

BREEDING BIRD CENSUS: 1990

Habitat	State/ Prov.	Compiler	Plot Size (ha)	Terr. per 40 ha	Num. spp.	Hr obs.	Yr study
Broadleaf Forest							
1. Northern Oak Woodland	CA	J.D. Petersen	16.0	105	21	12.4	1
2. Riparian Woodland Scattered Oaks	CA	K.L. Weaver	11.7	596	31	15.0	2
3. Western Sycamore Woodland with 4. Mixed Hardwood Poletimber	CA	H.L. Cogswell	24.3	213	27	66.8	1
	CT	A. Magee	8.5	425	27	13.0	24
5. Oak Hardwood Forest	CT	M. Dudek	15.8	305	31	26.0	4
6. Second-growth Hardwood Forest	CT	A. Magee	10.1	425	37	11.0	24
7. Mixed Upland Broadleaf Forest	DC	S.A. Briggs	14.2	669	38	128.5	32
8. Isolated Moist Tuliptree-Red Maple Upland Forest	MD	C.S. Robbins	21.4	240	27	56.0	2
9. Mature Beech-Maple-Oak Bottomland Forest	MD	C.S. Robbins	42.0	220	35	46.0	1
10. Upland Tulip Tree-Maple-Oak Forest	MD	G.E. Einem	11.9	350	33	50.0	7
11. Mature Deciduous Floodplain Forest	MD	D. Gauthey	7.6	373	27	51.0	38
12. Old Growth Woods and Swamp Forest	MI	L. Knapp	28.3	326	44	30.3	2
13. Upland Second-growth Oak-Hickory Forest	MS	H. Moore	10.0	656	37	24.8	2
14. Basswood-Black Ash Forest with Dead Timber	MN	G. Canterbury	11.5	288	28	23.0	4
15. Mature Aspen Forest with Young Maple Understory	MN	G.J. Peterson	10.0	378	20	134.0	1
16. Floodplain Forest	NC	H. Mueller	12.6	234	31	17.5	14
17. Mixed Deciduous Forest	NC	H. Mueller	12.6	204	28	19.5	15
18. Isolated Beech-Maple Woods	NY	R.M. Marshall	13.5	198	19	12.7	2
19. Mature Urban Deciduous Forest	NY	D.S. Kunstler	10.1	302	26	36.0	4
20. Urban Deciduous Forest	NY	D.E. Burhans	8.8	200	18	15.0	1

BREEDING BIRD CENSUS: 1990 (Continued)

Habitat	State/ Prov.	Compiler	Plot Size (ha)	Terr. per 40 ha	Num. spp.	Hr obs.	Yr study
Broadleaf Forest							
21. White Ash-Red Maple Forest	NY	G.R. Maxwell	16.2	172	29	10.0	5
22. Riparian Deciduous Forest	OH	E.J. Tramer	18.0	349	41	20.3	2
23. River Floodplain Broadleaf Forest	OH	W.E. McGill	18.0	167	30	12.0	2
24. Oak-Maple Ridge-Top Forest	PA	L. Goodrich	19.4	87	22	24.2	8
25. Oak-Maple Slope Forest	PA	L. Goodrich	16.9	101	21	25.3	8
26. Upland Oak-Red Maple Forest	RI	W.R. Eddleman	10.1	374	26	31.1	1
27. Mesophytic Forest I	VA	M.G. Smith	6.1	400	18	13.0	9
28. Mesophytic Forest II	VA	M.G. Smith	6.1	449	17	13.8	9
Needleleaf Forest							
29. Old-Growth Mixed Coniferous-Red Fir Forest Transition	CA	J. Davis	42.3	277	30	103.0	6
30. Ponderosa Pine Forest	CO	L. Hering	8.1	143	12	24.1	26
31. Heavily Thinned White Spruce Plantation	ME	J.K. Markowsky	4.1	448	25	20.0	6
32. Mature Red Spruce Forest	ME	T.P. Skaling	16.0	171	28	26.0	2
33. Mature Spruce-Fir Forest	ME	P.A. Duley	10.0	246	18	17.8	1
34. Mature Spruce Forest	ME	K.L. Crowell	4.0	110	12	4.8	4
35. Young Spruce Forest	ME	K.L. Crowell	4.5	306	20	9.3	10
36. Jack Pine Forest	MI	E. McLaren	16.0	72	13	21.5	6
37. Upland Christmas Tree Farm	NY	E.W. Brooks	10.7	196	15	18.5	8
38. Upland Scotch Pine Plantation	NY	E.W. Brooks	9.3	176	22	12.3	22
39. Mature White Pine Forest	RI	W.R. Eddleman	10.1	320	21	35.6	1
Broadleaf/Needleleaf Forest							
40. Grazed Oak-Pine Woodland	CA	K. Purcell	29.7	167	21	83.0	6
41. Ungrazed Oak-Pine Woodland	CA	K. Purcell	29.7	152	25	85.8	6
42. Ponderosa Pine-Scrub Oak Forest	CO	P.K. Coomber	13.8	400	22	23.0	10
43. Climax Hemlock-White Pine with Transition Hardwoods	CT	A. Magee	10.5	369	33	13.5	24

BREEDING BIRD CENSUS: 1990 (Continued)

Habitat	State/ Prov.	Compiler	Plot Size (ha)	Terr. per 40 ha	Num. spp.	Hr obs.	Yr study
44. Young Mixed Hardwood Stand-Conifer	CT	A. Magee	8.5	508	40	13.5	13
45. Oak-Hemlock Forest	CT	R.A. Askins	23.1	161	30	32.5	20
46. Upland Oak and Hemlock Forest	CT	J. Zickefoose	10.5	360	22	9.2	2
47. Central Hardwood Forest with Scattered Pine	DC	B. Ford	26.3	95	27	43.0	32
48. Isolated Oak-Tulipree-Pine Upland Forest	MD	C.S. Robbins	15.0	162	29	38.0	2
49. Mixed Oak-Virginia Pine Forest	MD	D. Dawson	38.0	197	39	65.0	1
50. Tamarack Bog and Hardwood	MI	J. Mullins	8.5	103	22	8.0	15
51. Young Aspen Forest with Scattered Mature Pines	MN	M. McDonald	9.0	455	20	32.0	1
52. Upland Mixed Pine-Spruce-Hardwood Plantation	NY	E.W. Brooks	16.6	180	29	18.3	17
53. Mature Hemlock-Hardwood Forest	OH	D. Minney	8.5	426	30	29.5	1
54. Mature Red Pine Forest with Deciduous Understory	MN	J. Whittaker	10.0	470	24	97.0	1
55. Mixed Oak-Pine Forest I	PA	D.A. Gross	6.0	413	28	24.5	14
56. Mixed Oak-Pine Forest II	PA	D.A. Gross	11.05	402	37	28.0	14
57. Hemlock-White Pine-Mixed Hardwood Forest	VA	K.R. Hinkle	6.1	213	12	12.2	5
Mixed Habitat							
58. Suburban Cemetery	AL	T.A. Imhof	15.0	210	21	21.0	11
59. Mature Upper Mixed-Coniferous Forest- Montane Chaparral	CA	D.W. Nelson	42.2	241	38	96.0	6
60. Mixed Habitat	CT	M. Dudek	15.0	696	53	34.7	4
61. Transition Forest and Thicket	CT	R.A. Askins	6.5	166	27	9.6	20
62. Disturbed Deciduous Forest	KS	R.L. Boyd	16.2	97	23	43.0	1
63. Bulrush and Cattail Marsh In Conifer Forest	MT	M.M. Bishop	40.5	200	51	21.5	16
64. Deciduous Forest with Pond and Brook	NJ	J. Brotherton	16.2	93	23	11.5	27
65. Freshwater Barrier Dune Community	NY	S.E. Bonanno	10.4	350	26	10.0	1

BREEDING BIRD CENSUS: 1990 (Continued)

Habitat	State/ Prov.	Compiler	Plot Size (ha)	Terr. per 40 ha	Num. sp.	Hr obs.	Yr study
66. Suburban Bird Sanctuary	NY	W.J. Kolodnicki	4.2	442	23	11.0	7
67. Field, Ridge, and Shrubby Trees	ON	M.F.G. Clark	6.6	803	20	16.4	2
68. Shrubby Trees, Ridge, and Woods	ON	M.F.G. Clark	7.3	457	21	13.1	1
69. Scattered Mixed Coniferous Forest in Subalpine Meadows and Spruce Bogs	OR	R.A. Hudson	32.4	48	15	14.0	15
70. Mixed Lowland Forest and Meadow with Stream	PA	D.B. Snyder	8.1	414	42	18.3	4
71. Mixed Mesophytic Woods and Brushland	TN	R.W. Simmers, Jr.	22.9	119	35	31.7	2
Non-forested wetlands							
72. Coastal Freshwater Marsh	CA	J.P. Kelly	10.5	379	18	9.9	6
73. Coastal Riparian Marsh	CA	J. Evens	17.5	2691	49	21.4	1
74. Desert Riparian-Freshwater Marsh	CA	E.A. Cardiff	15.4	340	32	23.3	14
75. Shrubby Swamp and Sedge Hummocks	CT	A. Magee	8.1	713	20	11.0	24
76. Wetland Sedge Meadow I	NE	G. Lingle	16.2	128	11	6.6	10
77. Wetland Sedge Meadow II	NE	G. Lingle	16.2	104	12	3.9	9
Shrubland							
78. Mesquite-Hackberry Riparian Association	AZ	J. & R. Tweet	11.2	303	22	14.5	2
79. Coastal Scrub	CA	R. Gutsell	8.1	219	16	163.0	16
80. Disturbed Coastal Scrub A	CA	S. Allen	4.7	204	21	135.0	16
81. Disturbed Coastal Scrub B	CA	K.J. Fernandez	8.1	187	17	181.0	17
Grassland							
82. Coastal Prairie	CA	J.P. Kelly					
83. Tallgrass Prairie I	IA	P.E. Lowther	16.0	81	18	6.5	7
84. Tallgrass Prairie II	IA	P.E. Lowther	65.7	77	17	9.0	7
85. Tallgrass Prairie III	IA	P.E. Lowther	44.8	99	19	8.3	7

BREEDING BIRD CENSUS: 1990 (Continued)

Habitat	State/ Prov.	Compiler	Plot Size (ha)	Terr. per 40 ha	Num. sp.	Hr obs.	Yr study
86. Kentucky Bluegrass Prairie	ND	D.H. Johnson	4.8	41	6	2.6	19
87. Mixed Prairie I	ND	D.H. Johnson	10.0	60	10	5.9	19
88. Mixed Prairie II	ND	D.H. Johnson	6.1	13	6	3.3	19
89. Mixed Prairie III	ND	D.H. Johnson	6.1	3	3	2.3	19
90. Mixed Prairie IV	ND	D.H. Johnson	6.1	29	7	3.0	19
91. Mixed Prairie V	ND	D.H. Johnson	6.1	13	3	2.9	19
92. Subirrigated Grassland	NE	G. Lingle	16.2	79	7	4.4	10
93. Subirrigated Native Hay	NE	G. Lingle	16.2	38	5	3.9	10
Grassland							
94. Tallgrass Prairie Remnant	OH	D. Minney	44.0	151	15	46.5	1
Successional Field							
95. Field and Shrubland	CT	T. Ford	24.0	109	25	19.8	1
96. Abandoned Upland Pasture	NY	V.M. Pitzrick	8.0	665	33	25.0	7
97. Abandoned Pasture Scrubland	ON	J. Romanow	9.0	369	35	24.0	9
Cultivated							
98. Mature Citrus Orchard	FL	F.E. Lohrer	77	79	3	24.8	1

1. NORTHERN OAK WOODLAND

ARBOLADA DE ROBLE NORTENO

JOHN D. PETERSEN

13935 Highway 12
Glen Ellen, California 95442

Location: California; Sonoma Co.; Glen Ellen; Bouverie Ranch; 38°22'N, 122°30'W; Glen Ellen Quadrangle, USGS. **Continuity:** New. **Size:** 16.0 ha. **Description of Plot:** Oak woodland varying in distribution from clumped to open savannah. A seasonal creek runs through the center of the plot. The plot is grazed by cattle May through October. *Quercus douglasii*, *Q. agrifolia*, and *Umbellularia californica* are the dominant canopy species. *Rhus diversiloba* and *Symphoricarpos rivularis* dominate the shrub layer. Ground cover is comprised mainly of *Avena fatua* and *Lolium multiflorum*. **Edge:** Both the N and S edges border similar habitat to that found within the plot. The E edge borders a mixed evergreen forest, and the W edge borders a grassland. **Topography and Elevation:** Minimum elevation 122 m, maximum 152 m. Plot is level to gently rolling. **Weather:** Mean temperature 16.2°C (range 10–27°C). **Coverage:** 12.4 h; 9 visits (mornings); 22 March; 4, 11, 20, 26 April; 3, 8, 16, 25 May. **Census:** Hutton's Vireo, 4.0 territories (10/40 ha); Anna's Hummingbird, 3.0 (8); Ash-throated Flycatcher, 3.0; Plain Titmouse, 3.0; Orange-crowned Warbler, 3.0; Dark-eyed Junco, 3.0; Lesser Goldfinch, 3.0; Black-throated Gray Warbler, 2.0; Mourning Dove, 2.0; Acorn Woodpecker, 2.0; Western Wood-Pewee, 2.0; Western Bluebird, 2.0; Warbling Vireo, 2.0; Chipping Sparrow, 2.0; House Finch, 2.0; Nuttall's Woodpecker, 1.0; Western Flycatcher, 1.0; Scrub Jay, 1.0; White-breasted Nuthatch, 1.0; American Robin, 1.0; Solitary Vireo, 1.0; Lark Sparrow, 1.0. **Total:** 22 species; 45 territories (112.5/40 ha).

2. RIPARIAN WOODLAND

BOSQUE RIVEREÑO

KENNETH L. WEAVER

1113 Senwood Way
Fallbrook, California 92028

Location: California; San Diego Co.; Fallbrook; ; 33°25'N, 117°14'W; Temecula Quadrangle, USGS. **Continuity:** Established 1989, 2 yr. **Size:** 11.7 ha. **Description of Plot:** See *Am. Birds* 38:105 (1984). **Weather:** Temperature ranged from 10–27°C. Typical for season, cloudy during most morning trips. **Coverage:** 15 h; 9 visits (7 mornings, 2 evening); 16, 17, 18, 29 April; 12, 19 May; 3 June; 4, 8, July. **Census:** Song Sparrow, 26.0 territories (89/40 ha); Yellow Warbler, 24.0 (82); Common Yellowthroat, 15.0 (51); Yellow-breasted Chat, 14.0 (48); Bushtit, 12.5 (43); Lesser Goldfinch, 11.0 (38); Western Wood-Pewee, 9.0 (31); Black-chinned Hummingbird, 8.0 (27); House Wren, 8.0; Black-headed Grosbeak, 6.5 (22); Downy Woodpecker, 6.0 (20); Rufous-sided Towhee, 6.0; Pacific-slope Flycatcher, 5.0 (17); Orange-crowned Warbler, 4.0 (14); Mourning Dove, 3.0 (10); Plain Titmouse, 3.0; Swainson's Thrush, 3.0; Brown-headed Cowbird, 2.0; Wrentit, 1.5; Costa's Hummingbird, 1.0; Nuttall's Woodpecker, 1.0; Northern Flicker, 1.0; Ash-throated Flycatcher, 1.0; Northern Rough-winged Swallow, 1.0; Scrub Jay, 1.0; House Finch, 1.0; Mallard, +; Turkey Vulture, +; Red-shouldered Hawk, +; Red-tailed Hawk, +; Common Raven, +. **Total:** 31 species; 174.5 territories (597/40 ha). **Visitors:** Great Blue Heron, Great Egret, Belted Kingfisher, California Quail, Band-tailed Pigeon, Vaux's Swift, Acorn Woodpecker, American Crow, Bewick's Wren, California Thrasher, Phainopepla, Hutton's Vireo. **Remarks:** Decreases were noted for many resident species, possibly correlated with the continuing drought. The numbers of neotropical migrants remains unusually high for a riparian

woodland in southern California. Band-tailed Pigeons, which were so conspicuous on the plot last yr, were only occasional visitors this yr. Yellow Warblers were observed feeding a young cowbird. **Acknowledgments:** This census was conducted with the support of the Palomar Audubon Society.

3. WESTERN SYCAMORE WOODLAND WITH SCATTERED OAKS

ARBOLADA DE HIGUERA DE SICOMORO CON ROBLES DISPERSOS

HOWARD L. COGSWELL

1548 East Avenue
Hayward, California 94541

Location: California; Alameda Co.; Livermore; Sycamore Grove Park; 37°38'N, 121°46'W; Livermore Quadrangle, USGS. **Continuity:** New. **Size:** 24.3 ha. **Description of Plot:** A pear-shaped open-canopy woodland tract with grassy ground cover running 800 m NW to SE, and 200–400 m wide. An unpaved service road runs through the SE and central portions, and splits into two roads through the N and W portions of the plot. The plot is grazed each yr by cattle during the spring and summer to reduce fuel buildup. A quantitative vegetation survey yielded the following results: Trees, 2 cm diameter and over, based on 14 randomly located 0.04-ha square samples, 173 trunks/ha (most trees have multiple trunks originating from a common base); total basal area 20.7 m²/ha. Species comprising 90% of the total number of trees [figures after each are trunks/ha, relative density (%), relative dominance (%), based on crown cover), frequency (%), and crown coverage (%), based on aerial photo of entire plot]: Western Sycamore 141, 82, 74.6, 86, 29.9; willow sp. 23, 13, 1.5, 7, 0.6; Coast Live-oak 7, 4, 9.0, 21, 3.6; Eucalyptus sp. 1.8, 1, -, 7, -. The values for Eucalyptus (2 ind. on plot) and willow are excessive, as these species were encountered in only one quadrat. Trees by diameter size class [figures after each are trunks/ha, relative density (%), basal area in m²/ha, and relative dominance (%), calculated from basal area of trees in the 14 samples, in that sequence]: saplings (< 7.6 cm) 20, 11.2, 0.02, 0.1; A (7.6–15.2 cm) 25, 14.4, 0.08, 1.3; B (15.2–22.9 cm) 27, 15.5, 0.06, 4.7; C (22.9–38.1 cm) 39, 22.5, 2.9, 14.0; D (38.1–53.3 cm) 32, 18.5, 5.1, 24.8; E (53.3–68.6 cm) 16, 9.2, 4.8, 23.5; F (68.6–83.8 cm) 9, 5.2, 3.7, 18.0; G (83.8–101.6 cm) 4, 2.3, 1.3, 6.1; H (> 101.6 cm) 2, 1.2, 1.6, 7.6; All trees sampled that were > 27 cm dbh were Western Sycamores; however, large oaks and cottonwoods occur elsewhere on the plot. Shrub stems/ha, 1219 (based on a count of all stems within 13 sample quadrats); shrub cover, 2.4%; mean shrub height, 2.1 m. Shrub species in order of decreasing abundance [with number of stems/ha]: Mulefat 398 live, 296 dead; Western Sycamore suckers and sprouts > 1 m in height 168; willow sp. 357 (occurred in only one quadrat); California Blue Elderberry; Snowberry; Gooseberry; Poison Oak; young Coast Live-oak; California Laurel. Clumps of *Artemisia californica*, *Salvia mellifera*, *Brickellia californica*, and *Ceanothus cuneatus* occur in several areas of the plot. Shrub canopy cover in the 14 quadrats averaged only 2.4%. Ground cover, 77%; mean height of herbaceous ground cover, 36 cm; total tree canopy cover, 41%; average canopy height, 12.5 m (range 4.6 to 23.5 m). **Water:** A creek flows through the plot, but flow is regulated by a dam 1.9 km upstream. **Edge:** Similar vegetation extends beyond the plot along 400 m of the NW and SE ends. The SW portion adjoins a horse pasture, grassland and abandoned orchard. The N and NW portions adjoin grassland heavily grazed by cattle. The NE and E portions are bounded by a two-lane road lined with utility poles and a vineyard beyond. A high voltage line crosses the middle of the plot, with one tower in the plot and others just outside. **Topography and Elevation:** The plot lies in a gently sloping valley floor between low stream terraces. A 3–5 m bank extends for 280 m near the S boundary, and is the area of greatest relief. Minimum elevation 146 m, maximum 158 m. **Weather:** Mean temperature 8.8°C (range 2–14°C). This was the fourth consecutive yr of drought throughout central California, with only 60% of normal rainfall. **Coverage:** 66.8 h; 11 visits (mornings); 6, 14, 18 (partial visit), 22 (part. vis.) March; 5, 7, 16, 24 April; 4, 10, 12 (part. vis.), 16

(part. vis.) May; 1 June. **Census:** European Starling, 41.0 territories (68/40 ha; 41N); Bewick's Wren, 10.5 (17; 1N, 2FL); Anna's Hummingbird, 7.5 (12); Mourning Dove, 7.0 (12); Plain Titmouse, 6.0 (10; 2N, 4FL); California Quail, 5.0 (8); Red-winged Blackbird, 4.5 (7; 1N); Acorn Woodpecker, 4.5 (7; 2N); Nuttall's Woodpecker, 3.5 (6; 2N); Bushtit, 3.5 (1N, 4FL); Lesser Goldfinch, 3.5 (6); Scrub Jay, 3.5 (6); Dark-eyed Junco, 3.5 (5); Rufous-sided Towhee, 3.0 (5); American Kestrel, 2.5; White-breasted Nuthatch, 2.5; Ash-throated Flycatcher, 2.5 (1N); Yellow-billed Magpie, 2.0 (2N, 1FL); California Towhee, 2.0; Tree Swallow, 2.0; Song Sparrow, 2.0; Brown-headed Cowbird, 2.0; Red-shouldered Hawk, 1.5; Wilson's Warbler, 1.0; Downy Woodpecker, 1.0; Western Bluebird, 1.0 (1N); California Thrasher, 1.0. **Total:** 27 species; 129.5 territories (213/40 ha). **Visitors:** Great Blue Heron, Green-backed Heron, Wood Duck, Mallard, Cinnamon Teal, Turkey Vulture, Red-tailed Hawk, Golden Eagle, Wild Turkey, Killdeer, Mourning Dove, Great-horned Owl, White-throated Swift, Belted Kingfisher, Northern Flicker, Black Phoebe, Western Kingbird, Violet-green Swallow, Northern Rough-winged Swallow, Cliff Swallow, Barn Swallow, Common Raven, House Wren, American Robin, Northern Mockingbird, Phainopepla, Warbling Vireo, Orange-crowned Warbler, Yellow Warbler, Common Yellowthroat, Black-headed Grosbeak, Lark Sparrow, Brewer's Blackbird, Northern Oriole, Purple Finch, House Finch. **Remarks:** Both the drought and human interference with stream flow are likely causes of the death of sycamores on this plot. The abundance of dead limbs on living trees has resulted in many woodpecker-built and natural cavities, and competition between native cavity nesters and starlings appears to be increasing. The absence as breeders of Warbling Vireo, Yellow Warbler, Black-headed Grosbeak, and Northern Oriole was unexpected since all are regular breeders 0.8 km upstream. By mid-May, grazing on the plot had reduced wetland vegetation to stubble trampled into mud. **Acknowledgments:** David Riensche assisted for several species on 2 dates, and was particularly helpful in locating and verifying use of nest cavities by starlings. Livermore Area Recreation and Park District staff kindly arranged for access to the park at places and times outside its normal open hours.

4. MIXED HARDWOOD POLETIMBER

BOSQUE MIXTO MADERERO

ANDREW MAGEE

*White Memorial Conservation Center
Litchfield, Connecticut 06759*

Location: Connecticut; Litchfield Co.; Bantam; White Memorial Foundation-Wheeler Hill; 41°42'N, 73°13'W; Litchfield Quadrangle, USGS. **Continuity:** Established 1965; 24 yr. **Size:** 8.5 ha. **Description of Plot:** See *Aud. Field Notes* 19:609-610 (1965). **Weather:** Mean temperature 21.5°C (range 20-23°C). **Coverage:** 13 h; 4 visits (1 morning, 2 afternoon, 1 evening); 4, 12, 16, 24 June. (*A minimum of eight visits during a four to six week period is recommended to insure adequate coverage and estimates of breeding bird densities. Ed.*) **Census:** Red-eyed Vireo, 14.0 territories (66/40 ha); Gray Catbird, 12.0 (56); Ovenbird, 9.0 (42); American Redstart, 8.0 (38); Veery, 6.0 (28); Black-and-white Warbler, 5.0 (24); Chestnut-sided Warbler, 4.0 (19); Rufous-sided Towhee, 4.0; Black-capped Chickadee, 3.0 (14); Wood Thrush, 3.0; Common Yellowthroat, 3.0; Blue Jay, 2.5; Wild Turkey, 2.0; Blue-winged Warbler, 2.0; Scarlet Tanager, 2.0; Broad-winged Hawk, 1.0; Downy Woodpecker, 1.0; Northern Flicker, 1.0; Least Flycatcher, 1.0; Eastern Phoebe, 1.0; Great Crested Flycatcher, 1.0; American Crow, 1.0; Tufted Titmouse, 1.0; White-breasted Nuthatch, 1.0; Northern Cardinal, 1.0; Eastern Wood-Pewee, 0.5; Black-throated Blue Warbler, 0.5. **Total:** 27 species; 90.5 territories (426/40 ha). **Remarks:** The transition toward second-growth forest on this abandoned hillside was reversed on ca 0.8 ha of the upper, N end of the plot by a tornado and subsequent salvage operation during July 1989. Despite this disturbance the forest interior species continued to increase in numbers. A pair of Broad-winged Hawks nested on the plot for the first time in 24 yr. **Acknowledgments:** Gordon Loery of the White Memorial Conservation Center wrote up the report.

