, 1; Hairy Woodpecker, 1; Brown Creeper, 1; Eur. Starling, 1; Ring-necked Pheasant, +; Golden-crowned Kinglet, +. **Average Total:** 68 birds (840/km², 340/100 acres). **Remarks:** 23 species. Birds seen per trip ranged from 31 to 74. Bird feeders were present at 1 location on the study site and probably had some influence on density and diversity. Fewer Mallards were present this year because the stream remained low throughout the period. Evening Grosbeaks were absent while Purple and House finches were new.—DONALD B. SNYDER, Dept. of Biology, Edinboro Univ. of Pennsylvania, Edinboro, PA 16444.

42. MIXED UPLAND HABITAT. — Location:

District of Columbia; the central third of Glover-Archbold Park, a long, narrow stream valley park, 38°55'N, 77°05'W, Washington W Quadrangle, D.C.-MD.-VA., USGS. **Continuity:** Established 1960: 24 years. **Size:** 14.2 ha = 35 acres. **Description of Plot:** See AFN 14:502-503 (1960). **Weather:** Average temp. of trips, 46°F; 2 with snow remaining from record 20 in. of Feb. 11; 7 trips were clear, 4 cloudy, wind mostly calm but 3 trips with up to 5 mph, 1 10 mph, 1 15-20. **Coverage:** Dec. 26, Jan. 1, 4, 7-9, 12, 29; Feb. 19, 21, 27. Total, 11 trips, 10.6 complete coverages of the area, 0820-1610, averaging 1.86 hr both a.m. and p.m. **Count:** Carolina Chickadee, 18 (127, 51); Am. Crow, 12 (85, 34); Rock Dove, 9 (64, 26); Blue Jay, 7 (49, 20); Tufted Titmouse, 6 (42, 17); N. Cardinal, 4 (28, 11); Downy Woodpecker, 3 (21, 9); Dark-eyed Junco, 3; Turkey Vulture, 2 (14, 6); Mourning Dove, 2; Red-bellied Woodpecker, 2; White-breasted Nuthatch, 2; White-throated Sparrow, 2; House Sparrow, 2; Black Vulture, 1 (7, 3); Ring-billed Gull, 1;

Pileated Woodpecker, 1, Brown Creeper, 1, Carolina Wren, 1; N. Mockingbird, 1; Eur. Starling, 1; Am. Goldfinch, 1; Red-tailed Hawk, +; Hairy Woodpecker, +; Fish Crow, +; Winter Wren, +; Golden-crowned Kinglet, +; Ruby-crowned Kinglet, +; Gray Catbird, +; Yellow-rumped Warbler, +; Fox Sparrow, +; Song Sparrow, +; Purple Finch, +; Pine Siskin, +. **Average Total:** 82 birds (579/km², 234/100 acres). **Remarks:** Total species, 34. Carolina Chickadees were up over recent years while Eur. Starlings were at their lowest, from a 24-year average of 13, much lower since 1976. The Rock Doves are found only in 1 corner of the area, near apartment buildings. Other figures were average.—SHIRLEY A. BRIGGS (compiler), L. HARTSELL CASH, OLIVE HOLBROOK, RICHARD RAINES, EDGAR H. SMITH, 7605 Honeywell Lane, Bethesda, MD 20814.



WB-PS 43. Putnam Co., Tenn. Mixed-Mesophytic Woods, Fields, and Brush. Photo/R. Simmers.

43. MIXED-MESOPHYTIC WOODS, FIELDS, AND BRUSH. — Location:

Tennessee; Putnam Co., in Barnes Hollow to NW of Lee Knob; 36°9'45"N, 85°22'W, Monterey Quadrangle, USGS. **Continuity:** Established 1978; 6 years. **Size:** 27.0 ha = 66.7 acres (resurveyed in 1982 using steel tape). **Description of Plot:** See AB 32:80 (1978) and 33:79 (1979). Changes: See AB 37:78 (1983). **Weather 1981-82:** Generally slightly milder than past winters, there were 2 severe cold waves, 1 on Jan. 17 when the temp. fell to -12°F or below. Most precip. fell as rain. Temp. range during trips, about 18°-55°F. Snow cover mostly absent (thin patches Jan. 12); light snow falling Jan. 14. **Coverage 1981-82:** Dec. 12-13, 20, 22, 26, 30; Jan. 2, 6, 12, 14, 20, 28, 30; Feb. 6, 17. Total 15 trips, 0745-1700, averaging 3.8 hours. **Count 1981-82:** (species followed by * were registered on every trip): Am. Robin, 27 (100, 40); Purple Finch, * 21 (78, 31); Eur. Starling, 20 (74, 30); White-throated Sparrow, * 18 (67, 27); Field Sparrow, * 12 (44, 18); Cedar Waxwing, 7 (26, 10); N. Cardinal, * 7; Rufous-sided Towhee, * 7; Dark-eyed Junco, 7; Yellow-rumped Warbler, * 6 (22, 9); Am. Goldfinch, 6; Carolina Chickadee, * 4 (15, 6); Downy Woodpecker, * 3 (11, 4); Am. Crow, 3; Tufted Titmouse, * 3; E. Bluebird, 3; Song

Sparrow * 3, Carolina Wren, * 2 (7, 3), Com Grackle, 2; Red-bellied Woodpecker, 1 (4, 1); Hairy Woodpecker, 1; N. Flicker, 1; Blue Jay, 1; Winter Wren, 1; Hermit Thrush, 1; Red-tailed Hawk, +; Am. Kestrel, +; Ruffed Grouse, +; Am. Woodcock, +; Yellow-bellied Sapsucker, +; Pileated Woodpecker, +; E. Phoebe, +; White-breasted Nuthatch, +; Brown Creeper, +; Golden-crowned Kinglet, +; Brown Thrasher, +; Fox Sparrow, +; Rusty Blackbird, +. **Average Total:** 167 birds (619/km², 250/100 acres). **Remarks 1982:** Total species, 38. The very large crop of beechnuts and fruits (notably of Flowering Dogwood, Carolina Buckthorn, sumacs, Japanese Honeysuckle, and Tulip-tree) probably accounts for the average total of 167 birds being the highest of any of the winters this study has been conducted. Two species absent in 1980-81, the Hermit Thrush and the towhee, were unusually numerous this winter (with up to 4 Hermit Thrushes and 10 towhees per trip). The Am. Robin, in low numbers in late Dec., gradually increased to peak numbers of 200 on Feb. 17. **Weather 1982-83:** Milder than most recent winters; 3 in. of snow on ground Dec. 11; ground otherwise bare. Temp. during count trips, 20°-60°F. **Coverage 1982-83:** Dec. 1-2, 6, 11, 18, 21, 27, 31; Jan. 6, 14, 21, 26. Total 12 trips, 0605-1720, averaging 3.45 hours. **Count 1982-83:** Purple Finch, * 15 (56, 22); N. Cardinal, * 13 (48, 19); Field Sparrow, * 11 (41, 16); Am. Goldfinch, * 10 (37, 15); White-throated Sparrow, * 8 (30, 12); Dark-eyed Junco, * 8; Mourning Dove, 5 (19, 7); Blue Jay, * 5; Carolina Chickadee, * 5; Tufted Titmouse, * 4 (15, 6); Golden-crowned Kinglet, * 3 (11, 4); E. Bluebird, 3; Song Sparrow, * 3; Downy Woodpecker, 2 (7, 3); White-breasted Nuthatch, * 2; Carolina Wren, * 2; Rufous-sided Towhee, * 2; Am. Woodcock, 1 (4, 1); Red-bellied Woodpecker, 1; Hairy Woodpecker, 1; N. Flicker, 1; Pileated Woodpecker, 1; E. Phoebe, 1; Brown Creeper, 1; Winter Wren, 1; Hermit Thrush, 1; Brown Thrasher, * 1; Eur. Starling, 1; Yellow-rumped Warbler, 1; Red-tailed Hawk, +; Yellow-bellied Sapsucker, +; Am. Crow, +; Am. Robin, +; N. Mockingbird, +. **Average Total:** 113 birds (419/km², 169/100 acres). **Remarks 1983:** Total species, 34. Wild food supplies this winter were near or below average; Japanese Honeysuckle and sumac fruits were numerous, Tulip-tree samaras fairly numerous (good crop), acorns fair, wild grapes numerous before the count started (exhausted by late Dec.), dogwood fruits in fair supply but soon exhausted. In both winters plenty of sunflower seed and mixed bird seed was put out nearly daily. The most abundant species this winter, the Purple Finch, has been present every year of this study; peak numbers of ca. 120 were attained on Jan. 17. As usual, many died striking the windows of my house; this year, the ratio of rosy birds killed to brown birds killed was about 1:12; about 40% of the feeder visitors were rosy-plumaged birds, however. The mild weather undoubtedly influenced the woodcock and phoebe. The Mourning Dove roosted regularly at night, but was very difficult to count, as it would leave and enter the plot at twilight; it was never seen during the

daylight hours Frugivores were mostly in low numbers this winter, insectivores (nuthatch, creeper, kinglet, etc.) in high numbers.—*RICHARD W. SIMMERS, JR., Box 170, Rt. 6, Cookeville, TN 38501.*

44. MIXED HABITAT-DISTURBED BOTTOMLAND. — **Location:** Oklahoma; Washington Co., Dewey, 2 mi W of intersection of 9th St and Hwy 75, 0.3 mi N on E bank of Caney River, 36°38'N, 95°58'W, Tulsa Quadrangle, USGS. **Continuity:** Established 1972; 11 consecutive years. **Size:** 40.5 ha = 100 acres. **Description of Plot:** See *AB* 26:976-977 (1972). **Weather:** Pleasant, 2 in. of snow in Jan. and again Feb. 1; average temp. were 27°F low, 35° high. **Coverage:** Dec. 30; Jan. 10, 17, 25, 31; Feb. 7. Six trips, 0800-1140. Total obs.-hours, 16. **Count:** Dark-eyed Junco, 17 (42, 17); N. Bobwhite, 15 (37, 15); Red-bellied Woodpecker, 9 (22, 9); Carolina Chickadee, 9; Blue Jay, 8 (20, 8); Tufted Titmouse, 6 (15, 6); Am. Robin, 5 (12, 5); Downy Woodpecker, 4 (10, 4); Am. Tree Sparrow, 4; Song Sparrow, 4; Am. Goldfinch, 4; Am. Crow, 3 (7, 3); N. Cardinal, 3; White-breasted Nuthatch, 2 (5, 2); Sharp-shinned Hawk, 1 (2, 1); Barred Owl, 1; Hairy Woodpecker, 1; N. Flicker, 1; Pileated Woodpecker, 1; Fox Sparrow, 1; Swamp Sparrow, 1; Red-winged Blackbird, 1; Great Horned Owl, +; Brown Creeper, +; Winter Wren, +; Golden-crowned Kinglet, +; E. Bluebird, +; Rufous-sided Towhee, +; Savannah Sparrow, +; Lincoln's Sparrow, +; Harris' Sparrow, +. **Average Total:** 101 birds (250/km², 101/100 acres). **Remarks:** Total species, 31. The species count was the lowest ever. The lowest individual count was 93 in 1979. Food crop was very poor. Except for the Sharp-shinned Hawk, avian predators were absent, possibly the height and density of dry vegetation kept them from seeing prey. Present on all counts were Red-bellied Woodpecker, Downy Woodpecker, Blue Jay, Carolina Chickadee, Tufted Titmouse, Song Sparrow and Dark-eyed Junco. This 100-acre plot lies in a bend of the Caney River on the W side of a section that is in pasture and wheat. The whole section, plus the 100-acres, has been leased to a rancher who installed strong fences and locked gates. I had permission to make the count, but to "belly under" the barbed wire. The plot appeared unaltered at the time of the count and cattle were not present.—*ELLA DELAP, 409 N. Wyandotte, Dewey, OK 74029.*

45. CAMPGROUND IN OLD ORCHARDS. — **Location.** Utah, Washington Co., Zion Nat'l Park, Watchman campground, loops A, B and C; 37°12'N, 113°00'W; Zion Nat'l Park Topographic Map (Zion Canyon Section), USGS. **Size:** 10.1 ha = 25 acres. **Continuity:** Established 1981, 3 years. **Description of Plot:** See *AB* 36:37 (1982). **Weather:** Dry during first half of period, with temp. slightly above normal; frequent rain and snow after mid-Jan. **Coverage:** Dec. 18, 31; Jan. 3, 7, 14, 22, 28; Feb. 4, 9, 12; 10 trips averaging 146 min., 0945-1540 MST. **Count:** Dark-eyed Junco, 47 (465,

188), Eur Starling, 7 (69, 28), White-crowned Sparrow, 7, N Flicker, 4 (40, 16), Downy Woodpecker, 2 (20, 8); Black-capped Chickadee, 2; Ruby-crowned Kinglet, 2; Yellow-bellied Sapsucker, 1 (10, 4); Hairy Woodpecker, 1; Scrub Jay, 1; Am. Robin, 1; W. Bluebird, 1; Am. Kestrel, +; N. Sawwhet Owl, +; Belted Kingfisher, +; Com. Raven, +; Red-breasted Nuthatch, +; Townsend's Solitaire, +; Rufous-sided Towhee, +; Song Sparrow, +. **Average Total:** 76 birds (751/km², 304/100 acres). **Remarks:** Total species: 20. The total woodpeckers dropped from 16 last year to 8; this possibly was the result of a poor pecan crop. Red-winged Blackbirds were missing this year, as in 1981; last year the species was second highest, with an average of 28 seen per trip.—*JEROME L. GIFFORD, P.O. Box 85, Springdale, UT 84767.*

MIXED RIPARIAN HABITATS OF SOUTHERN CALIFORNIA

The U.S. Bureau of Reclamation is studying the feasibility of constructing 2 dams along the Santa Margarita River in N San Diego County, California. The following 12 counts were accomplished during investigations by the U.S. Fish and Wildlife Service and the Bureau of existing environmental conditions on the river. We are attempting to use birds as general indicators of the quality of the environment in the project area. The proposed dams would result in the inundation of about 20 mi of the river and side creeks or about 1000 acres of riparian habitats and 1600 acres of shrublands (at conservation pool levels). Reduced flows downstream of the lower dam could affect 12 additional mi of the river or about 2550 acres of floodplain including approximately 1500 acres of vegetated riparian habitat and 300 acres of salt marsh, brackish marsh, and mudflat at the mouth of the river.

Ten counts included below are along the river, 2 downstream of the proposed lower dam and 8 spaced out above it to near the area of maximum inundation. The 2 counts along the San Luis Rey River were done in or near potential mitigation lands. The Santa Margarita River plots are located a maximum of about 12 airline mi apart.

Chris Nordby, Thomas Scott, and Richard Zembal are responsible for the vegetational analyses. I thank Chris Nordby for compilation of that data. Our studies were supported by the U.S. Fish and Wildlife Service, Ecological Services Office, Laguna Niguél, California, and the U.S. Bureau of Reclamation, Boulder City, Nevada.—*DAVID R. BONTRAGER, BRIAN E. DANIELS, THOMAS A. SCOTT, and RICHARD ZEMBAL (compiler), U.S. Fish and Wildlife Serv., 24000 Avila Rd., Laguna Niguél, CA 92677.*

46. RIVERINE AND CREEKSIDE RIPARIAN WOODLANDS. — **Location:** California; San Diego Co., about 3 mi NE of Fallbrook at the confluence of the Santa Margarita River and Rainbow Creek. Located mostly within NE ¼, Sec. 8, with NE tip in

SE ¼, Sec 5, T9S, R3W, 33°25'N, 117°13'W, Temecula Quadrangle, USGS. **Continuity:** New. **Size:** 9.75 ha = 24 1 acres ("L"-shaped with smaller arm extending up Rainbow Creek and the remainder, roughly 85% of plot, extending up the river, measured partially with tape and compass and in total by planimetry of a 1982 color aerial photo. **Description of Plot:** About 15% of the plot comprises the mixed woodland (willows, California Sycamore, and Coast Live Oak) along Rainbow Creek and the remainder is mostly willow woodland with some mixed woodland along the river mostly upstream from the creek mouth. The riverine riparian is about 250-390 ft wide and the creekside riparian is 150-250 ft wide. The plot extends upriver for about 3000 ft and upcreek for about 520 ft. The 2 water courses were 6-12 ft wide and about 30 ft wide and both contained flowing water during the entire study period. General habitat types and vegetation were assessed along a total of 757.7 m of transects. Low plant cover (below 6 ft) was analyzed by line intercept along the transects; counts of tree stems and stem diameters were recorded in a 1515.4 m² area (757.7 × 2 m); and canopy cover was assessed with 2 sightings through an ocular tube with crosshairs at each meter point (1 reading on each side of the transect tape) in woodland, such that 202 readings were taken along a 100 m length of transect. The vegetational analysis was accomplished on July 21, 26, 1982. The plot included approximately 45.1% tall willow woodland (greater than 5 m tall), 25.3% mixed woodland, 8.0% short willow woodland (less than 5 m tall), 8.4% scour channel with patchy riparian growth, 6.5% herbaceous to sub-shrubby riparian growth, 3% disturbed riparian (the result of ORV activities), and 3.7% flowing water as determined by linear measurements along the transects. A total of 1111 trees (2974/acre) was encountered in the belt transects. There were 2 species of willow and hybrids present in 5 size classes (class a, 0-1.5 in. dbh; b, 1.5-3; c, 3-6; d, 6-9; e, 9-15) Arroyo Willow, 761; 123; 20; 3; 3; Pacific Willow, 109; 30; 14; 4; 0; hybrid willows, 18, 10; 0; 0. California Sycamore occurred in 3 size classes: c-1, d-2, f(33-39 in.)-2. Coast Live Oak was encountered, b-4; as was Tree Tobacco, a-6; and Mexican Elder, a-1. Nine standing snags were also encountered a-7, b-1, c-1. Average tree canopy cover and tree stem densities were: 65.6% and 111 1 trees/100 m² (4498/acre) in tall willow woodland, 73.9% and 30/100 m² (1215/acre) in mixed woodland; and 23.4 and 190/100 m² (7692/acre) in short willow woodland. Low ground cover (below 6 ft) was contributed by 50 species of vascular plants and totaled 54.0% over the entire plot, although the addition of cover overlap (more than one species covering the same piece of ground) yields a ground cover estimate of 87.5%. The 12 most abundant low ground cover plants contributed 84.7% of the total cover and the relative percent of each (based upon 100% total) was: Desert Grape, 23.7%; Arroyo Willow, 23.1%; Pacific Willow, 8.5%; California Mugwort, 4.6%; Miner's-Lettuce, 4.4%; wild oats (*Avena* spp.), 4.3%; W. Blackberry, 3.4%; Mulefat, 3.4%; W. Poison-Oak, 3.0%; sweet clover, 2.8%,

Mexican Elder, 1 8%, and Com Cocklebur, 1 7% **Edge:** Similar riparian habitat continues for miles along the Santa Margarita River above and below the plot and also along Rainbow Creek to the E. The river bottom habitats here are bordered by chaparral, mostly on steep slopes with stands and individuals of Coast Live Oak most prevalent at the transition zone between riverine and shrubland/slope habitats. Annual grasslands and a dirt road parallel the E side of the river in a belt that varies from once to twice as wide as the riverine riparian belt and lies between the plot and the hillside chaparral. Elder and a few planted trees are scattered in the grasslands with locally abundant Coast Live Oaks. **Topography:** Elevations varied from 460 ft at the upstream creek edge to 400 ft at the downstream river edge, and about 460 ft at the upstream river edge. Local relief was not great and comprised the difference of a few feet between water or scour channel bottoms and slightly higher bars. **Weather:** Clear on 4 counts, overcast on 1, partly cloudy on 1, and completely clouded over on 1. Temp. averaged approximately 55°F, ranging from the low 40s to high 60s (°F). Light winds on 4 counts, no winds on 3 counts. **Coverage:** Dec 6-7, 13 (2); Jan. 3, 26; Feb. 4. **Total:** 7 trips, averaging 221 min each; 5 counts, 0715-1200 hrs; two counts, 1330-1645 hrs. **Count:** Yellow-rumped Warbler, 27 (277, 112); Song Sparrow, 15 (154, 62); Bushtit, 12 (123, 50); Wrentit, 12; Rufous-sided Towhee, 11 (113, 46); Ruby-crowned Kinglet, 10 (103, 41); Bewick's Wren, 8 (82, 33); Lark Sparrow, 8; Brown Towhee, 7 (72, 29); White-crowned Sparrow, 7; Anna's Hummingbird, 5 (51, 21); Plain Titmouse, 5; House Finch, 5; Lesser Goldfinch, 5; Scrub Jay, 4 (41, 17); California Quail, 3 (31, 12); Nuttall's Woodpecker, 3; N. Flicker, 3; Hutton's Vireo, 3; Orange-crowned Warbler, 3; Mourning Dove, 2 (21, 8), Com. Ground-Dove, 2; Black Phoebe, 2; California Thrasher, 2; Com. Yellowthroat, 2; Red-tailed Hawk, 1 (10, 4); Am. Kestrel, 1; Acorn Woodpecker, 1; House Wren, 1; Hermit Thrush, 1; Eur. Starling, 1; Fox Sparrow, 1, Green-backed Heron, +; Turkey Vulture, +, Black-shouldered Kite, +; Cooper's Hawk, +; Red-shouldered Hawk, +; Belted Kingfisher, +; Say's Phoebe, +; Com. Raven, +; Mountain Chickadee, +; Townsend's Warbler, +; Rufous-crowned Sparrow, +; Lincoln's Sparrow, +; W. Meadowlark, +. **Average Total:** 173 birds (1774/km², 718/100 acres). **Remarks:** Total species, 45. Eleven species observed on all counts: Anna's Hummingbird, Nuttall's Woodpecker, Black Phoebe, Plain Titmouse, Bewick's Wren, Ruby-crowned Kinglet, Wrentit, Yellow-rumped Warbler, Rufous-sided Towhee, Brown Towhee, and Song Sparrow. Six species observed on only 1 count: Turkey Vulture, Black-shouldered Kite, Belted Kingfisher, Say's Phoebe, Lincoln's Sparrow, and W. Meadowlark.—*DAVID BONTRAGER*.

