

Thirty-first Winter Bird-Population Study

Edited by Ronald A. and Audrey Ryder

List of Studies

<i>Habitat</i>	<i>State or Province</i>	<i>Hec-tares</i>	<i>Birds per sq. km.</i>	<i>Hrs. Obs.</i>	<i>Spe-cies</i>	<i>Yrs. of Study</i>
A. Forest Habitats						
1. Northern Coniferous Forest	Vermont	13.2	198	25.5	10	2
2. Maple-Pine-Oak Second-Growth	Massachusetts	11.8	85	25.9	18	2
3. Pitch Pine-Scrub Oak Forest	Massachusetts	7.5	0	7.0	0	1
4. Oak-Hickory Forest	Connecticut	10.0	110	15.0	13	1
5. Upland Mixed Pine-Spruce Hardwood Plantation	New York	16.6	151	26.3	13	5
6. Upland Oak Forest	New York	11.8	17	13.2	3	5
7. Maple-Oak Forest	New York	72.8	183	24.0	24	1
8. Mixed Hemlock-White Cedar-Hardwood Wet Forest	New York	4.5	517	48.0	14	1
9. Young Red Maple-Gray Birch Forest	New York	8.1	136	13.5	6	1
10. Young White Ash-Basswood Forest	New York	8.1	99	15.0	7	1
11. Mixed Hardwood Forest	Maryland	11.3	335	13.8	21	20
12. Hickory-Oak-Ash Floodplain Forest	Maryland	18.4	684	22.4	38	7
13. Upland Tulip-tree-Maple-Oak Forest	Maryland	12.0	292	16.0	25	6
14. Forest Developing after Cultivation	Maryland	8.1	136	10.5	13	10
15. Central Hardwood Forest with Scattered Pine	Dist. of Columbia	26.3	99	10.8	13	23
16. Upland Oak-Hickory Hardwood Forest	Virginia	11.0	73	28.8	22	8
17. Upland Tulip-tree-Oak Forest	Virginia	20.6	180	24.8	26	5
18. Beech-Maple Swamp Forest Mosaic	Ohio	8.3	217	8.7	13	4
19. Mature Oak Forest	Illinois	8.1	99	10.5	3	1
20. Bottomland Oak-Gum-Cypress Forest Recently Disturbed	Mississippi	11.4	1187	26.7	38	6
21. Ponderosa Pine-Douglas Fir Foothills Forest	Washington	11.2	81	13.2	15	3
22. Western Traditional Forest	California	9.3	462	8.0	18	1
23. Semi-disturbed Willow, Cottonwood, Black Walnut, Riparian Woodland	California	17.7	1821	15.8	62	1
24. Limber Pine Forest	California	21.0	114	32.0	4	1
25. Northern Pinyon Pine Woodland	California	27.8	54	31.2	7	1
26. Joshua Tree Woodland I	California	11.9	185	16.0	13	1
27. Joshua Tree Woodland II	California	9.0	200	24.0	11	2
B. Forest Mixed with Other Habitats						
28. Black Spruce-Tamarack Bog	New York	4.6	66	14.3	3	5
29. Mixed Habitat: Deciduous Wooded Stream Valley and Meadow	Maryland	35.6	205	23.9	37	6
30. Mature Deciduous Floodplain Forest	Maryland	17.8	600	17.0	27	27
31. Mixed Upland Habitat	Dist. of Columbia	14.2	621	27.8	37	19
32. Coastal Disturbed Floodplain	Virginia	8.1	198	7.5	25	14
33. Pineland, Scrub, Residential, Plant Nursery	Florida	10.1	880	30.0	42	4
34. Tamarack Bog and Hardwood Forest	Michigan	8.5	59	8.0	7	3
35. Floodplain, Woodland and Field	Ohio	22.5	828	6.3	21	3
36. Mixed Habitat: Mixed-Mesophytic Woods, Pastures and Brush	Tennessee	27.7	141	37.5	36	1
37. Mixed Habitat-Disturbed Bottomland	Oklahoma	40.5	457	22.1	40	6
38. Rural Cottonwood-Willow Riverbottom and Cattail Marsh	Colorado	10.9	778	15.0	29	1
39. Paloverde Woodland	California	5.5	1940	27.7	24	1
40. Willow Riparian	California	3.6	522	25.0	12	1
41. Willow Riparian	California	3.9	4015	32.9	20	1
42. Digger Pine Parkland	California	9.1	375	16.0	25	1
C. Brush, Grassland and Desert						
43. 11-year Field Regeneration	Massachusetts	4.3	276	8.5	13	1
44. Old Field with Brush Patches	Indiana	17.1	147	19.3	21	2
45. Live Oak-Mesquite Brushland	Texas	12.1	173	11.4	20	12
46. Foothills Brushland and Pinyon-Juniper Woodland	Colorado	10.1	425	9.0	19	1
47. Desert Oasis Woodland I	California	5.8	3041	43.6	31	1
48. Desert Oasis Woodland II	California	10.1	1285	33.9	37	1
49. Desert Riparian Willows	California	2.3	1523	32.0	13	1
50. Creosotebush Scrub on Southern Sierra Alluvium	California	25.5	94	16.0	11	1
51. Saltbush Scrub	California	25.5	788	18.0	13	1

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52. Creosotebush Scrub	California	25.5	82	13.9	10	1
53. Joshua Tree Woodland	California	26.3	133	22.3	22	1
54. High Desert Spring	California	5.5	273	23.3	21	1
55. Desert Scrub	California	25.5	82	16.0	11	1
56. High Desert Hot Springs	California	33.2	193	29.9	28	1
57. High Desert Reservoir and Shoreline	California	31.9	2075	13.1	12	1
		18.7	487	7.7	29	1
58. Blue Paloverde-Ironwood-Smocketree Desert Riparian Woodland, I	California	40.0	548	42.6	36	1
59. Blue Paloverde-Ironwood-Smocketree Desert Riparian Woodland, II	California	25.0	1013	44.2	40	1
60. Mesquite Forest	California	24.3	169	28.0	15	1
61. Ocotillo-Cholla	California	16.2	253	29.3	18	1
62. Tamarisk-Saltbush	California	18.5	287	16.0	31	1
63. Saltbush-Eurotia Desert	California	36.0	439	22.1	4	1
64. Mesquite-Saltbush	California	20.3	469	16.0	23	1
65. Creosotebush Community	California	12.3	82	65.3	8	1
66. Saltbush Community	California	12.3	114	57.4	8	1
67. Desert Marsh	California	5.7	1051	16.0	29	1
68. Saltbush Desert	California	36.0	64	23.4	4	1
69. Mojave Yucca-Staghorn Cholla Desert Scrub	California	20.0	345	24.0	25	1
70. Tamarisk-Desert Riparian	California	35.0	420	28.8	52	1
71. Creosote-Joshua Tree Desert	California	36.0	64	29.7	14	1
72. Creosote-Goldenhead Desert Scrub	California	36.0	147	26.4	14	1
73. Rabbitbrush	California	6.1	313	32.0	17	1
74. Cheesebush-Goldenbush Scrub	California	12.5	88	16.0	12	1
75. N. Mojave Sagebrush Scrub, I	California	21.0	48	25.0	5	1
76. N. Mojave Sagebrush Scrub, II	California	21.0	19	28.0	5	1
77. Blue Paloverde-Ironwood-Mixed Scrub and Succulent Desert Wash	California	20.0	810	43.8	30	1
78. N. Mojave Shadscale Scrub	California	27.0	78	28.0	8	1
79. Blue Paloverde-Ironwood-Creosotebush Dune Thickets	California	12.5	8341	56.7	43	1
80. Valley Grassland	California	8.1	4492	12.5	13	1
81. Paloverde Desert Wash	California	15.8	577	11.2	18	1
82. Ironwood-Smocketree Desert Ash	California	18.6	231	10.7	15	1
83. Desert Ironwood-Creosote Bajada, I	California	20.3	138	21.6	15	1
84. Desert Ironwood-Creosote, Bajada, II	California	20.3	138	19.5	18	1
85. Desert Riparian Thicket	California	10.3	862	24.0	26	1
86. Mesquite Community	California	12.6	675	24.0	16	1
87. Creosote-Brittlebush Rocky Hillside	California	20.0	85	24.3	7	1
88. Mesquite Woodland	California	20.0	390	20.0	16	1
89. Scrub Oak-Desert Chaparral	California	20.0	640	22.5	21	1
90. Creosote Scrub, I	California	20.3	795	23.2	16	1
91. Creosote Scrub, II	California	20.3	528	25.1	17	1
92. Psammophytic Scrub, I	California	20.3	222	26.7	12	1
93. Psammophytic Scrub, II	California	20.3	25	23.2	2	1
94. Ocotillo-Creosotebush Scrub	California	20.0	170	26.0	12	1
D. Habitats including Open Water						
95. Mixed Upland Habitat and Swamp	Connecticut	14.2	92	9.0	16	6
96. Cattail Marsh	New York	6.9	0	8.0	0	1
97. River Bank and River	Pennsylvania	4.6	715	8.0	24	4
		80.0	6	4.8	3	4
98. Lagoon*	Virginia	23.5	809	8.9	16	9
99. Lagoon	Virginia	23.5	1342	11.4	17	10
100. Barrier Beach and Saltwater Estuary	Florida	212.5	1106	42.0	75	1
101. Mixed Swamp and Abandoned Field	Ontario	4.9	103	18.0	14	1
102. Abandoned Stone Quarry	Indiana	19.8	323	17.4	29	1
103. Sewage Lagoons	Arizona	57.8	9424	14.8	47	1
104. Urban Freshwater Marsh	California	11.1	2597	15.0	14	1
105. Recreational Area	California	8.1	3973	22.5	41	1
106. Tamarisk-Quailbrush Marsh	California	21.5	791	24.0	36	1
107. Protected Sandy Beach	California	10.7	289	2.5	14	1
E. Croplands						
108. Hay-cropped Meadow	Massachusetts	9.5	21	2.5	2	1
109. Abandoned Pasture-Young Mixed Forest	New York	3.4	29	15.0	7	1
110. Corn Stubble, Rye and Short Grass	Pennsylvania	40.5	128	6.7	8	5
111. Abandoned Turf Field*	Maryland	6.3	238	4.3	8	2
112. Cornfield, I*	Maryland	16.1	192	8.0	12	3
113. Cornfield, II*	Maryland	23.8	394	8.8	12	3
114. Fallow Field	Indiana	7.2	500	10.5	11	1

Habitat	State or Province	Hectares	Birds per sq km	Hrs Obs	Species	Yrs of Study
F. Urban Habitats						
115. Small Town, Residential and Commercial Areas	New Brunswick	50.5	588	15.8	9	1
116. Suburban Housing Development	Massachusetts	15.0	60	6.9	6	1
117. Downtown Business District-Residential Area	Colorado	15.4	1125	8.0	5	6
118. Urban Woodland Park	California	13.6	2678	28.0	26	1
119. Urban Park	California	13.9	2866	20.0	22	1
120. Urban Park	California	4.8	1094	12.0	16	1

*Counts made in 1977 but not submitted then. — Ed.

1. NORTHERN CONIFEROUS FOREST

— **Location:** Vermont; 3.5 mi N of Wolcott, Lamoille Co.; 44°36'N, 72°26'W; Hardwick Quadrangle, USGS. **Continuity:** Established 1977; 2 years. **Size:** 13.15 ha = 32.5 acres (surveyed by tape and compass and divided into 49 sub-plots; boundaries marked with aluminum plates painted with letters and numbers). **Description of Area:** See AB 31:53 (1977). **Weather:** Daytime temperatures ranged from -6°C to 4°C, with a mean of -1°C; nighttime temperatures ranged from -28°C to -18°C, with a mean of -23°C. Snowfall for the period was below normal, 0 in. Snowpack 32.1 in at the beginning of the period and 28.5 in. at the end. **Coverage:** Mar. 8, 9, 10, 12, 15-18. Total 8 trips, averaging 3 hours; 6 trips between 0900 and 1300, 2 between 1300 and 1600, totaling 25.5 hours. **Count:** Black-capped Chickadee, 16 (122, 49); Golden-crowned Kinglet, 6 (46, 18); Com. Redpoll, 4 (30, 12); Ruffed Grouse, +; Pileated Woodpecker, +; Hairy Woodpecker, +; Com. Raven, +; Brown Creeper, +; Pine Grosbeak, +, White-winged Crossbill, +. **Average Total:** 26 birds (198/km², 80/100 acres). **Remarks:** Black-capped Chickadees and Golden-crowned Kinglets were noted on every trip, usually in close association. Com. Redpolls were noted on 5 trips; Ruffed Grouse and Hairy Woodpecker on 3 trips. Pine Grosbeaks, 2 Brown Creepers, Com. Raven, and White-winged Crossbill were each seen on only 1 trip. Seven species noted last year were missing from the 1978 count, perhaps owing to the compressed time span of coverage this year — NATALIE STEVENS, *Center for Northern Studies, Wolcott, VT 05680*.

2. MAPLE - PINE - OAK SECOND-GROWTH FOREST.

— **Location:** Massachusetts; Norfolk Co., Town of Foxboro conservation land, off Willow and East Sts.; 42°04'N, 71°11'30"W, Mansfield Quadrangle, USGS. **Continuity:** Established 1977; 2 years. **Size:** 11.8 ha = 29.2 acres. **Description of Area:** See AB 31:50-51 (1977). **Weather:** During census trips average temperature ranged from 11° to 41°F with an average of 23°. Ground bare on 2nd and 3rd trips; snow cover on other 14 trips ranged from 1 to 36 in. Sky mostly clear on 13 trips, light snow fell on 2, sleet on another. Weather data for Boston, about 20 mi N, supplied by U.S. National Weather Service: for Dec., Jan. and Feb., temperature departures from normal were respectively +1.2°, -0.7°, -3.3°F; total rainfall equivalent precipitation during census period was 14.48 in., above average for Dec. and Jan. with considerable rain; about 30 in. of snow fell Feb 6 & 7. **Coverage:** Dec. 13, 24, 28; Jan.

5-6, 13-14, 29 (2 trips); Feb. 3-4, 8, 10-12, 20. Total, 16 trips, 12 a.m. and 4 p.m. between 0805 and 1540, averaging 97 min each. **Count:** Black-capped Chickadee, 5 (42, 17); Blue Jay, 2 (17, 7); Tufted Titmouse, 1 (8, 3); White-breasted Nuthatch, 1; Dark-eyed Junco, 1; Red-tailed Hawk, +; Ruffed Grouse, +; Screech Owl (red phase), +; Downy Woodpecker, +; Com. Crow, +; Brown Creeper, +; Hermit Thrush, +; N. Shrike, +; Evening Grosbeak, +; Purple Finch, +; Am. Goldfinch, +; Tree Sparrow, +; Field Sparrow, +. **Average Total:** 10 birds (85/km², 34/100 acres). **Remarks:** Chickadees and jays were seen on 11 trips, titmice on 8, nuthatches on 7, creepers on 5, Purple Finches and Downy Woodpeckers on 4, juncos and grouse on 3. Nine species were recorded on only one trip, indicating the value of numerous trips in assessing species diversity when birds are widely scattered and their numbers are low. Crows were heard or seen flying over on 11 trips. The largest mixed foraging group consisted of 6 chickadees, 2 nuthatches, 2 titmice and a single Downy Woodpecker and Brown Creeper. The grosbeaks and Purple Finches on 2 trips were seen feeding on the berries of Eastern Red Cedar (*Juniperus virginiana*). The hawk flushed from the ground and perched for several minutes where it was harassed by 2 jays. The shrike (Feb. 12) sang intermittently for 12 minutes and regurgitated a pellet of mostly small bird bones and feathers. The Golden-crowned Kinglets, seen on the first six of ten trips last winter, were totally absent this year, a reflection, perhaps, of winter kill last year. Winter came early with snowfall on 4 days in December preceding the Dec. 13 trip (Hermit Thrush observed). Deep snow necessitated use of snowshoes for the last five trips and alteration of transects to avoid heavy brush. — WILLIAM E. DAVIS, JR., *College of Basic Studies, Boston Univ., Boston, MA 02215*.

3. PITCH PINE-SCRUB OAK FOREST.

— **Location:** Massachusetts; Plymouth Co., Myles Standish State Forest, 1 mi SE of College Pond; 41°52'N, 70°40'W, Wareham Quadrangle, USGS. **Continuity:** New (Breeding Bird Census, 1976). **Size:** 7.5 ha = 18.53 acres (an irregular right angle polygon with sides running N-S and E-W, surveyed). **Description of Plot:** See AB 31:51, 1977. Many dead Pitch Pines had been blown down since BBC; only a very few live trees inside plot. **Weather:** Temperatures during the census period were relatively constant, ranging in January from -6° to 0°C (21°-31°F), with the single February census being 6°C (43°F), and averaging -1°C (29°F) overall. Winds were

westerly, light to moderate. The ground was bare in January, except following one short-lived 4 in. snowfall Jan. 13, but was covered with a drifting 10 in. by Feb. 25. Skies were clear on 4 trips, overcast on 5, partly cloudy on 1. **Coverage:** Jan. 10-13, 15-18, 27; Feb. 25. Total: 10 trips, averaging 42 min. each, between 1010 and 1605. **EST. Count:** No birds were observed in the plot. **Remarks:** Two species were noted flying over the plot and in trees just outside its boundaries. On Jan. 10, 6 Red Crossbills (5 ♂, 1 ♀) were feeding on live Pitch Pine cones several yards from the plot boundary; a single bird flew over the plot Jan. 16. On Jan. 18, 45 Evening Grosbeaks flushed from several close by trees and crossed the plot. A Red-tailed Hawk was seen 3 times in the general area, and might well be assumed to hunt over the plot occasionally, although no mammals or their signs were detected. — CHRISTOPHER C. RIMMER, *Manomet Bird Observatory, Manomet, MA 02345*.

4. OAK-HICKORY FOREST.

— **Location:** Connecticut; Storrs, Tolland Co. Approximately ¼ mile N of Mansfield Middle School; 41°45'15"N, 72°13'15"W, Spring Hill Quadrangle, USGS. **Continuity:** New. **Size:** 10 ha = 24.71 acres (measured with steel tape and compass). **Description of Plot:** The area has not been disturbed in recent years. An analysis of the vegetation revealed the following: trees 4 in. dbh and over based on four 1/10 acre square samples, 480 trees/acre; total basal area, 90.6 ft²/acre. Species comprising 90% of the total number of trees (figures after each give number per acre, relative density %, relative dominance %, and frequency in that sequence): Red Oak (*Quercus rubra*) 140, 27.0, 73.1, 100; Shagbark Hickory (*Carya ovata*) 70, 8.3, 14.5, 75; Hophornbeam (*Ostrya virginiana*) 70, 29.0, 3.6, 100; Yellow Birch (*Betula lutea*) 60, 12.5, 1.8, 50; Pignut Hickory (*Carya glabra*) 35, 4.2, 1.5, 50; Horse Chestnut (*Aesculus hippocastanum*) 30, 6.3, 0.3, 25; Dead trees 25, 2.0, 2.5, 100; Am. Hornbeam (*Carpinus caroliniana*) 20, 4.2, 0.4, 50; White Oak (*Quercus alba*) 10, 2.1, 2.5, 25; Red Maple (*Acer rubrum*) 10, 2.1, 1.1, 25; Gray Birch (*Betula populifolia*) 10, 2.1, 0.2, 25. Average canopy height 45 ft (range 39-56 ft) Shrub stems/acre, 6250; Shrubs mostly Maple-leaf Viburnum (*Viburnum acerifolium*), blueberry (*Vaccinium* sp.), Com. Spicebush (*Lindera benzoin*), and Hackberry (*Celtis occidentalis*). **Topography:** Slope south with elevation 490 - 570 ft. **Edge:** The study area is part of a larger tract of woods of approximately 75 acres. The southern boundary is within 300 ft of an open field, the western boundary within 100 ft of a power-line cut 75

ft wide. A small pond is within 150 ft of the SW corner of the plot. **Water:** A small stream diagonally intersects the southern fifth of the plot and flows into the small pond outside of the study area. **Weather:** Monthly averages (30-year average in parentheses): Jan., 22.0° (26.2°), Feb., 17.1° (26.8°). During the 34-day study period the temperatures remained below freezing on 29 days and above freezing 1 night. The range of temperature was from -16° to 59°F. There was snow cover on all visits to the plot, ranging 4 - 27 in. (average 17 in). Monthly precipitation averages (30-year averages in parentheses): Jan., 8.74 in. (3.61), Feb., 3.60 in. (2.85). (Weather data from the Vegetable Research Farm 3 mi W of study area). **Coverage:** Jan. 24, 27, 28; Feb. 1, 5, 9, 11, 13, 16, 19, 21; Mar. 4. Total, 12 trips averaging 75 min. each (14 man-hours); all between 0630 and 1700 hours. **Count:** Com. Crow, 2 (20, 8); Black-capped Chickadee, 2; Downy Woodpecker, 1 (10, 4); Blue Jay, 1; Tufted Titmouse, 1; Pine Grosbeak, 1; Purple Finch, 1; Pine Siskin, 1; Am. Goldfinch, 1; Rock Dove, +; Hairy Woodpecker, +; White-breasted Nuthatch, +; White-throated Sparrow, +. **Average Total:** 11 birds (110/km², 45/100 acres). **Remarks:** No species was seen on every trip. Black-capped Chickadee seen on 10 trips, Com. Crow on 7 trips. Pine Grosbeak seen on 1 trip. This woodland had a very small population density probably owing to severity of the winter and dependency on feeders. — THOMAS R. BAPTIST, 124 Milbank Ave., Greenwich, CT 06830.

5. UPLAND MIXED PINE - SPRUCE-HARDWOOD PLANTATION. — **Location:** New York; S side of Brown Rd., near intersection with Vandermark Rd., 3.5 mi. W of Alfred, 42°7'30"N, 77°45'W; Andover Quadrangle, USGS. **Continuity:** Established 1974; 5 consecutive years. **Size:** 16.6 ha = 41 acres (roughly rectangular, perimeter measured with tape and compass). **Description of Area:** See AB 28:699-700 (1974). **Weather:** Data gathered at the Alfred Cooperative Weather Station indicated mean temperature during January was 17.3°F, 5° colder than the 63-year average. Total snowfall was 45 in., greatest on record for January, and about 30 in. more than normal. All trips were made on snowshoes! **Coverage:** Dec. 30; Jan. 3-5, 12, 16, 19, 21, 23, 24, 27, 28, 30; Feb. 1. Hours varied from 0915 to 1500 EST plus 1 short trip at 2300 to listen for owls. There was a total of 26 25 hours of field work and 8 trips. **Count:** Black-capped Chickadee, 13 (78, 32); Golden-crowned Kinglet, 3 (18, 7); Evening Grosbeak, 2 (12, 5); Pine Grosbeak, 2; Ruffed Grouse, 1 (6, 2); Pileated Woodpecker, 1; Hairy Woodpecker, 1; Downy Woodpecker, 1; Brown Creeper, 1; Turkey, +; Blue Jay, +; White-breasted Nuthatch, +; Red-breasted Nuthatch, +. **Average Total:** 25 birds (151/km², 61/100 acres). **Remarks:** Chickadees and Golden-crowned Kinglets were observed on every trip; Com. Redpolls were heard overhead every trip. A grouse was killed by an unidentified hawk. Portions of the stream remained open throughout the 34-day study period. Grosbeaks were attracted to a good supply of fruiting buckthorn. Blue Jays showed a significant decline. Average total birds has shown a downward trend since 1974 (33, 33, 27, 30, 25). Appreciation is extended to Gaylord Rough for weather data and to

Alfred Univ biology student, Stephen Scannell, who assisted in field work on 7 trips as part of a winter term special project. — ELIZABETH W. BROOKS, *Waterwells Rd., Alfred Station, NY 14803.*

6. 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; 5 intermittent years. **Size:** 11.8 ha = 29.1 ± 0.5 acres (nearly square, essentially 6 × 5 units of 208 ft edge; measured into a grid of one acre units, measured with steel tape). **Description of Plot:** See AB 26:661-662 and 941, 1972. **Weather:** Trips were made in all kinds of weather. Trip temperatures averaged about 21°F, with snow cover from 1-3 ft, averaging 2 ft. Weather data for Cooperstown, about 12 mi N, supplied by the U.S. National Weather Service: Jan. and Feb. temperatures ranged from -21° to +56° with an average of 17.3° and total precipitation 5.74 in. (water equivalent). Compared with other years (30-year period) January and February departed about -4.7° and +0.65 in. precipitation. February departed -8.1°. October, November, and December temperatures each averaged within 3° of the 30-year average and rainfall was +4, +1.9, and +1.4 in. **Coverage:** Jan. 8, 15, 22, 28-29; Feb. 5, 11, 16, 19, 23; Mar. 1. Total: 11 trips, mostly between 1000 and 1400, averaging 72 observer minutes each. The method used was described in the 1973 winter count. **Count:** Hairy Woodpecker, 1 (8, 3); Black-capped Chickadee, 1; Red Crossbill, +. **Average Total:** 2 birds (17/km², 7/100 acres). **Remarks:** Chickadee was seen on 3 trips and the Hairy (♀) on 7 trips. On 3 trips no birds were seen. A Barred Owl was seen once near the plot. This was much the lowest count ever. Unusual was seeing no Brown Creeper, Downy Woodpecker, or Blue Jay either in the plot or during the 1.5 mi hike each way to the plot through both deciduous and hemlock forest. This and last winter were both considerably more severe than other count years. This February was the coldest in 42 years and the snowiest in 68 years and this January was the second snowiest recorded here. The count was also very low in the Black Spruce-Tamarack Bog plot, number 28 in this issue of AB. — J. ROBERT MILLER, Dept. of Chemistry, DALE CLAYTON, and DOUGLAS WRIGHT, *Hartwick College, Oneonta, NY 13820.*

7. MAPLE-OAK FOREST. — **Location:** New York; Ulster Co., John Burroughs Nature Sanctuary, 1 mi W of West Park; 41°48'N, 73°58'W, Hyde Park Quadrangle, USGS. **Continuity:** New; BBC 1977. **Size:** 72.8 ha = 180 acres; surveyed. **Description of Area:** See AB 32:54 (1978). **Weather:** Local weather stations came close to setting records for sustained, if not severe, cold and total winter snowfall. Range -10° to +40°F; typically there were 15 in. of snow on the ground during the census period. **Coverage:** Jan. 15, 18, 23, 29-30; Feb. 4-5, 11, 13, 19-20, 27. Total, 12 trips, usually between 0900 and 1200 hours, and averaging 2 hours per trip. **Count:** Black-capped Chickadee, 18 (25, 10); Dark-eyed Junco, 16 (22, 9); Evening Grosbeak, 15 (21, 8); Golden-crowned Kinglet, 12 (16, 7); White-breasted Nuthatch, 10 (14, 6); Am. Goldfinch, 9 (12, 5);

Downy Woodpecker, 6 (8, 3); Blue Jay, 6; Tufted Titmouse, 5 (7, 3); Pine Grosbeak, 5; Com. Redpoll, 5; Tree Sparrow, 5; Pileated Woodpecker, 4 (5, 2); Cardinal, 4; Hairy Woodpecker, 3 (4, 2); Red-tailed Hawk, 2 (3, 1); Ruffed Grouse, 2; Barred Owl, 2; Brown Creeper, 2; Sharp-shinned Hawk, 1 (1, 1); Mourning Dove, 1; Screech Owl, +; Great Horned Owl, +; Com. Crow, +. **Average Total:** 133 birds (183/km², 74/100 acres) — JIM STAPLETON, *John Burroughs Nature Sanctuary, P.O. #220, West Park, NY 12493*

8. MIXED HEMLOCK-WHITE CEDAR-HARDWOOD WET FOREST. — **Location:** New York; St. Lawrence Co., St. Lawrence Univ., Kip Tract; 44°35'N 75°08'W. **Continuity:** New. **Size:** 4.5 ha = 11 acres (12 plots 200 ft square, surveyed). **Description of Area:** The dominant canopy trees are Eastern Hemlock (*Tsuga canadensis*), White Cedar (*Thuja occidentalis*), Red Maple (*Acer rubrum*), Black Ash (*Fraxinus nigra*). Dominant trees averaged 15 to 24 m in height; maximum dbh of dominant species was 55 cm, 40 cm, 60 cm and 50 cm, respectively. Understory species and their dbh, in addition to saplings of dominant species, included: Gray Birch (*Betula populifolia*), 13; poplar (*Populus* sp.), 18; Elm (*Ulmus americana*), 20. Dominant shrub layer included regeneration of tree species, American Yew (*Taxus canadensis*), Basswood (*Tilia americana*). Planted Red Pine (*Pinus resinosa*), 38.3 cm at W end and NE corner of census area; also scattered openings associated with large dead elms. **Edge:** Bounded by similar habitat on all sides; Little River to the N, meadow and cornfield 400 ft S, Pike Rd. 1200 ft E. **Topography:** Flat, gently slopes to the W. **Elevation:** 380 ft. **Food:** Dead trees, especially elm, support large and diverse woodpecker population. **Weather:** Generally clear and cold. Daily mean and extreme low and high temperatures (°F) were: January, 20.3 (-16, 51); February and first week of March, -2.1, 20.1 (-26, 30). **Coverage:** Jan. 15, 20, 22; Feb. 2, 6, 9, 12-13, 15, 23, 26-27; Mar. 4-5. Total man-hours: 48. **Count:** Black-capped Chickadee, 11 (247, 100); Blue Jay, 3 (67, 27); Hairy Woodpecker, 2 (45, 18); Evening Grosbeak, 2; Pine Siskin, 2; Downy Woodpecker, 1 (22, 9); White-breasted Nuthatch, 1; redpoll sp 1; Great Horned Owl, +; Pileated Woodpecker, +; Com. Crow, +; Red-breasted Nuthatch, +; Brown Creeper, +; N. Shrike, +. **Average Total:** 23 birds (517/km², 209/100 acres) **Remarks:** Total species, 14. Chickadees seen on all trips. Resident pairs of Hairy Woodpecker and Brown Creeper. Crow and shrike seen only once. Pileated Woodpecker and Great Horned Owl pair frequently seen in or near plot. Tracks of White-footed Mouse (*Peromyscus leucopus*), Porcupine (*Erethizon dorsatum*), Short-tailed Weasel (*Mustela erminea*), and Red Fox (*Vulpes fulva*). — WENDY C. CONGDON, DIERDRE J. HUNGERFORD, DOUGLAS A. HAMILTON, JOHN P. FERGUSON, JR., KENNETH L. CROWELL (compiler), *St. Lawrence Univ., Dept. of Biology, Canton, NY 13617.*

9. YOUNG RED MAPLE-GRAY BIRCH FOREST. — **Location:** New York; St. Lawrence Co., 4 mi NE of Waddington at Coles Creek, 44°53'N, 75°07'W; Louisville Quadrangle, USGS. **Continuity:** New. **Size:**

8.1 ha = 20 acres (rectangular, paced longitudinally and estimated laterally) **Description of Area:** See AB 31:31 (1976). **Weather:** Higher than average January snowfall. Temperature range -23° to -2°C . No precipitation during census. **Coverage:** Jan. 8, 17, 19, 22, 30; Feb. 11, 15, 16; Mar. 6. Total, 9 trips averaging 1.5 hours each between 0700 and 1700. **Count:** Com. Redpoll, 10 (124, 50); Pine Grosbeak, 1 (12, 5); Sharp-shinned Hawk, +; Hairy Woodpecker, +; Com. Crow, +; Black-capped Chickadee, +. **Average Total:** 11 birds (136/km², 55/100 acres). — **GERALD A. SMITH and GEORGE R. MAXWELL II**, Rice Creek Biological Field Station, SUNY at Oswego, NY 13126.

10. YOUNG WHITE ASH - BASSWOOD FOREST. — **Location:** New York; St. Lawrence Co., 3 mi SW of Morristown at Jacques Cartier State Park, 44°33'N, 75°41'W; Morristown Quadrangle, USGS. **Continuity:** New. **Size:** 8.1 ha = 20 acres (rectangular, paced longitudinally and estimated laterally). **Description of Area:** See AB 31:31 (1976). **Weather:** Higher than average January snowfall. Temperature range -24° to -2°C . No precipitation during census. **Coverage:** Jan. 8, 17-19, 21-22; Feb. 11, 14, 16; Mar. 6. Total, 10 trips averaging 1.5 hours each between 0700 and 1700. **Count:** Black-capped Chickadee, 3 (37, 15); Pine Grosbeak, 2 (25, 10); Com. Redpoll, 2; Hairy Woodpecker, 1 (12, 5); Com. Crow, +; White-breasted Nuthatch, +; Tree Sparrow, +. **Average Total:** 8 birds (99/km², 40/100 acres). — **GERALD A. SMITH, Rice Creek Biological Field Station, SUNY at Oswego, NY 13126.**

11. MIXED HARDWOOD FOREST. — **Location:** Maryland; Calvert Co., NW of Plum Point and 1 mi inland from Chesapeake Bay, on Tobacco Rd., between State Routes 263 and 261. **Continuity:** Established 1959; 20 consecutive years. **Size:** 11.3 ha = 28 acres. **Description of Area:** See AFN 13:333, 1959. **Weather:** Sky clear on all trips. The period was marked by excessive snow and below normal temperatures. Ground snow-covered except for the first trip. The creek was full and the low area was very wet at first, but later froze. High temperatures on census days varied between 32° and 45°F . **Coverage:** Jan. 2, 4, 12, 18, 24; Feb. 4, 8, 10-12. The 10 trips averaged 83 min. and began between 1115 and 1434 EST. **Count:** White-throated Sparrow 16 (141, 57); Cardinal, 3 (26, 11); Field Sparrow, 3, Bobwhite, 2 (18, 7); Downy Woodpecker, 2; Pine Siskin, 2; Song Sparrow 2; Am. Kestrel, 1 (9, 4); Red-bellied Woodpecker, 1; Hairy Woodpecker, 1; Com. Crow, 1; Carolina Chickadee, 1; Tufted Titmouse, 1; Rufous-sided Towhee, 1; Dark-eyed Junco, 1; Com. Flicker, +; Brown Creeper, +; Winter Wren, +; Carolina Wren, +; Golden-crowned Kinglet, +; Am. Goldfinch, +. **Average Total:** 38 birds (335/km², 136/100 acres). **Remarks:** This plot was logged during last year's census, and the bird population was greatly reduced to 29, a 19-year low. This year the population increased to 38 birds, still considerably below the 19-year average of 58 birds (20-year average, 57). The density/100 acres also improved, and the 20-year average is now 206 birds/100 acres. The White-throated Sparrow was the dominant species, and showed a marked

increase from 11 to 16 birds. This species accounted for the increase this year, as all other species changed very little. The White-throated Sparrow appeared to favor this logged area. The Am. Kestrel occurred for only the third time. The Carolina Wren occurred on only a single trip. Notable species missing this year were Pileated Woodpecker, Yellow-bellied Sapsucker, Hermit Thrush and Yellow-rumped Warbler. A total of 21 species occurred, and the 20-year average is 25. — **JOHN H. FALES**, 2809 Ridge Rd., Neeld Estate, Huntingtown, MD 20639.

12. HICKORY-OAK-ASH FLOODPLAIN FOREST. — **Location:** Maryland; Howard Co., floodplain of Middle Patuxent River, due W of Hobbits Glen Golf Course, Columbia; 39°13'10"N, 76°54'45"W, Clarksville Quadrangle, USGS. **Continuity:** Established 1972; 7 consecutive years. **Size:** 18.4 ha = 45.5 acres (L-shaped following the 310-ft contour; surveyed). **Description of Area:** See AB 25: 963-964 (1971). The dominant canopy trees are Pin Oak (*Quercus palustris*), Red Ash (*Fraxinus pennsylvanica*), Am. Elm (*Ulmus americana*), and Red Maple (*Acer rubrum*). Average canopy height, 105 ft. **Weather:** Unusually cold. Temperatures at the Clarksville station, 2 mi N of the study plot, averaged 26.3°F in January and 23.3° in February (6° below normal for January and 12° below normal for February). The ground was covered with 3-5 in. of snow and ice throughout the census period. Parts of the Middle Patuxent River remained open throughout the winter, but in mid-February it was possible to cross the river on the ice in a few places. Temperatures ranged from 1° to 32° on the morning trips and from 23° to 37° on the afternoon trips. Skies were clear on 5 census days and partly cloudy on 3. Winds were less than 5 mph. **Coverage:** Jan. 19, 29 (2); Feb. 4 (2), 11 (2), 12. Total, eight trips averaging 2 hours, 48 min. Morning trips started within 12 min of sunrise (except 30 min on the coldest day); afternoon trips ended 15 - 30 min before sunset. **Count:** Yellow-rumped Warbler, 45 (244, 99); Downy Woodpecker, 11 (60, 24); Com. Flicker, 8 (43, 18); Tufted Titmouse, 8; Cardinal, 8; White-throated Sparrow, 8; Red-bellied Woodpecker, 7 (38, 15); Carolina Chickadee, 6 (33, 13); White-breasted Nuthatch, 6; E. Bluebird, 3 (16, 7); Hairy Woodpecker, 2 (11, 4); Blue Jay, 2; Evening Grosbeak, 2; Purple Finch, 2; Red-shouldered Hawk, 1 (5, 2); Bobwhite, 1; Pileated Woodpecker, 1; Yellow-bellied Sapsucker, 1; Com. Crow, 1; Pine Siskin, 1; Am. Goldfinch, 1; Dark-eyed Junco, 1; Mallard, +; Hooded Merganser, +; Red-tailed Hawk, +; Ring-necked Pheasant, +; Mourning Dove, +; Barred Owl, +; Belted Kingfisher, +; Brown Creeper, +; Carolina Wren, +; Mockingbird, +; Gray Catbird, +; Hermit Thrush, +; Ruby-crowned Kinglet, +; Starling, +; Rufous-sided Towhee, +; Song Sparrow, +. **Average Total:** 126 birds (684/km², 277/100 acres). **Remarks:** Total species, 38. Effects of the severe freeze of the winter of 1976-77 were mentioned briefly in last year's report (AB 32: 25), and were discussed in more detail in *Maryland Birdlife* (33:8-11). Of the species severely affected by the prolonged freeze of 1976-77, the Winter Wren was absent again in the winter of 1978 while the Belted Kingfisher, Carolina Wren, Hermit Thrush, Ruby-crowned Kinglet, and Rufous-sided Towhee

were represented by only a plus sign in 1978. The other two species that were severely affected by the winter weather of 1976-77 were present in larger numbers in 1978: an average of 45 Yellow-rumped Warblers as compared with 9 in 1977, and 8 White-throated Sparrows as compared with 2 in 1977. Poison Ivy (*Rhus radicans*) berries, which had disappeared by the end of January in 1977, were still available by the end of the census period in 1978 and were heavily used by woodpeckers and most passerine species throughout the winter. — **CHANDLER S. ROBBINS**, 7902 Brooklyn Bridge Road, Laurel, MD 20810.

13. UPLAND TULIP - TREE - MAPLE - OAK FOREST. — **Location:** Maryland; Howard Co., W edge of Middle Patuxent River Valley, SW of Hobbits Glen Golf Course at Columbia, 39°12'55"N, 76°54'40"W, Clarksville Quadrangle, USGS. **Continuity:** Established 1972; 6 intermittent years. **Size:** 11.98 ha = 29.6 acres (basically rectangular, 1125 ft N-S by 1000 ft E-W, but irregularly extending farther in each direction where uniformity of habitat permits). **Description of Area:** See AB 25:971 (1971) and 25:665 (1972). The dominant canopy trees are Tulip-tree (*Liriodendron tulipifera*), Red Maple (*Acer rubrum*), White Oak (*Quercus alba*) and Red Oak (*Q. rubra*). **Weather:** Unusually cold. Temperatures ranged from 10° to 37°F on the four morning counts and from 30° to 40° on the four afternoon counts. Mean temperature for all eight counts was 29°. January temperatures at Clarksville averaged 26.3° or 6°F below normal; the February mean was 23.3° or 12° below normal. Winds 0-5 mph. Four counts were made on clear days, two on partly cloudy, one on overcast, and one with fog. There were 5 to 9 in. of snow on the ground on all trips except one. **Coverage:** Jan. 7, 21-22 (2), 28; Feb. 5, 9, 21. Total, 8 trips averaging 2 hours, 0 min. Morning trips started in the first 10 min after sunrise, and afternoon trips ended 12 - 18 min before sunset. **Count:** White-throated Sparrow, 9 (75, 30); Yellow-rumped Warbler, 3 (25, 10); Cardinal, 3, Dark-eyed Junco, 3; Red-bellied Woodpecker, 2 (17, 7); Downy Woodpecker, 2; Purple Finch, 2; Com. Flicker, 1 (8, 3); Hairy Woodpecker, 1; Blue Jay, 1; Carolina Chickadee, 1, Tufted Titmouse, 1; White-breasted Nuthatch, 1; Hermit Thrush, 1; E. Bluebird, 1, Evening Grosbeak, 1; Pine Siskin, 1; Am. Goldfinch, 1; Mourning Dove, +; Pileated Woodpecker, +; Com. Crow, +; Red-breasted Nuthatch, +; Brown Creeper, +; Carolina Wren, +; Golden-crowned Kinglet, +. **Average Total:** 35 birds (292/km², 118/100 acres). **Remarks:** Total species, 25. The second severe winter in a row was reflected in a low species total and the disappearance of several species as the season progressed. No species was detected on all eight trips, but Red-bellied Woodpecker, Downy Woodpecker and Purple Finch were recorded on seven trips each. Mourning Dove, Pileated Woodpecker, Com. Crow, Red-breasted Nuthatch, Brown Creeper and Golden-crowned Kinglet were observed on only one trip each. For the first time, no birds of prey were found; in each of the five previous years, three to five species of vultures, hawks and owls had been recorded. Carolina Chickadee reached a new low of 1. Juncos and White-throated Sparrows were found on three of the first four trips, but none of the last four

A Carolina Wren attempted to winter on the plot, but disappeared after the third trip. The two Hermit Thrushes, although seen irregularly, were still present on the last trip. — **CHANDLER S. ROBBINS**, 7902 Brooklyn Bridge Road, Laurel, MD 20810.

14. FOREST DEVELOPING AFTER CULTIVATION. — **Location:** Maryland; 8 km NE of Hampstead, on the watershed of Prettyboy Reservoir, 0.3 km NE of Beckleysville crossroads; 39°39'N, 76°47'W; Lineboro Quadrangle, USGS. **Continuity:** Established 1969; 10 years. **Size:** 8.1 ha = 20 acres. **Description of Area:** See *AFN* 23:528 (1969) and *AB* 28:701 (1974). **Weather:** During the 41-day study period there were 2 nights when the temperature did not go below freezing and 31 days when it did not go above freezing. The range was -20° to +11°C. The ground was bare during the first 15 days and covered with snow during the rest of the period. Precipitation totaled 25 cm (rain, sleet and 30 cm of snow). Twigs were covered with ice for a 4-day period in mid-January. **Coverage:** Dec. 26, 28, 31; Jan. 7, 15, 28; Feb. 4. Total, 7 trips averaging 90 min each, between 0800 and 1000 EST. **Count:** Golden-crowned Kinglet, 3 (37, 15); Downy Woodpecker, 2 (25, 10); chickadee sp., 2, Blue Jay, 1 (12, 5); Red-breasted Nuthatch, 1, Yellow-rumped Warbler, 1; Cardinal, 1; White-breasted Nuthatch, +; Brown Creeper, +; Carolina Wren, +; Hermit Thrush, +; Dark-eyed Junco, +; White-throated Sparrow, + **Average Total:** 11 birds (136/km², 55/100 acres). **Remarks:** Seen flying over: Canada Goose, Turkey Vulture, accipiter sp., buteo sp., Com. Crow, Starling, Evening Grosbeak, Am. Goldfinch — **HAVEN KOLB**, 18925 Gunpowder Rd., Millers, MD 21107.

15. CENTRAL HARDWOOD FOREST WITH SCATTERED PINE. — **Location:** Washington, D.C., Rock Creek Park, lying S of Military Rd. and W of Rock Creek. **Continuity:** Established 1948; 23 intermittent years. **Size:** 26.3 ha = 65 acres (triangular, surveyed). **Description of Area:** See *AFN* 2: 153-154 (1948) and *AFN* 16:369 (1962). **Weather:** Extremely cold and snowy. Average temperature on walks was 25°F. On all trips the ground was covered with snow. **Coverage:** Dec. 28; Jan. 15, 19; Feb. 5, 12. Total: 5 trips averaging 2.16 hours; between 0815 and 1430. **Count:** Com. Crow, 5 (19, 8); Red-bellied Woodpecker, 4 (15, 6); Blue Jay, 4; Carolina Chickadee, 3 (11, 5); White-breasted Nuthatch, 3; Downy Woodpecker, 2 (8, 3); Tufted Titmouse, 2; White-throated Sparrow, 2; Cardinal, 1 (4, 2); Red-tailed Hawk, +; Brown Creeper, +; Mockingbird, +; Dark-eyed Junco, +. **Average Total:** 26 birds (99/km², 40/100 acres). **Remarks:** Number of species observed was 13, considerably below the overall average for this area (20). The average total of 40 birds per 100 acres was also low as compared with the average since 1948 of 65/100 acres. The decrease was mostly in the common birds: Carolina Chickadee and Tufted Titmouse. This area shows a cyclic variation in abundance with a period of 6-8 years and the present dip in the curve may be the lowest point within a cycle that started in 1974. — **JOAN H. CRISWELL** (compiler), **R. D. VINE**, **BARBARA WHITE**, **HOWARD F. WHITE**, **ROBERT FORD** (Audubon Naturalist Society, 8940 Jones Mill Rd., Washington, DC 20015).

16. UPLAND OAK - HICKORY HARDWOOD FOREST. — **Location:** Virginia, Fairfax Co., Dranesville District Park, McLean. **Continuity:** Established 1971; 8 years. **Size:** 11.02 ha = 27.2 acres. **Description of Area:** See *AB* 25:636 (1971). **Weather:** The winter in the area was colder than usual. The average temperature of 29.8°F per trip was the lowest thus far recorded for this census, as was the temperature range (18° to 40°). The first of several snowfalls occurred on Jan. 13-14; thereafter the ground was covered with several inches of snow except on the last trip (Feb. 25), when south-facing slopes were clear. **Coverage:** Jan. 7, 12 (2), 14-15, 28, 31; Feb. 5 (2), 11, 12, 15, 18 (2), 19, 25. Total, 16 trips, between 0730 and 1300 or 1455 and 1630, averaging 1 hour 48 min. **Count:** Pileated Woodpecker, 1 (9, 4); Red-bellied Woodpecker, 1; Downy Woodpecker, 1; Com. Crow, 1; Carolina Chickadee, 1; Tufted Titmouse, 1; White-breasted Nuthatch, 1; Brown Creeper, 1; Turkey Vulture, +; Rock Dove, +; Mourning Dove, +; Screech Owl, +; Yellow-bellied Sapsucker, +; Hairy Woodpecker, +; Blue Jay, +; Winter Wren, +; Carolina Wren, +; Rusty Blackbird, +; Cardinal, +; Purple Finch, +; Pine Siskin, +; Dark-eyed Junco, +. **Average Total:** 8 birds (73/km², 29/100 acres). **Remarks:** The average total is the lowest ever recorded for this count and presumably reflects the results of two consecutive winters of unusual severity. — **JON and MARY BAYLESS**, **WAYNE DEXTER**, **GILBERT ESPENSHADE**, **BEN FERN**, **KEITH GUTHRIE**, **BILL PER-LEE**, **SHELDON TAYLOR**, **ROBERT J. WATSON** (compiler), 2636 Marcey Rd., Arlington, VA 22207.