5. OAK HARWOOD FOREST

BOSQUE DE ROBLE

MIKE DUDEK

*Miles Wildlife Sanctuary
95 West Cornwall Road
Sharon, Connecticut 06069*

Location: Connecticut; Litchfield Co.; Sharon; Miles Wildlife Sanctuary; 41°53'N, 73°24'W; Sharon Quadrangle, USGS. **Continuity:** Established 1987; 4 yr. **Size:** 15.8 ha. **Description of Plot:** See *J. Field Ornithol.* 60 (suppl.):26 (1990). **Weather:** Mean temperature 15.7°C (range 4–25°C). **Coverage:** 26 h; 12 visits (9 mornings, 3 evenings); 4, 6, 8, 10, 12, 14, 18, 21, 22, 25, 27, 28 June. **Census:** Ovenbird, 16.0 territories (40/40 ha); Eastern Wood Pewee, 11.0 (28); Black-and-white Warbler, 10.0 (25); Veery, 9.0 (23); Scarlet Tanager, 9.0; Downy Woodpecker, 6.0 (15); Black-throated Blue Warbler, 6.0; Yellow-bellied Sapsucker, 5.0 (13); Hermit Thrush, 5.0; Red-eyed Vireo, 5.0; Black-capped chickadee, 4.0 (10); White-breasted Nuthatch, 3.0 (8); Winter Wren, 3.0; Rufous-sided Towhee, 3.0; Yellow-billed Cuckoo, 2.0; Hairy Woodpecker, 2.0; Eastern Phoebe, 2.0; Tufted Titmouse, 2.0; Brown Creeper, 2.0; American Redstart, 2.0; Rose-breasted Grosbeak, 2.0; Northern Oriole, 2.0; American Robin, 1.5; Ruffed Grouse, 1.0; Mourning Dove, 1.0; Black-billed Cuckoo, 1.0; Pileated Woodpecker, 1.0; Blue Jay, 1.0; Yellow-throated Vireo, 1.0; Common Yellowthroat, 1.0; Red-winged Blackbird, 1.0. **Total:** 31 species; 120.5 territories (305/40 ha). **Visitors:** Great-crested Flycatcher, Ruby-throated Hummingbird, Red-bellied Woodpecker, Warbling Vireo.

6. SECOND-GROWTH HARDWOOD FOREST

BOSQUE SECUNDARIO DE MADERAS PURAS

ANDREW MAGEE

*White Memorial Conservation Center
Litchfield, Connecticut 06759*

Location: Connecticut; Litchfield Co.; Morris; White Memorial Foundation; 41°42'N, 73°12'W; Litchfield Quadrangle, USGS. **Continuity:** Established 1965; 24 yr. **Size:** 10.1 ha. **Description of Plot:** See *Aud. Field Notes* 19:590-591 (1965). **Weather:** Mean temperature 20.9°C (range 15–23°C). **Coverage:** 11 h; 5 visits (3 mornings, 1 afternoon, 1 evening); 5, 22, 23, 24, 25 June. (*A minimum of eight visits during a four to six week period is recommended to insure adequate coverage and estimates of breeding bird densities.* Ed.). **Census:** Ovenbird, 17.0 territories (67/40 ha); Red-eyed Vireo, 13.5 (54); Veery, 12.0 (48); Scarlet Tanager, 7.5 (30); Black-and-white Warbler, 5.0 (20); Wood Thrush, 4.5 (18); Chestnut-sided Warbler, 4.0 (16); Eastern Wood-Pewee, 3.0 (12); Black-capped Chickadee, 3.0; Tufted Titmouse, 3.0; American Robin, 3.0; American Redstart, 3.0; Gray Catbird, 2.5; Northern Flicker, 2.0; Blue Jay, 2.0; White-breasted Nuthatch, 2.0; Blue-winged Warbler, 2.0; Song Sparrow, 2.0; Hairy Woodpecker, 1.0; Rufous-sided Towhee, 1.5; Yellow-bellied Sapsucker, 1.0; Downy Woodpecker, 1.0; Eastern Phoebe, 1.0; American Crow, 1.0; Brown Creeper, 1.0; House Wren, 1.0; Yellow-throated Vireo, 1.0; Common Yellowthroat, 1.0; Brown-headed Cowbird, 1.0; Northern Oriole, 1.0; Broad-winged Hawk, 0.5; Barred Owl, 0.5; Hermit Thrush, 0.5; Blackburnian Warbler, 0.5; Northern Cardinal, 0.5; Rose-breasted Grosbeak, 0.5; American Goldfinch, 0.5. **Total:** 37 species; 107 territories (424/40 ha). **Remarks:** Scarlet Tanagers, up 5.5 territories from last yr, reached a new high for the 24 yr of censusing. The number of species was about average, but the total number of territories was above average. **Acknowledgments:** Gordon Loery of the White Memorial Conservation Center wrote up the report.

7. MIXED UPLAND BROADLEAF FOREST**BOSQUE MIXTO DE HOJA ANCHA DE ALTURAS**

SHIRLEY A. BRIGGS

7605 Honeywell Lane
Bethesda, Maryland 20814

Location: District of Columbia; D.C. Co.; Washington, D.C.; Glover-Archbold Park; 38°55'N, 77°5'W; Washington West Quadrangle, USGS. **Continuity:** Established 1959; 32 yr. **Size:** 14.2 ha. **Description of Plot:** See *Aud. Field Notes* 14:502-503 (1960). **Weather:** Mean temperature 17.5°C (range 2–31°C). **Coverage:** 128.5 h; 36 visits (20 mornings, 13 morning into afternoon, 3 afternoon); 14, 17, 22, 27 March; 7, 8, 14, 17, 22, 28 April; 6, 7, 15, 17, 19, 23 May; 4, 5, 6, 10, 11, 12, 13, 14, 16, 20, 23, 25, 26 June; 1, 4 July. **Census:** Gray Catbird, 30.0 territories (85/40 ha); Northern Cardinal, 28.0 (79); Carolina Wren, 21.0 (59); Carolina Chickadee, 18.0 (51); Tufted Titmouse, 16.5 (46); Rufous-sided Towhee, 13.0 (37); Red-bellied Woodpecker, 12.0 (34); Wood Thrush, 11.0 (31); Veery, 10.5 (30); Red-eyed Vireo, 10.0 (28); Downy Woodpecker, 7.0 (20); Northern Flicker, 7.0; American Robin, 5.0 (14); Blue Jay, 4.0 (11); American Crow, 4.0; White-breasted Nuthatch, 4.0; American Redstart, 4.0; Eastern Wood-Pewee, 3.0 (8); Acadian Flycatcher, 3.0; European Starling, 3.0; Common Yellowthroat, 3.0; Common Grackle, 3.0; House Finch, 3.0; Mourning Dove, 2.0; Hairy Woodpecker, 2.0; Blue-gray Gnatcatcher, 2.0; Song Sparrow, 2.0; House Sparrow, 1.5; Ruby-throated Hummingbird, 1.0; Pileated Woodpecker, 1.0; Eastern Phoebe, 1.0; House Wren, 1.0; Brown-headed Cowbird, 1.0; Eastern Screech-Owl, +; Rock Dove, +; Chimney Swift, +; Northern Mockingbird, +; Ovenbird, +. **Total:** 38 species; 237.5 territories (669/40 ha). **Visitors:** Black-crowned Night-Heron, Mallard, Wood Duck, Black Vulture, Red-tailed Hawk, Red-shouldered Hawk, Broad-winged Hawk, Osprey, Ring-billed Gull, Yellow-billed Cuckoo, Great-crested Flycatcher, White-eyed Vireo, Louisiana Waterthrush, Hooded Warbler, Scarlet Tanager, Indigo Bunting, American Goldfinch. **Remarks:** The number of territories was the highest in our 32 yr, the second highest being 224 in 1970. The total number of species was among the highest, but not close to the 45 observed in 1960. We had more hours of observation than last yr, but no more than in several previous yr. We observed a notable increase in American Redstarts, which went from a high of 15 in 1961 to 0 during the late 1960's and early 1970's, and then only an occasional visitor since 1978. **Other Observers:** Mary D'Imperio, Ann Feather, Olive Holbrook, Patricia Wood.

8. ISOLATED MOIST TULIPTREE-RED MAPLE UPLAND FOREST**BOSQUE AISLADO DE ÁLAMO-ARCE DE ALTURAS**

CHANDLER S. ROBBINS

Patuxent Wildlife Research Center
Laurel, Maryland 20708

Location: Maryland; Howard Co.; Clarksville; Rouse Nursery Woods; 39°12'N, 76°56'W; Clarksville Quadrangle, USGS. **Continuity:** Established 1989; 2 yr. **Size:** 21.4 ha. **Description of Plot:** See *J. Field Ornithol.* 61 (suppl.):35-36. **Weather:** Temperatures averaged close to normal. June precipitation was about 25% below normal, but the ground was saturated from excess rain in May. The two streams kept running through the end of August. **Coverage:** 56 h; 9 visits (mornings); 1 May–5 July. **Census:** Wood Thrush, 25.0 territories (47/40 ha; 29N, FL); Red-eyed Vireo, 20.0 (37; FL); Gray Catbird, 14.0 (26; 10N, FL); Acadian Flycatcher, 8.0 (15; 2N, FL); Red-bellied Woodpecker, 7.5 (14; FL); Northern Cardinal, 7.0 (13; 4N, FL); Tufted Titmouse, 6.5 (12; FL); Rufous-sided Towhee, 3.5 (6; 7FL); Mourning Dove, 3.0 (6; 1N); Northern Flicker, 3.0 (FL); Carolina Wren, 3.0 (FL); Scarlet Tanager, 3.0 (N, FL); Blue Jay, 2.5 (FL); Carolina Chickadee, 2.5 (FL); Kentucky Warbler, 2.5 (FL); Downy Woodpecker, 2.0 (1N, FL); Eastern Wood-Pewee, 2.0; White-

breasted Nuthatch, 2.0; Hooded Warbler, 2.0 (FL); Brown-headed Cowbird, 2.0 (1 FL raised by Wood Thrush); White-eyed Vireo, 1.5 (FL); Yellow-billed Cuckoo, 1.0; Hairy Woodpecker, 1.0 (FL); Great Crested Flycatcher, 1.0; American Crow, 1.0 (FL); American Robin, 1.0; Ovenbird, 1.0. **Total:** 27 species; 128.5 territories (240/40 ha). **Visitors:** Pileated Woodpecker, Yellow-throated Vireo, Louisiana Waterthrush, Common Yellowthroat, Indigo Bunting, Common Grackle. **Remarks:** No Gypsy Moths were encountered at this site, although there was much defoliation in the region. **Acknowledgments:** I thank Robert Young of the Rouse Company for permission to study the birds of this site, which is scheduled for a housing development in the near future.

9. MATURE BEECH-MAPLE-OAK BOTTOMLAND FOREST

BOSQUE INUNDABLE DE HAYA-ARCE-ROBLE MADURO

CHANDLER S. ROBBINS

*Patuxent Wildlife Research Center
Laurel, Maryland 20708*

Location: Maryland; Prince Georges Co.; Laurel; Patuxent Floodplain Forest; 39°3'N, 76°49'W; Laurel Quadrangle, USGS. **Continuity:** New. **Size:** 42.0 ha. **Description of Plot:** Basically rectangular, 450 x 900 m, with a small area added at the NW corner. Floodplain of the Patuxent River on the Patuxent Wildlife Research Center, including islands of slightly higher river terrace and adjacent terrace forest within the 100-yr floodplain. The forest has changed little in the past 50 yr except for recent overbrowsing by deer. The Patuxent River flows through the NE corner of the plot. This last extensive forest in central Maryland continues unbroken for 8 km along the river and consists of more than 1000 contiguous ha before broken by a powerline right-of-way. Beyond the powerline are more than 400 ha of contiguous forest on the Fort George G. Meade Military Reservation. A quantitative vegetation survey following the method described by F.C. James and H.H. Shugart, Jr. (1970. *Aud. Field Notes* 24:727-736) yielded the following results: Trees, 7.6 cm diameter and over, based on nine 0.04-ha circular samples, 623/ha; total basal area 33.7 m²/ha. Species comprising 95% of the total number of trees [figures after each are trees/ha, relative density (%), relative dominance (%), and frequency (%): American Beech 179, 29, 18, 100; Red Maple 120, 19, 11, 67; White Oak 60, 10, 26, 67; Sweet Gum 84, 14, 15, 100; Black Tupelo 52, 8, 3, 56; dead trees 46, 7, 7, 89; Ironwood 19, 3, 1, 22; White Ash 8, 1, 7, 22; Tuliptree 8, 1, 3, 22; Virginia Pine 8, 1, 2, 11. Trees by diameter size class [figures after each are trees/ha, relative density (%), basal area in m²/ha, and relative dominance (%): S (saplings 3–8 cm dbh) 552, -, 5.2, -; A (8–15 cm) 253, 41, 2.1, 6.3; B (15–23 cm) 137, 22, 3.4, 10.2; C (23–38 cm) 137, 22, 9.2, 27.2; D (38–53 cm) 66, 11, 9.9, 29.4; E (53–69 cm) 22, 3, 5.7, 16.9; F (69–84 cm) 8, 1, 3.4, 10.0. Density board readings (% of 10 x 10 cm squares more than 50% obscured by green vegetation from a distance of 11.35 m, n=36) using the method described by B.R. Noon (1981. *Techniques for sampling avian habitats. Pp. 42-52, In, D.E. Capen (Ed.), The use of multivariate statistics in studies of wildlife habitat, U.S.D.A. Forest Service Technical Report RM-87.*) yielded the following results: 0–0.3 m, 28%; 0.3–1 m, 23%; 1–2 m, 34%; 2–3 m, 43%. Foliage profiles (% occurrence of green vegetation based on 180 vertical sightings) using the method described by D.W. Schemske and N. Brokaw (1981. *Treefalls and the distribution of understory birds in a tropical forest. Ecology* 62:938-945.) yielded the following results: 0–0.5 m, 19%; 0.5–1 m, 2%; 1–1.5 m, 3%; 1.5–2 m, 7%; 2–2.5 m, 11%; 2.5–3 m, 4%; 3–4 m, 16%; 4–6 m, 44%; 6–8 m, 52%; 8–10 m, 47%; 10–15 m, 57%; 15–20 m, 43%; 20–25 m, 19%; 25–30 m, 1%. Shrub stems/ha, 5642; ground cover, 29%; canopy cover, 99%; average canopy height, 23 m (range 17–26 m). **Edge:** Except for another powerline break and two-lane Maryland route 197, these woods are contiguous with 1000 ha of forest to the S. On the W the woods slope gradually upward and continue for 100 to 1400 m. Only at the NW corner does a field approach to within 75 m of the study plot. **Topography and Elevation:** Essentially flat, minimum elevation 27 m, maximum 35 m. **Weather:** Mean temperature 15.4°C (range 11–29°C). Temperatures averaged close to normal with no prolonged hot spells. Excess precipitation in May kept the topsoil

moist despite a deficiency in precipitation during June. Above normal precipitation returned in July. **Coverage:** 46 h; 10 visits; 26 April to 3 July. **Census:** Red-eyed Vireo, 58.0 territories (55/40 ha); Ovenbird, 24.5 (23); Tufted Titmouse, 23.0 (22); Wood Thrush, 20.0 (19); Acadian Flycatcher, 17.5 (17); Red-bellied Woodpecker, 15.0 (14); Scarlet Tanager, 8.0 (8); White-breasted Nuthatch, 6.5 (6); Yellow-throated Vireo, 6.5; Yellow-billed Cuckoo, 5.0 (5); Hooded Warbler, 4.5 (4); Carolina Wren, 4.0 (4); Blue-gray Gnatcatcher, 4.0; Kentucky Warbler, 4.0; Louisiana Waterthrush, 3.5 (3); Carolina Chickadee, 3.0 (3); Northern Cardinal, 3.0; Downy Woodpecker, 2.5; Brown-headed Cowbird, 2.5; Pileated Woodpecker, 2.0; Red-shouldered Hawk, 1.5; Northern Flicker, 1.5; Eastern Wood-Pewee, 1.5; Barred Owl, 1.0; Hairy Woodpecker, 1.0; Great Crested Flycatcher, 1.0; Blue Jay, 1.0; American Crow, 1.0; Gray Catbird, 1.0; White-eyed Vireo, 1.0; Northern Parula, 1.0; Common Yellowthroat, 1.0; Wood Duck, 0.5; American Black Duck, 0.5; Mallard, 0.5. **Total:** 35 species; 232 territories (221/40 ha). **Visitors:** Green-backed Heron, Fish Crow, American Robin, Common Grackle, American Goldfinch. **Remarks:** See Table 5 in Stamm et al. (1960. *Bird-Banding* 31:115-130) for 1959 census results from a 36.4 ha portion of the site; numbers given there are for total adult individuals, not territories. Census data for 1963, 1964, 1967, 1969, and 1972 from the 42 ha plot have not been published. The only noticeable change in habitat since 1959 has been the reduction in the shrub layer by deer. This has resulted in a decrease in cardinals, Kentucky Warblers, and Hooded Warblers, and an increase in Ovenbirds. It does not account for the disappearance of redstarts, which had reached a high of 18 territories in 1964, and the sharp decline in Northern Parulas from nine in 1963 to one in 1990. **Acknowledgments:** I thank Fred and Jane Fallon for finding and checking nests (160 h), and for assisting with vegetation measurements.

10. UPLAND TULIPTREE-MAPLE-OAK FOREST

BOSQUE DE ALAMO-ARCE-ROBLE DE ALTURAS

GERALD E. EINEM

11442 High Hay Drive
Columbia, Maryland 21044

Location: Maryland; Howard Co.; Columbia; Middle Patuxent Environmental Area; 39°12'N, 76°54'W; Clarksville Quadrangle, USGS. **Continuity:** Established 1971; 7 yr. **Size:** 11.9 ha. **Description of Plot:** See *Am. Birds* 25:971 (1971). In 1983, the last census, a part of the floodplain forest along the NE side of the plot was cleared for a sewer line. **Weather:** Mean temperature 22.2°C (range 6–37°C). **Coverage:** 50 h; 25 visits (21 mornings, 4 evenings); 21, 23 April; 2, 6, 9, 12, 19, 27 May; 2, 3, 9, 10, 16, 17, 23, 24, 30 June; 1, 4, 7, 8, 15, 18, 21, 27 July. **Census:** Wood Thrush, 18.5 territories (62/40 ha); Red-eyed Vireo, 17.0 (57); Hooded Warbler, 8.5 (29; 1N); Red-bellied Woodpecker, 7.0 (24); Acadian Flycatcher, 7.0 (1N); Scarlet Tanager, 5.0 (17); Northern Cardinal, 5.0; Tufted Titmouse, 4.0 (13); Kentucky Warbler, 3.5 (12); Downy Woodpecker, 3.0 (10); Ovenbird, 3.0; Eastern Wood-Pewee, 2.5; Mourning Dove, 2.0; Carolina Chickadee, 2.0 (1N); White-breasted Nuthatch, 2.0; Veery, 2.0; Gray Catbird, 2.0; Rufous-sided Towhee, 2.0; Hairy Woodpecker, 1.0 (FL); Northern Flicker, 1.0; Blue Jay, 1.0; Carolina Wren, 1.0; Yellow-throated Vireo, 1.0; Northern Parula, 1.0; Yellow-billed Cuckoo, 0.5; American Crow, 0.5; Brown-headed Cowbird, 0.5; Red-tailed Hawk, +; Red-shouldered Hawk, +; Black-billed Cuckoo, +; Barred Owl, +; Pileated Woodpecker, +; Worm-eating Warbler, +. **Total:** 33 species; 103.5 territories (348/40 ha). **Visitors:** Blue-winged Warbler, Yellow-throated Warbler, American Redstart. **Remarks:** Wood Thrush density increased from 40/40 ha in 1976 to 62/40 ha this yr. Northern Cardinals decreased from 20/40 ha in 1976 to 17/40 ha this yr. Cerulean Warblers, present in all previous yr, were not found on the plot this yr. A fox and raccoon were observed on the plot. **Acknowledgments:** Thanks to Ken Vaughn and Steven Barnes for assistance with locating markers, marking trails, and tabulating data, and Chandler Robbins for advice and encouragement.

11. MATURE DECIDUOUS FLOODPLAIN FOREST

BOSQUE DECIDUO MADURO INUNDABLE

DICK GAUTHEY

6603 Reynard Drive
Springfield, Virginia 22152

Location: Maryland; Montgomery Co.; Glen Echo; Cabin John Island; 38°58'N, 77°8'W; Falls Church Quadrangle, USGS. **Continuity:** Established 1946; 38 yr. **Size:** 7.6 ha. **Description of Plot:** See *Aud. Field Notes* 1:212-213 (1947). **Weather:** (No data provided). **Coverage:** 51 h; 17 visits (mornings); First census 7 April, last census 9 June. **Census:** Carolina Chickadee, 6.0 territories (32/40 ha; 3N); European Starling, 6.0 (6N); Red-eyed Vireo, 6.0; Northern Parula, 6.0; Northern Cardinal, 5.5 (29); Carolina Wren, 5.0 (26); Acadian Flycatcher, 4.0 (21; 1N); Tufted Titmouse, 4.0 (1N); Wood Duck, 3.0 (16); Downy Woodpecker, 3.0; Blue-gray Gnatcatcher, 3.0; Red-bellied Woodpecker, 2.5; Yellow-throated Warbler, 2.0; House Finch, 2.0; Ruby-throated Hummingbird, 1.0 (1N); Barred Owl, 1.0; Hairy Woodpecker, 1.0; Pileated Woodpecker, 1.0 (1N); Eastern Wood-Pewee, 1.0; Great Crested Flycatcher, 1.0; American Crow, 1.0 (1N); White-breasted Nuthatch, 1.0; Warbling Vireo, 1.0; Prothonotary Warbler, 1.0; Indigo Bunting, 1.0; Song Sparrow, 1.0; Brown-headed Cowbird, 1.0. **Total:** 27 species; 71 territories (374/40 ha). **Visitors:** Canada Goose, Mallard, Mourning Dove, Northern Flicker, Common Yellowthroat, Common Grackle, Orchard Oriole, American Goldfinch. **Remarks:** An average of seven male Carolina Wrens was recorded from 1973 to 1976. After a severe winter only one was recorded in 1977, and generally only two were recorded through 1983. **Other Observers:** John Eliot, Dick Homan, Letty Limbach.

12. OLD GROWTH WOODS AND SWAMP FOREST

BOSQUES VIEJOS Y BOSQUES PANTANOSOS

LEAH KNAPP

435 Ferguson Road
Marshall, Michigan 49068

Location: Michigan; Calhoun Co.; Marshall; Jenney Woods Preserve; 42°14'N, 85°3'W; Quadrangle, USGS. **Continuity:** Established 1989; 2 yr. **Size:** 28.3 ha. **Description of Plot:** See *J. Field Ornithol.* 61 (suppl.):36 (1990). **Weather:** Mean temperature 20°C (range 10–28°C). **Coverage:** 30.3 h; 10 visits (7 mornings, 2 afternoons); 7, 14, 18, 19, 28 May; 4, 11, 18, 27 June; 1 July. **Census:** Song Sparrow, 23.0 territories (32/40 ha); Common Yellowthroat, 15.0 (21); Tufted Titmouse, 12.0 (17); Veery, 12.0; Blue Jay, 10.0 (14); Red-eyed Vireo, 10.0; Eastern Wood-Pewee, 9.0 (13); Gray Catbird, 9.0; Northern Cardinal, 9.0; Rose-breasted Grosbeak, 9.0; American Goldfinch, 8.0 (11); Indigo Bunting, 7.0 (10); Great Crested Flycatcher, 6.0 (8); Black-capped Chickadee, 6.0; Yellow-throated Vireo, 6.0; American Crow, 5.0 (7); Acadian Flycatcher, 5.0; Cedar Waxwing, 5.0; Blue-winged Warbler, 5.0; Brown-headed Cowbird, 5.0; Downy Woodpecker, 4.0 (6); Wood Thrush, 4.0; Yellow Warbler, 4.0; Black-and-white Warbler, 4.0; Scarlet Tanager, 4.0; Hairy Woodpecker, 3.0 (4); White-breasted Nuthatch, 3.0; Blue-gray Gnatcatcher, 3.0; Ovenbird, 3.0; Yellow-billed Cuckoo, 2.0; Red-bellied Woodpecker, 2.0; Northern Flicker, 2.0; Least Flycatcher, 2.0; American Crow, 2.0; Chestnut-sided Warbler, 2.0; American Redstart, 2.0; Common Grackle, 2.0; unidentified Accipiter, 1.0; Eastern Screech-Owl, 1.0; Canada Goose, 1.0; Mallard, 1.0; Red-tailed Hawk, 1.0; Great Horned Owl, 1.0; Northern Oriole, 1.0. **Total:** 44 species; 231 territories (326/40 ha). **Visitors:** Turkey Vulture, Ring-necked Pheasant, Red-winged Blackbird. **Remarks:** Level of human disturbance is very low due to relative inaccessibility of interior, density of edge vegetation, and lack of trails. High winds early in season resulted in the loss of some large trees.

13. UPLAND SECOND-GROWTH OAK-HICKORY FOREST

BOSQUE SECUNDARIO ROBLE-NOGAL DE ALTURAS

HAL MOORE

1 Lakeside Drive
Vicksburg, Mississippi 39180

Location: Mississippi; Warren Co.; Vicksburg; Lake Park Area; 32°14'N, 90°49'W; Big Black Quadrangle, USGS. **Continuity:** Established 1989; 2 yr. **Size:** 10.0 ha. **Description of Plot:** See *J. Field Ornithol.* 61 (suppl.):8-9 (1990). **Weather:** Mean temperature 18°C (range 11–22°C). Widely varying weather patterns with above average rainfall and below average temperatures. **Coverage:** 24.8 h; 12 visits (mornings); 4, 30 April; 1, 2, 6, 8, 10, 14, 16, 18, 20, 22 May. **Census:** Red-bellied Woodpecker, 19.0 territories (76/40 ha); Northern Cardinal, 18.0 (72); Tufted Titmouse, 15.0 (60); Carolina Wren, 13.0 (52); Acadian Flycatcher, 12.0 (48); White-eyed Vireo, 12.0; Red-eyed Vireo, 11.0 (44); Hooded Warbler, 9.0 (36); Prothonotary Warbler, 5.0 (20); Yellow-billed Cuckoo, 4.0 (16); Great Crested Flycatcher, 4.0; Carolina Chickadee, 4.0; Summer Tanager, 4.0; Downy Woodpecker, 3.0 (12); Wood Thrush, 3.0; Swainson's Warbler, 3.0; Kentucky Warbler, 3.0; Yellow-throated Vireo, 2.0; Brown-headed Cowbird, 2.0; Blue-gray Gnatcatcher, 1.0; Ruby-throated Hummingbird, 1.0; Red-shouldered Hawk, 1.0; Broad-winged Hawk, 1.0; Barred Owl, 1.0; Hairy Woodpecker, 1.0; Pileated Woodpecker, 1.0; Eastern Wood-Pewee, 1.0; Blue Jay, 1.0; American Crow, 1.0; Fish Crow, 1.0; Brown Thrasher, 1.0; American Redstart, 1.0; Worm-eating Warbler, 1.0; Louisiana Waterthrush, 1.0; Indigo Bunting, 1.0; Rufous-sided Towhee, 1.0; Orchard Oriole, 1.0. **Total:** 37 species; 164 territories (656/40 ha). **Visitors:** Purple Martin, Tennessee Warbler, Chestnut-sided Warbler, Chimney Swift.