47. RIVERINE WILLOW AND MIXED WOODLAND — **Location:** California; San Diego Co., on the N bank of the

San Luis Rey River, about 0.5 mi NE of the junction of Highway 76 and Mission Road. The plot is located partly within, but mostly above the mid-upper boundary of Sec. 20, T-10S, R-3W, 33°17'40"N, 117°07'W, Bonsall Quadrangle, USGS. **Continuity:** New. **Size:** 11.61 ha = 28.7 acres (irregularly shaped, following the stream course and measured with tape and compass). **Description of Plot:** A broad band of willow woodland and a narrower band of mixed woodland composed of willow, cottonwood and California Sycamore. Several sparsely vegetated scour channels course the length of the plot and parallel the river which here runs roughly NE to SW. The water course was mostly adjacent to the plot and was as wide as 50 m with flowing water throughout the study period. The general habitat types and vegetation were assessed along 610.1 m of transect run across the plot perpendicular to the river. Low plant cover (below 6 ft) was analyzed using the line intercept method along the transects; number of tree stems and dbh were recorded over a 1220.2 m² (610.1 m × 2 m) area; the canopy cover in woodland habitats was estimated by measuring the crown of each tree, as trees were not in leaf during the time of vegetation analysis (April 6, 1983). The plot included approximately 54.2% mature, short (20 ft) willow woodland, 21% mixed woodland, 8.8% herbaceous to subshrubby riparian growth, 7.3% riparian with scattered willow, 4.5% disturbed riparian, 2.6% sparsely vegetated scour channel, and 1.7% flowing water, as determined by linear measurements along the transects. A total of 2368 trees (7859/acre) in five size classes (class a, 0-1.5 in. dbh; b, 1.5-3; c, 3-6; d, 6-9; e, 9-15) were encountered. These included: Arroyo Willow 1656; 76; 48; 10; 2; Hinds Willow, 242; 0; 0; 0; Yellow Willow, 62; 21; 10; 1; 2; Gooding Willow, 91; 21; 11; 0; 0; Willow Hybrid, c-1; Fremont's Cottonwood, 22; 11; 4; 3; 4; saltcedar, a-6. The estimated percent canopy cover and tree stem density in woodland habitats were: 81% and 40/100 m² (1620/acre) in mixed woodland; 82% and 329/100 m² (13,324/acre) in willow woodland; and 39% with 133/100 m² (5387/acre) in willow woodland-riparian habitat. Low ground cover was contributed by 16 species of plants and totalled 54.8% over the entire plot. These included: California Mugwort, 28.3%; cattails, 26%; Bermuda grass (*Cynodon dactylon*), 7.8%; Douglas Mulefat, 5.9%; Bulrush, 4.3%; mustard, 4.3%; Mulefat, 3.1%; bromes (*Bromus* spp.), 3.7%; Spike-rush, 1.6%; Com. Cocklebur, 1.5%; Arroyo Willow, 1.5%; Telegraph Weed, 1.3%; Milk Thistle, 1.2%; Yerba Mansa, 0.4%; and sprouting forbs, 8.8%. **Edge:** The woodland continues for miles along the river. The plot is bounded by the San Luis Rey River on the SE and by Highway 76 on the NW. **Topography:** The plot is relatively flat at about 180 ft MSL. **Weather:** Temp. extremes, 45-72° with an average of around 65°F. Skies were clear during 6 trips. A light mist fell briefly during 1 count and observations were halted for 25 min on another count during a light rain. **Coverage:** Jan. 4, 7, 10, 17-18; Feb. 5, 7, 12. **Total:**

8 trips, 0700-1200, averaging 217 min each **Count:** Song Sparrow, 40 (344, 139), Yellow-rumped Warbler, 22 (189, 77); Bushtit, 21 (181, 73); Com. Yellowthroat, 16 (138, 56); Am. Goldfinch, 10 (86, 35); Ruby-crowned Kinglet, 9 (77, 31); House Finch, 8 (69, 28); Anna's Hummingbird, 6 (52, 21), Bewick's Wren, 6; Rufous-sided Towhee, 4 (34, 14); Hutton's Vireo, 3 (26, 10); Nuttall's Woodpecker, 2 (17, 7); Downy Woodpecker, 2; Black-shouldered Kite, 1 (9, 3); Red-shouldered Hawk, 1; Red-tailed Hawk, 1; Am Kestrel, 1; N. Flicker, 1; Black Phoebe, 1, Scrub Jay, 1; Plain Titmouse, 1; Wrentit, 1, Eur. Starling, 1; Orange-crowned Warbler, 1, Brown Towhee, 1; Red-winged Blackbird, 1, Lesser Goldfinch, 1; Am. Bittern, +; Great Blue Heron, +; Snowy Egret, +; Cooper's Hawk, +; Ring-necked Pheasant, +; Greater Yellowlegs, +; Mourning Dove, +; Cassin's Kingbird, +; Am. Crow, +; House Wren, +; Solitary Vireo, +; W. Meadowlark, + **Average Total:** 163 birds (1403/km², 568/100 acres). **Remarks:** Total species, 39.—*DAVID R. BONTRAGER*.

48. RIVERINE WILLOW WOODLAND WITH SCATTERED COTTONWOODS. — **Location:** California; San Diego Co., along the Santa Margarita River about 1.5 mi N of Fallbrook and 0.25 mi upstream of the mouth of Sandia Creek, in the NW ¼ Sec 7, continuing to Sec 7 center, T9S, R3W, 33°25'N, 117°08'W, Quadrangle, USGS. **Continuity:** New. **Size:** 12.7 ha = 31.4 acres (irregularly shaped, following the river bottom, but roughly 2750 × 500 ft, measured with tape and compass and planimetry of aerial photo.) **Description of Plot:** A band that varied from 350 ft to 800 ft wide, of willow and mixed woodlands (willows; Black Cottonwood, and California Sycamore) spans the river bottom which here is oriented roughly SE-NW. The water course width varied from 30 to 90 ft, and there were several small side channels on the plot. Flowing water was present throughout the entire study period. A sparsely vegetated sandbar, measuring about 60 × 875 ft, abutted a vertical dirt bank that was up to 15 ft high within the plot along the center of the NE boundary. Two small side creeks course into the plot, one from the S near the SE plot corner, and the other from the N near the plot center. General habitat types and vegetation were assessed along 756.9 m of transect. The vegetational analysis was accomplished on July 20, 21, 1982 as described in #46. The plot included approximately 56.3% mixed woodland, 16.0% tall willow woodland (greater than 5 m tall), 13.8% herbaceous to sub-shrubby riparian growth with scattered willows, 11.1% scour channel with some low cover, and 2.7% water channel, as determined by linear measurements along the transects. A total of 450 trees (1204/acre) was encountered in the belt transects in 5 size classes (size class a, 0-1.5 in. dbh; b, 1.5-3; c, 3-6; d, 6-9; e, 9-15): Arroyo Willow, 247; 25, 13; 9; 3; Pacific Willow, 59; 21; 7; 4; 2; Hinds Willow, a-16; Black Cottonwood, 27; 2; 4; 6, 1; Sycamore, c-1; and aborescent Tree Tobacco, a-3. A total of 32 standing snags was encountered: 23; 3; 6; 0; 0. Average tree canopy

cover and tree stem densities were 66.9% and 27 stems/100 m² (1093/acre) in tall willow woodland; 66.7% and 32.1/100 m² (1300/acre) in mixed woodland; and 9.6% and 23/100 m² (931/acre) in riparian with scattered willows. Low ground cover was contributed by 45 plant species and totalled 54.9% over the entire plot. Factoring in overlap where ground cover occurred yielded a cover estimate of 105.1%. The 15 most abundant low ground cover plants contributed 90.2% of the total cover and the relative percentage of each (based upon 100% total) was: Desert Grape, 36.3%; Arroyo Willow, 18.7%; Giant Reed, 7.3%; California Mugwort, 4.5%; White Sweet Clover, 3.2%; Pacific Willow, 2.8%; Com. Cocklebur, 2.7%; Sandbar Willow, 2.6%; scouring-rushes, 2.6%; Black Cottonwood, 2.4%; Telegraph Weed, 1.8%; Douglas Mulefat, 1.4%; W. Poison-oak, 1.4%; Douglas Nightshade (*Solanum douglasii*), 1.3%; and W. Blackberry, 1.2%. **Edge:** The riparian habitats continue along the river for miles upstream and down. The hills that border the river here are relatively steep and covered with dense chaparral, although Coast Live Oaks fringe and occur scattered within the shrublands near the plot boundaries. Paved road marks the downstream or NW edge of the plot (Sandia Creek Road) and runs along the downstream ¼ of the NE boundary. **Topography:** The plot is relatively flat at 340 ft. Local relief is small and contributed by the few feet difference between bars and channels and also by the vertical embankment along the NE boundary. **Weather:** Rainfall was about twice the normal amount for the season. Temp. for the period were normal. **Coverage:** Dec. 14, 27; Jan. 4, 11, 18; Feb. 1, 15, 16. **Total:** 8 trips, average of 130 min each; Feb. 15 from 1415 to 1615 hrs; the rest of the surveys during 0730-1045 hrs. **Count:** Song Sparrow, 41 (323, 131); Yellow-rumped Warbler, 28 (220, 89); Bewick's Wren, 19 (150, 61); Com. Yellowthroat, 12 (94, 38); Rufous-sided Towhee, 11 (87, 35); Wrentit, 9 (71, 29); Ruby-crowned Kinglet, 8 (63, 25); Lesser Goldfinch, 7 (55, 22); Anna's Hummingbird, 4 (31, 13); Hutton's Vireo, 4; Plain Titmouse, 3 (24, 10); House Finch, 3; Nuttall's Woodpecker, 2 (16, 6); N. Flicker, 2; Black Phoebe, 2; Bushtit, 2; Orange-crowned Warbler, 2; Turkey Vulture, 1 (8, 3); Red-shouldered Hawk, 1; Mourning Dove, 1; Belted Kingfisher, 1; Downy Woodpecker, 1; Scrub Jay, 1; House Wren, 1; Hermit Thrush, 1; California Thrasher, 1; Eur. Starling, 1; Brown Towhee, 1; Fox Sparrow, 1; Red-winged Blackbird, 1; Am. Goldfinch, 1; Great Blue Heron, +; Green-backed Heron, +; Mallard, +; Cooper's Hawk, +; Red-tailed Hawk, +; Am. Kestrel, +; California Quail, +; Acorn Woodpecker, +; Winter Wren, +; Marsh Wren, +; Townsend's Warbler, +; Rufous-crowned Sparrow, +; Lincoln's Sparrow, +; White-crowned Sparrow, +; Purple Finch, +. **Average Total:** 173 birds (1361/km², 551/100 acres). **Remarks:** Total species, 46. By Feb. 1 the resident breeders were actively singing.—**BRIAN E. DANIELS.**

49. NARROW CREEKSIDE BAND OF MIXED RIPARIAN WOODLAND.

— **Location:** California; San Diego Co., N of Fallbrook, near the border of San Diego and Riverside Cos. The plot begins at the confluence of Sandia Creek and the Santa Margarita River and spans the creek banks upstream for about 1.3 mi; beginning in the NE ¼ Sec 12 and continuing to the NE ¼ of Sec 1, T9S, R4W, 33°25'30"N, 117°08'W, Temecula Quadrangle, USGS. **Continuity:** New. **Size:** 12.95 ha = 32 acres (irregularly shaped, following the winding stream course, approximately 6865 ft × 203 ft, measured with tape and compass and checked by planimetry of aerial photo). **Description of Plot:** A narrow belt of mixed woodland (willows, cottonwoods, California Sycamore, Coast Live Oak) with some monotypic willow woodland and associated riparian growth, oriented roughly NS and situated along a narrow creek that ranged from about 18-30 ft wide and 1-2 ft deep. The riparian belt ranged in size 115-300 ft wide. The habitat is relatively undisturbed; however, 1 house located on approximately 1 acre of cleared land with associated cultivars was located on the plot near the N end. Flowing water was present along the length of the plot during the entire study period. General habitat types and vegetation were assessed along 744.7 m of transect. Vegetation analysis was performed on July 8, 14, 29, and August 3, 1982 as described in #46. The plot was composed of 60.6% mixed woodland, 14.2% herbaceous to sub-shrubby riparian vegetation, 12.0% short willow woodland (less than 5 m tall), 3.8% oak-willow woodland, 2.3% scour channel with herbaceous to sub-shrubby riparian vegetation, and 7.1% flowing water. A total of 212 trees (576/acre includes a few arborescent shrubs) was encountered along the transects. There were 3 species of willow present in 5 size categories (class a, 0-1.5 in. dbh; b, 1.5-3; c, 3-6; d, 6-9; e, 9-15): Arroyo Willow 53; 43; 8; 1; 0; Pacific Willow 13; 4; 1; 1; 2; Red Willow a-9, b-1. Two species of cottonwood were present in 4 size classes: Black Cottonwood a-11, c-3, d-3; Fremont's Cottonwood b-1. Sycamore was present in 6 classes: 12; 4; 2; 6; 2; f-2 (f = 21-27 in.). Coast Live Oak was present in 6 size classes: 11; 3; 3; 1; 4; 1. Tree Tobacco was present in 2 size classes: a-3, b-3. One Toyon occurred in size class a. A total of 4 snags was encountered; a-2, e-1, f-1. Average tree canopy cover (%) and tree stem densities, respectively (per 100 m² followed in parenthesis by per acre) were: 50.0% and 58/100 m² (2,348/acre) in short willow woodland, 65.3 and 10 (405) in oak-willow woodland and 65.2 and 16.1 (652) in mixed woodland. Seventy-four species of plants contributed a total of 54.5% ground cover over the entire plot. When factoring in overlap is included this figure increases to 96.7%. The 12 most abundant ground cover plants contributed 75.6% cover and the relative % of each (based on 100% total) were: Desert Grape, 18.2%; W. Poison-oak, 13.4%; W. Blackberry, 10.4%; Arroyo Willow, 8.4%; California Mugwort, 5.5%; Mulefat, 5.1%; wild oats, 4.2%; Pacific Willow, 2.8%; Black Cottonwood, 2%; W. Ragweed, 2%; White Sweet

Clover, 1.9%, and Durango-root, 1.7%. Sixty-two additional species contributed the remaining 24.4%. **Edge:** The plot was bounded by Sandia Creek road to the E and by upland habitats, mostly chaparral with patchy coastal sage scrub to the W and beyond the narrow road on the E. Riparian woodland habitats were continuous with the woodland habitats of the Santa Margarita River to the S and along Sandia Creek to the N. Bands of Coast Live Oaks and scattered individuals occurred along and intermixed with the shrublands. **Topography:** Elevation varied from about 310 ft on the S to 400 ft on the N. The W side of the plot was locally very steep; there was an average slope of about 43% over 7.3 acres. **Weather:** Overcast during 4 visits with clearing by mid-count on 2 of those dates, otherwise clear with temp. ranging from 40-80°F. **Coverage:** Dec 7, 15, 28; Jan. 4, 11, 20; Feb. 9, 15. Total 8 trips, averaging 225 min each; 7 trips, 740-1230 hrs.; 1 trip, 1340-1715 hrs.; additional single visit after dark of 45 min. **Count:** Yellow-rumped Warbler, 46 (355, 144), Song Sparrow, 22 (170, 69); Ruby-crowned Kinglet, 19 (147, 59); Bushtit, 14 (108, 44); Wrentit, 14; Plain Titmouse, 11 (85, 34); Hutton's Vireo, 11; House Finch, 11; Lesser Goldfinch, 11; Rufous-sided Towhee, 9 (69, 28), Scrub Jay, 7 (54, 22); Bewick's Wren, 7, Brown Towhee, 7; White-crowned Sparrow, 7; Acorn Woodpecker, 6 (46, 19); Com. Yellowthroat, 6; Anna's Hummingbird, 5 (39, 16); Nuttall's Woodpecker, 5; N. Flicker, 5, Orange-crowned Warbler, 5; Rock Dove, 4 (31, 13); Black Phoebe, 4; House Wren, 4, Eur. Starling, 4; California Quail, 3 (23, 9), Hermit Thrush, 3; W. Bluebird, 2 (15, 6), California Thrasher, 2; Dark-eyed Junco, 2, Red-shouldered Hawk, 1 (8, 3); Red-tailed Hawk, 1; Am. Kestrel, 1; W. Screech-Owl, 1, Red-breasted Sapsucker, 1; Downy Woodpecker, 1; Mountain Chickadee, 1; Golden-crowned Kinglet, 1; Cedar Waxwing, 1, Turkey Vulture, +; Sharp-shinned Hawk, +, Cooper's Hawk, +; Zone-tailed Hawk, +, Mourning Dove, +; Greater Roadrunner, +, Costa's Hummingbird, +; Belted Kingfisher, +; W. Flycatcher, +; Say's Phoebe, +, Com. Raven, +; Canyon Wren, +; Winter Wren, +; N. Mockingbird, +; Townsend's Warbler, +; Green-tailed Towhee, +, Rufous-crowned Sparrow, +; Fox Sparrow, +, Golden-crowned Sparrow, +. **Average Total:** 265 birds (2046/km², 828/100 acres) **Remarks:** Total species, 57. Twenty-two species were detected on every visit, including each of the 19 most abundant species and the Red-shouldered Hawk, Black Phoebe, and House Wren. The Zone-tailed Hawk was observed only twice on the plot, but was in the vicinity from at least Dec. 7 to Jan. A flock of 15 W. Bluebirds was seen on 1 evening. The Golden-crowned Kinglet was observed in the same vicinity on the plot from Dec. 15 to Feb. 9.—**RICHARD ZEMBAL.**

50. OPEN CREEKSIDE MIXED WOODLAND.

— **Location:** California; San Diego Co., on Camp Pendleton along Deluz Creek about 0.6 mi upstream of the mouth of Roblar Canyon. About 80% of the plot lies within the

center of the upper ½ of Sec 17, with the remainder in the SE ¼ Sec. 8, T9S, R4W, 30°24'N, 117°18'W Fallbrook Quadrangle, USGS. **Continuity:** New. **Size:** 12.5 ha = 30.9 acres (irregularly shaped along the winding creek bed, roughly 3250 × 415 ft, measured by planimetry of aerial photo). **Description of Plot:** A band of mixed woodland with scattered stands and individuals of willow, Coast Live Oak, and slightly less abundant California Sycamore. The understory cover is dense amongst the trees, but the creek bed and associated abundant sandbars were mostly sparsely vegetated. The water course was up to 95 ft wide on the plot and flowing water was present during the entire study period. Sparsely vegetated creekside sandbars were as wide as 155 ft. The creek bottom here is oriented roughly N-S. The general habitat types and vegetation were assessed along 790 m of transects. Vegetation analysis was conducted July 28, 1982 as described in #46. The plot included approximately 53.9% open mixed woodland, 27.8% scour channel and sparsely vegetated sandbar, 12.1% herbaceous to sub-shrubby riparian growth, 5.5% oak woodland, and 0.7% water course, as determined by linear measurements along the transects. A total of 126 trees (323/acre) was encountered along transects. Three species of willow were present in 3 size classes and 4 other species of trees (or arborescent shrub) were encountered in a total of 7 size classes (size class a, 0-1.5 in. dbh, b, 1.5-3; c, 3-6; d, 6-9; e, 9-15; f, 15-21; and g, 33-39): Arroyo Willow, 55, 7, 2; Pacific Willow, 5, 3, 2; Hinds Willow, a-2; Sycamore, 1; 2; 0; 5; 5; 1; 2; Coast Live Oak, 0; 0; 3, 1, 1; 5; 0; Mexican Elder, 6; 13; 3; 0; 0; 0; and Hollyleaf Coffeeberry, a-2. Average tree canopy cover and tree stem densities were 69.6% and 8 stems/100 m² (324/acre) in oak woodland and 43.9% and 8.1/100 m² (328/acre) in mixed woodland. Low ground cover was contributed by 81 species of vascular plants and totalled 64% over the entire plot. Where low ground cover occurred, factoring in overlap yields a cover estimate of 114.5%. The 17 most abundant low cover plants contributed 80.5% of the total cover and the relative percent of each (based upon 100% total) was W. Poison-oak, 19.3%; wild oats, 15.4%; Mexican Elder, 6.2%; W. Blackberry, 5.8%; Mulefat, 4.7%; Dragon Sagewort, 4.7%; umbrella-sedges, 3.2%; White Sage, 3.0%; Arroyo Willow, 2.9%; Squaw Bush, 2.9%; California Mugwort, 2.5%; Water-Speedwell, 2.3%; Coast Live Oak, 2.0%; W. Ragweed, 1.6%; California Wild Rose, 1.5%; Rabbit's Foot Grass (*Polypogon monspeliensis*), 1.3% and Douglas Mulefat, 1.2%. **Edge:** The woodland continues along Deluz Creek N-S. The plot was bounded on the E and W by steep hillsides with coastal sage scrub, chaparral, and fringing stands or scattered individuals of Coast Live Oak. **Topography:** Plot elevations ranged from about 210 ft at the downstream or S edge to about 260 ft at the N edge. **Weather:** Clear on 5 counts, partly cloudy on 3 counts. Temp. averaged approximately 60°F with a range from the low 50s to low 70s. Winds were moderate on 2 counts and insignificant on the rest. **Coverage:** Dec.

10(2), 17, Jan 29(2), 30, Feb 13, 20 **Total:** 8 counts, averaging 204 min per count; 5 counts, 0700-1130 hrs.; 3 counts, 1330-1630 hrs. **Count:** Yellow-rumped Warbler, 44 (352, 142); Song Sparrow, 17 (136, 55); Lesser Goldfinch, 16 (128, 52); Bush-tit, 15 (120, 49); Com. Yellowthroat, 15; Rufous-sided Towhee, 13 (104, 42); Acorn Woodpecker, 10 (80, 32); Plain Titmouse, 9 (72, 29); Ruby-crowned Kinglet, 9; Eur. Starling, 7 (56, 23); House Finch, 6 (48, 19); Anna's Hummingbird, 5 (40, 16); N. Flicker, 4 (32, 13); Scrub Jay, 4; Bewick's Wren, 4; House Wren, 4; Wrentit, 4; Hutton's Vireo, 4; Brown Towhee, 4; Band-tailed Pigeon, 3 (24, 10); Nuttall's Woodpecker, 3; Orange-crowned Warbler, 3; Dark-eyed Junco, 3; Com. Raven, 2; (16, 6); Mallard, 1 (8, 3); Red-tailed Hawk, 1; Am. Kestrel, 1; California Quail, 1; Black Phoebe, 1; California Thrasher, 1; Fox Sparrow, 1; Cooper's Hawk, +; Red-breasted Sapsucker, +; Downy Woodpecker, +; Am. Crow, +; Townsend's Warbler, +; Lincoln's Sparrow, +. **Average Total:** 215 birds (1719/km², 696/100 acres). **Remarks:** Total species, 37. Thirteen species were observed on all counts: Red-tailed Hawk, Nuttall's Woodpecker, N. Flicker, Plain Titmouse, Ruby-crowned Kinglet, Eur. Starling, Hutton's Vireo, Yellow-rumped Warbler, Com. Yellowthroat, Rufous-sided Towhee, Brown Towhee, Song Sparrow, and House Finch.—*DAVID R. BONTRAGER.*

51. NARROW RIVERINE BAND OF WILLOW AND MIXED WOODLANDS.

— **Location:** California; San Diego Co., about 1.5 mi. NNW of Fallbrook along the Santa Margarita River. About ¼ of the plot lies downstream and the remainder upstream of the Deluz Road Crossing of the river within the NE ¼, Sec 14, NW extreme Sec 13, and along the extreme bottom center Sec 12, T9S, R4W, 33°24'N, 117°15'W, Fallbrook Quadrangle, USGS. **Continuity:** New. **Size:** 13.16 ha = 32.5 acres (sinuously rectangular, along the river bottom, approximately 6000 × 236 ft, measured with tape and compass and checked by planimetry of aerial photo). **Description of Plot:** A narrow belt of willow and mixed woodlands (including California Sycamore, and Coast Live Oak) that spans the river bottom for about 1.14 mi. The plot is oriented E-W for about ¾ of its length and roughly N-S for the remainder. Flowing water was present during the entire study period. General habitat types and vegetation were assessed along a total of 778 m of transects. The vegetational analysis was accomplished on July 12-14, 1982 as described in #46. The plot was composed of 29.5% mixed woodland, 28.7% short willow woodland (less than 5 m tall), 14.1% tall willow woodland (greater than 5 m tall), 13.1% scour channel with low riparian growth, and 14.6% flowing water, as determined by linear measurements along the transects. A total of 909 trees (2365/acre) was encountered in transects. There were 4 species of willows present in 4 size classes (class a, 0-1.5 in. dbh; b, 1.5-3; c, 3-6; d, 6-9): Arroyo Willow, 601; 36; 4; 1; Goodding Willow, 1; 0; 3; 0; Hinds Willow, a-20; and Pacific Willow,