17. UPLAND TULIP-TREE-OAK FOREST. — **Location:** Virginia; Fairfax Co., U.S. Geological Survey National Center, Reston, 38°56'45"N, 77°21'50"W, Vienna Quadrangle, USGS. **Continuity:** Established 1974; 5 years. **Size:** 20.6 ha = 50.9 Acres. **Description of Area:** See *AB* 28: 701-702 and 1003-1004 (1974). **Weather:** Sky clear on 6 trips, overcast on 4, light fog on 1, and partly cloudy on 1. Winds were under 10 knots. Temperatures ranged from 12° to 44°F, averaging 31°F. The ground was clear Jan. 1, 6 and 7. Light snow covering on Jan. 4. From the Jan. 15 count through the last count, snow or snow and ice covered the ground. On Jan. 15 and 16 trips, vegetation was covered with ice. **Coverage:** Jan. 1, 4, 6-7, 15-16, 22, 29; Feb. 4, 9, 11-12. Total, 12 trips, 6 between 0730-1010 and 6 between 1430-1710, totaling 24.8 hours. **Count:** Purple Finch, 7 (34, 14); Dark-eyed Junco, 6 (29, 12); Carolina Chickadee, 5 (24, 10); Tufted Titmouse, 5; Downy Woodpecker, 2 (10,4); White-breasted Nuthatch, 2; Cardinal, 2; Pine Siskin, 2; Red-bellied Woodpecker, 1 (5, 2); Blue Jay, 1; Com. Crow, 1; Brown Creeper, 1; Starling, 1; Am. Kestrel, +; Turkey, +; Mourning Dove, +; Pileated Woodpecker, +; Hairy Woodpecker, +; Carolina Wren, +; Hermit Thrush, +; E. Bluebird, +; Golden-crowned Kinglet, +; Com. Grackle, +; Am. Goldfinch, +; Tree Sparrow, +; White-throated Sparrow, +. **Average Total:** 37 birds (180/km², 73/100 acres). **Remarks:** A large raptor killed and partially ate a Gray Squirrel in early February (1 clear outline of the raptor's wings at the moment of striking remained in the snow). Total birds per count was split between a lower average of 24 birds

(7 counts) and an upper average of 54 birds (5 counts), depending upon the presence or absence of erratically occurring finches. The average total birds per count decreased 9.8% from last year. — **JOAN C. WOODWARD** and **PAUL W. WOODWARD**, 2433 Southgate Sq., Reston, VA 22091.

18. BEECH-MAPLE SWAMP FOREST MOSAIC. — **Location:** Ohio; Hardin Co., side of County Rd 80 at intersection of Van Atta Rd, 4 mi SE of Ada (NW 1/4 NW 1/4 of Sec. II, T4S, R9E). **Continuity:** Established 1975; 4 years. **Size:** 8.3 ha = 20.5 acres. **Description of Area:** See *AB* 29:760-761 (1975). **Weather:** Snow covered the ground on all counts. Snow depth before the blizzard of Jan. 27 averaged 9.1 cm, and after the blizzard 61 cm. During the counts temperatures averaged -5°C, and for the general locality, the average temperature for January and February was -9.33°C with the average maximum and minimum temperatures of -4.1° and -14.6° respectively. February temperatures averaged 4° below January's. Total snowfall was 105.7 cm with a snow melt value of 11.7 cm (data from Ray Burkholder, U.S. Weather Observer, Pandora, Ohio). **Coverage:** Jan 7, 8, 13, 14, 16; Feb. 4, 17, 21. Total; 8 afternoon trips averaging 65 min. **Count:** Dark-eyed Junco, 7 (84, 34); Downy Woodpecker, 2 (24, 10); House Sparrow, 2; chickadee sp., 1 (12, 5); White-breasted Nuthatch, 1; Brown Creeper, 1; Yellow-rumped Warbler, 1; Cardinal, 1, Tree Sparrow, 1; Song Sparrow, 1; Com Flicker, +; Red-bellied Woodpecker, +, Tufted Titmouse, +. **Average Total:** 18 birds (217/km², 88/100 acres). **Remarks:** The statistics in the count above do not reflect the effect of the blizzard and the severe weather which followed. After the blizzard the number of species and individuals were reduced by 50%. Snow covered available ground foraging areas, and undoubtedly the low temperatures stressed the metabolic processes of the birds — **NELSON J. MOORE**, Dept. of Biology, Ohio Northern Univ., Ada, Ohio 45810.

19. MATURE OAK FOREST. — **Location:** Illinois; Cook Co., Busse Woods Forest Preserve, N side of Higgins Rd., 0.5 mi W of Arlington Heights Rd. (T41N, R11E). **Continuity:** New. **Size:** 8.1 ha = 20 acres (rectangular, 204 × 476 yds., paced with compass). **Description of Area:** Typical mature oak forest, similar to other Cook County forest preserves. Maximum height about 75 ft. Maximum about 2.5 ft, averaging 1.5 ft. White Oak (*Quercus alba*), 35%; N. Red Oak (*Q. borealis*), 30%; Bur Oak (*Q. macrocarpa*), 15%; Shagbark Hickory (*Carya ovata*), Black Oak (*Q. velutina*), Am. Elm (*Ulmus americana*), and others, 20%. Canopy is dense, with very few young trees and very little shrub or herbaceous layer. A reservoir is being constructed 0.25 mi to the W and S. **Topography:** Flat, elevation 800 ft. **Edge:** The study plot is near the center of the 500 acre forest preserve. **Water:** The Salt Creek is 0.25 mi W of the plot and had not completely frozen over by the end of the study period. **Food:** Many acorns and numerous dead trees. Very little fruit or berries. **Weather:** During the study period, the temperature ranged from -15° to 35°F. Snow cover was 0.5 in., Dec. 29, increasing to 6 in by Jan. 18. (Temperatures from O'Hare International Airport, 3 mi E.). **Coverage:** Dec.

29-31, Jan 1-2, 16, 18 Total 7 trips, all between 1030 and 1430, averaging 1.5 hours. **Count:** Black-capped Chickadee, 7 (86, 35); Downy Woodpecker, 1 (12, 5); Brown Creeper, + **Average Total:** 8 birds (99/km², 40/100 acres). **Remarks:** The chickadee was noted on 6 trips, the woodpecker on 4, and the creeper on 1. — JOSEPH SEEBACHER, 112 Clearmont Rd., Elk Grove, IL 60007.

20. BOTTOMLAND OAK - GUM - CYPRESS FOREST RECENTLY DISTURBED.

— **Location:** Mississippi; Washington Co., N of State Hwy 12 in LeRoy Percy State Park, 4 mi W of Hollandale (parts of Sec 5, 8 & 9; T15N, R7W). **Continuity:** Established 1971; 6 years (1976 omitted because of inaccessibility during construction). **Size:** 11.4 ha = 28.1 acres; rectangular in shape, 836 × 1463 ft (measured with compass and steel tape). **Description of Area:** See AB 25:638-639 (1971) and AB 32:30 (1978) for description of alterations. The cleared areas are recovering, led by numerous weed varieties. Fire-ant hills are prevalent. **Weather:** mean high during count period, 40.1°F; mean low; 26.0°; total precipitation, 8.4 in. Previous 6-year averages: 53.5°, 35.2°, and 9.3 in., respectively. Two in. snow covered the ground one count day. Preceding fall had above normal temperatures and precipitation. **Coverage:** Jan. 7, 14, 15, 21, 22, 29; Feb. 4, 5, 11, 18. Total, 10 trips; starting times, 0855 to 1425 CST; 7 a.m., 3 p.m. trips, averaging 160 obs-min trip. **Count:** Com. Grackle, 50 (440, 178); White-throated Sparrow, 11 (97, 39); Am. Robin, 8 (70, 28); Cardinal, 6 (53, 21); Red-bellied Woodpecker, 5 (44, 18); Yellow-rumped Warbler, 5; Swamp Sparrow, 5; Blue Jay, 4 (35, 14); Song Sparrow, 4; Com. Flicker, 3 (26, 11); Carolina Chickadee, 3; Carolina Wren, 3; Cedar Waxwing, 3; Dark-eyed Junco, 3; Pileated Woodpecker, 2 (18, 7); Yellow-bellied Sapsucker, 2; Tufted Titmouse, 2; Starling, 2; Red-winged Blackbird, 2; Rusty Blackbird, 2; Am. Woodcock, 1 (9, 4); Hairy Woodpecker, 1; Downy Woodpecker, 1; Brown Creeper, 1; Winter Wren, 1; Brown Thrasher, 1; Golden-crowned Kinglet, 1; Ruby-crowned Kinglet, 1; Am. Goldfinch, 1; Field Sparrow, 1; Com. Snipe, +, E. Phoebe, +; Orange-crowned Warbler, +, Brown-headed Cowbird, +; Rufous-sided Towhee, +; Tree Sparrow, +; Chipping Sparrow, +; Fox Sparrow, +. **Average Total:** 135 (1187/km², 480/100 acres). **Remarks:** Total species, 38. Seen on more than 7 trips were: flicker, Pileated, Red-bellied and Downy woodpeckers, sapsucker, Blue Jay, chickadee, titmouse, Carolina Wren, robin, Yellow-rumped Warbler, grackle, Cardinal, White-throated, Swamp, and Song sparrows. Hermit Thrush was absent. Grackles were seen in flocks of 200 on two separate days. Number of species remained about the same while the average total increased to almost the same level as before area disturbance. Food supply was fair, with Poison Ivy and Swamp Holly berries, weed seeds, insect larvae, and a few flying insects providing most of the food. — MR & MRS. G. E. ALEXANDER, JR., 1749 W Azalea, Greenville, MS 38701.

21. 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; 3 years. **Size:** 11.15 ha = 27.55 acres (rectangular, 1600 × 750 ft, the long axis N-S, surveyed by tape and compass). **Description of Area:** See AB 30:1051-1052 (1976). **Weather:** Temperatures from about 19° to 45°F. Mostly partly cloudy, clearing on two trips. Calm to 10 mph, mostly less than 5 mph. Up to 12 in. snow cover; some bare ground Jan. 21; much bare ground Feb. 14. **Coverage:** Dec. 21, 26; Jan. 9, 17, 21, 30; Feb. 4, 14. Trips between 0945 and 1155. Total hours 13.2. **Count:** Red-breasted Nuthatch, 4 (36, 15); Ruffed Grouse, 2 (18, 7); Com. Raven, 1 (9, 4); Mountain Chickadee, 1; Pygmy Nuthatch, 1; Sharpshinned Hawk, +; Downy Woodpecker, +; Black-billed Magpie, +; Black-capped Chickadee, +; White-breasted Nuthatch, +; Brown Creeper, +; Am. Robin, +; Golden-crowned Kinglet, +; Pine Grosbeak, +; Red Crossbill, +. **Average Total:** 9 birds (81/km², 33/100 acres). **Remarks:** A flock of about 120 Bohemian Waxwings flew over Jan. 30 but was not believed to be using the area. **Corrigendum:** The 1975-76 census (AB 30:1051-52, 1976), eliminating Bohemian Waxwings from last year's totals would give **Average Total:** 12 birds (108/km², 44/100 acres). — THOMAS H. ROGERS, E. 10820 Maxwell Ave., Spokane, WA 99206.

22. WESTERN TRANSITIONAL FOREST.

— **Location:** California; Riverside Co., 12 mi NW of Idyllwild, James Mt. Reserve. **Continuity:** New. **Size:** 9.3 ha = 23 acres (irregular rectangle, paced with measured step). **Description of Plot:** Western transitional forest. Trees, 3 in. in diameter and over, based on series of 72 points using the plotless point-quarter method (Cottam and Curtis, 1949). Species comprising over 99% of the total number of trees: Jeffrey Pine (*Pinus jeffreyi*), Ponderosa Pine (*P. ponderosa*), and their hybrids, 68, 53, 64, 39; Incense Cedar (*Calocedrus decurrens*) 20, 16, 5, 22; Kellogg Oak (*Quercus kelloggii*) 15, 12, 9, 14; Golden Oak (*Q. chrysolepis*) 9, 7, 12, 8; Sugar Pine (*P. lambertiana*) 8, 6, 6, 8; White Fir (*Abies concolor*) 5, 4, 1, 5; Coulter Pine (*P. coulteri*) 3, 2, 3, 4. Trees by diameter size class: A (3-6 in.) 13, 10, 1, 4; B (6-9 in.) 22, 18, 3, 5; C (9-15 in.) 35, 27, 11, 8; D (15-21 in.) 22, 26, 18, 5; E (21-27 in.) 22, 26, 18, 5; F (27-33 in.) 6, 5, 12, 2; G (33-40 in.) 5, 4, 12, 1; H (40-54 in.) 5, 4, 18, 1. Shrubs are few in number, less than 10/acre. Ground cover less than 5%, canopy cover 61%, average canopy height estimated at 43 ft; range 8-145 ft. Area was selectively logged around 1900. (Plant names from Munz, P. A., 1973, *A California Flora and Supplement*, Univ. of California Press.) **Edge:** Bordered on all sides by similar habitat. **Topography:** Gently sloping N-facing slope; elevation, 5200 ft. **Water:** A small stream borders NW corner of plot. **Food:** Large insect fauna, owing to mild temperatures. **Weather:** Maximum temperatures varied from low 40s to upper 60s, minimums from 20s to 40s (°F). An abnormally high precipitation (over 30 in.) was recorded during the period. **Coverage:** Dec. 28 (2); Jan. 9 (2); Feb. 1 (2), 20 (2). Total, 8 trips, between 0800 and 1500 PST, averaging 60 min each. **Count:** Golden-crowned Kinglet, 6 (64, 26); Steller's Jay, 5 (54, 22); Dark-eyed Junco, 5; Acorn Woodpecker, 4 (43, 17); Mountain Chickadee, 4; Pygmy Nuthatch, 4; Band-tailed Pigeon, 3 (32, 13); Brown Creeper, 3; Pine Siskin, 3;

White-breasted Nuthatch, 2 (21, 9), Ruby-crowned Kinglet, 2; Hairy Woodpecker, 1 (11, 4); Yellow-bellied Sapsucker, 1; Cooper's Hawk, +; Red-tailed Hawk, +; Williamson's Sapsucker, +; Com. Raven, +; Plain Titmouse, +. **Average Total:** 43 birds (462/km², 187/100 acres). **Remarks:** Milder than normal temperatures during the period allowed some individuals to remain at higher elevations, possibly reducing numbers of some species on the plot (*i.e.* Mountain Chickadee and Pygmy Nuthatch). Others may have been more common (*i.e.* kinglets and Pine Siskin). — DOUGLAS B. HAY, Calif. State Univ., Long Beach and 757 Belmont Ave., Long Beach, CA 90804.

23. SEMI-DISTURBED WILLOW, COTTONWOOD, BLACK WALNUT, RIPARIAN WOODLAND.

— **Location:** California, Tehama Co., on the W bank of the Sacramento River, N edge of Red Bluff (NW¼ of NW¼ of Sec. 20, T27N, R3W) 40°11'N, 122°14'W, Red Bluff Quadrangle, USGS. Part of Dog Island and Samuel Ayer City Park. **Continuity:** New. **Size:** 17.7 ha = 43.7 acres (irregular, measured from 7½' USGS map) **Description of Area:** This area is a semi-natural city park. It is made up of three parts: 1) Dog Island, 2) river channel separating island from mainland, and 3) mainland area. The different vegetation types of these three areas are treated separately in the vegetation survey. The entire area is an island of subclimax riparian vegetation, surrounded by urban-suburban areas, Blue Oak woodland and open fields, and is not connected to other riparian areas by riparian corridors. 1) Dog Island, 14.5 acres, is in a natural state with the exception of an access footbridge and several semi-maintained trails. The northern third of the island is primarily old-growth Cottonwood reaching 115 ft, with an understory of Mugwort (*Artemisia douglasiana*) and Blackberry (*Rubus procerus*). The middle third of the island is more diverse, with a number of willows, Oregon Ash, Box Elder and White Alder. There are dense bands of Blackberry in the understory, in some places reaching 6 ft. In the center of the island is a small marsh with cattail (*Typha* sp.) and Common Tule (*Scirpus acutus*). The southern third of the island is primarily Box Elder, Oregon Ash and White Alder, sometimes growing so densely that there is no understory. A quantitative survey of the area, based on seven 1 m wide transects gave: Trees 3-in. diameter and over, 825/acre. Species comprising 90% of the total number of trees [figures after each give number of trees/acre, relative density (%), relative dominance (%), frequency (%), relative cover (%) in that sequence]: willow (*Salix*, sp.) 224, 27, 33, 100, 25; Box Elder (*Acer negundo*) 168, 20, 12, 100, 19; Oregon Ash (*Fraxinus latifolia*) 112, 13, 10, 90, 7; White Alder (*Alnus rhombifolia*) 87, 10, 8, 100, 9; Fremont Cottonwood (*Populus fremontii*) 56, 7, 22, 63, 28; Black Walnut (*Juglans* sp.) 46, 5, 7, 68, 5; Blue Elderberry (*Sambucus caerulea*) 36, 4, 2, 68, 3; Fig (*Ficus carica*) 31, 4, 1, 16, 1; Western Sycamore (*Platanus racemosa*) 20, 2, 2, 26, 2; California Wild Grape (*Vitis californica*) 15, 2, 1, 37, 1; plum (*Prunus* sp.) 10, 1, 1, 37, 1; Black Mulberry (*Morus* sp.) 5, 1, 1, 21, >1; Tree of Heaven (*Ailanthus altissima*) 5, 1, >1, 21, >1; honeysuckle (*Lonicera* sp.) 5, 1, >1, 16, >1; California Buckeye (*Aesculus californica*)

5, 1, >1, 11, >1 Trees by diameter size class [figures after each size class give number of trees/acre, relative density (%), relative dominance (%) in that sequence]: A (3-9 in.) 571, 68, 37; B (10-18 in.) 168, 20, 27; C (19-30 in.) 61, 7, 17; D (31-60 in.) 36, 4, 19. Ground cover, 80%; canopy cover 88%; canopy height 30%, 45 ft or more 29%, 15-45 ft, 29%, 15 ft or less, mean canopy height 47 ft (range 10-115).

2) River channel, 6.1 acres. This side channel separates the island from the mainland. 3) Mainland, 23.1 acres (part of Samuel Ayer City Park). It has a circular road through the area. Outside the circle are picnic tables and barbecue pits and good stands of natural vegetation including large patches of blackberry understory. The area closest to the river resembles the island in vegetation. The area farthest from the river is mainly Valley Oak and Black Walnut. The area inside the circle, once a meadow, is now a *de facto* parking lot, with a scattering of Box Elder and Plum. A quantitative survey of the area based on five, 1 m transects gave: Trees 3-in. diameter and over, 485/acre. Species comprising 90% of the total number of trees: Black Walnut 194, 42, 46, 90, 37; Box Elder 116, 27, 13, 100, 17; Osage Orange (*Maclura pomifera*) 65, 12, 7, 20, 10; Fremont Cottonwood 32, 6, 19, 50, 7; willow sp. 19, 4, 5, 40, 7; Tree of Heaven 13, 2, 1, 10, >1; Valley Oak (*Quercus lobata*) 13, 2, 5, 30, 5; White Alder 13, 2, 2, 30, 1; Oregon Ash 13, 2, 2, 20, 2; Black Mulberry 7, 1, 1, 20, 1. Trees by diameter size class: A (3-9 in.) 219, 41, 16; B (10-18 in.) 239, 44, 44; C (19-30 in.) 39, 7, 15; D (31-60 in.) 45, 8, 26. Ground cover 55%, canopy cover 72%; canopy height 17% greater than 45 ft, 32%, 15-45 ft, 32% less than 15 ft; mean canopy height 41 ft, (range 6-100). **Topography:** Flat, elevation: 290 ft. **Weather:** Rainy and warm. Temperatures were above normal for period with 31° being the lowest temperature recorded. Most nighttime temperatures ranged from 40° to 50°F. Daytime temperatures ranged up to the mid-70s in December, but were in the 50s and low 60s in January and February. Heavy rains started in the last week in December and continued through most of January and into February. Rainfall for the period was about double normal. **Coverage:** Dec. 10, 24; Jan. 20, 26, Feb. 4, 18. Total 6 trips, between 0740 and 1105 PST, averaging 158 min each. **Count:** Band-tailed Pigeon, 44 (249, 101); Ruby-crowned Kinglet, 29 (164, 66); Bushtit, 21 (119, 48); Cedar Waxwing, 18 (102, 41); Scrub Jay, 16 (90, 37); Am. Goldfinch, 13 (74, 30); Dark-eyed Junco, 13; Bewick's Wren, 11 (62, 25); Varied Thrush, 10 (57, 23); Evening Grosbeak, 10; Pine Siskin, 10; Com. (Red-shafted) Flicker, 9 (51, 21); Song Sparrow, 9; Nuttall's Woodpecker, 8 (45, 18); Am. Robin, 8; California Quail, 7 (40, 16); California Gull, 7; Starling, 6 (34, 14); Orange-crowned Warbler, 6; Downy Woodpecker, 5 (28, 11); Steller's Jay, 5; Hermit Thrush, 5; Com. Crow, 4 (23, 9); Plain Titmouse, 4; White-breasted Nuthatch, 4; Yellow-rumped (Audubon's) Warbler, 4; Golden-crowned Sparrow, 4; Anna's Hummingbird, 3 (17, 7); W. Bluebird, 3; Lesser Goldfinch, 3; Fox Sparrow, 3; Green Heron, 2 (11, 5); Mallard, 2; Acorn Woodpecker, 2; Black Phoebe, 2; Golden-crowned Kinglet, 2; Pied-billed Grebe, 1 (6, 2); Great Blue Heron, 1; Wood Duck, 1; Com. Merganser, 1; Spotted Sandpiper, 1; Belted Kingfisher, 1; Brown Creeper, 1; Mockingbird, 1;

Yellow-rumped (Myrtle) Warbler, 1; W. Meadowlark, 1; Pintail, +; Green-winged Teal, +; Hooded Merganser, +; Turkey Vulture, +; Sharp-shinned Hawk, +; Red-tailed Hawk, +; Red-shouldered Hawk, +; Am. Coot, +; Killdeer, +; Ring-billed Gull, +; Rock Dove, +; Great Horned Owl, +; Lewis' Woodpecker, +; Tree Swallow, +; Hutton's Vireo, +; House Finch, +; Lincoln's Sparrow, +. **Average Total:** 322 birds (1821/km², 737/100 acres). **Remarks:** Total, 62 species and 1 subspecies. Band-tailed Pigeons and Evening Grosbeaks were not found in December. Golden-crowned Kinglets were not found after the heavy rains of early January. Most of the area was flooded for the first three weeks in January and for part of February, limiting the number of days that the census could be run. Special thanks to Marc Hayes, Tim Devine, Denise Devine and Phyllis Laymon for help on the vegetation survey. — *STEPHEN A. LAYMON, 68 Gurnsey Ave., Red Bluff, CA 96080.*

24. LIMBER PINE FOREST. — **Location:** California; Inyo Co., SE of New York Butte. About 7.5 air miles NE of Lone Pine. There are 2 sections to the study plot. Section 1 (N section) begins in the SW 1/4 of Sec. 11 and ends in the NE 1/4 of Sec. 10; and Section 2 (S section) begins and ends in the SE 1/4 of Sec. 11 of T15S, R37E, New York Butte Quadrangle, USGS. **Continuity:** New (BBC, 1977). **Size:** Section 1: 15.2 ha = 37.5 acres (407 x 242 x 417 x 542 m, paced). Section 2: 5.8 ha = 14.3 acres (251 x 318 x 174 x 252 m, paced). Total 21.0 ha = 51.8 acres. **Description of Plot:** See AB 32:90-91 (1978). **Weather:** The study period lasted 72 days. Temperatures ranged from -8.3°C to 5.6°C. Light snow on 2 study days; approximately 5 ft of snow fell during the study period. Two to four ft of snow was on the ground. **Coverage:** Jan. 12, 17, 28-29; Mar. 11-12, 25-26 (a.m. censuses); Jan. 16 and Mar. 24 (p.m. censuses). Total, 8 trips between 0630 and 1300, averaging 210 min. Two trips between 1915 and 2130, averaging 120 min. **Count:** Mountain Chickadee, 13 (62, 25); Clark's Nutcracker, 5 (24, 10); White-breasted Nuthatch, 3 (14, 6); Purple Finch, 3. **Average Total:** 24 birds (114/km², 46/100 acres). **Remarks:** Visitors (total number observed): Com. Raven, 12; Band-tailed Pigeon, 11; Dark-eyed Junco, 9; Com. Flicker, 5; White-throated Swift, 3; Golden Eagle, 1; Am. Kestrel, 1; Mountain Bluebird, 1. One Clark's Nutcracker nest still under construction was found. The Am. Kestrel, White-throated Swifts, Com. Flicker, and Dark-eyed Juncos are early spring migrants, the flicker and juncos being altitudinal migrants. Almost all of the foraging was done in the Limber Pines by all of the birds observed. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — *PETER WOODMAN, 1825 Weiman, Ridgecrest, CA 93555.*

25. NORTHERN PINYON PINE WOODLAND. — **Location:** California; Inyo Co., S of New York Butte. About 7.5 air mi NE of Lone Pine. Plot begins in the NE 1/4 Sec. 15, and ends in the SW 1/4 Sec. 14, T15S, R37E, New York Butte Quadrangle, USGS. **Continuity:** New (BBC, 1977). **Size:** 27.8 ha = 68.7 acres (602 x 408 x 422 x 952 m). **Description of Plot:** See AB 32:91-92 (1978). **Weather:** During the 72-day study

period the temperature ranged from -2.0° to 13.3°C. Snow fell during the census on two occasions. Approximately 4 ft of snow fell during the study period. Snow cover was usually patchy on the plot. **Coverage:** Jan. 11, 18, 28-29; Mar. 11-12, 25-26 (a.m. censuses); Jan. 17 and Mar. 24 (p.m. censuses). Total, 8 trips between 0630 and 1400 hours, averaging 200 min; 2 trips between 1930 and 2230 hours, averaging 135 min. **Count:** Mountain Chickadee, 5 (18, 7); Clark's Nutcracker, 3 (11, 4); Am. Robin, 3; Scrub Jay, 2 (7, 3); White-breasted Nuthatch, 2; Piñon Jay, +; Purple Finch, +. **Average Total:** 15 birds (54/km², 22/100 acres). **Remarks:** Seven species. Visitors (total number recorded): Com. Raven, 27; Rufous-sided Towhee, 8; Dark-eyed (Oregon) Junco, 7; Pine Siskin, 6; Townsend's Solitaire, 4; Golden Eagle, 1; Com. (Red-shafted) Flicker, 1; Brown Creeper, 1; Mountain Bluebird, 1. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — *TOM CAMPBELL and PETER WOODMAN, 19664 Charters Ave., Saratoga, CA 95070 and 1825 Weiman, Ridgecrest, CA 93555.*

26. JOSHUA TREE WOODLAND I. — **Location:** California; Inyo and Kern Counties, Sand Canyon, in S most extension of the Sierra Nevada, 12 mi N on Hwy 14 from intersection of State 178 and 14, then approximately 5 mi W on Brown Rd.; SE corner of plot is about 50 m N of road (on map, the plot lies N of the "Y" formed by the intersection of the main stream bed and the intermittent stream from the S), (SE 1/4 Sec. 1, T25S, R37E) Little Lake Quadrangle, 1954 USGS; 35°47'N, 117°56'W. **Continuity:** New (BBC, 1977). **Size:** 11.9 ha = 29.4 acres. **Description of Plot:** See AB 32:100-101 (1978). Plot sparsely covered with small shrubs, 0.5 to 1 m high. Joshua Trees (*Yucca brevifolia*) scattered over plot. **Weather:** Temperatures ranged from 40° to 75°F. Rain cancelled many days of field work in January and February. **Coverage:** Jan. 27-29; Feb. 18-19; Mar. 11, 18, 20. Total, 8 trips between 0530 and 0930 PST. Total man-hours, 16. **Count:** W. Bluebird, 8 (67, 27); Rock Wren, 4 (34, 14); House Finch, 4; Loggerhead Shrike, 2 (17, 7); Black-throated Sparrow, 2, Com. Raven, 1 (8, 3); Cactus Wren, 1; Sharp-shinned Hawk, +; Red-tailed Hawk, +, Roadrunner, +; Say's Phoebe, +; Mountain Bluebird, +; White-crowned Sparrow, +. **Average Total:** 22 birds (185/km², 75/100 acres). **Remarks:** Species total, 13. Nearly all birds were observed on or around Joshua Trees. Many species used these plants not only for resting sites and lookout perches, but also for foraging substrates. Few birds were observed in open areas away from clumps of *Yucca*. Rock Wrens were restricted to the vicinity of boulders or rock outcroppings. As many as 30 cattle were observed on the plot in a single visit. Herbaceous cover was fairly extensive in depressions on the study area, and plants were coming into bloom by early March. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — *CHARLES F DOCK, 1164 W. Adams, Los Angeles, CA 90007.*

27. JOSHUA TREE WOODLAND II. — **Location:** California; San Bernardino Co., 2

m₁ N and 0.7 m₁ W of Cima. The SW corner is at the BLM Bearing Tree for Sec 29, 22 meters E of Cima Rd. (SW 1/4 Sec. 29, T14N, R14E) Mescal Range Quadrangle, USGS; 35° 16'N, 115°30'W. **Continuity:** Established 1976; 2 intermittent years. **Size:** 9 ha = 22.2 acres (square, 300 × 300 m, paced) on a magnetic N compass grid. **Description of Plot:** See AB 30:1060-1061 (1976). **Weather:** Estimated temperatures during counts, 35° to 65°F. Heavy ground fog was encountered for part of Jan 7 count. Overcast Feb. 11, clear during other counts. Moderate winds were experienced on Feb. 11 and 18. Rainfall was well above normal during the count period with precipitation occurring regularly from late December through February. The surface soil was almost continuously wet during this period. **Coverage:** Jan. 2, 7, 13, 22, 29; Feb. 11, 18, 20. Total, 8 trips, between 0730 and 1030, averaging 3 hours each. **Count:** Sage Sparrow, 7 (78, 32); Brewer's Sparrow, 5 (56, 23); White-crowned Sparrow, 2 (22, 9); Ladder-backed Woodpecker, 1 (11, 5); Bewick's Wren, 1; Cactus Wren, 1; Loggerhead Shrike, 1; Am. Kestrel, +; Com. (Red-shafted) Flicker, +; Com. (Gilded) Flicker, +; Yellow-bellied Sapsucker, +. **Average Total:** 18 birds (200/km², 81/100 acres). **Remarks:** Ten species, one additional race. Roadrunner, Com. Raven and Black-throated Sparrow were recorded near the census plot in similar habitat and House Finches were seen flying over the plot. Bewick's Wren, Cactus Wren, Sage Sparrow, Brewer's Sparrow, and White-crowned Sparrow were often found in mixed flocks of various sizes and combinations of species. All species moved freely in and out of the plot. Cattle were seen on the plot on two occasions. Densities for this count are roughly twice as high as those recorded in 1976 and may be attributable to the increase in perennial grass cover. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — STEVEN W. CARDIFF. *San Bernardino Co. Museum, 2024 Orange Tree Lane, Redlands, CA 92373.*

28. BLACK SPRUCE-TAMARACK BOG. — **Location:** New York; Delaware Co., Mud Lake Bog, about 2 mi N of Pine Lake on South Hill and about 2 mi E of West Davenport; 42° 29'N, 74°55'45"W, West Davenport Quadrangle, USGS. **Continuity:** Established 1972; 5 intermittent years. **Size:** 4.6 ha = 11.3 acres (1.9 acres of central water not included in plot area; elliptical, measured into square grid of 16 one-acre units by steel tape, and many measured vegetation edge points connected to give the vegetation zone ellipses for a plot on graph paper, from which zonal areas and widths were determined). **Description of Plot:** See AB 26:659-661 and 959, 1972. **Weather:** Trips were made in all kinds of weather. Trip temperatures averaged about 26°F, with snow cover 18 in. to 42 in., averaging about 30 in. Weather data for Cooperstown, about 12 mi N, supplied by the U.S. National Weather Service, follow: Jan. and Feb. temperatures ranged from -21° to +56° with an average of 17.3° and total precipitation 5.74 in. (water equivalent). Compared with other years (30-year period) January and February departed about -4.7° and +0.65 in. precipitation. February departed -8.1°. October, November, and December temperatures were within 3° of the 30-year average and rainfall was +4, +1.9, and

+1.4 in. **Coverage:** Jan 8, 15, 22, 28, Feb 11, 12, 14, 16, 18, 19, Mar 1 Total 11 trips, mostly between 1200 and 1530, averaging 78 observer min each. The method used was described in the 1973 winter count of this plot. **Count:** This is given first for the 11.3 acre plot. The number in brackets is the average using only the actual foraging area — i.e., shrub (II) and tree (III) zones (8.7 acres). Com. Redpoll, 2 (44, 18) [57, 23]; Black-capped Chickadee, 1 (22, 9) [28, 11]; Hairy Woodpecker, +. **Average Total:** 3 birds (66/km², 27/100 acres) [85/km², 34/100 acres]. **Remarks:** Redpolls were seen on only 2 trips. Chickadees were seen on only 4 trips. On 4 trips no birds were seen. The density this year (both total density and non-finch/kinglet density) was even lower than in the very low year of 1975-76. Chickadees were again low. See the Upland Oak Forest plot count (no. 6 in this issue of AB) for comments on abnormally low numbers of other species in this area. — J. ROBERT MILLER, *Dept. of Chemistry, DALE CLAYTON, and DOUGLAS WIGHT, Hartwick College, Oneonta, NY 13820.*

29. MIXED HABITAT: DECIDUOUS WOODED STREAM VALLEY AND MEADOW. — **Location:** Maryland; Potomac, 39°2'40"N, 77°13'50"W, Rockville Quadrangle, USGS. **Continuity:** Established 1973; 6 years. **Size:** 35.6 ha = 88 acres (from contour map by planimeter). Boundary of survey area follows that proposed for Nature Study Center "Adventure" in future stream valley park. **Description of Area:** See AB 27:702-703 (1973). **Weather:** Temperatures ranged from a low of 19°F (Feb. 11) to 45° (Jan. 8). Rain fell on Jan. 8, all other count days were partly cloudy. Winds generally ranged from calm to gentle on most counts, but gusting to 12-18 mph on Jan. 2 and Feb. 11. Snow remained on the ground through most count days, averaging about 5 in. **Coverage:** Jan. 2, 8, 16; Feb. 3, 9 (½ count), 10 (½), 11-12. Total, 7 counts averaging 3 hrs. 25 min. **Count:** Cardinal, 10 (28, 11); Com. Crow, 8 (22, 9); Carolina Chickadee, 7 (20, 8); Field Sparrow, 5 (14, 6); White-throated Sparrow, 5; E. Bluebird, 4 (11, 5); Starling, 4; Song Sparrow, 4; Mourning Dove, 3 (8, 3); Tufted Titmouse, 3; Dark-eyed Junco, 3; Downy Woodpecker, 2 (6, 2); Mockingbird, 2; Purple Finch, 2; Am. Goldfinch, 2; Red-bellied Woodpecker, 1 (3, 1); Blue Jay, 1; White-breasted Nuthatch, 1; Carolina Wren, 1; House Sparrow, 1; Red-tailed Hawk, 1; Red-shouldered Hawk, 1; Com. Flicker, 1; Swamp Sparrow, 1; Sharp-shinned Hawk, +; Marsh Hawk, +; Barred Owl, +; Belted Kingfisher, +; Pileated Woodpecker, +; Hairy Woodpecker, +; Fish Crow, +; Brown Creeper, +; Golden-crowned Kinglet, +; Yellow-rumped Warbler, +; Brown-headed Cowbird, + Evening Grosbeak, +; Tree Sparrow, +. **Average Total:** 74 birds (205/km², 83/100 acres). **Remarks:** Total species, 37. Ring-billed Gulls flew over the study area on two days, and a Turkey Vulture, Black Vulture, and Canada Goose (15) were each seen once. Some highlights: Starlings down from last year (9-4), bluebirds up (1-4), Fish Crow was new. — JIM WILKINSON, DAVE FALLOW, JOHN VANCE, JOHN BAINES, JIM THOMAS, MORRILL B. DONNARD, JOHN R. NORVELL (compiler, Rt. 7, Box 32, Mt. Airy, MD 21771). *Montgomery County Chapter, Maryland Ornithological Society.*

30. MATURE DECIDUOUS FLOOD-PLAIN FOREST. — **Location:** Maryland, Montgomery Co., Glen Echo, 2.5 mi NW of Dist. of Columbia, between C. & O. Canal and Potomac River, Falls Church Quadrangle, USGS. **Continuity:** Established 1948; 27 intermittent years. **Size:** 17.8 ha = 44.1 acres. **Description of Area:** See AFN 2:153-156 (1948). **Weather:** Extremely cold and snowy. Snow and ice prevented access to the area during most of January. Average temperature on walks was 26°F. On all trips the ground was covered with snow up to 10 in. deep. **Coverage:** Jan. 14; Feb. 5 (2 trips), 11 (2 trips), 12 (2 trips). Total, 7 trips averaging 2.43 hours, between 0805 and 1130. **Count:** Carolina Chickadee, 24 (134, 54); Starling, 19 (106, 43); Com. Crow, 10 (56, 23); Downy Woodpecker, 8 (45, 18); Tufted Titmouse, 8; Carolina Wren, 6 (34, 14); Cardinal, 5 (28, 11); Purple Finch, 5; Red-bellied Woodpecker, 3 (17, 7); Song Sparrow, 3; White-breasted Nuthatch, 2 (11, 5); Evening Grosbeak, 2; Am. Goldfinch, 2; Dark-eyed Junco, 2; Turkey Vulture, 1 (6, 2); Pileated Woodpecker, 1; Yellow-bellied Sapsucker, 1; Brown Creeper, 1; Pine Siskin, 1; White-throated Sparrow, 1; Owl, Kestrel, +; Mourning Dove, +; Barred Owl, +; Com. Flicker, +; Hairy Woodpecker, +; Blue Jay, +; Winter Wren, +. **Average Total:** 107 birds (600/km², 243/100 acres). **Remarks:** Seen on or above the water nearby: Great Blue Heron, Hooded Merganser, Com. Merganser, Herring Gull, Ring-billed Gull, Belted Kingfisher. Total species observed, 27, was average for this census tract. The average total of 107 birds was higher than last year's 84. Some of this difference was because in 1978 more walks were taken between 0800 and 1130 when birds are more conspicuous. Another factor was the partial recovery of Carolina Wrens, the species most obviously affected by last winter's severe weather, dropping from 10 in 1976 to 2 in 1977. In the 1977 breeding census of Cabin John Island, which occupies nearly half of this census area, these wrens dropped from 7 pairs in 1976 to 1 pair in 1977. However, the wrens this winter increased to 6 individuals, indicating perhaps that the progeny of those surviving the 1977 winter were relatively resistant to cold and snow. — J. H. CRISWELL (compiler), W. H. CRAMER, J. R. GAUTHEY (*Audubon Naturalist Society, 8940 Jones Mill Rd., Washington, DC 20015.*)

31. MIXED UPLAND HABITAT. — **Location:** District of Columbia; the central third (35 acres) of Glover-Archbold Park, a long, narrow stream-valley park in NW of D.C. **Continuity:** Established 1960; 19 years. **Size:** 14.2 ha = 35 acres. **Description of Area:** See AFN 14:502-503, 1960. **Weather:** 4.3°F lower on the average than last winter, which had been the coldest for the study until then. The ground was covered with snow and ice throughout the census, down to only 70% cover on the last day. Weather was below freezing on 13 trips, and averaged 30.3°F for the whole period (29.9° in January, 30.7° in February). Wind calm on 8 trips, 10 to 15 mph on 7, 15 to 20 mph on 1, and 20 to 35 mph on 1. **Coverage:** Jan. 7, 15 (2 trips), 19, 21-22, 28 (2), 30; Feb. 1, 4-5, 7, 11 (3), 15, 19. Hours ranged from 0910 to 1730, with 10 trips in the morning, 7 in the afternoon, and one spanning the noon hour. A total of 27 hours, 45 min was

spent on the 18 trips, which gave 16 complete coverages of the area. Average coverage was 1 hour, 46 min. **Count:** Purple Finch, 12 (85, 34), Carolina Chickadee, 8 (56, 23); Dark-eyed Junco, 8; Com. Crow, 7 (49, 20); Starling, 7; Cardinal, 7; Tufted Titmouse, 5 (35, 14); Blue Jay, 4 (28, 11); Am. Goldfinch, 4; White-throated Sparrow, 4; Rock Dove, 3 (21, 9); Red-bellied Woodpecker, 3; White-breasted Nuthatch, 3; House Sparrow, 3; Downy Woodpecker, 2 (14, 6); Red-tailed Hawk, 1 (7, 3); Mourning Dove, 1; Hairy Woodpecker, 1; Carolina Wren, 1; Evening Grosbeak, 1; House Finch, 1; Pine Siskin, 1; Song Sparrow, 1; Turkey Vulture, +; Sharp-shinned Hawk, +; Red-shouldered Hawk, +; Herring Gull, +; Screech Owl, +; Pileated Woodpecker, +; Fish Crow, +; Winter Wren, +; Mockingbird, +; Yellow-rumped (Myrtle) Warbler, +; Com. Grackle, +; Brown-headed Cowbird, +; Com. Redpoll, +; Rufous-sided Towhee, +. **Average Total:** 88 birds (621/km², 251/100 acres). **Remarks:** Total species, 37. Effects of a second record cold winter are of special interest, and the thorough coverage of the area resulted in a record number of species, one higher than the previous high of 36 in 1975. The cumulative list was increased by two species: Sharp-shinned Hawk and Com. Redpoll, bringing it to 64 Northern species wintering here were in higher numbers than usual, with more Purple Finches and Pine Siskins than ever, Evening Grosbeaks above normal, but White-throated Sparrows a little below average. Total numbers of individuals were lower, however. We have had one other year at 85, two at 82, one at 81, and one at 78, spaced out through the 19 years in no significant pattern to show trends beyond annual conditions. This compares with the high counts of 177 in 1960 and 170 in 1975. The Carolina Wren, which dropped abruptly last year after a build-up over several mild winters, did survive this winter at the same level, with an average of 1 per trip and 2 individuals found on two of the last trips. There were also 2 Pileated Woodpeckers in the area, though the average came out to 1 since they tended to range below and above the census tract. — *SHIRLEY A. BRIGGS (compiler), L. HARTSELL CASH, OLIVE HOLBROOK, and EDGAR H. SMITH, with added observations from Kathryn Adkisson, J. W. Oberman, and William and Billy Stott: 7605 Honeywell Lane, Bethesda, MD 20014.*

32. COASTAL DISTURBED FLOODPLAIN. — **Location:** Virginia; Gloucester Co., Beaverdam Swamp, bounded on SE by Route 14 and 10-ft contour to 0.53 km upstream. **Continuity:** Begun 1965, first published 1976, 14 years. **Size:** 8.09 ha = 20 acres. **Description of Area:** See AB 30:1053-1055. **Weather:** Monotonously cold, 20-42°F, average 30°, 19° below 1976. January had twice normal rainfall; February colder, with crusty snow usually present. Skies clear 5 days, 2 hazy. Wind usually slight. **Coverage:** Jan. 2, 8, 14, 29; Feb. 5, 10; Mar. 5. Total, 7 trips, all but one in forenoon, averaging 1 hour, 5 min. **Count:** Bobwhite, 2 (25, 10); Red-bellied Woodpecker, 2; Tufted Titmouse, 2; Turkey Vulture, 1 (12, 5); Com. Flicker, 1; Hairy Woodpecker, 1; Downy Woodpecker, 1; Com. Crow, 1; Carolina Chickadee, 1; Carolina Wren, 1; Hermit Thrush, 1; Purple Finch, 1; Am. Goldfinch, 1; Red-shouldered Hawk, +;

Black Vulture, +; Am. Woodcock, +; Pileated Woodpecker, +; Blue Jay, +; White-breasted Nuthatch, +; Winter Wren, +; Mockingbird, +; Yellow-rumped Warbler, +; Cardinal, +; Swamp Sparrow, +; Song Sparrow, +. **Average Total:** 16 birds (198/km², 80/100 acres). **Remarks:** Total species, 25. Lowest species count in 14 years because of total failure of Poison Ivy crop for first time. Holly berries minimal and cold February barred elm seeds. Yellow-rumped Warbler, dominant in 5 prior years, was seen only 3 times. Of 13 species seen in past 13 years, the heretofore 2nd and 3rd most abundant species, White-throated Sparrow and Am. Robin, went unseen this year. Maturation of the forest, loss of most Sweetgums, and snow and cold caused a 30% reduction of species from the 13-year average of 37; and a 67% reduction of individuals. — *MARVIN L. WASS, Box 752, Gloucester, VA 23061.*

33. PINELAND, SCRUB, RESIDENTIAL, PLANT NURSERY. — **Location:** Florida; Dade Co., 1 mi N of Homestead; 25°29'N, 80°29'W. **Continuity:** Established 1975; 4 years. **Size:** 10.1 ha = 25 acres. **Description of Area:** See AB 29:770 (1975). Changes: One acre previously scrub now a plant nursery, subject to some spraying; home moved into 1 acre of field still scrub; a 5-acre vegetable field (hawks, Killdeer only, and only until spraying began) substituted for previous adjacent 5 acres of young avocado grove, now lifeless. This count reflects typical changing land use in S. Dade Co., with destruction of habitat and agricultural spraying. **Weather:** 5 days clear, 5 mixed with some rain on 2. Temperatures 42° to 82°F, average 55° to 65°. **Coverage:** Dec. 16, 23, 26, 30; Jan. 4, 5, 6, 14, 20, 21. Total, 30 hours; 2-3 trips daily, 10 nets set, feeder observation. **Count:** Yellow-rumped Warbler, 23 (227, 92); Am. Robin, 14 (138, 56); Killdeer, 12 (119, 48); Mourning Dove, 4 (40, 16); Tree Swallow, 4; Painted Bunting, 4; Blue Jay, 3 (30, 12); Gray Catbird, 3; Com. Flicker, 2 (20, 8); Mockingbird, 2; Cardinal, 2; Turkey Vulture, 1 (10, 4); Black Vulture, 1; Sharp-shinned Hawk, 1; Red-shouldered Hawk, 1; Marsh Hawk, 1; Am. Kestrel, 1; Ruby-throated Hummingbird, 1; House Wren, 1; Blue-gray Gnatcatcher, 1; White-eyed Vireo, 1; Ovenbird, 1; Com. Yellowthroat, 1; Spot-breasted Oriole, 1; Indigo Bunting, 1; Am. Goldfinch, 1; Rufous-sided Towhee, 1; Great Blue Heron, +; Great Egret, +; White-winged Dove, +; Ground Dove, +; Whip-poor-will, +; Belted Kingfisher, +; Red-bellied Woodpecker, +; Downy Woodpecker, +; E. Phoebe, +; Carolina Wren, +; Brown Thrasher, +; Hermit Thrush, +; Solitary Vireo, +; Orange-crowned Warbler, +; Palm Warbler, +. **Average Total:** 89 birds (880/km², 356/100 acres). **Remarks:**

	1975	1976	1977	1978
Species	51	41	31	42
Average Total	183	83	53	89
Density/km ²	1808	820	524	880

Total species, 42. Ninety-two (11%) birds were not observed, but were netted. The absence of doves in the open fields and horse pasture, and the paucity of passerines at feeders was doubtless due to an abundance of Sharp-shinned Hawks. Eleven were netted and removed during the count period. For feeder

species, the maximum seen at one time was recorded. There has been some deterioration in habitat.