14. BASSWOOD-BLACK ASH FOREST WITH DEAD TIMBER

BOSQUE DE TILO AMERICANO-FRESNO NEGRO CON ARBOLES MUERTOS

GRANT CANTERBURY

Department of Ecology and Evolutionary Biology
University of Minnesota
Minneapolis, Minnesota 55455

Location: Minnesota; Clearwater Co.; Lake Itasca; Bear Paw Point, Itasca State Park; 47°10'N, 95°12'W; Lake Itasca Quadrangle, USGS. **Continuity:** Established 1979; 4 yr. **Size:** 11.5 ha. **Description of Plot:** See *Am. Birds* 34:52-53 (1980). Basswood and Black Ash have replaced Paper Birch and American Elm as the dominant canopy species. Standing, dead birch and elm trees are common in the center of the plot. Ground cover consists primarily of Ostrich Fern and grass, with patches of Thistle, Nettle, and Blue Cohosh. Two small marshes, each 0.25 ha or less, occur in the S and SE portion of the plot. A quantitative vegetation survey following the method described by F.C. James and H.H. Shugart, Jr. (1970. *Aud. Field Notes* 24:727-736) yielded the following results: Trees, 7.6 cm diameter and over, based on 10 0.04-ha circular samples, 878/ha; total basal area 36.9 m²/ha. Species comprising 90% of the total number of trees [figures after each are trees/ha, relative density (%), relative dominance (%), and frequency (%): Basswood 346, 39.4, 38.4, 100; dead 239, 27.3, 34.9, 100; Black Ash 200, 22.8, 17.9, 100; American Elm 27, 3.1, 1.2, 70; White Spruce 22, 2.5, 1.2, 40; Paper Birch 12, 1.4, 1.9, 20; Balsam Fir 10, 1.1, 0.7, 10; Chokecherry 10, 1.1, 0.2, 10; Oak sp. 7, 0.8, 3.2, 30; Quaking Aspen 2, 0.3, 0.2, 10. Trees by diameter size class [figures after each are trees/ha, relative density (%), basal area in m²/ha, and relative dominance (%): A (7.6–15.2 cm) 435, 49.6, 4.0, 11; B (15.2–22.9 cm) 163, 18.6, 4.5, 12; C (22.9–38.1 cm) 111, 12.7, 6.2, 17; D (38.1–53.3 cm) 89, 10.1, 8.3, 22; E (53.3–68.6 cm) 74, 8.5, 12.4, 37; F (68.6–83.8 cm) 5, 0.6, 0.6, 3.9; Shrub stems/ha, 1951; ground cover, 94%; canopy cover, 71%; average canopy height, 17 m. **Edge:** The N and E sides are bordered by deciduous forest. A cattail marsh borders to the SE and a lake to the W.

Topography and Elevation: Mostly flat with low areas in the S and E corners, and a small hill in the SW corner. Minimum elevation 444 m. **Weather:** Mean temperature 17°C (range 10–24°C). **Coverage:** 23 h; 8 visits (5 mornings, 3 evenings); 20, 23, 30 June; 1, 4, 8, 12 July. **Census:** Red-eyed Vireo, 25.0 territories (87/40 ha); Black-throated Green Warbler, 9.5 (33); White-throated Sparrow, 6.5 (23; 1N); Common Yellowthroat, 6.0 (21); Mourning Warbler, 4.0 (14); Great Crested Flycatcher, 3.0 (10); Song Sparrow, 3.0; Red-winged Blackbird, 3.0; Black-capped Chickadee, 2.0 (1N); Northern Parula, 2.0; American Redstart, 2.0; Ruby-throated Hummingbird, 1.0; Yellow-bellied Sapsucker, 1.0 (1N); Downy Woodpecker, 1.0; Hairy Woodpecker, 1.0; Northern Flicker, 1.0 (1N); Pileated Woodpecker, 1.0 (1N); Eastern Wood-Pewee, 1.0; White-breasted Nuthatch, 1.0; Brown Creeper, 1.0; Winter Wren, 1.0; Veery, 1.0; Nashville Warbler, 1.0; Chestnut-sided Warbler, 1.0; Blackburnian Warbler, 1.0; Ovenbird, 1.0; Indigo Bunting, 1.0; Chipping Sparrow, 1.0. **Total:** 28 species; 83 territories (289/40 ha). **Visitors:** Great Blue Heron, Wood Duck, Tree Swallow, American Crow, Red-breasted Nuthatch, American Robin, Cedar Waxwing, Common Grackle, Brown-headed Cowbird, Purple Finch, Rose-breasted Grosbeak. **Other Observers:** Julie Isackson, Richard Jack, David E. Blockstein. **Acknowledgments:** Thanks to the Ornithology Class and Itasca Biological Station.

15. MATURE ASPEN FOREST WITH YOUNG MAPLE UNDERSTORY

BOSQUE MADURO DE ALAMO CON JOVEN SOTOBOSQUE DE ALTURAS

GLORIA J. PETERSON

460 Oak Street

Taylor's Falls, Minnesota 55084

Location: Minnesota; Clearwater Co.; Lake Itasca; Itasca State Park - Red Pine and Ozawindib Trails; 47°10'N, 95°10'W; Lake Itasca Quadrangle, USGS. **Continuity:** New. **Size:** 10.0 ha. **Description of Plot:** This deciduous/conifer plot is covered mostly by mature aspen, with young maple, young oak, birch, mature Red Pine, and White Pine. A stand of Red Pine extends 50 m into the plot's SW corner. The understory is predominantly young maple and Beaked Hazel. The ground cover is mainly Wild Sarsaparilla and Large Leaf Aster. Included in the plot is a 0.5 ha sphagnum bog that is partially covered with Speckled Alder, and a 0.5 ha pond, two-thirds of which is covered with reeds. Two grass hiking trails traverse the plot. A quantitative vegetation survey following the method described by F.C. James and H.H. Shugart, Jr. (1970. *Aud. Field Notes* 24:727-736) yielded the following results: Trees, 7.6 cm diameter and over, based on 10 0.04-ha circular samples, 719/ha; total basal area 40.7 m²/ha. Species comprising 90% of the total number of trees [figures after each are trees/ha, relative density (%), relative dominance (%), and frequency (%): maple sp. 185, 26, 10, 90; aspen sp. 146, 20, 26, 90; dead 126, 18, 15, 90; Paper Birch 74, 10, 9, 80; White Pine 49, 7, 20, 30; American Elm 39, 6, 1, 70; Red Pine 25, 3, 10, 30. Trees by diameter size class [figures after each are trees/ha, relative density (%), basal area in m²/ha, and relative dominance (%): A (7.6–15.2 cm) 223, 31, 2.1, 5; B (15.2–22.9 cm) 153, 21, 4.4, 11; C (22.9–38.1 cm) 188, 26, 10.6, 26; D (38.1–53.3 cm) 96, 13, 3.6, 22; E (53.3–68.6 cm) 34, 5, 5.7, 14; F (68.6–83.8 cm) 20, 3, 5.7, 14; G (83.8–101.6 cm) 5, 1, 2.3, 6; H (> 101.6 cm) 2, 0.3, 1.4, 3. Shrub stems/ha, 10,658; ground cover, 47%; canopy cover, 80%; average canopy height, 18 m (range 9–30 m). **Edge:** N and E bordered by similar forest, S bordered by Red Pine stand, W bordered by sphagnum bog, Red Pine, and aspen. **Topography and Elevation:** Minimum elevation 488 m, maximum 503 m. **Weather:** Mean temperature 17°C (range 10–21°C). **Coverage:** 134 h; 8 visits (7 mornings, 1 evening); 22, 24, 26 June; 1, 4, 6, 8, 10 July. **Census:** Red-eyed Vireo, 20.5 territories (82/40 ha); Ovenbird, 19.5 (78); Black-throated Green Warbler, 8.5 (34); Veery, 7.0 (28); Pine Warbler, 7.0; Yellow-bellied Sapsucker, 5.0 (20; 2N); American Redstart, 5.0; Eastern Wood-Pewee, 3.0 (12); Great Crested Flycatcher, 3.0; Brown Creeper, 3.0; Hairy Woodpecker, 2.0; Common Yellowthroat, 2.0 (FL); Canada Warbler, 2.0; Scarlet Tanager, 2.0; Downy Woodpecker, 1.0; Pileated Woodpecker, 1.0; Least Flycatcher, 1.0; Eastern Phoebe, 1.0

(1N); Rose-breasted Grosbeak, 1.0; Broad-winged Hawk, + (1N). **Total:** 20 species; 94.5 territories (378/40 ha). **Visitors:** Ruffed Grouse, Ruby-throated Hummingbird, Blue Jay, Black-capped Chickadee, Red-breasted Nuthatch, White-breasted Nuthatch, American Robin, Brown-headed Cowbird. **Remarks:** Red Squirrels were observed frequently. **Other observers:** Leslie M. Tewinkel, James C. Manolis, Paul R. Dykes, David E. Blockstein. **Acknowledgments:** University of Minnesota Forestry and Biological Station, Itasca State Park.

16. FLOODPLAIN FOREST

BOSQUE INUNDABLE

HELMUT MEULLER & STEPHEN HALL

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Chapel Hill, North Carolina 27599*

Location: North Carolina; Orange Co.; Chapel Hill; Big Oak Woods; 35°53'N, 79°0'W; Chapel Hill Quadrangle, USGS. **Continuity:** Established 1977; 14 yr. **Size:** 12.6 ha. **Description of Plot:** See *Amer. Birds* 32:63 (1978). **Weather:** No data provided. **Coverage:** 17.5 h; 9 visits (mornings); 28 April; 13, 16, 20, 24, 30 May; 3, 5, 13 June. **Census:** Red-eyed Vireo, 15.0 territories (48/40 ha); Acadian Flycatcher, 11.5 (36); Carolina Chickadee, 7.0 (22; FL); Blue-gray Gnatcatcher, 6.0 (19); Northern Cardinal, 4.0 (13); Yellow-throated Vireo, 3.5 (11); Kentucky Warbler, 3.5; Red-bellied Woodpecker, 3.0 (10); Ruby-throated Hummingbird, 2.5; Downy Woodpecker, 2.5; Hairy Woodpecker, 2.0; Northern Parula, 2.0; Hooded Warbler, 2.0; Summer Tanager, 1.5; Louisiana Waterthrush, 1.0; Eastern Wood-Pewee, 1.0; Great Crested Flycatcher, 1.0; Pine Warbler, 1.0; American Redstart, 1.0; Ovenbird, 1.0; Common Yellowthroat, 1.0; Scarlet Tanager, 1.0; Red-shouldered Hawk, +; American Woodcock, +; Yellow-billed Cuckoo, +; Chimney Swift, +; Pileated Woodpecker, +; Blue Jay, +; American Crow, +; Common Grackle, +; Brown-headed Cowbird, +. **Total:** 31 species; 74 territories (235/40 ha). **Visitors:** American Goldfinch, Red-winged Blackbird. **Other Observers:** R.H. Wiley, J. Phippen, W. Lancaster, N. Mueller, T. Hass, J. Poston, D. Pfister.

17. MIXED DECIDUOUS FOREST

BOSQUE MIXTO DECIDUO

HELMUT MEULLER & STEPHEN HALL

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Chapel Hill, North Carolina 27599*

Location: North Carolina; Orange Co.; Chapel Hill; Botanical Garden Research Area; 35°54'N, 79°1'W; Chapel Hill Quadrangle, USGS. **Continuity:** Established 1976; 15 yr. **Size:** 12.6 ha. **Description of Plot:** See *Amer. Birds* 31:41 (1977). **Weather:** No data provided. **Coverage:** 19.5 h; 10 visits (mornings); 28 April, 13, 16, 20, 24, 30 May; 3, 8, 13, 14 June. **Census:** Red-eyed Vireo, 10.0 territories (32/40 ha); Carolina Chickadee, 5.0 (16; FL); Carolina Wren, 5.0; Northern Cardinal, 4.5 (14); Tufted Titmouse, 4.0 (13); Wood Thrush, 3.5 (11); Red-bellied Woodpecker, 3.0 (10); Blue-gray Gnatcatcher, 3.0; Ovenbird, 3.0 (1N); Downy Woodpecker, 2.5; Pine Warbler, 2.5 (FL); Hooded Warbler, 2.5; Summer Tanager, 2.5; Ruby-throated Hummingbird, 2.0; Acadian Flycatcher, 2.0; White-breasted Nuthatch, 2.0; Hairy Woodpecker, 1.5; Eastern Wood-Pewee, 1.5; Yellow-throated Vireo, 1.5; Yellow-billed Cuckoo, 1.0; Great Crested Flycatcher, 1.0; Scarlet Tanager, 1.0; Red-shouldered Hawk, + (1N, FL); Mourning Dove, +; Pileated Woodpecker, +; Blue Jay, +; American Crow, +; Brown-headed Cowbird, +. **Total:** 28 species; 64.5

territories (205/40 ha). **Visitors:** Common Grackle, American Goldfinch, Chimney Swift. **Remarks:** Red-shouldered Hawk nested successfully. **Other Observers:** R.H. Wiley, J. Phippen, W. Lancaster, N. Mueller, T. Hass, D. Pfister.

18. ISOLATED BEECH-MAPLE WOODS

BOSQUE AISLADO DE HAYA-ARCE

ROBERT M. MARSHALL

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159 Sapsucker Woods Road
Ithaca, New York 14850*

Location: New York; Tompkins Co.; Ithaca; Sapsucker Woods (west); 42°29'N, 76°27'W; Ithaca East Quadrangle, USGS. **Continuity:** Established 1989; 2 yr. **Size:** 13.5 ha. **Description of Plot:** See *J. Field Ornithol.* 61 (suppl.):37-38 (1990). **Weather:** Mean temperature 12.2°C (range 11–17°C). **Coverage:** 12.7 h; 8 visits (mornings); 25, 27, 29 June; 2, 4, 10, 13, 17 July. **Census:** Red-eyed Vireo, 13.0 territories (38.5/40 ha; 1FL); Ovenbird, 11.5 (34.1); Eastern Wood-Pewee, 7.5 (22.2); Brown Creeper, 4.5 (13.3); Great Crested Flycatcher, 4.0 (11.9; 2FL); Scarlet Tanager, 4.0; Black-capped Chickadee, 3.5 (10.4; FL); White-breasted Nuthatch, 3.5; Yellow-bellied Sapsucker, 2.0; American Crow, 2.0; Wood Thrush, 2.0; Northern Flicker, 1.5; Veery, 1.5; American Robin, 1.5; Red-bellied Woodpecker, 1.0 (1N); Downy Woodpecker, 1.0; Hairy Woodpecker, 1.0; Tufted Titmouse, 1.0 (2FL); Northern Waterthrush, 1.0; **Total:** 19 species; 67 territories (198/40 ha). **Visitors:** Common Snipe, Barred Owl, Blue Jay, House Wren, Hermit Thrush, Solitary Vireo, Common Yellowthroat, Song Sparrow, Red-winged Blackbird, Common Grackle, Brown-headed Cowbird, American Goldfinch. **Remarks:** Barred Owl was observed roosting in same location on seven visits. Census was started too late to estimate adequately the territories of most cavity nesters. **Acknowledgements:** Thanks to Dave Nutter for observations of the Red-bellied Woodpecker nest.

19. MATURE URBAN DECIDUOUS FOREST

BOSQUE DECIDUO MADURO-URBANO

DAVID S. KÜNSTLER

*City of New York Dept. of Parks & Recreation
Van Cortlandt and Pelham Bays Parks Administrator's Office
1 Bronx River Parkway
Bronx, New York 10462*

Location: New York; Bronx Co.; Hunter Island, Pelham Bay Park; 40°52'N, 73°47'W; Mount Vernon Quadrangle, USGS. **Continuity:** Established 1987; 4 yr. **Size:** 10.1 ha. **Description of Plot:** See *J. Field Ornithol.* 61 (suppl.):38-39 (1990). **Weather:** Mean temperature 20.5°C (range 14–29°C). **Coverage:** 35.6 h; 9 visits (mornings); 27 April; 2, 7, 14, 23 May; 1, 8, 15, 22 June. **Census:** European Starling, 18.0 territories (71/40 ha; 4N); Common Yellowthroat, 16.5 (65); Gray Catbird, 8.0 (32; 1N); Rufous-sided Towhee, 3.5 (14; 1FL); Song Sparrow, 3.0 (12); Northern Oriole, 3.0 (1N); Northern Flicker, 2.5 (3N); Tufted Titmouse, 2.5; Eastern Wood-Pewee, 2.0; American Robin, 2.0; Red-eyed Vireo, 2.0; Red-bellied Woodpecker, 1.5; Black-capped Chickadee, 1.5 (1N); Ring-necked Pheasant, 1.0; Downy Woodpecker, 1.0; White-breasted Nuthatch, 1.0; House Wren, 1.0; Brown Thrasher, 1.0 (1N); Yellow Warbler, 1.0; Northern Cardinal, 1.0; Brown-headed Cowbird, 1.0; House Finch, 1.0; American Goldfinch, 1.0; Wood Thrush, 0.5; Great Horned Owl, + (1N; FL); Blue-winged Warbler, +. **Total:** 26 species; 76.5 territories (303/40 ha). **Visitors:** Red-headed Woodpecker, Hairy Woodpecker, Great-crested Flycatcher, Eastern Kingbird, Blue Jay, American Crow, Fish Crow, Cedar Waxwing. **Remarks:** Great Horned Owl nested at same site since 1988, and again raised three young. Hairy Woodpeckers

probably nested in or near plot. Northern Flickers and European Starlings were observed competing for two flicker-excavated nesting cavities. Corvids, particularly Blue Jays, were probably under-represented due to their habits. Blue-winged Warbler probably did not nest on plot this yr. American Goldfinch female was observed carrying grass on 7 May, highly unusual. Earliest New York state egg date is 3 July. **Acknowledgments:** Thanks to Anthony Emmerich and Paul Berizzi of my office for their support.

20. URBAN DECIDUOUS FOREST

BOSQUE DECIDUO URBANO

DIRK E. BURHANS

4042 Albany Street
Schenectady, New York 12304

Location: New York; Bronx Co.; Riverdale; Riverdale Park, Southern Section; 40°53'N, 73°55'W; Yonkers Quadrangle, USGS. **Continuity:** New. **Size:** 8.8 ha. **Description of Plot:** The plot is a mosaic of deciduous, closed-canopy forest, woodland, small fields, and vine communities. Railroad cuts bordering the western edge have contributed to erosion gullies. A sewage pumping station, occupying ca 0.1 ha, lies in the southern section of the plot. The following description of the vegetation was adapted from a 1989 study by the Natural Resources Group of NYC Department of Parks and Recreation. Species are listed in approximate order of dominance. The southern section of the plot (2.0 ha) contains several small vine communities of blackberry, porcelainberry, Japanese Hops, and wild grape, all under 1.5 m. Forest in this portion of the plot (1.6 ha) is dominated by Red Oak, Black Locust, and Tuliptree (canopy height ca 9 m), with an understory composed of Black Birch, Mulberry, and Sassafras. The middle portion of the plot (3.3 ha) contains a mixture of woodland dominated by Black Oak, Red Oak, and Black Locust (canopy height ca 9 m), and shrubby field dominated by Porcelainberry and Multiflora Rose. The woodland understory in this section is dominated by honeysuckle and bittersweet. The northern section of the plot (3.5 ha) is dominated by oak woodland and closed-canopy forest. Black Birch, Tuliptree saplings, Blackberry and Maple-leaved Viburnum dominate the understory. **Edge:** The W edge of the plot is bordered by a railroad right-of-way. The E edge is separated from an adjacent woodland and residences by a road. The N and S edges are bordered by wooded residences. **Topography and Elevation:** The park slopes steeply toward the Hudson River. **Weather:** Mean temperature 13.8°C (range 10–19°C). **Coverage:** 15 h; 13 visits (mornings); 24, 27 April; 4, 8, 11, 17, 23, 25, 30 May; 1, 5, 12, 15 June. **Census:** American Robin, 9.0 territories (41/40 ha); Gray Catbird, 7.0 (32); European Starling, 6.0 (27); Northern Cardinal, 4.0 (18); Northern Oriole, 3.0 (14); Downy Woodpecker, 2.0; Blue Jay, 2.0; Ring-necked Pheasant, 1.0; Black-capped Chickadee, 1.0; Tufted Titmouse, 1.0; White-breasted Nuthatch, 1.0; Carolina Wren, 1.0; House Wren, 1.0; Brown Thrasher, 1.0; Common Yellowthroat, 1.0; Rose-breasted Grosbeak, 1.0; Rufous-sided Towhee, 1.0; Song Sparrow, 1.0. **Total:** 18 species; 44 territories (200/40 ha). **Visitors:** Mourning Dove, Northern Flicker, Brown-headed Cowbird, Common Grackle, Red-winged Blackbird, Woodthrush, Eastern Kingbird, Eastern Wood-Pewee, Northern Mockingbird, Red-eyed Vireo. **Remarks:** Common Yellowthroats were observed feeding a single Brown-headed Cowbird fledgling. Absent during the last several yr, Carolina Wrens were present both in and outside the plot. **Acknowledgments:** Thanks to Ray Zaboli for his sharp eyes and to Helen Forgione for her help with the vegetation data.

21. WHITE ASH-RED MAPLE FOREST

BOSQUE DE FRESNO BLANCO-ARCE

GEORGE R. MAXWELL

RD1 Box 179C
Red Creek, New York 13143

Location: New York; Wayne Co.; Fair Haven; Metzger Road; 43°20'N, 76°44'W; Fair Haven Quadrangle, USGS. **Continuity:** Established 1986, 5 consecutive yr. **Size:** 16.2 ha.

Description of Plot: Young (24-yr old) coastal zone forest; See *J. Field Ornithol.* 60 (suppl.): 69 (1989). **Weather:** Mean temperature 18°C (range 12–24°C). **Coverage:** 10 h; 10 visits (6 morning, 4 evening); 5, 7, 8, 9, 11, 13, 14, 15, 18, 19 June. **Census:** Yellow Warbler, 11.0 territories (27/40 ha); American Robin, 6.0 (15); Gray Catbird, 5.0 (12); Common Yellowthroat, 4.0 (10); Northern Cardinal, 4.0; House Wren, 3.0 (7); Veery, 3.0; Wood Thrush, 3.0; American Redstart, 3.0; Northern Oriole, 3.0; Warbling Vireo, 2.0; Red-eyed Vireo, 2.0; Rose-breasted Grosbeak, 2.0; Song Sparrow, 2.0; Red-winged Blackbird, 2.0; Common Grackle, 2.0; Ruby-throated Hummingbird, 1.0; Ruffed Grouse, 1.0; Eastern Wood-Pewee, 1.0; Great Crested Flycatcher, 1.0; Eastern Kingbird, 1.0; Tree Swallow, 1.0; Black-capped Chickadee, 1.0; Cedar Waxwing, 1.0; European Starling, 1.0; Yellow-throated Vireo, 1.0; Ovenbird, 1.0; House Finch, 1.0; House Sparrow, 1.0. **Total:** 29 species; 70 territories (173/40 ha).

22. RIPARIAN DECIDUOUS FOREST

BOSQUE RIVEREÑO DECIDUO

ELLIOT J. TRAMER

*Department of Biology
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Toledo, Ohio 43606*

Location: Ohio; Lucas Co.; Waterville; Old Canal Lands; 41°28'N, 83°46'W; Grand Rapids Quadrangle, USGS. **Continuity:** Established 1989, 2 yr. **Size:** 18.0 ha. **Description of Plot:** See *J. Field Ornithol.* 61 (suppl.):43-44 (1990). **Weather:** Mean temperature 14.9°C (range 9–21°C). Generally cooler than average, especially early in the census period, with average rainfall. **Coverage:** 20.3 h; 8 visits (mornings); 2, 22, 26 May; 5, 10, 16, 22 June; 18 July. **Census:** American Robin, 19.5 territories (43/40 ha); House Wren, 10.5 (23); Song Sparrow, 10.5; Gray Catbird, 8.0 (18); Warbling Vireo, 7.5 (17); Northern Oriole, 7.5; Northern Cardinal, 7.5 (16); Blue Jay, 7.0 (16); Eastern Wood-Pewee, 6.0 (13); Mourning Dove, 5.5 (12); Wood Thrush, 5.5 (12); Indigo Bunting, 5.0 (11); Brown-headed Cowbird, 5.0 (11); Rose-breasted Grosbeak, 4.0 (9); White-breasted Nuthatch, 4.0 (8); Common Grackle, 3.5 (8); Northern Flicker, 3.0 (7); Downy Woodpecker, 3.0; Red-eyed Vireo, 3.0 (7); Red-winged Blackbird, 3.0; American Goldfinch, 3.0; Tufted Titmouse, 2.5; Carolina Wren, 2.5; Cedar Waxwing, 2.5; European Starling, 2.5; Black-capped Chickadee, 2.0; Orchard Oriole, 1.5; Blue-gray Gnatcatcher, 1.0; Red-headed Woodpecker, 1.0; Great Crested Flycatcher, 1.0; Yellow-throated Vireo, 1.0; Red-bellied Woodpecker, 1.0; Hairy Woodpecker, 1.0; Yellow Warbler, 1.0; Great Horned Owl, 1.0; Tree Swallow, 1.0; Chipping Sparrow, 1.0; Ruby-throated Hummingbird, 0.5; Wood Duck, 0.5; Eastern Kingbird, 0.5; Common Yellowthroat, 0.5. **Total:** 41 species; 157 territories (349/40 ha). **Visitors:** Yellow-billed Cuckoo, Brown Thrasher, Scarlet Tanager, House Finch, House Sparrow. **Remarks:** An unusually heavy hatch of Geometrid caterpillars occurred on the plot in May, which resulted in the partial defoliation of Basswood. Total breeding bird densities were 39% higher than in 1989, possibly in response to the caterpillar outbreak. Of the 19 species having three or more territories, 10 increased by more than 25% over 1989.