172, 38, 14, 6. Twelve sycamores were encountered 3; 5; 3; 1. One Coast Live Oak was recorded in size class a. A total of 10 snags was encountered: 7; 1; 2; 0. Average tree canopy cover and stem densities were: 28.9% and 52.1/100 m² (2109/acre) in mixed woodland, 61.5% and 124/100 m² (5020/acre) in short willow woodland; and 42.1% and 46/100 m² (1862/acre) in tall willow woodland. Low ground cover was contributed by 74 species of plants and totalled 38.8% over the entire plot, although factoring in cover overlap yielded a ground cover estimate of 144.5%. The 21 most abundant low ground cover plants contributed 86.5% of the total cover and the relative % of each (based upon 100% total) was Arroyo Willow, 23.6%; Pacific Willow, 12.8%; W. Poison-oak, 5.2%; Com. Cocklebur, 4.4%; Mulefat, 4.3%; White Sweet Clover, 4.0%; Desert Grape, 3.7%; Sour-Clover, 3.3%; scouring-rush, 3.0%; Hinds Willow, 2.9%; W. Blackberry, 2.8%; pigweeds, 2.5%; Water-Speedwell, 2.0%; brome (*Bromus* spp.), 1.8%; Wild Buckwheat, 1.7%; Miner's-Lettuce, 1.6%; Bermuda Grass (*Cynodon dactylon*), 1.6%; Telegraph Weed, 1.4%; Olney's Bulrush, 1.4%; California Sycamore, 1.4%; and California Mugwort, 1.1%. **Edge:** Similar riparian habitat is continuous for miles along the Santa Margarita River both up and downstream of the plot. The Deluz Road (2 lane, paved) runs along one side for about ¾ of the plot length. Steep hillsides rise out of the river basin with chaparral along one side, mostly the more shaded exposures particularly N-facing slopes, and coastal sage scrub along the other slope. The slope bottoms and gullies along the slopes are lined with stands and scattered individuals of coast live oak. **Topography:** Local topographic relief is slight and comprised of a few feet difference between vegetated bars and the bottoms of river and scour channels. The plot slopes from the upstream edge (NE) at 300 ft to about 280 ft at the downstream edge. **Weather:** Clear on 7 counts, overcast on 1, and rain on 1. Temp. averaged 55°F, with a range of 35°-75°. Winds were negligible during counts. **Coverage:** Dec. 7, 15, 21; Jan 6, 12, 20, 25; Feb. 17. **Total:** 9 trips; 8 trips, 0730-1230 hrs., 1 trip, 1400-1700 hrs., all averaging 195 min. **Count:** Yellow-rumped Warbler, 72 (547, 222); Lesser Goldfinch, 16 (122, 49); Song Sparrow, 14, (106, 43); Bush-tit, 11 (84, 34); Ruby-crowned Kinglet, 11; Bewick's Wren, 7 (53, 22); Plain Titmouse, 6 (46, 18); Com. Yellowthroat, 6; Rufous-sided Towhee, 6; California Quail, 5 (38, 15); Hutton's Vireo, 4 (30, 12); Orange-crowned Warbler, 3 (23, 9); Anna's Hummingbird, 2 (15, 6); Acorn Woodpecker, 2; N. Flicker, 2; Scrub Jay, 2; Wrentit, 2; California Thrasher, 2; Brown Towhee, 2; White-crowned Sparrow, 2; Dark-eyed Junco, 2; Red-tailed Hawk, 1 (8, 3); Nuttall's Woodpecker, 1; Black Phoebe, 1; Canyon Wren, 1; Am. Goldfinch, 1; Green-backed Heron, +; Turkey Vulture, +; Cooper's Hawk, +; Zone-tailed Hawk, +; Merlin, +; Belted Kingfisher, +; Downy Woodpecker, +; Com. Raven, +; Rock Wren, +; House Wren, +; Blue-gray Gnatcatcher, +; Hermit Thrush, +; Phainopepla,

+, Eur Starling, +, Townsend's Warbler, +; Wilson's Warbler, +; Rufous-crowned Sparrow, +; Golden-crowned Sparrow, +; House Finch, +. **Average Total:** 184 birds (1399/km², 566/100 acres). **Remarks:** Total species, 45. Eight species observed on all counts: Plain Titmouse, Bewick's Wren, Ruby-crowned Kinglet, Hutton's Vireo, Yellow-rumped Warbler, Com. Yellowthroat, Song Sparrow, and Lesser Goldfinch. Ten species observed only once: Green-backed Heron, Turkey Vulture, Zone-tailed Hawk, Down Woodpecker, Com. Raven, Eur. Starling, Townsend's Warbler, Wilson's Warbler, Rufous-crowned Sparrow, House Finch.—*THOMAS A. SCOTT.*

52. TALL WILLOW WOODLAND WITH PATCHY LOW GROUND COVER. — **Location:** California; San Diego Co., on Camp Pendleton at the confluence of the Santa Margarita River and Deluz Creek and downstream to a proposed dam site. The plot spans the river in the lower center of Sec. 29, T9S, R4W, 33°22'N, 117°19'W Morrow Hill Quadrangle, USGS. **Continuity:** New. **Size:** 10.76 ha = 26.6 acres irregularly shaped but roughly rectangular and 750 × 1550 ft, measured with tape and compass and checked by planimetry of aerial photo. **Description of Plot:** Dense willows form a nearly unbroken canopy over much of the plot with stands of tall trees, several exceeding 50 ft. There are abundant scour channels, many are shaded and without dense understory vegetation. The river course and associated sandbars run the length of the plot near the E boundary, varying from about 30-70 ft wide and oriented roughly N-S, as is the plot. Flowing water was present during the entire census period. General habitat types and vegetation were assessed along a total of 741.8 m of transect. The vegetation analysis was performed on June 29-30; and July 6, 1982 as described in #46. The plot was comprised of 77.4% tall willow woodland (>5 m tall), 7.9% scour channel with some low plant growth, 6.9% short willow woodland (<5 m tall), 3.1% California Sycamore woodland, 0.7% disturbed riparian growth, and 3.9% river channel and flowing water. A total of 577 trees (1575/acre) was encountered in the belt transects. There were 5 species of willow present in 5 size classes (class a, 0-1.5 in. dbh; b, 1.5-3; c, 3-6; d, 6-9; e, 9-15): Arroyo Willow, 173; 53; 81; 33; 10; Goodding Willow, a-9; Hinds Willow, a-186; b-2; Pacific Willow, a-2; and Red Willow, 14; 1; 5; 3; 0; Two sycamores, c-1, d-1, and 3 arborescent Castorbean plants, a-1, b-2, were also encountered. A total of 16 snags was encountered: a-11, b-4, c-1. Average tree canopy cover and tree stem densities were: 73.7% and 26.6/100 m² (1077/acre) in tall willow woodland; 66.6% and 267/100 m² (10,810/acre) in short willow woodland; and 75% and 2.0/100 m² (81/acre) in sycamore woodland. Forty-eight species of vascular plants contributed 39.7% low ground cover over the entire plot. Factoring in overlap increases ground cover to 63.7%. The 12 most abundant ground cover plants contributed 89.8% of the total cover and the relative percent of each (based

upon 100% total) was scouring-rushes, 31.0%; Arroyo Willow, 13.0%; California Mugwort, 11.4%; W. Blackberry, 8.3%; Desert Grape, 6.0%; Hinds Willow, 5.0%; Mulefat sprouts (*Baccharis* spp.), 4.4%; Douglas Nightshade, 2.7%; W. Stinging Nettle, 2.7%; Com. Cocklebur, 2.2%; umbrella-sedges, 1.7% and Red Willow, 1.4%. The remaining 10.2% cover was contributed by 36 species. **Edge:** The plot was bounded by the Santa Margarita River Road (dirt) along the S ½ of the E plot edge and by Camp Deluz road (dirt) along the remaining ½ of that edge. Beyond the roads on the E and W are low hills with coastal sage scrub, intermittent grasslands, and stands of Coast Live Oaks. Riparian habitats on the plot are contiguous with similar habitat along the Santa Margarita River to the S and NE and with those along Deluz Creek to the N. **Topography:** The floodplain is relatively flat with but slight local relief from scour channels and the riverbed and a slope of a few feet from N-S. Plot elevation is about 140 ft. **Weather:** Clear on 5 counts, overcast on 2 counts, and rain on 1 count. Temp. averaged 62°F on counts, with a range of 55-75°. Winds were negligible except on 1 count. **Coverage:** Dec. 14, 22, 28; Jan. 11; Feb. 1, 9, 16. **Total:** 8 counts; 7 counts 0730-1230 hrs, 1 count 1330-1700 hrs, all averaging 178 min. **Count:** Yellow-rumped Warbler, 47 (437, 177); Lesser Goldfinch, 29 (269, 109); Bushtit, 20 (186, 75); Ruby-crowned Kinglet, 15 (139, 56); Song Sparrow, 14 (130, 53); Bewick's Wren, 13 (49); House Finch, 8 (74, 30); Plain Titmouse, 7 (65, 26); Am. Goldfinch, 7; Hutton's Vireo, 6 (56, 23); Downy Woodpecker, 5 (46, 19); Nuttall's Woodpecker, 4 (37, 15); Eur. Starling, 4; Rufous-sided Towhee, 4; Dark-eyed Junco, 4; Acorn Woodpecker, 3 (28, 11); N. Flicker, 3; Orange-crowned Warbler, 3; Red-shouldered Hawk, 2 (19, 8); Townsend's Warbler, 2; Snowy Egret, 1 (9, 4); Black-shouldered Kite, 1; Red-tailed Hawk, 1; Com. Barn-Owl, 1; Anna's Hummingbird, 1; Black Phoebe, 1; Scrub Jay, 1; Com. Raven, 1; Am. Crow, 1; Mountain Chickadee, 1; House Wren, 1; Hermit Thrush, 1; California Thrasher, 1; Com. Yellowthroat, 1; Rufous-crowned Sparrow, 1; Mallard, +; Cooper's Hawk, +; Am. Kestrel, +; Greater Roadrunner, +; Great Horned Owl, +; Belted Kingfisher, +; Red-breasted Sapsucker, +; Hairy Woodpecker, +; White-breasted Nuthatch, +; Blue-gray Gnatcatcher, +; Wrentit, +; Water Pipit, +; Yellow Warbler, +; Black-and-white Warbler, +; Brown Towhee, +; Fox Sparrow, +; White-crowned Sparrow, +; Red-winged Blackbird, +; Brown-headed Cowbird, +. **Average Total:** 215 birds (1997/km², 808/100 acres). **Remarks:** Total species: 54. Ten species observed on all counts: Red-shouldered Hawk, Nuttall's Woodpecker, Downy Woodpecker, N. Flicker, Plain Titmouse, Bewick's Wren, Ruby-crowned Kinglet, Hutton's Vireo, Yellow-rumped Warbler, Song Sparrow; 5 species observed once: Great Horned Owl, Red-breasted Sapsucker, Hairy Woodpecker, Yellow Warbler, and Red-winged Blackbird.—*THOMAS A. SCOTT.*

53. WILLOW WOODLAND WITH DENSE RIPARIAN UNDERSTORY. — **Location:** California; San Diego Co., on Camp Pendleton along the W side of the floodplain of the Santa Margarita River N of the Isadora Cliffs and Basin. The N boundary was about 1100 yds S of a large Base Rifle Range. The plot was located in the NW ¼ Sec. 26, T10S, R5W, 33°17'N, 117°22'30"W, Las Pulgas Quad., USGS. **Continuity:** New. **Size:** 12 ha = 29.6 acres (approximately square in shape, about 1000 × 1300 ft, measured with tape and compass and by planimetry of aerial photo). **Description of Plot:** A broad belt of willow woodland and associated riparian growth, oriented roughly N-S along the W edge of the floodplain which measured about 3000 ft wide. The plot was located W of the river course and contained no flowing water although some standing water was present during the early spring as a result of heavy seasonal rainfall and runoff. General habitat types and vegetation were assessed along 771 m of transect. Vegetation analysis was performed on July 5-6, 7, 1982 as described in #46. The plot was comprised of 43.2% herbaceous to sub-shrubby riparian vegetation with scattered willows, 30.1% short willow woodland (less than 5 m tall), 21.9% tall willow woodland (5 m), and 4.8% additional low riparian growth. A total of 1174 trees (3082/acre) was encountered. There were 3 species of willow present in 4 size categories (class a, 0-1.5 in. dbh; b, 1.5-3; c, 3-6; d, 6-9). Arroyo Willow, 274; 50, 21, 1; Goodding Willow, 409; 44; 9; 0; Hinds Willow, 211; 1; 0; 0; saltcedar, 129; 17, 7, 0, and 1 arborescent Tree Tobacco was observed: a-1. A total of 6 snags was encountered: a-6. Average tree canopy cover and tree stem densities were: 62.5% and 106/100 m² (4291/acre) in tall willow woodland; 62.4 and 132 (5344) in short willow woodland, and 15.8 and 31.7 (1283) in riparian habitat with scattered willows. Fifty-six species of plants contributed low ground cover of 69% over the plot. Factoring in overlap, low ground cover increases to 114.2%. The 18 most abundant plants contributed 83.3% of the cover and the relative percentage (based on 100% total) of each was: Mulefat, 11.7%; Bermuda Grass (*Cynodon dactylon*), 10.3%; Douglas Mulefat, 7.2%; Arroyo Willow, 7.1%; spike-rush, 6.8%; Giant Reed, 6.7%; California Mugwort, 6.5%; Goodding Willow, 3.6%; umbrella-sedge, 3.6%; saltcedar, 3.5%; Yerba Mansa, 3.0%; Prairie Bulrush (*Scirpus robustus*), 3.0%; Black Mustard, 2.1%; English Ryegrass (*Lolium perenne*), 1.8%; Bristly Ox Tongue, 1.8%; Mulefat sprouts, 1.7%; Sweet Fennel, 1.5%; and Rabbit's Foot Grass (*Polygonon monspeliensis*), 1.4%. **Edge:** The plot was bounded by the Santa Margarita River on the E and water-well access roads (dirt) on the N and W. The riparian habitat continues on the other side of the river to the W and for miles along the river to the N and S. Low hills with coastal sage scrub and patches of open grassland abut the road on the W. **Topography:** The plot is relatively flat at about 40 ft elevation. **Weather:** Rainfall was about twice the normal amount for the season. Temp for

the period were normal **Coverage:** Dec 16, 28, Jan 7, 12, Feb 10, 15-17 **Total:** 8 trips, averaging 121 min each; Feb. 16 from 1415 to 1600 hrs.; the rest of the surveys 0730-1045 hrs **Count:** Song Sparrow, 72 (601, 243); Com Yellowthroat, 27 (225, 91); Red-winged Blackbird, 22 (184, 74); Am. Goldfinch, 17 (142, 17); Bushtit, 12 (100, 41); Yellow-rumped Warbler, 10 (83, 34); Ruby-crowned Kinglet, 7 (58, 24); Rufous-sided Towhee, 6 (50, 20); House Finch, 6; Bewick's Wren, 5 (42, 17); Anna's Hummingbird, 4 (33, 14); Lesser Goldfinch, 4; Black-shouldered Kite, 3 (25, 10); Wrentit, 3; Am. Crow, 2 (17, 7); Com. Raven, 2; House Wren, 2; White-crowned Sparrow, 2; N. Harrier, 1 (8, 3); Downy Woodpecker, 1; Nuttall's Woodpecker, 1; N. Flicker, 1; California Thrasher, 1; Hutton's Vireo, 1; Orange-crowned Warbler, 1; Brown Towhee, 1; Sharp-shinned Hawk, +; Cooper's Hawk, +; Red-tailed Hawk, +; California Quail, +; Virginia Rail, +; Sora, +; Mourning Dove, +; Greater Roadrunner, +; Short-eared Owl, +; Hairy Woodpecker, +; Black Phoebe, +; Eur. Starling, +; Lincoln's Sparrow, +; Golden-crowned Sparrow, +; Purple Finch, +. **Average Total:** 214 birds (1786/km², 723/100 acres) **Remarks:** Total species, 41. 118 Red-winged Blackbirds were recorded Dec. 28, 19 being the next highest count. Am. Goldfinch averaged 1 bird for the first 4 surveys, the last 4 surveys recorded a total of 132 birds.—**BRIAN E. DANIELS.**

54. RIVERINE WOODLAND WITH INTERMIXED SHRUBLANDS. — **Location:** California; San Diego Co., along the San Luis Rey River on the Wilderness Gardens Ecological Reserve located just S of Hwy 76, about 10 mi NE of the junction of Hwy 76 and I-15 between Marion and Agua Tibia canyons. The plot lies within the NE ¼ Sec 36, and the mid-W ½, Sec 31, T9S, R2W and R1W, respectively, 33°21'N, 117°2'W Pala Quadrangle, USGS. **Continuity:** New. **Size:** 12.39 ha = 30.61 acres (irregularly shaped, following the winding stream course for about a mi, and measured by planimetry of aerial photo) **Description of Plot:** A band of mixed woodland with scattered stands and individuals of willow, Coast Live Oak, White Alder, cottonwood, and California Sycamore intermixed with large, more open areas of coastal sage scrub and chaparral. Shrubland elements included California Buckwheat, Snapdragon Keckiella, Chamise, Deerweed, California Scrub Oak and Laurel Sumac. The undercover was dense in wooded areas but was sparse along the river channel, sandbars and in the coastal sage-chaparral areas. The water course was up to 150 ft wide and flowing water was present during the entire study period. The stream is oriented NW-SE here. The general habitat types and vegetation were assessed along 601.5 m of transects. Vegetation analysis was performed on Mar. 12 and 18, 1983 as described in #46. The plot included approximately 39.2% mixed woodland, 17.6% shrubland, 13.2% oak woodland, 5.9% shrublands with oak overstory, 5% unvegetated sandbar, 4.9% herbaceous to subshrubby riparian growth, 3% sparsely vegetated sandbar and

11.1% flowing water as determined by linear measurements along the transects. A total of 55 trees (185/acre) in 7 size classes (size class a, 0-1.5 in. dbh; b, 1.5-3; c, 3-6; d, 6-9; e, 9-15; f, 15-21; g, 21-27) were encountered along the transects: Mexican Elder, 17, 1, 5, 2; alder, a-6, b-3; sycamore, a-1, c-2, d-1, e-3; Coast Live Oak, c-2, d-1, e-1; Black Cottonwood, d-2, f-1; Arroyo Willow, a-3; California Scrub Oak, a-2, b-1; Fremont Cottonwood, g-1. Two snags were recorded; g-2. The estimated percent canopy cover and tree stem densities were 83.9% and 8.9 stems/100 m² (360.5/acre) in mixed woodland and 64.6% and 1.9 stems/100 m² (77/acre) in oak woodland. The number of stems of woody plants in the sage-chaparral areas were counted along a 2 m × 141.4 m (282.8 m²) area. There were 49 (693/acre) California Buckwheat stems, 26 (372/acre) *Brickellia* spp., 18 (258/acre) Chamise, 10 (143/acre) California Sagebrush, 8 (115/acre) Deerweed, 8 California Scrub Oak, 7 (100/acre) Laurel Sumac, 4 (57/acre) White Sage, and 3 (43/acre) Snapdragon Keckiella. Thirty species contributed to the low ground cover which totalled 56.2% over the entire plot. The relative percent of the most abundant ground cover contributors (based upon 100% total) was: bromes (*Bromus* spp.), 42%; W. Poison-oak, 14.1%; California Mugwort, 5.8%; California Buckwheat, 5.3%; Snapdragon Keckiella, 2.9%; Meadow-rue, 1.9%; Wild Cucumber, 1.7%; wild oats (*Avena* spp.), 1.6%; W. Ragweed, 1.6%; California Sagebrush, 1.5%; Laurel Sumac, 1.5%; mustard, 1.2%; jimsonweed (*Datura meteloides*), 1.2%; Annual Agoseris, 1.2%; Coast Live Oak, 1.1%; mixed forbs, 12.3%; and mixed shrub sprouts, 10.7%. **Edge:** The woodland continues along the San Luis Rey River to the NW and SE. The plot was bounded by steep hillsides with coastal sage scrub and chaparral, by steep cliff faces along approximately 300 m of the NW side, and by fringing stands and scattered individuals of coast live oak. **Topography:** The plot sloped gradually from about 580 ft MSL on the SE to 500 ft on the NW. **Weather:** Clear on 6 counts, overcast on 1 count. Temp. averaged 60°F, with a range of 40-75°. Winds were negligible on all counts. **Coverage:** Dec. 6, 16, 20, 27; Jan. 6, 19; Feb. 22. **Total:** Seven counts, averaging 225 min per count; 6 counts in morning, 1 count in afternoon. **Count:** Yellow-rumped Warbler, 43 (347, 140); Dark-eyed Junco, 14 (113, 46); Rufous-sided Towhee, 12 (97, 39); Bushtit, 11 (89, 36); Ruby-crowned Kinglet, 11; Plain Titmouse, 10 (81, 33); Eur. Starling, 8 (65, 26); Bewick's Wren, 5 (40, 16); Lesser Goldfinch 5; Song Sparrow, 4 (32, 13); Red-winged Blackbird, 4; Mountain Chickadee, 3 (24, 10); W. Bluebird, 3; Hutton's Vireo, 3; Brown Towhee, 3; California Quail, 2 (16, 7); Anna's Hummingbird, 2; Orange-crowned Warbler, 2; Com. Yellowthroat, 2; Purple Finch, 2; Red-shouldered Hawk, 1 (8, 3); Red-tailed Hawk, 1; Am. Kestrel, 1; Mourning Dove, 1; House Wren, 1; Blue-gray Gnatcatcher, 1; Hermit Thrush, 1; Wrentit, 1; California Thrasher, 1; Great Blue Heron, +; Black-crowned Night-Heron, +; Cooper's Hawk, +; Belted Kingfisher, +; Red-breast-

ed Sapsucker, +; Downy Woodpecker, +; Com Raven, +; White-breasted Nuthatch, +; Townsend's Warbler, +; Hermit Warbler, +; Fox Sparrow, +; Lincoln's Sparrow, +; White-crowned Sparrow, +; Lawrence's Goldfinch, +; Am. Goldfinch, +. **Average Total:** 158 birds (1275/km², 516/100 acres). **Remarks:** Total species, 44. Nine species observed on every count; Acorn Woodpecker, Nuttall's Woodpecker, N. Flicker, Black Phoebe, Mountain Chickadee, Plain Titmouse, Ruby-crowned Kinglet, Yellow-rumped Warbler, Rufous-sided Towhee.—**THOMAS A. SCOTT.**

55. WILLOW WOODLAND WITH OPEN PONDED WATER. — **Location:** California; San Diego Co., on Camp Pendleton along the E side of the floodplain of the lower Santa Margarita River just N of the mouth of Pueblitos Canyon. Vandegrift Boulevard approaches within about 30 m of the plot at the NE corner; lower central portion of the lower ½ of Sec. 26, T10S, R5W, 33°16'N, 117°22'30"W, Morro Hill Quad., USGS. **Continuity:** New. **Size:** 10.6 ha = 26.2 acres (nearly rectangular, about 1400 × 815 ft, measured with tape and compass and checked with planimetry of aerial photo). **Description of Plot:** A broad belt of willow woodland and associated riparian habitats oriented roughly N-S along the E side of the floodplain which is about 3000 ft wide. Pounded water was present during the entire count period. A shallow narrow pond, up to about 25 ft. long, was located along the E plot boundary with several smaller and more ephemeral ponds scattered elsewhere. General habitat types and vegetation were assessed along a total of 840 m of transect. The vegetational analysis was conducted on Aug. 4-5, 1982 as described in #46. The plot included approximately 38.9% short willow woodland (<5 m tall), 22.8% herbaceous to sub-shrubby riparian growth, 15.1% riparian growth with intermixed scattered willows, 14.5% tall willow woodland, 0.9% ponded or channeled water, and 7.8% disturbed riparian growth as determined by linear measurements along the transects. A total of 716 trees (1725/acre) was encountered along transects. There were 4 species of willow present in 6 size classes (class a, 0-1.5 in. dbh; b, 1.5-3; c, 3-6; d, 6-9; e, 9-15; f, 15-21): Arroyo Willow, 255; 127, 91; 2; 1; 0; Goodding Willow, 127; 66; 29; 1, 1; Hinds Willow, a-14, b-1; and Pacific Willow, a-1. A total of 5 snags was encountered a-3, b-2. Average tree canopy cover and tree stem densities were 71.4% and 54/100 m² (2186/acre) in tall willow woodland; 68.9% and 71/100 m² (2874/acre) in short willow woodland; and 8.2% and 28/100 m² (1134/acre) in riparian with sparse willows. Low ground cover was contributed by 42 plant species and totalled 33.5% over the entire plot although factoring in low cover overlap yields a ground cover estimate of 213.8%. The 12 most abundant low ground cover plants contributed 89.2% of the total cover and the relative percent of each (based on 100% total) was: California Mugwort, 22.9%; Mulefat, 22%; mustard, 11.5%; Douglas Mulefat, 10.8%; Bristly Ox Tongue, 5.7%; Branching