— *ERMA J. FISK, 17101 S.W. 284 St., Homestead, FL 33030.*

34. TAMARACK BOG AND HARDWOOD FOREST. — **Location:** Michigan, Berrien Co., Lincoln Township; 1 mi SW of Stevensville in Grand Mere State Park, 0.5 mi N of Willow Dr., on Wishart Rd. 42°00'N, 86°33'W, Bridgman Quadrangle, USGS. **Continuity:** Established 1976; 3 years. **Size:** 8.5 ha = 21 acres. **Description of Area:** See AB 30:1049. **Weather:** Snowing on all trips. Heavy snowfall and cold, with 1 to 3 ft of snow on the ground during the period. **Coverage:** Jan. 7-8, 14-15, 21-22; Feb. 11-12. Total, 8 trips between 0800 and 1500, averaging 1 hour each. **Count:** Pine Grosbeak, 3 (35, 14); Blue Jay, 1 (12, 5); Com. Redpoll, 1; Red-bellied Woodpecker, +; Downy Woodpecker, +; Tufted Titmouse, +; White-breasted Nuthatch, +. **Average Total:** 5 birds (59/km², 23/100 acres). **Remarks:** The bird population was down from last year. The invasion of northern species was noticeable. — *ALBERT MORSE, JAMES MULLINS (compiler), 2558 Locust Lane, Stevensville, MI 49127.*

35. FLOODPLAIN, WOODLAND AND FIELD. — **Location:** Ohio; Seneca Co., Heidelberg College land, Lewis Farm, Tiffin, along Rock Creek between Main St. and Hedges-Boyer Park; 41°05'N, 83°09'W. **Continuity:** Established 1976; 3 years. **Size:** 22.5 ha = 55.5 acres. **Description of Area:** See AB 30:1055 (1976). **Weather:** Temperature ranged from -20°C to 0°C. More snow than ever before. Creek completely frozen on last trip. **Coverage:** Dec. 23, 26; Jan. 15. Total, 3 trips, averaging 125 min each, between 0900 and 1200 EST. **Count:** Dark-eyed Junco, 56 (249, 101); Tree Sparrow, 55 (245, 99); House Sparrow, 22 (98, 40); Mourning Dove, 20 (89, 36); Starling, 11 (49, 20); Blue Jay, 4 (18, 7); Downy Woodpecker, 3 (13, 5); Cardinal, 3; Am. Goldfinch, 3; Song Sparrow, 3; Black-capped Chickadee, 2 (9, 4); Com. Flicker, 1 (4, 2); Tufted Titmouse, 1; White-breasted Nuthatch, 1; Field Sparrow, 1; Am. Kestrel, +; Belted Kingfisher, +; Red-bellied Woodpecker, +; Com. Crow, +; Brown Creeper, +; Swamp Sparrow, +. **Average Total:** 186 birds (828/km², 335/100 acres). **Remarks:** Weather prevented more coverage. Species numbers near normal, but average total is down 60 to 70% of past years. Weather took its toll all winter. — *JAMES COFFMAN and H. THOMAS BARTLETT (compiler), 3443 East CR 36, Tiffin, Ohio 44883.*

36. MIXED HABITAT: MIXED-MESOPHYTIC WOODS, PASTURES AND BRUSH. — **Location:** Tennessee; Putnam Co., in Barnes Hollow, about 5 mi WNW of Monterey; 36°9'45"N, 85°22'W, Monterey Quadrangle, USGS. **Continuity:** New. (BBC No. 80, 1977, taken in more open parts of this plot). **Size:** 27.7 ha = 68.5 acres (irregular, nearly rectangular except for S border; mostly from official property survey). **Description of Area:** See AB 32:80 (1978) for the unwooded portions (totalling 21.5 acres) of this plot. Two areas of rather mature mixed hardwoods forest are included in this expanded plot; one, 1 1

ha (2.6 acres), is at the SE end, the other is included within a wooded area, about 3.0 ha (7.3 acres), at the NE end. Most of the remainder of the plot is occupied by young mixed woodland (with scattered larger trees over 12 in DBH) which includes two frequent evergreen species, Red Cedar (*Juniperus virginiana*) and Virginia Pine (*Pinus virginiana*) on the N-facing slopes. Some brushy openings exist along old trails. **Edge:** Pastures on the NW and part of E border; woods, young to mature, on rest of border. **Topography:** Lower N- and S-facing slopes of a hollow, some as steep as 25-30%. **Elevation:** 1075 ft (W end along creek) to 1385 ft (SE corner). **Water:** Often available in creek bed and in a temporary brook on N-facing slope. **Food:** Acorn crop (on 7 oak species) excellent. Wild fruit (wild grapes, Dogwood, Poison Ivy, Red Cedar, etc.) crops fair to good but mostly depleted by December (Dogwood, wild grape) or mid-January (Red Cedar, Poison Ivy fruits). Tulip-trees with good crop of samaras; Virginia Pines with fairly good crop of seed. Not much weed seed available. I put out mixed bird feed near some brushy tangles during February. **Weather:** Much colder and snowier than normal in January and February; heaviest snowfall 3 in. on Feb. 21. Temperatures during walks varied from about 15° to 60°F, but were mostly in 30's. **Coverage:** Nov. 25; Dec. 2, 3, 7, 13, 16; Jan. 7, 14, 16; Feb. 1, 4, 16, 17, 20, 22. Total, 15 trips, between 0840 and 1500 CST, averaging about 2.5 hours. **Count:** Dark-eyed Junco, 7 (25, 10); Blue Jay, 6 (22, 9); Tufted Titmouse, 2 (7, 3); Am. Robin, 2; E. Bluebird, 2; Cardinal, 2; Purple Finch, 2; Com. Flicker, 1 (4, 1); Pileated Woodpecker, 1; Red-bellied Woodpecker, 1; Downy Woodpecker, 1; Com. Crow, 1; Carolina Chickadee, 1; White-breasted Nuthatch, 1; Brown Creeper, 1; Yellow-rumped Warbler, 1; Pine Siskin, 1; Am. Goldfinch, 1; Rufous-sided Towhee, 1; Field Sparrow, 1; White-throated Sparrow, 1; Fox Sparrow, 1; Song Sparrow, 1; Turkey Vulture, +; Red-tailed Hawk, +; Barred Owl, +; Hairy Woodpecker, +; Brown Thrasher, +; Hermit Thrush, +; Golden-crowned Kinglet, +; Loggerhead Shrike, +; Starling, +; Com. Grackle, + **Average Total:** 39 birds (141/km², 57/100 acres). **Remarks:** Species total, 36. Ruffed Grouse and Mourning Dove were seen on plot but not during count trips. The Blue Jay was seen on all trips; the junco, titmouse, and Red-bellied Woodpecker were found on 14 trips. Species found on 8 or more trips were Com. Flicker, Pileated Woodpecker, Carolina Chickadee, Brown Creeper, Yellow-rumped Warbler (none after Jan. 16), Cardinal, Purple Finch, goldfinch, towhee, White-throated Sparrow, and Song Sparrow. No wrens or bluebirds were found after December. Both mudids persisted through February. The Fox Sparrows, White-throated Sparrows, and robins left the plot by mid-December but were back in February; all 3 species were seen about a mile SW of the plot during midwinter. The bird feed attracted the sparrows, juncos, towhees, Cardinals, Brown Thrasher, and jays. Birds were most numerous in the bottomland or along the hedgerows at all times. The highest daily total was Nov. 25 (96 birds of 22 species); the lowest was Feb. 4 (13 birds of 9 species). Large flocks of Cedar Waxwings, Am. Robins, and E. Bluebirds depleted the wild fruit during late October and November;

Maximum numbers were 100 of both waxwings and robins on Nov. 6, and 22 bluebirds on Nov. 24. Some losses during the winter were due to predation. — RICHARD W. SIMMERS, JR., 128 Shipley St., Cookeville, TN 38501.

37. MIXED HABITAT - DISTURBED BOTTOMLAND. — **Location:** Oklahoma; Washington Co., Dewey, 2 mi W of intersection of Ninth St. and Hwy 75, 0.3 mi N on E bank of Caney River, 36° 38' N, 95° 58' W, Tulsa Quadrangle, USGS. **Continuity:** Established 1972; 6 consecutive years. **Size:** 40.47 ha = 100 acres (irregular rectangle roughly 600 × 800 yards; from SCS aerial map). **Description of Area:** See AB 26:976-977 (1972). **Weather:** Temperatures on count days from 17° to 46° F; snow cover from Jan. 11 to end of period; January had 18 overcast days and 15 days with temperature below 15° F. **Coverage:** Dec. 20, 30; Jan. 5, 10, 23, 28, 30; Feb. 10. Eight trips; two between 1230 and 1550; others between 0830 and 1230; total of 22 hours, 10 min. **Count:** Song Sparrow, 22 (54, 22); Bobwhite, 15 (37, 15); Blue Jay, 14 (35, 14); Carolina Chickadee, 10 (25, 10); Red-winged Blackbird, 9 (22, 9); Cardinal, 10; Brewer's Blackbird, 9 (22, 9); Dark-eyed Junco, 9; Red-headed Woodpecker, 8 (20, 8); Fox Sparrow, 7 (17, 7); Red-bellied Woodpecker, 6 (15, 6); Downy Woodpecker, 6; Am. Robin, 6; E. Bluebird, 6; Tree Sparrow, 6; Starling, 5 (12, 5); E. Meadowlark, 5; White-crowned Sparrow, 5; White-throated Sparrow, 4 (10, 4); Tufted Titmouse, 3 (7, 3); Red-tailed Hawk, 2 (5, 2); Com. Flicker, 2; White-breasted Nuthatch, 2; Rusty Blackbird, 2; Swamp Sparrow, 2; Marsh Hawk, 1 (2, 1); Pileated Woodpecker, 1; Com. Crow, 1; Brown Creeper, 1; Loggerhead Shrike, 1; Am. Goldfinch, 1; Field Sparrow, 1; Harris' Sparrow, 1; Lincoln's Sparrow, 1; Sharp-shinned Hawk, +; Red-shouldered Hawk, +; Am. Kestrel, +; Barred Owl, +; Mockingbird, +; Purple Finch, +. **Average Total:** 185 birds (457/km², 185/100 acres). **Remarks:** On Jan. 5, 33 species and 490 individuals were tallied. The other seven dates averaged 23 species and 142 individuals. White-crowned and Field Sparrows were new this year. Red-tailed Hawk, Red-bellied, Red-headed and Downy Woodpeckers, and Cardinal were seen on all counts. — ELLA DELAP, 409 N. Wyandotte, Dewey, OK 74029.

38. RURAL COTTONWOOD - WILLOW RIVERBOTTOM AND CATTAIL MARSH. — **Location:** Colorado; El Paso Co., along Old Pueblo Rd. S of Fountain. Fountain Creek watershed, plains of eastern Colorado adjacent to foothills of the Pikes Peak massif. R65W, T16S; south central Sec. 17; Fountain Quadrangle, USGS. **Continuity:** New. **Size:** 10.9 ha = 27 acres (narrowly rectangular, measured from map). **Description of Area:** High plains riverbottom adjoining Fountain Creek, lightly grazed by two cows. Elevation, 5450 ft. A slow-running, spring fed stream (8°C), flows across a floodplain composed of coarse and fine-grained alluvium. The gravel streambed is mainly covered by decomposing vegetation and muck up to depth of two ft. The edge of the stream was frequently frozen but there was always open water in the center. The vegetation is a mixture of three associations: a cottonwood-willow association (dom-

inated by *Populus sargentii* and *Salix exigua*, with *Dipsacus sylvestris*, *Aristida longiseta*, *Setaria* sp. and *Sporobolus* sp.); marsh vegetation (dominated by *Typha angustifolia*, *Rorippa nasturtium*, *Juncus* sp., and *Salix* sp with *Carex* sp. in the understory); and disturbed vegetation along the levee and roadside (dominant species are *Salsola kali* and *Chrysothamnus nauseosus*). **Edge:** Bordered on W by levee separating census area from Fountain Creek; on S by residential area and stables; on E by Old Pueblo Rd., and agricultural lands beyond; and on N by grazed land. **Weather:** South-central Colorado experienced an atypical January, with temperature maxima lower than normal (ranging from -7°C to 6°C at the study area). A light snow cover was on the ground two census days. Wind varied from 0 to 5 mph. **Coverage:** Jan. 19, 20, 21, 22, 28, 29. Ten censuses, 5 morning (0930-1130) and 5 afternoon (1400-1630), each averaging 1.5 hours for a total coverage of 15 hours. **Count:** Red-winged Blackbird, 57 (522, 211), Mallard, 21 (192, 78); Starling, 15 (137, 56), Tree Sparrow, 11 (101, 41); Song Sparrow, 11, Killdeer, 9 (82, 33); Com. Snipe, 9; Dark-eyed Junco, 6 (55, 22); House Finch, 5 (46, 19), White-crowned Sparrow, 5; Mourning Dove, 3 (27, 11); Black-billed Magpie, 2 (18, 7), Marsh Hawk, 1 (9, 4); Belted Kingfisher, 1, Black-capped Chickadee, 1; Great Blue Heron, +; Sharp-shinned Hawk, +; Rough-legged Hawk, +; Merlin, +; Am. Kestrel, +, Downy Woodpecker, +; Mountain Chickadee, +; Brown Creeper, +; Long-billed Marsh Wren, +; N. Shrike, +; Cassin's Finch, +, Pine Siskin, +; Am. Goldfinch, +; Harris' Sparrow, +. **Average Total:** 157 birds (1437/km², 581/100 acres). **Remarks:** Total species, 30. Red-winged Blackbirds and Starlings were counted as they flew over the study area to roosting sites on adjacent agricultural lands. Mallards, Killdeer and snipe were usually found near open water in the marshy habitat. Willow thickets along the stream were frequented by a variety of flocking birds: Tree Sparrows, Song Sparrows, White-crowned Sparrows, Dark-eyed Juncos and House Finches. At least one raptor usually a Marsh Hawk, was present during each census. The higher density of individuals (1437/km²) than is normally found in the Colorado cottonwood-willow riverbottom habitat (620/km², AB 28:6, 975-979) can be attributed to the mixture of elements of this habitat with the open water and marshland typical of a plains pond (density 1650/km²). (Density would be 778/km² if birds flying over had been omitted as recommended — Ed.) During the censusing period the area changed ownership. The new owners plan to modify the habitat to make it more desirable to wildlife, i.e., minor dredging of the stream to make it a suitable habitat for fish, increasing food and shelter availability, removing stables and horses, introducing game species, cutting down "useless" dead trees, and stabilizing the eastern embankment. If these plans are carried out it will be interesting to monitor the effects on native wildlife and vegetation that ensue. — NANCY WALTER and DAVID SAWYER, Biology Dept., Colorado College, Colorado Springs, CO 80903.



39. PALOVERDE WOODLAND. —

Location: California, Imperial Co along the E edge of the Algodones Dunes ("Sand Hills"), approx. 1.3 mi W of Glamis (on U.S. Hwy 78) and 300 yards NW of highway. Center of plot: Section unsurveyed T13S, R18E, Glamis Quadrangle, USGS; approx. 32°59'55"N, 115°05'37"W. **Continuity:** New. **Size:** 5.5 ha = 13.5 acres. Irregularly elliptical along NW axis; approx. 470 × 205 m. Area determined by simple triangulation (plot mostly measured, some paced). **Description of Plot:** Owing to the resultant damming of the bajada runoff, the NE border of the dunes harbors relatively lush vegetation. Extending perhaps ½ mi out onto the bajada the variable strip is generally composed of narrow microphyll woodlands adjacent to the dunes and lush Creosotebush scrub further E. The dune edge N of U.S. Hwy 78 is particularly rich. In this section, adjacent to the dunes, the plot centers about a unique slough or swale lined with dense Paloverdes (*Cercidium floridum*). The Paloverdes within the plot form a virtual island of habitat. Dune-side (SW); rising over the steeply mounded banks of the slough, the plot extends over variable sloping sandy soil to the abruptly rising sand dunes. Here, scattered Paloverdes are separated by sparse shrubbery. Bajada-side (NE); the variably sloping silty soil supports a veritable jungle. Adjacent the dense Paloverdes, lush Creosotebush scrub mingles with scattered Paloverdes. The scene is augmented by a lush expanse of mustard where the wash enters; and by dense concentrations of Brandegea (*Brandegea bigelovii*) trailing high into many of the trees and Creosotebushes (*Larrea tridentata*). To the SE the plot boundary mingles with less dense Paloverdes; and on the NW it is met by dunes (which shortly give way to more Paloverdes). **Vegetation:** Five 100-point pace transects, nine 2 m × 22 m transects, and nine 0.1 acre (0.04 ha) circles were made to determine canopy cover, ground cover, species composition, number of shrubs and trees, and tree size classes. The substratum is: 53.5% bare ground, 46.0% plant litter, and 0.5% shrub stems. The canopy of 42% is: 69.5% Paloverde, 11.6% Creosotebush, 9.0% dead Paloverde branches and some large annuals (mostly *Brassica*), 3.4% Brandegea, 3.0% Tooth-leaf (*Stillingia paucidentata*), and lesser percentages of Emory Dalea (*Dalea emoryi*), Jimson-weed (*Datura meteloides*) and Spanish Needle (*Palafoxia linearis*). Perennial species composition of the 2399 shrubs/ha (971/acre) is: 37% Tooth-leaf, 18% Brandegea, 16% Paloverde, 11% Spanish Needle, 8% Emory Dalea, 5% Creosotebush, 1% Lance-leaf Dittaxis (*Dittaxis lanceolata*), 1% Jimson-weed, 1% Burrobush (*Ambrosia dumosa*), 1% Cheesebush (*Hymenoclea salsola*), and lesser percentages of; Joint Fir (*Ephedra* sp.), Honey Mesquite (*Prosopis glandulosa*), Silk Dalea (*Dalea mollis*), Ironwood (*Olneya tesota*), Buckhorn Cholla (*Opuntia acanthocarpa*), Silver Cholla (*O. echinocarpa*), Desert Lavender (*Hyptis emoryi*), Brittlebush (*Encelia farinosa*) and Anderson Thornbush (*Lycium andersonii*). Paloverdes with 7.6 cm (3.0 in.) diameters or greater, based on the circle samples, have a density of 176 trees/ha (71/acre) including 228 trunks/ha (92 acre). Total basal area of the 64 trees (83 trunks) in the nine 0.04 ha (0.1 acre) circles is 2.283 sq. m (24.6 sq. ft). Number of trunks per size class: A (7.6-15.2 cm or 3-6

in.), 53, B (15.2-22.9 cm or 6-9 in.), 19, C (22.9-38.1 cm or 9-15 in.), 8, D (38.1-53.3 cm or 15-21 in.), 2, and E (53.3-68.6 cm or 21-27 in.), 1. The Paloverde canopy is 3.5-8.5 m (est. ave. 6.7) high. The Paloverde is a very branchy tree (shrubby but large) often with several low "horizontal" as well as vertical trunks. Single trees with multiple trunks at ground level are common; and changes in trunk diameter not due to branching is very gradual. For these reasons, trunks were measured at ground level. Annuals: a large patch of fruiting Mustard (*Brassica tournefortii*), a smaller one of Mallow (*Sphaeralcea* sp.), and scattered Desert Primroses (*Baileya pleniradiata*) contributed to the vegetational structure of the winter habitat. **Topography:** Most of the long bajada extending from the SW edge of the Chocolate Mountains is abutted by the Algodones Dunes. **Elevation:** The dunes rise from less than 300 ft to over 500 ft elevation. **Water:** The only perennial source is the Coachella Canal, 5-½ mi SE. This year water was available into spring at a dune pond (½ mi SE), remaining from heavy August rains. On the plot, open water from the 13 February storm lasted about 6 days. Though heavy rains flood most of the low areas in the plot, it generally makes more mud than open water. **Weather:** Temperatures during the census period ranged from 36-84°F (ave. 45-72°). Showers were recorded on Feb. 9 and a short but violent thunder shower the afternoon of Feb. 13. This was an unusually wet winter for the desert. Census mornings were clear 75% of the time and calm 50% of the time. **Coverage:** Feb. 8-9, 13, 15, 17, 20, 23, 25. Total 8 trips (over 17-day period) between 0700 and 1000, averaging 187 min each. Additional observations for owls and goatsuckers were made 1630-1815 (Feb. 20) and 0500-0600 (Feb. 25). **Count:** White-crowned Sparrow, 39 (714, 289); House Finch, 12 (220, 89); Gambel's Quail, 9 (165, 67); Ruby-crowned Kinglet, 9; Verdin, 5 (92, 37); Black-tailed Gnatcatcher, 5; Green-tailed Towhee, 4 (73, 30); Mourning Dove, 3 (55, 22); Long-eared Owl, 3; House Wren, 3; Cactus Wren, 3; Crissal Thrasher, 3; Yellow-rumped (Audubon's) Warbler, 2 (37, 15); Roadrunner, 1 (18, 7); Ladder-backed Woodpecker, 1; Ash-crowned Flycatcher, 1; Say's Phoebe, Orange-crowned Warbler, 1; Lesser Goldfinch, 1; Cooper's Hawk, +; Red-tailed Hawk, +; Great Horned Owl, +; Costa's Hummingbird, +; Brewer's Sparrow, +. **Average Total:** 106 birds (1940/km², 785/100 acres). **Remarks:** 24 species. Le Conte's Thrashers were seen on the edges of the plot twice; and Loggerhead Shrikes occasionally in habitat nearby. A Turkey Vulture (Feb. 7), and a Marsh Hawk (Feb. 5), were seen over the Creosotebush scrub not far NE of the plot. An early Lesser Nighthawk was in Creosotebush scrub closer to Glamis on Feb. 7. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — R. P. HENDERSON, 15950 Riverlands Ave., Guerneville, CA 95446.

40. WILLOW RIPARIAN. — Location: California; Inyo Co., E slope of the Inyo Mtns. at Willow Creek Camp, 43.2 mi SE of Big Pine, along Saline Valley Rd. (Sec. 2, T13S, R37E), Waucoba Wash Quadrangle, USGS; 36°50'N, 117°55'W. **Continuity:** New (BBC, 1977). **Size:** 3.6 ha = 9.0 acres (1335 m long

and a mean width of 27.4 m) Width varies from 7 to 62 m depending on width of vegetation. **Description of Plot:** See AB 32.85 (1978) **Weather:** Temperature varied from 40° to 67°F. Precipitation of 0.3 in. was recorded during the census period. On 4 census days it was 100% overcast and on 4 100% clear. Wind in the canyon was zero on all census days except one when it reached 5 mph. **Coverage:** Jan. 13-20. Total, 8 trips, 6 between 0700 and 1100 and 2 between 1700 and 1900. Total man-hours: 25. **Count:** Ruby-crowned Kinglet, 6 (165, 67); White-crowned Sparrow, 6, Bewick's Wren, 3 (82, 33); Long-billed Marsh Wren, 2 (55, 22); Song Sparrow, 2; Sharp-shinned Hawk, +; Long-eared Owl, +; Com (Red-shafted) Flicker, +; Rock Wren, +; Am Robin, +; Yellow-rumped Warbler, +; Dark-eyed Junco, +. **Average Total:** 19 birds (522/km², 211/100 acres). **Remarks:** Twelve species. This type of habitat contains a higher density of birds than any other California desert environment. The population at this site in winter is about 1/5 that in the spring, not counting the large influx of migrants (See AB 32: 85). However, a different species composition exists in the winter. The impact by feral burros on these habitats is quantitatively unknown, but one has only to visit Little Dodd Spring (28 mi SE of Willow Creek) where burros cannot go, to see the striking difference in quality of habitat. Thanks to Derham Guiliani for temperature data and as a guide in exploring other riparian habitats in Saline Valley. The study was sponsored by the Bureau of Land Management, California Desert Plan Program. Contribution No. 164, P.R.B.O. — ROBERT M. STEWART, Point Reyes Bird Observatory, 4990 Shoreline Hwy., Stinson Beach, CA 94970.

41. WILLOW RIPARIAN. — Location: California; Kern Co., Grapevine Canyon. The Grapevine Canyon road turns W off US 395, 2 mi N of the junction State 14 and US 395. The study plot begins 2.3 mi up the canyon road (NW ¼ of Sec. 29, and ends in the SW ¼ of Sec. 19, T25S, R38E), Inyokern Quadrangle, USGS; 35°44'N, 117°55'W. **Continuity:** New (BBC, 1977). **Size:** 3.88 ha = 9.6 acres (rectangular, 1931 m long following the streambed, paced); width ranges from 5 to 82 m, paced at 50 m intervals to give a mean of 20.1 m). **Description of Plot:** See AB 32:86-87 (1978). The creek was flowing through the entire study area. **Weather:** The temperatures ranged from -1.1° to 14.4°C. No precipitation on the census days but approximately 6 in of rain fell during the study period. Winds 0-20 mph. **Coverage:** Jan. 5, 7, 20, 22; Feb. 4, 18, 20, 24 (a.m. censuses); Jan. 19, Feb. 19 (p.m. censuses). total, 8 trips, between 0630 and 1115, averaging 202 min; 2 censuses between 2000 and 2300, averaging 180 min. **Count:** Pine Siskin, 35 (901, 365); White-crowned Sparrow, 29 (746, 302); California Quail, 28 (721, 292); Dark-eyed Junco, 13 (335, 135); Golden-crowned Sparrow, 7 (180, 73); Bewick's Wren, 6 (154, 63); Ruby-crowned Kinglet, 6; Brown Towhee, 6; Rufous-sided Towhee, 5 (129, 52); Ladder-backed Woodpecker, 4 (103, 42); Am. Robin, 3 (77, 31); Hermit Thrush, 3; Great Horned Owl, 2 (51, 21); Plain Titmouse, 2; W. Bluebird, 1; Scrub Jay, 1; Varied Thrush, 1. **Average Total:** 156 birds (4015/km², 1625/100 acres). **Remarks:** Species total, 19. Visitors (total number

observed) California Quail, 143, White-crowned Sparrow, 96, Pine Siskin, 40, Yellow-rumped Warbler, 13; House Finch, 13, Com. Raven, 10; Lesser Goldfinch, 9; Starling, 3; Com. Flicker, 2; Say's Phoebe, 2; California Thrasher, 2; Fox Sparrow, 2; Sharp-shinned Hawk, 1; Anna's Hummingbird, 1; Mountain Bluebird, 1; Loggerhead Shrike, 1. The resident numbers of California Quail, Pine Siskins, and White-crowned Sparrows may be inaccurate because of the numbers involved and the difficulty in differentiating the residents from those just drinking or loafing in the riparian habitat. The Anna's Hummingbird, Starlings, Yellow-rumped Warblers, and Lesser Goldfinches are all early spring arrivals. Most of the foraging was done in the cottonwoods and among the grapes. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — *PETER WOODMAN, 1825 Weiman, Ridgecrest, CA 93555.*

42. DIGGER PINE PARKLAND. — **Location:** California; Inyo Co., Sand Canyon, in S most extension of the Sierra Nevadas, 12 mi S on Hwy 14 from intersection of State 178 and 14, and about 6 mi W on Brown Rd.; N boundary of plot is immediately adjacent to road. T25S, R37E, sections undefined, Little Lake Quadrangle, 1954 USGS; 35°47'N, 117°56'W. **Continuity:** New (BBC, 1977). **Size:** 9.06 ha = 22.4 acres. **Description of Area:** See AB 32:94-95 (1978). Relatively open park-like stand of Digger Pines with intermittent shrub understorey. **Weather:** Daytime temperatures ranged from 40° to 75°F. Heavy rains occurred several times throughout winter months. **Coverage:** Jan 29; Feb. 4, 18-19, 20; Mar. 11-12, 19. Total, 8 trips between 0530 and 0930 PST. Total man-hours: 16. **Count:** Dark-eyed Junco, 8 (88, 36); Ruby-crowned Kinglet, 7 (77, 31); Steller's Jay, 4 (44, 18); Mountain Chickadee, 4; Com. Flicker, 3 (33, 13); Scrub Jay, 3; California Quail, 2 (22, 9); Cañon Wren, 2; Hairy Woodpecker, 1 (11, 4); Sharp-shinned Hawk, +; Cooper's Hawk, +; Red-tailed Hawk, +; Long-eared Owl, +; Williamson's Sapsucker, +; Ladder-backed Woodpecker, +; White-headed Woodpecker, +; Com. Raven, +; Bewick's Wren, +; Rock Wren, +; Am. Robin, +; Warbling Vireo, +; Yellow-rumped Warbler, +; House Finch, +; Rufous-sided Towhee, +; Brown Towhee, +. **Average Total:** 34 birds (375/km², 152/100 acres). **Remarks:** Number of species (25) relatively high for a winter census. Diversity enhanced by influx of montane species (Steller's Jay, Mountain Chickadee, Dark-eyed Junco, etc.) possibly related to hard winter at high elevations. The Steller's Jay and chickadee were not observed in early spring of 1977. Number of Scrub Jays seemed to be reduced when Steller's Jays were present on the study area. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — *CHARLES F. DOCK, 1164 W Adams Blvd., Los Angeles, CA 90007.*

43. 11-YEAR FIELD REGENERATION. — **Location:** Massachusetts; Plymouth Co., Town of Kingston, 2 mi SW of South Duxbury Center; 42°00'N, 70°43'W, Duxbury Quadrangle, USGS. **Continuity:** New (BBC, 1977). **Size:** 4.34 ha = 10.73 acres (a nearly regular

area of this habitat within a rectangle with sides running NE-SW and NW-SE, surveyed) **Description of Plot:** See AB 33:(1) BBC 64. A large portion of the plot's center, approximately 30% of its total area, was an iced-over flooded depression. **Food:** Besides grass spp. and Milkweed (*Asclepias syriaca*) seed, fruits of the following shrubs were available to birds, in order of decreasing abundance: Red Cedar (*Juniperus virginiana*), Northern Bayberry (*Myrica pensylvanica*), *Rosa* sp., and *Pyrus* sp. **Weather:** Temperatures ranged from -6° to 1°C (21° to 33°F), averaging -2°C (28°F). Winds were SW to NW, light to moderate (0-20 mph). Except for 2 quickly melting snowfalls, the ground was virtually bare in January, although the Feb. 19 census met with 100% snow cover, in drifts up to 2 ft. **Coverage:** Jan. 10-13, 15-18, 27; Feb. 19. Total, 10 trips, averaging 51 min each between 0845 and 1535 EST. **Count:** Yellow-rumped Warbler, 6 (138, 56); E. Meadowlark, 2 (46, 19); Am. Kestrel, 1 (23, 9); Com. (Yellow-shafted) Flicker, 1; Am. Robin, 1; Tree Sparrow, 1; Red-tailed Hawk, +; Marsh Hawk, +; Blue Jay, +; Com. Crow, +; Black-capped Chickadee, +; Mockingbird, +; Orange-crowned Warbler, +. **Average Total:** 12 birds (276/km², 112/100 acres). **Remarks:** Yellow-rumped Warblers were seen on 9 trips, the maximum single count being 14 on Jan. 17. Meadowlarks (maximum of 5) were seen on 6 trips, robins on 5, flickers on 4, Tree Sparrows on only 1 (flock of 9). A ♂ or ♀ Am. Kestrel was sighted on 5 visits — the birds were seen together once, outside the plot. The Marsh Hawk was seen quartering over the field on 3 trips. The Orange-crowned Warbler appeared only once. A Red-tailed Hawk crossed the plot's corner once and was seen another time over the adjacent forest. It may be presumed to hunt the field occasionally. Thanks to Trevor Lloyd-Evans for helping me to start this census and finishing it in my absence. — *CHRISTOPHER C. RIMMER, Manomet Bird Observatory, Manomet, MA 02345.*

44. OLD FIELD WITH BRUSH PATCHES. — **Location:** Indiana; Jefferson Co., Clifty Falls State Park. NW corner of plot 38°45'11"N, 85°24'52"W; in Sect. 33, T4N, R10E, Clifty Falls Quadrangle, USGS. **Continuity:** Established 1976; 2 years. **Size:** 17.05 ha = 42.13 acres. Irregular rectangle, measured with steel tape and compass. **Description of Area:** See AB 30 (6): 1056-57 (1976) and 31 (1): 61-62 (1977). Succession in two years has decreased grass coverage considerably; large herbs, particularly Field Goldenrod (*Solidago nemoralis*) have increased, but shrubs have not changed much. **Water:** Through January the creek in the ravine was open, but in February it was frozen, leaving no open water on the area. **Weather:** A record winter for long-term cold and snow cover. On counts, temperatures ranged from 10° to 40°F.; winds ranged from 1-10 mph, with gusts to 20 mph one day, from varied directions; sky from clear (once) to overcast (4 times). No precipitation during 8 counts, but a brief snow flurry once and a steady light snow throughout one count. Snow cover was absent on 2 of the December counts, but ranged from ½ in. to 14 in. (drifts to 40 in.) on 8 counts. **Coverage:** Dec. 5, 27, 31; Jan. 14, 21, 28; Feb. 9, 11, 18, 24. Total, 10 daylight (6 morning and 4 afternoon) trips averaging 116 min each

and ranging from 55 to 147 min. However, the 2 trips shorter than 120 min were by two or more observers; the other 8 trips were by a single observer. **Count:** Am. Goldfinch, 8 (47, 19); Am. Robin, 4 (23, 9); Bobwhite, 3 (18, 7); Cardinal, 3; Starling, 2 (12, 5); White-throated Sparrow, 2; Mockingbird, 1 (6, 2); Purple Finch, 1; Tree Sparrow, 1; Red-tailed Hawk, +; Am. Kestrel, +; Downy Woodpecker, +; Blue Jay, +; Com. Crow, +; Carolina Chickadee, +; E. Bluebird, +; E. Meadowlark, +; Red-winged Blackbird, +; Dark-eyed Junco, +; White-crowned Sparrow, +; Song Sparrow, +. **Average Total:** 25 birds (147/km², 59/100 acres). **Remarks:** No species was noted on all 10 trips. I believe that birds noted in flight over the area should be included in the count. In this case, the preceding count would have these changes: Increase Starling to 3, Com. Crow to 2, Red-winged Blackbird to 3; add Turkey Vulture, +, Black Vulture, +, Rough-legged Hawk, +, Peregrine Falcon, +; increase average total to 31 birds (182/km², 74/100 acres). Jackson R. Webster helped me on one count and several students on another day, but their time was not calculated above. — *DAN WEBSTER, Hanover College, Hanover, IN 47243.*

45. LIVE OAK - MESQUITE BRUSHLAND. — **Location:** Texas; Bexar Co., W. W. McAllister Park of San Antonio, 2 mi NE of San Antonio International Airport; 29°33'N, 98°27'W, Longhorn Quadrangle, USGS. Study area is along the N boundary of the park, extending 660 yds ESE of Jones-Maltsberger Rd., and 220 yds SSW of the fence. **Continuity:** Established 1967; 12 consecutive years. **Size:** 12.1 ha = 30 acres, based on survey stakes along the fence and measured outward 220 yds by steel tape. **Description of Area:** See AFN 21:472 (1967). Construction beginning north of the boundary but little change in human activity so far. The stream was dry from lack of sewage effluent and sparse rainfall, a change from the flowing stream of the past 3 seasons. **Weather:** Although October and November had rain, only 0.32 in. fell in December and 0.68 in January, leaving the soil dry with below-normal growth of winter grasses. The temperature averaged 7°F below normal in January and 8°F below normal in February. **Coverage:** Jan. 6, 9, 16, 28; Feb. 8, 16, 18. Total, 7 trips, averaging 98 min each, between 0845 and 1600 CST. **Count:** Cardinal, 5 (41, 17); White-throated Sparrow, 4 (33, 13); Ruby-crowned Kinglet, 3 (25, 10); Rufous-sided Towhee, 3; Black-crested Titmouse, 2 (16, 7); Ladder-backed Woodpecker, 1 (8, 3); Bewick's Wren, 1; Carolina Wren, 1; Mockingbird, 1; Am. Woodcock, +; Mourning Dove, +; Roadrunner, +; Barn Owl, +; Golden-fronted Woodpecker, +; E. Phoebe, +; Carolina Chickadee, +; Brown Creeper, +; Am. Robin, +; Hermit Thrush, +; Fox Sparrow, +. **Average Total:** 21 birds (173/km², 70/100 acres). **Remarks:** 20 species. Count was down from an average total of 121 birds and 42 species last year, probably from lack of rainfall and colder temperatures. The Barn Owl and Roadrunner were new species and seen only once. *STEVEN HAWKINS, and JAMES A. MIDDLETON, (compiler), San Antonio Audubon Society, San Antonio Garden Center, 3310 N. New Braunfels, San Antonio, TX 78209.*

46. FOOTHILLS BRUSHLAND AND PINYON-JUNIPER WOODLAND. —

Location: Colorado; El Paso Co.; Northwest Colorado Springs S of Garden of the Gods Park and W of Ridge Rd.; 38°52'N, 104°53'W, Manitou Springs Quadrangle, USGS. **Continuity:** New. **Size:** 10.12 ha = 25 acres (relatively rectangular; area measured from plot map). **Description of Plot:** A foothills ecotonal area characterized by mixed brushland (especially Mountain-mahogany [*Cercocarpus montanus*] with some Scrub Oak [*Quercus gambelii*], Skunkbush [*Rhus trilobata*] and Yucca [*Yucca glauca*]), with scattered Pinyon Pine (*Pinus edulis*) and a few One-seed Juniper (*Juniperus monosperma*), Red Cedar (*U. scopulorum*), Ponderosa Pine (*P. ponderosa*) and Douglas-fir (*Pseudotsuga menziesii*); and an interspersed of disturbed grassy slopes dominated by Blue Grama (*Bouteloua gracilis*). **Topography:** The plot slopes down to the southwest (6480 ft to 6380 ft), with a series of tilted N-S sandstone outcrops and interlaced dry ravines. **Edge:** There is similar habitat S and N, with the more impressive sandstone outcrops of the Garden of the Gods Park adjacent to the N. On the E beyond Ridge Rd. and its tourist lookout is similar habitat, while in the valley to the W are clustered private residences, some with bird feeders. **Weather:** The period was cooler and cloudier than usual; but except for a few storms (about 15 in. of snow) the winter was dry as normal. Average temperature was 26°F, with a range from -3° to 63°. **Coverage:** Jan. 16, 18, 22, 30; Feb. 5, 11, 19, 26; Mar. 6. Total: 9 trips, averaging 60 min. **Count:** Dark-eyed Junco, 14 (138, 56); Scrub Jay, 10 (99, 40); Rufous-sided Towhee, 6 (59, 24); Black-billed Magpie, 5 (49, 20); House Finch, 2 (20, 8); Com. Flicker, 1 (10, 4); Black-capped Chickadee, 1; Am. Robin, 1; Townsend's Solitaire, 1; Cassin's Finch, 1; Gray-headed Junco, 1; Red-tailed Hawk, +; Rock Dove, +; Hairy Woodpecker, +; Downy Woodpecker, +, Com. Raven, +; Com. Crow, +; Mountain Chickadee, +; Brown Towhee, +. **Average Total:** 43 birds (425/km², 172/100 acres). **Remarks:** When censusing began, this area was slated for high-density housing development; but subsequently it has been purchased by the City for addition to the Garden of the Gods Park. Many of the plot's species are those in previous Garden of the Gods censuses (AFN 15:364-366 [1961], a five-winter summary; and AB 32:36 [1978]). But brushland species were more abundant (e.g., Scrub Jay and Rufous-sided Towhee) while pinyon and juniper indicators (Piñon Jay, Plain Titmouse, Townsend's Solitaire) were scarce or absent. The higher diversity (19 species compared with, respectively, a five-year average of 15, and only 11) is at least in part a reflection of the ecotonal nature of this plot, especially the proximity to the residential area, and the feeders. The highest density of birds was in the vicinity of the feeders; while a centrally located, large sandstone outcrop was a focal point for much diversified bird activity. — RICHARD BEIDLEMAN (compiler), BRIGID BUTTERFIELD, INGER FEL DOTTO, TERRY LEYDEN, DAVID SAWYER, BRUCE TOWNSEND, NANCY WALTER, CHARLES WELCH, and RACHAEL WOOD (Field Zoology Class), Dept. of Biology, Colorado College, Colorado Springs, CO 80903.

47. DESERT OASIS WOODLAND I. —

Location: California, Riverside Co., Corn Springs Oasis, about 9 mi SW of Chuckwalla Rd. off-ramp on Interstate 10 near Desert Center. The study plot is located in the NE¼, NE¼, Sec. 29, and the NW¼, NW¼, Sec. 28, T6S, R16E, San Bernardino Base & Meridian. Chuckwalla Mountains Quadrangle, USGS; 33°38'N, 115°19'W. **Continuity:** New. **Size:** 5.8 ha = 14.3 acres (rectangular 273 × 210, surveyed). **Description of Plot:** A unique and isolated Colorado Desert Fan Palm Oasis situated on a slight bench above a desert wash. The native Fan Palms located at the oasis are at the easternmost range of their distribution in the California deserts. **Vegetation:** The distribution of plant species within the study area is considerably variable and influenced by major washes on the periphery, a portion of a small public campground within the boundaries of the plot and the availability of seep water at the oasis. Fifteen 0.1 acre (0.04 ha) circular plots were made to determine percent cover, species composition, and numbers of shrubs and trees. The substratum was composed of 20.2% small rocks (<5 cm), 8.8% large rocks (>5 cm), 25.8% bare ground, and 45.2% litter. The shrub cover of 40% was made up of 21.7% Mesquite (*Prosopis glandulosa* var. *torreyana*), 18.3% Paloverde (*Cercidium floridum*), 18.1% Allscale (*Atriplex polycarpa*), 11.4% Arrowweed (*Pluchea sericea*), 6.5% Catclaw (*Acacia greggii*), 4.4% each of Cheesebush (*Hymenoclea salsola*) and Abrojo (*Condaliopsis lycioides*), 3.9% Cattail (*Typha domingensis*), 3.1% Sweetbush (*Bebbia juncea*), 2.8% Desert Lavender (*Hyptis emoryi*), 2.1% Brandegea (*Brandegea bigelovii*), 1.3% Desert Tobacco (*Nicotiana trigonophylla*), 0.8% each of Palmate-leaved Gourd (*Cucurbita palmata*) and Brittlebush (*Encelia farinosa*), and 0.5% Saltgrass (*Distichlis spicata*). The tree cover of 7% was made up of 45.1% Tamarisk (*Tamarix ramosissima*), 38% Fan Palm (*Washingtonia filifera*), and 16.9% Ironwood (*Olneya tesota*). There are 2020 shrubs/ha (818/acre), of which 52.1% are Arrowweed, 23.9% Cattails, 6.8% Allscale, 3.3% Burrobush (*Ambrosia dumosa*), 2% Cheesebush, 1.5% Creosotebush (*Larrea tridentata*), 1.2% Mesquite, 1.1% each of Desert Tobacco, Paloverde, and Catclaw, and less than 1% each of 19 other perennial species located in the study plots. There are 202 trees/ha (82/acre), of which 49.6% are Tamarisk, 48.8% Fan Palm, and 1.6% Ironwood. Nomenclature of plant species follows P. A. Munz, *A Flora of Southern California* (1974). **Elevation:** 1600-1640 ft (480-492 m); nearest mountain slopes are directly N, S, and W of the plot. **Edge:** the plot is bounded on the N, E, and S sides by desert wash and associated wash edge species (i.e. - Mesquite, Catclaw, Paloverde, etc.). **Topography:** Slightly sloping bench. **Water:** There are several springs and seeps in the center of the study plot which have a permanent surface flow. There is also a "guzzler" located in the campground on the N border of the study plot. **Weather:** Temperatures during the study period ranged from 39°F to 66°F with a daily mean of 50°F. There was some precipitation and strong winds recorded. **Coverage:** Jan. 15, 23-24, 31; Feb. 1, 7-8, 13-15. Total, 13 trips, 5 from 1630-2200 and 8 between 0645 and 1130. The night trips averaged 186 min each and the day trips 211 min each. Total man-hours: 44. **Count:** White-crowned Sparrow, 55 (950, 385); Ruby-

crowned Kinglet, 45 (778, 315), Verdin, 30 (518, 210), Gambel's Quail, 11 (190, 77), House Finch, 7 (121, 49); Black-tailed Gnatcatcher, 4 (69, 28); Phainopepla, 4; Yellow-rumped Warbler, 3 (52, 21); Com. Flicker, 2 (35, 14); Ladder-backed Woodpecker, 2; Rock Wren, 2; Red-tailed Hawk, 1 (17, 7); Costa's Hummingbird, 1; Com. Raven, 1; House Wren, 1; Am. Robin, 1; Varied Thrush, 1, Hermit Thrush, 1; Cedar Waxwing, 1; Savannah Sparrow, 1; Chipping Sparrow, 1; Song Sparrow, 1; Sharp-shinned Hawk, +; Prairie Falcon, +; Great Horned Owl, +; Say's Phoebe, +; Loggerhead Shrike, +; Orange-crowned Warbler, +; Red-winged Blackbird, +; Lesser Goldfinch, +; Lincoln's Sparrow, + **Average Total:** 176 birds (3041/km², 1231/100 acres). **Remarks:** Total species, 31. The presence of surface water at the oasis has an influence on bird densities in this area of the desert. The oasis not only provides a source of drinking water, but it also influences the variety and amount of vegetation able to withstand the stress of growing in this otherwise inhospitable environment. An average of 16 Antelope Ground Squirrels (*Ammospermophilus leucurus*) was seen per census (250/km², 107/100 acres). Three Desert Cottontails (*Sylvilagus audubonii*), 3 Coyotes (*Canis latrans*), and 1 Gray Fox (*Urocyon cinereoargenteus*) were recorded on the counts. I wish to thank Paul Romero for assistance in the bird counts. This study was sponsored by the Bureau of Land Management, California Desert Plan Program — RICHARD W. KOOPMAN, 45-421 Sunset Lane, #2, Palm Desert, CA 92260.