23. RIVER FLOODPLAIN BROADLEAF FOREST

BOSQUE INUNDABLE DE HOJA ANCHA

WILLIAM E. MCGILL

*12 East Warren
Lebanon, Ohio 45036*

Location: Ohio; Warren Co.; Oregonia; Caesars Creek State Nature Preserve; 39°29'N, 84°6'W; Oregonia Quadrangle, USGS. **Continuity:** Established 1989; 2 yr. **Size:** 18.0 ha. **Description of Plot:** See *J. Field Ornithol.* 61 (suppl.):42 (1990). **Weather:** Mean temper-

ature 18.8°C (range 10–23°C). A very wet season. Several of the counts were discontinued because of rain. **Coverage:** 12 h; 8 visits (6 mornings, 1 afternoon, 1 evening); 29 April; 2, 20, 23, 27, 29 May; 1, 2 June. **Census:** Blue-gray Gnatcatcher, 8.0 territories (18/40 ha); Acadian Flycatcher, 7.5 (17); Red-eyed Vireo, 7.5; Northern Cardinal, 6.0 (13); Eastern Wood-Pewee, 4.5 (10); Indigo Bunting, 4.5; House Wren, 4.0 (9; 1N); Carolina Chickadee, 3.0 (7); Tufted Titmouse, 3.0; Rufous-sided Towhee, 3.0; Wood Thrush, 2.5; Downy Woodpecker, 2.0; Cerulean Warbler, 2.0; Kentucky Warbler, 2.0; Scarlet Tanager, 1.5; Red-bellied Woodpecker, 1.0; Hairy Woodpecker, 1.0; Northern Flicker, 1.0; Pileated Woodpecker, 1.0; Great Crested Flycatcher, 1.0; Blue Jay, 1.0; White-breasted Nuthatch, 1.0; Carolina Wren, 1.0; Eastern Bluebird, 1.0; Northern Parula, 1.0; Yellow-throated Warbler, 1.0; Louisiana Waterthrush, 1.0; Common Yellowthroat, 1.0; Northern Oriole, 1.0; White-eyed Vireo, 0.5. **Total:** 30 species; 75.5 territories (168/40 ha). **Visitors:** Wood Duck, Sharp-shinned Hawk, Wild Turkey, Mourning Dove, Yellow-billed Cuckoo, Belted Kingfisher, American Crow, Gray Catbird, American Robin, Yellow-throated Vireo, Prothonotary Warbler, Blue-winged Warbler, Black-throated Green Warbler, Hooded Warbler, American Goldfinch, Field Sparrow, Song Sparrow. **Remarks:** Wild Turkeys were stocked by Ohio Department of Natural Resources.

24. OAK-MAPLE RIDGE-TOP FOREST

BOSQUE DE ROBLE-ARCE DE TOPE DE COLINAS

LAURIE GOODRICH

Hawk Mountain Sanctuary

R.D. 2

Kempton, Pennsylvania 19529

Location: Pennsylvania; Berks Co.; Eckville; Owl's Head; 40°44'N, 75°50'W; New Ringgold Quadrangle, USGS. **Continuity:** Established 1982; 8 yr. **Size:** 19.4 ha. **Description of Plot:** See *Am. Birds* 37:55 (1983). **Weather:** Mean temperature 16°C (range 9–20°C). Strong winds affected detectability of species during 1.5 censuses. **Coverage:** 24.2 h; 12 visits (mornings); 25 April; 16, 22, 28 May; 3, 6, 11, 15, 18, 20, 22, 30 June. **Census:** Ovenbird, 9.5 territories (20/40 ha); Common Yellowthroat, 3.5 (7); Blue Jay, 3.0 (6); Wood Thrush, 3.0; Rufous-sided Towhee, 3.0; Scarlet Tanager, 2.5; Downy Woodpecker, 2.0; Great Crested Flycatcher, 2.0; Black-capped Chickadee, 2.0; Indigo Bunting, 1.5; Ruffed Grouse, 1.0; Mourning Dove, 1.0; Black-billed Cuckoo, 1.0; Northern Flicker, 1.0; Tufted Titmouse, 1.0; Hermit Thrush, 1.0; American Robin, 1.0; Black-and-white Warbler, 1.0; Rose-breasted Grosbeak, 1.0; Brown-headed Cowbird, 1.0; Red-eyed Vireo, 0.5; White-breasted Nuthatch, +. **Total:** 22 species; 42.5 territories (88/40 ha). **Visitors:** American Crow, Cedar Waxwing, Common Grackle, Sharp-shinned Hawk, Yellow-billed Cuckoo, Blue-gray Gnatcatcher, Black-throated Green Warbler. **Remarks:** The forest of this plot endured complete defoliation by Gypsy Moth caterpillars in June, but most trees refoliated by early July. The entire canopy and part of the shrub layer was affected. **Other Observers:** Jeanne Tinsman, Catherine Elwell, Philip Campbell.

25. OAK-MAPLE SLOPE FOREST

BOSQUE DE ROBLE-ARCE DE LADERAS

LAURIE GOODRICH

Hawk Mountain Sanctuary

R.D. 2

Kempton, Pennsylvania 19529

Location: Pennsylvania; Berks Co.; Eckville; River of Rocks; 40°45'N, 75°50'W; New Ringgold Quadrangle, USGS. **Continuity:** Established 1982; 8 yr. **Size:** 16.9 ha. **Descrip-**

tion of Plot: See *Am. Birds* 37:55 (1983). **Weather:** Mean temperature 16.3°C (range 10–21°C). **Coverage:** 25.3 h; 11 visits (mornings); 26 April; 14, 19, 30 May; 4, 9, 13, 15, 16, 26, 27 June. **Census:** Ovenbird, 8.5 territories (20/40 ha); Yellow-billed Cuckoo, 3.0 (7); Downy Woodpecker, 3.0; Wood Thrush, 3.0; Red-eyed Vireo, 3.0; Scarlet Tanager, 2.5; Eastern Wood-Pewee, 2.0; Great Crested Flycatcher, 2.0; Tufted Titmouse, 2.0; Black-and-white Warbler, 2.0; Pileated Woodpecker, 1.5; Blue Jay, 1.5; Black-capped Chickadee, 1.5; Ruffed Grouse, 1.0; Mourning Dove, 1.0; Hairy Woodpecker, 1.0; Northern Flicker, 1.0; White-breasted Nuthatch, 1.0; Winter Wren, 1.0; Blue-gray Gnatcatcher, 1.0; Black-billed Cuckoo, 0.5. **Total:** 21 species; 43 territories (102/40 ha). **Visitors:** Brown-headed Cowbird, Indigo Bunting, American Crow, Broad-winged Hawk, Hermit Thrush, Red-bellied Woodpecker, Rose-breasted Grosbeak, Cedar Waxwing, Ruby-throated Hummingbird, American Redstart. **Remarks:** The forest of this plot endured complete defoliation by Gypsy Moth caterpillars in June, but most trees refoliated by early July. The entire canopy and part of the shrub layer was affected. Some of the ground cover also was attacked before caterpillar populations crashed. **Other Observers:** Jeanne Tinsman, Philip Campbell, Catherine Elwell, Mark Blauer.

26. UPLAND OAK-RED MAPLE FOREST

BOSQUE DE ROBLE-ARCE ROJO DE ALTURAS

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University of Rhode Island

Kingston, Rhode Island 02881

Location: Rhode Island; Washington Co.; Peace Dale; Hazard Tract; 41°27'N, 71°29'W; Narragansett Pier Quadrangle, USGS. **Continuity:** New. **Size:** 10.1 ha. **Description of Plot:** This deciduous forest plot is a 300 x 320 m rectangle with one 80-m wide segment extending 60 m farther N than the main portion. The forest is second growth oak and Red Maple that grew in after farm land was abandoned about 60 yr ago. The plot is a portion of a 27 ha reserve owned by the University of Rhode Island, and situated amidst a landscape dominated by residential development. Much of the remainder of the forest consists of a Red Pine plantation. Additional plantings of non-native trees occur on the plot, the largest being a 0.3 ha Red Pine planting. Red Maple occurs mostly as a subcanopy or as smaller sized trees. Substantial numbers of oaks, in a band across the center of the plot have been killed by Gypsy Moths, resulting in a relatively open canopy. Additional canopy openings occur at two small ponds on the W side of the plot. These kettleholes both contained water during the census period. The understory is largely dominated by dense growth of bullbrier (*Smilax* sp.). A trail bisects the plot from the center of its N boundary to the SW corner. A quantitative vegetation survey following the method described by F.C. James and H.H. Shugart, Jr. (1970. *Aud. Field Notes* 24:727-736) yielded the following results: Trees, 7.6 cm diameter and over, based on 10 0.04-ha circular samples, 882/ha living, 180/ha standing dead; total basal area 29.6 m²/ha living, 5.6 m²/ha standing dead. Species comprising 94% of the total number of trees [figures after each are trees/ha, relative density (%), relative dominance (%), and frequency (%): Red Maple 449, 51, 28, 100; Black Oak 172, 19, 30, 100; Scarlet Oak 100, 11, 18, 80; White Oak 60, 7, 10, 80; White Pine 28, 3, 2, 10; Northern Red Oak 25, 3, 3, 30. Living trees by diameter size class: [figures after each are trees/ha, relative density (%), basal area in m²/ha, and relative dominance (%): A (7.6–15.2 cm) 428, 48, 4.4, 15; B (15.2–22.9 cm) 250, 28, 7.1, 24; C (22.9–38.1 cm), 170, 19, 12.4, 42; D (38.1–53.3 cm) 32, 4, 5.0, 17; E (53.3–68.6 cm) 2, 0.2, 0.7, 2; Standing dead trees by diameter size class [figures after each are trees/ha, relative density (%), basal area in m²/ha, and relative dominance (%): A (7.6–15.2 cm) 102, 57, 1.0, 19; B (15.2–22.9 cm) 42, 23, 1.2, 21; C (22.9–38.1 cm) 28, 16, 2.0, 36; D (38.1–53.3 cm) 8, 4, 1.3, 24. Shrub stems/ha, 9725, dominated by *Smilax* sp., *Viburnum* sp., Highbush Blueberry, and Sweet Fern-perbush. Ground cover, 60%, dominated by Bullbrier, Hay-scented Fern, New York Fern,

and Ground Pine. Canopy cover, 80.5%; average canopy height, 14.5 m (range 9 to 22 m). **Water:** An ephemeral stream that meanders across the southeastern quarter of the plot was dry by mid-June. Water was present in four glacially-formed depressions at the start of the count period. Two of these were dry by early June. **Edge:** A 50–90 m buffer of similar habitat occurs to the E and is bounded by Broad Rock Road. A Red Pine plantation extends from the plot boundary for 150 m N to Saugatucket Road. A residential area with mature tree plantings begins 70 m S of the plot. Saugatucket Pond is located 10–50 m W of the plot border, and is closest to the boundary at the NW corner. **Topography and Elevation:** The plot slopes gently toward the S and E. Minimum elevation 11 m, maximum 19 m. **Weather:** Mean temperature 18°C (range 3–27°C). **Coverage:** 31.1 h; 12 visits (8 mornings, 3 afternoons, 1 evening); 18, 22 April; 8, 16, 24 June; 3, 4, 5, 7, 8, 13 July. **Census:** Rufous-sided Towhee, 13.5 territories (54/40 ha); Ovenbird, 12.5 (50); Gray Catbird, 8.5 (34); Northern Cardinal, 8.5; Tufted Titmouse, 5.5 (22); Veery, 5.5; Downy Woodpecker, 4.5 (18); Black-capped Chickadee, 4.5; Eastern Wood-Pewee, 4.0 (16); Great Crested Flycatcher, 3.0 (12); White-breasted Nuthatch, 3.0; Black-and-white Warbler, 3.0; Blue Jay, 2.5; Common Yellowthroat, 2.5; Wood Thrush, 2.0; Scarlet Tanager, 2.0; American Robin, 1.5; Northern Flicker, 1.0; Brown Creeper, 1.0; Carolina Wren, 1.0; House Wren, 1.0; Blue-winged Warbler, 1.0; Pine Warbler, 1.0; Brown-headed Cowbird, 1.0; Great Horned Owl, 0.5; American Crow, 0.5. **Total:** 26 species; 94.5 territories (374/40 ha). **Visitors:** Eastern Phoebe, Red-eyed Vireo, Common Grackle. **Other Observers:** Douglas Cubanski, Erin Dator, Marie Hanlon, J. Wesley Morse. **Acknowledgments:** Scott McAllister and John R. Lemieux assisted with vegetation sampling. Special thanks to J.H. Brown for identifying plants and for permission to use the site.

27. MESOPHYTIC FOREST I

BOSWQUE MESOFÍTICO I

MICHAEL G. SMITH

Route 3, Box 301
Elkton, Virginia 22827

Location: Virginia; Green Co.; Elkton; Pocasin Cabin Plot; 38°24'N, 78°29'W; Fletcher Quadrangle, USGS. **Continuity:** Established 1981, 9 yr. **Size:** 6.1 ha. **Description of Plot:** Plot lies on the E side of the Blue Ridge Mountains and is composed of Northern Hardwood Forest that has not been logged for 50 yr. The rocky mountain slope lies at an angle of 5–22 degrees, and contains a spring-fed stream. The plot is continuous forest with no edge. A fire road bisects the count area. **Weather:** Mean temperature 13.7°C (range 4–24°C). Rainfall was above average and temperatures were below average in May. Temperatures and rainfall during June were average. **Coverage:** 13 h; 12 visits (9 morning, 3 evening); 18, 23, 27, 29, 30, 31 May; 6, 7, 8, 10, 11, 17 June. **Census:** American Redstart, 13.5 territories (88/40 ha); Veery, 9.5 (62); Red-eyed Vireo, 5.0 (33); Black-throated Blue Warbler, 4.5 (30); Eastern Wood-Pewee, 4.0 (26); Acadian Flycatcher, 3.0 (20; 1N); Ovenbird, 3.0; Hooded Warbler, 3.0; Rufous-sided Towhee, 3.0; Wood Thrush, 2.0; Chestnut-sided Warbler, 2.0; Scarlet Tanager, 2.0; Indigo Bunting, 2.0; Cerulean Warbler, 1.5; Tufted Titmouse, 1.0; Solitary Vireo, 1.0; Canada Warbler, 0.5; Rose-breasted Grosbeak, 0.5. **Total:** 18 species; 61 territories (400/40 ha). **Visitors:** Black-billed Cuckoo, Red-bellied Woodpecker, Downy Woodpecker, Hairy Woodpecker, Chickadee sp., White-breasted Nuthatch, Cedar Waxwing, Black-throated Green Warbler, Kentucky Warbler, Dark-eyed Junco, Brown-headed Cowbird, American Goldfinch. **Remarks:** Fifty percent of the trees within the plot were defoliated by Gypsy Moth caterpillars. Oaks, maples, and hickories were affected the most. Cedar Waxwing flocks of up to 30 were seen feeding on caterpillars. Coverage hours dropped 36% from the 4-yr average. The percent deviation in breeding Wood Thrushes from the four yr mean was -58%. **Acknowledgments:** Thanks to Kathleen Finnegan, Elwood Fisher, Diane Holsinger, Betty Rosson, Carrie Stanovick, and Charles Ziegenfus for the plot layout and vegetation survey. Also thanks to the personnel of the Shenandoah National Park for their cooperation in the study.

28. MESOPHYTIC FOREST II

BOSQUE MESOFÍTICO II

MICHAEL G. SMITH

Route 3, Box 301
Elkton, Virginia 22827

Location: Virginia; Green Co.; Elkton; Pocosin Mission Plot; 38°24'N, 78°29'W; Fletcher Quadrangle, USGS. **Continuity:** Established 1981, 9 yr. **Size:** 6.1 ha. **Description of Plot:** See *J. Field Ornithol.* 60 (suppl.):33 (1989). Plot lies on the E side of the Blue Ridge Mountains and is composed of Northern Hardwood Forest that has not been logged for 50 yr. A fire road bisects the census plot. **Weather:** Mean temperature 14.4°C (range 4–24°C). Rainfall was above average and temperatures were below average in May. Temperatures and rainfall during June were average. **Coverage:** 13.8 h; 12 visits (9 morning, 3 evening); 18, 23, 27, 29, 30, 31 May; 6, 7, 8, 10, 11, 17 June. **Census:** American Redstart, 15.0 territories (98/40 ha); Ovenbird, 9.5 (62; 1N); Red-eyed Vireo, 8.0 (52); Veery, 6.5 (43); Eastern Wood-Pewee, 5.0 (33); Cerulean Warbler, 5.0; Scarlet Tanager, 4.0 (26); Acadian Flycatcher, 3.5 (23); Wood Thrush, 3.5 (1N); Rufous-sided Towhee, 3.0 (20); Tufted Titmouse, 2.0; Rose-breasted Grosbeak, 2.0; Solitary Vireo, 1.0; Black-throated Blue Warbler, 0.5; Hairy Woodpecker, +; White-breasted Nuthatch, +; Blackburnian Warbler, +. **Total:** 17 species; 68.5 territories (449/40 ha). **Visitors:** Yellow-billed Cuckoo, Ruby-throated Hummingbird, Red-bellied Woodpecker, Downy Woodpecker, Pileated Woodpecker, Common Raven, Chickadee sp., Cedar Waxwing, Worm-eating Warbler, Indigo Bunting, Brown-headed Cowbird, American Goldfinch. **Remarks:** Gypsy Moth caterpillars defoliated 50% of the plot. Small Cedar Waxwing flocks were observed feeding on the caterpillars. There was a 29% drop in coverage hours from the 4-yr average. The percent deviation in breeding Wood Thrushes from the four yr mean was -72%. **Acknowledgments:** Thanks to Kathleen Finnegan, Elwood Fisher, Diane Holsinger, Betty Rosson, Carrie Stanovick, and Charles Ziegenfus for the plot layout and vegetation survey. Also thanks to the personnel of the Shenandoah National Park for their cooperation in the study.

29. OLD-GROWTH MIXED CONIFEROUS-RED FIR FOREST TRANSITION

BOSQUE MADURO DE TRANSICIÓN MIXTO DE CONÍFEROS-PINABETE ROJO

JEFFREY DAVIS, RODERICK H. MACDONALD & MICHAEL W. SHERMAN

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Fresno, California 93710

Location: California; Fresno Co.; Wishon Village; Teakettle Experimental Forest; 36°57'N, 119°2'W; Patterson Mountain N Quadrangle, USGS. **Continuity:** Established 1985; 6 yr. **Size:** 42.3 ha. **Description of Plot:** See 1985 BBC. **Weather:** Mean temperature 4.5°C (range -2–6°C). Weather conditions were generally fair except for a storm 26–27 May which left snow on the ground through 29 May. Precipitation was above average for this time of the yr. **Coverage:** 106 h; 12 visits (mornings); 21, 22, 23, 30, 31 May; 1, 7, 8, 11, 15, 18, 19 June. **Census:** Golden-crowned Kinglet, 81.5 territories (77/40 ha); Fox Sparrow, 50.5 (48); Red-breasted Nuthatch, 21.5 (20; 11N); Dusky Flycatcher, 16.5 (16; 2N); Brown Creeper, 16.0 (15; 2N); Dark-eyed Junco, 15.0 (14; 8N); Mountain Chickadee, 10.5 (10; 6N); Western Tanager, 10.5; Hammond's Flycatcher, 9.5 (9; 2N); MacGillivray's Warbler, 9.0 (8); Hermit Warbler, 8.5 (8); Yellow-rumped Warbler, 7.0 (7); Mountain Quail, 5.5 (5); White-headed Woodpecker, 5.5 (6N); Steller's Jay, 5.0 (5); American Robin, 4.0 (4); Red-breasted Sapsucker, 3.5 (3; 4N); Solitary Vireo, 3.0 (3); Hermit Thrush, 2.0; Evening Grosbeak, 1.5; Pileated Woodpecker, 1.0; Winter Wren, 1.0; Townsend's Solitaire, 1.0 (1N); Green-tailed Towhee, 1.0; Northern Pygmy-Owl, 0.5; Band-tailed Pigeon, 0.5; Vaux's

Swift, 0.5; Hairy Woodpecker, 0.5 (1N); Northern Flicker, 0.5; Common Raven, 0.5 (1N). **Total:** 30 species; 293.5 territories (278/40 ha). **Visitors:** Sharp-shinned Hawk, Calliope Hummingbird, Olive-sided Flycatcher, Western Wood-Pewee, Western Flycatcher, Clark's Nutcracker, White-breasted Nuthatch, House Wren, Warbling Vireo, Chipping Sparrow, Pine Siskin, Lesser Goldfinch, Cassin's Finch. **Remarks:** All boundary territories were computed as 0.5. **Acknowledgments:** We wish to acknowledge Tracy Tennant and D. Parker Backstrom who were inadvertently omitted as observers on this plot in 1989. This effort is part of a study of bird monitoring techniques being conducted by Dr. Jared Verner, USDA Forest Service.

30. PONDEROSA PINE FOREST

BOSQUE DE PINO PONDEROSA

LOUISE HERING

5000 Butte, Vista Village, #145
Boulder, Colorado 80301

Location: Colorado; Boulder Co.; Boulder; Enchanted Mesa; 40°20'N, 105°16'W; Boulder Quadrangle, USGS. **Continuity:** Established 1965; 26 yr. **Size:** 8.1 ha. **Description of Plot:** See *Aud. Field Notes* 8:372 (1954). **Weather:** Mean temperature 15.6°C (range 10–25°C). **Coverage:** 24.1 h; 12 visits (11 mornings, 1 afternoon); 22 March; 14 April; 3, 12, 21, 22 May; 1, 6, 13, 22 June; 5, 23 July. **Census:** Western Wood-Pewee, 6.0 territories (30/40 ha); Pygmy Nuthatch, 5.0 (25); Broad-tailed Hummingbird, 3.0 (15); American Robin, 3.0 (1N); Chipping Sparrow, 3.0; Mourning Dove, 2.0; Violet-green Swallow, 2.0; Hairy Woodpecker, 1.0; Mountain Chickadee, 1.0; Solitary Vireo, 1.0; Brown-headed Cowbird, 1.0; Lesser Goldfinch, 1.0. **Total:** 12 species; 29 territories (143/40 ha). **Visitors:** Northern Flicker, Clark's Nutcracker, Western Tanager, House Finch, Black-headed Grosbeak, Black-billed Magpie, Steller's Jay, White-breasted Nuthatch, Pine Siskin. **Remarks:** The nesting population for this season was smaller than for 1989. Raiding of nests by Black-billed Magpies and Steller's Jays was minimal compared to 1982 after the forest was thinned. Few young were observed on the plot suggesting poor nesting success overall. **Acknowledgments:** Thanks to Vera Evenson for doing one survey and for her encouragement.

31. HEAVILY THINNED WHITE SPRUCE PLANTATION

PLANTACIÓN MADURA DE ABETO BLANCO

JULIET K. MARKOWSKY

1 Edgewood Drive
Orono, Maine 04473

Location: Maine; Penobscot Co.; Old Town; University Forest, Block C-4; 44°57'N, 68°41'W; Orono Quadrangle, USGS. **Continuity:** Established 1985; 6 yr. **Size:** 4.1 ha. **Description of Plot:** See *J. Field Ornithol.* 60 (suppl.):35 (1989). Two-thirds of the plantation was cut over during the winter of 1989-1990. Large (38-53 cm) White Spruce and White Pine were removed, as were parts of the understory. **Weather:** Mean temperature 12°C (range 4–17°C). Temperatures and precipitation during May and June were about average for the season. **Coverage:** 20 h; 10 visits (8 mornings, 1 evening); 16, 21, 24 May; 4, 12, 15, 20, 23, 27, 28 June. **Census:** Black-throated Green Warbler, 5.0 territories (49/40 ha); Northern Parula, 4.0 (39); White-throated Sparrow, 4.0; Black-capped Chickadee, 3.0 (29); Golden-crowned Kinglet, 3.0; Blackburnian Warbler, 3.0; Eastern Wood-Pewee, 2.0; Red-breasted Nuthatch, 2.0; Magnolia Warbler, 2.0; Black-and-white Warbler, 2.0; Ovenbird, 2.0; Hairy Woodpecker, 1.0; Northern Flicker, 1.0; Great Crested Flycatcher, 1.0; Blue Jay, 1.0; Brown Creeper, 1.0; Winter Wren, 1.0; Solitary Vireo, 1.0; Red-eyed Vireo, 1.0; Nashville Warbler, 1.0; Yellow-rumped Warbler, 1.0; Pine Warbler, 1.0; Bay-breasted Warbler, 1.0; Canada Warbler, 1.0; Purple Finch, 1.0. **Total:** 25 species; 46 territories (449/40 ha). **Visitors:**

Broad-winged Hawk, Blue Jay, Ruby-crowned Kinglet, Veery, Swainson's Thrush, Hermit Thrush, Wood Thrush, American Robin, Tennessee Warbler, American Redstart, Mourning Warbler, Pine Siskin. **Remarks:** Flycatchers increased presumably due to openings created by thinning operation. **Acknowledgments:** Norman Famous and students in the University of Maine Field Ornithology Class.