Phacelia, 3.2%, Lambs Quarters, 2.8%, Arroyo Willow, 2.7%, Hooker's Evening-Primrose, 2.6%; rush, 2.1%; Giant Reed, 1.8%; and Poison-Hemlock (*Conium maculatum*), 1.1%. **Edge:** Continuous floodplain and similar riparian habitat surrounds the plot on 3 sides; Vandegrift Boulevard is E with low hills beyond with grasslands and patches of coastal sage scrub. **Topography:** The floodplain is generally flat at an elevation of about 35 ft. An old dike, now heavily overgrown with herbaceous to sub-shrubby plants, rises to about 1-2 ft above the average ground elevation and courses along nearly the length of the plot from N to S at about mid-plot. **Weather:** Overcast or foggy on part of 3 counts, otherwise clear with temp. ranging from about 38-75°F. The surfaces of several small puddles were iced over at the beginning of 1 count. **Coverage:** Dec. 14, 21, 30; Jan. 6; Feb. 1, 10, 16. **Total:** 8 trips, averaging 177 min. each; 7 trips, 0737-1145 hrs.; 1 trip, 1415-1635 hrs. **Count:** Song Sparrow, 80 (755, 305); Com. Yellowthroat, 25 (236, 95); Bush-tit, 21 (198, 80); Red-winged Blackbird, 21; Am. Goldfinch, 20 (189, 76); White-crowned Sparrow, 17 (160, 65); Lesser Goldfinch, 9 (85, 34); Bewick's Wren, 8 (75, 31); Ruby-crowned Kinglet, 8; House Finch, 8; Yellow-rumped Warbler, 7 (66, 27); Rufous-sided Towhee, 6 (57, 23); Black Phoebe, 4 (38, 15); Am. Crow, 4; Wren-tit, 3 (28, 11); Black-shouldered Kite, 2 (19, 8); California Quail, 2; Killdeer, 2; Anna's Hummingbird, 2; Hutton's Vireo, 2; Red-shouldered Hawk, 1 (9, 4); Downy Woodpecker, 1; N. Flicker, 1; Com. Raven, 1; House Wren, 1; Hermit Thrush, 1; California Thrasher, 1; Water Pipit, 1; Orange-crowned Warbler, 1; Brown Towhee, 1; W. Meadowlark, 1; Brown-headed Cowbird, 1; Snowy Egret, +; N. Harrier, +; Red-tailed Hawk, +; Virginia Rail, +; Sora, +; Black-necked Stilt, +; Am. Avocet, +; Greater Yellowlegs, +; Mourning Dove, +; Say's Phoebe, +; Plain Titmouse, +; Blue-gray Gnatcatcher, +; Loggerhead Shrike, +; Rufous-crowned Sparrow, +; Golden-crowned Sparrow, +. **Average Total:** 263 birds (2480/km², 1004/100 acres). **Remarks:** Total species, 47. Ten species were detected during every visit: Black-shouldered Kite, Killdeer, Anna's Hummingbird, Black Phoebe, Bewick's Wren, Ruby-crowned Kinglet, Com. Yellowthroat, Rufous-sided Towhee, Song Sparrow, and White-crowned Sparrow. Goldfinch use of the plot increased dramatically near the beginning of Feb. which coincided with the general onset of flowering of the willows.—**RICHARD ZEMBAL and THOMAS SCOTT.**

56. COASTAL SAGE SCRUB WITH SCATTERED LIVE OAKS. — **Location:** California; San Diego Co., above the N bank of the Santa Margarita River, approximately 0.1 mi W of the DeLuz Road crossing of the river within the NE ¼ Sec. 14, T9S, R4W, 33°24'N, 117°16'W, Fallbrook Quadrangle, USGS. **Continuity:** New. **Size:** 16.27 ha = 40.2 acres (irregularly shaped, following the topography of the hillsides and stream course, measured by planimetry of aerial photo). **Description of Plot:** The shrublands are on an

intermittently steep SW-facing slope above the N bank of the Santa Margarita River. The longer axis of the plot runs roughly parallel to the river bend and constitutes part of the E slope of a side canyon along its distal half. The composition of perennial plants and low growing ground cover was assessed from a total of 594.4 m of line intercept analysis for ground cover and 1188 m² of belt transect for woody stem counts along 3 randomly placed transect lines run across the plot. Vegetational analysis was performed on Feb. 9-10, 15 and 17, 1983. Total ground cover was 89.9% and total cover contributed by woody species was 47.6%. Thirty-six species of vascular plants were encountered along the transects. The 5 dominant shrubs were (after each species is % of 47.6% total woody cover contributed by that species followed in parenthesis by stems/ac): California Sagebrush, 50.2% (1216); California Buckwheat, 23.9% (694); White Sage, 18% (603); Deerweed, 2.5% (106); Climbing Bedstraw, 2.1% (95). The actual numbers of arborescent plants on the plot were: 49 (1.2/ac) Laurel Sumac; 38 (0.9/ac) Coast Live Oak; 28 (0.7/ac) Toyon; 22 (0.5/ac) Engelmann Oak; 20 (0.5/ac) California Scrub Oak; 18 (0.4/ac) Tree Tobacco; 7 (0.2/ac) Mexican Elder; 4 (0.1/ac) Hollyleaf Coffeeberry; and 4 (0.1/ac) Mission Manzanita. The dominant low-growing ground cover contributors were mixed grasses which included: fescue (*Festuca* spp.), wild oats (*Avena* spp.), bromes (*Bromus* spp.), and Needlegrass (*Stipa* spp.). These grasses contributed 27.7% to the total ground cover (based upon 100% for all ground cover contributors including woody species). Other important forbs included: Annual Agoseris, Cat's Ear, and Uropappus, which combined contributed 14% of the total; *Bothriochloa barbinodis*, 6.3%; bedstraw, 5.1% and mustard, 1.3%. **Edge:** Oak woodland in the side-canyon bottom bordered half of the W edge with river-side riparian along the other half and the S edge. DeLuz Road (paved) defined the E boundary. Beyond the oak woodland, the river-side riparian, and the road, similar coastal sage scrub habitat occurred along with stands of chaparral on the more mesic slopes. There was flowing water present just off the plot during the entire count period in both the river and the bottom of the side-canyon. **Topography:** The plot sloped steeply from the canyon bottom on the W up to DeLuz Road along the E, and from the river-ward edge to the N boundary. Elevations varied from 230 ft on the SW corner to 530 ft on the NE. **Weather:** Overcast on part of 2 counts, otherwise clear with temp. ranging from about 50-80°F. **Coverage:** Dec. 15, 21, 30; Jan. 5, 12; Feb. 1, 9. **Total:** 7 trips, averaging 159 min each; 6 trips, 1340-1715 hrs; 1 trip, 745-1045 hrs; additional 3 visits after dark, averaging 32 min each. **Count:** Bushtit, 23 (141, 57); Yellow-rumped Warbler, 19 (117, 47); Brown Towhee, 18 (111, 45); Wren-tit, 16 (98, 40); White-crowned Sparrow, 16; Rufous-crowned Sparrow, 15 (92, 37); California Quail, 12 (74, 30); Rufous-sided Towhee, 9 (55, 22); Bewick's Wren, 7 (43, 17); Ruby-crowned Kinglet, 5 (31, 12); Acorn Woodpecker, 3 (18, 7); N. Flicker, 3; House Finch, 3; Lesser Goldfinch, 3; Anna's Hummingbird, 2 (12,

5), House Wren, 2, Com. Yellowthroat, 2, Song Sparrow, 2, Golden-crowned Sparrow, 2; Red-tailed Hawk, 1 (6, 2); Am. Kestrel, 1, Great Horned Owl, 1; Costa's Hummingbird, 1; Nuttall's Woodpecker, 1; Black Phoebe, 1, Scrub Jay, 1; Plain Titmouse, 1; California Thrasher, 1; Eur. Starling, 1; Hutton's Vireo, 1; Turkey Vulture, +; Mourning Dove, +, Greater Roadrunner, +; Burrowing Owl, +, Red-breasted Sapsucker, +; Say's Phoebe, +; Com. Raven, +; W. Bluebird, +, Hermit Thrush, +; N. Mockingbird, +. **Average Total:** 173 birds (1063/km², 430/100 acres) **Remarks:** Total species, 40. Ten species were observed on every visit, the 9 most abundant species noted above and the Golden-crowned Sparrow. The California Quail, and Bushtit were observed in groups numbering up to 36 and 42 individuals, respectively. The Yellow-rumped Warblers were nearly always observed foraging in the canopies of oaks of Laurel Sumac and the White-crowned Sparrows also often fed in Laurel Sumac.—**RICHARD ZEMBAL and THOMAS SCOTT**

57. CHAPARRAL WITH A NARROW BAND OF CANYON-BOTTOM WOODLAND. — **Location:** California; San Diego Co., above the N bank of the Santa Margarita River. The SW edge of the plot is located about 0.5 mi E of the mouth of Sandia Creek. The plot is mostly located within the NE ¼ of Sec. 7, T9S, R3W (a small part is in the NW ¼ of Section 7), 33°25'N, 117°14'W, Temecula Quadrangle, USGS. **Continuity:** New. **Size:** 24.08 ha = 59.5 ac (irregular shape but very roughly rectangular and about 2500 × 1035 ft measured with tape and compass and checked with planimetry of aerial photo). **Description of Plot:** The shrublands line the NW- and SE-facing slopes of a small canyon that courses perpendicular to the Santa Margarita River. The chaparral continues over a low hill and onto a second NW-facing slope on the NW corner of the plot. Woody chaparral covers much of the NW-facing slopes, whereas a lower growing and more open "soft" chaparral grows on the SE-facing slope and onto the top of the lower ridge. The "soft" chaparral vegetates about 1/5 of the plot with dominant Chamise and Deerweed. The canyon bottom vegetation is dominated by large, mostly widely spaced, Coast Live Oaks with an occasional California Sycamore, and abundant low growing willows, mostly Arroyo Willows. The canyon bottom woodland is continuous along the length of the plot, but the continuity is contributed by the willows with breaks between the oaks and sycamores. The woodland belt varies from about 10-20m in width with a usual maximum breadth of only 2 oaks. At the lower end of the canyon bottom there is a grove of about 15 oaks at the SW tip of the plot. Disused dirt roads run along the upper (SE) ridge and the top of the low hill with very overgrown spur roads that course diagonally along both NW-facing slopes. The composition of vascular plants in the shrublands was assessed with a total of 660.9m of line intercept analysis for ground cover and 1139.4m² (569.7m × 2m)

of belt transect for woody stem counts along 2 transects run perpendicular to the canyon bottom. The vegetational analysis was done Aug. 11-12, 1982. Total ground cover by vascular plants was 92.6% and total cover contributed by woody species was 63.7%. Sixty species of plants were encountered along the transects. The 10 dominant woody cover contributors were (after each species is % of 63.7% total woody cover contributed by that species followed in parentheses by stems/acre): California Lilac, 25% (954); Chamise, 23.9% (769); Deerweed, 10% (274); Mission Manzanita, 9.9% (274); California Buckwheat, 7.6% (278); California Scrub Oak, 7.1% (174); S. Honeysuckle, 3% (50); Com. *Hazardia*, 2.9% (125); Bigberry Manzanita, 2% (25); and Toyon, 1.8% (18). The dominant, mostly lower-growing, ground cover contributors included grasses, vines, and forbs such as (percentages are based upon 100% for all cover contributors including woody plants) brome (*Bromus* spp.), 14.6%; Desert Grape, 2.9%; Tocalote, 2%; Bird's-beak, 1.8%; Wild Oats (*Avena* spp.), 1.6%; Cat's Ear, 1.4%; Wild Cucumber (*Marah macrocarpus*), 1.3%; and W. Poison-oak, 1%. **Edge:** Similar habitat borders most of 3 sides of the plot with an avocado ranch along about 1/3 of the N edge. Riparian woodland with abundant willows along the river and a small side creek border the W edge and SW tip of the plot. **Topography:** The slope is relatively steep from the canyon bottom at 360-500 ft to the upper ridge (SE edge of plot) at 400-600 ft. The lower hill on the opposite side of the canyon bottom peaks at about 520 ft and slopes down to the NW to a lowest point of about 360 ft. The average slope is about 44%. **Weather:** Overcast on part of 2 counts, otherwise clear with temp ranging about 50-75°F. **Coverage:** Dec 14, 28; Jan. 4, 12, 20; Feb. 1, 9, 15. **Total:** 8 trips; 6 trips, 1400-1720 hrs, 2 trips, 740-1110 hrs, all averaging 176 min; additional 2 visits after dark, averaging 53 min. **Count:** Bush-tit, 36 (150, 61); Wrentit, 29 (120, 49); Rufous-sided Towhee, 22 (91, 37); White-crowned Sparrow, 15 (62, 25); Yellow-rumped Warbler, 14 (58, 24); Brown Towhee, 13 (54, 22); Bewick's Wren, 12 (50, 20); California Quail, 10 (42, 17); House Finch, 9 (37, 15); Lesser Goldfinch, 9; Scrub Jay, 7 (29, 12); Ruby-crowned Kinglet, 6 (25, 10); Rufous-crowned Sparrow, 6; Anna's Hummingbird, 5 (21, 8); California Thrasher, 5; Fox Sparrow, 4 (17, 7); Plain Titmouse, 3 (12, 5); Acorn Woodpecker, 2 (8, 3); House Wren, 2; Song Sparrow, 2; Golden-crowned Sparrow, 2; Turkey Vulture, 1 (4, 2); Red-tailed Hawk, 1; Am. Kestrel, 1; Mourning Dove, 1; Greater Roadrunner, 1; Com. Barn-Owl, 1; W. Screech-Owl, 1; Costa's Hummingbird, 1; N. Flicker, 1; Black Phoebe, 1; Say's Phoebe, 1; Hutton's Vireo, 1; Black-crowned Night-Heron, +; N. Harrier, +; Sharp-shinned Hawk, +; Cooper's Hawk, +; Red-shouldered Hawk, +; Red-breasted Sapsucker, +; Nuttall's Woodpecker, +; Am. Crow, +; Com. Raven, +; Blue-gray Gnatcatcher, +; Hermit Thrush, +; Orange-crowned Warbler, +; Com. Yellowthroat, +; W. Meadowlark, +. **Average Total:** 225

birds (934/km², 378/100 acres) **Remarks:** Total species, 47. Fourteen species were seen on every trip: California Quail, Scrub Jay, Bewick's Wren, Ruby-crowned Kinglet, Wrentit, California Thrasher, Yellow-rumped Warbler, Rufous-sided Towhee, Brown Towhee, Rufous-crowned Sparrow, Song Sparrow, White-crowned Sparrow, House Finch, and Lesser Goldfinch.—*RICHARD ZEMBAL and BRIAN DANIELS.*

58. OLD FIELD WITH BRUSH PATCHES. — **Location:** Indiana; Jefferson Co., Clifty Falls St. Park. NW corner of plot 38°45'11"N, 85°24'52"W; in Sec. 33 T4N, R10E, Clifty Falls Quadrangle, USGS. **Continuity:** Established 1976; 4 intermittent years. **Size:** 17.05 ha = 42.13 acres. **Description of Plot:** See AB 30:1056-57 (1976), 31:61-62 (1977), and 36:38 (1982). Succession in 7 years has decreased grass coverage greatly and increased large herbs, shrubs, and saplings. **Water:** The creek in the ravine was running each count day, and never completely frozen over. **Weather:** A mild winter, with little rain or snow. Temp. range, 23°-50°F; wind 0-10 mph (over 6 mph once); sky mostly clear (4) to overcast (4); precipitation once (light misty rain; snow cover from 0 (8) to 1 in. (2)). **Coverage:** Jan. 1 (partial), 5, 8, 22, 26, 29; Feb. 5, 12, 18-19. Total, 9 daylight (4 morning and 5 afternoon) trips averaging 151 min each and ranging 121-198 min plus a partial morning trip of 55 min. One trip by 3 observers, 2 by 2, and 7 trips by 1 (29 obs.-hours total). **Count:** White-throated Sparrow, 8 (47, 19); N. Cardinal, 5 (29, 12); Am. Crow, 2 (12, 5); Am. Tree Sparrow, 2; Am. Goldfinch, 2; N. Bobwhite, 1 (6, 2); Carolina Chickadee, 1; N. Mockingbird, 1; Rufous-sided Towhee, 1; Song Sparrow, 1; Dark-eyed Junco, 1; Red-tailed Hawk, +; Am. Kestrel, +; Mourning Dove, +; Great Horned Owl, +; Pileated Woodpecker, +; Tufted Titmouse, +; Carolina Wren, +; Golden-crowned Kinglet, +; Am. Robin, +; Brown Thrasher, +; Fox Sparrow, +. **Average Total:** 25 birds (147/km², 59/100 acres). **Remarks:** 22 species. Only the N. Cardinal was noted on all 10 trips. Seen flying over the plot were additional Am. Crows, Turkey Vulture, and Cedar Waxwing. Dwight Chamberlain, Dick Heller, and Marcus Webster assisted.—*DAN WEBSTER, Hanover College, Hanover, IN 47243.*

WINTER BIRDS OF PRAIRIE REMNANTS OF OMAHA, NEBRASKA

The following studies were sponsored by the Audubon Society of Omaha. Vegetation analyses were taken from *Native Tallgrass Prairie Remnants of Eastern Nebraska: Floristics and Effects of Management, Topography, Size, and Season of Evaluation*, an unpublished master's thesis prepared by Judith F. Boettcher for the Univ. of Neb. at Omaha in 1981.

The weather this winter was unusually mild, with occasional ice storms but no persist-

ent snow cover before the middle of Jan

I appreciate the efforts of the observers, who spent part of their free time to visit these prairie remnants and watch no birds.—*BARBARA L. WILSON* (compiler, *Rte. 1, Box 41, Hastings, IA 51540*), *NEAL RATZLAFF* (I.), *JIM and SANDY KOVANDA* (II.), *JIM DUCHEY* (III.)

59. TALL GRASS PRAIRIE I. — **Location:** Nebraska; Douglas Co., Stolley Prairie, 2.5 mi W of Boys Town; 41°16'N, 96°11'W, Elkhorn Quadrangle, USGS. **Continuity:** New. **Size:** 8.5 ha = 21.0 acres. **Description of Plot:** Percent ground cover, from 90 plots in early Aug.: total cover, 92.9%; total grass cover, 85.0%; total forb cover, 51.9%; Big Bluestem (*Andropogon gerardi*), 50.4%; Porcupine Grass (*Stipa spartea*), 31.0%; Red Clover, 29.3%; Kentucky Blue Grass (*Poa pratensis*), 19.7%; Japanese Brome (*Bromus japonicus*), 19.6%; Leadplant, 12.5%; Schribner's Panic Grass (*Dichanthelium oligosanthes* var. *scribnerianum*), 7.7%; Smooth Brome (*Bromus inermis*), 7.0%; Moss species, 6.1%; 46 other species less than 5% each. **Edge:** Cultivated fields, road, and windbreak. **Topography:** E-facing slope. **Elevation:** 1110-1156 ft. **Coverage:** Jan. 7, Feb. 5, 12, 23; Mar. 13. Total trips, 5; obs.-hours, 5.8. **Census:** No birds. **Remarks:** Meadowlarks (probably W.) flew over the prairie to land in the adjacent field. A variety of birds used the shrub windbreak at the edge.—*NEAL RATZLAFF, 536 Brentwood Road, Omaha, NE 68114.*

60. TALL GRASS PRAIRIE II. — **Location:** Nebraska; Sarpy Co., Hover Prairie, 2 mi W of Bellevue; 41°09'N, 95°51'W; Omaha S. Quadrangle, USGS. **Continuity:** New. **Size:** 4.9 ha = 12.1 acres. **Description of Plot:** Per cent ground cover, from 30 plots in early Aug.: total cover, 95.5%; total grass cover, 91.2%; total forb cover, 39.3%; Big Bluestem (*Andropogon gerardi*), 68.6%; Kentucky Blue Grass (*Poa pratensis*), 28.6%; Flowering Spurge, 15.6%; Heath Aster, 11.8%; Little Bluestem (*Andropogon scoparius*), 10.8%; Indian Grass (*Sorghastrum nutans*), 7.5%; 23 other species, less than 5% each. **Edge:** Railroad tracks, highway, wooded stream, and shrub windbreak. **Topography:** W-facing slope. **Elevation:** 1060-1110 ft. **Coverage:** Dec. 18, Jan. 9, 22; Feb. 6, 19, Mar. 12. Total trips, 6; obs.-hours, 6.75. **Count:** N. Bobwhite, 4 (82, 33); Ring-necked Pheasant, 1 (20, 8); Song Sparrow, +. **Average Total:** 5 birds (102/km², 41/100 acres). **Remarks:** 3 species. One covey of 25 bobwhite flushed on Feb. 19.—*JIM and SANDY KOVANDA, 8002 S. 45th Ave., Omaha, NE 68157.*

61. TALL GRASS PRAIRIE III. — **Location:** Nebraska; Douglas Co., Baummeister Prairie, 1 mi S, 2 mi W of Boys Town, 41°14'N, 96°10'W; Gretna Quadrangle, USGS. **Continuity:** New. **Size:** 24 ha = 59.2 acres. **Description of Plot:** Per cent ground cover, from 120 plots in early Aug.: total cover, 96.2%; total grass cover, 94.4%; total forb

cover, 56.9%; Big Bluestem (*Andropogon gerardi*), 40.2%; Kentucky Blue Grass (*Poa pratensis*), 33.6%; Little Bluestem (*Andropogon scoparius*), 27.7%; Moss species, 24.8%; Porcupine Grass (*Stipa spartea*), 17.1%; a grass (*Dicanthelium linearifolium*), 12.8%; Flowering Spurge, 10.7%; Leadplant, 8.0%; a grass (*Dicanthelium acuminatum*), 6.8%; Red Clover, 6.5%; a grass (*Dicanthelium oligosanthes* var. *scribnerianum*), 6.4%; Heath Aster, 5.6%; 43 other species, less than 5% each. The prairie was mowed in late summer and was very short through the winter. **Edge:** Wooded stream, windbreaks. **Topography:** N and E-facing slopes. **Elevation:** 1090-1190 ft. **Coverage:** Jan. 13, 21, 28; Feb. 14, 17. Total trips, 5; obs.-hours, 3.75. **Count:** No birds.—*JIM DUCEY, 910 North 49th St., Omaha, NE 68132.*

62. SCRUB OAK-MOUNTAIN MAHOGANY WOODLAND. — **Location:** Colorado; El Paso Co., 300 ft W Dwire Hall, Univ. of Colorado campus, Colorado Springs; 38°52'N, 104°47'W, Pikeview Quadrangle, USGS. **Continuity:** New (established 1980 as a BBC). **Size:** 8.0 ha = 19.8 acres. **Description of Plot:** See AB 35:87 (1981). **Weather:** More than average precipitation, all as snow, occurred this winter but most censuses were made with bare ground because the study area is on a S-facing slope. Average daily high temp. for Jan. and Feb. were 40-50°F and lows were 20-35°. **Coverage:** Jan. 25; Feb. 3, 13, 19-22, 27; Mar. 1, 7. 10 trips, all between 0730 and 1100, averaging 1.2 hours each. **Count:** Dark-eyed Junco, 8 (100, 40); Black-billed Magpie, 7 (87, 35); Am. Robin, 3 (37, 15); Scrub Jay, 2 (25, 10); Black-capped Chickadee, 2; Rock Dove, 1 (12, 5); N. Flicker, 1; Am. Crow, 1; Townsend's Solitaire, 1; Com. Raven, +; Eur. Starling, +; House Finch, +; House Sparrow, +. **Average Total:** 26 birds (324/km², 131/100 acres). **Remarks:** Total species, 13. Only the Black-billed Magpie was observed on every census, but the Dark-eyed Junco was seen on all but 2 censuses. We wish to thank those members of the ornithology class who participated in some of the censuses.—*REBECCA HOLMES and DON VAN HORN* (compiler), *Univ. of Colorado, Colorado Springs, CO 80907.*