48. DESERT OASIS WOODLAND II. —

Location: California; Riverside Co., Pushawalla Palms Oasis, about 1½ mi NE of the Washington Street, Ramon Rd transition, E of Thousand Palms. In the SW¼, NW¼ and the NW¼, SW¼, Sec. 17, T4S, R7E, San Bernardino Base & Meridian, Myoma Quadrangle (7½), USGS; 33°49'N, 116°17'W. **Continuity:** New. **Size:** 10.1 ha = 25 acres (trapezoidal 492 × 198m × 522 × 198m paced) **Description of Plot:** A desert wash oasis in Pushawalla Canyon; one of a major grouping of Colorado Desert native Fan Palm oases along the San Andreas fault zone. **Vegetation:** The type and distribution of plant species within the study area are essentially divided into those of the Creosotebush association on the E and W benches above the present wash, and those of the oasis zone in the wet soils down in the canyon. In comparison to the plant associations on the bench, the distribution of species within the oasis is not random, but is instead determined by the available water supply. To account for these differences, five 100 point pace transects were made on the benches above the oasis and 16 one-fortieth acre rectangular quadrats (3 × 33 m) were made in the canyon to determine percent cover, species composition, and numbers of shrubs and trees. The substratum was composed of 27.6% small rocks (<5 cm), 13.4% large rocks (>5 cm), 29.3% bare ground, 24.0% litter, and 5.7% shrub stems. The shrub cover of 12.6% was made up of 15.5% Brittlebush (*Encelia farinosa*), 11.5% Smoke Tree (*Dalea spinosa*), 10.2% Arrowweed (*Pluchea sericea*), 7.5% each of Catclaw (*Acacia greggii*) and Burrobush (*Ambrosia dumosa*), 7.1% Creosotebush (*Larrea tridentata*), 6.6% Quail

Brush (*Atriplex lentiformis*), 5.3% Screwbean (*Prosopis pubescens*), 4.4% Pigmy Cedar (*Peucephyllum schottii*) and less than 4% each of 13 other species. The tree cover of 14.9% was made up of 73.4% Fan Palm (*Washingtonia filifera*), 16% Tamarisk (*Tamarix ramosissima*), 7% Cottonwood (*Populus fremontii*), and 2.8% Willow (*Salix exigua*). There are 2304 shrubs/ha (933/acre), of which 18.7% are Burrobush, 10.5% are Brittlebush, 9.9% are Indigo-bush (*Dalea schottii*), 9.5% are Desert Trumpet (*Eriogonum inflatum*), 8.8% are Arrowweed, 6.3% are Creosotebush, 5.6% are Goldenbush (*Haplopappus acradeniis*), 4.8% are Sweetbush (*Bebbia juncea*) and less than 4% each of 21 other species. There are 675 trees/ha (274/acre), of which 38.9% are Fan Palm, 30.8% Willow, 27.5% Tamarisk, and 2.8% Cottonwood. Nomenclature follows P.A. Munz, *A Flora of Southern California* (1974). **Elevation:** Wash: 530-600 ft (159 m-180 m), bench: 600-700 ft (180 m-210 m). **Edge:** The plot fills the width of Pushawalla Canyon including the upper bench (part of the former streambed) and the lower wash where the present spring and palm oasis are located. Creosotebush scrub is found on the N, E, and W sides while the S is a continuation of another Fan Palm oasis. **Topography:** Major canyon wash and adjacent upper benches; nearest mountain slopes form the Pushawalla Canyon on the E and W. **Water:** There is a major all-year seep spring in the Pushawalla Palms oasis. **Weather:** Temperatures during the study period ranged from 45° to 62°F with a daily mean of 52°F. No precipitation was recorded. **Coverage:** Jan. 23, 26-27; Feb. 1-3, 7, 12, 14. Total: 10 trips, 2 from 1700 to 2130 and 8 between 0650 and 1145. The night trips averaged 240 min each and the day trips 194 min each. Total man hours: 34. **Count:** House Finch, 33 (326, 132); Yellow-rumped Warbler, 16 (158, 64); W. Bluebird, 12 (119, 48); White-crowned Sparrow, 12; Starling, 11 (109, 44); Ruby-crowned Kinglet, 7 (69, 28); Cedar Waxwing, 6 (59, 24); Chipping Sparrow, 5 (49, 20); Lesser Goldfinch, 4 (40, 16); Rock Wren, 3 (30, 12); Am. Robin, 3; Gambel's Quail, 2 (20, 8); White-throated Swift, 2; Verdin, 2; Cactus Wren, 2; Phainopepla, 2; Turkey Vulture, 1 (10, 4); Snow Goose, 1; Com. Raven, 1; Bewick's Wren, 1; Black-tailed Gnatcatcher, 1; Orange-crowned Warbler, 1; Am. Goldfinch, 1; Brewer's Sparrow, 1; Sharp-shinned Hawk, +; Cooper's Hawk, +; Red-tailed Hawk, +; Prairie Falcon, +; Am. Kestrel, +; Killdeer, +; Mourning Dove, +; Screech Owl, +; Ladder-backed Woodpecker, +; Say's Phoebe, +; Mockingbird, +; Dark-eyed Junco, +; Rufous-crowned Sparrow, +. **Average Total:** 130 birds (1285/km², 520/100 acres). **Remarks:** Species total, 37. Most birds utilize both plant communities during the day. There are heavy concentrations of birds in the oasis community during the early morning hours while dispersion of many to the Creosotebush scrub community usually takes place during the mid-morning. The spring at Pushawalla Palms has surface flow all year round. Raptors appear to be fairly abundant. The mammal population either is not numerous or the temperatures in this area at this time of year preclude very much activity. I wish to thank Paul Romero for assistance. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — RICHARD W. KOOPMANN, 45-421 Sunset Lane #2, Palm Desert, CA 92260.

49. DESERT RIPARIAN WILLOWS. — **Location:** California, Inyo and Kern Counties, Sand Canyon, in southern most extension of the Sierra Nevada, 12 mi N on Hwy 14 from intersection of State 178 and 14, then 3.5 mi W on Brown Rd.; from center of Sec. 7, T25S, R38E, the plot extends up the canyon following the main stream approximately 2.3 km; Little Lake Quadrangle 1954, USGS; 35°47'N, 117°56'W. **Continuity:** New (BBC, 1977). **Size:** 2.3 ha = 5.68 acres. **Description of Area:** See AB 32:85-86 (1978). Canyon bottom with constant running stream. Three intermittent streams and many gullies fed the stream after rains. **Weather:** Daytime temperatures ranged from 40° to 75°F. Record rains cancelled many days of field work in January and February. **Coverage:** Jan. 21-22, 27; Feb. 18-20; Mar. 11-12. Total, 8 trips between 0630 and 1030 (PST). Total man-hours: 32. **Count:** Ruby-crowned Kinglet, 21 (914, 370); Scrub Jay, 4 (174, 70); Dark-eyed Junco, 4; Bewick's Wren, 2 (87, 35); Am. Robin, 1 (44, 18); Hermit Thrush, 1; Brown Towhee, 1; Rufous-sided Towhee, 1; Long-eared Owl, +; Com. Flicker, +; Yellow-rumped Warbler, +; White-crowned Sparrow, +; Golden-crowned Sparrow, +. **Average Total:** 35 birds (1523/km², 616/100 acres). **Remarks:** Thirteen species. High density figures are to some extent an artifact of the sampling technique. While the area of willow habitat is only 2.3 hectares, many birds foraging in the willows use adjacent habitats extensively. Thus the actual area of all habitats used by the birds recorded in the willows is probably 10 or 20 times greater than the area of pure willows. The total number of species observed on this area was surprisingly low. Perhaps the total absence of foliage precludes most species' utilization of this habitat. Kinglets, on the other hand, were extremely common. Flooding caused by the heavy winter rains obliterated the understory of grasses and herbs, almost certainly reducing bird diversity. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — CHARLES F. DOCK, 1164 Adams Blvd., Los Angeles, CA 90007.

Counts 50 through 57 were taken in several of the habitats found in the Coso Geothermal Study Area, a 126 sq. mi. parcel of land, located in the northwestern Mojave Desert in southwestern Inyo County, California. Interest in this area has been generated by the possibility of the development of geothermal power. This study was funded by the Bureau of Land Management, Bakersfield District, and accomplished with the cooperation of the Naval Command at the China Lake Naval Weapons Center.

50. CREOSOTE BUSH SCRUB ON SOUTHERN SIERRA ALLUVIUM. — **Location:** California; 12 mi N of Little Lake, Inyo Co., ¼ mi W of US 395, just N of Johnson Canyon. S15, T21S, R37E, Haiwee Reservoir Quadrangle, USGS. **Continuity:** New. **Size:** 25.5 ha = 63 acres (rectangular, 850 × 300 m, paced). **Description of Area:** The study plot is on an alluvial fan at the base of the eastern escarpment of the Sierra Nevada Mountains. Terrain is rocky. A barbed wire fence runs across the plot N-S about 250 m from the east end. Four 100-point pace transects and two 2

× 100 m transects were utilized to estimate the composition of perennial plants and substratum. The substratum was composed of 49.5% small rock (<5 cm), 21.2% litter, 20.5% bare ground, 5.3% large rock (>5 cm), and 3.5% shrub stems. The shrub cover of 23% was made up of 27.2% Creosotebush (*Larrea tridentata*), 27.2% Hopsage (*Grayia spinosa*), 19.6% Cooper Goldenbush (*Haplopappus cooperi*), 15.2% Burro Bush (*Ambrosia dumosa*), 3.3% California Buckwheat (*Eriogonum fasciculatum* ssp. *poliofolium*), 2.2% Winter Fat (*Eurotia lanata*), 2.2% Goldenhead (*Acamptopappus* sp.), and 1.1% each of Bladdersage (*Salazaria mexicana*), Anderson Thornbush (*Lyrium andersonii*), and dead perennials. There are 10,025 shrubs/ha (4057/acre) of which 27.5% are Cooper Goldenbush, 21.3% Burro Bush, 17.3% Hopsage, 8.2% dead perennials, 7.5% Creosotebush, 6.8% California Buckwheat, 4.7% Goldenhead, 2.7% Winter Fat, 1% Bladdersage, 1% Desert Aster (*Machaeranthera tortifolia*), 0.5% each of Nevada Joint Fir (*Ephedra nevadensis*), Anderson Thornbush, and Blackbush (*Coleogyne ramosissima*), 0.3% Cheesebush (*Hymenoclea salsola*), and 0.2% Squirrel-tail (*Sitanion hystrix*). Perennial plants present on the plot in smaller numbers were Beavertail Cactus (*Opuntia basilaris*), Mohave Prickly-pear (*O. erinacea* var. *erinacea*), and Cottonthorn (*Tetradymia spinosa*). Sprouting annual plants included *Amsinckia tessellata*, *Calochortus kennedyi*, *Delphinium* sp., and *Phacelia* sp. **Topography:** Elevation, 3800-4200 ft. Plot slopes moderately to the E. **Edge:** The S side is adjacent to Johnson Canyon wash, the other 3 sides have habitat continuous with that of the plot. The Sierra rise steeply to the W above the alluvium, and Rose Valley stretches E. **Weather:** Very cold, with a chill wind on 3 trips. Temperatures during the study ranged from 28° to 70° F with an average of 48.2°F at China Lake Naval Air Facility at 2229 ft. Measurable precipitation on 15 days and a total rainfall of 5.24 in. was recorded. **Coverage:** Jan. 19-20, 27-30; Feb. 34. Eight trips, averaging 120 min between 0745 and 1600; 4 completed before 1145. **Count:** Sage Sparrow, 12 (47, 19); Piñon Jay, 9 (35, 14), Com. Raven, 1 (4, 2); Rock Wren, 1; Loggerhead Shrike, 1; Cooper's Hawk, +; Marsh Hawk, +; Com. Flicker, +; Horned Lark, +; Bewick's Wren, +; House Finch, +. **Average Total:** 24 birds (94/km², 38/100 acres). **Remarks:** Sage Sparrows and a single Rock Wren were seen on all trips. A Loggerhead Shrike was frequently present, and ravens were often overhead. The Piñon Jays were seen once, a single flock of about 75 birds. Many woodrat nests were on and around large boulders. Male Sage Sparrows were establishing breeding territories by late January. This study was supported by the U.S. Bureau of Land Management, Bakersfield District. — RICHARD L. ZEMBAL, BARBARA W. MASSEY, and THOMAS E. LaROCQUE, Dept. of Biology, California State Univ., Long Beach, CA 90840.

51. SALT BUSH SCRUB. — **Location:** California; Inyo Co., 1 mi E of US 395 (Coso Junction), 0.4 mi S of Coso Rd. on a dirt road along a powerline, and 150 m W of powerline road. S6, T22S, R38E, and S1, T22S, R37E, Haiwee Reservoir Quadrangle, USGS. **Continuity:** New. **Size:** 25.5 ha = 63 acres (rec-

tangular 300 × 850 m, paced) **Description of Area:** Valley floor (Rose Valley) A mudflat area (approx. 7 ha) bounded on 2 sides by moderate knolls that extend beyond the width of the study plot. Two shallow ditches within the mudflat drain the surrounding habitat. Water present in these ditches throughout the study. Four 100-point pace transects and two 2 × 100 m transects were utilized to estimate the composition of perennial plants and substratum. The substratum was composed of 57% bare ground, 28.5% litter, 10.3% small rock (<5 cm) and 4.3% shrub stems. The shrub cover of 20.8% was made up of 61.4% Cattle Spinach (*Atriplex polycarpa*), 15.7% dead perennials, 13.3% Shadscale (*A. confertifolia*), 4.8% Bud Sagebrush (*Artemisia spinescens*), 2.4% Cheesebush (*Hymenoclea salsola*), 1.2% Hopsage (*Grayia spinosa*), and 1.2% Winter Fat (*Eurotia lanata*). There are 9225 shrubs/ha (3733/acre) of which 39.5% are Cattle Spinach, 23.8% dead perennials, 21.8% Shadscale, 5.5% Bud Sagebrush, 4% Winter Fat, 3.7% Goldenhead (*Acamptopappus* sp.), 1% Cottonthorn (*Tetradymia spinosa*), and less than 1% each of Hopsage and Indian Ricegrass (*Oryzopsis hymenoides*). The perennial vegetation of the eastern 2/3 of the plot is a low-growing cover of small shrubs composed mostly of dominant Cattle Spinach, subdominant Shadscale and common Bud Sagebrush. Cattle Spinach and Shadscale are codominant on the western 1/3 of the plot and the vegetation here is comprised of appreciably larger shrubs and manifests a greater species diversity. Perennials present in small numbers but not encountered in the transects were Burro Bush (*Ambrosia dumosa*), Silver Cholla (*Opuntia echinocarpa*), and Beavertail Cactus (*O. basilaris*). Annual plants (mostly sprouting) included *Amsinckia tessellata*, *Astragalus* sp., *Camissonia* sp., *Eriogonum* sp., *Salsola iberica*, and *Sphaeralcea ambigua* **Topography:** Elevation, 3380 ft. Gently rolling terrain. **Edge:** All 4 sides bounded by similar habitat. **Food:** *Atriplex* spp. were in heavy seed. Invertebrates were present in ditches and on the mudflat. **Water:** Shallow ponds after winter rains. **Weather:** Temperatures during the study ranged from 28° to 70°F with an average temperature of 48.2°F (at the China Lake Naval Air Facility at 2229 ft). Measurable precipitation on 15 days and a total rainfall of 5.24 in. was recorded. **Coverage:** Jan. 19-20, 23, 27-29; Feb. 3-4. Eight trips averaging 135 min between 0730 and 1615, 4 completed before 1030. **Count:** Sage Sparrow, 94 (369, 149); Horned Lark, 48 (188, 76), White-crowned Sparrow, 31 (122, 49); House Finch, 12 (47, 19); Savannah Sparrow, 11 (43, 17); W. Meadowlark, 4 (16, 6); Loggerhead Shrike, 1 (4, 2); Red-tailed Hawk, +; Marsh Hawk, +; Com. Raven, +; Le Conte's Thrasher, +; Sage Thrasher, +; Lesser Goldfinch, +. **Average Total:** 201 birds (788/km², 319/100 acres). **Remarks:** Sage Sparrows and Horned Larks were seen on every trip, often in large flocks. Smaller flocks of White-crowned Sparrows, Savannah Sparrows and House Finches, and a few W. Meadowlarks were seen on most trips. A Loggerhead Shrike was apparently in residence. Birds foraged in and around the puddles and also bathed in them. Effects of grazing (probably by burros) was evident on the vegetation. Large numbers of ravens (often several hundred) flew over the plot just before dusk on their way to roost on

the powerlines along U S 395 This study was supported by the U.S. Bureau of Land Management, Bakersfield District. — **RICHARD L. ZEMBAL, BARBARA W. MASSEY, and THOMAS E. LaROCQUE, Dept. of Biology, California State Univ., Long Beach, CA 90840.**

52. CREOSOTEBUSH SCRUB. — Location: California; Inyo Co., 50 m S of Coso Rd., 3.9 mi E of junction of Coso Rd. and US 395. The plot lies mostly in the NW corner of S4 and NE corner of S5, T22S, R38E, Haiwee Reservoir Quadrangle, USGS. **Continuity:** New. **Size:** 25.5 ha = 63 acres (rectangular, 850 × 300 m, paced). **Description of Area:** Boulder-strewn alluvial fan with a wash down center of EW (long) axis. Decomposed granite substrate. Evenly spaced Burro Bush (*Ambrosia dumosa*) and Creosotebush (*Larrea tridentata*) shrubs. Four 100-point pace transects and two 2 × 100 m transects were utilized to estimate the composition of perennial plants and substratum. The substratum was composed of 74.2% small rock (<5 cm), 15.7% litter, 3% large rock (>5 cm), 2.3 bare ground, and 4.8 shrub stems. The shrubcover of 15.8% was made up of 49.2% Burro Bush, 25.4% Creosotebush, 7.9% Hopsage (*Grayia spinosa*), 6.3% Cheesebush (*Hymenoclea salsola*), 4.8% dead perennials, 4.7% Cattle Spinach (*Atriplex polycarpa*) and 1.6% California Buckwheat (*Eriogonum fasciculatum* ssp. *polifolium*). There are 8125 shrubs/ha (3288/acre) of which 57% are Burro Bush, 13% dead perennials, 10.3% Creosotebush, 5.7% Cattle Spinach, 4.8% Cheesebush, 4.3% Hopsage, 0.8% Terete-leaved Rabbitbrush (*Chrysothamnus teretifolius*), 0.8% Fremont Dalea (*Dalea fremontii*), 0.8% Nevada Joint Fir (*Ephedra nevadensis*), 0.8% Bladdersage (*Salazaria mexicana*), 0.5% California Buckwheat, 0.5% Cottonthorn (*Tetradymia spinosa*), and 0.3% each of Anderson Thornbush (*Lycium andersonii*), Desert Aster (*Machaeranthera tortifolia*), Wishbone Bush (*Mirabilis bigelovii*), and Beavertail Cactus (*Opuntia basilaris*). Perennial plants present on the plot in smaller numbers were Cottontop Cactus (*Echinocactus polycephalus*), Peachthorn (*L. cooperi*), and Desert-straw (*Stephanomeria pauciflora*). Annual plants (mostly sprouting) included *Amsinckia tessellata*, *Calochortus kennedyi*, *Chorizanthe rigida*, *Erodium cicutarium*, *Eriogonum inflatum* (dried), and species of *Camissonia*, *Eriogonum*, and *Phacelia*. **Topography:** Elevation, 3820 ft at NE end, sloping gradually to 3700 ft at SW end. **Edge:** Alluvial fan vegetated with Creosotebush scrub was continuous on all sides of plot. **Weather:** Clear on all trips; cold, strong winds on 3 trips. Temperatures during the study period ranged from 28° to 70°F at China Lake Naval Air Facility at 2229 ft). Measurable precipitation fell on 15 days, total rainfall was 5.24 in. **Coverage:** Jan. 19-20, 23, 27-29; Feb. 3, 6. Total, 8 trips averaging 104 min. **Count:** Sage Sparrow, 12 (47, 19); Horned Lark, 6 (24, 10); Rock Wren, 2 (8, 3); Le Conte's Thrasher, 1 (4, 2); Marsh Hawk, +; Prairie Falcon, +; Chukar, +; Bewick's Wren, +; Sage Thrasher, +; Loggerhead Shrike, +. **Average Total:** 21 birds (82/km², 33/100 acres). **Remarks:** Two pairs of Le Conte's Thrashers were probably in residence on the plot. Rock Wrens were noted in the same sites along the wash on each trip. A Prairie Falcon was flushed from the

wash on one occasion Ravens were noted overhead on 4 trips, usually 1 or 2 only This study was supported by the U.S. Bureau of Land Management, Bakersfield District — **RICHARD L. ZEMBAL, BARBARA W. MASSEY, and THOMAS E. LaROCQUE, Dept. of Biology, California State Univ., Long Beach, CA 90840.**

53. JOSHUA TREE WOODLAND. — Location: California; Inyo Co., 3.9 mi E on Coso Rd. from U.S. 395, then 4.6 mi N to end of old mine road; S10 & 11, T21S, R38E; Haiwee Reservoir Quadrangle, USGS. **Continuity:** New. **Size:** 26.25 ha = 64.9 acres; rectangular 1050 × 250 m, paced. **Description of Area:** High desert valley lying NE-SW between rocky hills. Joshua Trees (*Yucca brevifolia*) evenly spaced throughout. Four 100-point pace transects and two 2 × 100 m transects were utilized to estimate composition of perennial plants and substratum. The substratum was composed of 66.7% small rock (<5 cm), 2.5% bare ground, 28% litter, and 2.5% shrub stems. The perennial plant cover of 29.3% was made up of 29.9% Hopsage (*Grayia spinosa*), 24.8% Cheesebush (*Hymenoclea salsola*), 13.7% Bladdersage (*Salazaria mexicana*), 10.2% Joshua Tree, 9.4% Cooper Goldenbush (*Haplopappus cooperi*), 6.0% Peachthorn (*Lycium cooperi*), 2.6% Mountain Joint Fir (*Ephedra viridis*), 1.7% Goldenhead (*Acamptopappus* sp.), and 1.7% Silver Cholla (*Opuntia echinocarpa*) There are 10,525 shrubs/ha (4259/acre) of which 34.8% are Cheesebush, 25.8% Hopsage, 9.5% Cooper Goldenbush, 8.8% Bladdersage, 5% dead perennials, 4% Goldenhead, 2.8% Joshua Tree, 2.8% Peachthorn, 2.5% Mountain Joint Fir, 2% Silver Cholla, 1.3% Wishbone Bush (*Mirabilis bigelovii*), and less than 1% each of Matchweed (*Gutierrezia sorothrae*) and Cottonthorn (*Tetradymia spinosa*). Also present in small numbers but not encountered in the transects were Wingscale (*Atriplex canescens*), Terete-leaved Rabbitbrush (*Chrysothamnus teretifolius*), California Buckwheat (*Eriogonum fasciculatum* ssp. *polifolium*), Winter Fat (*Eurotia lanata*), Rock Goldenbush (*Haplopappus cuneatus*), and Beavertail Cactus (*O. basilaris*). Two perennial grasses were common, Squirreltail (*Sitanion hystrix*) and Needlegrass (*Stipa speciosa*). Annual plants (mostly sprouting) included (*Amsinckia tessellata*, *Eriastrum eremicum*, *Salvia columbariae*, *Stanleya pinnata*, and species of *Astragalus*, *Camissonia*, *Castilleja*, *Chorizanthe*, *Eriogonum*, *Lepidium*, and *Phacelia*) **Topography:** Elevation, 5040 to 5200 ft, gently rising to N and E from low point at SE corner **Edge:** Bordered on 2 long axes by 200 ft rocky ridges; at both ends, Joshua Tree woodland is continuous. **Weather:** Clear on 4 trips, hazy or with broken clouds on 4 trips. Temperatures during the study period ranged from 28° to 70°F, average temperature was 48.2°F (at China Lake Naval Air Facility at 2229 ft) Measurable precipitation fell on 15 days; total rainfall was 5.24 in. **Coverage:** Jan. 23, 27, 30-31; Feb. 3, 6-7, 19. Eight trips averaging 167 min between 0610 and 1715; 5 trips completed before 1115. **Count:** Sage Sparrow, 16 (61, 25), House Finch, 4 (15, 6); Horned Lark, 3 (11, 5), Cactus Wren, 2 (8, 3); Rock Wren, 2; Chukar, 1 (4, 2); Com. Flicker, 1; Ladder-backed Woodpecker, 1; Bewick's Wren, 1; Logger-

head Shrike, 1, Black-throated Sparrow, 1, Dark-eyed Junco, 1, White-crowned Sparrow, 1, Red-tailed Hawk, +; Golden Eagle, +; Roadrunner, +; Great Horned Owl, +; Long-eared Owl, +; Black-billed Magpie +; Piñon Jay, +; Cañon Wren, +. **Average Total:** 35 birds (133/km², 54/100 acres). **Remarks:** A pair of Ladder-backed Woodpeckers was seen on most trips. A Golden Eagle flew onto plot and perched on a Joshua Tree for several minutes. Ravens flew over regularly, in small numbers. Burros and cattle grazed the plot and bobcat tracks were seen. This study was supported by the U.S. Bureau of Land Management, Bakersfield District. — **RICHARD L. ZEMBAL, BARBARA W. MASSEY, and THOMAS LaROCQUE, Dept. of Biology, California State Univ., Long Beach, CA 90840.**

54. HIGH DESERT SPRING. — **Location:** California; Inyo Co., 5.5 mi N of Coso Hot Springs by rough dirt road, within the boundaries of China Lake Naval Weapons Center. S10 and 15, T21S, R39E, Haiwee Reservoir Quadrangle, USGS. **Continuity:** New. **Size:** 5.5 ha = 13.6 acres (irregular shape, 100 × 550 m, paced). **Description of Area:** High-desert spring in a steep-sided canyon. A dense and nearly continuous belt of Arroyo Willows (*Salix lasiolepis* var. *lasiolepis*) runs the length of the plot in the canyon bottom with a maximum breadth of approximately 50 ft. Maximum willow canopy height 22 ft with an average height of 10-12 ft. Other perennials common in the canyon bottom were Scale-broom (*Lepidospartum squamatum*) and Rubber Rabbitbrush (*Chrysothamnus nauseosus* ssp. *hololeucus*) with occasional Lupine (*Lupinus excubitus* var. *excubitus*), brickellia (*Brickellia* spp. - 2 spp.), Horehound (*Marrubium vulgare*), and Wingscale (*Atriplex canescens*). Less common perennials included milkweed (*Asclepias* sp.), sagebrush (*Artemisia* sp.), baccharis (*Baccharis* sp.), and Sand-Wash Groundsel (*Senecio douglasii* var. *monoensis*). An aquatic herb (*Rorippa* sp.) was found growing in several pools. Common perennial plants of the canyon slopes were Cattle Spinach (*Atriplex polycarpa*), Terete-leaved Rabbitbrush (*Chrysothamnus teretifolius*), and Cheesebush (*Hymenoclea salsola*), with occasional Peachthorn (*Lycium cooperi*), Hopsage (*Grayia spinosa*), Wingscale, Mountain Joint Fir (*Ephedra viridis*), buckwheat (*Eriogonum* sp.), and Rubber Rabbitbrush. Less abundant perennial plants included Cooper Goldenbush (*Haplopappus cooperi*), Cottonthorn (*Tetradymia spinosa*), Bladdersage (*Salazaria mexicana*), and Encelia (*Encelia virginensis* ssp. *actoni*). **Topography:** Elevation, 4680 to 4800 ft. **Edge:** Rocky hills of volcanic origin rise steeply on both sides of the canyon; at N (upper) end, above the willow belt, the canyon contains desert wash vegetation; below the willows the canyon broadens into a wide desert wash. **Water:** Year-round spring with standing pools in the dry season (summer) and a full, fast-flowing stream in the wet season (winter). **Weather:** Clear on 8 trips, overcast on 2. Temperatures during the study period ranged from 28° to 70°F with an average temperature of 48.2° (at China Lake Naval Air Facility at 2229 ft). Measurable precipitation fell on 15 days; total rainfall was 5.24 in. **Coverage:** Jan. 21 (2), 22, 28-29; Feb.

4, 6, 11-12, 19 Ten trips averaging 140 min between 0715 and 1740, 5 completed before 1100. **Count:** Rufous-sided Towhee, 3 (55, 22); Rock Wren, 2 (36, 15); Ruby-crowned Kinglet, 2; Cooper's Hawk, 1 (18, 7); Chukar, 1; Long-eared Owl, 1; Bewick's Wren, 1; Varied Thrush, 1; Sage Sparrow, 1; Dark-eyed Junco, 1; White-crowned Sparrow, 1; Red-tailed Hawk, +; Prairie Falcon, +; Am. Kestrel, +; Com. Snipe, +; Com. Flicker (Red-shafted and Gilded), +; Say's Phoebe, +; Am. Robin, +; Hermit Thrush, +; Black-throated Sparrow, +; Song Sparrow, +. **Average Total:** 15 birds (273/km², 110/100 acres). **Remarks:** Small passerines were extremely secretive and few in number. A ♀ Cooper's Hawk, present on most trips, presumably influenced their occurrence and behavior. A Com. Flicker, (Gilded race), was seen on 3 trips, well N of its recorded range in the state. Four Long-eared Owls roosted several nights in the willows. A small flock of Varied Thrushes arrived after a heavy storm in the Sierra, and stayed a few days. Ravens flew over the plot regularly, moving N in the early morning and S before dusk, with up to 70 in the late afternoon flocks. A flock of 36 Snow Geese was sighted overhead on one trip. Burros, cattle, and bobcats all used the spring. Vegetation was heavily grazed. This study was supported by the U.S. Bureau of Land Management, Bakersfield District. We are grateful to the personnel at China Lake Naval Weapons Center for their cooperation. — **RICHARD L. ZEMBAL, BARBARA W. MASSEY, and THOMAS E. LaROCQUE, Dept. of Biology, California State Univ., Long Beach, CA 90840.**

55. DESERT SCRUB. — **Location:** California; Inyo Co., 100 m SW of Haiwee Spring. Spring, within the boundaries of China Lake Naval Weapons Center, S15, T21S, R39E, Haiwee Reservoir Quadrangle, USGS. **Continuity:** New. **Size:** 25.5 ha = 63 acres (rectangular, 850 × 300 m, paced). **Description of Area:** High desert slope. Three washes run W-E through the plot, 1 at the sound end and 2 on the north. A jeep trail runs N-S just outside the east boundary. Four 100-point pace transects and two 2 × 100 m transects were utilized to estimate the composition of perennial plants and substratum. The substratum was composed of 63.2% small rock (<5 cm), 20% litter, 6.7% bare ground, 6.3% large rock (>5 cm), and 3.8% shrub stems. The shrub cover of 16.8% was made up of 32.8% Hopsage (*Grayia spinosa*), 19.4% Cheesebush (*Hymenoclea salsola*), 16.4% Bladdersage (*Salazaria mexicana*), 11.9% Cooper Goldenbush (*Haplopappus cooperi*), 9% California Buckwheat (*Eriogonum fasciculatum* ssp. *poliofolium*), 4.5% Peachthorn (*Lycium cooperi*), 4.5% Mountain Joint Fir (*Ephedra viridis*), and 1.5% Linear-Leaved Goldenbush (*Haplopappus linearifolius*). There are 17,325 shrubs/ha (7011/acre) (many of the shrubs counted were extremely small), of which 25.8% were Cheesebush, 25.3% Cooper Goldenbush, 15.3% Hopsage, 11.5% Bladdersage, 8.5% California Buckwheat, 5.8% dead perennials, 4% Mountain Joint Fir, 2% Peachthorn, 1% Linear-Leaved Goldenbush, and less than 1% each of Terete-leaved Rabbitbrush (*Chrysothamnus teretifolius*), Winter Fat (*Eurotia lanata*), and Beavertail Cactus (*Opuntia basilaris*). Perennial plants present

on the plot in small numbers but not encountered in the transects were goldenhead (*Acamptopappus* sp.), Wingscale (*Atriplex canescens*), Fremont Dalea (*Dalea fremontii*), Matchweed (*Gutierrezia sarothrae*), Scale-broom (*Lepidospartum squamatum*), Silver Cholla (*Opuntia echinocarpa*), and Cottonthorn (*Tetradymia spinosa*). Sprouting annual plants included *Amsinckia tessellata*, *Calochortus kennedyi*, *Erodium cicutarium*, *Eriogonum inflatum* (dried), *Salvia columbariae*, *Sphaeralcea ambigua*, and species of *Camissonia*, *Chorizanthe*, *Eriogonum*, *Euphorbia*, *Lomatium*, and *Phacelia*. **Topography:** Elevation, 4600 to 4800 ft. The plot slopes moderately to the E. **Edge:** Similar habitat borders 3 sides. Steep hills rise just W of the plot. **Water:** Nearest water at Haiwee Spring, 100 m NE. **Weather:** Temperatures during the study period ranged from 28° to 70°F with an average temperature of 48.2°F (at the China Lake Naval Air Facility at 2229 ft). Measurable precipitation fell on 15 days and a total rainfall of 5.24 in. was recorded. **Coverage:** Jan 21 (2 trips), 22, 28-29; Feb. 4, 6, 12. Eight trips averaging 120 min between 0800 and 1700, 4 trips completed before 1120. **Count:** Sage Sparrow, 8 (31, 13); Horned Lark, 5 (20, 8), Chukar, 3 (12, 5); Rock Wren, 3; Mountain Bluebird, 1 (4, 2); House Finch, 1; Long-eared Owl, +; Com. Flicker, +; Sage Thrasher, +, Rufous-sided Towhee, +; Dark-eyed Junco, +. **Average Total:** 21 birds (82/km², 33/100 acres). **Remarks:** Sage Sparrows and Horned Larks were present on 6 trips. Rock Wrens were seen at the same spots on every trip. A flock of 9 Mountain Bluebirds foraged through the plot one day in mid-February after a heavy storm in the Sierra. Ravens were seen overhead on every visit. This study was supported by the U.S. Bureau of Land Management, Bakersfield District. We thank the personnel at China Lake Naval Weapons Center for their cooperation. — **RICHARD L. ZEMBAL, BARBARA W. MASSEY, and THOMAS LaROCQUE, Dept. of Biology, California State Univ., Long Beach, CA 90840.**

56. HIGH DESERT HOT SPRINGS. — **Location:** California; Inyo Co., 11.5 mi E of US 395 on Coso Rd., in the China Lake Naval Weapons Center. S4, T22S, R39E Haiwee Reservoir Quadrangle, USGS. **Continuity:** New. **Size:** 33.2 ha = 82.1 acres (diamond-shaped, with sides 800, 725, 540 and 870 m, paced). **Description of Area:** Southwestern portion of a high-desert flat, with several acres of steaming, sulphurous hot springs, ruins of 7 buildings, and several exploratory drill sites for geothermal wells. Eighty percent of the plot is virtually devoid of shrub cover. Substratum composition (from 4 Toe Point Transects) was 41.7% small rock (<5 cm), 31.5% litter (mostly live forbs and grasses), 23.5% bare ground, and 3.3% large rock (>5 cm) Sprouting forbs and grasses were abundant over much of the shrubless area. Common forbs were Filaree (*Erodium cicutarium*), Yellow Peppergrass (*Lepidium flavum*), Popcorn-flower (*Plagiobothrys* sp.), Forget-me-not (*Cryptantha* sp.), Desert Trumpet (*Eriogonum inflatum*) and Stiff-stemmed Comb-bur (*Pectocarya setosa*). Other herbs included Little Desert Trumpet (*Eriogonum trichopes*), lupine (*Lupinus* sp.), Evening Primrose (*Oenothera* sp.), Peppergrass (*Lepidium* sp.),

Sand-crest (*Calyptridium monandrum*), Pin-cushion (*Chaenactis* sp.), Phacelia (*Phacelia* sp.), Spurge (*Euphorbia* sp.), and Bird's Foot Trefoil (*Lotus* sp.). Common grasses were Fescue (*Festuca* sp.), and Bermuda Grass (*Cynodon dactylon*), with Grama Grass (*Bouteloua* sp.) and Schismus (*Schismus* sp.) also present. Shrub cover was confined to the N end of the plot with small amounts along the E and SW boundaries. Common shrubs were Wingscale (*Atriplex canescens*) and Cheese-bush (*Hymenoclea salsola*), with lesser numbers of Creosotebush (*Larrea tridentata*) and Fremont Dalea (*Dalea fremontii*), and sparse Silver Cholla (*Opuntia echinocarpa*). A single Tamarisk tree (*Tamarix* sp.) marks the N corner of the plot. **Topography:** Elevation, 3600 to 3640 ft mostly flat with a gentle downward slope to the N. **Edge:** Bounded on all sides by *Atriplex-Hymenoclea* association with the inclusion of Creosotebush on SW and SE. Rocky hills rise to W and S about 500 m from plot boundaries, on the N and E sides stretches a broad, flat, saltbush scrub covered valley floor. **Water:** Runoff from underground hot springs forms a short stream that terminates in a small pond, and also fills a cattle trough. **Weather:** Clear on 8 trips, overcast on 3. Temperatures during the study period ranged from 28° to 70° with an average temperature of 48.2° (at China Lake Naval Air Facility at 2229 ft). Measurable precipitation fell on 15 days; total rainfall was 5.24 in. **Coverage:** Jan. 21 (2), 22, 28-29; Feb. 4, 7, 12, 18-20. Total, 11 trips, averaging 163 min each, between 0700 and 1700; 7 completed before 1100. **Count:** Horned Lark, 25 (75, 30); White-crowned Sparrow, 12 (36, 15); Sage Sparrow, 7 (21, 9); Rock Wren, 5 (15, 6); Chukar, 4 (12, 5); House Finch, 4; Com. Flicker, 1 (3, 1); Ladder-backed Woodpecker, 1; Say's Phoebe, 1; Bewick's Wren, 1; Le Conte's Thrasher, 1; Loggerhead Shrike, 1; Black-throated Sparrow, 1; Red-tailed Hawk, +, Golden Eagle, +; Prairie Falcon, +; Am. Kestrel, +; Roadrunner, +; Barn Owl, +; Sage Thrasher, +; W. Bluebird, +; Ruby-crowned Kinglet, +; Starling, +; House Sparrow, +; W. Meadowlark, +; Red-winged Blackbird, +; Lesser Goldfinch, +; Rufous-sided Towhee, +. **Average Total:** 64 birds (193/km², 78/100 acres). **Remarks:** The buildings (ruins of a former resort) were roost sites for Com. Flicker, Say's Phoebe, Am. Kestrel, raven and both finches. Several contained old nests. Black-throated Sparrows were seen once, in a small flock. Many forage in the surrounding hills. Rock Wrens were noted in the same places on each trip. Permanent water attracts burros and cattle. Ravens flew over the plot regularly in small numbers. Coyotes were heard on several trips. This study was supported by the U.S. Bureau of Land Management, Bakersfield District. We are grateful to the personnel at China Lake Naval Weapons Center for their cooperation. — **RICHARD L. ZEMBAL, BARBARA W. MASSEY, and THOMAS E. LaROCQUE, Dept. of Biology, California State Univ., Long Beach, CA 90840.**

57. HIGH DESERT RESERVOIR AND SHORELINE. — **Location:** California; Inyo Co., 8 mi S of Coso Jct., on E side of US 395, across from the Little Lake Hotel. S8 and 17, T23S, R38E, Little Lake Quadrangle, USGS. **Continuity:** New. **Size:** 31.9 ha = 78.8 acres of

open water, 18.7 ha = 46.2 acres of grassy meadow (irregular shape, measured from a topography map with a polar planimeter). **Description of Area:** The E shore is bordered by a steep escarpment 160 ft high at the N end, diminishing to 80 ft at the S end. Marshes border the shoreline and meadows extend from both N and S shores. A 40 ft cliff borders the W shore. Perennial plants found growing mostly widely scattered in shallow water or along the water's edge included infrequent and scrubby Willows (*Salix* sp.), occasional stands of Cattail (*Typha* sp.), occasional Tamarisk (*Tamarix* sp.), and infrequently encountered small stands of Common Reed (*Phragmites australis*). Much of the immediate shoreline and most of the area between the S shore of Little Lake and the 2 ponds in the S meadows was covered in a dense growth of Saltgrass (*Distichlis spicata* var. *stricta*) with occasional stands of Yerba Mansa (*Anemopsis californica*). Shrub cover was sparse. The most common shrub was Shadscale (*Atriplex confertifolia*), with occasional Torrey Saltbush (*Atriplex torreyi*), and less common Cattle Spinach (*Atriplex polycarpa*), Sweet Bush (*Bebbia juncea*), and Rubber Rabbitbrush (*Chrysothamnus nauseosus* ssp. *hololeucus*). Russian Thistle (*Salsola iberica*) was common along the fence row and dirt road, and in other disturbed areas. **Topography:** Elevation, 3120 to 3200 ft, sloping very gradually to the S. **Weather:** Temperatures during the study period ranged from 28° to 70° with an average temperature of 48.2°F (at China Lake Naval Air Facility at 2229 ft). Measurable precipitation fell on 15 days and a total of 5.24 in. was recorded. **Coverage:** Jan. 18, 22, 27-31; Feb. 3, 6, 11, 18-19. Ten trips averaging 125 min between 0700 and 1800. Two were split trips, with the open water count one day and the shoreline (meadows) another. **Count** (open water): Canvasback, 317 (994, 402); Am. Coot, 166 (521, 211); Ruddy Duck, 159 (499, 202); Cinnamon Teal, 8 (25, 10); Green-winged Teal, 7 (22, 9); Pied-billed Grebe, 2 (6, 3); Eared Grebe, 1 (3, 1); Pintail, 1; Bufflehead, 1; Whistling Swan, +; Mallard, +; Com. Merganser, +; **Census** (grassy meadow): White-crowned Sparrow, 35 (187, 76); Brewer's Blackbird, 27 (144, 58); Starling, 18 (96, 39); Com. Raven, 2 (11, 4); Great Blue Heron, 1 (5, 2); Red-tailed Hawk, 1; Marsh Hawk, 1; Prairie Falcon, 1; White-throated Swift, 1; Long-billed Marsh Wren, 1; Rock Wren, 1; Red-winged Blackbird, 1; Song Sparrow, 1; Golden Eagle, +; Killdeer, +; Mourning Dove, +; Screech Owl, +; Great Horned Owl, +; Com. Flicker, +; Black Phoebe, +; Say's Phoebe, +; Steller's Jay, +; Varied Thrush, +; Hermit Thrush, +; Ruby-crowned Kinglet, +; Yellow-rumped Warbler, +; House Sparrow, +; W. Meadowlark, +; Sage Sparrow, +. **Average Totals:** Open water, 662 birds (2075/km², 840/100 acres); grassy meadow, 91 birds (487/km², 197/100 acres). **Remarks:** The hunting season ended in late January and both numbers of waterfowl and species diversity increased thereafter. A large flock of 500+ Canvasbacks arrived the last week of January and stayed. The marshes were hunting grounds for Marsh Hawks, and the cliffs were favored roosting sites for Red-tailed Hawks and Prairie Falcons. Ravens and Prairie Falcons were beginning courtship activity around the cliffs in early February. The riparian vegetation provided habitat for small

passerines not seen frequently in the surrounding desert, like Yellow-rumped Warbler, Long-billed Marsh Wren and Black Phoebe. Beaver and muskrat were seen swimming in the lake at dusk. This study was supported by the U.S. Bureau of Land Management, Bakersfield District. — **RICHARD L. ZEMBAL, BARBARA W. MASSEY, and THOMAS E. LaROCQUE, Dept. of Biology, California State Univ., Long Beach, CA 90840.**

58. BLUE PALOVERDE - IRONWOOD-SMOKETREE DESERT RIPARIAN WOODLAND, I. — **Location:** California, Imperial Co., Milpitas Wash, 1.5 - 2 mi W of State 78 on Milpitas Wash Rd.; BM 506, T10S, R21E, Palo Verde Mts. Quadrangle, USGS; 35°17'N, 114°48'W. **Continuity:** New. **Size:** 40 ha = 98.8 acres (rectangular along wash 1000 × 400 m surveyed and paced). **Description of Plot:** This major wash drains the Palo Verde Mountains to the N, the Black Hills to the NW, and the Chocolate Mountains to the W and SW; it empties into the Colorado River 5-6 mi E of the study site. Adjacent habitat is characterized by coarse desert pavement and locally variable stands of subshrubs, creosotebushes, and short microphyllous trees. **Edge:** Bounded on the E by a high-tension powerline corridor; a moderately used paved road parallels the N side of the wash. **Topography:** Nearly flat; elevation 490-510 ft (149-155 m); nearest peaks, 1353-1795 ft (412-547 m), are 2 - 3.5 mi to NNE. **Water:** The nearest permanent water is the Colorado River 5-6 mi E. **Weather:** Temperatures during the study period ranged from 39° to 75°F. Although little rain fell on count days, soil moisture was rather high through most of the study and herbaceous cover increased in February. Wide-spread storm fronts swept slowly across southern California from December through early March. Winds were variable: some days were calm; others had steady winds to 20 mph with gusts 25-35 mph. Winds were generally highest from late morning to late afternoon. **Coverage:** Dec. 15, 16; Jan. 7-9, 27-28; Feb. 16-19. Total, 11 days; 6 morning counts averaging 4.1 hours; 5 late afternoon counts averaging 2.6 hours. Densities reported are on the 6 a.m. counts. At least 1 hour per night for 5 nights was spent censusing owls and caprimulgids. **Count:** White-crowned Sparrow, 44 (110, 45); Phainopepla, 37 (93, 37); Brewer's Sparrow, 27 (68, 27); Verdin, 20 (50, 20); Ruby-crowned Kinglet, 12 (30, 12); Black-tailed Gnatcatcher, 10 (25, 10); Yellow-rumped Warbler, 10; House Finch, 9 (23, 9); Ladder-backed Woodpecker, 5 (13, 5); House Wren, 5; Mockingbird, 5; Chipping Sparrow, 5; Gambel's Quail, 4 (10, 4); Mountain Bluebird, 4; Say's Phoebe, 3 (8, 3); Cactus Wren, 3; Loggerhead Shrike, 3; Mourning Dove, 2 (5, 2); Screech Owl, 2; Am. Kestrel, 1 (3, 1); Great Horned Owl, 1; Com. (Red-shafted) Flicker, 1; Gila Woodpecker, 1; Ash-throated Flycatcher, 1; Gray Flycatcher, 1; Rock Wren, 1; Orange-crowned Warbler, 1; Black-throated Sparrow, 1; Sharp-shinned Hawk, +; Roadrunner, +; Costa's Hummingbird, +; Horned Lark, +; Sage Thrasher, +; Lesser Goldfinch, +; Lark Sparrow, +; Dark-eyed (Oregon) Junco, +. **Average Total:** 219 birds (548/km², 222/100 acres). **Remarks:** Total, 36 species. Winter visitors included: Costa's Hummingbird, Sage Thrasher, and Orange-crowned Warbler

observed 2 mornings in late winter, Sharp-shinned Hawk, Horned Lark, Lesser Goldfinch, Lark Sparrow, and Dark-eyed (Oregon) Junco seen 1 morning. Patches of annuals along the upper floodplain and near the wash supported 5 resident finch species. Densities of these finches roosting in the wash were greater than those foraging, since many birds left the wash to feed in adjacent habitat. Quail were scarce and towhees absent because of the removal of much brushy cover and suitable forage by devastating floods late last summer. At times this wash was heavily used by jeep and dune-buggy drivers who occasionally discharged firearms at wildlife. I thank Scott Hecker for field assistance. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — **CARL S. TOMOFF**, *Environmental Studies Program, Prescott Center College, Prescott, AZ 86301*.

59. BLUE PALOVERDE - IRONWOOD - SMOKETREE DESERT RIPARIAN WOODLAND, II. — **Location:** California; Imperial Co., Indian Wash, 12.5 mi N of US 1-8 and 12 mi S of State 78 on Ogilby Rd.; NE¼ Sec. 22, T14S, R20E, Ogilby Quadrangle, USGS; 32°56'N, 114°15'W. **Continuity:** New. **Size:** 25 ha = 61.7 acres (generally rectangular 900 m long × 250-300 m wide fitting contours of wash, surveyed and paced). **Description of Plot:** This major wash courses SW through open desert between Black Mountain to the N and the Cargo Muchacho Mountains to the SE; extensive Sand Hills rise 7-10 mi SW and W of the site. Neighboring flats are characterized by large expanses of coarse desert pavement, by widely scattered stunted creosote bushes, subshrubs, and succulents, and by thin strands of ironwood-ocotillo-lined washes. Some areas in this typical Colorado Desert region are devoid of woody vegetation. **Edge:** The quadrat is bounded on the SW by a frequently used paved highway (S34); a high-tension powerline corridor crosses the plot near the W end. Open desert surrounds the wash. **Topography:** Nearly flat; elevation 605-625 ft (184-191 m); closest slopes are 1-2 mi away with peaks, 1473-2089 ft (449-637 m), 2.5-3.5 mi SE. **Water:** The nearest permanent natural water is probably the Colorado River 21-22 mi. E of the site. **Weather:** Temperatures during the study period ranged from 38° to 76° F. Although little rain fell on count days, soil moisture was high through most of the study and herbaceous cover increased steadily through February. Widespread storm fronts swept slowly across southern California from December through early March. Winds were variable: some days were calm; others had steady winds to 20 mph with gusts 25-35 mph. Winds were generally highest from late morning to late afternoon. **Coverage:** Dec. 16-18; Jan. 8-9, 28; Feb. 16-19. Total, 10 days; 6 morning counts averaging 4.2 hours; 4 late afternoon counts averaging 3.5 hours. Densities reported are based on the 6 a.m. counts. At least 1 hour per night for 5 nights was spent censusing owls and caprimulgids. **Counts:** White-crowned Sparrow, 56 (224, 91); Phainopepla, 32 (128, 52); Verdin, 31 (124, 50); Black-tailed Gnatcatcher, 26 (104, 42); Gambel's Quail, 17 (68, 28); Green-tailed Towhee, 13 (52, 21); Ruby-crowned Kinglet, 10 (40, 16); House Wren, 8 (32, 13); Dark-eyed (Oregon)

Junco, 8, House Finch, 7 (28, 11), Crissal Thrasher, 6 (24, 10), Ladder-backed Woodpecker, 5 (20, 8); Rufous-sided Towhee, 5; Costa's Hummingbird, 4 (16, 6); Cactus Wren, 3 (12, 5); Mockingbird, 3; Loggerhead Shrike, 3; Mourning Dove, 2 (8, 3); Screech Owl, 2; Com. (Red-shafted) Flicker, 2; Say's Phoebe, 2; Yellow-rumped Warbler, 2; Black-throated Gray Warbler, 2; Roadrunner, 1 (4, 2); Gila Woodpecker, 1; Bewick's Wren, 1; Sage Thrasher, 1; Red-tailed Hawk, +; Cooper's Hawk, +; Am. Kestrel, +; Great Horned Owl, +; Ash-throated Flycatcher, +; Gray Flycatcher, +; Tree Swallow, +; Rock Wren, +; Solitary Vireo, +; Orange-crowned Warbler, +; Pine Siskin, +; Lesser Goldfinch, +; Sage Sparrow, +. **Average Total:** 253 birds (1013/km², 410/100 acres). **Remarks:** 40 species. Phainopepla and Mockingbirds, specialists on mistletoe (*Phoradendron*) berries, were intraspecifically territorial. The Gila Woodpecker and Sage Thrashers also fed on the berries but were occasionally displaced by Mockingbirds. Costa's Hummingbird nectared at flowers of thornbush (*Lycium*) and crucillo (*Condalia*); many species ate their fruits. Greater foliage volume accounts for higher densities of Verdins, wrens, gnatcatchers, and kinglets here than at Milpitas Wash (Study No. 58). Dense brush and weedy thickets provided cover and food for quail and towhees. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — **CARL S. TOMOFF**, *Environmental Studies Program, Prescott Center College, Prescott, AZ 86301*.