32. MATURE RED SPRUCE FOREST

BOSQUE DE ABETO ROJO MADURO

THOMAS P. SKALING

10 Cumberland Street
Brunswick, Maine 04011

Location: Maine; Somerset Co.; West Forks; Boise Cascade Tract; 45°25'N, 70°10'W; Pierce Pond Quadrangle, USGS. **Continuity:** Established 1989; 2 yr. **Size:** 16.0 ha. **Description of Plot:** See *J. Field Ornithol.* 61 (suppl.):46 (1990). **Weather:** Mean temperature 6.6°C (range -2–14°C). Temperatures and precipitation throughout the period were normal. **Coverage:** 26 h; 8 visits (mornings); 25, 27, 31 May; 2, 16 June; 6, 10, 13 July. **Census:** Golden-crowned Kinglet, 6.0 territories (15/40 ha); Red-breasted Nuthatch, 5.5 (14); Yellow-rumped Warbler, 5.0 (12); Blackburnian Warbler, 5.0; Winter Wren, 4.0 (10); Magnolia Warbler, 4.0; Black-capped Chickadee, 3.0 (8); Brown Creeper, 3.0; Swainson's Thrush, 3.0; Solitary Vireo, 3.0; Dark-eyed Junco, 3.0; Northern Parula, 2.5; Yellow-bellied Flycatcher, 2.0; Boreal Chickadee, 2.0; Hermit Thrush, 2.0; Nashville Warbler, 2.0; White-throated Sparrow, 2.0; Yellow-bellied Sapsucker, 1.5; Bay-breasted Warbler, 1.5; American Black Duck, 1.0; Northern Goshawk, 1.0; Hooded Merganser, 1.0; Hairy Woodpecker, 1.0; Blue Jay, 1.0; American Robin, 1.0; Common Yellowthroat, 1.0; Purple Finch, 1.0; Canada Warbler, 0.5. **Total:** 28 species; 68.5 territories (171/40 ha). **Visitors:** Sharpshinned Hawk, Barred Owl, Downy Woodpecker, Great Crested Flycatcher, Gray Jay, Common Raven, Black-throated Blue Warbler, Black-throated Green Warbler, Northern Waterthrush, Scarlet Tanager, White-winged Crossbill, Evening Grosbeak. **Remarks:** With few minor fluctuations, mostly on the plus side, the numbers of species and territories showed little change from 1989. Censusing within one 50 m diameter circle of the plot was made impossible during the first four visits by the aggressive behavior of a Goshawk pair. Their nest was placed at the top of a 15 m Yellow Birch snag. Movements within 50 m of the nest induced a series of frightening, low-level diving attacks. **Acknowledgments:** I thank Boise Cascade for their continued support of this project.

33. MATURE SPRUCE-FIR FOREST

BOSQUE MADURO DE PINABETE

PETER A. DULEY

Seaward Nurseries, Route 77
Cape Elizabeth, Maine 04107

Location: Maine; Cumberland Co.; Cape Elizabeth; Ram Island Farm; 43°34'N, 70°15'W; Cape Elizabeth and P Quadrangle, USGS. **Continuity:** New. **Size:** 10.0 ha. **Description of Plot:** The study plot is located on a 891 ha estate. A small log cabin sits on the plot, and an area of ca 75 m², which was clear cut in 1987, has now come back as a shrubby field. A quantitative vegetation survey based on the method described by F.C. James & H.H. Shugart, Jr. (1970. *Aud. Field Notes* 24: 727-736) yielded the following results: Trees, 7.6 cm diameter and over, based on five 0.04-ha circular samples, 1160/ha living, 60/ha dead; total basal area 54.3 m²/ha living, 2.8 m²/ha standing dead. Species comprising 100% of the total number of living trees [figures after each are trees/ha, relative density (%), relative dominance (%), and frequency (%): Red Spruce 670, 58, 51, 100; Balsam Fir 235, 20, 6, 80; Red Maple 145, 13, 12.5, 100; White Pine 70, 6, 27, 100; White Birch 25, 2, 3, 80;

Red Oak 15, 1, 0.5, 20. Living trees by diameter size class [figures after each are trees/ha, relative density (%), basal area in m²/ha, and relative dominance (%): A (7.6–15.2 cm) 720, 55, 6.8, 13; B (15.2–22.9 cm) 235, 18, 6.5, 12; C (22.9–38.1 cm) 265, 20, 19.8, 36; D (38.1–53.3 cm) 65, 5, 11, 20; E (53.3–68.6 cm) 20, 1, 5.8, 11; F (68.6–83.8 cm) 10, 1, 4.5, 8. Shrub stems/ha, 1290; ground cover, 40%; canopy cover, 83%; average canopy height, 17.2 m (range 14–21 m). **Water:** Two small bodies of water occur on the plot, one 31 m in diameter, the other 17 m. **Edge:** the study area is bordered on the S by a road, contiguous forest on the E and W, and a pond on the N side. **Topography and Elevation:** The plot is primarily flat. **Weather:** Mean temperature 34°C (range 27–37°C). **Coverage:** 17.8 h; 8 visits (mornings); 14, 17, 31 May; 5, 6, 12, 14, 26 June. **Census:** Black-throated Green Warbler, 14.0 territories (56/40 ha); White-throated Sparrow, 5.0 (20); Black-and-white Warbler, 4.5 (18); Black-capped Chickadee, 4.5 (18); Tree Swallow, 4.0 (16); Red-breasted Nuthatch, 3.0 (12); Yellow-rumped Warbler, 3.0; American Redstart, 3.0; Common Yellowthroat, 3.0; Eastern Phoebe, 2.5; Winter Wren, 2.5; Blue Jay, 2.0; Eastern Wood-Pewee, 2.0; Great Crested Flycatcher, 2.0; American Robin, 2.0; Rufous-sided Towhee, 2.0; Mourning Dove, 1.5; Veery, 1.0. **Total:** 18 species; 61.5 territories (246/40 ha). **Visitors:** Ruby-crowned Kinglet, Canada Warbler, Nashville Warbler, Cape May Warbler, Magnolia Warbler, Red Crossbill, Rose-breasted Grosbeak, Solitary Vireo, Red-eyed Vireo, Yellow-shafted Flicker, Great Horned Owl. **Remarks:** Brown-headed Cowbirds were in evidence throughout the study area and did not seem to be limited to canopy openings or clearings. **Acknowledgments:** I would like to express my thanks to Robert and Millicent Monks for allowing me to conduct this census on their property. I also would like to express my gratitude to Steve Baird and Shan Burson who helped grid and map the plot.

34. MATURE SPRUCE FOREST

BOSQUE MADURO DE ABETOS

KENNETH L. CROWELL

*Biology Department
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Canton, New York 13617*

Location: Maine; Hancock Co.; Sunset; Stinson Point; 44°11'N, 68°42'W; Deer Isle Quadrangle, USGS. **Continuity:** Established 1987; 4 yr. **Size:** 4.0 ha. **Description of Plot:** See *J. Field Ornithol.* 60 (suppl.):47 (1989). **Weather:** Mean temperature 15.1°C (range 13–17°C). **Coverage:** 4.8 h; 9 visits (mornings); 12, 13, 17, 20, 24, 25, 26 June; 3, 6 July. **Census:** Black-throated Green Warbler, 3.0 territories (30/40 ha); Dark-eyed Junco, 3.0; Golden-crowned Kinglet, 2.0 (20); Yellow-rumped Warbler, 2.0; Blackburnian Warbler, 1.0 (1); Eastern Wood-Pewee, +; Black-capped Chickadee, +; Winter Wren, +; Swainson's Thrush, +; Northern Parula, +; Magnolia Warbler, +; White-throated Sparrow, +. **Total:** 12 species; 11 territories (110/40 ha). **Visitors:** Common Raven. **Remarks:** November 1989 storm resulted in blowdown in the southwestern quadrant of the plot.

35. YOUNG SPRUCE FOREST

BOSQUE DE ABETOS JOVEN

KENNETH L. CROWELL

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St. Lawrence University
Canton, New York 13617*

Location: Maine; Hancock Co.; Sunset; Stinson Point; 44°10'N, 68°43'W; Deer Isle Quadrangle, USGS. **Continuity:** Established 1977; 10 yr. **Size:** 4.5 ha. **Description of Plot:** See *Am. Birds* 32:72 (1978). **Weather:** Mean temperature 14.7°C (range 9–24°C). June was cooler and wetter than normal with continuous fog from 15 to 25 June. **Coverage:** 9.3 h;

10 visits (8 mornings, 2 afternoons); 12, 14, 15, 16, 17, 21, 24 June; 1, 7 July. **Census:** Black-throated Green Warbler, 5.0 territories (44/40 ha); Magnolia Warbler, 4.5 (40); White-throated Sparrow, 3.0 (27); Blue Jay, 2.5; American Robin, 2.5; Dark-eyed Junco, 2.5; Black-capped Chickadee, 2.0; Winter Wren, 2.0; Yellow-rumped Warbler, 2.0; Black-and-white Warbler, 2.0; Mourning Dove, 1.5; Ruffed Grouse, 1.0 (1N); Downy Woodpecker, 1.0; Golden-crowned Kinglet, 1.0; Swainson's Thrush, 1.0; Northern Flicker, 0.5; Purple Finch, 0.5; Eastern Wood-Pewee, +; Common Raven, +; European Starling, +. **Total:** 20 species; 34.5 territories (307/40 ha). **Visitors:** Cooper's Hawk, Pine Siskin, Cedar Waxwing.

36. JACK PINE FOREST

BOSQUE DE PINO DE JACK

ELIZABETH McLAREN

Whitefish Point Bird Observatory

P.O. Box 80527

Lansing, Michigan 48908

Location: Michigan; Chippewa Co.; Paradise; Whitefish Point; 46°45'N, 85°6'W; Vermilion SE and Shelldrake Quadrangle, USGS. **Continuity:** Established 1985, 6 yr. **Size:** 16.0 ha. **Description of Plot:** See *J. Field Ornithol.* 60 (suppl.):45 (1989). **Weather:** Temperatures range from 3–15°C. **Coverage:** 21.5 h; 10 visits (mornings); 7, 10, 14, 15, 17, 18, 21, 22, 24, 25 June. **Census:** Black-throated Green Warbler, 9.0 territories (22/40 ha); Ovenbird, 6.0 (15); Yellow-rumped Warbler, 4.5 (11); Nashville Warbler, 2.5; Dark-eyed Junco, 2.0; Chipping Sparrow, 1.5; Hermit Thrush, 1.0; Pine Warbler, 1.0; Eastern Wood-Pewee, 0.5; Black-capped Chickadee, 0.5; Red-breasted Nuthatch, 0.5; Northern Flicker, +; Solitary Vireo, +. **Total:** 13 species; 29 territories (72/40 ha).

37. UPLAND CHRISTMAS TREE FARM

FINCAS DE ARBOLES DE NAVIDAD EN ALTURA

ELIZABETH W. BROOKS

1435 Waterwells Road

Alfred Station, New York 14803

Location: New York; Allegany Co.; Andover; Kent Christmas Tree Farm; 42°10'N, 77°50'W; Andover Quadrangle, USGS. **Continuity:** Established 1983; 8 yr. **Size:** 10.7 ha. **Description of Plot:** See *Amer. Birds* 38:91 (1984). **Weather:** Mean temperature 24.7°C (range 21–28°C). **Coverage:** 18.5 h; 12 visits (9 mornings, 1 afternoon, 2 evenings); 15, 23 April; 30 May; 6, 14, 20, 28 June; 5, 13, 28 July; 4, 12 August. **Census:** Chipping Sparrow, 17.0 territories (64/40 ha; 7N); Song Sparrow, 14.0 (52; 8N); Cedar Waxwing, 3.0 (11; 1N); Field Sparrow, 3.0 (3N); American Robin, 2.0 (2N); Savannah Sparrow, 2.0 (1N); Bobolink, 2.0; Purple Finch, 2.0 (5N); American Goldfinch, 2.0; Eastern Kingbird, 1.5 (1N); American Woodcock, 1.0; Rufous-sided Towhee, 1.0 (2N); Grasshopper Sparrow, 1.0; Red-winged Blackbird, 1.0; Brown-headed Cowbird, 1.0. **Total:** 15 species; 53.5 territories (200/40ha). **Visitors:** Northern Harrier, Mourning Dove, Horned Lark, American Crow, Black-capped Chickadee, House Wren, European Starling, Red-eyed Vireo, Yellow Warbler, Prairie Warbler, Indigo Bunting, Vesper Sparrow, Eastern Meadowlark, Common Grackle, House Finch. **Remarks:** A cowbird egg was found in the nest of a Song Sparrow. The total number of species was lowest ever recorded. Chipping and Song Sparrows were at record high numbers. A small number of harvest-ready Austrian and Scotch Pines were treated with a color-odor spray. Only one bird nested in a treated tree. **Acknowledgments:** Appreciation to Tom and Kathy Kent for permission to conduct the study on their land.

38. UPLAND SCOTCH PINE PLANTATION

PLANTACIÓN EN ALTURA DE PINO ESCOCÉS

ELIZABETH W. BROOKS

1435 Waterwells Road
Alfred Station, New York 14803

Location: New York; Allegany Co.; Alfred; Foster Plantation; 42°7'N, 77°45'W; Andover Quadrangle, USGS. **Continuity:** Established 1969; 22 yr. **Size:** 9.3 ha. **Description of Plot:** See *Amer. Birds* 38:38 (1984). **Weather:** Mean temperature 23.8°C (range 18–27°C). **Coverage:** 12.3 h; 10 visits (6 mornings 2 afternoons, 2 evenings); 15 April; 28 May; 5, 12, 19, 26 June; 3, 10, July; 2 August. **Census:** Chipping Sparrow, 7.5 territories (32/40 ha; 1N); Common Yellowthroat, 6.0 (26); Song Sparrow, 5.5 (24); Cedar Waxwing, 3.0 (13; 1N); Magnolia Warbler, 2.0; Indigo Bunting, 2.0; Rufous-sided Towhee, 2.0; Field Sparrow, 2.0; Purple Finch, 2.0; American Woodcock, 1.5; Yellow-rumped Warbler, 1.5; Blue Jay, 1.0; Black-capped Chickadee, 1.0; American Robin, 1.0 (1N); Blue-winged Warbler, 1.0; Ovenbird, 1.0; Dark-eyed Junco, 1.0; Black-throated Green, +; House Wren, +; Gray Catbird, +; Blackburnian Warbler, +; Brown-headed Cowbird, +. **Total:** 22 species; 41 territories (176/40 ha). **Visitors:** Downy Woodpecker, Alder Flycatcher, Eastern Kingbird, Red-breasted Nuthatch, Veery, Wood Thrush, Brown Thrasher, Nashville Warbler, Northern Cardinal, Rose-breasted Grosbeak. **Remarks:** A major logging operation in an extensive hardwood lot 91 m S of the study area caused severe disturbance to the breeding birds in the affected area. Many displaced deciduous breeding species spent time in the coniferous study area. **Acknowledgments:** Appreciation to Cynthia Clements and Phil Foster for permission to conduct the study on their land.

39. MATURE WHITE PINE FOREST

BOSQUE MADURO DE PINO BLANCO

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Location: Rhode Island; Washington Co.; West Kingston; Marion Eppley Wildlife Sanctuary; 41°30'N, 71°35'W; Slocum 7.5' Quadrangle, USGS. **Continuity:** New. **Size:** 10.1 ha. **Description of Plot:** The plot consists of a rectangle 450 x 155 m, running NW–SE, and a second connected portion 80 x 420 m, running N–S. The plot is composed, almost exclusively, of White Pine on glacial outwash soil in the Queen's River Drainage. It lies in the SW corner of the 415-ha Audubon Society of Rhode Island's Marion Eppley Wildlife Sanctuary. The White Pine canopy is closed except for occasional tree-fall gaps, most common on the E side, and four bogs. A quantitative vegetation survey following the method described by F.C. James and H.H. Shugart, Jr. (1970. *Aud. Field Notes* 24:727-736) yielded the following results: Trees, 7.6 cm diameter and over, based on 10 0.04-ha circular samples, 772/ha live, 107/ha standing dead; total basal area 45.8 m²/ha living, 2.0 m²/ha standing dead. Species comprising 99% of the total number of trees [figures after each are trees/ha, relative density (%), relative dominance (%), and frequency (%):] White Pine 552, 72, 94, 100; Red Maple 115, 15, 2, 50; Black Oak 35, 4.5, 1, 60; White Oak 35, 4.5, 1, 40; Scarlet Oak 22, 3, 1, 50. Living trees by diameter size class [figures after each are trees/ha, relative density (%), basal area in m²/ha, and relative dominance (%):] A (7.6–15.2 cm) 333, 43, 3.4, 7; B (15.2–22.9 cm) 185, 24, 5.3, 12; C (22.9–38.1 cm) 145, 19, 10.8, 23; D (38.1–53.3 cm) 67, 8, 11.3, 25; E (53.3–68.6 cm) 32, 4, 9.6, 21; F (68.6–83.8 cm) 5, 1, 2.4, 5; G (83.8–101.6 cm) 5, 1, 3.1, 7; Standing dead trees by diameter size class [figures after each are trees/ha, relative density (%), basal area in m²/ha, and relative dominance (%):] A (7.6–15.2 cm) 77, 72, 0.8, 41; B (15.2–22.9 cm) 20, 18, 0.6, 29; C (22.9–38.1 cm) 5, 5, 0.2, 9;

D (38.1–53.3 cm) 5, 5, 0.4, 21. Shrub stems/ha, 1825, dominated by Highbush Blueberry, Leather Leaf, Red Maple, and White Pine. Ground cover, 41.5%, dominated by Peat Moss (in bogs), White Pine, and Hay-scented Fern. Canopy cover, 80.5%; average canopy height, 20.6 m (range 16–25 m). **Water:** Four bogs, ranging in diameter from 15 to 60 m, occur on the plot, all in glacially-formed kettleholes. All contained water throughout the count period. **Edge:** A 70-m buffer of similar habitat adjoins the plot on the W and S. Dugway Bridge road marks the W edge of this buffer, and two house lots and a turf grass farm are found to the S. Pine forest of younger age continues for over 100 m on the SE border of the plot. The forest gradually grades into upland oak habitat to the E and N. **Topography and Elevation:** The plot is nominally flat except for the aforementioned bogs. Additionally, three other glacially-formed depressions occur on the plot; none hold water. Minimum elevation 35 m, maximum 41 m. **Weather:** Mean temperature 18°C (range 13–26°C). Strong winds were experienced during one count. **Coverage:** 35.6 h; 14 visits (12 morning, 1 afternoon, 1 evening); 10, 11, 16, 30 June; 1, 2, 3, 4, 5, 7, 9, 10, 11 July. **Census:** Pine Warbler, 17.0 territories (67/40 ha); Ovenbird, 8.0 (32); Hermit Thrush, 6.5 (26); Gray Catbird, 6.0 (24); Black-throated Green Warbler, 5.0 (20); Black-capped Chickadee, 5.0; American Robin, 4.5 (18); Common Yellowthroat, 4.5; Brown Creeper, 3.5 (14); Red-breasted Nuthatch, 3.0 (12); Rufous-sided Towhee, 2.5; Blue Jay, 2.0; Tufted Titmouse, 2.0; White-breasted Nuthatch, 2.0; Veery, 2.0; Swamp Sparrow, 2.0; Downy Woodpecker, 1.5; Hairy Woodpecker, 1.0; Northern Flicker, 1.0; Black-and-white Warbler, 1.0; Scarlet Tanager, 1.0. **Total:** 21 species; 81 territories (329/40 ha). **Visitors:** Broad-winged Hawk, American Crow, Eastern Phoebe, Eastern Wood-Pewee, Carolina Wren, Common Grackle, Red-winged Blackbird, Chipping Sparrow, House Sparrow, House Wren, Blue-winged Warbler, Brown-headed Cowbird, Great Crested Flycatcher, Cedar Waxwing. **Other Observers:** Nancy W. Clayton, Mary Jo Murray, David M. Clayton. **Acknowledgments:** Thanks to Patrick Dorcas and the Audubon Society of Rhode Island for permission to use the site, and to J.H. Brown for assistance with plant identification.

40. GRAZED OAK–PINE WOODLAND

ARBOLEDA DE ROBLE-PINO PASTADO

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Location: California; Madera Co.; Coarsegold; San Joaquin Experimental Range; 37°6'N, 119°44'W; Millerton Lake West Quadrangle, USGS. **Continuity:** Established 1985; 6 yr. **Size:** 29.7 ha. **Description of Plot:** See *J. Field Ornithol.* 60 (suppl.):35-36 (1989). **Weather:** Mean temperature 13.1°C (range 10–15°C). The cumulative effects of the fourth consecutive drought yr were most evident in the absence of usually intermittent streams and the early drying up of ponds and reservoirs. Two census days were lost to rain. **Coverage:** 83 h; 12 visits (mornings); 28, 30 March; 2, 5, 10, 12, 13, 17, 19, 22, 25, 26 April. **Census:** Plain Titmouse, 27.0 territories (36/40 ha; 16N); House Finch, 10.5 (14; 1N); California Quail, 10.0 (14; 1N); Ash-throated Flycatcher, 8.5 (11; 4N); Scrub Jay, 8.0 (11; 4N); Bushtit, 7.5 (10; 7N); Bewick's Wren, 7.5 (2N); Mourning Dove, 7.0 (9; 2N); Violet-green Swallow, 7.0; Acorn Woodpecker, 4.5 (6; 4N); Brown Towhee, 4.5 (4N); Lesser Goldfinch, 4.5; European Starling, 4.0 (5; 5N); Anna's Hummingbird, 3.5 (5; 4N); Brown-headed Cowbird, 3.0 (4); House Wren, 2.0; Western Bluebird, 2.0 (3N); White-breasted Nuthatch, 1.5 (1N); American Kestrel, 1.0 (2N); Nuttall's Woodpecker, 0.5; Hutton's Vireo, 0.5 (1N). **Total:** 21 species; 124.5 territories (168/40 ha). **Visitors:** Turkey Vulture, Golden Eagle, Cooper's Hawk, Red-tailed Hawk, Common Poorwill, Northern Flicker, Western Kingbird, Common Raven, Rock Wren, Blue-gray Gnatcatcher, American Robin, Phainopepla, Brewer's Blackbird, Northern Oriole, Lawrence's Goldfinch. **Remarks:** All boundary territories were

computed as 0.5. This plot had 44 nest boxes, 18 of which were used this season. **Acknowledgments:** This effort is part of a study of bird monitoring techniques being conducted by Dr. Jared Verner, USDA Forest Service.

41. UNGRAZED OAK-PINE WOODLAND

ARBOLEDA DE ROBLE-PINO NO PASTADO

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JENNIFER G. TURNER

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Location: California; Madera Co.; Coarsegold; San Joaquin Experimental Range-Natural Area; 37°50'N, 119°43'W; Millerton Lake West Quadrangle, USGS. **Continuity:** Established 1985; 6 yr. **Size:** 29.7 ha. **Description of Plot:** See *J. Field Ornithol.* 60 (suppl.):34-35 (1989). **Weather:** Mean temperature 12.5°C (range 10-15°C). See BBC 40 (this issue) for additional weather data. **Coverage:** 85.8 h; 12 visits (mornings); 27, 28 March; 2, 4, 5, 11, 13, 17, 19, 20, 25, 26 April. **Census:** Plain Titmouse, 19.0 territories (26/40 ha; 7N); California Quail, 9.5 (13; 3N); Mourning Dove, 9.5 (1N); Scrub Jay, 8.5 (11; 9N); Anna's Hummingbird, 7.0 (9; 2N); Brown-headed Cowbird, 7.0; Acorn Woodpecker, 6.5 (9; 2N); Ash-throated Flycatcher, 6.5; Brown Towhee, 6.0 (8; 3N); House Finch, 6.0 (1N); Bushtit, 5.5 (7; 6N); Lesser Goldfinch, 5.5; Bewick's Wren, 4.5 (6; 2N); Violet-green Swallow, 2.5; California Thrasher, 2.0; Western Bluebird, 1.5 (1N); European Starling, 1.5 (3N); White-breasted Nuthatch, 1.0 (1N); Hutton's Vireo, 1.0; Cooper's Hawk, 0.5 (1N); Red-tailed Hawk, 0.5 (1N); Nuttall's Woodpecker, 0.5; Western Kingbird, 0.5; Canyon Wren, 0.5 (1N); Northern Oriole, 0.5. **Total:** 25 species; 113.5 territories (153/40 ha). **Visitors:** Turkey Vulture, Golden Eagle, American Kestrel, Black Phoebe, Common Raven, House Wren, Blue-gray Gnatcatcher, American Robin, Brewer's Blackbird, Lawrence's Goldfinch. **Remarks:** All boundary territories were computed as 0.5. **Acknowledgments:** We wish to acknowledge D. Parker Backstrom, Matthew Georgeff, and Tracy Tennant who were inadvertently omitted as observers on this plot in 1989. This effort is part of a study of bird monitoring techniques being conducted by Dr. Jared Verner, USDA Forest Service.