63. BAJADA DESERT SCRUB. — **Location:** Arizona; Pima Co., NW of Tucson; 32°22'N, 111°02'W; Jaynes Quadrangle, USGS. **Continuity:** New. **Size:** 8.1 ha = 20 acres (from survey). **Description of Plot:** A bajada Sonoran desert scrub community S of the Tortillito Mountains with a house and citrus orchard occupying less than 0.4 ha in 1 corner. The vegetation was censused in representative 30 ft radius circles and by a complete count of trees and saguaro cacti. The bajada substratum is 80% sand and fine gravel, 15% plant stems and 5% plant litter. The perennial canopy cover is 25%, composed primarily of Triangle-leaf Bursage 4080/acre; Staghorn Cholla 165; a prickly pear (*Opuntia phaeacantha*) 68; Jumping Cholla 19; *Mammillaria* sp. 13; Tesota 12; Barrel Cactus 6; Yellow Paloverde and Saguaro 2. The exotic vegeta-

tion in the developed corner is 1 *Eucalyptus* sp., 2 *Pinus* sp., 15 *Citrus* sp., 3 date palms, about 5 Oleanders and 1 Peppertree. **Edge:** The plot is bounded by Thornydale Road on the E, a road with a park with similar vegetation beyond on the N, and similar vegetation on the W and S. **Topography:** The plot is nearly level at 2380 ft. **Weather:** Temp. were about normal but precip. was twice average. **Coverage:** Jan. 5, 13, 27; Feb. 1, 7, 11; Mar. 6 (2 surveys). Average length: 58 min. Surveys, 0943-1425. **Count:** Gambel's Quail, 11 (136, 55); Mourning Dove, 7 (86, 35); Gila Woodpecker, 5 (62, 25); Verdin, 5; Curve-billed Thrasher, 5; Cactus Wren, 3 (37, 15); Black-throated Sparrow, 3; White-crowned Sparrow, 3; N. Flicker, 2 (25, 10); Harris' Hawk, 1 (12, 5); Ruby-crowned Kinglet, 1; Yellow-rumped Warbler, 1; N. Cardinal, 1; Brown Towhee, 1; House Finch, 1; Am. Kestrel, +; Ladder-backed Woodpecker, +; Bewick's Wren, +; Black-tailed Gnatcatcher, +; Phainopepla, +; Eur. Starling, +; Pyrrhuloxia, +. **Average Total:** 50 birds (618/km², 250/100 acres). **Remarks:** Total species, 22. The Harris' Hawks ranged between the park to the N and the plot and spent much time perched atop saguaros. The dates in the orchard attracted Gila Woodpeckers, but the birds paid little attention to the citrus fruit.—*JOAN C. and ROBERT C. TWEIT, 4100 N. Romero Rd., #108, Tucson, AZ 85705.*

64. COASTAL SCRUB. — **Location:** California; Marin Co., 4 mi NW of Bolinas and 0.5 mi inside the S boundary of Pt. Reyes Nat'l Seashore; 37°55'N, 122°45'W, Bolinas Quadrangle, USGS. **Continuity:** Previously censused in 1972 and 1980; 3 intermittent years. **Size:** 8.1 ha = 20 acres. **Description of Plot:** See AB 25:1003-1004 (1971). **Weather:** Partly cloudy skies prevailed on 64% of the census mornings; the remainder were clear (21%) or overcast (14%). Winds were light (1-5 mph) and variable. Temp. during the winter were normal or slightly above normal, ranging from 38-60°F on census mornings. The winter of 1983, however, saw the highest rainfall in recorded history, 59.71 in. between July 1, 1982 and June 30, 1983. Much of this rain was concentrated in late winter/early spring: Feb. had 12.28 in. and Mar. had 14.80, both unprecedented amounts. **Coverage:** Feb. 10-11, 14, 17, 21, 24; Mar. 11, 14; 0700-1415. The 8 trips averaged 137 min each with an average starting time of 0815. Total hours = 18.3. **Count:** Pine Siskin, 25 (309, 125); White-crowned Sparrow, 23 (284, 115); Ruby-crowned Kinglet, 15 (185, 75); Song Sparrow, 13 (161, 65); Wrenit, 10 (124, 50); Bushtit, 7 (86, 35); Bewick's Wren, 7; Rufous-sided Towhee, 7; Turkey Vulture, 3 (37, 15); Scrub Jay, 3; Allen's Hummingbird, 2 (25, 10); Am. Robin, 2; Red-tailed Hawk, 1 (12, 5); Am. Kestrel, 1; California Quail, 1; Anna's Hummingbird, 1; N. Flicker, 1; Com. Raven, 1; Blue-gray Gnatcatcher, 1; Yellow-rumped Warbler, 1; Brown Towhee, 1; Fox Sparrow, 1; Dark-eyed Junco, 1; Purple Finch, 1; Merlin, +; Chestnut-backed Chickadee, +; W. Bluebird, +; Rufous-crowned

Sparrow, +; Golden-crowned Sparrow, +; Brewer's Blackbird, +. **Average Total:** 129 birds (1594/km², 645/100 acres). **Remarks:** Total species, 30. Despite the record rainfall, the winter bird density of this mature coastal scrub study plot was much higher than that of the winter of 1980. This was caused by 2 factors: (1) an exceptionally successful 1982 breeding season causing permanent resident species to be present in record numbers at the start of the winter, and (2) apparently average to relatively low winter mortality rates as determined by on-going studies of color-banded birds on this plot. Thus, the exceptional rainfall of 1983, which resulted primarily from a nearly continuous string of warm southerly storms of light or moderate intensity, apparently caused less mortality than the few severe, intensely cold northerly storms of 1980. The greatest increase over 1980 numbers was shown by Song Sparrow, White-crowned Sparrow, Rufous-sided Towhee, Bewick's Wren, Wrenit, Bushtit, and Pine Siskin, all permanent resident species, and by Ruby-crowned Kinglet, a winter resident. Blue-gray Gnatcatcher was a notable addition to the census, as gnatcatchers are very rare winter residents in Marin Co. Two and possibly even 3 individuals were known to be present on or near the study plot. Hermit Thrush was conspicuous this winter by its absence. A general decline in numbers from early Feb. to mid-Mar. was noticed and is attributed to late winter mortality caused by the excessive Feb. and Mar. rainfall. Rich Del Carlo helped with the censusing. Contribution No. 261, PRBO — *CHIP ISENHART, DAVE DESANTE, and JERRY TABBIA, Point Reyes Bird Observatory, 4990 Shoreline Hwy., Stinson Beach, CA 94970.*

65. DISTURBED COASTAL SCRUB B. — **Location:** California; Marin Co., 3.5 mi NW of Bolinas and 0.16 mi inside the S boundary of Pt. Reyes Nat'l Seashore, 37°55'N, 122°45'W, Bolinas Quadrangle, USGS. **Continuity:** Previously censused in 1980, 2 years. BBCs nearly continuous since 1971. **Size:** 8.1 ha = 20 acres. **Description of Plot:** See AB 25:1002-1003 (1971). **Weather:** See Coastal Scrub, No. 64. **Coverage:** Feb. 11, 14, 16, 17, 21-22; Mar. 10-11, 0730-1250. The 8 trips averaged 139 min each with an average starting time of 0806. Total hours = 18.5. **Count:** Song Sparrow, 22 (272, 110); White-crowned Sparrow, 22; Pine Siskin, 10 (124, 50); Bushtit, 7 (86, 35); Ruby-crowned Kinglet, 7; Wrenit, 4 (49, 20); Turkey Vulture, 3 (37, 15); California Quail, 3; Bewick's Wren, 3; Yellow-rumped Warbler, 2 (25, 10); Rufous-sided Towhee, 2; Am. Kestrel, 1 (12, 5); Mourning Dove, 1; Allen's Hummingbird, 1; Violet-green Swallow, 1; Tree Swallow, 1; Scrub Jay, 1; Com. Raven, 1; W. Bluebird, 1; Am. Robin, 1; Brewer's Blackbird, 1; Red-tailed Hawk, +; Killdeer, +; Anna's Hummingbird, +; N. Flicker, +; Black Phoebe, +; Eur. Starling, +. **Average Total:** 95 birds (1174/km², 475/100 acres). **Remarks:** Total species, 27. Despite the record rainfall and the fact that three fewer species were detected than in 1980, the winter

bird density on this successional state coastal scrub study plot was 23% higher than in the winter of 1980. As in the case of the Coastal Scrub, No. 64, this is attributed to an exceptionally successful 1982 breeding season for permanent resident species and to average or relatively low early winter mortality rates. The largest increases were detected in Song and White-crowned sparrows with smaller but still pronounced increases in California Quail, Wrentit, Yellow-rumped Warbler, Rufous-sided Towhee and Pine Siskin, mostly permanent resident species. In contrast, Bushtit and Am Robin were present in smaller numbers than during the winter of 1980 and Hermit Thrush, Brown Towhee, Fox and Golden-crowned sparrows, and Lesser Goldfinch were absent. This successional stage coastal scrub is recovering from intense agricultural use that ended some 18 years ago. Its winter bird density was 24% less than that of the mature Coastal Scrub plot, No. 64. Among the more common species, the successional stage plot supported more wintering Yellow-rumped Warblers and Song Sparrows and as many Bushtits and White-crowned Sparrows as the mature plot, but considerably fewer wintering Scrub Jays, Bewick's Wrens, Ruby-crowned Kinglets, Wrentits, Rufous-sided Towhees, and Pine Siskins. These latter species seem to prefer the dense continuous cover of mature coastal scrub over the patchy and less dense but often taller cover of Coyote Brush (*Baccharis pilularis* var. *consanguinea*) that characterizes successional stage coastal scrub. As in the Coastal Scrub, No. 64, a substantial decrease in numbers of birds censused were noted from early Feb. to mid-Mar and is attributed primarily to late winter mortality. Rich Del Carlo and Phil Bellamy helped with the censusing. Contribution No. 262, PRBO.—*CHIP ISENHART, DAVE DESANTE, and JERRY TABBIA. Point Reyes Bird Observatory, 4990 Shoreline Hwy., Stinson Beach, CA 94970.*

66. BURNED DISTURBED COASTAL SCRUB. — **Location:** California; Marin Co., 5.5 mi NW of Bolinas and 2 mi inside the S boundary of Pt. Reyes Nat'l Seashore; 37°55'N, 122°45'W, Bolinas Quadrangle, USGS **Continuity:** New. **Size:** 8.1 ha = 20 acres (measured). Shape irregular, roughly a long narrow rectangle oriented along the N-S axis with a smaller E-W rectangle and an equilateral triangle near the SW corner. The shape was selected to accommodate the burned area while eliminating, as much as possible, the interspersed and surrounding unburned areas. **Description of Plot:** A variously gentle to steep S-facing slope from 280-840 ft elevation encompassing parts of 2 old marine terraces. Prior to Aug. 1982, the area consisted primarily of disturbed successional stage coastal scrub interspersed with smaller patches of undisturbed mature coastal scrub and a few small scattered Douglas-firs. The disturbed areas were grazed as recently as 1964. In Aug. 1982, a brushfire swept through the area and burned most of the disturbed scrub but jumped over much of the undisturbed scrub (which was mostly in protected hollows). Winter

rains stimulated a lush growth of annual grasses and forbs in the burned areas and initiated crown sprouting in the remaining standing Coyote Brush. In Mar. 1983, the vegetation of the plot was as follows: bare ground, 5%; open grassland (burned disturbed coastal scrub), 61%; open grassland mixed with shrub skeletons (burned disturbed coastal scrub), 16%; undisturbed mature coastal scrub, 14%; and patches of small Douglas firs, 4%. Before burning, the disturbed coastal scrub consisted almost entirely of Coyote Brush, probably 0.5-1.0 m in height. The grassland that has replaced it consists mostly of *Avena*, *Bromus*, and *Stipa*, all introduced annual grasses. The undisturbed unburned coastal scrub (about 3 ft in height) consists of Coyote Brush, 49%; W. Poison-oak, 27%; California Buckthorn, 6%; Bush Monkeyflower, 5%; W. Blackberry, 4%; California Sagebrush, 3%; others, 6%. The plot is surrounded on all sides by similar, but mostly unburned, habitat. The nearest fresh water is 2 intermittent streams, about 0.25 mi to both the E and W. **Weather:** See Coastal Scrub, No. 64. **Coverage:** Feb. 16-17, 19-21, 24; Mar. 4, 10; 0800-1130. The 8 trips averaged 133 min each with an average starting time of 0831. Total hours = 17.7. **Count:** Pine Siskin, 41 (507, 205); White-crowned Sparrow, 19 (235, 95); California Quail, 12 (148, 60); Ruby-crowned Kinglet, 6 (74, 30); Wrentit, 5 (62, 25); Dark-eyed Junco, 4 (49, 20); Turkey Vulture, 3 (37, 15); N. Flicker, 3; Scrub Jay, 3; Bushtit, 3; W. Bluebird, 3; Anna's Hummingbird, 2 (25, 10); Steller's Jay, 2; Bewick's Wren, 2; Am. Robin, 2; Red-tailed Hawk, 1 (12, 5); Black Phoebe, 1; Rufous-sided Towhee, 1; Song Sparrow, 1; Am. Kestrel, +; Band-tailed Pigeon, +; Allen's Hummingbird, +; Tree Swallow, +; Com. Raven, +; Chestnut-backed Chickadee, +; Hutton's Vireo, +; Yellow-rumped Warbler, +; Rufous-crowned Sparrow, +; Fox Sparrow, +; Golden-crowned Sparrow, +; House Finch, +. **Average Total:** 114 birds (1408/km², 570/100 acres). **Remarks:** Total species, 31. The winter bird density on this recently burned plot was intermediate between that on the mature Coastal Scrub, No. 64, and that on the successional stage Disturbed Coastal Scrub, No. 65. The burning apparently made the area more attractive to those species that prefer to forage on relatively open ground, such as California Quail, N. Flicker, W. Bluebird, and Dark-eyed Junco. These species were present in greater numbers on the burned plot than on either of the unburned plots. For unknown reasons, Steller's Jays and Pine Siskins were also more abundant on the burned plot. In contrast, the densities of those species that prefer to forage in dense scrub were considerably reduced on the burned plot compared to both unburned plots. These species included Bushtit, Bewick's Wren, Ruby-crowned Kinglet, Rufous-sided Towhee, White-crowned Sparrow, and Song Sparrow. Wrentits, which were found in the burned plot only in the small unburned portions, were similar in density to Wrentits in the unburned disturbed plot but considerably less dense than in the unburned undisturbed plot. To some extent, the relatively high density and surprisingly high species richness of

the burned plot may have been caused by the long narrow shape of the plot that provided it with over 50% more border (relative to its area) than the unburned plots. This may have allowed it to intersect more home ranges of both solitary and flocking species. Despite this potential bias for overestimation on the burned plot, it is clear that the occasional burning of California coastal scrub habitat (a periodic and natural phenomenon) does not cause a catastrophic decline in the population density of wintering birds. Thanks to Rich Del Carlo who helped with the establishment and censusing of this plot. Contribution No. 263, PRBO.—*DAVE DESANTE, CHIP ISENHART, and JERRY TABBIA. Point Reyes Bird Observatory, 4990 Shoreline Hwy., Stinson Beach, CA 94970.*

67. 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; 10 intermittent years. **Size:** 14.2 ha = 35 acres. **Description of Plot:** See AFN 22:714-715 (1968). Disregard 1968 coordinates. **Weather:** Temp. range during count hours, 30-35°F. Wind W to WNW, calm 3 days, light breeze to 10 mph on 4 days. Overcast 2 days, clear 5 days. No snow cover on 4 trips, patchy to 8 in. on 3 trips. **Coverage:** Dec. 17, 29; Jan. 9, 22; Feb. 4, 18, 27. Total 7 trips, 0800-1430, averaging 1 hr each. **Count:** Black-capped Chickadee, 5 (35, 14); Downy Woodpecker, 1 (7, 3); White-breasted Nuthatch, 1; Golden-crowned Kinglet, 1; Ruffed Grouse, +; Mourning Dove, +; Am. Crow, +; Tufted Titmouse, +; Brown Creeper, +; E. Bluebird, +; Am. Robin, +; Yellow-rumped Warbler, +; N. Cardinal, +; Song Sparrow, +. **Average Total:** 8 birds (56/km², 23/100 acres). **Remarks:** Total species, 14. Black-capped Chickadee was seen on 6 trips, the White-breasted Nuthatches on 5 trips. The Mourning Dove, Am. Crow, E. Bluebird, Am. Robin, Yellow-rumped Warbler, and N. Cardinal were seen on 1 trip only.—*LEON L. BARKMAN, 26 West Street, Newtown, CT 06470.*

68. RIVER BANK AND RIVER. — **Location:** Pennsylvania; Clinton Co., Center under the McElhattan bridge on the N bank of the W branch of the Susquehanna River, 0.8 km (½ mi) NW of BM 571 in McElhattan, 41°09'57"N, 77°22'22"W, Jersey Shore Quadrangle, USGS. **Continuity:** Established 1975; 8 intermittent years. **Size:** River Bank, approximately 4.6 ha = 11.4 acres. River, 80 ha = 197.7 acres of water. See AB 29:780 (1975) for measuring technique. **Description of Plot:** See AB 29:780 (1975). **Weather:** The mean high and low temp. for Jan. was 38.8° and 22°F, and for the first 12 days of Feb. was 38.6° and 19.1°. There was no snow except for 4 in. on 2 trips. Ice cover on the river was about 10% on 2 trips and less than 10% on all other trips. **Coverage:** Jan. 6, 18, 29; Feb. 12 (2 trips each); Jan. 27 (1 trip). Total 9 trips averaging 66 min, 0955-1600. **Count:** River Bank: Cedar Waxwing, 16 (347, 140); Am

Tree Sparrow, 12 (260, 105), White-breasted Nuthatch, 3 (65, 26); Dark-eyed Junco, 3; Downy Woodpecker, 2 (43, 18); Black-capped Chickadee, 2; N. Cardinal, 2; Am. Goldfinch, 2; Am. Crow, 1 (22, 9); Yellow-rumped Warbler, 1; Hairy Woodpecker, +; Pileated Woodpecker, +; Tufted Titmouse, +; Brown Creeper, +; Golden-crowned Kinglet, +; Song Sparrow, +; White-throated Sparrow, +; Purple Finch, +; Evening Grosbeak, +; House Sparrow, +. **River:** Black Duck, 1 (1, 1). **Average Total:** River Bank, 44 birds (954/km², 386/100 acres); River: 1 bird (1/km², 1/100 acres of water). **Remarks:** Total species, River Bank, 20; River, 1.—**PARKER PEER, GLENNA and PAUL SCHWALBE** (compiler, Dept. of Biological Sciences, Lock Haven University, Lock Haven, PA 17745), (members of the West Branch Bird Club and Ornithological Society).

69. BARRIER BEACH AND SALT-WATER ESTUARY. — **Location:** Florida; Duval Co., on N side of St. John's River, where it meets the sea, and S side of Ft. George River, immediately S of Little Talbot Is. St. Park. Area is 1 mi N of Mayport Naval Base and is known locally as the North Jettys Area: 30°25'N, 81°25'W, Mayport Quadrangle, USGS. **Continuity:** Established 1978, 6 years. **Size:** 212.5 ha = 525 acres. **Description of Plot:** See AB 33:47 (1979). **Water:** The inlet continues to shallow and the salt marsh vegetation continues to increase. **Weather:** Temp. range, 25-83°F. Monthly averages were 3.8° above normal for Dec., but 4.2° below normal for Jan. and 2.3° below normal for Feb. Precipitation was about normal in Dec. and Feb., but 4.12 in. above normal in Jan., with an in. or more falling 4 days in succession, Jan. 20-23. (Weather data from Jacksonville Int'l Airport, 15 mi inland.) **Coverage:** Dec. 4, 19, 21, 25; Jan. 8-9, 16, 22, 30; Feb. 6, 10, 12-13, 19. Total, 14 trips, 0800-1500, mostly on high tide, averaging 3 hrs each. **Count:** Black Skimmer, 518 (244, 99); Dunlin, 371 (175, 71); Royal Tern, 297 (140, 57); Herring Gull, 209 (98, 40); Sanderling, 177 (83, 34); Ring-billed Gull, 166 (78, 32); Brown Pelican, 156 (73, 30); Laughing Gull, 121 (57, 23); Semipalmated Plover, 107 (50, 20); W. Sandpiper, 106 (50, 20); Ruddy Turnstone, 95 (45, 18); Red Knot, 77 (36, 15); Forster's Tern, 62 (29, 12); Great Black-backed Gull, 50 (24, 10); Short-billed Dowitcher, 41 (19, 8); Red-breasted Merganser, 40 (19, 8); Double-crested Cormorant, 25 (12, 5); Black-bellied Plover, 25; Willet, 16 (8, 3); Caspian Tern, 14 (7, 3); Piping Plover, 7 (3, 1); Bonaparte's Gull, 7; Savannah Sparrow, 6 (3, 1); Snowy Egret, 4 (2, 1); Sandwich Tern, 4; Eur. Starling, 4; Boat-tailed Grackle, 4; Black Scoter, 3 (1, 1); Wilson's Plover, 3; Marbled Godwit, 3; Mourning Dove, 3; Yellow-rumped Warbler, 3; Horned Grebe, 2 (1, +); Killdeer, 2; Long-billed Curlew, 2; Great Blue Heron, 1 (+, +); Little Blue Heron, 1; Cattle Egret, 1; Ruddy Duck, 1; Clapper Rail, 1; Am. Oystercatcher, 1; Lesser Yellowlegs, 1; Purple Sandpiper, 1; Com. Ground-Dove, 1; Belted King-

fisher, 1; Am. Crow, 1; Am. Robin, 1; N. Cardinal, 1; Red-throated Loon, +; Com. Loon, +; N. Gannet, +; Great Cormorant, +; Tricolored Heron, +; Reddish Egret, +; Green-backed Heron, +; Wood Stork, +; Hooded Merganser, +; Turkey Vulture, +; Osprey, +; N. Harrier, +; Red-tailed Hawk, +; Am. Kestrel, +; Virginia Rail, +; Lesser Golden Plover, +; Greater Yellowlegs, +; Spotted Sandpiper, +; Parasitic Jaeger, +; Iceland Gull, +; Lesser Black-backed Gull, +; Black-legged Kittiwake, +; Com. Tern, +; Red-bellied Woodpecker, +; Fish Crow, +; Carolina Wren, +; Gray Catbird, +; N. Mockingbird, +; Loggerhead Shrike, +; Orange-crowned Warbler, +; Com. Yellowthroat, +; Rufous-sided Towhee, +; Vesper Sparrow, +; Song Sparrow, +; Swamp Sparrow, +; Red-winged Blackbird, +; E. Meadowlark, +. **Average Total:** 2743 birds (1291/km², 522/100 acres). **Remarks:** The average total of 2743 was well above the 5-yr mean (1978-82) of 2368, but well below the all time high of 3563 (1981). The total of 87 species is far more than the previous high of 77 (1981) and the 5-yr mean of 70. This in part, reflects the enthusiasm of Connor who participated for the first time and the higher number of counts this year. Of the 25 most abundant species: 10 were below the 5-yr mean, 10 were above and 5 were about average. Very high above the 5-yr mean were Black Skimmer (518 vs. 225), Royal Tern (297 vs. 199), Brown Pelican (156 vs. 74), Ruddy Turnstone (95 vs. 57), Forster's Tern (62 vs. 32), and Dunlin (371 vs. 215). Very low below the mean were Lesser Scaup (1 vs. 20); and Herring Gull (209 vs. 387).—**HAROLD CONNOR, 249 Canis Dr., Orange Park, FL 32073; ROBERT W. LOFTIN** (compiler), University of N. Florida, 4567 St. John's Bluff Rd., S., Jacksonville, FL 32216, and **JOSEPH WILSON, 4013 NW 12th Terrace #3, Gainesville, FL 32601.**