60. MESQUITE FOREST. — **Location:** California; Inyo Co., S end of Saline Valley near Salt Lake; 53.2 mi SE of Big Pine, along Saline Valley Rd.; just S of Salt Lake freshwater marsh, Sec. 26-27, T14S, R38E, New York Butte Quadrangle, USGS; 36°41'N, 117°50'W. **Continuity:** New. **Size:** 24.3 ha = 60 acres (approximately rectangular-oblong, 890 m long and a mean width of 273 m. Width varies from 123 m near the ends to 430 m near the middle) **Description of Plot:** A mesquite community, much of which is impenetrable, with various sized open areas ranging from no vegetation to densely covered with shrubs 2-5 ft high. This is part of a larger broken forest which borders Salt Lake. **Vegetation:** A quantitative survey of the vegetation gave the following results: Trees, 3 in. diameter and over, based on 6 circular samples 70.4/acre; total basal area, 21.6 ft²/acre. Species comprising the study plot (figures after each give number of trees/acre, relative density (%), relative dominance, frequency, in that sequence): Honey Mesquite (*Prosopis juliflora* var. *torreyana*) 61, 86, 72, 100; Screwbean Mesquite (*P. pubescens*) 10, 14, 28, 17. Trees by diameter size class (figures after each class give number of trees/acre, relative density (%), basal area in sq ft/acre, relative dominance): A (3-6 in.) 26, 36.3, 2.6, 11.8; B (6-9 in.) 34, 47.7, 10.1, 46.6; C (9-15 in.) 11, 16, 9, 41.6. Ground cover 0%; Canopy cover 78%; average canopy height 17 ft (range 6-25). Five 100 pace toe-point transects were also conducted to determine percent cover and species composition. The substratum is composed of 17.2% bare ground, 0.2% small rocks (<1/8 in.), 79% plant litter, and 3.6% shrub stems. The shrub canopy cover of 69.0% is composed of 95% Honey Mesquite, 3.2% Saltbush (*Atriplex*

polycarpa), 1.2% Sea Blite (*Suaeda torreyana*) and 0.6% Saltbush (*A. lentiformis*) Shrub composition is 80.2% Honey Mesquite, 10.4% Sea Blite, 5.6% Saltbush (*A. lentiformis*) and 3.8% Saltbush (*A. polycarpa*). Other perennial species occurring on the plot but not recorded in the vegetational analysis were Iodine Bush (*Allenrolfea occidentalis*) and Arrowweed (*Pluchea sericea*). **Elevation:** 1080 ft. **Edge:** The NW edge is bordered by a freshwater marsh; the NE by alkaline salt flats where the main cover is Iodine Bush; SE and SW by sparse Creosote community. **Topography:** A flat bordering an alkaline lake. **Water:** A freshwater marsh exists 150 m NW of the plot. **Weather:** Temperature varied from 38° to 67° F. during the census period. **Coverage:** Jan. 11-12, 21-26. Total: 8 trips, 6 between 0730 and 1100 and 2 between 1700 and 1900. Total man-hours: 28. **Counts:** Ruby-crowned Kinglet, 12 (49, 20); White-crowned Sparrow, 9 (37, 15); Sage Sparrow, 8 (33, 13); Bewick's Wren, 7 (29, 12); Sharp-shinned Hawk, 1 (4, 2); Great Horned Owl, 1, Com. Flicker, 1; Le Conte's Thrasher, 1, Rufous-sided Towhee, 1; Marsh Hawk, +, Say's Phoebe, +; Com. Raven, +; Rock Wren, +; Yellow-rumped (Myrtle) Warbler, +; Brewer's Blackbird, +. **Average Total:** 41 birds (169/km², 68/100 acres). **Remarks:** 15 species Mammals observed: Black-tailed Jackrabbit (*Lepus californicus*) 2, Coyote (*Canis latrans*) 6, Kangaroo Rat (*Dipodomys deserti*) tracks During the day 10-20 feral burros were observed in surrounding Creosote habitat and on the edges of the Mesquite forest. During the night these animals came to the freshwater marsh bordering the plot. Evidence that the burros are eating the thorny stems of Honey Mesquite was found throughout the forest! Mistletoe (*Phoradendron*) berries were present on Mesquite but apparently no bird species utilized this food source. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. Contribution No. 163, PRBO. — **ROBERT M. STEWART**, *Point Reyes Bird Observatory, 4990 Shoreline Highway, Stinson Beach, CA 94970*.

61. OCOTILLO - CHOLLA. — **Location:** California; Riverside Co., Santa Rosa Mtns., about 5.5 mi S of State 74/State 111 junction in Palm Desert. The study plot begins E of Hwy 74 in the NE ¼ Sec. 18, T6S, R6E, and extends into the SE ¼ Sec. 7, SW ¼ Sec. 8, and NW ¼ Sec. 17, T6S, R6E, Palm Desert Quadrangle, USGS; 33°40'N, 116°25'W. **Continuity:** New. **Size:** 16.2 ha = 40.0 acres, (rectangular 540 × 300m, measured). **Description of Plot:** Typical Ocotillo-Cholla subcommunity of Creosotebush Scrub community. **Vegetation:** The vegetation, mostly low shrubs, is quite diverse owing to the topography variation from ridges and deep arroyos with rocky or sandy washes at bottom. Five 100 point-pace transects were made to determine percent cover and species composition of perennial shrubs. The substratum was composed of 39.0% small rocks (<5 cm), 24.6% large rocks (>5 cm), 11.4% bare ground, 22.6% litter, and 2.4% shrub stems. The shrub cover of 13.8% was made up of 33.6% Brittlebush (*Encelia farinosa*), 23.2% Desert Trumpet (*Eriogonum inflatum*), 8.8% Fagonia (*Fagonia californica*), 6.6% Burrobush (*Ambrosia dumosa*), 4.4% Creosotebush (*Larrea triden-*

tata), 2.4% *Ocotillo* (*Fouquieria splendens*), 1.8% each of Buckhorn Cholla (*Opuntia acanthocarpa*), Jumping Cholla (*Q. bigelovii*), Indigo-bush (*Dalea schottii*), 1.6% each of Sage (*Salvia vaseyi*), and *Stephanomeria* (*Stephanomeria pauciflora*), 1.2% of each *Ditaxis* (*Ditaxis lanceolata*), and Small-seeded Sand Mat (*Euphorbia polycarpa*), 1.0% each of Wishbone Bush (*Mirabilis bigelovii*), and Sweetbush (*Bebbia juncea*), 0.8% each of Beavertail Cactus (*Q. basilaris*), Desert Lavender (*Hyptis emoryi*), and Arrowleaf (*Pleurocoronis plurisetata*), 0.6% each of Chuparosa (*Beloperone californica*), Century Plant (*Agave deserti*), Nevada Joint Fir (*Ephedra nevadensis*), Live-forever (*Dudleya saxosa*), and White Ratany (*Krameria grayi*), 0.4% each of Desert Fir (*Peucephyllum schottii*), Desert Bedstraw (*Galium stellatum*), Nipple Cactus (*Mammillaria dioica*), and Dalea (*Dalea mollis*), and 0.2% each of Rock Hibiscus (*Hibiscus denudatus*), Paper-bag Bush (*Salazaria mexicana*), Desert Mallow (*Sphaeralcea ambigua*), Little-leaved Ratany (*Krameria parvifolia*), and Barrel Cactus (*Echinocactus acanthodes*). Plant names are from Munz, *A California Flora, with the Supplement*, 1968. **Elevation:** 1600-1120 ft (488-341 m). **Edge:** The plot is bounded on all sides by Ocotillo-Cholla sub-community-type of Creosote Desert Shrub. **Topography:** Many steep slopes ending in rocky or sandy washes with general overall slope from SW to NE. **Water:** The nearest permanent water is in Palm Desert. A water tank 0.5 mi SW of the plot may provide permanent water. **Weather:** Temperatures during the study period range from 30° to 75°F. Several large rainstorms left 5.78 in. of precipitation. **Coverage:** Jan. 16, 21, 25, 28; Feb. 15, 17, 19, 25. Total, 8 trips, between 0645 and 1130, averaging 220 min each. **Count:** House Finch, 9 (56, 23); Black-throated Sparrow, 8 (49, 20); Rock Wren, 5 (31, 13); Yellow-rumped (Audubon's) Warbler, 5; Costa's Hummingbird, 3 (19, 8); Mourning Dove, 2 (12, 5); Ruby-crowned Kinglet, 2; Lesser Goldfinch, 2; Say's Phoebe, 1 (6, 3); Com. Raven, 1; Verdin, 1; Bewick's Wren, 1; Loggerhead Shrike, 1; Red-tailed Hawk, +; Roadrunner, +; Ladder-backed Woodpecker, +; Cactus Wren, +; Scott's Oriole, +. **Average Total:** 18 species, 41 birds (253/km², 103/100 acres). **Remarks:** Two evenings (Feb. 24, 25) were spent listening for goatsuckers and owls without success. However, large owl pellets that were not too old and contained *Neotoma* sp. bones and skull were found in one of the small caves, indicating the area has been used by one of the larger owls. Heavy rainfall, coming late December and February, triggered much growth in Ocotillo leaves. Nest-building activity by two pairs of Black-throated Sparrows, both in *Encelia farnosa*, was observed on Feb. 25. Black-tailed Jackrabbit (*Lepus californicus*), 1; wood rat (*Neotoma* sp.), 1; White-tailed Antelope Squirrel (*Ammospermophilus leucurus*), 3; and Side-blotched Lizards (*Uta stansburiana*), 6, were seen on the counts. I thank Ruth C. Yoder for assistance with vegetation transects, Oscar Clarke, botanist, and University of California/Riverside Herbarium for assistance with plant identification. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — BARBARA A. CARLSON, P.O. Box 1015, Upland, CA 91786.



62. TAMARISK - SALTBUSH. — **Location:** California; San Bernardino Co., Afton Canyon; 15 mi N, 17 mi E of Newberry. SE $\frac{1}{4}$ Sec. 18, T11N, R6E, Cave Mt. Quadrangle, USGS; 35°02'N, 116°23'W. **Continuity:** New (BBC 1977). **Size:** 18.5 ha = 45.7 acres, paced. **Description of Area:** See AB 32:106 (1978). Part of the floodplain of the Mojave River; now primarily dry ground but containing a few washes with marsh vegetation and standing water. The main channel of the Mojave River, a few hundred feet S, could easily reflood and rechannel the plot. **Weather:** [Not reported, See Study No. 67, Ed.] **Coverage:** Dec. 13, 25; Jan. 3, 20, 22; Feb. 7, 10, 15. Total, 8 trips, between 0630 and 1130, averaging 120 min each. **Count:** White-crowned Sparrow, 27 (146, 59); Gambel's Quail, 8 (43, 18); W. Meadowlark, 7 (38, 15); White-throated Swift, 2 (11, 4); Ruby-crowned Kinglet, 2; Red-tailed Hawk, 1 (5, 2); Com. Flicker, 1; Com. Raven, 1; Long-billed Marsh Wren, 1; House Finch, 1; Rufous-sided Towhee, 1; Savannah Sparrow, 1; Sharp-shinned Hawk, +; Cooper's Hawk, +; Marsh Hawk, +; Prairie Falcon, +; Am. Kestrel, +; Killdeer, +; Com. Snipe, +; Yellow-bellied Sapsucker, +; Say's Phoebe, +; Mountain Chickadee, +; Verdin, +; Rock Wren, +; Mockingbird, +; Am. Robin, +; Phainopepla, +; Loggerhead Shrike, +; Starling, +; Dark-eyed Junco, +; Lincoln's Sparrow, +. **Average Total:** 53 birds (287/km², 116/100 acres). **Remarks:** Species total, 31. All of the raptors except the Am. Kestrel roosted outside the plot but frequently foraged within it. At least 20 Long-eared Owls roosted just outside the plot and foraged nightly within it, although none was recorded on any of the counts. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — MICHAEL WEINSTEIN, 161 Val Verde, Solvang, CA 93463.

63. SALTBUSH - EUROTIA DESERT. — **Location:** California; San Bernardino Co.; Superior Dry Lake. Plot is situated 100 yards SE of Superior Dry Lake; NE border of plot is adjacent to road to Crutts Well. In the NE $\frac{1}{4}$ of Sec. 20, T31S, R46E, Mountain Quadrangle, USGS; 35°13'N, 117°4'W. **Continuity:** New. **Size:** 36 ha = 88.96 acres (square, 600 × 600 m, paced). **Description of Plot:** Low profile, diverse saltbush-Eurotia community at the edge of a dry lake. **Vegetation:** Five 100 toe-point transects were conducted to determine percent cover and species composition. The substratum is composed of 68.8% bare ground, 18% plant litter, 12.2% small rock (<5 cm), and 1% woody stems. The shrub canopy cover of 6.8% is composed of 35.3% Shadscale (*Atriplex confertifolia*), 29.4% Winterfat (*Eurotia lanata*), 23.5% *Atriplex polycarpa*, 5.9% plant litter, 2.9% Bud Sagebrush (*Artemisia spinescens*), and 2.9% Mojave Horsebrush (*Tetradymia stemolepis*). The shrub composition is 42.2% Shadscale, 36% Winterfat, 16.4% *Atriplex polycarpa*, 0.4% Burrobush (*Ambrosia dumosa*), 0.4% Bud Sagebrush, 0.4% *Astragalus* sp., 0.2% Anderson Thornbush (*Lycium andersonii*), 0.2% Desert Alyssum (*Lepidium fremontii*), 0.2% Mojave

Horsebrush. Annual species recorded in transects were Storks-bill (*Erodium cicutarium*), Saucerplant (*Oxytheca perfoliata*), and *Lotus* sp. Incidental perennial species seen on plot but not recorded on transects were Desert Mallow (*Sphaeralcea ambigua*), Spiny Hop-sage (*Grayia spinosa*), and Princes Plume (*Stanleya pinnata*). **Edge:** Similar habitat on all sides. Superior Dry Lake begins 100 yards off the NW border. **Topography:** Slightly sloping (aspect NW); the nearest mountain slope is a 4140 ft peak 3 mi S of the plot. **Elevation,** 3010 ft. **Water:** The nearest water at this time is Superior Lake 100 yards NW. **Weather:** Skies clear on 6 days, cloudy on 2; light wind on 2 days, no wind on 6; temperature ranged through study period from 18° to 78°F. Rain-fall for the period was unusually heavy. **Coverage:** Jan. 19, 26; Feb. 1, 16-17, 21-22, 24; between 0714 and 1010 on 5 days, and 1880 and 1618 on 3; and the evenings of Jan 25 and Feb. 21 between 1830 and 2130 PST. Total, 10 trips, 21.1 hours. **Count:** Horned Lark, 143 (397, 161); Sage Sparrow, 15 (42, 17); Com. Raven, +; Le Conte's Thrasher, +. **Average Total:** 158 birds (439/km², 178/100 acres). **Remarks:** 4 species. A Loggerhead Shrike and a Marsh Hawk were seen near the plot and on one trip a Great Horned Owl was heard some distance off the SE border. Horned Larks were seen in large flocks the first 6 trips, but the large flocks were absent the last 2 trips. The density of Horned Larks in the Saltbush-Eurotia habitat of this plot is 12 times the density at the Saltbush community plot of Cuddeback Lake (Study No. 68) where Eurotia composition is only 0.8%. A Kit Fox (*Vulpes macrotis*) was seen on one of the night walks. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — ROSS E. LANDRY, 6822 Westminster Ave. #43, Westminster, CA 92683.

64. MESQUITE - SALTBUSH. — **Location:** California; San Bernardino Co., Afton Canyon, 15 mi N, 17 mi E of Newberry, SE and SW $\frac{1}{4}$ of Sec. 18, T11N, R6E, Cave Mountain Quadrangle, USGS; 35°02'N, 116°23'W. **Continuity:** New (BBC, 1977). **Size:** 20.3 ha = 50.1 acres, paced. **Description of Plot:** See AB 32:101-102 (1978). A community typical of the drier areas adjacent to the Mojave River; mesquite and large saltbushes are intermixed with small grassy meadows and tall stands of arrowweed in the windblown sand. A 22-unit Bureau of Land Management campground occupies the SW corner of the plot. **Weather:** Temperatures ranged from 20° to 80°F. **Coverage:** Dec. 10-11, 27; Jan. 1, 13, 17; Feb. 4, 15. Total, 8 trips, all between 0630 and 1130, averaging 120 min each. **Count:** White-crowned Sparrow, 77 (380, 154); Phainopepla, 5 (25, 10); Ruby-crowned Kinglet, 2 (10, 4); Marsh Hawk, 1 (5, 2); Com. Raven, 1; Verdin, 1; Rock Wren, 1; Mockingbird, 1; Am. Robin, 1; Cedar Waxwing, 1; Loggerhead Shrike, 1; Yellow-rumped Warbler, 1; Rufous-sided Towhee, 1; Sage Sparrow, 1; Red-tailed Hawk, +; Prairie Falcon, +; Gambel's Quail, +; Roadrunner, +; White-throated Swift, +; Mountain Chickadee, +; House Wren, +; Le Conte's Thrasher, +; House Sparrow, +. **Average Total:** 95 birds (469/km², 190/100 acres). **Remarks:** 23 species. The Red-tailed Hawk and the Prairie Falcon both foraged

over a wide area which included this plot. The Le Conte's Thrasher entered the plot partway through the study, and was seen nearly every trip thereafter. The House Wren was common before and for the first part of the count period, then it left. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — MICHAEL WEINSTEIN, 161 Val Verde, Solvang, CA 93463.

65. CREOSOTEBUSH COMMUNITY. — **Location:** California; San Bernardino Co., Milligan is 31 mi SE of Cadiz, an old AT&SF Railroad station. The plot begins where the railroad crosses a small wash; the wash forms the E boundary. In the SW¼ Sec. 10, T2N, R17E, Milligan Quadrangle, USGS; 34°16'N, 115°11'W. **Continuity:** New. **Size:** 12.3 ha = 30.3 acres (1100 × 1200 ft, measured). **Description of Plot:** The last homogeneous stand of Creosotebush nearest Old Woman Mountains. The small wash contains slightly more dense cover, otherwise vegetation is sparse throughout. The site has seen some use by off-road vehicles; tracks are apparent. **Vegetation:** Except for the wash area, most of the plant cover consists of four species, none much over one m tall. Five 100-point pace transects were made to determine percent cover and species composition. The substrate consisted of 67% sand (rocks < 2 in.), 12% rock (> 2 in.), 11% litter, 7% bare ground, and 2% plant stems. The plants were: Creosotebush (*Larrea tridentata*), 57%; Ground Spurge (*Euphorbia polycarpa*), 31%; Burrobush (*Ambrosia dumosa*), 6%; California Buckwheat (*Eriogonum fasciculatum*) 4%; and Milkweed (*Asclepias subulata*), 0.2%. **Edge:** The plot is bounded on the north by the railroad and railroad levee and Old Woman Mountains; on the other three sides it is bounded by Creosotebush community. **Topography:** 15-20% slope. Elevation, 730 ft. Nearest mountain slopes are Old Woman Mountains, 0.6 mi N of plot. **Water:** Nearest water is the transient water 1 mi S between the salt evaporators and the salt refinery. Nearest permanent water is in the salt evaporators. Nearest permanent fresh water is at Iron Mountain Pumping Station 9.5 mi SE of plot. **Weather:** Temperatures ranged from 40° to 70° F., wind from 0 to 30 knots. Rain fell on Feb. 10 and 11. **Coverage:** Jan. 18, 27; Feb. 10-12, 24-26. Total, 8 trips, between 0545 and 1130, plus 4 visits between 1300 and 1745, and 2 visits between 2000 and 2245; average 4 hours 40 min per visit. **Count:** Sage Sparrow, 6 (49, 20); Say's Phoebe, 2 (16, 7); Horned Lark, 1 (8, 3); Black-throated Sparrow, 1; Short-eared Owl, +; Com. Nighthawk, +; Tree Swallow, +; Loggerhead Shrike, +. **Average Total:** 10 birds (82/km², 33/100 acres). **Remarks:** 8 species. On Feb. 25, Say's Phoebes were engaged in courting behavior. Also seen in the surrounding area but not in the plot were: Turkey Vulture, Barn Owl, W. Kingbird, Com. Raven and House Sparrow. We thank Kathleen Cheap for assistance on the plant transects. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — D. JOHNSTON and M. FOSTER, 99 So. 12th St., San Jose, CA 95112.

66. SALTBUUSH COMMUNITY. — **Location:** California; San Bernardino Co., 32 mi

SE of Cadiz, ½ mi W of the Milligan salt processing plant of Standard Salt Co. The study plot borders the road between the salt plant and the salt evaporators on the N and the dunes on the E. In the NE¼ Sec. 13, T2N, R17E, Milligan Quadrangle, USGS; 34°16'N, 115°09'W. **Continuity:** New. **Size:** 12.3 ha = 30.3 acres (1100 × 1200 ft, measured). **Description of Plot:** A flat, sparsely vegetated dry lake bed area, with transient seasonal water. **Vegetation:** Two species of *Atriplex* comprise most of the vegetation of the plot, and the vegetation is sparse throughout. Five 100-point pace transects were made to determine percent cover and species composition. The substrate is composed of: 55% bare ground, 29.9% sand, 9% litter, 5.6% water (25% water on Jan. 18 to 0% water by Feb. 24), shrub stems 0.5%. The plant species are Hoary Saltbush (*Atriplex canescens*), 51%; *Atriplex* sp., 19.6%; California Buckwheat (*Eriogonum fasciculatum*), 15.4%; Creosotebush (*Larrea tridentata*), 6.4%; Burrobush (*Ambrosia dumosa*), 6.2%; Alkali Goldenbush (*Haplopappus acradenioides*), 8%. **Edge:** The plot is bounded on the S by Danby Lake basin, with no vegetation, and on the other three sides by mixed saltbush-creosotebush stands which grade into creosotebush community. **Topography:** Flat, less than 1% slope. Nearest mountains are Old Woman Mountains, 2 mi NE of plot. **Water:** Nearest permanent water is in Standard Salt Co. evaporation pond 0.8 mi. NW. Nearest permanent fresh water is at Iron Mountain Pumping Station, 8.8 mi S. The plot contained fresh water until the third week of February. **Weather:** Temperatures during the study period ranged from 40° to 70°F. Winds 10-15 knots common. **Coverage:** Jan. 18, 28; Feb. 10-12, 24-26. Total, 8 trips between 0600 and 1130, plus 3 between 1330 and 1700, and 2 between 2100 and 2230; average, 4 hours 25 min per visit. **Count:** Sage Sparrow, 6 (49, 20); White-crowned Sparrow, 5 (41, 17); Green-winged Teal, 2 (16, 7); Say's Phoebe, 1 (8, 3); Tree Swallow, +; Sage Thrasher, +; Loggerhead Shrike, +; Black-throated Sparrow, +. **Average Total:** 14 birds (114/km², 46/100 acres). **Remarks:** 8 species. Also seen in the area but not in the plot were: Turkey Vulture, Barn Owl, W. Kingbird, Pintail, Com. Raven, and House Sparrow. Black-tailed Jackrabbits (*Lepus californicus*) were seen in the plot and vicinity on every trip. Antelope Ground Squirrels (*Ammospermophilus leucurus*) were seen on three visits. Eight Zebra-tailed Lizards (*Callosaurus draconoides*) were seen on Feb. 24 and 25. We thank Kathleen Cheap for assistance on the plant transects. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — M. FOSTER and D. JOHNSTON, 99 So. 12th St., San Jose, CA 95112.

67. DESERT MARSH. — **Location:** California; San Bernardino Co., Afton Canyon, 15 mi N, 17 mi. E of Newberry, SW¼ of Sec. 17, T11N, R6E, Cave Mountain Quadrangle, USGS; 35°02'N, 116°22'W. **Continuity:** New (BBC, 1977). **Size:** 5.7 ha = 14.1 acres, paced. **Description of Plot:** See AB 32:113 (1978). Typical marshy area of the Mojave River bottomlands, there is very little of this habitat in the Mojave River and in the desert in general. The plot consists of two marsh areas, oblong in shape and NW-SE in orientation of the long

axis, separated by a 6 to 10 ft bank and a road along the bank. **Weather:** Temperatures ranged from 20° to 80°F during the count period. **Coverage:** Dec. 15, 18, 21; Jan. 12, 24, Feb. 11, 14, 21. Total, 8 trips, all between 0630 and 1130, averaging 120 min each. **Count:** White-crowned Sparrow, 26 (456, 184), Green-winged Teal, 4 (70, 28); Cinnamon Teal, 4; Am. Coot, 4; Long-billed Marsh Wren, 4; W. Meadowlark, 4; Cliff Swallow, 2 (35, 14); Ruby-crowned Kinglet, 2; House Finch, 2; Redhead, 1 (18, 8); Am. Kestrel, 1, Com. Flicker, 1; Com. Raven, 1; Am. Robin, 1; Phainopepla, 1; Yellow-rumped Warbler, 1; Lincoln's Sparrow, 1; Mallard, +; Ring-necked Duck, +; Marsh Hawk, +; Sora, +, Killdeer, +; Say's Phoebe, +; Verdin, +, Le Conte's Thrasher, +; Loggerhead Shrike, +, Starling, +; Red-winged Blackbird, +; Song Sparrow, +. **Average Total:** 60 birds (1051/km², 426/100 acres). **Remarks:** 29 species. The Marsh Hawk roosted outside the plot but occasionally foraged in it. This study was sponsored by the Bureau of Land Management, California Desert Plan Program — MICHAEL WEINSTEIN, 161 Val Verde, Solvang, CA 93463.

68. SALTBUUSH DESERT. — **Location:** California; San Bernardino Co., Cuddeback Lake. The E border of the study plot is 333 yards into the saltbush from the edge of the dry lake; 0.5 mi S of Twenty Mule Team Parkway and 8.5 mi. E of US 395. In the SW ¼ Sec. 28, NW ¼ Sec. 33, NE ¼ Sec. 32, and SE ¼ Sec. 29, T30S, R42E, Cuddeback Lake Quadrangle, USGS; 35°17'N, 117°29'W. **Continuity:** New (BBC 1977). **Size:** 36 ha = 88.96 acres (square, 600 × 600 m, paced). **Description of Plot:** See AB 32:104-105 (1978). Only new annual seen was *Lotus* sp. **Water:** Nearest water at that time is Cuddeback Lake. **Weather:** Skies clear on 6 days, light clouds on 2 days. Light winds on 3 days, no wind on 5 days. The nearest rain gauge is 20 mi away at Edwards Air Force Base where 7.88 in. of rain was recorded with rain falling on 27 days in the study period. During the study period temperature ranged from 74° to 22°F. **Coverage:** Dec. 16; Jan. 13, 20, 25; Feb. 3, 16-17, 22, between 0714 and 1055 on 5 days, between 1240 and 1611 on 3 days, and the evenings of Feb. 2 and 16 between 1830 and 2040 PST. Total, 10 trips, 23.4 hours. **Count:** Horned Lark, 12 (33, 13); Sage Sparrow, 11 (31, 12), Le Conte's Thrasher, +; Rock Wren, +. **Average Total:** 23 birds (64/km², 26/100 acres). **Remarks:** 4 species. On one trip a Marsh Hawk was seen foraging near the study plot, and on a night trip a Poor-will was heard near the SE corner of the plot. Unusually low numbers of birds were seen on 2 trips but birds followed a normal distribution on the other 6 trips. These days of low activity occurred with Air Force fighter planes were engaged in gunnery practice across Cuddeback Lake and were circling low over the study plot. Two Kit Fox (*Vulpes macrotis*) were seen on 1 night trip. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — ROSS E. LANDRY, 6822 Westminster Ave. #43, Westminster, CA 92683



69. MOJAVE YUCCA - STAGHORN CHOLLA DESERT SCRUB. — **Location:** California; San Bernardino Co., SW edge of Lanfair Valley, 4.5 mi S and 1 mi E of intersection of Ivanpah and Cedar Canyon Rds. The plot roughly parallels Ivanpah Rd. and the SW corner is about 270 m NW of where Ivanpah Rd. crosses Fenner Wash; NE¼ Sec. 5, T11N, R17E, Lanfair Valley Quadrangle, USGS; 35°04'N, 115°10'W. **Continuity:** New. **Size:** 20 ha = 49.42 acres (rectangular, 400 × 500 m, paced), the length running N-S on a magnetic N compass grid. **Description of Plot:** See AB 32:102 (1978). Despite considerable amounts of rain during the previous spring and summer, the plot remained virtually devoid of herbaceous vegetation while most other areas of the Lanfair Valley (covered with creosotebush scrub and Joshua tree woodland) showed pronounced growth of annuals and perennial grasses. The absence of herbaceous growth may be a result of heavy grazing pressures by cattle and/or the unusually high rabbit and rodent populations found in this habitat. **Weather:** Estimated temperatures during counts ranged from 40° to 70°F. Overcast during count Jan. 3, otherwise clear or mostly clear. Little or no wind during counts except for 40-50 km/hr winds Feb. 19. Rainfall was well above average during the count period with precipitation occurring regularly from late December through February. **Coverage:** Dec. 22; Jan. 3, 8, 21, 28; Feb. 12, 19, 25. Total, 8 trips, between 0730 and 1030, averaging 3 hours each. Several nights spent on or near plot listening for nocturnal species. **Count:** White-crowned Sparrow, 37 (185, 75); Sage Sparrow, 11 (55, 22); Black-throated Sparrow, 5 (25, 10); Gambel's Quail, 4 (20, 8); Cactus Wren, 3 (15, 6); Com. (Red-shafted) Flicker, 1 (5, 2); Com. Raven, 1; Verdin, 1; Bewick's Wren, 1; Rock Wren, 1; Le Conte's Thrasher, 1; Black-tailed Gnatcatcher, 1; W. Meadowlark, 1; Brewer's Sparrow, 1; Red-tailed Hawk, +; Prairie Falcon, +, Am. Kestrel, +; Ladder-backed Woodpecker, +; Sage Thrasher, +; Crissal Thrasher, +; Mountain Bluebird, +; Ruby-crowned Kinglet, +; Yellow-rumped (Audubon's) Warbler, +; House Finch, +; Vesper Sparrow, +. **Average Total:** 69 birds (345/km², 140/100 acres). **Remarks:** 25 species. The ravens were seen foraging over the plot. Verdin, Bewick's, Cactus and Rock Wrens, Le Conte's Thrasher, Black-tailed Gnatcatcher, Ruby-crowned Kinglet, W. Meadowlark, Sage, Black-throated, Brewer's and White-crowned Sparrows were often found in mixed flocks with various sizes and combinations of species. Most species moved freely in and out of the plot and only the Cactus Wrens showed a high degree of territoriality. Raptors were notably scarce considering the large populations of small mammals present. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — STEVEN W. CARDIFF, San Bernardino Co. Museum, 2024 Orange Tree Lane, Redlands, CA 92373.

70. TAMARISK-DESERT RIPARIAN. — **Location:** California; San Bernardino Co., Mojave River in Afton Canyon. The plot extends from 17 to 17.4 mi E and 14.6 mi N of Newberry and from the Union Pacific railroad tracks on the N to the canyon walls on the S, SE¼ Sec. 13, T11N, R5E, to SW¼ Sec. 18,

T11N, R6E, Cave Mtn Quadrangle, USGS, 35°02'N, 116°24'W. **Continuity:** New (BBC, 1977). **Size:** 35 ha = 86.4 acres. **Description of Plot:** See AB 32:105, 106 (1978). On Feb. 16, heavy runoff into the upper portions of the Mojave River resulted in a flash flood through Afton Canyon. Heavy flow continued for several days and generally subsided to the normal level. The flood washed out the large pond on the NE portion of the plot and it has been replaced by a broad, barren channel which lies about 2 m below the level of the adjacent floodplain. The river course was not greatly altered but nearly all vegetation growing in or immediately along it was scoured away. Most of the floodplain was covered with water during the height of the flood but the vegetation was not significantly damaged. **Weather:** This was an exceptionally wet winter in the desert areas of Southern California. A number of storms moved through the area from late December through February and the plot received significant amounts of precipitation. Estimated temperatures during counts ranged from 28° to 70°F. Skies were overcast on Dec. 21 and Feb. 27. Thick ground fog was encountered during part of the count on Jan. 8. Winds of 25-40 km/hr were recorded on Jan. 15. **Coverage:** Dec. 4, 21; Jan. 8, 15, 20, 29; Feb. 19, 27. Total, 8 trips, between 0730 and 1130, averaging 3.6 hours each. **Count:** White-crowned Sparrow, 33 (94, 38); Long-billed Marsh Wren, 24 (69, 28); Long-eared Owl, 18 (51, 21); House Finch, 10 (29, 12); Ruby-crowned Kinglet, 7 (20, 8); Yellow-rumped (Audubon's) Warbler, 6 (17, 7); Green-winged Teal, 5 (14, 6); Am. Coot, 5; Lincoln's Sparrow, 5; Phainopepla, 4 (11, 5); Dark-eyed (Oregon) Junco, 4; Verdin, 3 (9, 3); Song Sparrow, 3; Com. (Red-shafted) Flicker, 2 (6, 2); Say's Phoebe, 2; Am. Robin, 2; Marsh Hawk, 1 (3, 1); Am. Kestrel, 1; Sora, 1; Com. Gallinule, 1; Killdeer, 1; Com. Snipe, 1; Black Phoebe, 1; House Wren, 1; Bewick's Wren, 1; Rock Wren, 1; Hermit Thrush, 1; Lesser Goldfinch, 1; Savannah Sparrow, 1; Golden-crowned Sparrow, 1; Pied-billed Grebe, +; Black-crowned Night Heron, +; Am. Bittern, +; Redhead, +; Ring-necked Duck, +; Sharp-shinned Hawk, +; Cooper's Hawk, +; Red-tailed Hawk, +; Prairie Falcon, +; Merlin, +; Greater Yellowlegs, +; Roadrunner, +; Yellow-bellied Sapsucker, +; Ladder-backed Woodpecker, +; Mountain Chickadee, +; Mockingbird, +; Sage Thrasher, +; Water Pipit, +; Cedar Waxwing, +; Red-winged Blackbird, +; Rufous-sided Towhee, +; Sage Sparrow, +. **Average Total:** 147 birds (420/km², 170/100 acres). **Remarks:** 52 species. The flood destroyed most of the marsh and pond habitat. The Long-billed Marsh Wrens, Lincoln's Sparrows, and Song Sparrows were mostly restricted to these areas and were forced to seek other types of vegetation on the plot. The Am. Coots were left stranded and exposed and gradually disappeared. The flood had little effect on other species on the plot. The 18 Long-eared Owls were found roosting together in a nearly impenetrable tamarisk thicket and were probably overlooked during the first half of the census period. The Mockingbird, Sage Thrasher, Am. Robins, Cedar Waxwings, and Phainopeplas were usually found in clumps of mesquite where they were attracted by mistletoe berries. The Bewick's Wren sang often and appeared to have a distinct territory. Common Ravens were occa-

sionally seen flying over the plot. This study was sponsored by the Bureau of Land Management, California Desert Plan Program — EUGENE A. and STEVEN W. CARDIFF, San Bernardino Co. Museum, 2024 Orange Tree Ln, Redlands, CA 92373.

71. CREOSOTE - JOSHUA TREE DESERT. — **Location:** California; San Bernardino Co.; Fairview Valley. At the foot of Fairview Mountain 1 mi N of Red Top Mine, 3 mi NE of Apple Valley. NW 1/4 Sec. 29 and SW 1/4 Sec. 20, T6N, R2W of the Apple Valley Quadrangle, USGS; 34°35'N, 117°6'W. **Continuity:** New. **Size:** 36 ha = 88.96 acres (square 600 × 600 m, paced). **Description of Area:** A rich and diverse Creosote-Joshua Tree community at the foot of a rocky mountain. **Vegetation:** Five 100 toe-point transects were conducted to determine percent cover and species composition. The substratum is composed of 48.8% bare ground, 31% plant litter, 15.4% small rock (<5 cm), 4% rock (>5 cm), and 3.8% woody stems. The shrub canopy cover of 12.4% is composed of 43.5% Creosotebush (*Larrea tridentata*), 17.7% Desert Almond (*Prunus fasciculata*), 14.5% Joshua Tree (*Yucca brevifolia*), 8.1% Pencil Cactus (*Opuntia ramosissima*), 8.1% *Ephedra nevadensis*, 3.2% Cooper Goldenbush (*Haplopappus cooperi*), 1.6% Cheesebush (*Hymenoclea salsola*), 1.6% Mojave Horsebrush (*Tetradymia stenolepis*), and 1.6% California Buckwheat (*Eriogonum fasciculatum*). The shrub composition is 29% Creosotebush, 24% *Ephedra nevadensis*, 9.4% Cheesebush, 8% Desert Almond, 5.4% California Buckwheat, 5% Mojave Horsebrush, 4.8% Pencil Cactus, 3.2% Joshua Tree, 3.2% Cooper Goldenbush, 2% Turpentine Broom (*Thamnosma montana*), 1.8% *Salazaria mexicana*, 1.2% Burrobush (*Ambrosia dumosa*), 1.2% Goldenhead (*Acamptopappus sphaerocephalus*), 1% Silver Cholla (*Opuntia echinocarpa*), 0.2% Desert Aster (*Machaeranthera tortifolia*), 0.2% Anderson Thornbush (*Lycium andersonii*), 0.2% *Gutierrezia microcephala*, and 0.2% *Eriogonum* sp. The only annual species found was Storksbill (*Erodium cicutarium*). Incidental perennial species seen on plot but not recorded on transects were Nigger-Heads (*Echinocactus polycephalus*), Downy Brome (*Bromus tectorum*), and *Chrysothamnus teretifolius*. **Edge:** The plot is bordered on the SW by rocks and on all other sides by similar habitat. **Topography:** Slightly sloping (aspect E), the nearest mountain is Fairview Mountain (4329 ft) 2 mi SW. A wash bisects the N half of the plot. Elevation, 3300 ft. **Water:** The nearest water at present is in the wash on the study plot. **Weather:** Skies clear on 7 days, cloudy on 1; no wind on 4 days, light winds on 3 and winds over 20 mph on 1; temperature ranged through the study period from 20° to 78°F; rainfall for this period was heavy. **Coverage:** Jan. 18, 24, 27; Feb. 2, 15, 21, 23-24; between 0715 and 1125 on 5 days, and 1255 and 1620 on 3; and the evenings of Jan 23 and Feb. 1 between 1830 and 2130 PST. Total, 10 trips, 29.7 hours. **Count:** Rock Wren, 6 (17, 7); Cactus Wren, 4 (11, 4); White-crowned Sparrow, 4; Loggerhead Shrike, 2 (6, 2); House Finch, 2; Say's Phoebe, 1 (3, 1); Le Conte's Thrasher, 1; Sage Thrasher, 1; Yellow-rumped (Myrtle) Warbler, 1; Black-throated Sparrow, 1; Red-tailed Hawk, +; Tree Swallow, +; Com. Raven, +,

Sage Sparrow, + **Average Total:** 23 birds (64/km², 26/100 acres) **Remarks:** 14 species. A Ladder-backed Woodpecker was seen on the day the plot was laid out but was not seen on any of the census trips. The area is heavily used by motorcycle riders. While conducting plant transects 62 hits out of 500 were over vehicle tracks. Heaviest erosion damage is located in and around the wash where riders have been climbing the steep banks. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — *ROSS E. LANDRY, 6822 Westminster Ave. #43, Westminster, CA 92683.*

72. CREOSOTE - GOLDENHEAD DESERT SCRUB. — **Location:** California; Kern Co., Fremont Valley. Two mi E of Neutralia Rd the boundary fence for the Desert Tortoise Natural Area crosses Phillips Rd.; the study plot begins 54 yds E of the fence and 111 yards N of wash N of Phillips Rd. W 1/2 Sec. 30, T31S, R38E of the Castle Butte Quadrangle, USGS; 35°12'N, 117°57'W. **Continuity:** New (BBC, 1977). **Size:** 36 ha = 88.96 acres (square, 600 × 600 m, paced). **Description of Plot:** See AB 32:99 (1978). **Weather:** Skies clear on 5 days, cloudy on 3; no wind on 4 days, light winds on 3, and winds over 15 mph on 1 day. The nearest rain gauge is 14 mi. away at Edwards Air Force Base where 7.88 inches of rain fell on 27 days in the study period. During the study period temperature ranged from 23° to 80°F. **Coverage:** Dec. 15; Jan. 13, 20, 25; Feb. 1, 3, 15, 23; between 0715 and 1100 on 5 days, and between 1220 and 1545 on 3 days; and evenings of Jan. 31 and Feb. 22 between 1905 and 2130 PST. Total, 10 trips, 26.4 hours. **Count:** White-crowned Sparrows, 23 (64, 26); Horned Lark, 18 (50, 20), Sage Sparrow, 6 (17, 7); Sage Thrasher, 2 (6, 2); Com. Raven, 1 (3, 1); Le Conte's Thrasher, 1; Loggerhead Shrike, 1; Yellow-rumped (Audubon's) Warbler, 1; Golden Eagle, +; Marsh Hawk, +; Poor-will, +; Verdin, +; Rock Wren, +; Black-throated Sparrow, +. **Average Total:** 53 birds (147/km², 60/100 acres). **Remarks:** 14 species. On one trip a W Meadowlark was seen in the wash near the S border of the plot. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — *ROSS E. LANDRY, 6822 Westminster Ave. #43, Westminster, CA 92683.*

73. RABBITBRUSH. — **Location:** California, Inyo and Kern Cos., Sand Canyon, in southernmost extension of the Sierra Nevadas, 12 mi N on Hwy 14 from intersection of State 178 and 14, then 3.5 mi W on Brown Rd.; from center of Sec. 7, T25S, R38E, the plot extends up the canyon following the main stream approximately 2.3 km; Little Lake Quadrangle 1954, USGS; 35°47'N, 117°56'W. **Continuity:** New (BBC, 1977). **Size:** 6.1 ha = 15 acres. **Description of Plot:** See AB 32:103-104 (1978). Canyon bottom with constant stream. Area studied was immediately adjacent to willows where another plot was located. The plot was fairly uniformly covered with Rabbitbrush and occasional Sagebrush. **Weather:** Daytime temperatures ranged from 40° to 75°F. Heavy rains occurred intermittently throughout winter. **Coverage:** Jan. 21-22, 27; Feb. 18-20; Mar. 11-12. Total, 8 trips between 0530 and 0930 (PST). Total

man-hours 32 **Count:** Ruby-crowned Kinglet, 4 (66, 27), Scrub Jay, 3 (49, 20), Bewick's Wren, 3; Brown Towhee, 2 (33, 13); Dark-eyed Junco, 2; California Quail, 1 (16, 7); Rock Wren, 1; Rufous-sided Towhee, 1; White-crowned Sparrow, 1; Golden-crowned Sparrow, 1; Roadrunner, +; Com. Flicker, +; Steller's Jay, +; Hermit Thrush, +; Wilson's Warbler, +; House Finch, +; Black-throated Sparrow, +. **Average Total:** 19 birds (313/km², 127/100 acres). **Remarks:** Although 17 species were seen on the study area, very few individuals were observed. Most species appear to utilize this vegetation type only temporarily, as resting perches. Exceptions to this generalization include the Brown and Rufous-sided towhees, California Quail, Dark-eyed Junco and the crowned sparrows. Kinglets and Bewick's Wren occasionally forage in this area. Surprisingly, few quail were recorded in this study plot, but this may reflect their secretive behavior during the winter months rather than their actual density. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — *CHARLES F. DOCK, 1164 W. Adams Blvd., Los Angeles, CA 90007.*

74. CHEESEBUSH - GOLDENBUSH SCRUB. — **Location:** California; Kern Co., Sand Canyon, in southernmost extension of the Sierra Nevadas, 12 mi N on Hwy 14 from intersection of State 178 and 14, and about 5 mi W on Brown Rd.; S branch of road crosses E half of plot. (On map, plot lies immediately W of the "Y" formed by the intersection of main streambed and intermittent stream from the south.) SE1/4 Sec. 1, T25S, R37E; Little Lake Quadrangle, 1954 USGS; 35°47'N, 117°56'W. **Continuity:** New (BBC, 1977). **Size:** 12.5 ha = 30.9 acres. **Description of Plot:** See AB 32:97 (1978). Plot covered with shrubs 0.5 to 1.5 m in height. Density of shrubs decreases from E to W as slope increases. **Weather:** Daytime temperatures from 40° to 75°F. Heavy rains occurred intermittently during the winter days. **Coverage:** Jan. 28; Feb. 4, 18-20; Mar. 12, 18-19. Total, 8 trips between 0530 and 0930 (PST). Total man-hours, 16. **Count:** Rock Wren, 2 (16, 6); House Finch, 2; Violet-green Swallow, 1 (8, 3); Scrub Jay, 1; Com. Raven, 1; Brown Towhee, 1; Black-throated Sparrow, 1; Dark-eyed Junco, 1; White-crowned Sparrow, 1; Bewick's Wren, +; Cañon Wren, +; Ruby-crowned Kinglet, +. **Average Total:** 11 birds (88/km², 36/100 acres). **Remarks:** 12 species. Birds on this plot were distinctly patchy in their distribution. Almost all sightings occurred along either the S or E borders of the study area, where typical scrub vegetation gave way to rock outcroppings or semiriparian situations. Very few birds were sighted in the open scrub association characteristic of most of the plot. Cattle were present on virtually all field days. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — *CHARLES F. DOCK, 1164 W. Adams, Los Angeles, CA 90007.*

75. N. MOJAVE SAGEBRUSH SCRUB, I. — **Location:** California; Inyo Co., Waucoba Wash, 1 mi E of Waucoba Canyon, 31.2 mi SE of Big Pine; along Saline Valley Rd.; Sec. 9 (not 8), T11S, R37E, Waucoba Spring Quadrangle, USGS; 37°00'N, 117°57'W. **Continuity:**