42. PONDEROSA PINE-SCRUB OAK FOREST

BOSQUE DE PINO PONDEROSA-MATORRAL DE ROBLE

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Location: Colorado; ElPaso Co.; Colorado Springs; USAFA Breeding Bird Survey; 38°57'N, 104°50'W; Pikeview Quadrangle, USGS. **Continuity:** Established 1980; 10 yr. **Size:** 13.8 ha. **Description of Plot:** The study area is comprised of gently rolling, Ponderosa Pine-covered terrain interspersed with clumps of Gambel's Oak and Mountain Mahogany. Ground cover includes various annual and perennial grasses and forbs, and is generally found in several small open areas within the plot. Ponderosa Pine covers 58.3% of the study area; shrubs cover 7.4%. The stand is native and has not been harvested except for a Dwarf Mistletoe control project in 1976 in which ca 10% of the stand was thinned. The average age of trees is 70 yr, but several trees within the plot are over 300 yr old. One unimproved road winds through the center of the area, but disturbance is limited to occasional horse and foot traffic. **Weather:** Mean temperature 16.1°C (range 9-26°C). Weather data was collected from the USAF Academy airfield located 2 km E of the study area. The mean monthly temperature during June was 3.5°C warmer than the 10-yr mean of 16.5°C, but precipitation was 4.3 cm below the 10-yr mean of 4.8 cm. July was cooler and wetter than

average with the mean monthly temperature 2.5°C below the 10-yr mean of 20.5°C, and total precipitation up 4.8 cm over the 10-yr mean of 6.4 cm. **Coverage:** 23 h; 10 visits (9 mornings, 1 afternoon); 8, 20, 26, 28 June; 3, 6, 9, 12, 20, 27 July. **Census:** Chipping Sparrow, 23.0 territories (67/40 ha); Pine Siskin, 21.0 (61); Western Wood-Pewee, 17.0 (49); Rufous-sided Towhee, 15.0 (44); Broad-tailed Hummingbird, 14.0 (41); Lesser Goldfinch, 11.0 (32); Mourning Dove, 7.0 (20); Pygmy Nuthatch, 7.0; American Robin, 5.0 (14); Solitary Vireo, 5.0; House Finch, 4.0 (12); Mountain Chickadee, 2.0; Red-tailed Hawk, 1.0; Great Horned Owl, 1.0; Common Nighthawk, 1.0; Tree Swallow, 1.0; Violet-green Swallow, 1.0; White-breasted Nuthatch, 1.0; Western Bluebird, 1.0; Gray Catbird, 1.0; MacGillivray's Warbler, 1.0; Western Tanager, 1.0. **Total:** 22 species; 141 territories (409/40 ha). **Visitors:** Sharp-shinned Hawk, Cooper's Hawk, Rufous Hummingbird, Yellow-bellied Sapsucker, Hairy Woodpecker, Least Flycatcher, Trail's Flycatcher, Western Flycatcher, Northern Rough-winged Swallow, Cliff Swallow, American Crow, Black-capped Chickadee, Red-breasted Nuthatch, House Wren, Mountain Bluebird, Gray-cheeked Thrush, Virginia's Warbler, Yellow-rumped Warbler, Black-headed Grosbeak, Indigo Bunting, Song Sparrow, Dark-eyed Junco, Brewer's Blackbird, Brown-headed Cowbird, Northern Oriole, American Goldfinch. **Remarks:** The USAF Academy breeding bird census area is divided into 12 100 x 115 m grids. Grid corners are each marked with permanent stakes and plastic tape. Ten surveys were completed with bird sightings recorded on a separate map of the study area for each visit. On average, two observers were in the field each trip; one recorded observations. Records were transferred to a Geographic Information System (GIS) to locate precisely each individual sighting, and pertinent field data were entered into a data base. Any bird sighted three or more times within a grid block over the ten survey dates was considered territorial. Where possible, observations of nests, fledglings, and other signs of breeding were used to confirm assumptions of breeding status. **Acknowledgments:** Mike Babler, Brian Cullis, Vern Dayhoff, John Obringer, Greg Speights, and William Wittman.

43. CLIMAX HEMLOCK-WHITE PINE FOREST WITH TRANSITION HARDWOODS

BOSQUE CLÍMAX DE PICEA-PINO BLANCO EN TRANSICIÓN A MADERAS
DURAS

ANDREW MAGEE

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Location: Connecticut; Litchfield Co.; Litchfield; White Memorial Foundation-Catlin Woods; 41°43'N, 73°12'W; Litchfield Quadrangle, USGS. **Continuity:** Established 1965; 24 yr. **Size:** 10.5 ha. **Description of Plot:** See *Aud. Field Notes* 19:594-595 (1965). **Weather:** Mean temperature 17.6°C (range 11–22°C). **Coverage:** 13.5 h; 6 visits (4 mornings, 1 afternoon, 1 evening); 5, 10, 17, 24, 25 June. (*A minimum of eight visits during a four to six week period is recommended to insure adequate coverage and estimates of breeding bird densities. Ed.*) **Census:** Ovenbird, 15.0 territories (57/40 ha); Red-eyed Vireo, 12.0 (46); Veery, 9.0 (34); Red-breasted Nuthatch, 5.0 (19); Blackburnian Warbler, 5.0; Black-throated Green Warbler, 4.0 (15); Black-capped Chickadee, 4.0; Solitary Vireo, 3.5 (13); Eastern Wood-Pewee, 3.0 (11); Great Crested Flycatcher, 3.0; Blue Jay, 3.0; Wood Thrush, 3.0; Pine Warbler, 3.0; Scarlet Tanager, 3.0; White-breasted Nuthatch, 2.0; Brown Creeper, 2.0; Yellow-rumped Warbler, 2.0; Purple Finch, 2.0; American Crow, 1.5; American Robin, 1.5; Wood Duck, 1.0; Sharp-shinned Hawk, 1.0; Downy Woodpecker, 1.0; Hairy Woodpecker, 1.0; Pileated Woodpecker, 1.0; Tufted Titmouse, 1.0; Common Yellowthroat, 1.0; Song Sparrow, 1.0; Common Grackle, 1.0; Brown-headed Cowbird, 1.0; Broad-winged Hawk, 0.5; Barred Owl, 0.5; Gray Catbird, 0.5; Northern Cardinal, 0.5. **Total:** 34 species; 98.5 territories (375/40 ha). **Remarks:** This was the first confirmed nesting of a Sharp-shinned Hawk on any of the five White Memorial census areas. Both the Blackburnian Warbler and Black-throated Green Warbler showed significant declines from last yr and were well below average numbers

for the 24 yr this plot has been censused. **Acknowledgments:** Gordon Loery of the White Memorial Conservation Center wrote up the report.

44. YOUNG MIXED HARDWOOD-CONIFER STAND

BOSQUE JOVEN-MIXTO DE MADERAS DURAS/RODAL DE CONÍFEROS

ANDREW MAGEE

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Location: Connecticut; Litchfield Co.; East Morris; White Memorial Foundation; 41°42'N, 73°10'W; Litchfield Quadrangle, USGS. **Continuity:** Established 1978; 13 yr. **Size:** 8.5 ha. **Description of Plot:** See *Amer. Birds* 33:72 (1979). **Weather:** Mean temperature 21°C (range 19–23°C). **Coverage:** 13.5 h; 4 visits (1 morning, 2 afternoon, 1 evening); 6, 9, 11, 22 June. (*A minimum of eight visits during a four to six week period is recommended to insure adequate coverage and estimates of breeding bird densities. Ed.*) **Census:** Gray Catbird, 14.0 territories (66/40 ha); Veery, 12.0 (56); American Redstart, 12.0; Red-eyed Vireo, 8.0 (38); Wood Thrush, 7.0 (33); Ovenbird, 7.0; Blue-winged Warbler, 5.0 (24); Chestnut-sided Warbler, 5.0; Black-capped Chickadee, 3.0 (14); American Robin, 3.0; Black-and-white Warbler, 3.0; Rose-breasted Grosbeak, 3.0; Canada Warbler, 2.5; Scarlet Tanager, 2.5; Ruby-throated Hummingbird, 2.0; Blue Jay, 2.0; Rufous-sided Towhee, 2.0; Downy Woodpecker, 1.0; Hairy Woodpecker, 1.0; Eastern Wood-Pewee, 1.0; Eastern Phoebe, 1.0; Yellow-throated Vireo, 1.0; Common Yellowthroat, 1.0; Song Sparrow, 1.0; Brown-headed Cowbird, 1.0; Northern Oriole, 1.0; Broad-winged Hawk, 0.5; Mourning Dove, 0.5; Barred Owl, 0.5; Northern Flicker, 0.5; American Crow, 0.5; Tufted Titmouse, 0.5; White-breasted Nuthatch, 0.5; Solitary Vireo, 0.5; Magnolia Warbler, 0.5; Louisiana Waterthrush, 0.5; Common Grackle, 0.5; American Goldfinch, 0.5; Turkey Vulture, +; Red-tailed Hawk, +. **Total:** 40 species; 108 territories (508/40 ha). **Remarks:** The forest-interior bird populations on this transitional plot continue to recover from the clear-cutting of Red Pine during the winter of 1978-1979. The Red-eyed Vireo reached a new high of eight territories, up from four last yr. The Ovenbird, which was the the most abundant species in 1978 (15 territories) and has since never exceeded three territories, increased to seven this yr. Blackburnian Warblers and Solitary Vireos have never recovered, presumably because of the absence of large conifers. The total number of species and territories remains higher than before cutting. **Acknowledgments:** Gordon Loery of the White Memorial Conservation Center wrote up the report.

45. OAK-HEMLOCK FOREST

BOSQUE DE ROBLE-PICEA

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Location: Connecticut; New London Co.; New London; Bolleswood Natural Area; 41°22'N, 72°7'W; Uncasville Quadrangle, USGS. **Continuity:** Established 1953; 20 yr. **Size:** 23.1 ha. **Description of Plot:** See *Am. Birds* 37: 73-74 (1983). **Weather:** Mean temperature 12.3°C (range 4–18°C). May and June were exceptionally cool, rainy, and foggy. **Coverage:** 32.5 h; 10 visits (mornings); 15, 19, 27, 28 May; 2, 10, 12, 16, 17, 21, 23 June; 1, 3, 8 July. **Census:** Veery, 10.0 territories (17/40 ha); Red-eyed Vireo, 8.5 (15); Black-capped Chickadee, 7.5 (13); Tufted Titmouse, 6.5 (11); Gray Catbird, 6.5; Ovenbird, 6.0 (10); Rufous-sided Towhee, 4.5 (8); Wood Thrush, 4.0 (7); Black-and-white Warbler, 4.0; Brown-headed Cowbird, 3.5 (6); Blue Jay, 3.0 (5); Common Yellowthroat, 3.0; Scarlet Tanager, 3.0; Carolina Wren, 2.5; Great Crested Flycatcher, 2.0; White-breasted Nuthatch,

2.0; Hooded Warbler, 2.0; Northern Cardinal, 2.0; Eastern Wood-Pewee, 1.5; House Wren, 1.5; Chestnut-sided Warbler, 1.5; Barred Owl, 1.0; Downy Woodpecker, 1.0; Hairy Woodpecker, 1.0; Northern Flicker, 1.0; Eastern Phoebe, 1.0; White-eyed Vireo, 1.0; Louisiana Waterthrush, 1.0; Broad-winged Hawk, 0.5; Red-bellied Woodpecker, 0.5. **Total:** 30 species; 93 territories (161/40 ha). **Visitors:** Great Horned Owl, Ruby-throated Hummingbird, American Crow, American Robin, Cedar Waxwing, Blue-winged Warbler, Prairie Warbler, Worm-eating Warbler, Common Grackle, House Finch, American Goldfinch. **Remarks:** Results of this BBC, which was initiated in 1953, have been analyzed in Askins, R.A. 1990. *Birds of the Connecticut College Arboretum; Population Changes over Forty Years*. Connecticut College Arboretum 31:1-43. **Other Observers:** Margaret Philbrick.

46. UPLAND OAK AND HEMLOCK FOREST

BOSQUE ROBLE Y PICEA DE ALTURAS

JULIE ZICKEFOOSE & ROBERT BRAUNFIELD

Box 84

Hadlyme, Connecticut 06439

Location: Connecticut; Middlesex Co.; Salem; Strong Woodland, Burnham Brook Preserve; 41°27'N, 72°19'W; Hamburg Quadrangle, USGS. **Continuity:** Established 1989; 2 yr. **Size:** 10.5 ha. **Description of Plot:** See *J. Field Ornithol.* 61 (suppl.):49-50 (1990). **Weather:** Mean temperature 13°C (range 7–27°C). **Coverage:** 9.2 h; 8 visits (mornings); 24, 28 May; 5, 12, 15, 19, 25, 28 June. **Census:** Red-eyed Vireo, 18.5 territories (70/40 ha); Ovenbird, 14.0 (53); Black-throated Green Warbler, 7.0 (27); Eastern Wood-Pewee, 4.0 (15); Black-capped Chickadee, 4.0; Tufted Titmouse, 4.0; Blue-gray Gnatcatcher, 4.0; Yellow-throated Vireo, 4.0; Cerulean Warbler, 4.0; Black-and-white Warbler, 4.0; Worm-eating Warbler, 4.0; Scarlet Tanager, 4.0; American Redstart, 3.5 (13); Acadian Flycatcher, 3.0 (11); Hermit Thrush, 3.0; Wood Thrush, 3.0; Barred Owl, 1.5 (1N, FL); Downy Woodpecker, 1.0; Great Crested Flycatcher, 1.0; Blue Jay, 1.0; White-breasted Nuthatch, 1.0; Brown Creeper, 1.0. **Total:** 22 species; 94.5 territories (360/40 ha). **Visitors:** Yellow-shafted Flicker, Hairy Woodpecker, Least Flycatcher, American Crow, Veery, Eastern Bluebird, Cedar Waxwing, Solitary Vireo, Blackburnian Warbler, Chestnut-sided Warbler, Louisiana Waterthrush, Canada Warbler, Brown-headed Cowbird, Rose-breasted Grosbeak, Rufous-sided Towhee. **Remarks:** More simultaneous singing records were obtained this yr for all species as a result of increased observer efficiency. **Acknowledgments:** Dr. Richard H. Goodwin and Dr. Robert Askins.

47. CENTRAL HARDWOOD FOREST WITH SCATTERED PINE

BOSQUE CENTRAL DE MADERAS DURAS CON PINOS DISPERSOS

BOB FORD

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Washington, D.C. 20015

Location: District of Columbia; Washington, D.C.; Washington, D.C.; Rock Creek Park; 38°57'N, 77°3'W; Washington West Quadrangle, USGS. **Continuity:** Established 1948; 32 yr. **Size:** 26.3 ha. **Description of Plot:** See *Aud. Field Notes* 2:153-154 (1948). A severe windstorm during June 1989 felled numerous trees along the N border of the plot and created a woodland opening of just over 1 ha. **Weather:** Mean temperature 17.2°C (range 7–27°C). **Coverage:** 43 h; 26 visits (24 mornings, 1 afternoon, 1 evening); 1, 5, 8, 9, 20, 22, 28 April; 12, 17, 19, 24, 28, 30 May; 1, 4, 6, 7, 9, 13, 16, 20, 23, 30 June. **Census:** Red-bellied Woodpecker, 6.5 territories (10/40 ha); Red-eyed Vireo, 6.5; Ovenbird, 6.5; Eastern Wood-Pewee, 4.0 (6); Carolina Chickadee, 4.0; Tufted Titmouse, 4.0; Carolina Wren, 4.0; Veery, 4.0; Wood Thrush, 3.5 (5); White-breasted Nuthatch, 3.0 (5); Rufous-

sided Towhee, 2.5; Northern Flicker, 2.0; Acadian Flycatcher, 2.0; Scarlet Tanager, 2.0; Downy Woodpecker, 1.5; Northern Cardinal, 1.5; Hairy Woodpecker, 1.0; Great Crested Flycatcher, 1.0; Yellow-throated Vireo, 1.0; Louisiana Waterthrush, 1.0; Pileated Woodpecker, 0.5; Eastern Phoebe, 0.5; Brown-headed Cowbird, 0.5; Mourning Dove, +; Blue Jay, +; American Crow, +; American Redstart, +. **Total:** 27 species; 63 territories (96/40 ha). **Other Observers:** Vera DeMarco. **Acknowledgments:** Assistance in compiling was provided by Shirley Briggs.

48. ISOLATED OAK-TULIPTREE-PINE UPLAND FOREST

BOSQUE AISLADO DE ROBLE-ÁLAMO-PINO DE ALTURAS

CHANDLER S. ROBBINS

Patuxent Wildlife Research Center

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Location: Maryland; Howard Co.; Laurel; High Ridge County Park; 39°7'N, 76°52'W; Laurel Quadrangle, USGS. **Continuity:** Established 1989; 2 yr. **Size:** 15.0 ha. **Description of Plot:** See *J. Field Ornithol.* 61 (suppl.):50-51 (1990). **Weather:** Temperatures averaged close to normal with no prolonged hot spells. Excess precipitation in May kept the topsoil moist despite a deficiency in June. Above-normal rainfall returned in July. The intermittent stream kept flowing until the end of August. **Coverage:** 38 h; 9 visits (mornings); 20 April-8 July. **Census:** Tufted Titmouse, 10.0 territories (27/40 ha; FL); Ovenbird, 6.5 (17); Red-eyed Vireo, 5.0 (13); Carolina Wren, 4.0 (11; FL); Red-bellied Woodpecker, 3.5 (9; FL); Wood Thrush, 3.5; Northern Cardinal, 3.5; Eastern Wood-Pewee, 2.0; Blue Jay, 2.0 (FL); Hooded Warbler, 2.0; Downy Woodpecker, 1.5 (FL); Northern Flicker, 1.5 (1N, FL); White-breasted Nuthatch, 1.5; Rufous-sided Towhee, 1.5 (FL); Brown-headed Cowbird, 1.5; Mourning Dove, 1.0; Yellow-billed Cuckoo, 1.0; Hairy Woodpecker, 1.0; Acadian Flycatcher, 1.0; Great Crested Flycatcher, 1.0; American Crow, 1.0 (1N, FL); Carolina Chickadee, 1.0 (FL); Louisiana Waterthrush, 1.0; Kentucky Warbler, 1.0; Scarlet Tanager, 1.0 (FL); Red-shouldered Hawk, 0.5 (FL); American Robin, 0.5 (FL); Yellow-throated Vireo, 0.5; Pileated Woodpecker, +. **Total:** 29 species; 61 territories (163/40 ha). **Visitors:** Fish Crow, Northern Parula, Pine Warbler, Black-and-white Warbler, Common Grackle, Northern Oriole, House Finch, American Goldfinch. **Remarks:** This was part of a comparative study of nesting success of residents, temperate zone migrants, and neotropical migrants in small, isolated woodlots. This plot was sprayed with Dimilin for Gypsy Moth control on 9 May 1990. Oaks just outside the sprayed area were defoliated. There is no previous record of insect control here. The Acadian Flycatchers did not arrive on territory until 8 July, but were seen regularly through 28 August. **Acknowledgments:** I thank Jeffrey A. Bourne, Director, Howard County Department of Recreation and Parks, for permission to use High Ridge Park as a study site.

49. MIXED OAK-VIRGINIA PINE FOREST

BOSQUE MIXTO DE ROBLE-PINOS DE VIRGINIA

DEANNA DAWSON & BARBARA DOWELL

U.S. Fish & Wildlife Service

Patuxent Wildlife Research Center

Laurel, Maryland, 20708

Location: Maryland; Prince Georges Co.; Bowie; Tanglewood; 39°0'N, 76°47'W; Laurel & Lanham Quadrangles, USGS. **Continuity:** New. **Size:** 38.0 ha. **Description of Plot:** This site, owned by the City of Bowie, was formerly part of a tract of contiguous forest that exceeded 150 ha; adjacent forest was cleared in Autumn 1989 for residential development. A homesite and several small fields, formerly located on the property, have reverted to mixed stands of pine and deciduous trees. The rest of the study plot consists primarily

of mature upland forest dominated by White Oak. Two small streams flow along the E and W borders of the study plot and into the Newstop Branch, which separates the study plot from the development site. A quantitative vegetation survey following the method described by F.C. James and H.H. Shugart, Jr. (1970. *Aud. Field Notes* 24:727-736) yielded the following results: Trees, 8 cm diameter and over, based on seven 0.04-ha circular samples, 824/ha; total basal area 24.7 m²/ha. Species comprising 92% of the total number of trees [figures after each are trees/ha, relative density (%), relative dominance (%), and frequency (%): Virginia Pine 214, 26, 25, 57; White Oak 107, 13, 14, 43; River Birch 88, 11, 4, 29; Black Jack Oak 64, 8, 3, 14; Sweet Gum 61, 7, 10, 71; Red Maple 57, 7, 9, 57; dead trees 50, 6, 6, 57; Southern Red Oak 43, 5, 10, 71; Eastern Hophornbeam 39, 5, 2, 14; Black Gum 36, 4, 2, 71. Trees by diameter size class [figures after each are trees/ha, relative density (%), basal area in m²/ha, and relative dominance (%): S (sapling 3–8 cm dbh) 1236, -, 2.9, -; A (8–15 cm) 518, 63, 4.8, 20; B (15–23 cm) 136, 16, 3.8, 15; C (23–38 cm) 136, 16, 10.1, 41; D (38–53 cm) 36, 5, 6.0, 24. Density board readings (% of 10 x 10 cm squares more than 50% obscured by green vegetation from a distance of 11.35 m, n=28) using the method described by B.R. Noon (1981. *Techniques for sampling avian habitats*. Pp. 42-52, *In*, D.E. Capen (Ed.), *The use of multivariate statistics in studies of wildlife habitat*, U.S.D.A. *Forest Service Technical Report* RM-87.) yielded the following results: 0–0.3 m, 51%; 0.3–1 m, 23%; 1–2 m, 15%; 2–3 m, 26%. Foliage profile (% occurrence of green vegetation based on 140 vertical sightings) using the method described by D.W. Schemske and N. Brokaw (1981. *Treefalls and the distribution of understory birds in a tropical forest*. *Ecology* 62: 938-945.) yielded the following results: 0–0.5 m, 31%; 0.5–1 m, 5%; 1–1.5 m, 2%; 1.5–2 m, 2%; 2–2.5 m, 3%; 2.5–3 m, 1%; 3–4 m, 6%; 4–6 m, 41%; 6–8 m, 36%; 8–10 m, 31%; 10–15 m, 26%; 15–20 m, 21%; 20–25 m, 2%; 25–30 m, 1%. Shrub stems/ha, 9513; ground cover, 38%; canopy cover, 91% (21% coniferous); average canopy height, 18 m (range 8–25 m). **Edge:** Railroad tracks and a forested buffer of ca 50 m separate the study plot from residential areas to the E and N. Most of the land to the S and W of the plot has been cleared for residential development. **Topography and Elevation:** Minimum elevation 30 m, maximum 43 m. Plot slopes gradually down to Newstop Branch. **Weather:** Temperatures averaged close to normal. Rainfall in May was above average. **Coverage:** 65 h; 14 visits (mornings); 25 April to 20 June. **Census:** Red-eyed Vireo, 28.0 territories (29/40 ha); Northern Cardinal, 13.0 (14; 4N); Rufous-sided Towhee, 9.5 (10; FL); Tufted Titmouse, 9.0 (9; 1N); Blue-gray Gnatcatcher, 9.0; Ovenbird, 9.0 (1N); Kentucky Warbler, 9.0 (FL); Acadian Flycatcher, 8.0 (8; 3N); Hooded Warbler, 8.0 (3N); Scarlet Tanager, 8.0 (FL); Carolina Chickadee, 7.0 (7; 1N); Wood Thrush, 7.0 (2N); White-eyed Vireo, 6.0 (6; FL); Pine Warbler, 6.0; Red-bellied Woodpecker, 5.0 (5; 1N); Carolina Wren, 5.0 (FL); Downy Woodpecker, 4.0 (4; 1N); Black-and-white Warbler, 4.0 (FL); Eastern Wood-Pewee, 3.5 (4); Great Crested Flycatcher, 3.0 (3); Blue Jay, 3.0; White-breasted Nuthatch, 3.0; Gray Catbird, 3.0; Yellow-billed Cuckoo, 2.5; Indigo Bunting, 2.5; Hairy Woodpecker, 2.0; Northern Parula, 2.0; Common Yellowthroat, 2.0; Northern Flicker, 1.5; Red-shouldered Hawk, 1.0; Barred Owl, 1.0; Yellow-throated Vireo, 1.0; Worm-eating Warbler, 1.0 (FL); Louisiana Waterthrush, 1.0; Red-tailed Hawk, 0.5 (1N); Pileated Woodpecker, 0.5; Ruby-throated Hummingbird, +; American Crow, +; Common Grackle, +; Brown-headed Cowbird, +. **Total:** 40 species; 188.5 territories (198/40 ha). **Visitors:** Eastern Phoebe, American Robin, Eastern Bluebird, Orchard Oriole, Blue Grosbeak, House Finch, American Goldfinch. **Remarks:** Each of the three Hooded Warbler nests contained one or more cowbird eggs. Parts of the forest were sprayed in early May with BT to control Gypsy Moth caterpillars. Oaks in the W part of the study plot were partially defoliated. **Acknowledgments:** We thank Chandler Robbins for assistance in the collection of vegetation data.

50. TAMARACK BOG AND HARDWOOD

PANTANO DE TAMARAK-MADERAS DURAS

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Location: Michigan; Berrien Co.; Stevensville; Grand Mere State Park; 42°0'N, 86°33'W; Bridgman Quadrangle, USGS. **Continuity:** Established 1976, 15 yr. **Size:** 8.5 ha. **Description of Plot:** See *Am. Birds* 30:1049 (1976). **Weather:** Mean temperature 14.7°C (range 11–20°C). **Coverage:** 8 h; 8 visits (mornings); 2, 3, 9, 10, 16, 17, 23, 24 June. **Census:** Veery, 3.0 territories (14/40 ha); Red-eyed Vireo, 3.0; Eastern Wood-Pewee, 2.0 (9); Blue Jay, 2.0; Canada Warbler, 2.0; Black-throated Green Warbler, 1.0; Hairy Woodpecker, 1.0; Great Crested Flycatcher, 1.0 (5); Black-capped Chickadee, 1.0; Tufted Titmouse, 1.0; Wood Thrush, 1.0; American Robin, 1.0; Ovenbird, 1.0; Scarlet Tanager, 1.0; Northern Cardinal, 1.0. **Total:** 15 species; 22 territories (104/40 ha).