70. SEWAGE LAGOONS-RIPARIAN WOODLAND. — **Location:** Utah; Washington Co., Springdale sewage plant, adjoining W edge of Rockville; 37°10'N, 113°3'W Springdale West Quadrangle, USGS. **Continuity:** Established 1981, 3 years. **Size:** 24.3 ha = 60 acres. **Description of Plot:** See AB 37:42-43 (1983). **Weather:** Temp. slightly above average; mostly dry until mid-Jan., and then frequent rains. **Coverage:** Dec. 9, 13, 16, 21, 29; Jan. 2, 8, 18, 26; Feb. 3, 8, 11; 12 trips averaging 57 min., 1035-1540. **Count:** Ring-necked Duck, 36 (148, 60); Mallard, 21 (86, 35); Green-winged Teal, 3 (12, 5); Canada Goose, 2 (8, 3); Water Pipit, 2; Wood Duck, 1 (4, 2); Com. Goldeneye, 1; Black Phoebe, 1; Eared Grebe, +; Great Blue Heron, +; N. Shoveler, +; Gadwall, +; Am. Wigeon, +; Lesser Scaup, +; Bufflehead, +; Hooded Merganser, +; Com. Merganser, +; Ruddy Duck, +; Am. Kestrel, +; Am. Coot, +; Killdeer, +; Say's Phoebe, +; Com. Raven, +; Rock Wren, +. **Average Total:** 67 birds (276/km², 112/100 acres). **Remarks:** Total species, 24. Mallard was the only species found on all 12 trips; all others were seen on 8 or less. Warm weather to the N failed to move waterfowl S for the winter,

causing a drop from last year in the average number of birds.—**JEROME L. GIFFORD, P.O. Box 85, Springdale, UT 84767.**

71. COASTAL SALT MARSH. — **Location:** California; Humboldt Co., Eureka, near foot of Bay Street and KIEM radio towers and bordering Eureka Slough; 40°47'N, 124°07'W, Eureka Quadrangle, USGS. **Continuity:** Established 1982, 2 years. **Size:** 6.5 ha = 16 acres. **Description of Plot:** See AB 35:101 (1981). **Weather:** 2 of the 8 census days were overcast, 4 were cloudy, and 2 were clear. Light drizzle occurred toward the end of the first census. Total precipitation during the study period was 5.52 in. Temp., 32-66°F (data from Nat'l Weather Serv., Eureka). **Coverage:** Jan. 20, 25, 28; Feb. 1, 3, 8, 12, 17; 1982; 0710-1155. Total hours: 16. **Count (1982):** Marsh Wren, 15 (232, 94), Song Sparrow, 14 (216, 88); Eur. Starling, 3 (46, 19); Am. Robin, 2 (31, 13); Lincoln's Sparrow, 2; W. Meadowlark, 2; Bufflehead, 1 (15, 6); Black-shouldered Kite, 1; Am. Coot, 1; Savannah Sparrow, 1; Red-winged Blackbird, 1; Great Egret, +; N. Harrier, +; Belted Kingfisher, +; N. Flicker, +; Am. Crow, +; Com. Raven, +; Ruby-crowned Kinglet, +; Yellow-rumped Warbler, +. **Average Total:** 43 birds (664/km², 269/100 acres). **Remarks:** Total species, 19. Species seen on all 8 trips included Marsh Wren and Song Sparrow. Species seen on only one trip included Belted Kingfisher, Com. Raven, and Am. Crow. This marsh was used as a comparative salt marsh for a salt marsh restoration project on a nearby slough (see AB 37:43, No. 51) The study was funded through the U.S. Fish & Wildlife Serv., Wildl. Res. Field Station, Arcata, CA. Gratitude is extended to Paul F. Springer for his advice throughout the investigation.—**DANA L. BASE, 514 Sapphire St., Kemmerer, WY 83101.**

72. RYE, CORN STUBBLE AND SHORT GRASS. — **Location:** Pennsylvania; Clinton Co., 1 mi SE of Avis, 41°10'31"N, 77°17'34"W, Jersey Shore Quadrangle, USGS. **Continuity:** New. **Size:** 40.5 ha = 100 Acres. **Description of Plot:** A rectangular patch of cultivated cropland, 1640 ft by 2640 ft, oriented in a NE by SW direction. This winter the fields were composed of rye, 24.3 ha (60%); corn stubble, 15.4 ha (38%); and short grass 0.8 ha (2%). **Edge:** Bordered on all sides by similar cropland. A gravel road bisects the area on its long axis. Power lines pass over the N corner of the study area, of which three large poles are in the area. The end of a row of trees approaches within a few ft of the NW side; no other trees are nearby. **Topography:** Essentially flat, elev 540 ft. **Water:** During wet weather, water collects in a few shallow depressions. **Weather:** Average Jan. high temp. was 38.8°F, average low was 22°. For the first 17 days of Feb., the average high was 40° and the average low was 17°. Snowfall for the count period was 8 in. Ground was snow-covered on 3 trips with a 4 in. maximum. **Coverage:** Jan. 17-18, 31, Feb. 5, 12, 16; 1983. Total, 6 trips averaging 22 min each, between 0925 and 1353. **Count:**

Mourning Dove, 8 (20, 8), Am Crow, 2 (5, 2), Horned Lark, 1 (2, 1), N. Harrier, +, Rock Dove, +. **Average Total:** 11 birds (27/km², 11/100 acres). **Remarks:** Total species, 5 — *GLENNA and PAUL SCHWALBE, (compiler), Dept. of Biological Sciences, Lock Haven University, Lock Haven, PA 17745.*

WINTERING BIRDS OF CORN AND SOYBEAN FIELDS IN SOUTHEASTERN INDIANA

The following 21 censuses were conducted on private farms in Scott Co., SE Indiana. They are the initial results of a 3-year study by the Indiana Div. of Fish and Wildlife and the U S D.A. Soil Con. Serv. to determine bird and small mammal use of corn and soybean fields under a variety of conventional and reduced tillage practices. All fields were censused 10 times during Jan. and Feb., although other bird species were noted during additional visits to the fields. Birds were not counted if they were using other habitats besides crop fields, *i.e.*, fencerows or grassy portions of roadways or waterways within a field. Birds flying overhead were also ignored, unless, as in the case of some raptors, they appeared to be searching for food. Censuses were conducted throughout the day and inclement weather was avoided.

This winter period was 11°F warmer than normal with precipitation 40% of normal. The mean maximum and minimum temp. for Jan. were 41° and 25°, respectively, and 46° and 25° for Feb. Precipitation totals for Jan. and Feb were 1.7 and 1 in., respectively. Snow cover occurred on 7 days and did not exceed 1 in.

Sizes of each field were determined from aerial photographs using a dot grid. Twenty ground cover measurements were taken in each field by visually estimating percent cover in 20 × 100-cm sampling frames. The maximum height of vegetation was measured in 40 such frames.—*JOHN S. CASTRALE and RICHARD T. SPEER, Indiana Div. of Fish and Wildlife, R.R. #2, Box 477, Mitchell, IN 47446.*

73. CORN RESIDUE WITH WHEAT COVER CROP. — **Location:** Indiana; Scott Co., 2.4 mi NW of Lexington on Reid Rd; 38°41'N, 85°38'W, Blocher Quadrangle, USGS. **Continuity:** New. **Size:** 28.1 ha = 69.4 acres (irregular). **Description of Plot:** Cultivated field planted to corn the previous summer. Wheat aerially seeded prior to corn harvest. Crop residue left unchopped after fall harvest. Mean vegetation height was 15 in. and cover measurements were: 5% bare soil, 88% plant litter, and 7% green vegetation. **Edge:** Bordered on W by county road, N by drainageway and winter wheat fields, and E and S by woods. **Topography:** Strongly rolling, elev. 600-670 ft. **Coverage:** Jan. 18-19; Feb. 10, 14-18, 23-24. Total: 10 trips, averaging 28 min, 0915-1430. **Count:** Am. Crow, 11 (39, 16); Dark-eyed Junco, 7 (25, 10); Red-winged Blackbird, 5 (18, 7); N. Cardinal, 3 (11, 4); E. Bluebird, 1 (4, 1); Rusty Blackbird, 1; Turkey Vulture, +; N. Flicker,

+; Blue Jay, +; Am Tree Sparrow, +; Song Sparrow, +. **Average Total:** 28 birds (100/km², 40/100 acres). **Remarks:** Total species, 11. N. Cardinals noted on 7 counts; Am. Crow, 6; Dark-eyed Junco, 5; Red-winged Blackbird, 4; Am. Tree and Song sparrows, 3; N. Flicker, E. Bluebird, Rusty Blackbird, 2; and the remaining species, 1.

74. CORN RESIDUE WITH RYEGRASS COVER CROP. — **Location:** Indiana; Scott Co., 1.8 mi S New Frankfort at intersection of Blocher Rd and County Rd 100 N; 38°42'N, 85°42'W, Blocher Quadrangle, USGS. **Continuity:** New. **Size:** 5.0 ha = 12.3 acres (mostly rectangular). **Description of Plot:** Cultivated field planted to corn the previous summer. Ryegrass (*Lolium multiflorum*) aerially seeded prior to corn harvest with establishment erratic. Crop residue left unchopped after fall harvest. Mean vegetation height was 18.5 in. and cover measurements were: 16% bare soil, 72% plant litter, and 12% green vegetation. **Edge:** Bordered on N and W by county roads, S by soybean residue, and E by corn residue. **Topography:** Gently sloping; elevation, 610-630 ft. **Coverage:** Jan. 28, 31; Feb. 1-4, 8, 10, 14, 21. Total: 10 trips, averaging 16 min, 0930-1435. **Count:** Mourning Dove, 4 (80, 33); Am. Kestrel, +; E. Meadowlark, +. **Average Total:** 4 birds (80/km², 33/100 acres). **Remarks:** Total species, 3. Mourning Doves noted on 3 counts, and the remaining species on 1. On 6 counts no birds were observed.

75. CORN RESIDUE WITH CROWN VETCH COVER CROP I. — **Location:** Indiana; Scott Co., 1.5 mi W Blocher, just W of County Rd 500 E; 38°43'N, 85°41'W, Blocher Quadrangle, USGS. **Continuity:** New. **Size:** 10.4 ha = 25.7 acres (mostly square). **Description of Plot:** Cultivated field planted to corn the previous summer. Crown vetch seeded in June. Crop residue left unchopped after fall harvest. Mean vegetation height was 16 in. and cover measurements were: 19% bare soil, 77% plant litter, and 4% green vegetation. **Edge:** Bordered on S by woods, N by soybean residue, W by fallow field, and E by residential. **Topography:** Gently rolling; elevation, 610-660 ft. **Coverage:** Jan. 27, 31; Feb. 1-4, 8, 16-17, 22. Total: 10 trips, averaging 36 min, 0915-1500. **Count:** Am. Goldfinch, 20 (192, 78); Song Sparrow, 1 (10, 4); Dark-eyed Junco, 1; Am. Kestrel, +; Mourning Dove, +; Blue Jay, +. **Average Total:** 22 birds (212/km², 86/100 acres). **Remarks:** Total species, 6. Am. Goldfinches noted on 8 counts; Song Sparrow, 5; Dark-eyed Junco, 2; and the remaining species, 1. On 2 counts no birds were observed.

76. CORN RESIDUE WITH CROWN VETCH COVER CROP II. — **Location:** Indiana; Scott Co., 1.5 mi N of Lexington at the intersection of Getty and Horner Rds; 38°40'N, 85°37'W, Kent Quadrangle, USGS. **Continuity:** New. **Size:** 3.4 ha = 8.4 acres (rectangular). **Description of Plot:** Cultivated field planted to corn the previous summer. Crown vetch seeded in June. Crop residue left

unchopped after fall harvest. Mean vegetation height was 18 in. and cover measurements were: 12% bare soil, 85% plant litter, and 3% green vegetation. **Edge:** Bordered on N by bean field, W by winter wheat, S by disked corn, and E by county road. **Topography:** Gently rolling; elevation, 660-680 ft. **Coverage:** Jan. 18-19; Feb. 10, 14-17, 21-23. Total: 10 trips, averaging 22 min, 0955-1420. **Count:** Mourning Dove, 8 (235, 95); Dark-eyed Junco, 1 (29, 12); Downy Woodpecker, +; Tufted Titmouse, +; E. Bluebird, +; N. Cardinal, +. **Average Total:** 9 birds (265/km², 107/100 acres). **Remarks:** Total species, 6. Mourning Doves were noted on 8 counts; Dark-eyed Junco, 3; and the remaining species, 1. On 1 count no birds were observed. Species observed during period but not on a count: N. Goshawk, N. Bobwhite

77. CORN RESIDUE I. — **Location:** Indiana; Scott Co., 3.6 mi W of Lexington, at the intersection of SR 3 and 356; 38°39'N, 85°41'W, Blocher Quadrangle, USGS. **Continuity:** New. **Size:** 20.7 ha = 51.1 acres (roughly square). **Description of Plot:** Cultivated field planted to corn the previous summer. Crop residue left unchopped after fall harvest. Mean vegetation height was 13 in. and cover measurements were: 18% bare soil and 82% plant litter. **Edge:** Bordered on N and W by woods, E by residential and highway, and S by pasture and highway. **Topography:** Gently rolling; elevation, 640-660 ft. **Coverage:** Jan. 28, 31; Feb. 1-4, 8, 21, 23-24. Total: 10 trips, averaging 29 min, 0915-1420. **Count:** Mourning Dove, 8 (39, 16), Am. Crow, 1 (5, 2); Killdeer, +; Horned Lark, +; E. Meadowlark, +. **Average Total:** 9 birds (44/km², 18/100 acres). **Remarks:** Total species, 5. Mourning Doves noted on 8 counts; Horned Lark 2; and the remaining species, 1. On 1 count no birds were observed

78. CORN RESIDUE II. — **Location:** Indiana; Scott Co., 0.9 mi W of Lexington on SR 356; 38°38'N, 85°38'W, Blocher Quadrangle, USGS. **Continuity:** New. **Size:** 26.6 ha = 65.7 acres (mostly square). **Description of Plot:** Cultivated field planted to corn the previous summer. Crop residue left unchopped after fall harvest. Mean vegetation height was 12 in. and cover measurements were: 6% bare soil, 89% plant litter, and 5% green vegetation. **Edge:** Bordered on W and S by woods, E by fencerow and corn residue, and N by highway. **Topography:** Gently sloping; elevation, 650-690 ft. **Coverage:** Jan. 27, 31; Feb. 1-4, 9, 17, 22, 24. Total: 10 trips, averaging 30 min, 1020-1250. **Count:** E. Bluebird, 2 (8, 3); Am. Crow, +; Rufous-sided Towhee, +; E. Meadowlark, +. **Average Total:** 2 birds (8/km², 3/100 acres). **Remarks:** Total species, 4. E. Bluebirds noted on 5 counts, and the remaining species on 1. On 4 counts no birds were observed.

79. CORN RESIDUE III. — **Location:** Indiana; Scott Co., 1.8 mi W of Lexington, N of SR 356; 38°39'N, 85°40'W, Blocher Quadrangle, USGS. **Continuity:** New. **Size:** 19.7 ha = 48.7 acres (irregular). **Description of**

Plot: Cultivated field planted to corn the previous summer. Crop residue left unchopped after fall harvest. Mean vegetation height was 12 in. and cover measurements were: 7% bare soil, 87% plant litter, and 6% living vegetation. **Edge:** Bordered on S and W by woods, E by pasture, and N by shrubby fencerow. **Topography:** Rolling; elevation, 600-640 ft. **Coverage:** Jan. 18-19; Feb. 10, 14-15, 17-18, 22-24. Total: 10 trips, averaging 25 min, 0950-1450. **Count:** Am. Crow, 10 (51, 21); Eur. Starling, 2 (10, 4); E. Bluebird, 1 (5, 2); Song Sparrow, 1; Dark-eyed Junco, 1; Red-tailed Hawk, +; Red-bellied Woodpecker, +; N. Flicker, +; Tufted Titmouse, +; Am. Robin, +; N. Cardinal, +; E. Meadowlark, +. **Average Total:** 15 birds (76/km², 31/100 acres). **Remarks:** Total species, 12. Am. Crows noted on 6 counts; E. Bluebird, 4; Red-tailed Hawk, Song Sparrow, and Dark-eyed Junco, 3; N. Flicker and Eur. Starling, 2; and the remaining species 1. On 1 count no birds were observed.

80. DISKED CORNFIELD I. — Location: Indiana; Scott Co., 1.8 mi E of Vienna on SR 356; 38°39'N, 85°43'W, Blocher Quadrangle, USGS. **Continuity:** New. **Size:** 19.8 ha = 48.9 acres (mostly rectangular). **Description of Plot:** Cultivated field planted to corn the previous summer. Crop residue disked after fall harvest. Mean vegetation height was 4.3 in. and cover measurements were: 75% bare soil and 25% plant litter. **Edge:** Bordered on N by woods, S by highway, E by soybean residue, and W by shrubby fencerow and disked cornfield. **Topography:** Rolling; elevation, 600-625 ft. **Coverage:** Jan. 27, 31; Feb. 1, 3-4, 7, 9, 18, 23-24. Total: 10 trips, averaging 26 min, 0900-1520. **Count:** Killdeer, 1 (5, 2); Turkey Vulture, +; Am. Crow, +. **Average Total:** 1 bird (5/km², 2/100 acres). **Remarks:** Total species, 3. Killdeer noted on 3 counts; Am. Crow, 2; Turkey Vulture, 1. On 4 counts no birds were observed.

81. DISKED CORNFIELD II. — Location: Indiana; Scott Co., 1.8 mi SE of Scottsburg at the intersection of County Rds 200 S and 150 E; 38°39'N, 85°44'W, Blocher Quadrangle, USGS. **Continuity:** New. **Size:** 22.8 ha = 56.3 acres (mostly rectangular). **Description of Plot:** Cultivated field planted to corn the previous summer. Crop residue disked after fall harvest. Mean vegetation height was 4.3 in. and cover measurements were: 72% bare soil and 28% plant litter. **Edge:** Bordered on N and W by county roads, E by woods and winter wheat fields, and S by a coniferous fencerow. **Topography:** Rolling; elevation, 600-630 ft. **Coverage:** Jan. 18-19; Feb. 14-18, 22-24. Total: 10 trips, averaging 15 min, 0905-1405. **Count:** Rock Dove, 2 (9, 4); Horned Lark, 2; Mourning Dove, 1 (4, 2); Killdeer, +; E. Bluebird, +; E. Meadowlark, +. **Average Total:** 5 birds (22/km², 9/100 acres). **Remarks:** Total species, 6. Horned Larks noted on 3 counts; Rock and Mourning doves, 2; and the remaining species, 1. On 2 counts no birds were observed. Am. Kestrels were seen during the period but

not during a count

82. DISKED CORNFIELD III. — Location: Indiana; Scott Co., 1.8 mi S of New Frankfort on County Rd 100 N, just E of SR 203; 38°42'N, 85°42'W, Blocher Quadrangle, USGS. **Continuity:** New. **Size:** 21.2 ha = 52.4 acres (roughly rectangular). **Description of Plot:** Cultivated field planted to corn the previous summer. Crop residue disked after fall harvest. Mean vegetation height was 5.5 in. and cover measurements were: 64% bare soil and 36% plant litter. **Edge:** Bordered on S and E by county roads, N by woods and shrubby fencerow, and W by residential. **Topography:** Rolling; elevation, 600-630 ft. **Coverage:** Jan. 28, 31; Feb. 1-4, 8, 10, 14, 16. Total: 10 trips, averaging 34 min, 0910-1435. **Count:** Horned Lark, 2 (9, 4); E. Meadowlark, +. **Average Total:** 2 birds (9/km², 4/100 acres). **Remarks:** Total species, 2. Horned Larks noted on 3 counts and E. Meadowlark, 1. On 6 counts no birds were observed.

83. DISKED CORNFIELD IV. — Location: Indiana; Scott Co., 1.5 mi N of Lexington at the intersection of Getty and Horner Rds; 38°40'N, 85°37'W, Kent Quadrangle, USGS. **Continuity:** New. **Size:** 6.2 ha = 15.3 acres (rectangular). **Description of Plot:** Cultivated field planted to corn the previous summer. Crop residue disked after fall harvest. Mean vegetation height was 5 in. and cover measurements were: 44% bare soil and 56% plant litter. **Edge:** Bordered on S by woods, W by winter wheat, N by corn residue with crown vetch cover crop, and E by county road. **Topography:** Gently rolling; elevation, 660-680 ft. **Coverage:** Jan. 18-19; Feb. 10, 14-17, 21-23. Total: 10 trips, averaging 22 min, 0955-1420. **Count:** Mourning Dove, +; Am. Crow, +; E. Bluebird, +; Song Sparrow, +. **Average Total:** 0 birds. **Remarks:** Total species, 4. Mourning Doves and Am. Crows noted on 2 counts, and the remaining species on 1. On 4 counts no birds were observed.

84. DISKED CORNFIELD WITH WHEAT COVER CROP. — Location: Indiana; Scott Co., 1.5 mi N of Leota on County Rd 150 S; 38°40'N, 85°50'W, Scottsburg Quadrangle, USGS. **Continuity:** New. **Size:** 28.4 ha = 70.1 acres (irregular). **Description of Plot:** Cultivated field planted to corn the previous summer. Crop residue disked and wheat planted after fall harvest. Mean vegetation height was 6.3 in. and cover measurements were: 51% bare soil, 33% plant litter, and 16% green vegetation. **Edge:** Bordered on W and N by disked cornfield and fencerow, E by woods, and S by county road. **Topography:** Gradual slope; elevation, 590-610 ft. **Coverage:** Jan. 18-19; Feb. 14-18, 22-24. Total: 10 trips, averaging 25 min, 0845-1620. **Count:** E. Bluebird, 4 (14, 6); Horned Lark, 3 (11, 4); Dark-eyed Junco, 3; Am. Robin, 1 (4, 1); Killdeer, +; Mourning Dove, +; N. Cardinal, +; Song Sparrow, +; White-throated Sparrow, +. **Average Total:** 11 birds (39/km², 16/100 acres). **Remarks:** Total species, 9. E. Bluebirds noted on 7 counts; Horned

Lark, 4; Dark-eyed Junco, 3; Am Robin and Song Sparrow, 2, and the remaining species, 1. On 2 counts no birds were observed

85. CHISEL-PLOWED CORNFIELD. — Location: Indiana; Scott Co., 2.4 mi NW of Lexington along County Rd 200 S, 38°39'N, 85°40'W, Blocher Quadrangle, USGS. **Continuity:** New. **Size:** 8.7 ha = 21.5 acres (roughly rectangular). **Description of Plot:** Cultivated field planted to corn the previous summer. Crop residue chisel-plowed after fall harvest. Mean vegetation height was 3.5 in. and cover measurements were 86% bare soil and 14% plant litter. **Edge:** Bordered on N by wooded stream, W by shrubby fencerow, E by drainage way and chiselplowed cornfield, and S by county road. **Topography:** Rolling; elevation, 600-620 ft. **Coverage:** Jan. 27, 31; Feb. 1-4, 8, 15-17. Total 10 trips, averaging 20 min, 1020-1410. **Count:** Horned Lark, 1 (11, 5). **Average Total:** 1 bird (11/km², 5/100 acres). **Remarks:** Total species, 1. Horned Larks noted on 2 counts, on 8 counts no birds were observed.