New (BBC, 1977) **Size:** 21 ha = 51.9 acres (rectangular, 350 m E-W × 600 m N-S) **Description of Plot:** A typical sagebrush community of the N. Mojave Desert. See AB 32:104 (1978). The nearest permanent water is at Waucoba Spring, 0.5 mi W of the plot; this winter water was flowing in Waucoba Canyon, 0.5 mi S of Waucoba Spring. **Weather:** Temperatures during the study period from 35° to 60°F; cloud cover from 0 to 100%. No precipitation occurred during the census period, however, at least two winter storms dropped snow on the plot. **Coverage:** Jan. 27-31; Feb. 1-2. Total, 7 trips, 5 between 0700 and 1100 and 2 between 0700 and 1100 and 1700 and 1900. Total man-hours: 25. **Count:** Sage Sparrow, 6 (29, 12); Bushtit, 2 (10, 4); Bewick's Wren, 1 (5, 2); Rock Wren, 1; Mourning Dove, +. **Average Total:** 10 birds (48/km², 19/100 acres). **Remarks:** 5 species. Mammals observed on the plot: Desert Cottontail (*Sylvilagus auduboni*), 4; Black-tailed Jackrabbit (*Lepus californicus*), 2; White-tailed Antelope Ground Squirrel (*Ammospermophilus leucurus*), scat and burrow; Coyote (*Canis latrans*), 1. This is one of a pair of plots established for a long-term study on the effects of feral burros on vertebrates. Burros were not observed on the plot during the census period but up to three at a time were seen coming to Waucoba Spring in the evenings and 18 were observed 2 mi SE of the plot. This census indicates 3.2 times more birds than the control plot (Study No. 76) during the winter period. The study was sponsored by the Bureau of Land Management, California Desert Plan Program. Contribution No. 166, P.R.B.O. — *ROBERT M. STEWART, Point Reyes Bird Observatory, 4990 Shoreline Hwy., Stinson Beach, CA 94970.*

76. N. MOJAVE SAGEBRUSH SCRUB, II. — **Location:** California; Inyo Co., 1 mi N of Marble Canyon, 21.1 mi SE of Big Pine; along Saline Valley Rd.; Sec. 6 (not 12), T10S, R36E, Waucoba Spring Quadrangle, USGS, 37°6'N, 117°58'W. **Continuity:** New (BBC, 1977). **Size:** 21 ha = 51.9 acres (rectangular, 350 m E-W × 600 m N-S). **Description of Plot:** A typical Sagebrush community of the N Mojave Desert. See AB 32:104 (1978) **Weather:** At least 3 winter storms dropped snow on the plot. During the censuses cloud cover ranged from 0 to 100%. **Coverage:** Feb. 3-4, 19, 20, 22-23, 25-26. Total, 8 trips, 6 between 0700 and 1130 and 2 between 1700 and 1900. Total man-hours: 28. **Count:** Com. Raven, 1 (5, 2); Mountain Bluebird, 1; Loggerhead Shrike, 1; Sage Sparrow, 1; Golden Eagle, +. **Average Total:** 4 birds (19/km², 8/100 acres). **Remarks:** 5 species. Mammals observed in the study area were White-tailed Antelope Ground Squirrel (*Ammospermophilus leucurus*) 3, and Desert Cottontail (*Sylvilagus auduboni*) scat. Also Coyote (*Canis latrans*) was heard 0.5 km from the plot. This area is a control plot for Study No. 75 to study the effects of feral burros on winter and breeding bird populations. There was no sign of grazing by an ungulates although feral burro scat was found 2 mi N of the plot. The study was sponsored by the Bureau of Land Management, California Desert Plan Program. Contribution No. 167, P.R.B.O. — *ROBERT M. STEWART, Point Reyes Bird Observatory, 4990 Shoreline Hwy., Stinson Beach, CA 94970.*

77. BLUE PALOVERDE - IRONWOOD - MIXED SHRUB AND SUCCULENT DESERT WASH. — **Location:** California; Riverside Co., Arroyo Seco, about 2.5 mi S of San Augustine Pass, Chuckwalla Mountains; 6.5 m W of Graham Pass Rd. on Bradshaw Rd.; SE¼ Sec. 25, T8S, R16E, Iris Pass Quadrangle, USGS; 33°27'N, 115°15'W. **Continuity:** New. **Size:** 20 ha = 49.42 acres (rectangular 900 × 200 m along the wash and 200 × 100 m section in SE corner, surveyed). **Description of Plot:** On a shelving plain between the Chuckwalla Mountains to the N and Chocolate Mountains to the S. The wash courses through open desert characterized by gravel and rough desert pavement, scattered shrubs and succulents, and local strands of microphyllous tree-lined washes. Plant species diversity is high owing in part to coexistence of Mohave and Colorado Desert species. **Edge:** The wash channel runs near the E boundary of the quadrat which includes parts of a cliff bank rising 10-15 m above the channel; gravelly ridges, sparsely vegetated with subshrubs and succulents, roll off to the E. Open desert with much lower plant coverage and species richness extends S and W for several miles. A lightly travelled unpaved road runs N-S west of the quadrat. **Topography:** Slightly sloping; elevation 2140-2230 ft (652-680 m); nearest peaks, 2620-2886 ft (799-880 m), are 2 and 3 mi to the N. **Water:** Chuckwalla Well is 2 mi E and Chuckwalla Springs 3.5 mi NE of the wash. **Weather:** Temperatures during the study period ranged from 34° to 67°F. Although no rain gauges were used, precipitation was frequent in this region; widespread storm fronts swept slowly across southern California from December to early March. Soil moisture was high during much of the study and herbaceous cover increased by March. Winds were variable: some days were calm; others had steady winds to 20 mph with gusts 25-35 mph. Winds were generally highest between late morning and late afternoon. **Coverage:** Jan. 24-27; Mar. 3-6. Total, 8 days; 6 morning counts averaging 4.1 hours; 6 late afternoon counts averaging 2.2 hours. Densities reported are based on the 6 a.m. counts. At least 1 hour per night for 6 nights was spent censusing for owls and caprimulgids. **Count:** White-crowned Sparrow, 30 (150, 61); Phainopepla, 18 (90, 36); House Finch, 18; Verdin, 17 (85, 34); Black-tailed Sparrow, 12 (60, 24); Black-tailed Gnatcatcher, 9 (45, 18); Gambel's Quail, 8 (40, 16); Sage Sparrow, 7 (35, 14); Cactus Wren, 5 (25, 10); Ladder-backed Woodpecker, 4 (20, 8); House Wren, 4; Rock Wren, 4; Mountain Bluebird, 4; Ruby-crowned Kinglet, 4; Crissal Thrasher, 3 (15, 6); Loggerhead Shrike, 3; Mockingbird, 2 (10, 4); Sage Thrasher, 2; Yellow-rumped Warbler, 2; Red-tailed Hawk, 1 (5, 2); Roadrunner, 1; Bewick's Wren, 1; Townsend's Solitaire, 1; Lesser Goldfinch, 1; Brewer's Sparrow, 1; Screech Owl, +; Great Horned Owl, +; Long-eared Owl, +; Say's Phoebe, +; Le Conte's Thrasher, +. **Average Total:** 162 birds (810/km², 328/100 acres). **Remarks:** 30 species. In early March courtship behavior was noted for Gambel's Quail, Verdin, Black-tailed Gnatcatcher, and Black-throated Sparrow; Cactus Wren, Phainopepla, and House Finch had begun nest building. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — **CARL S. TOMOFF, Environmental Studies**

Program, Prescott Center College, Prescott, AZ 86301

78. N. MOJAVE SHADSCALE SCRUB. — **Location:** California; Inyo Co., 2.5 mi N of Deep Springs Lake in Deep Springs Valley; 21 mi NE of Big Pine along road to Deep Springs College (6.5 mi SE of entrance to college); Sec. 19, T7S, R36E, Blanco Mountain Quadrangle, USGS; 37°19'N, 118°04'W. **Continuity:** New. **Size:** 27 ha = 66.7 acres (rectangular, 300 m N-S × 900 m E-W). **Description of Plot:** A typical Shadscale Scrub community of the N. Mojave Desert. Five 100-pace toe-point transects were conducted to determine percent cover and species composition. The substratum was composed of 33.4% bare ground, 32.6% plant litter, 26.8% small rocks (<2 in.), 5.4% large rocks (>2 in.), and 1.8% shrub stems. The shrub canopy cover 14.8% is composed of 24.3% Fourwing Saltbrush (*Atriplex canescens*), 17.6% Cheesebush (*Hymenoclea salsola*), 17.6% Nevada Joint Fir (*Ephedra nevadensis*), 13.5% Menodora (*Menodora spinescens*), 12.1% Cottonthorn (*Tetradymia spinosa*), 9.5% Rabbitbrush (*Chrysothamnus viscidiflorus*), 4.0% Indigo Bush (*Dales polyadenia*), and 1.4% Winter Fat (*Eurotia lanata*). Shrub composition is 33.6% Winter Fat, 17.4% Cottonthorn, 10.8% Cheesebush, 10.2% Fourwing Saltbrush, 9.6% Menodora, 7.4% Nevada Joint Fir, 5.2% Rabbitbrush, 3.2% Goldenhead (*Acamptopappus shockleyi*), 1.8% Indigo Bush, 0.4% Burrobush (*Ambrosia dumosa*) and 0.4% Mojave Desert Mallow (*Sphaeralcea pulchella*). **Elevation:** 5140 to 5225 ft. **Edge:** There is similar habitat on all sides. **Topography:** Slightly W-E sloping alluvial plain with several shallow washes crossing the plot in a NW-SE direction. **Water:** The nearest water is 2.5 mi S at Deep Springs Lake. **Weather:** Both rain and snow fell on the plot during the census period. **Coverage:** Feb. 5-9, 18, 21, 24. Total, 8 trips, 6 between 0700 and 1200 and 2 between 1700 and 1900. Total man-hours: 28. **Count:** Sage Sparrow, 11 (41, 16); Horned Lark, 8 (30, 12); Mountain Bluebird, 1 (4, 1); White-crowned Sparrow, 1; Rough-legged Hawk, +; Marsh Hawk, +; Short-eared Owl, +; Com. Raven, +. **Average Total:** 21 birds (78/km², 31/100 acres). **Remarks:** Mammals seen on the plot were Black-tailed Jack Rabbit (*Lepus californicus*), 2; White-tailed Antelope Ground Squirrel (*Ammospermophilus leucurus*), 3; and Coyote (*Canis latrans*), 1. Beef cattle lightly graze the plot but apparently only on Rice Grass (*Oryzopsis hymenoides*). Thanks to Mary DeDecker for identification of several shrub species. The study was sponsored by the Bureau of Land Management, California Desert Plan Program. Contribution No. 165, P.R.B.O. — **ROBERT M. STEWART, Point Reyes Bird Observatory, 4990 Shoreline Hwy., Stinson Beach, CA 94970.**

79. BLUE PALOVERDE - IRONWOOD - CREOSOTEBUSH DUNE THICKETS. — **Location:** California; Riverside Co., Chuckwalla Valley, about 20 mi W of Blythe, 3 mi SW of junction of Interstate 10 with Wileys Well Rd.; Sec. 7, T7S, R20E; McCoy Springs Quadrangle, USGS; 33°35'N, 114°56'W. **Continuity:** New. **Size:** 12.5 ha = 30.9 acres (irregular belt following contour of dunes 1000 × 125 m, paced and surveyed). **Description of**

Plot: The site lies in the E section of an extensive valley draining the Little Chuckwalla Mountains to the S, Chuckwalla Mountains to the SW, and McCoy and Palen Mountains to the N. The Ford Dry Lakes are 4-8 mi NW and Wileys Well Wash 2-3 mi SE of the site. The valley is characterized by sandy alluvium, widely scattered creosotebushes and bursage, and seasonally variable herbaceous cover. Riparian vegetation is scarce in the region. Most plants are characteristic of the Colorado Desert. **Edge:** The dunes are surrounded by open Creosotebush flats typical of very dry portions of the Colorado Desert. Variations in height and density of shrubs, as well as herbaceous plant coverage, are related to local differences in edaphic factors. An open tree-lined wash courses N-S west of the dunes. **Topography:** Nearly flat; elevation 400 ft (122 m); closest slopes are 5-6 mi away with peaks 2000 ft (610 m) 6 mi to SW and 2054 ft (626 m) 7 mi to the NE. **Water:** Wileys Well is 6 mi SE and the Colorado River flows about 23 mi E of the site. **Weather:** Temperatures during the study period ranged from 34° to 72°F. Although little rain fell on census days, soil moisture was high during much of the study and herbaceous cover was lush. Storm fronts swept slowly across southern California frequently from December through early March. Winds varied from calm to 20 mph with gusts to 25-35 mph. Winds were generally highest from late morning to late afternoon. **Coverage:** Jan. 23-27; Mar. 3-6. Total days 9, 7 morning counts averaging 4.2 hours; 7 late afternoon counts averaging 2.9 hours. Densities reported are based on the 7 a.m. counts. At least 1 hour per night for 7 nights was spent censusing owls and caprimulgids. **Count:** White-crowned Sparrow, 364 (2911, 1178); Brewer's Sparrow, 261 (2087, 845); Mourning Dove, 148 (1184, 479); Vesper Sparrow, 90 (720, 291); House Finch, 45 (360, 146); Gambel's Quail, 31 (248, 100); Savannah Sparrow, 25 (200, 81); Long-eared Owl, 13 (104, 42); Black-tailed Gnatcatcher, 8 (64, 26); Verdin, 7 (56, 23); Lark Bunting, 7; Turkey Vulture, 6 (48, 19); Yellow-rumped Warbler, 5 (40, 16); Say's Phoebe, 4 (32, 13); Le Conte's Thrasher, 4; House Wren, 3 (24, 10); Ruby-crowned Kinglet, 3; Green-tailed Towhee, 3; Am. Kestrel, 2 (16, 6); Horned Lark, 2; Loggerhead Shrike, 2; W. Meadowlark, 2; Sharpshinned Hawk, 1 (8, 3); Red-tailed Hawk, 1; Marsh Hawk, 1; Great Horned Owl, 1; Com. Flicker, 1; Ladder-backed Woodpecker, 1; Mockingbird, 1; Rufous-sided Towhee, 1; Cooper's Hawk, +; Ferruginous Hawk, +; Prairie Falcon, +; Merlin, +; Roadrunner, +; Short-eared Owl, +; Sage Thrasher, +; Am Robin, +; Cedar Waxwing, +; Pine Siskin, +; Sage Sparrow, +; Lincoln's Sparrow, +; Song Sparrow, +. **Average Total:** 1043 birds (8341/km², 3375/100 acres). **Remarks:** 43 species. About 90% of average density was composed of 5 granivores: White-crowned Sparrow, Brewer's Sparrow, Mourning Dove, House Finch and Gambel's Quail. This remarkable density (7508/km², 3039/100 acres) was a result of abundant food supply on and adjacent to the quadrat and the excellent roosting cover provided by the thickets. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — **CARL S. TOMOFF, SCOTT HECKER, Environmental Studies Program, Prescott Center College, Prescott, AZ 86301.**

80. VALLEY GRASSLAND. — **Location:** California, Los Angeles Co., W half of Horse Flats; 34°17'40"N, 118°33'42"W, Oat Mountain Quadrangle, USGS. **Continuity:** New. **Size:** 8.13 ha = 20.08 acres (rectangular, 270 × 360 yds measured with steel tape and compass). **Description of Area:** Open valley grassland at base of the Santa Susana Mtns. Treeless with winter rain and hot dry summers. A dirt road runs N-S through the E half of the study site. **Vegetation:** Twenty-five ½ m² random circular plots were sampled to determine percent cover, percent species composition and standing height. Green vegetation covers 58% of the study site. Sprouts of oat (*Avena* sp.), bromegrass (*Bromus* sp.) and medic (*Medicago* sp.) comprise 42% of the stand. Forty-four percent is composed of storksbill (*Erodium* sp.) and 7% is composed of mustard (*Brassica* sp.). Together, these genera form a standing height of 1-4 cm. In addition, Horehound (*Marrubium vulgare*) comprises 6% (4-40 cm tall) of the stand while trace amounts of Dove Weed (*Eremocarpus setigerus*) and Loco Weed (*Astragalus* sp.) are present. Twenty-one percent of the study site is covered with a sparse branching canopy of dead *Brassica* sp. stems from the previous year. Mean height of this canopy is 75 cm. **Topography:** Elevation 472 m (1550 ft), mildly sloping (2-3%) SE. **Edge:** On all sides immediately surrounding the study site is similar flat grassland habitat. Beyond this lie moderately steep rolling foothills. **Water:** A seasonal stream lies 640 m (.4 mi) to the SE. **Weather:** Temperatures ranged from 6°C (42°F) to 21°C (70°F) during the coverage period, with all counts occurring in temperatures between 16°C (60°F) and 21°C (70°F). Winter rainfall was extremely heavy, with 3.86 in. falling during the study period. Total rainfall for January was 7.70 in. which brought the season total to 14.74 in. (seasonal norm is 7.66 in.). Precipitation measurements from the U.S. Weather Bureau Station in Los Angeles located 38 km SSE of the study site. Skies were clear during 3 counts, partly cloudy during 6 and intermittent light rain occurred on one count. Winds of 5 mph occurred on 2 occasions. **Coverage:** Jan. 13, 15, 17-21. Total, 10 trips; 3 morning (0830-1130), 1 mid-day (1130-1330), 6 afternoon (1330-1730), averaging 75 min each. **Count:** Savannah Sparrow, 212 (2609, 1056); Mourning Dove, 112 (1378, 558); Lark Sparrow, 22 (271, 110); W. Meadowlark, 7 (86, 35); House Finch, 5 (62, 25), Horned Lark, 4 (49, 20); Am. Kestrel, 1 (12, 5); Com. Raven, 1 (12, 5); Vesper Sparrow, 1 (12, 5); Sharp-shinned Hawk, +; Red-tailed Hawk, +; Marsh Hawk, +; Say's Phoebe, +. **Average Total:** 365 birds (4492/km², 1818/100 acres). **Remarks:** Savannah Sparrows and Mourning Doves were seen on every count. Lark Sparrows were seen on 9 trips and appeared to feed, but not roost, on the study plot. Sixty meadowlarks were seen on one late afternoon trip. These birds appeared to be roosting overnight on the study plot. Very few meadowlarks were seen on the plot during the day. A feeding flock of 31 Horned Larks was seen on one trip. The study plot was intermittently grazed by sheep subsequent to the first count. Off-road vehicles occasionally occupied the study site. — **LAWRENCE K. AXELROD**, Dept. of Biology, California State Univ., Long Beach, and 19210 Clymer St., Northridge, CA 91326.

81. PALOVERDE DESERT WASH. — **Location:** California, San Bernardino Co., Chemehuevi Wash in Chemehuevi Valley, about 18 mi N of Vidal Junction on US 95. W boundary of plot is about 200 m E of Hwy 95; the plot begins in the NE ¼ of Sec. 15, T4N, R22E, Savahia Peak Quadrangle, USGS; 34°26'N, 114°39'W. **Continuity:** New. **Size:** 15.8 ha = 39 acres (rectangular 700 × 225 m, paced). **Description of Plot:** Chemehuevi Wash is located in the northernmost portion of the Colorado Desert in California. The size and vegetation cover of the wash varies considerably owing to the large flows of water it receives now and then. **Vegetation:** Five 100 toe-point transects were made to determine plant composition and percent ground cover. The ground cover was composed of 51% bare ground, 30% small rocks (<2 in.), 1% large rocks (>2 in.), 7% litter, and 10% shrub stems. The shrub cover was 18%. It consisted of 44% Blue Paloverde (*Cercidium floridum*), 18% Cheesebush (*Hymenoclea salsola*), 7% Goldenbush (*Haplopappus linearifolius*), 6% Brandegea (*Brandegea bigelovii*), 5% Creosotebush (*Larrea tridentata*), 4% Burrobush (*Ambrosia dumosa*), 3% each of Smoketree (*Dalea spinosa*) and Boxthorn (*Lycium andersonii*), 2% each of Sweetbush (*Bebbia juncea*) and Desert Tobacco (*Nicotiana trigonophylla*), and 1% Mistletoe (*Phoradendron californicum*). The percent composition of perennial species was 30% Cheesebush, 14% Burrobush, 11% Blue Paloverde, 9% Desert Tobacco, 7% Creosotebush, 6% each of Brandegea and Smoketree, 5% Goldenbush, 4% Spanish Needles (*Palafoxia linearis*), 2% each of Sweetbush and Desert-straw (*Stephanomeria pauciflora*), 1% each of Boxthorn and Encelia (*Encelia* sp.) and Desert Mallow (*Sphaeralcea ambigua*). **Edge:** The plot is bounded by Creosote-Burrobush scrub. **Topography:** Slope is very slight. **Elevation:** 1120-1160 ft. **Water:** Nearest permanent water is the Colorado River, approx. 16 mi E. **Weather:** Temperatures during the study period ranged from 30° to 75°F; the precipitation recorded was 1.25 inches. **Coverage:** Jan. 20-21, 29-30; Feb. 4-5, 19, 25. Total, 8 trips all between 0700 and 1845, averaging 84 min each, two were evening counts. **Count:** White-crowned Sparrow, 48 (304, 123); Verdin, 11 (70, 28); Phainopepla, 9 (57, 23); Black-tailed Gnatcatcher, 8 (51, 21); Ruby-crowned Kinglet, 7 (44, 18); Gambel's Quail, 2 (13, 5); Logger-head Shrike, 2; Ladder-backed Woodpecker, 1 (6, 3); Bewick's Wren, 1; Sage Thrasher, 1; House Finch, 1; Sharp-shinned Hawk, +; Red-tailed Hawk, +; Short-eared Owl, +; Say's Phoebe, +; House Wren, +; Yellow-rumped (Audubon's) Warbler, +; Brewer's Sparrow, +. **Average Total:** 91 birds (577/km², 233/100 acres). **Remarks:** An average of 1.1 Black-tailed Jackrabbits (*Lepus californicus*) were seen on the counts (7/km², 3/100 acres). Six White-tailed Antelope Squirrels (*Ammospermophilus leucurus*) and 3 Desert Cottontails (*Sylvilagus auduboni*) were recorded on the counts. I thank Dick Zembal for his assistance in plant identification. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — **BRIAN E. DANIELS**, 3471 Lama, Long Beach, CA 90808.



82. IRONWOOD - SMOKETREE DESERT WASH. — **Location:** California; San Bernardino Co., Vidal Wash in Vidal Valley, about 5.5 mi E and 6.5 mi S of Vidal Junction on US Hwy 95. The W boundary of the plot begins in the SE ¼ Sec. 8, T1S, R24E, Parker Quadrangle, USGS; 34°06'N, 114°29'W. **Continuity:** New. **Size:** 18.6 ha = 45.9 acres (rectangular 675 × 275 m, paced). **Description of Plot:** Typical wash type of the Northern Colorado Desert. A private dirt road crosses the wash near its western boundary. **Vegetation:** Five 100 toe-point transects were made to determine plant composition and percent ground cover. The ground cover was composed of 45% bare ground, 42% small rocks (<2 in.), 3% large rocks (>2 in.), 6% litter, and 5% shrub stems. The shrub cover was 11%. It consisted of 37% Desert Ironwood (*Olneya tesota*), 19% Blue Paloverde (*Cercidium floridum*), 10% each of Smoketree (*Dalea spinosa*) and Cheesebush (*Hymenoclea salsola*), 4% each of Creosotebush (*Larrea tridentata*) and Boxthorn (*Lycium andersonii*), and 1% Mistletoe (*Phoradendron californicum*). The percent composition of perennial species was 27% Cheesebush, 17% Desert Ironwood, 15% Smoketree, 14% Creosotebush, 12% Burrobush (*Ambrosia dumosa*), 7% Boxthorn, 5% Blue Paloverde, and 2% each of Encelia (*Encelia* sp.) and Desert-straw (*Stephanomeria pauciflora*). **Edge:** The plot is bounded by Creosote-Burrobush scrub. **Topography:** Slope is very slight. Elevation, 480-520 ft. **Water:** Nearest permanent water is the Colorado River, approx. 3.5 mi. E. **Weather:** Temperatures during the study period ranged from 30° to 75°F; the precipitation recorded was 1.87 in. **Coverage:** Jan. 18-19, 22, 28; Feb. 3, 18, 20, 26. Total, 8 trips all between 0700 and 0900, averaging 80 min each; two were evening counts between 1800 and 1900. **Count:** White-crowned Sparrow, 10 (54, 22); Verdin, 8 (43, 17); Black-tailed Gnatcatcher, 7 (38, 15); Phainopepla, 7; Ladder-backed Woodpecker, 2 (11, 4); Loggerhead Shrike, 2; Yellow-rumped (Audubon's) Warbler, 2; House Finch, 2; Gambel's Quail, 1 (5, 2); Cactus Wren, 1; Ruby-crowned Kinglet, 1; Yellow-rumped (Myrtle) Warbler, 1; Prairie Falcon, +; Say's Phoebe, +; Bewick's Wren, +; Sage Thrasher, +. **Average Total:** 43 birds (231/km², 94/100 acres). **Remarks:** Four Black-tailed Jackrabbits (*Lepus californicus*) and two White-tailed Antelope Squirrels (*Ammospermophilus leucurus*) were recorded on the counts. I thank Dick Zembal for his assistance in plant identification. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — **BRIAN E. DANIELS**, 3471 Lama, Long Beach, CA 90808.

83. DESERT IRONWOOD - CREOSOTE BAJADA, I. — **Location:** California; Imperial Co., 2 mi E of Glamis on U.S. Hwy 78. Here, at milepost 43 the SE border extends parallel to the highway at about 75 m. Section unsurveyed, T13S, R18E, Acolita Quadrangle, USGS; south corner approx. 33°50'N, 115°02'36"W. **Continuity:** New. **Size:** 20.25 ha = 50.04 acres; 450 m square (measured). **Description of Area:** Formed by the range of Chocolate Mountains in SE California, an extensive bajada [“a steep, curved descending road or trail” — Webster III] slopes down from their

SW face into the Salton Sink and Imperial Valley. The bajada is approx 3-10 mi wide, 50 mi long; and ranges from 300 to 700 ft elevation. Here, the plots sample the network of intermingling dry and shallow watercourses that traverse the sloping gravel plain. Trees are generally restricted to the larger washes; shrubbery is denser and fuller adjacent to the washes. Large open areas devoid of watercourses commonly separate equally large vegetated areas. Upon inspection, considerable vegetational differences are evident between the two plots. This random difference is likely a result of the more diffused pattern of washes in Desert Ironwood-Creosote Bajada, II, which results in larger expanses of shrubbery and fewer trees. Approximately two larger washes traverse each plot. Neither plot is undisturbed by ORV use (fairly light), and rather severe ditching (origin unknown) in sections of Desert Ironwood-Creosote, II may have resulted in the more diffused pattern of washes. **Vegetation:** Twelve 100-point pace transects were made to determine percent cover and species composition. The substratum is composed of 75.5% small rocks (<5 cm), 17.3% bare ground, 6.8% plant litter, 0.3% shrub stems and 0.1% large rocks (>5 cm). The canopy cover of 8% is composed of: 42% Creosotebush (*Larrea tridentata*), 20% Brittlebush (*Encelia farinosa*), 15% Ironwood (*Olneya tesota*), 12% dead branches of Ironwood and Creosotebush, 5% Burrobush (*Ambrosia dumosa*), and 4% Paloverde (*Cercidium floridum*). Supplementary canopy of 1% each is provided by other species listed in species composition. Perennial species composition: 41% Creosotebush, 40% Brittlebush, 10% Burrobush, 2% Cheesebush (*Hymenoclea salsola*), 2% Ironwood, 2% Jimson-weed (*Datura meteloides*), 1% Silver Cholla (*Opuntia echinocarpa*), and 0.5% Parry Dalea (*Dalea parryi*), Silk Dalea (*Dalea mollis*), Lance-leaf Ditaxis (*Ditaxis lanceolata*), Fagonia (*Fagonia californica*), Rock Hibiscus (*Hibiscus denudatus*), Ocotillo (*Fouquieria splendens*), Silver Cholla (*Opuntia echinocarpa*), Buckthorn Cholla (*O. acanthocarpa*), Darning Needle Cactus (*O. ram sissima*), Beavertail Cactus (*O. basilaris*), Cot-tontop Cactus (*Echinocactus polycephalus*), Corkseed Cactus (*Mammillaria tetrancistra*), Anderson Thornbush (*Lycium andersonii*), Desert Tobacco (*Nicotiana trigonophylla*), Sweetbush (*Bebbia juncea aspera*), and *Stephanomeria* sp. The Sand-mat (*Euphorbia polycarpa*) is common through mostly insignificant perennial; and Desert Mistletoe (*Phoradendron californicum*) is a regular parasite on the Ironwoods. Annuals are all but absent until mid-February; but by March 1978 miniature gardens flourished beneath Ironwoods and diffuse carpets extended onto open gravelly areas. **Edge:** Other than the highway 75 m off SE border, similar habitat surrounds plot. **Topography:** Flat sloping plain with 1.6% slope; elevation 367-443 ft (132-135 m). **Water:** Occasional pools in washes lasted several days after heavy rain. Larger infrequent ponds at dune edge (3 mi SE) sometimes hold water. Dew makes a significant contribution on calm mornings after precipitation. The closest permanent source is the Coachella Canal, 8½ mi SE. **Weather:** During the census period temperatures ranged from 36 to 84°F (ave. 45-73°). Showers were recorded Feb. 5 and 9; and on Feb. 13 a short but violent afternoon thunder-

storm nearly filled the washes. This was the wettest winter in at least 20 years (pers comm "locals"). Census mornings were clear 75% of the time and calm 63%. **Coverage:** Feb. 2-3, 6, 11, 14, 18, 21, 24. Total. 8 trips (over 23-day period) between 0700 and 0905, averaging 114 min each. Additional observations for owls and goatsuckers were made on Feb. 15, 21, and 23 between 1540 and 1805, averaging 127 min each. **Count:** Black-tailed Gnatcatcher, 5 (25, 10); Ruby-crowned Kinglet, 4 (20, 8); Yellow-rumped (Audubon's) Warbler, 4; Sage Sparrow, 4; Brewer's Sparrow, 4; Verdin, 3 (15, 6); White-crowned Sparrow, 2 (10, 4); Rock Wren, 1 (5, 2); Mountain Bluebird, 1; Prairie Falcon, +; Mourning Dove, +; Costa's Hummingbird, +; Horned Lark, +; Loggerhead Shrike, +; House Finch, +. **Average Total:** 28 birds (138/km², 56/100 acres). **Remarks:** Phainopeplas were occasionally seen from the plot but not on it. Lesser Goldfinches were twice seen flying over the plot, and a Starling once. Verdin, Black-tailed Gnatcatcher, and Ruby-crowned Kinglet were seen on all 8 censuses; Yellow-rumped Warbler and Sage Sparrow on 7; Brewer's Sparrow on 6; and White-crowned Sparrow on 4. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — R. P. HENDERSON, 15950 Riverlands Ave., Guerneville, CA 95440.

84. DESERT IRONWOOD - CREOSOTE BAJADA, II. — **Location:** California; Imperial Co.; 2 mi E of Glamis on U.S. Hwy 78. At milepost 43 the NW border extends parallel to the highway at about 150 m. Sections unsurveyed, T13S, R18E, Acolita Quadrangle, USGS. West corner approx. 33°00'44"N, 115°02'32"W. **Continuity:** New. **Size:** 20.25 ha = 50.04 acres; 450 m square (measured). **Description of Plot:** See description Desert Ironwood-Creosote Bajada, I. **Vegetation:** Twelve 100-point pace transects were made to determine percent cover and species composition. The substratum is composed of 73.9% small rocks (<5 cm), 17.9% bare ground, 7.5% plant litter, 0.4% shrub stems, and 0.2% large rocks (>5 cm). The canopy cover of 8% is composed of: 31% Creosotebush (*Larrea tridentata*), 30% Ironwood (*Olneya tesota*), 12% dead branches of Ironwood and Creosotebush, 11% Brittlebush (*Encelia farinosa*), 5% Burrobush (*Ambrosia dumosa*), 5% Cheesebush (*Hymenoclea salsola*), and 5% Paloverde (*Cercidium floridum*). Perennial species composition is: 50.7% Creosotebush, 22.2% Brittlebush, 16.8% Burrobush, 3.4% Cheesebush, 2.7% Ironwood, 2.0% Jimson-weed (*Datura meteloides*), 1.9% Darning Needle Cactus (*Opuntia ramosissima*), 0.5% Paloverde, and 0.5% Parry Dalea (*Dalea parryi*), Silk Dalea (*Dalea mollis*), Lance-leaf Ditaxis (*Ditaxis lanceolata*), Fagonia (*Fagonia californica*), Silver Cholla (*Opuntia echinocarpa*), Buckhorn Cholla (*O. acanthocarpa*), Beavertail Cactus (*O. basilaris*), Desert Lavender (*Hyptis emoryi*), Anderson Thornbush (*Lycium andersonii*), Desert Tobacco (*Nicotiana trigonophylla*), Brandegea (*Brandegea bigelovii*), Sweetbush (*Bebbia juncea aspera*), Spanish Needle (*Palafoxia linearis*), and *Stephanomeria* sp. The sand-mat, (*Euphorbia polycarpa*), is a common though mostly insignificant perennial; and Desert Mistletoe (*Phoradendron californicum*) is a common

parasite on the Ironwoods. Annuals are all but absent until mid-February, but by March 1978 miniature gardens flourished beneath Ironwoods and diffuse carpets extended onto open gravelly areas. **Edge:** Other than the highway 150 m off NW border, like habitat surrounds plot. **Topography:** Flat sloping plain with 1.6% slope; elevation 443-467 ft (135-142 m). **Water:** See Desert Ironwood-Creosote Bajada, I. **Weather:** During the study period temperatures ranged from 32 to 84°F (av. 46-72°). Showers were recorded Jan 30 and Feb. 5 and 9. On Feb. 13 a short and violent afternoon thunderstorm nearly filled the washes; streams up to 30 cm deep were formed in half an hour. Census mornings were clear 63% of the time and calm 50%. **Coverage:** Jan. 30; Feb. 1, 4, 7, 12, 16, 19, 22. Total. 8 trips (over 24-day period) between 0655 and 1000, averaging 120 min each. Additional observations for owls and goatsuckers were made 1720-1830 (Feb. 16) and 1540-1800 (Feb. 19). **Count:** Yellow-rumped (Audubon's) Warbler, 10 (49, 20); Verdin, 4 (20, 8); Mountain Bluebird, 3 (15, 6); Black-tailed Gnatcatcher, 2 (10, 4); Phainopepla, 2; White-crowned Sparrow, 2; Sage Thrasher, 1 (5, 2); Ruby-crowned Kinglet, 1; Loggerhead Shrike, 1; House Finch, 1; Brewer's Sparrow, 1; Am Kestrel, +; Mourning Dove, +; Ladder-backed Woodpecker, +; Say's Phoebe, +; Horned Lark, +; Blue-gray Gnatcatcher, +; Sage Sparrow, +. **Average Total:** 28 birds (138/km², 56/100 acres). **Remarks:** Refer to Count and Remarks of Desert Ironwood-Creosote Bajada, I (Census No. 83) for supplementary species. The greater frequency of mistletoe on this plot may be responsible for the greater numbers of Sage Thrashers and Phainopeplas; and, to a lesser degree, Mountain Bluebirds. Low level military jets and helicopters were common; off-road vehicles occasional. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — R. P. HENDERSON, 15950 Riverlands Ave., Guerneville, CA 95446.

85. DESERT RIPARIAN THICKET. — **Location:** California; Inyo Co., Amargosa River Gorge; 0.8 km (0.5 mi) S of the Tecopa Post Office; plot begins in the SE 1/4 Sec 9 and extends into the NE 1/4 Sec. 16, T20N, R7E, Tecopa Quadrangle, USGS; 35°50'N, 116°13'W. **Continuity:** New. **Size:** 10.3 ha = 25.5 acres (approximate rectangle, 212 × 487 m, paced). **Description of Plot:** A riparian thicket on E bank of a permanent river. Little significant riparian vegetation on W bank of this portion of the river. Surrounding hills are quite steep and rise to 80 ft (24.4 m) above the stream bed in some sections. The river borders the W side of the plot and varies from 3.25 to 30 ft (1-9.1 m) in width and from several ft to several in. in depth. **Vegetation:** Five 100-point pace transects and five 2 m × 100 m transects were made to determine the percent cover, species composition, and number of perennial plants. An absolute count of the trees on the plot with a dbh of 7.6 cm (3 in) and over were also made: 29/study plot (2.8/ha and 1.1/acre). Of these few trees, 21 (72.4%) are Screwbean Mesquite (*Prosopis pubescens*), 4 (13.8%) are Goodding's Willow (*Salix gooddingii*), and 4 (13.8%) are Honey Mesquite (*P. glandulosa*); total basal area 68

sq m/ha (1.1 sq ft/acre) in the plot. Both the willows and the screwbean have an estimated average height of 8 m (26.2 ft) and range from 6 to 11 m (19.5-36 ft). The willows grow exclusively on the E side of the upper stream bank; the Honey Mesquite grow along the old railroad bed and should be considered an edge species; the Screwbean Mesquites are distributed in small clusters throughout the plot. The canopy cover of 48.6% is composed of 53.1% Goodding's Willows, 18.9% Arrowweed (*Pluchea sericea*), 12.75% Desert Blite (*Suaeda Torreyana*), 4.5% Quailbush (*Atriplex lentiformis*), 4.1% Screwbean Mesquite, 2.4% Olney Bulrush (*Scirpus Olneyi*), 1.6% Common Reed (*Phragmites communis*), 1.2% Willow, 0.8% Mule Fat (*Baccharis viminea*) and 0.4% Allscale (*A. polycarpa*). There are 16,010 perennial plants/ha (6482/acre); of these 35.5% are Goodding's Willow, 18.8% Arrowweed, 12% Olney Bulrush, 8.8% Desert Blite, 8% Cooper's Rush (*Juncus cooperi*), 7.8% Quailbush, 4.25% Mule Fat, 3.0% Screwbean Mesquite, and less than 1% each of Allscale and Salt Grass (*Distichlis spicata*). The substratum is composed of 58.0% litter, 25.0% living parts of perennial plants, 14.8% bare ground, 1.4% small rocks (<5 cm), and 0.8% large rocks (>5 cm). Plants recorded within the plot but missed on the transects included: Mistletoe (*Phoradendron californicum*), Squaw Waterweed (*B. sergiloides*), Four-winged Saltbush (*A. canescens*). **Elevation:** about 2105 ft maximum (641.6 m). **Edge:** At the N border of the plot is a fence maintained by the BLM. Immediately beyond this boundary is a large (3 ha = 7.41 acre) area which is frequently bulldozed by the owner. The disturbed area was previously habitat similar to that within the plot. Runoff from this compacted bare ground is causing significant erosion along the N edge of the plot. South of the study plot is similar habitat. The E and W is steep, sparsely vegetated sandstone hills. **Topography:** Gently sloping from N to S with an elevation change of approximately 1320-1260 ft (402-384 m). The raised bed of a dismantled railroad track runs along the E boundary of the plot, paralleling the river, about 40 ft (12.2 m) above the elevation of the river bed. The plot therefore slopes from E to W at an angle of 18%. It lies in the Amargosa Gorge which cuts through the Sperry Hills. **Water:** In addition to the Amargosa River there are two springs which emerge from the E side of the plot and run across it. Another series of springs arise from the ground in the north-central area where the *Scirpus/Juncus* marsh is. **Weather:** Temperatures during the census period ranged from 32° to 77°F; 7.6 cm (2.98 in.) of rainfall recorded during the period is anomalous. **Coverage:** Jan. 24, 26, 28, 30; Feb. 22, 24, 26, 28 Total, 8 trips averaging 3 hours each, between 1800-2200. **Count:** Ruby-crowned Kinglet, 17 (165, 67); Verdin, 12 (116, 47); White-crowned Sparrow, 11 (107, 43); Gambel's Quail, 8 (78, 31); Long-billed Marsh Wren, 6 (58, 24); Yellow-rumped Warbler, 6; Song Sparrow, 6; Bewick's Wren, 5 (48, 20); Am. Robin, 4 (39, 16); Orange-crowned Warbler, 4; Crissal Thrasher, 3 (29, 12); Com. Flicker, 2 (19, 8); Virginia Rail, 1 (10, 4); Black Phoebe, 1; Rock Wren, 1; Phainopepla, 1, Sage Sparrow, 1; Great Blue Heron, +; Am. Bittern, +; Red-tailed Hawk, +; Roadrunner, +, Long-eared Owl, +; White-throated Swift,

+ Com Raven, +, W Bluebird, +, Rufous-sided Towhee, + **Average Total:** 89 birds (862 /km², 349/100 acres). **Remarks:** 26 species. Census data indicate that Crissal Thrashers and Phainopeplas are present in higher numbers in January and February. The presence of robins and W. Bluebirds may be attributed to the crops of mistletoe berries which grow on the Honey Mesquite, an edge species. One Cooper's Hawk, and 6 Tree Swallows seen in late February were considered migrants rather than winter residents. Motorcycles were encountered on the plot on several trips, and tracks were evident on every trip. A plant collected on the plot had been tentatively identified as *Baccharis salicina*, a species previously undescribed from California. There is a possibility, however, that this plant is an intergrade (specimen on file with California Academy of Sciences). Thanks to Ken Smith for weather data, Jan Tarble for the use of her field notes, Meryl Evens for field assistance, John Kipping and Dennis Breedlove for help with plant identification. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — JULES EVENS, Laguna Ranch, P.O. Box 59, Pt. Reyes Station, CA 94956.

86. MESQUITE COMMUNITY. — Location: California; Inyo Co., S tip of Resting Springs Range; 5.2 mi ENE of the Tecopa Post Office; the plot is in the SE ¼ of Sec. 31, T21N, R8E, Tecopa Quadrangle, USGS; 35° 53'N, 116°10'W. **Continuity:** New. **Size:** 12.6 ha = 31.1 acres (irregular, approximately 560 × 225 m, paced). **Description of Plot:** A dense mesquite thicket which follows the course of a dry river bed. The surrounding hills are sparsely vegetated with small shrubs characteristic of the eastern Mohave. **Vegetation:** Four 100-point pace transects and five 2 × 100 m transects were made to determine percent cover, species composition and number of shrubs. The density and excessive branching of the mesquite necessitated measurements to be made 30 cm above the ground. The substratum is composed of 49.5% bare ground, 26.5% litter, 16% small rocks (<5 cm), 7% large rocks (>5 cm), 1% shrub stems. The canopy cover of 27% is composed of 91.6% Honey Mesquite (*Prosopis glandulosa*), 3.7% dead shrubs, 1.85% Allscale (*Atriplex polycarpa*), 1.85% Desert Blite (*Suaeda Torreyana*), and 1% Four-winged Saltbush (*A. canescens*). There are 470 shrubs/ha (190/acre) total basal area 31.9 m²/ha (138.9 ft²/acre); of which 80.75% are Honey Mesquite, 8.5% Allscale, 4.5% Desert Blite, 3% Four-winged Saltbush, 1.75% Quailbush (*A. lentiformis*), 1% Brittlebush (*Encelia farinosa*), Bush Encelia (*E. frutescens*), and Hopsage (*Grayia spinosa*). The local ranchers burn the thicket at approximately 3-year intervals, which may account for the extreme homogeneity of the plot and the relative scarcity of mistletoe (*Phoradendron californicum*). **Elevation:** 1740-1720 ft (527-521 m), sloping very gradually to the SW. **Edge:** Bounded on the N by a dirt road which provides access to off-road vehicles. The S length of the plot is bordered, by a vertical bank, approx. 2m high. The plot is a section of a continuous strip of mesquite thicket which is 8 km long and 200-300 m wide, and is therefore bordered on E and W by similar habitat. **Topography:** The dry river bed in which the plot occurs runs from NE to

SW at the foot of the Chicago Valley. The drainage basin is formed by run-off from the E slopes of the Resting Springs Range (max elevation 3269 ft = 990 m) and the W slopes of the Nopah Range (max. elevation 5875 ft = 1781 m). **Water:** The nearest known source of permanent water is Resting Springs, 0.5 km NW. **Weather:** Temperatures during the census period ranged between 32° and 77°F; 7.6 cm (2.98 in.) of precipitation was recorded. Winter rain is anomalous in the region. **Coverage:** Jan. 25, 27, 29, 31; Feb. 21, 23, 25, 27 Total, 8 trips between 0630 and 2200, averaging 3 hours each. **Count:** White-crowned Sparrow, 22 (175, 71); Verdin, 13 (103, 42); Gambel's Quail, 12 (95, 39); Bewick's Wren, 12; Ruby-crowned Kinglet 8 (64, 26); Yellow-rumped Warbler, 5 (40, 16); Crissal Thrasher, 4 (32, 13); Am. Robin, 4; Com. (Red-shafted) Flicker, 2 (16, 6); Roadrunner, 1 (8, 3); Rock Wren, 1; Sage Sparrow, 1; Am. Kestrel, +, Great Horned Owl, +; Say's Phoebe, +, Rufous-sided Towhee, +. **Average Total:** 85 birds (675/km², 273/100 acres). **Remarks:** 16 species. The periodic fires to which this plot is subjected, and the subsequent scarcity of mistletoe, may be responsible for the conspicuous absence of Phainopeplas, W. Bluebirds, and Cedar Waxwings, frugivores which are common in nearby mesquite communities that do support healthy crops of mistletoe. It is interesting that Am. Robins, also frugivores, were present. Crissal Thrashers were often seen in pairs and it is suspected that they were nesting by late February. A Sharp-shinned Hawk (Feb. 21, 23) and a Cooper's Hawk (Feb. 21) were considered migrants rather than winter residents. Mammals seen on the plot included Antelope Ground Squirrel (*Ammodramophilus leucurus*), Desert Cottontail (*Sylvilagus auduboni*). Evidence of Coyote (*Canis latrans*) and Badger (*Taxidea taxus*) was also found. Thanks to Ken Smith for weather data and Jan Tarble for access to her field notes. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — JULES EVENS, Laguna Ranch, P.O. Box 59, Pt. Reyes Station, CA 94956.