51. YOUNG ASPEN FOREST WITH SCATTERED MATURE PINES

BOSQUE JOVEN DE ALAMO CON ALGUNOS PINOS MADUROS DISPERSOS

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Location: Minnesota; Clearwater Co.; Itasca State Park; Sewage Lagoon; 47°13'N, 95°10'W; Lake Itasca Quadrangle, USGS. **Continuity:** New. **Size:** 9.0 ha. **Description of Plot:** Level upland habitat with no standing or running water. Most of plot is thickly forested with young aspen that have grown in since 1972, when the area was cleared and burned over as part of a pine regeneration program. Large (24 m) Red Pine and White Pine dominate the NE quarter of the plot where the Pine Warblers, nuthatches, and woodpeckers occur. A quantitative vegetation survey following the method described by F.C. James and H.H. Shugart, Jr. (1970. *Aud. Field Notes* 24:727-736) yielded the following results: Trees, 7.6 cm diameter and over, based on 10 0.04-ha circular samples, 813/ha; total basal area 13.4 m²/ha. Species comprising 90% of the total number of trees [figures after each are trees/ha, relative density (%), relative dominance (%), and frequency (%): aspen sp. 729, 89.7, 52.4, 90; White Oak 39, 4.7, 8.6, 40; dead 17, 2.1, 14.6, 40; Black Oak 12, 1.5, 0.9, 10; White Pine 5, 0.6, 16.5, 10; Red Pine 2, 0.3, 5.3, 10; Trees by diameter size class [figures after each are trees/ha, relative density (%), basal area in m²/ha, and relative dominance (%): A (7.6–15.2 cm) 770, 94.8, 7.2, 53.6; B (15.2–22.9 cm) 7, 0.9, 0.2, 1.5; C (22.9–38.1 cm) 22, 2.7, 1.2, 9.3; F (68.6–83.8 cm) 7, 0.9, 2.1, 16; G (83.8–101.6 cm) 2, 0.3, 1.1, 8.4; H (> 101.6 cm) 2, 0.6, 1.5, 11.2. Shrub stems/ha, 19883; ground cover, 76%; canopy cover, 72%; average canopy height, 9.6 m (range 7.6–12.2 m). **Edge:** Similar forest type to the W, N, E. To the S, a sewage lagoon and small bog occupy low ground about 100 m from the SE corner of the plot to about 25 m from the SW corner. **Topography and Elevation:** Minimum elevation 451 m, maximum 457 m. **Weather:** Mean temperature 18°C (range 7–24°C). **Coverage:** 32 h; 8 visits (5 mornings, 3 evenings); 25 June; 1, 4, 6, 7, 9, 10, 12 July. **Census:** Chestnut-sided Warbler, 24.5 territories (109/40 ha); Red-eyed Vireo, 14.5 (64); Pine Warbler, 8.5 (38); Ovenbird, 8.5; American Redstart, 6.0 (27); Mourning Warbler, 6.0; Chipping Sparrow, 5.0 (22); Veery, 4.0 (18); Golden-winged Warbler, 4.0; Gray Catbird, 3.5 (16); Ruffed Grouse, 3.0 (13); Nashville Warbler, 3.0; Rose-breasted Grosbeak, 2.0; Indigo Bunting, 2.0; Downy Woodpecker, 1.5; Least Flycatcher, 1.5; Great Crested Flycatcher, 1.5; Common Yellowthroat, 1.5; Yellow-bellied Sapsucker, 1.0; Hairy Woodpecker, 1.0. **Total:** 20 species; 102.5 territories (456/40 ha). **Visitors:** Broad-winged Hawk, Black-billed Cuckoo, Barred Owl, Ruby-throated Hummingbird, Northern Flicker, Pileated Woodpecker, Eastern Wood-Pewee, Blue Jay, American Crow, Black-capped Chickadee, White-breasted Nuthatch, Red-breasted Nuthatch, American Robin, Yellow-rumped,

Northern Parula, Brown-headed Cowbird, Scarlet Tanager, American Goldfinch, Song Sparrow. **Remarks:** Chickadees and nuthatches may have bred on the plot earlier in the yr. **Other Observers:** Michael McDonald, Shannon Swanson, Naoko Seki, David E. Blockstein, Rachel Budelsky.

52. UPLAND MIXED PINE-SPRUCE-HARDWOOD PLANTATION

PLANTACIÓN MIXTAS DE PINO-ABETO MADERAS DURAS DE ALTURAS

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Location: New York; Allegany Co.; Alfred; Phillips Creek State Reforestation Tract; 42°8'N, 77°45'W; Andover Quadrangle, USGS. **Continuity:** Established 1974; 17 yr. **Size:** 16.6 ha. **Description of Plot:** See *Amer. Birds* 28:699-700 (1974). **Weather:** Mean temperature 17.3°C (range 8-28°C). Data collected from Alfred Cooperative Weather Station indicated that the average daily temperature in May was 2°C warmer than average, and 4°C warmer in June. Precipitation in May was above average, but was well below average during June. A cold, wet spell from 14 to 23 May may have affected breeding success in some species. **Coverage:** 18.3 h; 13 visits (6 mornings, 4 afternoons, 3 evenings); 21, 30 April; 12, 19, 27 May; 3, 10, 17, 24 June; 1, 8 July; 1 August. **Census:** Black-throated Green Warbler, 9.0 territories (22/40 ha); Magnolia Warbler, 9.0; Blackburnian Warbler, 9.0; Golden-crowned Kinglet, 8.0 (19); Dark-eyed Junco, 8.0; Red-breasted Nuthatch, 3.0 (7); American Robin, 3.0; Blue Jay, 2.5; Black-capped Chickadee, 2.5 (1N); Brown Creeper, 2.0 (1N); Wood Thrush, 2.0 (1N); Solitary Vireo, 2.0; Yellow-rumped Warbler, 2.0; Common Yellowthroat, 2.0; Chipping Sparrow, 1.5; Veery, 1.0; Chestnut-sided Warbler, 1.0; Ovenbird, 1.0; Mourning Warbler, 1.0; Indigo Bunting, 1.0; Song Sparrow, 1.0; Brown-headed Cowbird, 1.0; Purple Finch, 1.0; White-winged Crossbill, 1.0; Broad-winged Hawk, 0.5; Red-shouldered Hawk, +; Hermit Thrush, +; Scarlet Tanager, +; Rose-breasted Grosbeak, +. **Total:** 29 species; 75 territories (181/40 ha). **Visitors:** Ruffed Grouse, Wild Turkey, Mourning Dove, Yellow-bellied Sapsucker, Pileated Woodpecker, American Crow, Common Raven, Canada Warbler. **Remarks:** Red-shouldered Hawk, Hermit Thrush, and White-winged Crossbill were new to the study site. Declines continued for Black-throated Green Warbler, Blackburnian Warbler, Blue Jay, Black-capped Chickadee and Ovenbird. Magnolia Warbler continued to increase. **Acknowledgments:** Appreciation to Rick Walker for weather data.

53. MATURE HEMLOCK-HARDWOOD FOREST

BOSQUE DE MADERAS DURAS-Y PICEA MADURA

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Location: Ohio; Hocking Co.; Gibisonville; Hood Hollow Plot; 39°30'N, 82°34'W; South Bloomingville Quadrangle, USGS. **Continuity:** New. **Size:** 8.5 ha. **Description of Plot:** The entire plot is located in a narrow ravine bordered on either side by vertical sandstone cliffs ca 10 m high. The cliffs provide cooler and moister conditions than much of the surrounding forest. The canopy is dominated by mature, often pure stands of Eastern Hemlock, interspersed with Tulip-tree and American Beech. The forest type is more typical of higher elevation Appalachian or northern forests than that found in the Allegheny Plateau of SE Ohio. The understory and ground cover in the hemlock stand is poorly developed. By contrast, it is well developed under the deciduous canopy where Maple-leaf Viburnum,

Witch Hazel, Spice Bush, and canopy species saplings occur. Canopy openings are not uncommon, particularly along the cliff bases. Those areas contain heavy growth of *Rubus* sp., Red-berried Elder, and Summer Grape. A quantitative vegetation survey following the method described by F.C. James and H.H. Shugart, Jr. (1970. *Aud. Field Notes* 24:727-736) yielded the following results: Trees, 8 cm diameter and over, based on five 0.04-ha circular samples, 430/ha; total basal area 19.7 m²/ha. Species comprising 90% of the total number of trees [figures after each are trees/ha, relative density (%), relative dominance (%), and frequency (%): Eastern Hemlock 168, 39, 36, 100; Tuliptree 84, 20, 24, 100; American Beech 39, 9, 14, 60; Sugar Maple 39, 9, 6, 80; Yellow Birch 35, 8, 7, 80; Cherry Birch 39, 9, 7, 60; Red Oak 10, 2, 5, 20. Trees by diameter size class [figures after each are trees/ha, relative density (%), basal area in m²/ha, and relative dominance (%): A (7.6–15.2 cm) 94, 22, 87.0, 2; B (15.2–22.9 cm) 74, 17, 2.1, 5; C (22.9–38.1 cm) 133, 31, 9.9, 25; D (38.1–53.3 cm) 94, 22, 15.7, 40; E (53.3–68.6 cm) 30, 7, 8.6, 22; F (68.6–83.8 cm) 5, 1, 2.2, 6. Shrub stems/ha, 9460; ground cover, 67%; canopy cover, 73%; average canopy height, 27.8 m (range 18–36 m). **Edge:** Same forest type to the N and S (hemlock ravine); to the E and W the plot is bounded by massive sandstone outcrops 3–15 m high. The forest type above the cliffs is mature oak-hickory. **Topography and Elevation:** A very small portion of level floodplain along a small stream which transects the plot lengthwise. From the stream to the base of the cliffs, the terrain consists of steep, rugged talus slopes. **Weather:** Mean temperature 15.5°C (range 10–24°C). Temperatures slightly below average, and rainfall slightly above average for the census period. **Coverage:** 29.5 h; 8 visits (morning); 20, 25, 28 May; 4, 11, 23, 30 June; 16 July. **Census:** Acadian Flycatcher, 21.0 territories (99/40 ha); Red-eyed Vireo, 9.0 (42); Ovenbird, 8.0 (38); Wood Thrush, 6.5 (31; 1N); Worm-eating Warbler, 5.5 (26); Black-and-white Warbler, 5.0 (24); Eastern Phoebe, 4.0 (19; 2N); Louisiana Waterthrush, 4.0 (1N); Scarlet Tanager, 3.5 (16); Brown-headed Cowbird, 3.0 (14); Hooded Warbler, 3.0; Black-throated Green Warbler, 2.5; Tufted Titmouse, 2.0; Hermit Thrush, 2.0; Northern Parula, 2.0; Kentucky Warbler, 1.5; Ruby-throated Hummingbird, 1.0; Ruffed Grouse, 1.0; Hairy Woodpecker, 1.0 (N); Pileated Woodpecker, 1.0; Blue Jay, 1.0; Carolina Chickadee, 1.0; Carolina Wren, 1.0; Northern Cardinal, 1.0; Cooper's Hawk, +; Wild Turkey, +; Red-bellied Woodpecker, +; Northern Rough-winged Swallow, +; Solitary Vireo, +; Indigo Bunting, +. **Total:** 30 species; 90.5 territories (426/40 ha). **Visitors:** Turkey Vulture, Red-tailed Hawk, White-breasted Nuthatch, Veery, Yellow-throated Vireo. **Acknowledgments:** Crane Hollow, Inc., and Bill and Jane Ann Ellis.

54. MATURE RED PINE FOREST WITH DECIDUOUS UNDERSTORY

BOSQUE MADURO DE PINO ROJO CON SOTOBOSQUE DECIDUO

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Location: Minnesota; Clearwater Co.; Itasca State Park Wilderness Sanctuary; 47°13'N, 95°12'W; Itasca State Park Quadrangle, USGS. **Continuity:** New. **Size:** 10.0 ha. **Description of Plot:** Part of a state wilderness sanctuary, the mature forest is composed of Red Pine and White Pine that form a 20–25 m canopy. Maple and Quaking Aspen form a fairly dense sub-canopy up to 10 m. The dense understory indicates a succession to deciduous forest, but White Pine seedlings are numerous, particularly along deer trails. Fairly heterogeneous understory opens up on the S edge of the plot where several clearings occur. A 1 ha sedge meadow is near the center. Fire has been absent in this area since the early part of this century. A quantitative vegetation survey following the method described by F.C. James and H.H. Shugart, Jr. (1970. *Aud. Field Notes* 24:727-736) yielded the following results: Trees, 7.6 cm diameter and over, based on 10 0.04-ha circular samples, 642/ha; total basal area 60.9 m²/ha. Species comprising 90% of the total number of trees [figures

after each are trees/ha, relative density (%), relative dominance (%), and frequency (%): Red Pine 138, 21.5, 58.0, 70; dead 118, 18.5, 13.8, 90; maple sp. 101, 15.8, 5.6, 60; Ironwood 94, 14.6, 2.2, 50; Balsam Fir 79, 12.3, 5.5, 70; birch sp. 37, 5.8, 1.9, 50; White Pine 32, 5.0, 10.7, 40. Trees by diameter size class [figures after each are trees/ha, relative density (%), basal area in m²/ha, and relative dominance (%): A (7.6–15.2 cm) 177, 27.7, 1.6, 2.7; B (15.2–22.9 cm) 156, 24.2, 4.3, 7.1; C (22.9–38.1 cm) 116, 18.1, 6.5, 10.6; D (38.1–53.3 cm) 47, 7.3, 4.4, 7.2; E (53.3–68.6 cm) 62, 9.6, 10.3, 16.9; F (68.6–83.8 cm) 42, 6.5, 12.0, 19.9; G (83.8–101.6 cm) 32, 5.0, 14.6, 24.0; H (> 101.6 cm) 10, 1.6, 7.0, 11.5. Shrub stems/ha, 3057; ground cover, 60%; canopy cover, 73%; average canopy height, 21 m. **Edge:** Bordered on W, N, and E by similar forest. **Topography and Elevation:** Basically flat with a few scattered inclines. Elevation 449 m. **Weather:** Mean temperature 9°C (range 7–27°C). **Coverage:** 97 h; 8 visits (7 mornings, 1 evening); 22, 26 June; 1, 3, 6, 8, 9, 10 July. **Census:** Ovenbird, 26.5 territories (106/40 ha); Pine Warbler, 21.5 (86); Black-throated Green Warbler, 12.5 (50); Red-eyed Vireo, 9.5 (38); Hermit Thrush, 7.5 (30); Chestnut-sided Warbler, 5.0 (20); Common Yellowthroat, 5.0; Canada Warbler, 4.0 (16); Eastern Wood-Pewee, 3.0 (12); Great Crested Flycatcher, 3.0; Red-breasted Nuthatch, 3.0; Hairy Woodpecker, 2.5; Scarlet Tanager, 2.5; Ruffed Grouse, 2.0; Downy Woodpecker, 2.0; Mourning Warbler, 1.5; Black-backed Woodpecker, 1.0; Pileated Woodpecker, 1.0; Black-capped Chickadee, 1.0; Brown Creeper, 1.0; Northern Parula, 1.0; Pine Siskin, 1.0; Winter Wren, 0.5; Broad-winged Hawk, +. **Total:** 24 species; 117 territories (470/40 ha). **Visitors:** Blue Jay, American Robin, Black-billed Cuckoo, Yellow-bellied Sapsucker, Gray Jay, Black-and-white Warbler, Song Sparrow, Purple Finch. **Remarks:** Common Yellowthroats were found in the sedge meadow and bog, and Mourning Warblers were restricted to the thick, concentrated deciduous growth. **Other Observers:** David Blockstein. **Acknowledgments:** Anne Braunschwig.

55. MIXED OAK–PINE FOREST I

BOSQUE MIXTO DE ROBLE–PINO I

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R.R. 1, U.S. Route 11

Berwick, Pennsylvania 18603

Location: Pennsylvania; Luzerne Co.; Wapwallopen; Council Cup Forest; 41°4'N, 76°7'W; Sybertsville Quadrangle, USGS. **Continuity:** Established 1977; 14 yr. **Size:** 6.0 ha. **Description of Plot:** See *Am. Birds* 33:70 (1979). Since 1977 the forest has matured, but the major components remain similar. Dogwoods have declined as a result of leaf anthracnose dieback. **Weather:** Mean temperature 15°C (range 7–25°C). Precipitation during each month was above average. **Coverage:** 24.5 h; 9 visits (mornings); 27 April; 3, 18, 25 May; 6, 12, 20 June; 3, 19 July. **Census:** Black-capped Chickadee, 7.0 territories (47/40 ha); Red-eyed Vireo, 6.5 (43); Ovenbird, 6.0 (40); Eastern Wood-Pewee, 5.0 (33); Brown-headed Cowbird, 5.0; Tufted Titmouse, 4.5 (30); Scarlet Tanager, 4.0 (27); Blue Jay, 3.0 (20); Cedar Waxwing, 3.0; Wood Thrush, 2.5; Downy Woodpecker, 2.0; American Robin, 2.0; Rose-breasted Grosbeak, 2.0; Chipping Sparrow, 2.0; White-breasted Nuthatch, 1.5; Northern Flicker, 1.0; Great Crested Flycatcher, 1.0; Brown Creeper, 1.0; Northern Cardinal, 1.0; Ruffed Grouse, 0.5; Hairy Woodpecker, 0.5; Pileated Woodpecker, 0.5; American Crow, 0.5; Red-tailed Hawk, +; Yellow-billed Cuckoo, +; Black-and-white Warbler, +; Indigo Bunting, +; Northern Oriole, +. **Total:** 28 species; 62 territories (413/40 ha). **Visitors:** Ruby-throated Hummingbird, Mourning Dove, Eastern Kingbird, Blue-gray Gnatcatcher, Common Grackle, American Goldfinch. **Remarks:** Gypsy Moth defoliation was severe in sections of the plot where oaks dominate. Many trees suffered complete defoliation, but most were partially refoliated by 19 July. Many species were observed feeding on Gypsy Moth caterpillars, especially during early and mid-May. A Blue Jay was observed consuming an Ovenbird fledgling on 12 June. A raccoon was actively searching tree cavities and leaf litter on 6 June. **Acknowledgments:** Thanks to Pennsylvania Power and Light Company for support of this project.

56. MIXED OAK-PINE FOREST II**BOSQUE MIXTO DE ROBLE-PINO II****DOUGLAS A. GROSS***Ecology III, Susquehanna Biological Laboratory
R.R. 1, U.S. Route 11
Berwick, Pennsylvania 18603*

Location: Pennsylvania; Luzerne Co.; Beach Haven; TR419 Forest, Pennsylvania Power and Light Co.; 41°5'N, 76°8'W; Berwick Quadrangle, USGS. **Continuity:** Established 1977; 14 yr. **Size:** 11.05 ha. **Description of Plot:** See *Am. Birds* 33:70 (1979). Since 1979 the forest has matured, but the major components remain similar. Dogwoods have declined as a result of leaf anthracnose dieback. **Weather:** Mean temperature 16°C (range 6–26°C). **Coverage:** 28 h; 9 visits (mornings); 2, 15, 22, 31 May; 8, 18, 27 June; 17, 27 July. **Census:** Red-eyed Vireo, 15.5 territories (56/40 ha); American Redstart, 10.0 (36); Tufted Titmouse, 8.0 (29); Eastern Wood-Pewee, 7.5 (27); Cedar Waxwing, 7.0 (25); Scarlet Tanager, 7.0; Ovenbird, 6.0 (22); Wood Thrush, 5.5 (20); Black-capped Chickadee, 5.0 (18); Northern Cardinal, 5.0; Indigo Bunting, 4.0 (14); Blue-gray Gnatcatcher, 3.5 (13); Chipping Sparrow, 3.0 (11); Brown-headed Cowbird, 3.0; Downy Woodpecker, 2.0; Hairy Woodpecker, 2.0; Worm-eating Warbler, 2.0; Hooded Warbler, 2.0; Rose-breasted Grosbeak, 2.0; Blue Jay, 1.5; Gray Catbird, 1.5; Yellow-throated Vireo, 1.5; Ruby-throated Hummingbird, 1.0; White-breasted Nuthatch, 1.0; American Robin, 1.0; Blackburnian Warbler, 1.0; Great Crested Flycatcher, 0.5; Eastern Kingbird, 0.5; Carolina Wren, 0.5; Chestnut-sided Warbler, 0.5; Northern Oriole, 0.5; Red-tailed Hawk, +; Wild Turkey, +; Northern Flicker, +; Pileated Woodpecker, +; American Crow, +; Common Yellowthroat, +. **Total:** 37 species; 111 territories (402/40 ha). **Visitors:** Turkey Vulture, Sharp-shinned Hawk, Yellow-billed Cuckoo, Black-billed Cuckoo, Least Flycatcher, Yellow Warbler, Rufous-sided Towhee, Field Sparrow, Common Grackle, American Goldfinch. **Remarks:** Defoliation by Gypsy Moths opened up sections of the plot and made them attractive to edge species such as Indigo Bunting. Most defoliation occurred where oaks dominate. Most trees refoliated by 17 July. **Acknowledgments:** Thanks to Pennsylvania Power and Light Company for support of this project.

57. HEMLOCK-WHITE PINE-MIXED HARDWOOD FOREST**BOSQUE MIXTO DE MADERAS DURAS-PICEA-PINO BLANCO****KENNETH R. HINKLE***Route 2, Box 32J
Bridgewater, Virginia 22812*

Location: Virginia; Rockingham Co.; Rawley Springs; Keparth Run; 38°33'N, 79°4'W; Rawley Springs Quadrangle, USGS. **Continuity:** Established 1979, 5 yr. **Size:** 6.1 ha. **Description of Plot:** See *Am. Birds* 34:58 (1980). **Weather:** Mean temperature 16.9°C (range 5–24°C). **Coverage:** 12.3 h; 9 visits (8 mornings, 1 evening); 14, 19, 24 May; 1, 7, 9, 13, 16, 21 June. **Census:** Acadian Flycatcher, 8.0 territories (52/40 ha); Red-eyed Vireo, 7.0 (46); Louisiana Waterthrush, 3.0 (20); Scarlet Tanager, 3.0; Black-throated Green Warbler, 2.0; Wood Thrush, 2.0; Ovenbird, 2.0; Tufted Titmouse, 1.5; Northern Parula, 1.5; Solitary Vireo, 1.0; Worm-eating Warbler, 1.0; Eastern Wood-Pewee, 0.5. **Total:** 12 species; 32.5 territories (213/40 ha). **Visitors:** Black-throated Blue Warbler, Blue Jay, Carolina Chickadee, Brown-headed Cowbird, Downy Woodpecker, American Goldfinch, Mourning Dove, Eastern Phoebe, Pileated Woodpecker, American Redstart, Rose-breasted Grosbeak, Tennessee Warbler, Yellow-billed Cuckoo, Common Raven. **Remarks:** Numbers down somewhat from 1989; however, generally unsettled weather throughout much of period may have reduced numbers of birds detected. Most notable declines observed for Acadian Flycatcher, Northern Parula, and Wood Thrush. The Northern Parula was not heard until

7 June, which was 2–3 wk later than in previous yr. **Acknowledgments:** Thanks to Rod Bodkin for help in laying out plot and identification of some species.

58. SUBURBAN CEMETERY

CEMENTARIO SUBURBANO

THOMAS A. IMHOF

1036 Pike Road

Birmingham, Alabama 35218

Location: Alabama; Jefferson Co.; Birmingham; Oakland Cemetery; 33°29'N, 86°54'W; Bessemer Quadrangle, USGS. **Continuity:** Established 1978, 11 yr. **Size:** 15.0 ha. **Description of Plot:** See *Am. Birds* 34:18-19 (1980). Far fewer evergreen shrubs, fewer mature trees due to wind and cutting; denser privet-laurel-cherry thicket, and thick regrowth under power line right-of-way on borders between cemetery and residence lots. **Weather:** Mean temperature 17.2°C (range 0–25°C). **Coverage:** 21 h; 21 visits (20 mornings, 1 afternoon); 4, 10, 18, 29 March; 5, 10, 19, 25 April; 2, 5, 8, 15, 22, 27 May; 6, 15, 21, 30 June; 11, 21, 28 July. **Census:** American Robin, 10.0 territories (27/40 ha; N, FL); House Finch, 10.0 (N, FL); House Sparrow, 10.0 (N, FL); Northern Mockingbird, 8.0 (21; N, FL); Northern Cardinal, 7.0 (19; N, FL); European Starling, 6.0 (16; N, FL); Blue Jay, 5.0 (13; FL); Mourning Dove, 4.0 (11; N, FL); Rufous-sided Towhee, 3.0 (8; N, FL); Brown-headed Cowbird, 2.0; Northern Flicker, 2.0; Carolina Wren, 2.0; Brown Thrasher, 2.0; Red-bellied Woodpecker, 1.0; Downy Woodpecker, 1.0; Eastern Wood-Pewee, 1.0; Great Crested Flycatcher, 1.0; American Crow, 1.0 (1N, FL); Carolina Chickadee, 1.0; Tufted Titmouse, 1.0; White-eyed Vireo, 1.0. **Total:** 21 species; 79 territories (211/40 ha). **Visitors:** American Kestrel, Killdeer, Rock Dove, Common Nighthawk, Chimney Swift, Red-headed Woodpecker, Barn Swallow, White-breasted Nuthatch, Yellow-throated Vireo, Red-winged Blackbird, Common Grackle, all known to breed in immediate vicinity. **Remarks:** Recorded on the same tract on this year's WBPS are 18 of the breeding species and seven of the visitors (25 yr round residents).