86. PLOWED CORNFIELD. — Location: Indiana; Scott Co., 0.6 mi E of Scottsburg at intersection of County Rd 150 E and SR 56; 38°41'N, 85°44'W, Blocher Quadrangle, USGS. **Continuity:** New. **Size:** 18.9 ha = 46.7 acres (triangular in shape). **Description of Plot:** Cultivated field planted to corn the previous summer. Crop residue mold-board-plowed after fall harvest. Mean vegetation height was 2 in. and cover measurements were: 99% bare soil and 1% plant litter. **Edge:** Bordered on S by highway, W by county road, and NE by drainage ditch. **Topography:** Level floodplain; elevation, 550 ft. **Coverage:** Jan. 18-19; Feb. 14-18, 22-24. Total: 10 trips, averaging 12 min, 0925-1400. **Count:** Killdeer, +. **Average Total:** 0 birds. **Remarks:** Total species, 1. Killdeer noted on 2 counts, and on 8 counts no birds were observed

87. CHISEL-PLOWED SOYBEAN FIELD. — Location: Indiana; Scott Co., 1.8 mi NW of Lexington on County Rd 650 E, 38°40'N, 85°39'W, Blocher Quadrangle, USGS. **Continuity:** New. **Size:** 43.3 ha = 107 acres (mostly rectangular). **Description of Plot:** Cultivated field planted to soybeans the previous summer. Crop residue chisel-plowed after fall harvest. Mean vegetation height was 2.5 in. and cover measurements were: 97% bare soil and 3% plant litter. **Edge:** Bordered on S and W by wooded streams, N by chisel-plowed corn, and E by county road. **Topography:** Level floodplain; elevation, 620 ft. **Coverage:** Jan. 18-19; Feb. 14-18, 22-24. Total: 10 trips, averaging 14 min, 1020-1345. **Count:** Horned Lark, 4 (9, 4). **Average Total:** 4 birds (9/km², 4/100 acres). **Remarks:** Total species, 1. Horned Larks noted on 2 counts; on 8 counts no birds were observed.

88. DISKED SOYBEAN FIELD. — Location: Indiana; Scott Co., 2.4 mi SW of Blocher on County Rd 500 E, N of SR 56, 38°41'N, 85°40'W, Blocher Quadrangle,

USGS Continuity: New **Size:** 10.0 ha = 24.7 acres (irregular). **Description of Plot:** Cultivated field planted to soybeans the previous summer. Crop residue disked after fall harvest. Mean vegetation height was 3.5 in. and cover measurements were: 94% bare soil and 6% plant litter. **Edge:** Bordered on S and W by woods, N by soybean residue, and E by shrubby fencerow and county road. **Topography:** Rolling; elevation, 610-630 ft. **Coverage:** Jan. 28, 31; Feb. 1-4, 8, 15-16, 18. Total 10 trips, averaging 29 min, 0850-1350. **Count:** Turkey Vulture, +; Red-tailed Hawk, +. **Average Total:** 0 birds. **Remarks:** Total species, 2. Both raptor species noted on 1 count soaring at a low altitude directly above the field. On 9 counts no birds were observed.

89. SOYBEAN RESIDUE I. — Location: Indiana; Scott Co., 3.3 mi W of Lexington on SR 3; 38°39'N, 85°41'W, Blocher Quadrangle, USGS. **Continuity:** New. **Size:** 24.4 ha = 60.2 acres (roughly rectangular). **Description of Plot:** Cultivated field planted to soybeans the previous summer. Crop residue left after fall harvest. Mean vegetation height was 4.3 in. and cover measurements were 32% bare soil, 44% plant litter, and 24% green vegetation. **Edge:** Bordered on N and W by woods, S by pasture, and E by highway. **Topography:** Gently sloping; elevation, 600-650 ft. **Coverage:** Jan. 18-19; Feb. 14-18, 22-24. Total: 10 trips, averaging 20 min, 0935-1400. **Count:** Brown-headed Cowbird, 30 (123, 50); Horned Lark, 29 (119, 48), Eur. Starling, 25 (103, 42); Am. Robin, 5 (21, 8); Killdeer, 3 (12, 5); Am. Tree Sparrow, 2 (8, 3); Dark-eyed Junco, 2; Am. Crow, 1 (4, 2); Red-tailed Hawk, +; Rock Dove, +; Blue Jay, +; E. Bluebird, +; E. Meadowlark, +. **Average Total:** 97 birds (398/km², 161/100 acres). **Remarks:** Total species, 13. Horned Larks noted on 10 counts; Killdeer, 6; Eur. Starling, 4; Am. Crow and Am. Robin, 3; E. Bluebird and Am. Tree Sparrow, 2; and the remaining species, 1.

90. SOYBEAN RESIDUE II. — Location: Indiana; Scott Co., 1.8 mi W of Lexington, NW of the intersection of County Rd 600 E and SR 356; 38°39'N, 85°39'W, Blocher Quadrangle, USGS. **Continuity:** New. **Size:** 10.8 ha = 26.6 acres (mostly square). **Description of Plot:** Cultivated field planted to soybeans the previous summer. Crop residue left after fall harvest. Mean vegetation height was 5 in. and cover measurements were: 57% bare soil and 43% plant litter. **Edge:** Bordered on N by shrubby fencerow, W by woods, and S and E by residential and county road. **Topography:** mostly level; elevation, 640-650 ft. **Coverage:** Jan. 27, 31; Feb. 1-4, 9-10, 14-15. Total: 10 trips, averaging 25 min, 0945-1450. **Count:** Horned Lark, 5 (46, 19); Killdeer, +; E. Bluebird, +. **Average Total:** 5 birds (46/km², 19/100 acres). **Remarks:** Total species, 3. Horned Larks noted on 6 counts; Killdeer, 2; and E. Bluebird, 1. On 4 counts no birds were observed. Species seen during period but not on a count include: Am. Crow, Am. Robin, Eur. Starling.

91. SOYBEAN RESIDUE III. — Location: Indiana; Scott Co., 1.5 mi W of Blocher between Wooster Rd and County Rds 500 E and 200 N; 38°43'N, 85°41'W, Blocher Quadrangle, USGS. **Continuity:** New. **Size:** 36.4 ha = 90.0 acres (irregular). **Description of Plot:** Cultivated field planted to soybeans the previous summer. Crop residue left after fall harvest. Mean vegetation height was 5.5 in. and cover measurements were: 40% bare soil, 54% plant litter, and 6% green vegetation. **Edge:** Bordered on E and W by county roads, and N and S by woods. **Topography:** Gradual slope; elevation, 650-670 ft. **Coverage:** Jan. 18-19; Feb. 10, 14-18, 22-23. Total: 10 trips, averaging 19 min, 0910-1425. **Count:** Com. Grackle, 56 (154, 62); Horned Lark, 10 (27, 11); Eur. Starling, 7 (19, 8); Brown-headed Cowbird, 7; E. Bluebird, 3 (8, 3); Am. Crow, 1 (3, 1); Red-tailed Hawk, +; Killdeer, +. **Average Total:** 84 birds (231/km², 93/100 acres). **Remarks:** Total species, 8. Horned Larks noted on 9 visits; E. Bluebird, 3; Red-tailed Hawk and Am. Crow, 2; and the remaining species, 1. On 1 count no birds were observed.

92. SOYBEAN RESIDUE WITH HAIRY VETCH COVER CROP. — Location: Indiana; Scott Co., 1.8 mi S of New Frankfort, at intersection of Blocher Rd and County Rd 100 N; 38°42'N, 85°42'W, Blocher Quadrangle, USGS. **Continuity:** New. **Size:** 6.9 ha = 17.0 acres (rectangular). **Description of Plot:** Cultivated field planted to soybeans the previous summer. Hairy vetch aerially seeded on half of the field in Aug. Crop residue left after fall harvest. Mean vegetation height was 8 in. and cover measurements were: 73% bare soil, 24% plant litter, and 3% green vegetation. **Edge:** Bordered on N by corn residue, E by soybean residue with barley crop, S by woods, and W by gravel road. **Topography:** Gently sloping; elevation, 610-630 ft. **Coverage:** Jan. 28, 31; Feb. 1-4, 8, 10, 14, 21. Total: 10 trips, averaging 9 min, 0930-1435. **Count:** Mourning Dove, +. **Average Total:** 0 birds. **Remarks:** Total species, 1. Mourning Dove noted on 1 count, and on 9 counts no birds were observed.

93. SOYBEAN RESIDUE WITH GRASS COVER CROP. — Location: Indiana; Scott Co., 1.8 mi S of New Frankfort, at intersection of Blocher Rd and County Rd 100 N; 38°42'N, 85°42'W, Blocher Quadrangle, USGS. **Continuity:** New. **Size:** 3.5 ha = 8.7 acres (rectangular). **Description of Plot:** Cultivated field planted to soybeans the previous summer. Half of the field was aerially seeded with ryegrass (*Lolium multiflorum*) and half with barley in Aug. Crop residue left after fall harvest. Mean vegetation height was 8 in. and cover measurements were: 42% bare soil, 24% plant litter, and 34% green vegetation. **Edge:** Bordered on S by woods, N and E by corn residue, and W by soybean residue. **Topography:** Gently sloping; elevation, 610-630 ft. **Coverage:** Jan. 28, 31; Feb. 1-4, 8, 10, 14, 21. Total: 10 trips, averaging 8 min, 0930-1435. **Count:** Am. Kestrel, +. **Average Total:** 0 birds. **Remarks:** Total species,

1 Am Kestrel noted on 1 count, and on 9 counts no birds were observed.

94. FARMSTEAD. — Location: Iowa, Mills Co., 4.75 mi N and .75 mi W of Hastings; 41°06'N, 95°31'W; Malvern Quadrangle, USGS. **Continuity:** New (established as BBC in 1982). **Size:** 7.7 ha = 19 acres. **Description of Plot:** See AB 37:104 (1983). **Weather:** Unusually mild, with occasional ice storms but no persistent snow cover before the middle of January, when the ground finally froze. **Coverage:** Dec. 29; Jan. 18, 28; Feb. 6, 18-20. Total obs.-hours, 5.5. **Count:** House Sparrow, 76 (988, 400); Dark-eyed Junco, 13 (169, 68); Rock Dove, 4 (52, 21), Am. Goldfinch, 4; Black-capped Chickadee, 2 (26, 11); Red-bellied Woodpecker, 1 (13, 5); Downy Woodpecker, 1; Blue Jay, 1, White-breasted Nuthatch, 1; Eur. Starling, 1, N. Cardinal, 1; Harris Sparrow, 1; Mourning Dove, +; Hairy Woodpecker, +; N. Flicker, +; Am. Tree Sparrow, +; White-throated Sparrow, +; Red-winged Blackbird, +; Purple Finch, +. **Average Total:** 109 birds (1418/km², 574/100 acres). **Remarks:** Total species, 19. The hog operation was terminated in early Dec., and that probably caused the decrease in House Sparrow numbers compared to the 1983 Breeding Bird Census. One waterer was available all winter. Grain was available continuously but in limited areas. One feeder of Niger Thistle seed was provided, and was used by the goldfinches and chickadees.—BARBARA L. WILSON, Rte. 1, Box 41, Hastings, IA 51540.

95. URBAN CONSERVATION AREA—FLOODPLAIN AND UPLAND HABITAT. — Location: Canada; Ontario, Newmarket, Mabel Davis Conservation Area, N of Davis Dr., W of Bayview Ave.; 44°03'55"N, 79°27'25"W. **Continuity:** New. **Size:** 6.5 ha = 16 acres; irregular rectangular shape, 235 m midwest point, 370 m longest point, size from owner's survey. **Description of Plot:** Both floodplain and upland forest present. Floodplain on E bank of Holland River covers 34% of plot; dominated by Boxelder, dbh 10 in. and Peachleaf Willow, dbh 28 in. A few Am. Elm, dbh 4 in. and N. White-Cedar, dbh 6 in. Little shrub or herbaceous undergrowth. Flood pools and oxbow cover ca. 5% of the floodplain. Twenty-eight percent of plot is upland and is dominated by Sugar Maple. Other species in upland area include Black Cherry, Am. Beech, E. White Pine, E. Hophornbeam and Am. Hornbeam. Maple constitutes over 95% of trees and Black Cherry dominates the shrub layer. Approximate dbh distribution for maple is 5%, 22 in.; 35%, 10 in.; 60%, 4-6 in. The maple woodland underwent a light cutting during Feb. The third major habitat is a transitional field unit which contains wet portions with growths of cat-tail and Swamp Milkweed. Thickets of trees and shrubs are dominated by Am. Cranberrybush, Red-osier Dogwood, hawthorn and Shining Willow. A few dozen conifers have been planted. Species of undergrowth include grasses, Red Raspberry and Riverbank Grape. This unit occupies ca 34% of the plot. The remainder of the plot (ca

4%) contains a building surrounded by plantings of N. White-Cedar and White Spruce, mainly 4 in. dbh. **Topography:** Elevation rises from 760 ft on W edge at river, to 790 ft at E edge of plot. **Edge:** Commercial use and provincial highway to S., E. margin housing, to N. marsh, roadway and urban park. To W. Holland River with housing, railway and road beyond the floodplain. Much ecotone within plot. **Water:** River is W boundary but is not included in the plot, flood pools and oxbow on floodplain. River did not freeze until Jan. 22. **Food:** Thirty plus Highbush Cranberry covered with berries, keys on Box Elder, little or no snow cover on ground, dead wood abundant. Two bird feeders containing seed within the plot. Nine feeders (8 seed, 1 suet) ca. 425 ft opposite E edge of plot. **Weather:** Data from Bradford Muck Research Station ca. 6 mi NW of plot. Mildest winter in 30 yrs at many S Ontario stations. Range of temp. during census period -9° to 63° F. Mean monthly temp. during census warmer than other Dec., Jan., Feb. during 7-year period of record at Bradford. Total snowfall during census period 13 in., 6 in. on 1 day. Normally 15 in. of snow falls during Jan. alone. During counts generally fair and clear, temp. 14° to 36° F. During 10 of 11 counts < 1 in. of snow on ground. **Coverage:** Dec. 18, 29, 31; Jan. 2, 8, 15, 22, 29; Feb. 3, 19, 26. All trips 0815-1645, 7 completed before 1045. 11 trips averaging 57 min, total 10.5 obs.-hrs. **Count:** Black-capped Chickadee, 6 (93, 38); Downy Woodpecker, 1 (15, 6); Hairy Woodpecker, 1; White-breasted Nuthatch, 1; Eur. Starling, 1; Purple Finch, 1; Evening Grosbeak, 1; House Sparrow, 1; Am. Crow, +; Golden-crowned Kinglet, +; N. Shrike, +; N. Cardinal, +; Dark-eyed Junco, +. **Average Total:** 13 birds (201/km², 81/100 acres). **Remarks:** Total species, 13. Black-capped Chickadee present 10 of 11 counts. N. Shrike, N. Cardinal, Dark-eyed Junco, Evening Grosbeak, House Sparrow present once. Thanks are due the Ontario Climate Centre for weather data.—KENNETH W. DANCE, 140 Armitage Dr., Newmarket, Ontario, Canada, L3Y 5L7.

96. URBAN PARK WITH POND. — **Location:** Ontario, Waterloo Region, Kitchener, Lakeside Park; $43^{\circ}26'N$, $80^{\circ}30'W$ Waterloo-Kitchener West Quadrangle, DEMR. **Continuity:** Established 1982, 2 consecutive years. **Size:** 14.2 ha = 35.1 acres. **Description of Plot:** See AB 37:47 (1983). **Weather:** Unseasonably warm with below-average amounts of snow and no major snow storms. Temp. extremes during the count period were -2° and 57° F. The Dec. 25 temp. of 57° was the highest ever recorded in Kitchener on that date. Temp. during actual counts ranged from -1 to 43° . Maximum snow depth was 2 in. on Jan. 21; on 7 counts there was no snow on the ground, or only a trace. **Coverage:** Dec. 13, 18, 26; Jan. 1, 8, 14, 21; Feb. 12-13, 20. Total, 10 counts, averaging 80 min, 0745-1700, 8 before 1100. **Count:** Black-capped Chickadee, 3 (21, 9); Am. Tree Sparrow, 3; Blue Jay, 2 (14, 6); Am. Crow, 2; Eur. Starling, 2; N. Cardinal, 2; N. Shrike, 1 (7, 3); Am. Goldfinch, 1; House Sparrow, 1; Sharp-

shinned Hawk, +; Downy Woodpecker, +; Hairy Woodpecker, +; White-breasted Nuthatch, +; Am. Robin, +. **Average total:** 17 birds (120/km², 48/100 acres). **Remarks:** 64 species. The 60% decrease in numbers of individuals and absence of 8 species present the previous winter are probably owing to the lack of bird feeders (3 last year), the warm weather which decreased immigration by northern species, and possibly the presence of the N. Shrike. Blue Jay, Eur. Starling and Am. Tree Sparrow were seen on 8 of 10 counts. Species overhead included: Mallard, Ring-billed Gull and Rock Dove.—A.P. SANDILANDS, P.O. Box 147, Plattsville, Ontario, N0J 1S0, and KENNETH W. DANCE, 140 Armitage Drive, Newmarket, Ontario, Canada, L3Y 5L7.

WINTER BIRDS OF SMALL URBAN WOODLOTS IN KITCHENER-WATERLOO

Considerable research has been conducted on the effect of fragmentation and isolation on the bird communities of forest islands in human-dominated landscapes. The following 6 WP-PS's were conducted to test the hypothesis that the character of the land around forest islands may affect the nature of their faunal assemblages. Specifically, I sought to examine the effects of nearby vehicular traffic on avian use of such islands.

Three of the plots are subjected to large volumes of traffic on their borders, and 3 others suffer negligible disturbance from this source. The surveys were conducted as a randomized complete block experiment with survey days as blocks. The N_2 bird species diversity index was used (M.O. Hill 1973, *Ecology* 54:427) and $F_{2,1}$ (R.V. Alatalo 1981, *Oikos* 37:199) was used as the measure of evenness. Average number of birds/count, species richness, and where appropriate, diversity and evenness values are given with 95% confidence limits.

Vegetation descriptions are as follows: trees (>4 in dbh) and shrub density and shrub heights are ranked on an ordinal scale; tree diameters are based on a sample of at least 10 trees per woodlot, and given as mean \pm standard error; tree species' relative densities are based on a varying size of sample of at least 60 trees; and shrub/sapling composition was assessed subjectively. The edges of these woodlots are, for the most part, canopy dripline and cantilevered edge types (using terminology of Ranney *et al.*, 1981, in *Forest Island Dynamics in Man-dominated Landscapes*. Springer).

The weather during this past winter was somewhat colder with more snowfall than average. Mean temp. were (in $^{\circ}$ F; with 20-yr averages): Dec. 25.3 (26.6); Jan. 12.6 (19.0); Feb. 16.7 (19.76). Total snowfall for the same months (in.; with 20 yr. averages, where available): Dec. 12.9; Jan. 27.3 (15.9); Feb. 12.1 (12.2). Temp. range on the count days, 5° - 31° .

The James Baillie Memorial Fund generously provided funds to cover the computing and publication costs of this study.—PAUL G.R. SMITH, School of Planning, Faculty of

Environmental Studies, Univ of Waterloo, Waterloo, Ontario, Canada

97. MESOPHYTIC URBAN WOODLOT I. — Location: Ontario; Waterloo, NE corner of Univ. Ave. and Westmount Ave $43^{\circ}28'N$, $80^{\circ}32'W$ Waterloo-Kitchener West Quadrangle, DEMR. **Continuity:** New. **Size:** 0.81 ha = 2 acres. **Description of Plot:** A triangular woodlot. The overstory is composed of (relative densities $>5\%$): Sugar Maple, (32%); Am. Beech, (24.7); Am. Hornbeam (16.5); Black Cherry, (12.4); Am Basswood, (7.2); White Ash, (5.2). Tree density is medium with good representation in all age classes. Tree diameters (in.) were: 13.4 ± 2.6 . The shrub/sapling layer is composed primarily of Chokecherry, Eur. Buckthorn, White Ash, beech and hornbeam. Shrub/sapling density is high with medium height (6-9 ft). A forest island of similar size is located across Univ. Avenue. These and other islands, including Mesophytic Urban Woodlot II, form a discontinuous habitat corridor along Laurel Creek. **Edge:** Two sides are bordered by main arterials with a stream (Laurel Creek) running between the road and the woodlot on 1 of these sides. The third side is bordered by a parking lot and lawn. **Coverage:** Jan. 29; Feb. 3, 8, 14, 20, 25, 1982. 0900-1300. Total hours, 2. **Count:** N. Cardinal, +. **Average Total:** 0 birds. **Remarks:** Total species, 1. A cardinal was observed on 1 visit. Mean number of birds/count (lower and upper 95% confidence limits) was 0.2 (0, 0.60); mean species richness, 0.2 (0, 0.60).

98. MESOPHYTIC URBAN WOODLOT II. — Location: Ontario, Waterloo, 300 ft E of Westmount Ave. and 2300 ft N of Univ. Ave. $43^{\circ}28'N$, $80^{\circ}33'W$ Waterloo-Kitchener W Quadrangle, DEMR. **Continuity:** New. **Size:** 0.73 ha = 1.8 acres. **Description of Plot:** A roughly oval woodlot. The overstory is composed of (relative densities $>5\%$): Am. Beech (56.9%); Ironwood (20.7), Black Cherry (12.1) and White Ash (6.9). Tree density is low with relatively good representation in all age classes but fewer trees in the middle age classes. Tree diameters (in) were: 13.4 ± 2.8 . The shrub/sapling layer is composed primarily of Com. Chokecherry and White Ash. Shrub/sapling density is medium but patchy in its distribution. Shrub/sapling height is medium-high (6-15 ft). One edge is advancing with a band of *Solidago* and *Rubus*. **Edge:** One irregular side is bordered by a stream, with lawn and shrubby habitat on the other bank. The remaining side is bordered by the lawn of a Univ. residence. **Coverage:** Jan. 29; Feb. 3, 8, 14, 20, 25, 1982. 0900-1300. Total hours, 2. **Count:** Black-capped Chickadee, 2 (275, 111); Am. Goldfinch, 1 (137, 56); Downy Woodpecker, +; N. Cardinal, +. **Average Total:** 3 birds (412/km², 167/100 acres). **Remarks:** Total species, 4. Chickadee and goldfinch observed on 3 visits, others on 1. Mean number of birds/count (lower and upper 95% confidence limits) was 2.8 (1.58, 4.51); mean species richness, 1.7 (0.58, 2.75); mean diversity (N_2), 1.44 (0.51, 2.38); mean evenness ($F_{2,1}$), 0.85 (0.75, 0.95).

99. MESOPHYTIC URBAN WOOD-LOT III. — **Location:** Ontario, Kitchener, SW corner of Blockline Rd. and Strasbour Rd 43°25'N, 80°29'W, Kitchener-Breslau Quadrangle, DEMR. **Continuity:** New. **Size:** 1.21 ha = 3 acres. **Description of Plot:** A triangular woodlot. The overstory is composed of (relative densities >5%): Sugar Maple (47.3); Am. Beech (26.0); Am. Basswood (10.7), N. Red Oak (9.2). Tree density is medium with good representation of all age classes. Tree diameters (in.) were: 11.3 ± 1.7. The shrub/sapling layer is composed primarily of White Ash, Chokecherry, Sugar Maple, Am. Beech and Red-osier Dogwood. White Ash dominates the shrub layer and is concentrated at the edges of the woodlot. Shrub/sapling density is low-medium with patchy distribution. Shrub/sapling height is medium (6-9 ft). **Edge:** Two sides bordered by main arterial roads and the third by a shopping plaza parking lot. **Coverage:** Jan. 29; Feb. 3, 8, 14, 20, 25, 1982. 0900-1300. Total hours, 2. **Count:** Black-capped Chickadee, 2 (165, 67); Eur. Starling, 1 (82, 33); Downy Woodpecker, +; Hairy Woodpecker, +. **Average Total:** 3 birds (247/km², 100/100 acres). **Remarks:** Total species, 4. Chickadee observed on 3 trips, starling on 2, and Downy and Hairy woodpeckers on 1. Mean number of birds/count (with lower and upper 95% confidence limits) was 2.8 (0, 6.49); mean species richness, 1.2 (0, 2.56); mean diversity (N₂), 0.85 (0, 1.85); mean evenness (F_{2,1}), 0.75 (0.39, 1).