87. CREOSOTE-BRITTLEBUSH ROCKY HILLSIDE. — Location: California; Imperial Co., Devil's Canyon area; adjacent to Interstate 8 and 1.9 mi W of its intersection with State 98 at Ocotillo. The NW corner is approximately 55 yards S of the highway, and the N boundary parallels the highway; E½ Sec. 9 and W½ Sec. 3, T17S, R9E, Jacumba Quadrangle, USGS; 32°43'N, 116°00'W. **Continuity:** New (BBC, 1977). **Size:** 20 ha = 49.4 acres (irregularly rectangular, 400 × 500 m, paced). **Description of Plot:** See AB 32: 98-99 (1978). **Weather:** Daily temperatures on census days, ca. 55-75°F. The winter of 1977-78 was exceptionally wet and the ground was damp on many occasions. Vegetation was more profuse than in most years. **Coverage:** Dec. 18, 23; Jan. 1, 16, 21, 29; Feb. 4, 25; Mar 9. Nine trips averaging 2.7 hours each, all conducted before noon. **Count:** Rock Wren, 8 (40, 16); Black-throated Sparrow, 6 (30, 12); House Finch, 2 (10, 4); Yellow-rumped (Audubon's) Warbler, 1 (5, 2); Red-tailed Hawk, +; Am. Kestrel, +; Com. Raven, +. **Average Total:** 17 birds (85/km², 34/100 acres). **Remarks:** Visitors included: White-crowned Sparrow, 80, Brewer's Sparrow, 8; Orange-crowned War-

bler, 1, Chipping Sparrow, 1 Counts such as this emphasize the often arbitrary designations that are required when censuses are made seasonally (i.e., breeding bird, winter) rather than in reference to the biology of the species involved. In a breeding bird census of this area in March-June 1977, I reported the virtual absence of birds (17/km², 5/100 acres) or about one-seventh that found in the current study. Most surprising was the lack of Rock Wrens, which breed in similar rocky desert habitats in many areas of southern California and on the offshore islands. The results of this "winter" census help clarify the apparent discrepancy. Evidently Rock Wrens breed in the area in large numbers in late winter and early spring, when vegetation and insects are maximal, then move to higher elevations in late spring as local conditions deteriorate; this would provide them with time and opportunity for a second nesting in a new area. Black-throated Sparrows, on the other hand, are truly winter residents, confining their winter activities largely to the rocky hillsides and avoiding the desert washes that they prefer later in the year. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — JOSEPH R. JEHL, JR., *Hubbs/Sea World Research Inst., 1700 South Shores Rd., San Diego, CA 92109.*

88. MESQUITE WOODLAND. — **Location:** California; Imperial Co., approximately 14.5 mi E of Calexico on State Hwy. 98. A powerline crosses the highway; the SE corner is about 45 yards W and 22 yards N of the highway; S border parallels the highway; in Sec. 31, T16S, R17E of the Calexico Quadrangle, USGS; 32°44'N, 115°15'W. **Continuity:** New (BBC, 1977). **Size:** 20 ha = 49.4 acres (rectangular, 400 × 500 m, paced). **Description of Plot:** See AB 32:102 (1978). **Weather:** Diurnal temperature generally ranged from 60 to 75°F during the census periods. Good conditions prevailed, with light rain at times during one census. The winter of 1977-78 was exceptionally wet, with record rainfalls in the deserts. **Coverage:** Dec. 23; Jan. 6, 28; Feb. 3, 26, 28; Mar. 14, 17. Total, 8 trips averaging 2.5 hours each, made between 0700 and 1200. **Count:** Verdin, 47 (235, 95); Ruby-crowned Kinglet, 12 (60, 24); Black-tailed Gnatcatcher, 8 (40, 16); Abert's Towhee, 3 (15, 6); Turkey Vulture, 2 (10, 4); Yellow-rumped (Audubon's) Warbler, 2; White-crowned Sparrow, 2; Gambel's Quail, 1 (5, 2); Orange-crowned Warbler, 1; Red-tailed Hawk, +; Marsh Hawk, +; Com. (Red-shafted) Flicker, +; Yellow-bellied Sapsucker, +; Ladder-backed Woodpecker, +; Bewick's Wren, +; Cactus Wren, +. **Average Total:** 78 birds (390/km², 158/100 acres). **Remarks:** Visitors included: Mourning Dove, 41; Rough-winged Swallow, 5; Marsh Hawk, 3; Ash-throated Flycatcher, 3; Killdeer, 3; White-winged Dove, 2; Black-necked Stilt, 1; House Wren, 1; Crissal Thrasher, 1; Hermit Thrush, 1; Phainopepla, 1; Nashville Warbler, 1. Black-necked Stilts and Killdeer occasionally fly over from the adjacent All American Canal and have no effect on the area. Mourning Dove did not appear until late February. Verdins first appeared in early January with increasing numbers until estimations were nearly impossible to make. It was by far the dominant bird in the area. Crissal Thrasher first appeared on

Feb 26 and is believed to be a summer resident. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — SUZANNE I. BOND, 4138 Vermont St., San Diego, CA 92103.

89. SCRUB OAK-DESERT CHAPARRAL. — **Location:** California, Imperial Co., Smuggler's Cave; approximately 222 yards SW of the turnoff to In-Ko-Pah County (San Diego) Park, on US Hwy 8, a winding dirt road leads SE, climbing about 500 ft before descending into a sheltered valley (Smuggler's Cave) approximately 1.25 mi from the highway. The Valley tends NW-SW, and the NW border traverses the NW end of the valley floor. The long axis follows the center of the valley; in Sec. 5, T18S, R9E, Jacumba Quadrangle, USGS; 32°38'N, 116°05'W. **Continuity:** New (BBC, 1977). **Size:** 20 ha = 49.4 acres (rectangular, 400 × 500 m, paced). **Description of Plot:** See AB 32:105 (1978). **Weather:** Diurnal temperature generally ranged from 50° to 65°F during the census periods. Strong winds at times. The winter of 1977-78 was very wet, with record rainfalls in the deserts. There was surface runoff and several small catch ponds on occasion. **Coverage:** Dec. 16; Jan. 18, 29; Feb. 14, 24; Mar. 3, 7, 10, 24. Total, 9 trips averaging 2.5 hours each; censuses made between 0730 and 1230. **Count:** House Finch, 54 (270, 109); White-crowned Sparrow, 35 (175, 71); California Quail, 10 (50, 20); Black-throated Sparrow, 8 (40, 16); Scrub Jay, 3 (15, 6); Dark-eyed (Oregon) Junco, 3; Com. Raven, 2 (10, 4); Cactus Wren, 2; Rock Wren, 2; Lesser Goldfinch, 2; Red-tailed Hawk, 1 (5, 2); Com. (Red-shafted) Flicker, 1; Bewick's Wren, 1; Ruby-crowned Kinglet, 1; Loggerhead Shrike, 1; Rufous-sided Towhee, 1; Brown Towhee, 1; Mountain Quail, +; Say's Phoebe, +; California Thrasher, +; Black-tailed Gnatcatcher, +. **Average Total:** 128 birds (640/km², 259/100 acres). **Remarks:** The visitors, all migrants, included: Anna's Hummingbird, 1; Costa's Hummingbird, 1; W. Flycatcher, 1; Hermit Thrush, 1; Scott's Oriole, 1. Bird activity was usually heavy except on several days when adverse weather, off-road traffic, or shooting disturbed the area. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — SUZANNE I. BOND, 4138 Vermont St., San Diego, CA 92103.

90. CREOSOTE SCRUB, I. — **Location:** California; Imperial Co., open creosotebush scrub desert just S of Hwy 78, 0.6 mi E of milepost 29, Sec. 36, T13S, R16E, Holtville Quadrangle, USGS; 32°49'N, 115°15'W. **Continuity:** New. **Size:** 20.25 ha = 50.04 acres (450 meters square). **Description of Plot:** Plot is relatively flat with low, rolling, creosote-covered sand dunes; creosote uniformly distributed throughout plot; substrate sand. Creosotebushes were 6-12 ft (2-4 m) in height. **Vegetation:** Open areas (sand and litter comprise 90% of the study plot) with 10% scrub cover. The perennial plant species, in descending order of abundance, are: Creosotebush (*Larrea tridentata*), 69%; Spanish Needles (*Palafixia linearis*), 21%; Wingscale (*Atriplex canescens*), 7%; Burrobush (*Ambrosia dumosa*), 2%; Long-leaved Ephedra (*Ephedra trifurca*), 1%; Emory Dalea (*Dalea emoryi*),

≤1%; Plicate Coldenia (*Coldenia plicata*), ≤1%. This area only occasionally has ORVs present and none were seen in the area during the study period. **Elevation:** 50-65 ft (15-20 m) above sea level. **Weather:** Temperatures ranged from 2° to 25°C with clear to partly cloudy skies prevailing. There was heavy ground fog early on the morning of Feb 6. There was 2.16 in. (5.49 cm) of rain during the study period, though no rain fell on count days. **Coverage:** Jan. 11, 25, 29; Feb. 6, 8, 11-12, 24. Total of 8 surveys conducted between 0630 and 1010, averaging 174 min each. In addition 3 night surveys were conducted on Jan. 24, 25; Feb. 9 and 24 to check for noncturnal species. **Count:** White-crowned Sparrow, 93 (459, 186); Brewer's Sparrow, 34 (168, 68); Mourning Dove, 10 (49, 20); House Finch, 6 (30, 12); Blue-gray Gnatcatcher, 4 (20, 8); Yellow-rumped Warbler, 4; Black-tailed Gnatcatcher, 3 (15, 6); Sage Sparrow, 3; Ruby-crowned Kinglet, 2 (10, 4); Verdin, 1 (5, 2); Loggerhead Shrike, 1; Marsh Hawk, +; Burrowing Owl, +; Say's Phoebe, +; Black-throated Sparrow, +; Chipping Sparrow, +. **Average Total:** 161 birds (795/km², 322/100 acres). **Remarks:** The sparrows usually fed together in large flocks and several of the other passerine species often were associated with the sparrows (e.g., gnatcatchers, kinglets, warblers, Verdin). The sparrows fed on the ground on fresh shoots and seeds, while the other species fed in the bushes overhead on buds and insects. No ecological or behavioral differences between the two species of gnatcatchers were discerned. Both species occurred together and fed in the outer branches of Creosotebushes. This study was sponsored by the Bureau of Land Management, California Desert Plan Program — LEE JONES, P.O. Box 1284, Topanga, CA 90290; JON DUNN, 3411 Felton St., San Diego, CA 92104, and IAN MACGREGOR, 5276 Gould Ave., La Canada, CA 91011.

91. CREOSOTE SCRUB, II. — **Location:** California; Imperial Co., open creosotebush scrub desert just S of Hwy 78 at milepost 29, Sec. 36, T13S, R16E, Holtville Quadrangle, USGS; 32°49'N, 115°15'W. **Continuity:** New. **Size:** 20.25 ha = 50.04 acres (450 meters square). **Description of Plot:** Plot is flat and very uniform; substrate sand (90%) with scattered pebbles (10%) with uniformly distributed Creosote/Ephedra scrub to 3 meters in height. **Vegetation:** Open areas (bare ground and litter) comprise 95% of the study plot with 5% scrub cover. The perennial plant species are, in descending order of abundance: Creosotebush (*Larrea tridentata*), 56%; Long-leaved Ephedra (*Ephedra trifurca*), 17%; Spanish Needles (*Palafixia linearis*), 11%; Burrobush (*Ambrosia dumosa*), 10%; Four-winged Saltbush (*Atriplex canescens*), 6%; Emory Dalea (*Dalea emoryi*), <1%; Plicate Coldenia (*Coldenia plicata*), <1%. This area receives minimal off-road vehicle use. Although I never saw any ORVs inside the study plot, occasionally fresh tire tracks were present. **Topography:** Uniform throughout except for a small, vegetated sand dune about 12 ft (4 m) high and 450 ft (150 m) long in the W section of the plot. **Elevation:** 50 ft (15 m) above sea level. **Weather:** Temperatures ranged from 2° to 25°C with clear to partly cloudy skies prevailing. There was heavy

ground fog early on the morning of Feb 6. There was 2.16 in. (5.49 cm) of rain during the study period, though no rain fell on days that surveys were made. **Coverage:** Jan. 11, 23, 27; Feb. 6-7, 11-12, 23. Total of 8 surveys conducted between 0645 and 1010, averaging 173 min each. In addition 2 night surveys were done Jan. 24 and Feb. 22 of one hour each to check for nocturnal species. **Count:** Brewer's Sparrow, 37 (183, 74); White-crowned Sparrow, 30 (148, 60); Sage Sparrow, 17 (84, 34); Yellow-rumped Warbler, 6 (30, 12); Blue-gray Gnatcatcher, 5 (25, 10); Verdin, 2 (10, 4); Black-tailed Gnatcatcher, 2; Ruby-crowned Kinglet, 2; Burrowing Owl, 1 (5, 2); Say's Phoebe, 1; Loggerhead Shrike, 1; House Finch, 1; Vesper Sparrow, 1; Lark Sparrow, 1; Cooper's Hawk, +; Sage Thrasher, +; Chipping Sparrow, +. **Average Total:** 107 birds (528/km², 214/100 acres). **Remarks:** The three common sparrow species usually fed together in well-established flocks that foraged through areas much more extensive than the confines of the 50-acre plot. Often two separate flocks could be found within the plot and occasionally only a few scattered individuals could be found. The other passerine species were often loosely associated with these sparrow flocks, feeding in the creosotebushes above the ground-feeding sparrows. Blue-gray Gnatcatchers, Sage, Brewer's and White-crowned sparrows were seen on every survey. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — LEE JONES, P.O. Box 1284, Topanga, CA 90290, and KIMBALL GARRETT, Dept. of Biology, Univ. of California, Los Angeles, CA 90024.

92. PSAMMOPHYTIC SCRUB, I. — **Location:** California; Imperial Co., Algodones Sand Hills just N of Hwy 78 across from turn-off to Gecko Cmpgd, Sec. 36, T13S, R17E, Glamis Quadrangle, USGS; 32°58'45"N, 115°10'5"W. [Psammophytic = thriving on sand]. **Continuity:** New. **Size:** 20.25 ha = 50.04 acres (450 meters square). **Description of Plot:** Plot is on the western edge of the Algodones Sand Hills and, though closed to off-road vehicle use, receives limited ORV use on weekends, especially holidays. It is 0.5 mi E of the nearest creosote scrub desert which is characteristic of much of southeastern California. **Vegetation:** The substrate is 90% sand, 6% litter (on sand) and 4% plant cover. The perennial plant species, listed in descending order of abundance, are: Spanish Needles (*Palafoxia linearis*), 36%; Croton (*Croton wigginsii*), 20%; Desert Buckwheat (*Eriogonum deserticola*), 18%; Plicate *Coldenia* (*Coldenia plicata*), 13%; Long-leaved Ephedra (*Ephedra trifurca*), 6%; Emory Dalea (*Dalea emoryi*), 4%; Burrobush (*Ambrosia dumosa*), 3%; Blazing-star (*Mentzelia longiloba*), <1%; Creosotebush (*Larrea tridentata*), <1%. The effect of ORVs on the plant cover appears to be minor. Vegetation is sparse and mostly confined to the flat areas and troughs between sand dunes. **Topography:** Average slope of 1-1/2°. Elevation, 200-300 ft (65-100 m) above sea level. **Weather:** Temperatures ranged from 2° to 25°C with clear to partly cloudy skies prevailing. There was 2.16 in. (5.49 cm) of rain during the study period; however, no rain fell on count days. **Coverage:** Jan. 24, 28; Feb. 5-6, 9, 11-12, 25. Total of 8 surveys conducted between 0640 and 1050, averaging 174 min

each. Additionally, 4 night surveys averaging 53 min each were conducted on Jan. 24, 29, Feb. 13, and 26 to search for nocturnal species. **Count:** Lesser Goldfinch, 14 (69, 28); Yellow-rumped Warbler, 9 (44, 18); Mourning Dove, 6 (30, 12); House Finch, 6; Sage Sparrow, 4 (20, 8); White-crowned Sparrow, 3 (15, 6); Say's Phoebe, 1 (5, 2); Verdin, 1; Brewer's Sparrow, 1; Red-tailed Hawk, +; Marsh Hawk, +; Loggerhead Shrike, +. **Average Total:** 45 birds (222/km², 90/100 acres). **Remarks:** The Lesser Goldfinches fed on *Palafoxia* seeds and were occasionally joined by Yellow-rumped Warblers, House Finches, and White-crowned Sparrows. Yellow-rumped Warbler was the only species seen on every survey. Burrowing Owl pellets were found inside the plot on Feb. 25, though no birds were recorded in the plot. Species recorded flying over the plot, but not associated in any apparent manner with the plot, were Horned Lark, Tree Swallow, Cliff Swallow, and Lawrence's Goldfinch. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — LEE JONES, P.O. Box 1284, Topanga, CA 90290, and TERRY CLARK, 316 So. Spalding Dr., Beverly Hills, CA 90212.

93. PSAMMOPHYTIC SCRUB, II. — **Location:** California; Imperial Co., Algodones Sand Hills just S of Hwy 78 and E of the turn-off to Gecko Cmpgd, Sec. 36, T13S, R17E, Glamis Quadrangle, USGS; 32°32'58'40"N, 115°10'W. **Continuity:** New. **Size:** 20.25 ha = 50.04 acres (450 meters square). **Description of Plot:** Plot is on the W edge of the Algodones Sand Hills 0.5 mi E of the nearest creosote scrub desert. This is an area designated for orv use and receives heavy ORV traffic on weekends, very little during the week. **Vegetation:** Much vegetation has been destroyed by continual trampling. Only the larger perennials have remained relatively free from disturbance. This plot has only 1/4 the plant cover as the Psammophytic Scrub I plot located across the highway in a closed area. The substrate is 94% sand, 5% plant litter (on sand), and 1% plant cover. The perennial plant species, listed in descending order of abundance, are: Long-leaved Ephedra (*Ephedra trifurca*), 39%; Croton (*Croton wigginsii*), 38%; Spanish Needles (*Palafoxia linearis*), 12%; Plicate *Coldenia* (*Coldenia plicata*), 9%; Emory Dalea (*Dalea emoryi*), 1%; Desert Buckwheat (*Eriogonum deserticola*), <1%; Blazing-star (*Mentzelia longiloba*), <1%; Creosotebush (*Larrea tridentata*), <1%; Burrobush (*Ambrosia dumosa*), <1%. **Topography:** An average slope of 1 1/2°. Elevation, 200-300 ft (65-100 m). **Weather:** Temperatures ranged from 2° to 25°C with clear to partly cloudy skies prevailing. It rained approximately 0.02 in. on Feb. 10, temporarily interrupting a survey. Total rainfall during the study period was 2.16 in. (5.49 cm). **Coverage:** Jan. 11, 22, 26; Feb. 6, 10, 13, 14, 26. Total of 8 surveys between 0615 and 1115, averaging 174 min each. Additionally, night censuses were conducted Feb. 13 and 26. **Count:** Mountain Plover, 4 (20, 8); Loggerhead Shrike, 1 (5, 2). **Average Total:** 5 birds (25/km², 10/100 acres). **Remarks:** On two occasions no species were recorded. Mourning Doves were frequently seen beside the highway just N of the plot, but never within the plot. Killdeer, Mourning Dove, Horned Lark, Yellow-rumped Warbler, House Finch, Lesser Gold-

finch and White-crowned Sparrow were recorded flying over the plot on one or more occasion. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — LEE JONES, P.O. Box 1284, Topanga, CA 90290.

94. OCOTILLO-CREOSOTEBUSH SCRUB. — **Location:** California; Imperial Co., Ocotillo; on the N side of State Hwy S-2, 4.2 mi NW of intersection with Interstate 8. The SE corner is 0.5 mi W of a paved road leading north from S-2 to an active gravel pit, and 22 yards N of the highway; the S boundary parallels the highway; entirely enclosed in Sec. 20, T16S, R9E, of the Carrizo Mts. Quadrangle, USGS; 32°46'N, 116°03'W. **Continuity:** New (BBC 1977). **Size:** 20 ha = 49.4 acres (rectangular 400 × 500 m, paced). **Description of Plot:** See AB 32:103 (1978). **Weather:** Diurnal temperature ranged from 55° to 75°F during census periods. Fair conditions usually prevailed, but strong winds (ca. 30 mph) occurred on some days, as is usual at this season. The winter of 1977-78 was exceptionally wet, with record rainfalls; the ground was wet on many days to an undetermined depth. **Coverage:** Dec. 18, 23; Jan. 1, 16, 22; Feb. 1, 19, 26; Mar. 5, 18. Total, 10 trips averaging 2.6 hours each, 9 between 0700 and 1300, one entirely in afternoon (1400-1700). **Count:** Brewer's Sparrow, 26 (130, 53); House Finch, 2 (10, 4); Chipping Sparrow, 2; Mountain Bluebird, 1 (5, 2); Yellow-rumped (Audubon's) Warbler, 1; Black-throated Sparrow, 1; Sage Sparrow, 1; Red-tailed Hawk, +; Am. Kestrel, +; Com Raven, +; Say's Phoebe, +; Loggerhead Shrike, +. **Average Total:** 34 birds (170/km², 69/100 acres). **Remarks:** Visitors, all migrants, included: White-crowned Sparrow, 25; Lark Bunting, 3; Le Conte's Thrasher, 2; Sage Thrasher, 2; Cactus Wren, 1; Rock Wren, 1; Black-tailed Gnatcatcher, 1; goldfinch sp., 1; hummingbird sp., 1. The area was virtually birdless from December through mid-January. At that time, small numbers of Brewer's and Chipping sparrows began to occur. Whether these had wintered locally and had moved onto the plot, or represented early migrants, is not known; here they are tentatively treated as winter residents. If these two species are considered as migrants, the average total per census drops to only 5 birds (25/km², 10/100 acres). Sparrow flocks became commoner in February but were wary and hard to approach, so the relative proportion of species could not be determined; the majority were Brewer's, but Chipping may have comprised 10% of the total. The first known migrants appeared on Feb. 19. By March, sparrow abundance dropped sharply, even though food supplies were good; perhaps birds dispersed widely in response to abundant resources everywhere on the desert. It is invalid to terminate a winter bird study merely because of the presence of migrants. These birds may have an important effect on the carrying capacity of the area. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — JOSEPH R. JEHL, JR., Hubbs/Sea World Research Inst., 1700 South Shores Rd., San Diego, CA 92109.

95. 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 (Disregard 1968 coordinates), Derby Quadrangle, USGS **Continuity:** Established 1968; 6 intermittent years. **Size:** 14.2 ha = 35 acres (irregular, greatest dimensions 653 × 364 yds, surveyed). **Description of Area:** See *AFN* 22:714-715 (1968). **Weather:** Temperature during count hours ranged from 21 to 37°F. No wind 3 days; winds W to NW, light breeze to 10 mph 5 days, wind to 15 mph 1 day. Overcast 1 day, partly cloudy 5 days, clear 3 days. No snow cover on 2 trips; snow cover irregular to 24 in., 7 trips. **Coverage:** Dec. 9, 18, 29; Jan. 5, 12, 27, Feb. 3, 13, 25. Total, 9 trips between 1030 and 1600, averaging 1 hour each. **Count:** Black-capped Chickadee, 4 (28, 11); Pine Grosbeak, 3 (21, 9); White-breasted Nuthatch, 2 (14, 6); Com. Crow, 1 (7, 3); Cardinal, 1; House Finch, 1; Dark-eyed Junco, 1; Ruffed Grouse, +; Mourning Dove, +; Pileated Woodpecker, +; Hairy Woodpecker, +; Downy Woodpecker, +; Blue Jay, +; Tufted Titmouse, +; Ruby-crowned Kinglet, +; Yellow-rumped Warbler, +. **Average Total:** 13 birds (92/km², 37/100 acres). **Remarks:** The Black-capped Chickadee was seen on every trip, the White-breasted Nuthatch on every trip except one. The Ruffed Grouse, Mourning Dove, Pileated Woodpecker, Tufted Titmouse, Ruby-crowned Kinglet, House Finch, and Dark-eyed Junco were seen on only one trip. An exceptionally cold winter, heavy snow cover, and bird feeders in areas adjacent to the study area probably had an influence on the total population observed. — *LEON L. BARKMAN, Science Dept., Housatonic Community College, Bridgeport, CT 06608.*

96. CATTAIL MARSH. — **Location:** New York; St. Lawrence Co., on SW side of Rte 68 SW/4 Canton 15' Quadrangle. **Continuity:** New **Size:** 6.9 ha = 17 acres (trapezoidal, 143 × 1350 × 645 × 1350 yds). **Description of Plot:** Mostly barren ice with scattered emergent plants and shrubs (*Salix* sp. and *Spirea* sp.), alders (*Alnus* sp.) line the NW and SE sides, while the E boundary is an 8 ft high dam, used to control flow. **Topography:** Flat, elevation 300 to 310 ft. **Edge:** Area is bounded on the NW and SE by open fields which rise to elevations of 350 to 360 ft on the NW and 320 to 330 ft on the SE. The W boundary was arbitrarily chosen to coincide with the farthest extent of the public fishing area, and the main portion of the wetlands extends in this direction. **Water:** Virtually the entire area becomes water covered. One main channel drains east into the Grasse River. **Weather:** Generally clear and cold. Daily mean low and high temperatures (°F) (and extremes) were: January, 3, 20.3 (-16, 51); February and first week of March, -2.1, 20.1 (-26, 30). **Coverage:** Feb. 5, 8, 13, 14, 16, 18, 21; Mar. 7. Eight trips, between 0700 and 1000, averaging 1 hr. each. **Count:** No sightings. **Remarks:** Plot markers were placed out to assist in future BBC. Lack of winter residents undoubtedly a result of lack of food, exposure, and availability of more protected wooded areas. — *WILLIAM L. BAER, ROBERT BRUCE, KENNETH L. CROWELL (compiler), Dept. of Biology, St. Lawrence Univ., Canton, NY 13617.*



97. RIVER BANK AND RIVER. — **Location:** Pennsylvania, Center under McElhattan bridge on the N bank of the W branch of the Susquehanna River, 0.8 km (1/2 mi) NW of BM 571 in McElhattan; 41°09'57"N, 77°22'22"W, Jersey Shore Quadrangle, USGS. **Continuity:** Established 1975; 4 consecutive years. **Size:** River Bank, 3.2 km (2 mi) long, from 9 to 33 m wide, mean width, ca. 14.3 m, approximately 4.6 ha = 11.4 acres. The mean river width is about 250 m, which for 3.2 km would be 80 ha = 197.7 acres of water. **Description of Area:** See *AB* 29:780 (1975). **Weather:** January's mean high and low were 30.1° and 15.5°F, with precipitation at 8.25 in. February's figures are 29.5°, 11.5° and 0.86 in. respectively. The ground had 4 to 24 in. of snow on 4 trips. Ice cover on the river was less than 20% during count period. Wind was 10-15 mph on three trips. **Coverage:** Jan. 5, 19, 23, 29; Feb. 2, 18, 20-21, 23. Total, 9 trips, averaging 85 min each, between 0800 and 1600, 5 completed by 1100. **Count:** River Bank: Com. Crow, 9 (195, 79); Black-capped Chickadee, 6 (130, 53); Cardinal, 4 (87, 35); Downy Woodpecker, 3 (65, 26); Blue Jay, 2 (43, 18); White-throated Sparrow, 2; Rock Dove, 1 (22, 9); Tufted Titmouse, 1; White-breasted Nuthatch, 1; Com. Redpoll, 1; Am. Goldfinch, 1; Tree Sparrow, 1; Song Sparrow, 1; Great Blue Heron, +; Red-tailed Hawk, +; Am. Kestrel, +; Mourning Dove, +; Pileated Woodpecker, +; Yellow-bellied Sapsucker, +; Hairy Woodpecker, +; Brown Creeper, +; Am. Robin, +; House Finch, +; Dark-eyed Junco, +. River: Black Duck, 3 (4, 2); Canada Goose, 2 (2, 1); Com. Merganser, +. **Average Total:** River Bank, 33 birds (715/km², 289/100 acres); River: 5 birds (6/km², 3/100 acres of water). **Remarks:** For the river bank, the number of species seen on each trip was from 4 to 14 and the number of individuals was from 14 to 27. — *MORTON CLASTER, CECIL HAZLETT, JOHN LUNDY, PARKER PEER, CHARLES SCHACH, VESTA SCHACH, GLENNA SCHWALBE, PAUL SCHWALBE, (compiler, Dept. of Biological Sciences, Lock Haven State College, Lock Haven, PA 17745), JAMES VANEMON (West Branch Bird Club and Ornithological Society).*

98. LAGOON. — **Location:** Virginia; Arlington Co., Roaches Run Waterfowl Sanctuary, Arlington; 38°52'N, 77°02'30"W, Alexandria Quadrangle, USGS. **Continuity:** Established 1968; 9 intermittent years. **Size:** 23.5 ha = 58 acres. **Description of Area:** See *AB* 27:691 (1973). **Weather:** Clear on 8 trips and partly cloudy on 4 trips. Temperatures ranged from 21° to 44°F. Most of the water, except between the outlets, was frozen throughout the period except on Dec. 29 when the southern half was open and on Jan. 2 when there was a large open area in the northern half. **Coverage:** Dec. 25, 29; Jan. 2, 8, 11, 15, 18, 22, 29; Feb. 3, 6, 9, 1977. Total: 12 trips, totaling 8.9 hours, between 1055 and 1530. **Count:** Pintail, 57 (243, 98); Mallard, 46 (196, 79); Ring-billed Gull, 46; Herring Gull, 32 (136, 55); Black Duck, 2 (9, 3); Black-crowned Night Heron, 1 (4, 2); Canvasback, 1; Com. Goldeneye, 1; Com. Merganser, 1; Great Black-backed Gull, 1; Belted Kingfisher, 1; Great Blue Heron, +; Am. Wigeon, +; Red-head, +; Killdeer, +; Com. Snipe, +. **Average Total:** 190 birds (809/km², 328/100 acres).

Remarks: The following significant changes from last winter were noted: disappearance of Pied-billed Grebes, first records of Black-crowned Night Herons since winter 1973-1974, 533% increase in Pintails (2nd highest average ever recorded), only one sighting of Am. Wigeons compared to last year's average of 10, and almost complete disappearance of Killdeer and Com. Snipe. Overall there was a 25% increase over last year's average total population. The extremely cold winter was probably responsible for the above changes. From Jan. 2 onward, the Potomac River was completely frozen. The lagoon, the only open water in the general vicinity, probably attracted birds that would normally occur on the river. Other species may have been driven further south by the cold. — *PAUL W. WOODWARD, 2433 Southgate St., Reston, VA 22091.*

99. LAGOON. — **Location:** Virginia, Arlington Co., Roaches Run Waterfowl Sanctuary, Arlington; 38°52'N, 77°02'30"W, Alexandria Quadrangle, USGS. **Continuity:** Established 1968; 10 intermittent years. **Size:** 23.5 ha = 58 acres. **Description of Area:** See *AB* 27:691 (1973). **Weather:** Clear on 7 trips, partly cloudy on 1 trip, and overcast on 4 trips. It was snowing heavily on Feb. 6. Temperatures ranged from 24° to 44°F. Water completely open Dec. 19 and Jan. 9, mostly frozen Jan. 4 and about half frozen (northern part) on the other 9 trips. **Coverage:** Dec. 19, 27, 30; Jan. 4, 9, 14, 17, 22, 28; Feb. 1, 6, 10, 1978. Total: 12 trips, totaling 11.4 hours, between 0935 and 1420. **Count:** Mallard, 129 (550, 222); Pintail, 66 (281, 114); Herring Gull, 42 (179, 72); Ring-billed Gull, 40 (170, 69); Am. Wigeon, 14 (60, 24); Great Black-backed Gull, 9 (38, 16); Black Duck, 4 (17, 7); Com. Merganser, 4; Lesser Scaup, 3 (13, 5); Great Blue Heron, 2 (9, 3); Pied-billed Grebe, 1 (4, 2); Canvasback, +; Com. Goldeneye, +; Bufflehead, +; Killdeer, +; Lesser Black-backed Gull, +; Belted Kingfisher, +. **Average Total:** 315 birds (1342/km², 543/100 acres). **Remarks:** A 65.8% increase over last year's average total population. Significant individual changes were a 180.4% increase in Mallards (highest average ever recorded), a 15.8% increase in Pintails (also highest average), and reappearance of Am. Wigeons after an almost complete absence last winter. Ducks were often feeding on natural food; in most recent winters they appeared to be only resting in the lagoon. An adult Lesser Black-backed Gull, a rare visitor in this area, was seen Dec. 27. — *PAUL W. WOODWARD, 2433 Southgate Sq., Reston, VA 22091.*

100. BARRIER BEACH AND SALT-WATER ESTUARY. — **Location:** Florida, Duval Co., on N side of St. John's River, where it meets the sea, and S side of the Ft. George River, immediately S of Little Talbot Island State Park. Area is 1 mi N of the Mayport Naval Base, and is known locally as the North Jetty's Area, Ward's Bank, the Ft. George Inlet, and/or the Huguenot Memorial State Historic Site (Mayport Quadrangle, USGS, 30°25'N, 81°25'W). **Continuity:** New. **Size:** 212.5 ha = 525 acres. (Two triangles, one 5900 × 6400 × 5300 ft, the other 5300 × 5000 × 3400 ft, calculated from USGS map.) **Description of Area:** A great sandy hook, with a barrier beach on the east protecting a tidal

estuary with sandbars and some mudflats exposed at low tide. Includes base of a granite jetty, but not the jetty itself. Much of the area is sandy beach devoid of any vegetation. Between the barrier beach and the estuary a line of unstable dunes are more or less covered with Sea-oats (*Uniola paniculata*) and other salt-loving forbs such as Seashore Paspalum (*Paspalum vaginatum*), Seashore Dropseed (*Sporobolus virginicus*), Beach Pennywort (*Hydrocotyle bonariensis*), Railroad Vine (*Ipomoea pes-caprae*), Sea Rocket (*Cakile harperi*), and Beach Hogwort (*Croton punctatus*). At the base of the hook there are a few Cabbage Palms (*Sabal palmetto*) and some Wax Myrtle shrubs (*Myrica cerifera*). Near one edge, there is a small brackish marsh with Sea Ox-eye (*Borrichia frutescens*), Salt-meadow Cordgrass (*Spartina patens*) and Black Rush (*Juncus roemerianus*). **Water:** At high tide about 70% of the area is covered with salt water, at low tide about 40%. The salt content of the small brackish marsh varies depending on rainfall and tide, since at spring tide, salt water washes directly into it. There is no truly fresh water except in puddles after a rain. Rainfall during the study period was above normal: 0.79 in. in December, 1.86 in January, and 0.59 in February. **Weather:** Temperatures ranged from 24° to 79°F. Monthly averages were below normal: 2.1° in December, 6.0° in January, and 8.8° in February. (Weather data for Jacksonville International Airport, 15 mi inland.) **Coverage:** Dec. 3-4, 8, 18; Jan. 2, 8, 21, 29; Feb. 5, 11, 19-20, 25-26. Total, 14 trips, from 0815 to 1750, on all tides, averaging 3 hours each. Area was censused by automobile, driving along the edge of the water and stopping frequently to count flocks of birds with a telescope. Comparatively less coverage was given to the grassy dune areas where most passerines were found. **Count:** Dunlin, 327 (154, 62); Black Skimmer, 279 (131, 53); Herring Gull, 252 (119, 48); Royal Tern, 215 (101, 41); Red Knot, 206 (97, 39); Ring-billed Gull, 137 (64, 26); Sanderling, 133 (63, 25); Laughing Gull, 101 (48, 19); Short-billed Dowitcher, 88 (41, 17); Am. Robin, 71 (33, 14); W. Sandpiper, 69 (32, 13); Semipalmated Plover, 67 (32, 13); Brown Pelican, 58 (27, 11); Great Black-backed Gull, 53 (25, 10); Black-bellied Plover, 48 (23, 9); Lesser Scaup, 46 (22, 9); Ruddy Turnstone, 39 (18, 7); Forster's Tern, 34 (16, 6); Willet, 25 (12, 5); Bonaparte's Gull, 17 (8, 3); Double-crested Cormorant, 12 (6, 2); Red-breasted Merganser, 10 (5, 2); Piping Plover, 9 (4, 2); Caspian Tern, 8 (4, 2); Wilson's Plover, 6 (3, 1); Com. Snipe, 6; scaup sp., 4 (2, 1); Horned Grebe, 3 (1, 1); Red-winged Blackbird, 3; Boat-tailed Grackle, 3; Savannah Sparrow, 3; Killdeer, 2 (1, +); Sandwich Tern, 2; Pine Siskin, 2; Com. Loon, 1 (+, +); Great Blue Heron, 1; Greater Scaup, 1; Am. Oystercatcher, 1; Long-billed Curlew, 1; Lesser Yellowlegs, 1; Purple Sandpiper, 1; "peep", 1; Starling, 1; E. Meadowlark, 1; Am. Goldfinch, 1; Red-throated Loon, +; Pied-billed Grebe, +; Little Blue Heron, +; Snowy Egret, +; Louisiana Heron, +; Turkey Vulture, +; Marsh Hawk, +; Osprey, +; Merlin, +; Am. Kestrel, +; Clapper Rail, +; Greater Yellowlegs, +; Pectoral Sandpiper, +; Least Sandpiper, +; Marbled Godwit, +; Lesser Black-backed Gull, +; Ground Dove, +; Belted Kingfisher, +; Tree Swallow, +; Fish Crow, +; Mockingbird, +; Loggerhead Shrike, +; Rufous-sided Towhee, +; Hens-

low's Sparrow, +, Seaside Sparrow, +, Swamp Sparrow, +, Snow Bunting, + **Average Total:** 2349 birds (1106/km², 447/100 acres). **Remarks:** 73 species. Robins were seen only once, a flock of 1000 resting and feeding in the study area on Jan. 29. The Pectoral Sandpiper was a late migrant, seen on the first trip only. Clapper Rail and Com. Snipe were seen only in the small brackish marsh. Purple Sandpipers were seen only at the base of the rock jetty. Sandwich Terns were seen on every trip in December but not thereafter. The Marbled Godwit did not appear until February, when it was seen on every trip. — **JOSEPH WILSON**, 2635 Oak Summit Dr., Jacksonville, FL 32211, and **ROBERT W. LOFTIN** (compiler), Univ. of North Florida, Box 17074, Jacksonville, FL 32216.

101. MIXED SWAMP AND ABANDONED FIELD. — **Location:** Canada; Ontario, 4.8 km (3 mi) N of Acton, Conc. 3, Lot 5, Parcel 7. Plot center military grid coordinate 736355, Map #40P9. **Continuity:** New (BBC, 1977). **Size:** 4.85 ha = 12.0 acres (2.22 ha in swamp, 2.63 ha in field); 146.3 × 331.6 m (480 × 1088 ft) by survey. **Description of Area:** See AB 32:78 (1978). **Weather:** Overcast on all visits. Snowing during 3 visits. Lowest starting temp. -26°C, highest finishing temp. -5°C. Mean census temp. -10.5°C. Mean snow cover 68.6 cm (27 in.). **Coverage:** Jan. 7, 14, 20 (2), 21; Feb. 4-5, between 0745 and 1030, and 1500 to 1645. Total man-hours: 18. **Count:** Ruffed Grouse, 1 (21, 8); Com. Crow, 1; Pine Siskin, 1; Am. Goldfinch, 1; Snow Bunting, 1; *Buteo* sp., +; Rock Dove, +; Pileated Woodpecker, +; Hairy Woodpecker, +; Downy Woodpecker, +; Blue Jay, +; Black-capped Chickadee, +; Brown Creeper, +; redpoll sp., +. **Average Total:** 5 birds (103/km², 42/100 acres). — **M. J. SHARP** and **T. M. TOBIAS**, c/o 7-110 Fife Ave., Kitchener, Ont., Canada N2B 1N3.

102. ABANDONED STONE QUARRY. — **Location:** Indiana; Jefferson Co., 3 mi W of Hanover, NW corner of plot 38°42'00"N, 85°31'30"W; in Sect. 16, T3N, R9E, Kent Quadrangle, USGS. **Continuity:** New. **Size:** 19.8 ha = 49 acres, rectangular shape. Measured with steep tape and compass. **Description of Area:** Reportedly, the quarry was last mined in 1968. The census area could be divided into four major quadrants. The NW quadrant was principally a lake; NE a low-lying bare rock area with patchy vegetation; SE a marsh of primarily Cattail-Willow vegetation; SW a hill formed of mining rock remains. Approximately 32% of census area was bare or crushed rock. Herbs and low woody plants (listed in approximate order of abundance) were mainly Common Cattail (*Typha latifolia*), Orchard Grass (*Dactylis glomerata*), Indian Hemp (*Apocynum cannabinum*), Tarweed (*Grindelia squarrosa*), Nimbwill (*Muhlenbergia schreberi*), White Heath Aster (*Aster pilosus*), Wild Carrot (*Daucus carota*), Broomsedge (*Andropogon virginicus*), Common Evening Primrose (*Oenothera biennis*), Blue Vervain (*Verbena hastata*), Japanese Honeysuckle (*Lonicera japonica*), Common Milkweed (*Asclepias syriaca*), Burdock (*Arctium minus*), Witchgrass (*Panicum capillare*), bramble (*Rubus* sp.), Common Mugwort (*Artemisia vulgaris*), Gray Goldenrod (*Solidago nemoralis*), Curly Dock (*Rumex crispus*), Bull-

thistle (*Cirsium vulgare*), and Common Mullein (*Verbascum thapsus*) Trees were sparse, present were Willow (*Salix nigra*), Red Cedar (*Juniperus virginiana*), Pussywillow (*Salix discolor*), Black Locust (*Robinia pseudoacacia*), Tuliptree (*Liriodendron tulipifera*), Swamp White Oak (*Quercus bicolor*), Water Oak (*Q. nigra*), Silver Maple (*Acer saccharinum*), Black Walnut (*Juglans nigra*), Sassafras (*Sassafras albidum*), Sweet Gum (*Liquidambar styraciflua*), Sycamore (*Platanus occidentalis*), and Hackberry (*Celtis occidentalis*) Principal vegetation cover on the hill was Orchard Grass, Nimbwill, Tarweed, White Heath Aster, Wild Carrot, and Blue Vervain Principal marsh vegetation was Cattail and Willow. Principal vegetation on the low-lying bare rock area was Cattail, Willow, Broomsedge, Indian Hemp, Common Evening Primrose, and Tarweed. **Topography:** Elevation 720 ft, relief 100 ft. Much exposed limestone bedrock. **Soil:** Before excavation was Corydon stony silt loam; now none. **Water:** All water flowed into the lake. Several springs were present. When snow melted, water of marsh was deep and water was found in small ponds on low-lying bare rock area. When temperatures dropped below freezing I could walk through the marsh and over the lake. **Edge:** The N and E boundaries were adjacent to level areas which were undergoing succession since the end of quarrying. The S boundary was a dirt road beyond which was a crop field. The W boundary was in part a ridge of digging remains, continuing southward up and over the hill. Running parallel to this W boundary was a busy highway, a few yards to the west. **Weather:** A very harsh winter. On days of counts temperatures ranged from -5° to 54°F, winds from 3-30 mph, mainly from the S and W. The sky was sunny on 6 of the 9 study days. Snow cover was from 0 to 16 in. with an average of 8 in. No precipitation during counts. **Coverage:** Dec. 22; Jan. 8, 15, 22, 29; Feb. 9, 12, 20, 23. Total, 9 morning counts, averaging 109 min each, ranging from 80 to 180 min. In addition, two 30 min night trips. **Count:** Mourning Dove, 13 (66, 27); Dark-eyed Junco, 13; Tree Sparrow, 7 (35, 14); Mallard, 6 (30, 12); Song Sparrow, 6; E. Bluebird, 3 (15, 6); Cedar Waxwing, 3; Am. Goldfinch, 3; Blue Jay, 2 (10, 4); E. Meadowlark, 2; Bobwhite, 1 (5, 2); Mockingbird, 1; Starling, 1; Cardinal, 1; White-crowned Sparrow, 1; sparrow, sp., 1; Red-tailed Hawk, +; Killdeer, +; Belted Kingfisher, +; Com. Flicker, +; Hairy Woodpecker, +; Red-bellied Woodpecker, +; Carolina Chickadee, +; Tufted Titmouse, +; Carolina Wren, +; Am. Robin, +; Red-winged Blackbird, +; Purple Finch, +; Rufous-sided Towhee, + **Average Total:** 64 birds (323/km², 131/100 acres). **Remarks:** Crow, Marsh Hawk, Rock Dove, Am. Kestrel, and Black Vulture, just seen in flight. On my last outing (Feb. 23) large flocks of Red-winged Blackbirds were seen. This can be attributed to the study dates overlapping their migration. Because the quarry had such a varied habitat many niches were available; thus a great diversity of species was present but not in large density. James H. Maysilles identified the plant specimens, for which I thank him. J. Dan Webster assisted me on one count. — **KEITH L. GEHRING**, Hanover College, Hanover, IN 47243.



103. SEWAGE LAGOONS. — **Location:** Arizona, Santa Cruz Co., Nogales, 8.8 miles N of the international boundary, adjacent to Potrero Creek, Santa Cruz River and the S. Pacific Railroad; 31°30'N, 111°00'W, Nogales Quadrangle, USGS. **Continuity:** New. **Size:** 57.8 ha = 142.8 acres. **Description of Area:** Of the 142.8 acres, 83.6 acres are water and 59.2 acres are land. The aquatic acreage consists of two aerated lagoons (6.7 acres each), two first stage stabilization lagoons (23.3 acres each), and one second stage stabilization lagoon (23.6 acres). Most land acreage consists of diked gravel roads between and around the lagoons. **Weather:** [Not furnished, Ed.]. **Coverage:** Dec. 14-15, 20-21; Jan. 3, 19; Feb. 22, Mar. 2. Between 0900 and 1700 hours. Total party-hours: 14.8. **Count:** Ruddy Duck, 1456 (2519, 1020); Ring-necked Duck, 695 (1203, 487); N. Shoveler, 612 (1059, 429); Am. Coot, 501 (867, 351); Brewer's Blackbird, 367 (635, 257); Eared Grebe, 312 (540, 218); Am. Wigeon, 282 (488, 197); Starling, 212 (367, 148); Red-winged Blackbird, 204 (353, 143); Lesser Scaup, 128 (221, 90); Gadwall, 124 (215, 87); Pintail, 93 (161, 65); Least Sandpiper, 86 (149, 60); House Finch, 51 (88, 36); Brown-headed Cowbird, 41 (71, 29); raven, sp., 39 (67, 27); Green-winged Teal, 28 (48, 20); Spotted Sandpiper, 26 (45, 18); White-crowned Sparrow, 24 (42, 17); Say's Phoebe, 18 (31, 13); Tree Swallow, 18; Vesper Sparrow, 16 (28, 11); Killdeer, 15 (26, 11); Water Pipit, 15; Cinnamon Teal, 12 (21, 8); Com. Snipe, 10 (17, 7); Redhead, 7 (12, 5); Canvasback, 5 (9, 4); Loggerhead Shrike, 5; Lincoln's Sparrow, 5; Bufflehead, 4 (7, 3); Gambel's Quail, 4; Vermilion Flycatcher, 4; Yellow-rumped Warbler, 4; Pyrrhuloxia, 4; Red-tailed Hawk, 3 (5, 2); Black Phoebe, 3; Am. Kestrel, 2 (3, 1); Bewick's Wren, 2; Great-tailed Grackle, 2; Wood Duck, 1 (2, 1); Great Blue Heron, 1; Marsh Hawk, 1; W. Sandpiper, 1; Curve-billed Thrasher, 1; Savannah Sparrow, 1; Song Sparrow, 1. **Average Total:** 5446 birds (9424/km², 3814/100 acres). **Remarks:** Ruddy Duck, Ring-necked Duck, N. Shoveler, Am. Coot, Eared Grebe, Am. Wigeon, Lesser Scaup and Gadwall were observed on all trips. — **JOHN BELL and RANDALL MADDING (compiler), 1404 Bristol Dr., Nogales, AZ 85621.**

104. URBAN FRESHWATER MARSH. — **Location:** California; Los Angeles Co., North Long Beach, adjacent to Los Angeles River between South St. and Del Amo Blvd. **Continuity:** New. **Size:** 11.11 ha = 27.5 acres (arc, measured by steel tape). **Description of Plot:** Herbaceous and marsh plants with no canopy cover. Russian Thistle (*Salsola iberica*), Castor Bean (*Ricinus communis*), Tree Tobacco (*Nicotiana glauca*), Sweet Clover (*Melilotus albus*), Curly Dock (*Rumex crispus*), Mustard (*Brassica juncea* and *kaber*), Wild Radish (*Raphanus sativus*), Umbrella Sedge (*Cyperus odoratus*), Cat-tail (*Typha latifolia*), Smartweed (*Polygonum* sp.), Heron's Bill (*Erodium maschatum*), Sunflower (*Helianthus californicus*), good grass cover in part; many dead stems, 4-5 ft tall, particularly in southern 1/3 of plot. (Nomenclature from Munz, *A Flora of Southern California*.) **Topography:** The study plot is part of a narrow remaining strip of the original Los Angeles River. The strip runs from the source of the river in the San Bernardino Mts. to the

outlet at the Pacific Ocean, sometimes interrupted by urban development, but continuous enough to have a bridge path along the entire length. The W bank within the plot has been reconstructed as part of the Los Angeles River flood control (a cement bypass constructed adjacent to the original river) and lacks vegetation. The E bank consists of large rocks and vegetative cover. The center is shallowly trenched and has a fairly consistent flow of water in varying amounts. **Edge:** The plot is bordered by a new urban park on the N, the river on the W, a major city street on the south and a residential sector on the E. Electric power lines and a freeway run along the W border of the river. **Water:** Sources are the Los Angeles River itself, residential run-off and water running from the north, mainly rain water draining from the park. **Food:** Seeds, insects and rodents are in good supply within the plot plus additional sources from the surrounding area. **Weather:** During the survey, southern California received 14 in. of rain and the drought of the previous 2 years was officially declared over. The temperature range for Long Beach was from 47° to 69°F, but the plot was often at least 5° cooler because of water and wind off the river. **Coverage:** Jan. 7, 11-13 (2), 17 (2) 19 (2). Ten trips between 0800-1100 or 1230-1530, averaging 90 min each. **Count:** House Finch, 213 (1914, 774); Red-winged Blackbird, 23 (207, 83); White-crowned Sparrow, 22 (198, 80); Mourning Dove, 21 (189, 76); White-tailed Kite, 2 (18, 7); Am. Kestrel, 2; Red-tailed Hawk, 1 (9, 4); Com. Flicker, 1; Black Phoebe, 1; Loggerhead Shrike, 1; Lesser Goldfinch, 1; Song Sparrow, 1; Say's Phoebe, +; Fox Sparrow, +. **Average Total:** 289 (2597/km², 1051/100 acres). **Remarks:** Because of dense ground cover, White-crowned Sparrows were not readily visible and total given is likely to be lower than actual representation. House Finch counts varied considerably, ranging from 110 to 300, and this count may be higher than actual representation — or the population varies consistently. The White-tailed Kite, kestrel and Red-tailed Hawk were found in or near the study plot every day at almost any time. A flock of Water Pipits was encountered on two morning counts either within the plot or along the edge of the flood control. Occasional Sanderlings and numerous gulls (Ring-billed and Herring) as well as Rock Doves were frequent visitors to the flood control for drinking water, but none ever made use of the study area itself. — **MARY ANN MAY, Calif. State Univ., Long Beach and 407 E. 61 St., Long Beach, CA 90805.**

105. RECREATIONAL AREA. — **Location:** California; Los Angeles Co., Whittier Narrows Flood Control Basin, New Lakes Wildlife Refuge, S side of Durfee Rd., 1 mi SW of intersection with Peck Rd., (T2S, R11W). **Continuity:** New. **Size:** 8.05 ha = 19.9 acres (irregular shape, measured by pacing). **Description of Area:** Newly established wildlife refuge, approximately 2½ years old, previously an alfalfa field. The survey area is discontinuous in habitat because it is newly established. The E half contains two lakes of 2 and 3 acres, respectively, comprising 25% of the plot. The lakes are bordered E and N by Mulefat (*Baccharis glutinosa*) and willows (*Salix* sp.), with a few Tree Tobaccos (*Nicotiana glauca*). Marsh-fleabane (*Pluchea purpur-*

ascens) and sedges are found along the water edge. Along the S and E borders of the lakes grow Cattails (*Typha latifolia*) and Marsh-fleabane. Between and just in front of the lakes is scattering of dead brush, bare areas, Horseteed (*Coryza canadensis*), mustards, and a few Tree Tobaccos. The rest of the area consists of clumped vegetation stands. The N edge of the plot is bordered by a stand of Mulefat approximately 30 ft wide. The W and E edges vary more, yet consist mainly of Mulefat, willows, and a few scattered Tree Tobaccos, Douglas Nightshades (*Solanum douglasii*) and Elderberry bushes (*Sambucus mexicana*). The S edge is made up of Emory Baccharis (*Baccharis emoryi*) and a few Mulefat shrubs and W of the lakes lies a stand of dead brush (approximately 1 m high) with intermittent stands of Hedgemustard (*Sisymbrium irio*) and grass. This area of brush makes up 25% of the survey area. Three sets of high voltage lines run parallel to the W edge and 60 ft into the plot. Three supports for the lines lie in the SW quarter of the plot. The only other structures are a small wood-frame building, a round tin storage bin in the NE corner, and a bench with a lath roof located in front of and between the two lakes. **Topography:** Flat, elevation 200 ft. **Edge:** Paved roads immediately adjacent to N and E edges; beyond that a large park and lake to the north, a continuation of the wildlife refuge to the E. Around the S and W edges lies a channel which contains water only after a rain. S of the channel lies an open pasture and to the west a 20-acre lake surrounded by vegetation similar to the study area. **Weather:** The range of temperatures was from 43° to 68°F. Rainfall for the month was 14 in. **Coverage:** Jan. 10, 14, 16 (2), 17 (2), 18 (2), 20-21. Total: 10 trips, all between 0740 and 1400, averaging 135 min each. **Count:** White-crowned Sparrow, 123 (1527, 618); Am. Coot, 39 (484, 196); Bushtit, 36 (447, 181); Ruddy Duck, 32 (397, 161); Song Sparrow, 18 (224, 90); White-throated Swift, 9 (112, 45); Cinnamon Teal, 8 (99, 40); Green-winged Teal, 5 (62, 25); Red-winged Blackbird, 5; Pied-billed Grebe, 4 (50, 20); Mallard, 4; Eared Grebe, 3 (37, 15); Am. Wigeon, 3; N. Shoveler, 3; Bufflehead, 3; Yellow-rumped Warbler, 3; White-tailed Kite, 2 (25, 10); Red-tailed Hawk, 2; Am. Kestrel, 2; California Quail, 2; House Finch, 2; Double-crested Cormorant, 1 (12, 5); Green Heron, 1; Great Egret, 1; Snowy Egret, 1; Ring-necked Pheasant, 1; Com. Gallinule, 1; Belted Kingfisher, 1; Black Phoebe, 1; Long-billed Marsh Wren, 1; Loggerhead Shrike, 1; Com. Yellowthroat, 1; Lincoln's Sparrow, 1; Red-throated Loon, +; Great Blue Heron, +; Am. Bittern, +; Gadwall, +; Com. Merganser, +; Com. Flicker, +; Mockingbird, +; Hermit Thrush, +. **Average Total:** 320 birds (3973/km², 1608/100 acres). **Remarks:** The counts were affected by unseasonably high rainfall (the year's average falling in a single month), many surveys being conducted on rainy or overcast days. Meadowlarks were seen in the area prior to the survey but never during it, probably because of precipitation during the survey. The time of counts also affected birds seen. Early morning, prior to 0800, was the time in which the Red-throated Loon, Com. Merganser, cormorants, and Great Blue Heron were seen. Later in the day birds such as the Bushtits and Mockingbirds became active and moved into the area. Quail and pheasant counts were low

because of poor visibility within the stands of Mulefat and dead brush. They could only be counted when flushed and at times they would not flush. The Red-throated Loon, Great Blue Heron, Gadwall, Com. Merganser, and Hermit Thrush were seen on only one occasion. All other species were seen during three or more survey periods. The Red-throated Loon was seen circling the plot twice; however, on the second loop, it encountered two of the power lines and died shortly thereafter. House Finches were seen on the periphery yet only a few entered the survey area. Pintails and Ring-necked Ducks, as well as a Marsh Hawk, inhabit the 20-acre lake area but did not enter the survey area. — PAULA PETERS, 10219 Garfield, South Gate, CA 90280.

106. TAMARISK-QUAILBRUSH MARSH. — **Location:** California; San Bernardino Co., Mojave River in Afton Canyon. In the sandy Mojave River wash between the canyon walls, extending from 18.25 to 18.75 mi E and 13.9 to 14.1 mi N of Newberry; E $\frac{1}{4}$ Sec. 20, T11N, R6E, Cave Mtn. Quadrangle, USGS; 35°02'N, 116°22'W. **Continuity:** New (BBC, 1977). **Size:** 21.5 ha = 53.1 acres. **Description of Plot:** See AB 32:115 (1978). On Feb. 16, heavy runoff into the upper reaches of the Mojave River caused a flash flood through Afton Canyon which gradually subsided over several days. Although most of the S half of the plot was covered with water during the height of the flood, damage was mainly restricted to the marsh vegetation in and immediately along the edges of the riverbed, which was almost completely scoured away. **Weather:** Rainfall was well above normal and a number of storms produced significant precipitation from late December through February. Estimated temperatures during counts ranged from 45° to 65°F. Skies were overcast Jan. 2 and Feb. 5 (a few sprinkles), clear or mostly clear during other counts. Little or no wind was experienced except Jan. 15 when 30-50 km/hr gusts were recorded. **Coverage:** Dec. 4, 19, Jan. 2, 15, 23, 27; Feb. 5, 20. Total, 8 trips, between 0700 and 1030, averaging 3 hrs. each. **Count:** White-crowned Sparrow, 105 (489, 198); Long-billed Marsh Wren, 15 (70, 28); Lincoln's Sparrow, 8 (37, 15); Ruby-crowned Kinglet, 7 (33, 15); White-throated Swift, 5 (23, 9); House Finch, 5; Song Sparrow, 5; Rufous-sided Towhee, 3 (14, 6); Golden-crowned Sparrow, 3; Say's Phoebe, 2 (9, 4); Verdin, 2; Rock Wren, 2; Dark-eyed (Oregon) Junco, 2; Black Phoebe, 1 (5, 2); Am. Robin, 1; Yellow-rumped (Audubon's) Warbler, 1; Lesser Goldfinch, 1; Savannah Sparrow, 1; Fox Sparrow, 1; Green-winged Teal, +; Sharp-shinned Hawk, +; Red-tailed Hawk, +; Marsh Hawk, +; Am. Kestrel, +; Killdeer, +; Com. Snipe, +; Great Horned Owl, +; Com. (Red-shafted) Flicker, +; Yellow-bellied Sapsucker, +; Winter Wren, +; House Wren, +; Townsend's Solitaire, +; Water Pipit, +; Phainopepla, +; Orange-crowned Warbler, +; Yellow-rumped (Myrtle) Warbler, +; W. Meadowlark, +; Dark-eyed (Slate-colored) Junco, +. **Average Total:** 170 birds (791/km², 320/100 acres). **Remarks:** Species total, 36. Common Ravens and Brewer's Blackbirds were occasionally seen flying over the plot. Two Great Horned Owls heard calling from the canyon walls on Feb. 20 were probably nesting nearby. Flocks of White-throated Swifts were seen feeding over the plot twice

and roost in the cliffs. The House Finches, juncos, and White-crowned Sparrows were usually found in segregated flocks. The Golden-crowned Sparrows were loosely associated with the White-crowns but often kept to themselves. The sapsucker, Verdins, marsh wrens, kinglets, Orange-crowned Warbler, towhees, Golden- and White-crowned sparrows, and Fox, Lincoln's, and Song sparrows were fairly sedentary; most other species moved freely in and out of the plot. Winter Wren is unusual for this area of California. This study was sponsored by the Bureau of Land Management, California Desert Plan Program. — EUGENE A. and STEVEN W. CARDIFF, San Bernardino Co. Museum, 2024 Orange Tree Ln, Redlands, CA 92373.

107. PROTECTED SANDY OCEAN BEACH. — **Location:** California; Los Angeles Co., Belmont Shore, Long Beach, 33°44'50"N, 118°07'15"W. From W jetty of Alamitos Bay, W to 62nd Pl lifeguard station, and from water's edge to the boardwalk. **Continuity:** New. **Size:** 10.7 ha = 26.5 acres (rectangular 160 × 800 yd, measured by calibrated pace). **Description of Area:** A sandy beach protected by the outer jetty of Long Beach Harbor, located 3500 yd offshore; there is rarely surf over two feet. This beach is on a peninsula between Long Beach Harbor and Alamitos Bay. It is bounded to the N by houses and apartments, to the S by the ocean, and to the E by the W jetty of Alamitos Bay. To the W there is unobstructed sandy beach for several miles. After each storm the shape of the beach is restored with earth-moving equipment. **Food:** The major source of food and water is the sea; however some Rock Doves and House Sparrows were observed feeding from trash containers. The primary food items were benthic marine invertebrates. Gulls fed on dead fish and crabs, as well as small living clams, *Tivela stultorum*. Willets and Sanderlings were observed feeding on the sand crab *Emerita analoga*. Willets also fed on the snail *Cerithidia californica* at times. Marbled Godwits fed on various polychaetes in the sand. The invertebrates mentioned appeared to be abundant, as the birds were usually successful at their feeding during the observations. **Vegetation:** The area is mostly bare sand, however one acre of sand dunes in the NE corner is covered with the ice plant *Mesembryanthemum crystallinum* L. (*Cryophytum* C. N. E. Br.). In the same corner there is a row of four palms, *Washingtonia filifera* Wendland approximately 5 m high. **Weather:** Temperatures during this period ranged from 36° to 75°F; 5.62 in. of rain were recorded (unusually high). **Coverage:** Jan. 3, 5, 11, 13, 17, 20, 22, 24, 29; Feb. 2. Ten trips, averaging 15 min each. **Count:** Ring-billed Gull, 13 (121, 49); Sanderling, 11 (103, 42); Willet, 2 (19, 8); House Finch, 2; Marbled Godwit, 1 (9, 4); Rock Dove, 1; Com. Crow, 1; Brown Pelican, +; Black-bellied Plover, +; Herring Gull, +; California Gull, +; Bonaparte's Gull, +; Heermann's Gull, +; House Sparrow, +. **Average Total:** 31 birds (289/km², 117/100 acres). **Remarks:** The dominant species on this beach, in terms of numbers, was the Ring-billed Gull, observed on every trip. These are joined by Sanderlings during low tides. The beach is used not only as a feeding area but also as a resting area. On most trips a group of a dozen or more Ring-billed Gulls was

observed on the upper beach, all facing into the wind. Willets were seen on most trips, during all tide heights. — MARK GODSEY, 757 Loma Vista, Long Beach, CA 90813.

108. HAY - CROPPED MEADOW. — **Location:** Massachusetts; Plymouth Co., Town of Duxbury land, 2 mi SW of South Duxbury Center: 42°00'N, 70°43'W, Duxbury Quadrangle, USGS. **Continuity:** New (BBC 1977). **Size:** 9.53 ha = 23.55 acres. **Description of Plot:** See AB 33:(1) BBC 188. Several flooded grassy depressions had frozen covering 10-15% of the plot's total area. **Food:** Virtually none. **Weather:** Temperatures ranged from -6° to 0°C (21° to 32°F), averaging -2°C (28°F). The ground was bare in January, except following 2 light snowfalls, while by Feb. 19, 3-ft drifts covered parts of the area. Winds were variable, predominantly from W-NW, never greater than 20-25 mph. The sky was clear on 3 trips, overcast on 6, partly cloudy on 1. **Coverage:** Jan. 10, 11, 12, 13, 15, 16, 17, 18, 27; Feb. 19. Total: 10 trips, averaging 15 min each, between 0845 and 1535, EST. **Count:** Com. Crow, 2 (21, 8); Marsh Hawk, +. **Average Total:** 2 birds (21/km², 8/100 acres). **Remarks:** Common Crows (maximum of 6) were seen on 4 trips. The Marsh Hawk was twice seen quartering over the meadow. Mourning Doves were observed flying over the plot on 2 visits — they may well forage for grit on the dirt road bisecting the plot. This meadow offered no shelter or food, thus supporting so few birds. Grateful thanks to Trevor Lloyd-Evans for completing this census in my absence. — CHRISTOPHER C RIMMER, Manomet Bird Observatory, Manomet, MA 02345.

109. ABANDONED PASTURE - YOUNG MIXED FOREST. — **Location:** New York, St. Lawrence Co., 0.25 mi E of Howardville Rd., 0.25 mi SW of Rte 68; 44°33'N, 75°03'W, Pierrepoint Quadrangle, USGS. **Continuity:** New. **Size:** 3.44 ha = 8.5 acres. **Description of Area:** See AB 32:74 (1978). **Weather:** Generally clear and cold. Daily mean and extreme low and high temperatures (°F) were: January 3, 20.3 (-16, 51); February and first week of March -2.1, 20.1 (-26, 30). Precipitation January 10.55 cm; February 0.75 cm. Hard rain Jan. 8 and 25. Snow cover approximately 30 to 90 cm throughout period; little snowfall in February. **Coverage:** Dec. 24, 30; Jan. 7, 15, Feb. 18; Mar. 2-3, 5. Eight trips, between 1030 and 1600 EST, averaging 1 hour per trip, 15 man-hours. **Count:** Com. Redpoll, 1 (29, 12), Red-tailed Hawk, +; Ruffed Grouse, +; Blue Jay, +; chickadee, sp., +; N. Shrike, +; Pine Grosbeak, +. **Average Total:** 1 bird (29/km², 12/100 acres). **Remarks:** Species total, 7. Chickadee and Ruffed Grouse (or tracks) seen on 4 visits. Redpoll and Pine Grosbeak seen as single flocks. Eastern Cottontail (*Sylvilagus floridanus*) abundant. Assisted by Lee H Harper, Christine Sholl, Grant Cornwell, Marnie R. Crowell, to whom thanks. — KENNETH L. CROWELL, Dept. of Biology, St. Lawrence Univ., Canton, NY 13617.

110. CORN STUBBLE, RYE AND SHORT GRASS. — **Location:** Pennsylvania, one-half mile S of Jersey Shore, 41°11'05"N, 77°15'10"W, Jersey Shore Quadrangle, USGS. **Continuity:** Established 1974; 5 consecutive years. **Size:** 40.47 ha = 100 acres (rectangular)

Description of Area: See AB 28 722-723 (1974) This winter the fields were composed of corn stubble, 29.5 ha (74%); rye, 6 ha (15%); and short grass, 4.5 ha (11%). **Weather:** January's mean high and low was 30.1°F and 15.5°F, with precipitation at 8.25 in. February's figures are 29.5°F, 11.5°F and 0.86 in. respectively. Wind was no greater than 20 mph on any trip. The ground has 4-24 in. of snow on 6 trips. **Coverage:** Jan. 6-7, 12-13, 19, 25, 27. Total, 7 trips, averaging 57 min each, between 0925 and 1330, 4 completed before 1200. **Count:** Horned Lark, 27 (67, 27); Com. Redpoll, 17 (42, 17); Snow Bunting, 3 (7, 3); Mourning Dove, 2 (5, 2); Com. Crow, 2; Lapland Longspur, 1 (2, 1); Rough-legged Hawk, +, Downy Woodpecker, +. **Average Total:** 52 birds (128/km², 52/100 acres). **Remarks:** The February trips had 100% cover of deep snow and averaged one bird per trip. For the whole count the number of species per trip ranged from 0 to 5, and the number of individuals from 0 to 188. — GLENN A. SCHWALBE, PAUL W. SCHWALBE (compiler), Dept. of Biological Sciences, Lock Haven State College, Lock Haven, PA 17745.

111. ABANDONED TURF FIELD. — **Location:** Maryland; Montgomery Co., McKee-Beshers Wildlife Management Area, 39°04'32"N, 77°23'18"W, Sterling Quadrangle, USGS. **Continuity:** Established 1976; 2 years. **Size:** 6.3 ha = 15.6 acres. **Description of Area:** See AB 29:1140 (1975). **Weather:** Clear sky on 7 trips, partly cloudy on 1 trip, and overcast on 2 trips. Temperatures ranged from 12° to 52°F. Area covered with snow and ice from first count, Jan. 12, to Feb. 4. **Coverage:** Jan. 12, 18, 20, 26, 31; Feb. 4, 10-11, 14, 16, 1977. Total, 10 trips, between 0925 and 1145, totaling 4.3 hours. **Count:** Dark-eyed Junco, 8 (127, 51); Tree Sparrow, 4 (63, 26); Carolina Chickadee, 1 (16, 6); Am. Goldfinch, 1; White-throated Sparrow, 1; Marsh Hawk, +; Cardinal, +; Field Sparrow, +. **Average Total:** 15 birds (238/km², 96/100 acres). **Remarks:** Average total population was 1 bird more than last year's. Significant decreases were Field Sparrows from 4 to +; Cardinals, 3 to +; and E Meadowlarks, 2 to 0. Dark-eyed Juncos increased from + to 8, but most were recorded on Feb. 4 when a flock of 75 moved through the E edge of the area. Few birds were recorded in February after the snow cover had disappeared. — PAUL W. WOODWARD, 2433 Southgate Sq., Reston, VA 22091.

112. CORNFIELD, I. — **Location:** Maryland; Montgomery Co., McKee-Beshers Wildlife Management Area, 39°04'15"N, 77°23'42"W, Sterling Quadrangle, USGS. **Continuity:** Established 1975; 3 years. **Size:** 16.1 ha = 39.8 acres. **Description of Area:** See AB 29:784 (1975). This winter the area consisted of 8 E-W strips of various crops and natural vegetation. Number in parentheses is width of the strip. From S, these strips were 1) Winter Wheat (*Triticum* sp.) stubble with a fairly dense growth of Fall Panic-grass (*Panicum dichotomiflorum*) and scattered Jimsonweed (*Datura stramonium*), Bristlegrass (*Setaria* sp.), Swamp Smartweed (*Polygonum coccineum*), and to the south, Horseweed (*Erigeron canadensis*) (67 yds); 2) weedy strip of Small White Aster (*Aster vimineus*), Evening Primrose (*Oenothera biennis*), thistle (*Cirsium* sp.), and Com. Mullein (*Verbascum thapsus*) (62

yds), 3) Corn (*Zea mays*) stubble (58 yds), 4) weedy strip of Small White Aster and Evening Primrose with a little Horseweed (3 yds); 5) Winter Wheat stubble with a fairly dense growth of Fall Panic-grass, Bristlegrass, Jimsonweed (on the E), and scattered Swamp Smartweed, thistle, and Evening Primrose (58 yds) (this strip was accidentally omitted in last year's description when it was planted in Winter Wheat); 6) weedy strip of Small White Aster, Horseweed, thistle, and Evening Primrose (6 yds); 7) Corn stubble (52 yds); 8) weedy strip of Small White Aster, Evening Primrose, and thistle (62 yds). **Weather:** Clear sky on 5 trips, partly cloudy on 2 trips, and overcast on 1 trip. Temperatures ranged from 12° to 38°F. From Jan. 9 to Feb. 7 the area was completely covered with snow and ice. On Jan. 2 and Feb. 14 there was no snow covering. **Coverage:** Jan. 2, 9, 12, 20, 26, 31; Feb. 7, 14. Total, 8 trips, all between 0925 and 1125, totaling 8 hours. **Count:** Tree Sparrow, 6 (37, 15); Song Sparrow, 6; Dark-eyed Junco, 5 (31, 13); Cardinal, 4 (25, 10); Savannah Sparrow, 3 (19, 8); White-throated Sparrow, 3; Swamp Sparrow, 2 (12, 5); Marsh Hawk, 1 (6, 3); Com. Crow, 1; Am. Goldfinch, 1; Downy Woodpecker, +; Carolina Chickadee, +. **Average Total:** 31 birds (192/km², 78/100 acres). **Remarks:** Average number of birds decreased 76.7% from last winter. Significant species decreases were White-throated Sparrow (59 to 3), Mourning Dove (13 to 0), and Cardinal (12 to 3). The heavy snow and ice covering was probably responsible for these decreases as much food, especially unharvested corn, was inaccessible to the birds. Woodland birds that fed commonly in this field last year were scarce this winter, probably because of the absence of Giant Ragweed (*Ambrosia trifida*) — their major food source in the field. — PAUL W. WOODWARD, Dept. of Zoology, Univ. of Maryland, College Park, MD 20742.

113. CORNFIELD, II. — **Location:** Maryland; Montgomery Co., McKee-Beshers Wildlife Management Area, 39°04'43"N, 77°23'37"W, Sterling Quadrangle, USGS. **Continuity:** Established 1975; 3 years. **Size:** 23.8 ha = 58.9 acres. **Description of Area:** See AB 29:784-785 (1975). This winter the area consisted of 11 E-W strips of various crops and natural vegetation. Number in parentheses is the width of the strip. From S, these strips were 1) Winter Wheat (*Triticum* sp.) stubble with a fairly dense growth of Fall Panic-grass (*Panicum dichotomiflorum*) and Swamp Smartweed (*Polygonum coccineum*) with scattered Bristlegrass (*Setaria* sp.) (53 yds); 2) weedy strip of mainly Small White Aster (*Aster vimineus*) (3 yds); 3) Corn (*Zea mays*) stubble (50 yds); 4) Fescue grass (*Festuca* sp.) and Broomsedge (*Andropogon virginicus*) (28 yds); 5) Winter Wheat (64 yds); 6) weedy strip of mainly Small White Aster (6 yds); 7) Winter Wheat stubble with a fairly dense growth of Fall Panic-grass and Swamp Smartweed and scattered Bristlegrass (43 yds); 8) Fescue grass and Broomsedge with a dense growth of Small White Aster, Tickseed Sunflower (*Bidens* sp.), and Early Goldenrod (*Solidago juncea*) at the east end (28 yds); 9) Winter Wheat (103 yds); 10) weedy strip of Small White Aster, Early Goldenrod, and Evening Primrose (*Oenothera biennis*) (8 yds); 11) Winter Wheat stubble with Fall Panic-grass, Swamp Smartweed, Bristlegrass, and Horseweed (*Erigeron cana-*

densis) (83 yds) **Weather:** Sky clear on 5 trips, partly cloudy on 1 trip, and overcast on 2 trips. Temperatures ranged from 12° to 46°F. The area was covered with snow and ice from Jan 9 to Jan. 27, partly covered on Feb. 4 and 11, and clear on Dec. 30 and Feb. 16. **Coverage:** Dec. 30; Jan. 9, 18, 21, 27; Feb. 4, 11, 16. Total, 8 trips, all between 0830 and 1120, totaling 8.8 hours. **Count:** Dark-eyed Junco, 41 (172, 70); Swamp Sparrow, 14 (59, 24); Savannah Sparrow, 13 (55, 22); Song Sparrow, 8 (34, 14); White-throated Sparrow, 7 (29, 12); Am. Goldfinch, 4 (17, 7); E. Meadowlark, 3 (13, 5); Tree Sparrow, 2 (8, 3); Marsh Hawk, 1 (4, 2); Carolina Chickadee, 1; Cardinal, 1, Field Sparrow, 1. **Average Total:** 94 birds (394 /km², 160/100 acres). **Remarks:** Average number of birds per count increased 6.8% from last winter. Most birds were seen when the area was completely covered with snow. Last winter the three most abundant species were Song Sparrow (38), Swamp Sparrow (17), and Savannah Sparrow (10). This year the top three species were Dark-eyed Junco, Swamp Sparrow, and Savannah Sparrow. In spite of the heavy snow and ice cover, this field contained the largest accessible food supply in the general vicinity, which probably accounted for the increase in juncos from an average total of 2 last year to 41 this year. Throughout the winter 1-2 Marsh Hawks were seen hunting songbirds and may have been the cause of a decrease of meadowlarks from 6 to 7 on the first two counts to 0 by Feb. 4. — PAUL W. WOODWARD, Dept. of Zoology, Univ. of Maryland, College Park, MD 20742.

114. FALLOW FIELD. — **Location:** Indiana; Jefferson Co., 2½ mi W of Hanover. NW corner of plot 38°42'40"N, 85°31'00"W; in Sec 10, T3N, R9E, Kent Quadrangle, USGS. **Continuity:** New. **Size:** 7.2 ha = 17.8 acres, rectangular shape. Measured with steel tape and compass. **Description of Area:** At time of census field had been fallow for 18 months. Vegetation entirely herbaceous: mainly Red Clover (*Trifolium pratense*), Devil Grass (*Cynodon dactylon*), Tumbleweed (*Amaranthus albus*), Giant Foxtail (*Setaria faberi*), Annual Morning Glory (*Ipomoea purpurea*), Horse Nettle (*Solanum carolinense*), Tarweed (*Grindelia squarrosa*), Jimson Weed (*Datura stramonium*), Rough Pigweed (*Amaranthus retroflexus*), Horseweed (*Erigeron canadensis*), Cocklebur (*Xanthium pensylvanicum*), and Many-flowered Aster (*Aster ericoides*) in approximately that order of abundance. **Topography:** 780 ft elevation, with zero to two percent slopes. **Soil:** Avonburg silt loam. **Water:** When snow wasn't present ground was very moist due to the level topography. **Edge:** N boundary a busy highway, across which was a pasture. W boundary a driveway across which was a pasture and buildings. S edge a corn stubble field. E boundary a private yard with lawn and a field in succession with Broomsedge and Red Cedar. **Weather:** A very harsh winter. On days of counts temperatures ranged from 5° to 60°F, winds from 0-25 mph, mainly from W. Sky clear on 6 of the 9 outings. Snow cover from 0 to 18 in. with average of 8 in. No precipitation during counts. **Coverage:** Dec. 22; Jan. 5, 12, 19, 26; Feb. 2, 5, 16, 23. Total, 9 daylight (7 morning and 2 afternoon) trips averaging 63 min. each, ranging from 50 to 80 min. In addition, two 30-min night trips. **Count:** Dark-eyed Junco,

13 (180, 73), Tree Sparrow, 7 (97, 39), Am Goldfinch, 6 (83, 34), Song Sparrow, 6, E Meadowlark, 2 (28, 11); Cardinal, 1 (14, 6); sparrow, sp., 1; Marsh Hawk, +; Am. Kestrel, +; Mourning Dove, +; Starling, +. **Average Total:** 36 birds (500/km², 202/100 acres). **Remarks:** Turkey Vulture, Rock Dove, crow, Mockingbird, Red-winged Blackbird, and Purple Grackle just seen in flight. A great density of birds (Am. Goldfinch, Dark-eyed Junco, Tree Sparrow and Song Sparrow) seen on Jan. 12, 19 and 26 suddenly disappeared; their food supply had been depleted. James H. Maysilles identified the herb specimens, for which I thank him. J. Dan Webster assisted me on one count. — **KEITH L. GEHRING**, Hanover College, Hanover, IN 47243.

115. SMALL TOWN, RESIDENTIAL AND COMMERCIAL AREAS. — **Location:** Canada; New Brunswick, Sackville 45°54'N, 64°22'W, map sheet 21H/16W; bounded by Bridge, York, Lansdowne, Park, and Salem Streets and Queens Road, and vacant lots along Lorne Street. **Continuity:** New. **Size:** 50.5 ha = 124.8 acres; irregular shape, maximum dimensions approximately 1000 m by 675 m (paced). **Description of Area:** Most of S half of built-up area of town; about 80 percent residential — 242 single homes, ca. 1/3 built before World War II, few since 1960, with many garages and outbuildings, and 7 small apartment blocks; about 10% commercial — 1 bank, 7 offices, 37 stores (in 26 buildings), laundry, 3 garages, and a warehouse; about 10% "service" — 2 schools, hospital, medical centre, a church and hall, 6 meeting halls, curling rink, and 5 government buildings (federal 3, provincial 1, municipal 1). The older areas contain at least 30 trees/ha, mostly large trees 15-20 m in height on private lots (few street-edge plantings), chiefly maples with fewer of other broad-leaved trees, and conifers scarce and very localized. Hedges and shrubs are scarce, but lawns are general. Untended grassy areas occupy the centres of many blocks. A soccer field and small park are in the northernmost block (the university campus and sports fields adjoining the northwest corner were excluded). **Elevation:** 15-30 m (50-100 ft). **Topography:** Sloping gently upward from SE to NW; the sea-dyke is about 700 m to southeast of the plot. **Weather:** Mean temperatures averaged slightly below normal in each month, but with no sustained cold spells; both snow and rainfall were much above normal until mid-January; conditions during counts ranged from overcast once with some light drizzle on 4 surveys to clear on 3 surveys; winds were light — only once over 10 km/h; temperatures ranged from -14° to +3°C (7° to 37°F). Ground was fully snow-covered (except streets) on all surveys. **Coverage:** Dec. 19, 31; Jan. 20, 25; Feb. 9, 11, 26. Mean 2 hours 15 min per survey, 0740 to 1228 hours AST. All surveys by the author, alone. **Count:** Starling, 147 (291, 118); House Sparrow, 139 (275, 111); Rock Dove, 3 (6, 2); Blue Jay, 3; Com. Grackle, 2 (4, 2); Com. Crow, 1 (2, 1); Black-capped Chickadee, 1; Brown-headed Cowbird, 1; Herring Gull, +. **Average Total:** 297 birds (588/km², 238/100 acres). **Remarks:** Regular visitors (mean no. per survey): Herring Gull 2, Rock Dove 5, Com. Raven 1. Irregular visitors: Sharp-shinned Hawk, Great Black-backed Gull, Evening Grosbeak. Total species, 9. The results of individual surveys

were quite uniform, despite the usual difficulties in coverage (irregular street grid, absence of laneways). Starling counts were the most variable (range 98-210), since these birds, with gulls, ravens, and crows, also commuted to the town dump ca. 800 m SE. Survival of grackles and cowbirds through the count period reflects both the mild winter and the feeding of wild birds (increased over former decades). The scarcity of winter finches, especially Evening Grosbeaks, this winter was generally all over the Maritimes. — **ANTHONY J. ERSKINE**, Canadian Wildlife Service, Box 1590, Sackville, New Brunswick, Canada E0A 3C0.

116. SUBURBAN HOUSING DEVELOPMENT. — **Location:** Massachusetts; Plymouth Co., Jan Marie Dr., 3 mi SW of Plymouth Center; 41°56'N, 70°42'W, Plymouth Quadrangle, USGS. **Continuity:** New (BBC, 1977). **Size:** 15.0 ha = 37.07 acres (an approximate rectangle with sides running NE-SW and NW-SE, calculated from building plans). **Description of Plot:** See AB 33:(1). **Weather:** The ground was essentially bare in January, only twice being covered by light snowfall, while the Feb. 19 census encountered 100% snow cover, in drifts as high as 2 ft. Temperatures ranged from -6° to 0°C (21°-33°F), averaging -2°C (28°F). Winds were SW to NW, light to moderate (0-20 mph). Skies were clear on 2 trips, overcast on 4, and partly cloudy on 4. **Coverage:** Jan. 10-13, 15-18, 27; Feb. 19. Total: 10 trips, averaging 41.5 minutes each, between 0915 and 1445 EST. **Count:** Starling, 5 (33, 13); Blue Jay, 2 (13, 5); Black-capped Chickadee, 1 (7, 3); Dark-eyed (Slate-colored) Junco, 1; Mourning Dove, +; Com. Crow, +. **Average Total:** 9 birds (60/km², 24/100 acres). **Remarks:** Additional species seen flying over plot: Herring Gull, Evening Grosbeak, Am. Goldfinch, Rock Dove. Of the 62 houses on this plot, only 6 had any type of feeding station. Only 3 of these consistently provided food. Starlings were seen 4 times, one flock of 41 large accounting for their higher density than Blue Jays, which were seen on 3 trips (maximum daily count of 10). The highest daily count of juncos was 6. No more than 2 chickadees were ever seen on one trip. Natural foods and good cover were minimal. More active feeders might well increase bird diversity and abundance in this plot. Grateful thanks go to Trevor Lloyd-Evans for finishing this census in my absence. — **CHRISTOPHER G. RIMMER**, Manomet Bird Observatory, Manomet, MA 02345.

117. DOWNTOWN BUSINESS DISTRICT-RESIDENTIAL AREA. — **Location:** Colorado; El Paso Co., Downtown Colorado Springs. **Continuity:** Established 1969; 6 intermittent years. **Size:** 15.38 ha = 38 acres. **Description of Area:** See AFN 23:558-560 (1969) and 24:569-570 (1970). Since the last published study (1976) there has been continued razing of buildings, especially in the S business district, and replacement mainly with paved or unpaved lots. **Weather:** The period was cooler and cloudier than usual; but except for a few storms (14.9 in. of snow) the winter was dry, as normal. Average temperature was 27°F with a range from -3° to 63°. **Coverage:** Jan. 4, 10, 19, 30; Feb. 6, 11, 21; Mar. 5. Total, 8 trips averaging 1 hour. **Count:** House Sparrow, 153 (995, 403); Rock Dove, 17 (111,

45), Com Crow, 1 (7, 3), House Finch, 1; Starling, 1. **Average Total:** 173 birds (1125/km², 455/100 acres). **Remarks:** Over the past decade this area has been converted in the S from business buildings to urban-renewal "parking lots" and in the N from old residences to businesses and lots; and there has been an associated decline in species diversity. Of the 16 species recorded in this urban area through past winters, only 5 were seen this winter and only 2 of these commonly (both Old World). From a former low-density scattering of the House Sparrows in the 8 blocks (an average of 35 in 1971 up to 77 in 1976), most now are in a single flock occupying a landscaped parking lot (the birds especially favor the low dense hedges) in a block where bird seed is regularly put out in several locations. The largest number of sparrows on one date was 257; and during the daytime the birds become a nuisance. Indeed, there is mild but growing conflict between those who feed the birds and those who oppose the feeding. Incidentally, at night many of the sparrows apparently leave the parking lot to roost elsewhere. — **RICHARD BEIDLEMAN** (compiler), **WILLIAM GOMEZ**, **JEAN HANSKE**, **BETTY HARWOOD**, **SHARON LIBELL**, **JOAN MEALY**, and **VICKI POOL** (Field Zoology Class), Dept. of Biology, Colorado College, Colorado Springs, CO 80903

118. URBAN WOODLAND PARK. — **Location:** California; Los Angeles Co., Long Beach. Recreation Park, bordered by 7th and 10th Sts on S and N, by Park Ave. and a Municipal Golf Course W and E; bisected by Federation Dr., which extends from 10th to 7th St. **Continuity:** New. **Size:** Approximately 13.5 ha = 33.5 acres (determined from Long Beach Park Dept. survey maps). **Description of Area:** Typical urban woodland park. Trees average 125 ft tall and 1.5 ft dbh. Most trees and shrubs are not native California species. 80% of the ground is covered by Bermuda and Rye grasses, but a few areas such as the bandshell and picnic area and the bike path, are covered by cement or asphalt. Tree population consists of 50% Blue Gum Eucalyptus (*E. globulus*), 5% Canary Pine (*Pinus canariensis*); and 3% of each of the following trees: Am. Sweetgum (*Liquidambar styraciflua*), California Sycamore (*Platanus racemosa*), Glossy Privet (*Ligustrum lucidum*); Primrose Tree (*Lagunaria patersoni*); Silver Maple (*Acer saccharinum*); Carob (*Ceratonia siliqua*); Coast Redwood (*Sequoia sempervirens*); Silk Tree (*Albizia julibrissin*); Chinese Evergreen Elm (*Ulmus parvifolia*); Weeping Willow (*Salix babylonica*); Deodar Cedar (*Cedrus deodara*); Mexican Fan Palm (*Washingtonia robusta*); Canary Island Date Palm (*Phoenix canariensis*); Olive (*Olea europea*), and Wisteria. Shrubs average 5 ft in height and are equally divided in the following species: *Cocculus laurifolius*; *Bambusa oldhami*, *Pyracantha*; *Melaleuca nesophlia*; and *Callistemon citrinus*. Buildings include the bandshell, the Casting Club clubhouse, two restrooms, and the park maintenance buildings. **Topography:** Flat with 50 ft elevation. **Edge:** The study plot is part of a large urban park and golf course of 200+ acres of woodland type habitat surrounded by a primarily urban residential area. The park was established 50+ years ago. **Water:** An oval concrete casting pool of about 100 ft × 30 ft is found NE of

Federation Dr. **Food:** A heavy crop of berries on the Glossy Privet and Primrose trees attracted a large flock of Cedar Waxwings. The Sweetgum and Sycamore trees were heavy with their fruits and attracted Waxwings and Lesser Goldfinches. Anna's Hummingbirds fed on the flowers of Blue Gum Eucalyptus and Pyracantha. Dead wood and bark strips of the eucalyptus trees harbor insects and grubs that attract the Com. Flicker. Pyracantha berries attracted House Sparrows, Hermit Thrushes, and White-crowned Sparrows. **Weather:** The temperature range was 47.9°F to 64.5°F. Approximately 7.62 in. of rain fell during this period. **Coverage:** Dec. 31; Jan. 1-2, 8, 17, 18, 22 (2 trips). Total of 8 trips, 4 morning (0800-1200) and 4 afternoon (1300-1600). **Count:** House Sparrow, 56 (413, 167); Yellow-rumped Warbler, 41 (302, 122); House Finch, 38 (280, 113); Brewer's Blackbird, 37 (273, 110); Anna's Hummingbird, 33 (243, 99); Starling, 29 (214, 87); Rock Dove, 25 (184, 75); Cedar Waxwing, 22 (162, 66); Mourning Dove, 19 (140, 57); Dark-eyed Junco, 11 (81, 33); Lesser Goldfinch, 10 (74, 30); Spotted Dove, 9 (66, 27); Com. Crow, 8 (59, 24); White-crowned Sparrow, 8; Scrub Jay, 3 (22, 9); Hermit Thrush, 3; Com. Flicker, 2 (15, 6); Mockingbird, 2; Brown-headed Cowbird, 2; Sharp-shinned Hawk, 1 (7, 3); Am. Kestrel, 1; Black Phoebe, 1; Ruby-crowned Kinglet, 1; Water Pipit, 1; Red-tailed Hawk, +; Am. Robin, +. **Average Total:** 363 birds (2678/km², 1084/100 acres). **Remarks:** Rock Doves, Anna's Hummingbirds, Com. Flicker, Com. Crow, Yellow-rumped (Audubon's) Warbler, House Sparrow, House Finch, and White-crowned Sparrow were seen on every trip. Mourning Dove, Spotted Dove, Scrub Jay, Starling, and Dark-eyed Junco were seen on seven trips. The Red-tailed Hawk was seen twice. The single robin and a flock of Water Pipits were seen only once. The Red-tailed Hawk was observed roosting in the adjoining golf-course, and the Sharp-shinned Hawk was observed in the pursuit and capture of a Brewer's Blackbird. An unusually large number of Monarch and Viceroy butterflies was observed in and around the eucalyptus trees on all trips. Feral *Amazona* parrots were heard on two trips, and have been seen at several different times, although not while the survey was being taken. — R. DENISE and DAVID L. LUCAS, P.O. Box 14699, Long Beach, CA 90803.

119. URBAN PARK. — **Location:** California; Los Angeles Co., Alondra Park, bounded on the N by Manhattan Beach Blvd., S by Redondo Beach Blvd., E by El Camino College, W by Alondra Park Golf Course. **Continuity:** New. **Size:** 13.9 ha = 34.4 acres (est. from architectural map; odd shaped about 833 yd NS and 108 to 450 yd EW). **Description of Area:** Much of the area is mowed grass. There is a lake about 190 by 290 yd and a 100 yd radius swimming pool, drained for the winter, in the S end of the park. About 3% of the area is covered by cement paths. In the N end is a 40 by 100 yd asphalt parking lot and a brick dust baseball diamond. The dominant trees are Queen Palms (*Arecastrum romanzoffianum*) many of which grow around the lake, acacia (*Acacia* sp.) primarily in the S end, American Elm (*Ulmus americana*), alder (*Alnus* sp.), eucalyptus (*Eucalyptus* sp.) and Scotch Pine (*Pinus sylvestris*) recently planted along the margins of the path running NS

through the park. **Edge:** Bounded by a golf course on the W, a college on the E and residential areas on the N & S. **Weather:** The rainfall previous to and during the survey was twice the seasonal norm for the area (over 14 in.). Temperatures ranged from 42° to 75°F, average 66° high and 50° low. **Coverage:** Jan. 11-12, 15-17 (2 trips), 22, 25, 27, 29. Total, 10 trips averaging 2 hours each, both morning and afternoon. **Count:** Am. Coot, 141 (1013, 410); Mallard, 108 (776, 314); California Gull, 63 (453, 183); Brewer's Blackbird, 46 (330, 134); House Sparrow, 11 (79, 32); Rock Dove, 7 (50, 20); Starling, 5 (36, 15); Yellow-rumped Warbler, 4 (29, 12); Double-crested Cormorant, 3 (22, 9); Mourning Dove, 3; House Finch, 3; Am. Kestrel, 1 (7, 3); W. Gull, 1; Scrub Jay, 1; Com. Crow, 1; Loggerhead Shrike, 1; Pied-billed Grebe, +; N. Shoveler, +; Forster's Tern, +; Anna's Hummingbird, +; Com. Flicker, +; Mockingbird, +. **Average Total:** 399 birds (2866/km², 1160/100 acres). **Remarks:** Birds seen on all trips were Am. Coot, Mallard, California Gull, Brewer's Blackbird and Rock Dove. The crows were seen on one trip and as many as 7 cormorants were seen at one time. The lake also supports about 63 Peking Ducks. The ducks, coots, blackbirds, some of the gulls and pigeons are fed daily by visitors to the park. Most of the gulls were in the drained swimming pool. — HARRIETT CROUCH, Dept. of Biology, California State Univ., Long Beach and 4107 W. 165th St., Lawndale, CA 90260.

120. URBAN PARK. — **Location:** California; Redondo Beach Wilderness Park, Redondo Beach, at the junction of Camino Real and Albert Ave.; 33°49'40"N, 118°22'28"W. **Continuity:** New. **Size:** 4.75 ha = 11.75 acres (irregular, roughly triangular, determined by county surveyors). **Description of Area:** A newly established "wilderness" park, with approximately 1/6 of the acreage devoted to paved trails, an amphitheater, buildings, and parking. The ground is thickly covered with meadow grasses, primarily Alta fescue, with occasional iceplants (*Gasoul edule*). Very young forest, planted in 1974, with an average height of 8 ft. Percentage of trees by actual count: Pines (*Pinus thunbergia*, *P. radiata*, *P. halapensis*, *P. canariensis*), 36%; Gums (*Eucalyptus rostrata*, *E. rudis*, *E. viminalis*), 16%; Sycamore (*Platanus racemosa*), 14%; Ash (*Fraxinus velutina*), 9%; Alder (*Alnus rhombifolia*), 4%; Catalpa (*Catalpa speciosa*), 4%; Brazilian Pepper (*Schinus terebinthifolius*), 4%; Elm (*Ulmus parvifolia sempervirens*), 3%; Pear (*Pyrus kawakamii*), 3%; Poplar (*Populus canadensis*), 3%; California Bay (*Umbellularia californica*), 2%; Coast Redwood (*Sequoia sempervirens*), 2%. Occasional shrubs by the edge and the service area, mainly Burford Holly (*Ilex cornuta burfordii*) and California Holly (*Photinia arbutifolia*). **Topography:** Elevation, an average of 1300 ft above sea level, with gentle hills creating minor elevation changes. **Water:** Two recirculating ponds, edged with natural materials. A small pond is located in the S section, the larger pond at the extreme N end, surrounded by large sycamores. The park receives much moisture from ocean fog. **Food:** Abundant signs of rodent activity, with amphibians in the grass hummocks. Killifish (*Genus Fundulus*) and goldfish (*Carrassius auratus*) reside in the ponds. The only berries abounding are from the hol-

lies, and few grasses were in seed. Insects, especially gnats, were moderately abundant. **Edge:** The SW side is bordered by a busy street, although screened by trees and a quiet parking lot. The W and N ends have a steep drop-off, covered with iceplants. The E side drops off precipitously, with a covering of dense bushes, to a residential area containing large trees. The S is bordered by a large apartment building, screened by trees. **Weather:** Rainfall was particularly heavy, twice the normal average. Precipitation occurred intermittently throughout the survey period, with an average of 14 in. The average temperature was 59°F; with a low of 49° and a high of 73°. **Coverage:** Jan. 7, 12, 14-15, 17-18, 21-22. Total, 8 trips, all between 0800 and 1130, averaging 90 min each. **Count:** House Finch, 12 (252, 102); W. Meadowlark, 6 (126, 51); Starling, 6; White-crowned Sparrow, 6; Mourning Dove, 4 (84, 34); Yellow-rumped Warbler, 4; Mockingbird, 3 (63, 26); Killdeer, 2 (42, 17); Anna's Hummingbird, 2; Lesser Goldfinch, 2; Am. Kestrel, 1 (21, 9); Belted Kingfisher, 1; Com. Flicker, 1; Scrub Jay, 1; Com. Crow, 1; Am. Robin, +. **Average Total:** 52 birds (1094/km², 443/100 acres). **Remarks:** Seven feral Mallards and one Muscovy Duck are introduced residents at the pond areas. A pair of Com. Flickers was sighted on 4 trips only. A flock of 9 Water Pipits flew overhead on one occasion. Large and frequent flocks of gulls (Western, Ring-billed, California; occasional Herring and Heermann's gulls) flew above the park enroute to a nearby athletic field or, presumably, the ocean. — ANNE F. MABEN, 1708 Oak Ave., Manhattan Beach, CA 90266.



WB-PS 12. Hickory-Oak-Ash Floodplain Forest. Middle Patuxent River. February 11, 1978. Photo/C. S. Robbins.