100. MESOPHYTIC URBAN WOOD-LOT IV. — **Location:** Ontario; Kitchener, E of the intersection of Old Country Rd. and Country Hill Dr. 43°26'N, 80°30'W Waterloo-Kitchener W Quadrangle, DEMR. **Continuity:** New. **Size:** 0.73 ha = 1.8 acres. **Description of Plot:** A roughly oval woodlot with a slightly upland character. The overstory is composed of (relative densities >5%): Sugar Maple (31.8%); Am. Hornbeam (20.6); Am. Beech (14.3); N. Red Oak (9.5); White Ash (6.3); Yellow Birch, (6.3); Am. Basswood (4.8); Black Cherry (4.8). Tree density is medium with good representation in all age classes. Tree diameters (in.) were: 10.8 ± 1.6. The shrub/sapling layer is composed primarily of White Ash, Alternate-leaved Dogwood, Eur. Buckthorn, Chokecherry, Black Cherry and N. Red Oak. Shrub/sapling density is moderate but of low average height (1.6-6.2 ft). A medium-sized (>25ac) forest island is located approximately 1250 ft from the plot. **Edge:** One-half of the edge is bordered by residential single-family dwellings. The other half is bordered by an open field of mowed grass between the woodlot and the road. **Coverage:** Jan. 29; Feb. 3, 8, 14, 20, 25, 1982. 0900-1300. Total hours, 2. **Count:** Am. Goldfinch, 3 (412, 167); Black-capped Chickadee, 2 (275, 111); Eur. Starling, 2; House Sparrow, 2; Downy Woodpecker, 1 (137, 56); Hairy Woodpecker, +; Blue Jay, +; Am. Crow, +; White-breasted Nuthatch, +; N. Cardinal, +. **Average Total:** 10 birds (1373/km², 556/100 acres). **Remarks:** Total species 10. Chickadee, Downy Woodpecker ob-

served on 4 trips, goldfinch and House Sparrow on 3, all others on 1. Mean number of birds/count (lower and upper 95% confidence limits) was 9.7 (0, 19.92); mean species richness, 2.8 (0.40, 5.27); mean diversity (N₂), 2.04 (0.61, 3.48); mean evenness (F_{2,1}), 0.81 (.56, 1).

101. MESOPHYTIC URBAN WOOD-LOT V. — **Location:** Ontario; Kitchener, corner of Salt Spring Cr. and Southwood Dr. 43°24'N, 80°29'W Waterloo-Kitchener-Breslau Quadrangle, DEMR. **Continuity:** New. **Size:** 0.73 ha = 1.8 acres. **Description of Plot:** A roughly triangular woodlot. The overstory is composed of (relative densities >5%): Sugar Maple (41.6); White Ash (20.4); N. Red Oak (19.4) and Am. Basswood (14.8). Tree density is medium with good representation of all age classes but some skewness toward younger age classes. Tree diameters (in.) were: 9.7 ± 1.1. The shrub/sapling layer is composed primarily of Com. Chokecherry, Sugar Maple, White Ash and Eur. Buckthorn. Shrub/sapling density is low with low height (0-6.2 ft). A large (>75ac) forest island is located about 935ft from the plot. **Edge:** 40% of the edge is bordered by residential area composed of single-family dwellings. 60% bordered by a small open area between the woodlot and the roads. **Coverage:** Jan. 29; Feb. 3, 8, 14, 20, 25, 1982. 0900-1300. Total hours, 2. **Count:** Dark-eyed Junco, 1 (137, 56); Downy Woodpecker, +; House Sparrow, +. **Average Total:** 1 bird (137/km², 56/100 acres). **Remarks:** Total species, 3. Each species observed only once. Mean number of birds/count (lower and upper 95% confidence limits) was 1.8 (0, 6.05); mean species richness, 0.5 (0, 1.38).

102. MESOPHYTIC URBAN WOOD-LOT VI. — **Location:** Ontario; Kitchener, between Hidden Valley Road and Hwy. 8. 43°25'N, 80°30'W, Waterloo-Kitchener W Quadrangle, DEMR. **Continuity:** New. **Size:** 1.21 ha = 3 acres. **Description of Plot:** A triangular shaped woodlot. The overstory is composed of (relative densities): Sugar Maple (74.1%); Am. Beech (7.4); Black Cherry (7.4); Am. Basswood (5.6); N. Red Oak (3.7); White Ash (1.8). Tree density is medium with good representation in all age classes. Tree diameters (in.) were: 10.0 ± 2.4. The shrub/sapling layer is composed primarily of Alternate-leaved Dogwood, Com. Chokecherry and Sugar Maple with some Staghorn Sumac (*Rhus typhina*) and raspberry (*Rubus* sp.) on the SW edge. Shrub/sapling density is low with low average height (0-7.5 ft). The woodlot is approximately 1250 ft from a large (>125 ac) forest island. **Edge:** One edge is bordered by a 4-lane divided highway. A second edge is bordered by a small gravel road with low traffic volume. The third and smallest edge is bordered by a single house and yard. **Coverage:** Jan. 29; Feb. 3, 8, 14, 20, 25, 1982. 0900-1300. Total hours, 2. **Count:** N. Cardinal, 1 (82, 33); Red-tailed Hawk, +; Am. Kestrel, +; White-breasted Nuthatch, +. **Average Total:** 1 bird (82/km², 33/100 acres). **Remarks:** Total species, 4. Each spe-

cies observed only once. Mean number of birds/count (lower and upper 95% confidence limits) was 1.2 (0, 2.39); mean species richness, 0.7 (0.13, 1.21).

103. SUBURBAN CEMETERY. — **Location:** Alabama; Jefferson Co., Birmingham, Oakland Cemetery, immediately NE of intersection of Pike and Warrior Rds in Ensley section; 33°29'N, 86°54'W, Bessemer Quadrangle, USGS. **Continuity:** Established 1978; 6 consecutive years. **Size:** 15 ha = 37 acres. **Description of Plot:** See AB 34:18-19 (1980). **Weather:** Winter warm and wet, at least 3 in. excess precipitation by Feb. 28. Special events: Jan. 20, ice storm, rain freezing on impact with cold ground; Feb. 5, rain-sleet-snow storm; Mar. 10, an all-day powdery snow onto 40°F ground against a background of greenery (elm, maple, magnolia, Black Oak, and Sweetgum had already budded!); Mar. 23, 3 in. of snow (Note, last 2 wintery events beyond normal WB-PS period here). **Coverage:** Daily throughout the year, 63 trips, Dec. 1, 1982-Feb. 28, 1983, 40 min each, 0800-1640, only 5, 1500 or later, 36 before noon (See remarks). Total obs.-hours, 42. **Count:** Eur. Starling, 105 (701, 284); Com. Grackle, 39 (260, 105); House Sparrow, 22 (147, 59); Mourning Dove, 12 (80, 32); Red-winged Blackbird, 9 (60, 24); Blue Jay, 8 (53, 22); N. Cardinal, 7 (47, 19); Am. Robin, 6 (40, 16); Purple Finch, 6; Rock Dove, 3 (20, 8); Rufous-sided Towhee, 3; Field Sparrow, 3; N. Flicker, 2 (13, 5); N. Mockingbird, 2; Yellow-rumped Warbler, 2; White-throated Sparrow, 2; Dark-eyed Junco, 2; Rusty Blackbird, 2; Brown-headed Cowbird, 2; Red-bellied Woodpecker, 1 (7, 3); Yellow-bellied Sapsucker, 1; Downy Woodpecker, 1; Carolina Chickadee, 1; Tufted Titmouse, 1; Cedar Waxwing, 1; House Finch, 1; Am. Goldfinch, 1; Red-tailed Hawk, +; Am. Kestrel, +; Am. Woodcock, +; Red-headed Woodpecker, +; Am. Crow, +; Carolina Wren, +; Winter Wren, +; Golden-crowned Kinglet, +; Ruby-crowned Kinglet, +; Blue-gray Gnatcatcher, +; Brown Thrasher, +; Song Sparrow, +; E. Meadowlark, +. **Average Total:** 245 birds (1636/km², 662/100 acres). **Remarks:** Total species, 40. An additional 7 species; Merlin, E. Phoebe, Brown Creeper, Loggerhead Shrike, Chipping, Fox, and Swamp sparrows, probably wandering due to local weather, were recorded in March, mostly the first week. Highs for the 6 years were recorded for Mourning Dove, Downy Woodpecker, Winter Wren, Yellow-rumped Warbler, Purple Finch, House Finch, and Am. Goldfinch, all but the wren and warbler are good feeder customers. The tract is 1½ miles W of a roost of 220,000+ blackbirds of which 1000+ often spend about 1600-1700 on the tract in tall trees chattering but rarely feeding. By counting the tract mostly before 1500 each day (See Coverage) the undue influence of these birds on population figures is lessened. The gnatcatcher was noted only Dec. 3 and was most likely a late fall migrant. The Golden-crowned Kinglet has been noted for the third consecutive year now in an area with few pines in a habitat in which it normally does not winter. Perhaps the high propor-

tion of evergreen shrubs attracts it —*THOMAS A. IMHOF, 1036 Pike Rd., Birmingham, AL 35218.*

104. SUBURBAN RAVINE. — **Location:** Nebraska; Douglas Co., Omaha, Armbrust Park; 41°13'N, 96°03'W; Ralston Quadrangle, USGS. **Continuity:** New. **Size:** 1.78 ha = 4.4 acres. **Description of Plot:** The area censused lies in a suburban area of Omaha. It includes that part of Armbrust Park in the SE¼, Sec. 33, (T-15N, R-12W) and the adjacent private lot at 9708 Grover St. Most of the park is a shallow wooded ravine with paths. One corner is a small grassy field. Portions are dug up and planted as gardens by the adjacent landowners. Several landowners provide bird feeders near the park, and at least part of the creek was without ice all winter. For the vegetative analysis, trees in the lot and E of the creek were identified and measured. This was estimated to be a sample of ⅓ of the trees, so the data was extrapolated from all the trees before necessary calculations were made. Trees 3 in. dbh and over, 68/acre; total basal area, 67.4 ft²/acre. Species comprising 95% of the total number of trees (figures after each give the number of trees/acre, relative density (%), relative dominance (%), in that sequence): Red Mulberry 19, 28, 10; Bur Oak 17, 26, 59; elm 17, 24, 13; Boxelder 4, 6, 4; Black Willow 3, 4, 5; E. Cottonwood 2, 2, 5. Trees by diameter size class (figures after each size class give number of trees/acre, relative density (%), basal area (ft²/acre), relative dominance (%), in that sequence): A (3-6 in.) 29, 42, 13, 4; B (6-9 in.) 10, 14, 13, 4; C (9-15 in.) 13, 18, 44, 15; D (15-21 in.) 5, 8, 43, 15; E (21-27 in.) 6, 9, 84, 28; F (27-33 in.) 4, 6, 88, 30; G (33-40 in.) 0.3, 0.5, 11, 4; H (>40 in.) 1, 2, 1, 0.3. **Edge:** Bordered by houses with yards. **Topography:** Shallow ravine with creek that flows N. **Weather:** Same as Winter Birds of Prairie Remnants. **Elevation:** 1050-1090 ft. **Coverage:** Dec. 13; Jan. 5, 13, 19, 26; Feb. 3, 8, 16, 22; Mar. 1. Total obs.-hrs, 9. **Count:** Am. Goldfinch, 30 (1685, 682); Dark-eyed Junco, 25 (1404, 568); Eur. Starling, 9 (505, 205); Black-capped Chickadee, 4 (225, 91); N. Cardinal, 4; House Sparrow, 4; Downy Woodpecker, 2 (112, 45); Blue Jay, 2; White-breasted Nuthatch, 2; Golden-crowned Kinglet, 1 (56, 23); Am. Robin, 1; Cedar Waxwing, 1; Chipping Sparrow, 1; White-crowned Sparrow, 1; Harris' Sparrow, 1; Mourning Dove, +; Red-bellied Woodpecker, +; Hairy Woodpecker, +; N. Flicker, +; Am. Crow, +; Brown Creeper, +; Winter Wren, +; Song Sparrow, +; Lincoln's Sparrow, +; White-throated Sparrow, +; Com. Grackle, +; Purple Finch, +; Pine Siskin, +. **Average Total:** 88 birds (4942/km², 2000/100 acres). **Remarks:** 28 species. The wren, kinglet, and Chipping Sparrow were probably present due to the unusually mild winter. The Chipping Sparrow was a winter-plumaged bird, and was documented.—*BARBARA L. WILSON (compiler), Rt. 1, Box 41, Hastings, IA 51540 and TANYA BRAY, 9708 Grover, Omaha, NE 68124.*

105. SMALL TOWN, RESIDENTIAL AND COMMERCIAL AREAS. — **Loca-**

tion: Kansas, Douglas Co., the central portion of Baldwin City, bounded by U S Hwy 56 (Ames St.) on the N. Newton St. on the S, 10th St. on the W, and 6th St. on the E; 38°47'N, 95°11'W, Baldwin City Quadrangle, USGS. **Continuity:** Established 1982, 2 years. **Size:** 66.9 ha = 165.3 acres. **Description of Plot:** See AB 37:46-47 (1983). **Weather:** Same as Study No. 000, p 00. **Coverage:** Jan. 10, 16, 22-23, 25, 27-30; Feb. 18-19, 21, 24, 27; Mar. 2, 4. Total trips, 18 during 0730-1130 and 1500-1730, averaging 3.1 hours. **Census:** House Sparrow, 174 (260, 105); Eur. Starling, 81 (121, 49); Am. Goldfinch, 64 (96, 39); Purple Finch, 28 (42, 17); N. Cardinal, 26 (39, 16); Black-capped Chickadee, 25 (37, 15); Dark-eyed Junco, 23 (34, 14); Blue Jay, 18 (27, 11); Am. Robin, 10 (15, 6); Downy Woodpecker, 8 (12, 5); Tufted Titmouse, 8; White-breasted Nuthatch, 7 (10, 4); Red-bellied Woodpecker, 5 (7, 3); N. Flicker, 3 (4, 2); Am. Crow, 2 (3, 1); Hairy Woodpecker, 1 (1, 1); Brown Creeper, 1; Am. Tree Sparrow, 1; Am. Kestrel, +; Killdeer, +; Red-headed Woodpecker, +; Yellow-bellied Sapsucker, +; E. Bluebird, +; N. Mockingbird, +; Cedar Waxwing, +; Song Sparrow, +. **Average Total:** 485 birds (725/km², 293/100 acres). **Remarks:** Total species, 26. The average total this winter is only half that of last winter, with much of the difference owing to the complete absence of Pine Siskins, which averaged 168/census last winter. Goldfinch numbers were also about half of the previous winter's average. Although the same number of feeding stations were present this winter as last, some were not continually stocked. This drew some birds off the study area to nearby feeding stations. Our thanks to Matt Bloom and Scott Trowbridge for their help on several trips.—*MARTIN C. BRAUN and CALVIN L. CINK, Biology Dept., Baker Univ., Baldwin City, KS 66006.*

106. URBAN MOBILE HOME PARK.

— **Location:** Arizona; Pima Co., Tucson, Carefree Village; 32°17'N, 111°00'W, Jaynes and Tucson North Quadrangles, USGS. **Continuity:** New. **Size:** 11.1 ha = 27.4 acres (from property survey). **Description of Plot:** The park is 16 years old and contains about 225 mobile homes and a clubhouse. The vegetation is mainly exotic and quite varied. The analysis is from a complete count of trees and shrubs. The common trees are: White Mulberry, 25/acre, (15 ft or less in height); assorted palms, 15/acre; African sumac, 12/acre; Velvet Ash, 8/acre; Olive, Fremont Cottonwood, Italian Cypress, pines, Chinese Elm, all 5/acre; *Prunus* sp., paloverde, *Citrus* sp., Chinaberry, Loquat, all 3/acre. The common shrubs are: Oleander, 50/acre; privet, 45/acre; *Pyracantha* sp., 30/acre; arborvitae, 12/acre; Chinese Juniper, 8/acre; Desert Broom, Texas Ranger, (*Caesalpinia* sp.), Castorbean, Heavenly Bamboo, Lavender, all 3/acre. Other plants are: prickly Pear, 10/acre; Cholla and Fountain Grass (*Pennisetum setaceum*), 5/acre; honeysuckle, an aloe, (*Aloe saponaria*), *Parthenocissus* sp., Ocotillo, all 3/acre. About ½ of the lots are landscaped with rock, the rest and the common area in the middle are

grassy. **Edge:** The park is surrounded by single family homes and vacant, disturbed land. **Topography:** The area is flat at an elevation of 2300 ft. **Weather:** Precipitation for Jan and Feb. was about twice the average and temp. was about average. **Coverage:** Dec 12, 15, 17, 22; Jan. 1, 11, 14, 28; Feb. 4, 12, Mar. 9. Trip length averaged 33 min; 7 in the morning, 4 in the afternoon. **Count:** House Sparrow, 55 (496, 201); Inca Dove, 19 (171, 69); House Finch, 15 (135, 55); N. Mockingbird, 7 (63, 26); Great-tailed Grackle, 3 (27, 11); Verdin, 1 (9, 4); Eur. Starling, 1; Rock Dove, +; White-winged Dove, +; Mourning Dove, +; Anna's Hummingbird, +; Gila Woodpecker, +; N. Flicker, +; Cactus Wren, +; Ruby-crowned Kinglet, +; Curve-billed Thrasher, +; Yellow-rumped Warbler, +; N. Cardinal, +. **Average Total:** 101 birds (911/km², 369/100 acres). **Remarks:** Total species, 18. House Finches arrived in numbers in mid-Jan. Pre-nesting behavior was conspicuous on the last census.—*JOAN C. and ROBERT C. TWEIT, 4100 N. Romero Rd., #108, Tucson, AZ 85705.*

107. SUBURBAN BAJADA DESERT SCRUB.

— **Location:** Arizona; Pima Co., W side of Tucson; 32°14'N, 111°02'W, Cat Mountain Quadrangle, USGS. **Continuity:** New (BBS, 1965). **Size:** 10.12 ha = 25 acres. **Description of Plot:** See AFN 19:610-612 (1965). **Weather:** Temp. was about normal, but rainfall was twice the average. **Coverage:** Jan. 2, 9, 16, 29; Feb. 6, 13; Mar. 1. Trips averaged 49 min, 0900-1445. **Count:** Gambel's Quail, 14 (138, 56); House Finch, 10 (99, 40); House Sparrow, 8 (79, 32); Verdin, 6 (59, 24); Curve-billed Thrasher, 6; Cactus Wren, 5 (49, 20); Eur. Starling, 4 (40, 16); Mourning Dove, 3 (30, 12); Gila Woodpecker, 3; Inca Dove, 2 (20, 8); N. Flicker, 2, N. Mockingbird, 2; White-crowned Sparrow, 2, Ruby-crowned Kinglet, 1 (10, 4); Black-tailed Gnatcatcher, 1; Phainopepla, 1; N. Cardinal, 1; Pyrrhuloxia, 1; Brown Towhee, 1, Black-throated Sparrow, 1; Am. Kestrel, +, Greater Roadrunner, +; Ladder-backed Woodpecker, +; Blue-gray Gnatcatcher, +. **Average Total:** 74 birds (731/km², 296/acre). **Remarks:** Total species, 24. Six more houses have been built since 1965 and the exotic vegetation has grown considerably, but the vegetation is still basically desert scrub. More Eur. Starlings, House Sparrows and House Finches are now present than in 1965 and Inca Doves have arrived. Pyrrhuloxias were not found in 1965.—*JOAN C. and ROBERT C. TWEIT, 4100 N. Romero Rd., Tucson, AZ 85705.*

108. OZARK OAK-HICKORY FOREST SECOND GROWTH.

— **Location:** Missouri, St. Louis Co., Washington Univ Tyson Research Center, on I-44, 8 mi W of I-270; 38°31'N, 90°34'W, Manchester Quadrangle USGS. **Continuity:** Established 1980, 4th consecutive year. **Size:** 7.85 ha = 19.4 acres, a strip through uniform terrain. **Description of Plot:** See AB 35(1):25. **Weather:** Typical of Jan. and Feb. for the area, with snow on ground Jan. 11-Feb. 6. Snowfall dur-

ing Jan. 11 trip perhaps reduced avian activity and detectability. Clear sky (3 trips), cloudy or overcast (7 trips). Light winds, did not appear to affect bird activity or detectability. Temp. range 18-68°F. **Coverage:** Jan. 11, Feb. 4-6, 13, 20, 22 (2 trips) 24-25. Ten trips, about 2 hrs each; 9 0700-1240; one 1530-1720. Total obs.-hrs: 19.4. **Count:** Blue Jay, 2 (25, 10); chickadees sp. (probably Carolina) 2; Tufted Titmouse, 2; Golden-crowned Kinglet, 2; Red-bellied Woodpecker, 1; Downy Woodpecker, 1; White-breasted Nuthatch, 1; Am. Robin, 1; N. Cardinal, 1; Purple Finch, 1; Wild Turkey, +; Hairy Woodpecker, +; N. Flicker, +; Pileated Woodpecker, +; Brown Creeper, +; E. Bluebird, +; Yellow-rumped Warbler, +; Dark-eyed Junco, +; Com. Grackle, +. **Average Total:** 18 birds/trip (229/km², 93/100 acres). **Remarks:** Total species, 19. Visitors (passing overhead): Canada Goose, Turkey Vulture, Red-tailed Hawk, Cooper's Hawk, Am. Crow, Red-winged Blackbird (flock of 25). Red-bellied Woodpecker was detected on all 10 trips, Tufted Titmouse on 8, chickadee on 7, Blue Jay and kinglet on 6, Downy Woodpecker on 5, Red-tailed Hawk and Junco on 4.—ROSE

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109. LONGLEAF PINE FOREST. —

Location: Florida; Leon Co., 5 mi SW of Tallahassee in Timber Compartment 224, Apalachicola Nat'l Forest; T15, R1W, sec. 32; 30°20'N, 84°20'W, Lake Munson Quadrangle USGS. **Continuity:** Established 1980; two intermittent years. **Size:** 20 ha = 49.4 acres (rectangular—400 × 500 m). **Description of Plot:** See AB 35(1). Since this description, the plot has been thinned of some of its oak understory. **Weather:** Temp. range 36-60°F; most trips from low 40s to mid-50s. Wind speeds during trips did not exceed Beaufort 1. No precipitation occurred during trips. **Coverage:** Jan. 11-13, 18, 22, 26, 28-29, 1982. Eight trips, averaging 3 hrs each. Survey routes were a maximum of 100m apart and a rate of 100m/12 min was maintained. All trips between 720-1045 EST. Total obs.-hrs: 24.

Count: Pine Warbler, 19 (95, 39); E. Bluebird, 17 (85, 34); Am. Robin, 14 (70, 28); Yellow-rumped Warbler, 9 (45, 18); Am. Goldfinch, 8 (40, 16); Tufted Titmouse, 7 (35, 14); Red-winged Blackbird, 6 (30, 12); Yellow-bellied Sapsucker, 4 (20, 8); Carolina Chickadee, 4; Brown-headed Nuthatch, 4 (20, 8); Am. Crow, 3; Ruby-crowned Kinglet, 3; Red-bellied Woodpecker, 2; Red-cockaded Woodpecker, 2; Carolina Wren, 2; Downy Woodpecker, 1.5; Blue Jay, 1.5; Palm Warbler, 1.5; E. Phoebe, 1; Turkey Vulture, +; Am. Kestrel, +; Mourning Dove, +; Great Horned Owl, +; Hairy Woodpecker, +; Pileated Woodpecker, +; House Wren, +; N. Mockingbird, +; Solitary Vireo, +; N. Cardinal, +; Bachman's Sparrow, +; Chipping Sparrow, +; Dark-eyed Junco, +. **Average Total:** 117 birds per trip (585/km², 237/100 acres). **Remarks:** Total species 19, + 14 visitors. Although the Great Horned Owl was probably breeding on the plot (it was seen flying from the same area on four occasions), a nest was never found.—CATHLEEN NESMITH and JAMES COX, Dept. of Biological Sciences, Florida State Univ., Tallahassee, FL 32306.



Gyrfalcon with pheasant/Keith Hansen.