59. MATURE UPPER MIXED-CONIFEROUS FOREST-MONTANE CHAPARRAL

BOSQUE MADURO MIXTO DE CONÍFEROS Y CHAPARRAL MONTANO

DANIEL W. NELSON, COLEEN PIDGEON & JENNIFER G. TURNER

Pacific Southwest Experiment Station

2081 E. Sierra Avenue

Fresno, California 93710

Location: California; Fresno Co.; Shaver Lake; 37°6'N, 119°4'W; Huntington Lake SW Quadrangle, USGS. **Continuity:** Established 1985; 6 yr. **Size:** 42.2 ha. **Description of Plot:** See 1985 BBC. **Weather:** Mean temperature 3.3°C (range -3–6°C). **Coverage:** 96 h; 12 visits (mornings); 21, 22, 23, 30, 31 May; 1, 7, 8, 11, 15, 18, 19 June. **Census:** Golden-crowned Kinglet, 44.5 territories (42/40 ha; 7N); Hermit Warbler, 32.5 (31; 2N); Fox Sparrow, 26.0 (25); Dark-eyed Junco, 14.0 (13; 11N); Dusky Flycatcher, 13.0 (12; 3N); Western Tanager, 12.0 (11; 2N); Red-breasted Nuthatch, 11.0 (10; 7N); Yellow-rumped Warbler, 10.0 (10); MacGillivray's Warbler, 9.5 (9); Warbling Vireo, 9.0 (8; 6N); Nashville Warbler, 9.0 (2N); Brown Creeper, 8.5 (8; 6N); Solitary Vireo, 8.5 (1N); Mountain Chickadee, 8.0 (8; 4N); Hammond's Flycatcher, 7.0 (7; 2N); Purple Finch, 5.0 (5); Mountain Quail, 4.5 (4; 1N); White-headed Woodpecker, 2.5 (3N); Steller's Jay, 2.5; Hermit Thrush, 2.5 (1N); Western Wood-Pewee, 2.0 (3N); Western Flycatcher, 1.5; American Robin, 1.5 (1N); Rufous-sided Towhee, 1.5 (2N); Band-tailed Pigeon, 1.0; Red-breasted Sapsucker, 1.0 (3N); Black-headed Grosbeak, 1.0; Evening Grosbeak, 1.0; Northern Pygmy-Owl, 0.5; Hairy Woodpecker, 0.5; Northern Flicker, 0.5 (1N); Pileated Woodpecker, 0.5; Common

Raven, 0.5; Townsend's Solitaire, 0.5; Green-tailed Towhee, 0.5; Chipping Sparrow, 0.5; Lincoln's Sparrow, 0.5; Brown-headed Cowbird, 0.5. **Total:** 38 species; 255 territories (242/40 ha). **Visitors:** Sharp-shinned Hawk, Northern Goshawk, White-throated Swift, Anna's Hummingbird, Calliope Hummingbird, Olive-sided Flycatcher, Clark's Nutcracker, Winter Wren, Western Bluebird, Lazuli Bunting, Pine Siskin, Lesser Goldfinch, Red Crossbill. **Remarks:** All boundary territories were computed as 0.5. **Acknowledgments:** This effort is part of a study of bird monitoring techniques being conducted by Dr. Jared Verner, USDA Forest Service.

60. MIXED HABITAT

HÁBITAT MIXTO

MIKE DUDEK

*Miles Wildlife Sanctuary
95 West Cornwall Road
Sharon, Connecticut 06069*

Location: Connecticut; Litchfield Co.; Sharon; Miles Wildlife Sanctuary; 41°53'N, 73°24'W; Sharon Quadrangle, USGS. **Continuity:** Established 1986; 5 yr. **Size:** 15.0 ha. **Description of Plot:** See *J. Field Ornithol.* 60 (suppl.)66-67 (1989). **Weather:** Mean temperature 14.2°C (range 4–27°C). **Coverage:** 34.7 h; 12 visits (9 mornings, 3 evenings); 1, 3, 5, 7, 11, 13, 15, 20, 22, 23, 26, 29 June. **Census:** Gray Catbird, 29.0 territories (77/40 ha); Yellow Warbler, 19.0 (51); Chestnut-sided Warbler, 15.0 (40); Red-winged Blackbird, 14.0 (37); Common Yellowthroat, 13.5 (36); American Robin, 13.0 (35); American Redstart, 13.0; Song Sparrow, 13.0; Veery, 12.0 (32); Cedar Waxwing, 8.0 (21); Red-eyed Vireo, 7.0 (19); Northern Oriole, 7.0; Eastern Phoebe, 6.5 (17); Black-capped Chickadee, 6.0 (16); Least Flycatcher, 6.0; Tree Swallow, 6.0; Great Crested Flycatcher, 5.0 (13); Barn Swallow, 4.0 (11); House Finch, 4.0; Wood Duck, 3.0 (8); Wood Thrush, 3.0; Black-and-white Warbler, 3.0; Rose-breasted Grosbeak, 3.0; Rufous-sided Towhee, 3.0; Chipping Sparrow, 3.0; Swamp Sparrow, 3.0; Brown-headed Cowbird, 3.0; American Goldfinch, 3.0; Mourning Dove, 2.0; Downy Woodpecker, 2.0; Eastern Kingbird, 2.0; Yellow-throated Vireo, 2.0; Blue-winged Warbler, 2.0; Yellow-rumped Warbler, 2.0; Ovenbird, 2.0; Common Grackle, 2.0; Brewster's Warbler, 1.0; Canada Goose, 1.0; Mallard, 1.0; Hooded Merganser, 1.0; Ruffed Grouse, 1.0; American Woodcock, 1.0; Yellow-billed Cuckoo, 1.0; Whip-poor-will, 1.0; Chimney Swift, 1.0; Ruby-throated Hummingbird, 1.0; Red-bellied Woodpecker, 1.0; Yellow-bellied Sapsucker, 1.0; Blue Jay, 1.0; Eastern Bluebird, 1.0; Scarlet Tanager, 1.0; Northern Cardinal, 1.0; Purple Finch, 1.0. **Total:** 53 species; 261 territories (696/40 ha). **Visitors:** American Crow, Belted Kingfisher, Black-billed Cuckoo, Field Sparrow, Great Blue Heron, Hairy Woodpecker, Northern Flicker, Northern Harrier, Tufted Titmouse, Turkey Vulture, Warbling Vireo, White-breasted Nuthatch.

61. TRANSITION FOREST AND THICKET

TRANSICIÓN DE BOSQUE-MATORRAL

ROBERT A. ASKINS & WENDY R. DREYER

*Department of Zoology
Connecticut College
New London, Connecticut 06320*

Location: Connecticut; New London Co.; New London; Bolleswood Natural Area, Connecticut College Arboretum; 41°22'N, 72°8'W; Uncasville Quadrangle, USGS. **Continuity:** Established 1953; 20 yr. **Size:** 6.5 ha. **Description of Plot:** See *Am. Birds* 37:73-74 (1983). **Weather:** Mean temperature 12.2°C (range 7–18°C). May and June were exceptionally cool, rainy, and foggy. **Coverage:** 9.6 h; 10 visits (mornings); 15, 19, 27 May; 2, 12, 16, 21, 23 June; 3, 8 July. **Census:** Gray Catbird, 5.0 territories (31/40 ha); Red-eyed Vireo,

4.0 (25); White-eyed Vireo, 2.5; Blue-winged Warbler, 2.5; Chestnut-sided Warbler, 2.0; Northern Cardinal, 2.0; Blue Jay, 1.5; Carolina Wren, 1.5; Wood Thrush, 1.5; White-breasted Nuthatch, 1.0; Common Yellowthroat, 1.0; Red-bellied Woodpecker, 0.5; Black-capped Chickadee, 0.5; House Wren, 0.5; Hooded Warbler, 0.5; Rufous-sided Towhee, 0.5. **Total:** 16 species; 27 territories (166/40 ha). **Visitors:** Broad-winged Hawk, Ruby-throated Hummingbird, Downy Woodpecker, Hairy Woodpecker, Eastern Wood-Pewee, Great Crested Flycatcher, American Crow, Brown-headed Cowbird, Tufted Titmouse, Veery, American Robin, Northern Mockingbird, Cedar Waxwing, Song Sparrow. **Remarks:** Results of this BBC, which was initiated in 1953, have been analyzed in Askins, R.A. 1990. *Birds of the Connecticut College Arboretum: Population Changes over Forty Years*. Connecticut College Arboretum 31:1-43. **Other Observers:** Margaret Philbrick.

62. DISTURBED DECIDUOUS FOREST

BOSQUE DECIDUO ALTERADO

ROGER L. BOYD

Biology Department

Baker University

Baldwin City, Kansas 66006

Location: Kansas; Douglas Co.; Baldwin City; Ivan Boyd Woods; 38°48'N, 97°10'W; Baldwin City Quadrangle, USGS. **Continuity:** New. **Size:** 16.2 ha. **Description of Plot:** See *J. Field Ornithol.* 60 (suppl.):15-16 (1989). **Weather:** Mean temperature 16°C (range 10–12°C). Precipitation during both May and June was above average. **Coverage:** 43 h; 10 visits (8 mornings, 2 afternoons); 21, 22, 23, 24, 25, 27 May; 5, 7 June. **Census:** Northern Cardinal, 6.0 territories (15/40 ha; 2N); Great Crested Flycatcher, 4.0 (10); Tufted Titmouse, 4.0; Kentucky Warbler, 4.0 (1N); Black-capped Chickadee, 3.0 (7); Yellow-billed Cuckoo, 2.0; Red-bellied Woodpecker, 2.0 (1N); Blue-gray Gnatcatcher, 2.0; American Woodcock, 1.0; Whip-poor-will, 1.0 (1N); Downy Woodpecker, 1.0; Eastern Wood-Pewee, 1.0; Blue Jay, 1.0; White-breasted Nuthatch, 1.0 (1N); Wood Thrush, 1.0; Summer Tanager, 1.0; Indigo Bunting, 1.0; Field Sparrow, 1.0; Ruby-throated Hummingbird, 0.5; Hairy Woodpecker, 0.5 (1N); Ovenbird, 0.5; Rufous-sided Towhee, 0.5; Northern Oriole, 0.5. **Total:** 23 species; 39.5 territories (98/40 ha). **Visitors:** Red-tailed Hawk, Wild Turkey, Northern Bobwhite, Mourning Dove, Northern Flicker, American Crow, House Wren, Eastern Bluebird, Brown Thrasher, Red-eyed Vireo, Northern Parula Warbler, Rose-breasted Grosbeak, Brown-headed Cowbird, American Goldfinch. **Other Observers:** Jon Boyd and Jeff Rupert. **Acknowledgments:** We appreciate the use of the land which is owned by Thomas and Francis Manson, and managed by Baker University.

63. BULRUSH AND CATTAIL MARSH IN CONIFER FOREST

CIÉNAGAS DE ENEAS EN BOSQUE DE CONÍFERAS

MARCELLA M. BISHOP

750 Rocky Point Road

Polson, Montana 59860

Location: Montana; Lake Co.; Polson; Safe Harbor Marsh; 47°35'N, 114°9'W; Wild Horse Island Quadrangle, USGS. **Continuity:** Established 1975; 16 yr. **Size:** 40.5 ha. **Description of Plot:** See *Am. Birds* 31:84-85 (1977). **Weather:** Mean temperature 13.4°C (range 7–17°C). **Coverage:** 21.5 h; 6 visits (4 mornings, 2 evenings); 30 April; 6 May; 4, 9, 10 June; 3 July. (*A minimum of eight visits during a four to six week period is recommended to insure adequate coverage and estimates of breeding bird densities. Ed.*) **Census:** Yellow-headed Blackbird, 35.0 territories (35/40 ha); Song Sparrow, 15.0 (15); Red-winged Blackbird, 15.0; Willow Flycatcher, 10.0 (10); Tree Swallow, 10.0; Common Yellowthroat, 10.0; Wood Duck, 7.0 (7); Redhead, 6.0 (6); Canada Goose, 5.0 (5); American Coot, 5.0; Common

Nighthawk, 5.0; Pied-billed Grebe, 4.0 (4); Western Wood-Pewee, 4.0; Hammond's Flycatcher, 4.0; Black-capped Chickadee, 4.0; Marsh Wren, 4.0; American Robin, 4.0; Yellow Warbler, 4.0; Great Blue Heron, 2.0; Ring-necked Duck, 2.0; Osprey, 2.0; Ring-billed Gull, 2.0; Mourning Dove, 2.0; Calliope Hummingbird, 2.0; Northern Flicker, 2.0; Violet-green Swallow, 2.0; Mountain Chickadee, 2.0; Red-breasted Nuthatch, 2.0; Ruby-crowned Kinglet, 2.0; Swainson's Thrush, 2.0; Cedar Waxwing, 2.0; Warbling Vireo, 2.0; MacGillivray's Warbler, 2.0; Western Tanager, 2.0; Chipping Sparrow, 2.0; Dark-eyed Junco, 2.0; Brown-headed Cowbird, 2.0; Spotted Sandpiper, 1.0; American Bittern, 1.0; Red-tailed Hawk, 1.0; Prairie Falcon, 1.0; Ruffed Grouse, 1.0; Great Horned Owl, 1.0; Rufous Hummingbird, 1.0; Western Flycatcher, 1.0; Common Raven, 1.0; Golden-crowned Kinglet, 1.0; Townsend's Solitaire, 1.0; Black-headed Grosbeak, 1.0; Cassin's Finch, 1.0; Evening Grosbeak, 1.0. **Total:** 51 species; 203 territories (200/40 ha). **Remarks:** Formerly Bird-Pinkney Marsh, Safe Harbor Marsh became a Nature Conservancy Preserve in 1989. **Acknowledgments:** Bird and Pinkney families who cooperated in the conversion of this unique tract to a preserve.

64. DECIDUOUS FOREST WITH POND AND BROOK

BOSQUE DECIDUO CON CHARCA Y ARROYO

JOHN BROTHERTON

249 E. Crescent Avenue
Mahwah, New Jersey 07430

Location: New Jersey; Bergen Co.; Mahwah; Campgaw Mountain Reservation; 41°4'N, 74°11'W; Ramsey NJ-NY + Quadrangle, USGS. **Continuity:** Established 1964; 27 yr. **Size:** 16.2 ha. **Description of Plot:** See *Aud. Field Notes* 19:623-624 (1965). **Weather:** Mean temperature 11°C (range 6-15°C). **Coverage:** 11.5 h; 10 visits (mornings); 15, 17, 22, 24, 26, 29, 31 May; 5, 7, 12 June. **Census:** Veery, 4.0 territories (10/40 ha); Red-eyed Vireo, 4.0; Ovenbird, 4.0; Tufted Titmouse, 3.0 (7); Gray Catbird, 3.0; Wood Thrush, 2.0; Common Yellowthroat, 2.0; Red-bellied Woodpecker, 1.0; Northern Flicker, 1.0; Pileated Woodpecker, 1.0; Eastern Wood-Pewee, 1.0; Great Crested Flycatcher, 1.0; Blue Jay, 1.0; Black-capped Chickadee, 1.0; White-breasted Nuthatch, 1.0; American Robin, 1.0; Yellow-throated Vireo, 1.0; Louisiana Waterthrush, 1.0; Scarlet Tanager, 1.0; Northern Cardinal, 1.0; Song Sparrow, 1.0; Common Grackle, 1.0; Northern Oriole, 1.0. **Total:** 23 species; 38 territories (94/40 ha). **Visitors:** Canada Goose, Wood Duck, Mallard, Mourning Dove, Yellow-billed Cuckoo, Downy Woodpecker, Eastern Kingbird, Tree Swallow, American Crow, Blue-winged Warbler, Black-and-white Warbler, American Redstart, Brown-headed Cowbird. **Other Observers:** John Bristow, Nancy Bristow, Kathryn Sjolander, Jane White.

65. FRESHWATER BARRIER DUNE COMMUNITY

COMUNIDAD DE DUNA CON BARRERAS DE AGUA FRESCA

SANDRA E. BONANNO & GERALD A. SMITH

SUNY College of Environmental Science & Forestry
350 Illick Hall
Syracuse, New York 13210

Location: New York; Jefferson Co.; Ellisburg; Lakeview Wildlife Management Area; 43°44'N, 76°13'W; Ellisburg Quadrangle, USGS. **Continuity:** New. **Size:** 10.4 ha. **Description of Plot:** A narrow strip of barrier dunes separating the open waters of Lake Ontario from Lakeview Pond and Marsh. Plot is composed of open, dry secondary dunes (2-5 m in height) and swales along the W portion, and dense alder thickets along the E portion. A quantitative vegetation survey based on the method described by F.C. James & H.H. Shugart, Jr. (1970. *Aud. Field Notes* 24: 727-736) was used to describe the two primary habitat types, (1) alder thicket/shrubland, which comprised 55% of the site and, (2) open

herbaceous-dune-swale, which comprised 45% of the site. Sampling in the alder/shrubland habitat yielded the following results: Trees, 7.5 cm diameter and over, based on eight 0.005-ha armlength transects, 595/ha; total basal area 259 m²/ha. Species comprising 90% of the total number of trees [figures after each are trees/ha, relative density (%), relative dominance (%), and frequency (%): Green Ash 162, 27, 44, 25; Black Willow 108, 18, 29, 25; Paper Birch 135, 23, 17, 13; Speckled Alder 81, 14, 2, 25; Black Cherry 54, 9, 3, 13; Trees by diameter size class [figures after each are trees/ha, relative size density (%), basal area in m²/ha, and relative dominance (%): A (7.5–15.0 cm) 243, 41, 0.7, 20.6, 8; B (15.0–22.5 cm) 108, 18, 0.9, 26.1, 10; C (22.5–30.0 cm) 108, 18, 2.1, 55.9, 22; D (> 30 cm) 135, 23, 5.7, 154.4, 60. Shrub stems/ha, 18459; ground cover, 54%; canopy cover, 76%; average canopy height, 14 m. Sampling in the open herbaceous-dune-swale habitat yielded the following results: Trees, 7.5 cm diameter and over, based on 12 0.005-ha armlength transects, 386/ha; total basal area 113 m²/ha. Species comprising 90% of the total number of trees [figures after each are trees/ha, relative density (%), relative dominance (%), and frequency (%): Eastern Cottonwood 351, 91, 97, 67. Trees by diameter size class [figures after each are trees/ha, relative density (%), basal area in m²/ha, and relative dominance (%): A (7.5–15.0 cm) 193, 50, 0.8, 14.9, 13; B (15.0–22.5 cm) 88, 23, 1.1, 19.0, 17; C (22.5–30.0 cm) 53, 14, 1.2, 22.2, 20; D (> 30 cm) 53, 14, 3.2, 55.3, 50. Shrub stems/ha, 8733; ground cover, 58%; canopy cover, 23%; average canopy height, 8 m. **Edge:** Habitat contiguous on N and S edges. A shallow pond and cattail marsh borders the plot to the E, and primary dunes border to the W. **Topography and Elevation:** Minimum elevation 76 m, maximum 80 m. Alder thickets occur on E facing slope of secondary dunes; terrain then flattens and slopes gently E to the pond/marsh. **Weather:** Mean temperature 18.8°C (range 13–24°C). **Coverage:** 10 h; 10 visits (8 mornings, 2 evenings); 29, 31 May; 2, 6, 12, 15, 20, 21, 25, 28 June. **Census:** Yellow Warbler, 21.0 territories (81/40 ha); Song Sparrow, 11.0 (42); Common Yellowthroat, 6.0 (23); House Wren, 5.0 (19); Veery, 5.0; Gray Catbird, 4.0 (15); American Redstart, 4.0; Great Crested Flycatcher, 3.0 (12); Black-capped Chickadee, 3.0; Brown-headed Cowbird, 3.0; Northern Flicker, 2.0; Tree Swallow, 2.0; American Robin, 2.0; Brown Thrasher, 2.0; Cedar Waxwing, 2.0; European Starling, 2.0; Rufous-sided Towhee, 2.0; Red-winged Blackbird, 2.0; Northern Oriole, 2.0; American Goldfinch, 2.0; Ruffed Grouse, 1.0; Downy Woodpecker, 1.0; Eastern Wood-Pewee, 1.0; Willow Flycatcher, 1.0; Wood Thrush, 1.0; Red-eyed Vireo, 1.0. **Total:** 26 species; 91 territories (350/40 ha). **Visitors:** Black-poll Warbler, Chestnut-sided Warbler, Rose-breasted Grosbeak, Mourning Dove, Northern Cardinal, Swamp Sparrow, Ring-billed Gull, Common Grackle, Black Tern, Killdeer, Mallard, Wood Duck, Great Blue Heron, Eastern Kingbird, White-breasted Nuthatch, Blue Jay, Warbling Vireo. **Other Observers:** Sandra E. Bonanno, Gerald A. Smith. **Acknowledgments:** Dr. George Maxwell, Dr. Donald J. Leopold, Suzanne Crandall, Suzanne Ravenscroft.

66. SUBURBAN BIRD SANCTUARY

SANTUARIO DE AVES SUBURBANO

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134 Cove Road
Oyster Bay, New York 11771*

Location: New York; Nassau Co.; Oyster Bay; Theodore Roosevelt Memorial Bird Sanctuary; 40°52'N, 73°30'W; Hicksville Quadrangle, USGS. **Continuity:** Established 1983; 7 yr. **Size:** 4.2 ha. **Description of Plot:** See *Am. Birds* 38:125-126 (1984). **Weather:** Mean temperature 15.1°C (range 4–24°C). **Coverage:** 11 h; 8 visits (6 mornings, 2 evenings); 7, 12, 19 May; 1, 2, 23, 25 June; 3 July. **Census:** House Wren, 7.0 territories (67/40 ha; 6N); Common Grackle, 7.0 (7N); Gray Catbird, 4.0 (38; 2N); Mourning Dove, 3.0 (29); American Robin, 3.0; Northern Cardinal, 3.0; Northern Oriole, 3.0; House Sparrow, 2.0 (2N); Tufted Titmouse, 1.5; Chipping Sparrow, 1.5; Red-bellied Woodpecker, 1.0 (1N); American Crow, 1.0 (1N); White-breasted Nuthatch, 1.0 (1N); Carolina Wren, 1.0; Wood

Thrush, 1.0; Red-eyed Vireo, 1.0; Blue-winged Warbler, 1.0; Ovenbird, 1.0; Scarlet Tanager, 1.0; House Finch, 1.0; Downy Woodpecker, 0.5; Eastern Wood-Pewee, 0.5; Song Sparrow, 0.5. **Total:** 23 species; 46.5 territories (443/40 ha). **Visitors:** Yellow-billed Cuckoo, Eastern Screech-Owl, Great-horned Owl, Northern Flicker, Hairy Woodpecker, Blue Jay, Black-capped Chickadee, Northern Mockingbird, Veery, Cedar Waxwing, European Starling, Common Yellowthroat, Red-winged Blackbird, Brown-headed Cowbird, Rose-breasted Grosbeak, American Goldfinch, White-throated Sparrow. **Other Observers:** Kenneth R. Page, Jerome Bernstein.

67. FIELD, RIDGE, AND SHRUBBY TREES

CAMPOS, COLINAS Y ARBUSTOS

MICHAEL F. CLARK

27 Skyline Drive

Dundas, Ontario L9H 3S3

Location: Ontario; Municipality of Hamilton-Wentworth; Dundas; Dundas Valley Plot 1; 43°15'N, 79°54'W. **Continuity:** Established 1989; 2 yr. **Size:** 6.6 ha. **Description of Plot:** See *J. Field Ornithol.* 60 (suppl.):14 (1989). **Weather:** Temperatures during study period were average, ranging from 8 to 29°C. **Coverage:** 16.4 h; 8 visits (6 mornings, 2 evenings); 12, 26 May; 2, 9, 16, 25, 30 June; 8 July. **Census:** Yellow Warbler, 39.5 territories (239/40 ha); Song Sparrow, 25.0 (152); Gray Catbird, 22.0 (133); Field Sparrow, 7.0 (42); American Goldfinch, 7.0; Willow Flycatcher, 5.0 (30); Northern Oriole, 5.0; Red-winged Blackbird, 5.0; American Robin, 3.0 (18); Northern Cardinal, 3.0; Northern Flicker, 2.0; Eastern Kingbird, 2.0; Brown-headed Cowbird, 2.0; Blue-winged Warbler, 1.5; Mourning Dove, 1.0; Black-billed Cuckoo, 1.0; Cedar Waxwing, 1.0; Common Yellowthroat, 1.0; Common Grackle, 1.0; Indigo Bunting, 0.5. **Total:** 20 species; 134.5 territories (815/40 ha). **Visitors:** Yellow-billed Cuckoo, Common Nighthawk, Ruby-throated Hummingbird, Downy Woodpecker, Great Crested Flycatcher, Blue Jay, American Crow, Black-capped Chickadee, Northern Mockingbird, Brown Thrasher, European Starling, Warbling Vireo, Chestnut-sided Warbler, Chipping Sparrow, House Finch. **Remarks:** Although breeding totals appear high, special efforts were made to ensure singing males were not duplicated, particularly for Yellow Warblers whose numbers rose ca 25%.

68. SHRUBBY TREES, RIDGE, AND WOODS

MATORRAL CON BORDES Y BOSQUE

MICHAEL F. CLARK

27 Skyline Drive

Dundas, Ontario L9H 3S3

Location: Ontario; Municipality of Hamilton-Wentworth; Dundas; Dundas Valley Plot 2; 43°15'N, 79°54'W. **Continuity:** New. **Size:** 7.3 ha. **Description of Plot:** See 1986 WBPS report. **Weather:** Temperatures were at normal levels during study period, ranging from 11 to 29°C. Precipitation, 100% above average in May, probably resulted in dense plant growth observed in June. **Coverage:** 13.1 h; 8 visits (6 mornings, 2 evenings); 12, 26 May; 2, 16, 23, 27, 30 June; 9 July. **Census:** Yellow Warbler, 21.0 territories (115/40 ha); Gray Catbird, 12.0 (66); Song Sparrow, 10.5 (58); Northern Cardinal, 5.0 (27); Northern Oriole, 5.0; Yellow-billed Cuckoo, 4.0 (22); Black-capped Chickadee, 3.0 (16); American Robin, 3.0; Blue-winged Warbler, 3.0; American Goldfinch, 3.0; Field Sparrow, 2.5; Great Crested Flycatcher, 2.0; Eastern Kingbird, 1.5; Mourning Dove, 1.0; Willow Flycatcher, 1.0; Blue Jay, 1.0; House Wren, 1.0; Cedar Waxwing, 1.0; Red-eyed Vireo, 1.0; Rose-breasted Grosbeak, 1.0; Brown-headed Cowbird, 1.0. **Total:** 21 species; 83.5 territories (458/40 ha). **Visitors:** Turkey Vulture, Ruffed Grouse, Eastern Screech-Owl, Northern Flicker, White-breasted Nuthatch, Wood Thrush, Brown Thrasher, Chestnut-sided Warbler, American

Redstart, Common Yellowthroat, Scarlet Tanager, Indigo Bunting, Rufous-sided Towhee, Red-winged Blackbird, Orchard Oriole. **Remarks:** Removal of railway tracks at the N edge of the plot during the study period may have caused some disturbance. This plot has many of the elements of the next stage in succession observed in the neighboring Dundas Valley Plot 1, where the major breeding species are the same, but occur at twice the density. Species favoring woods habitat or edge, such as Rose-breasted Grosbeak, Red-eyed Vireo, Great Crested Flycatcher, and Yellow-billed Cuckoo, bred on this plot, but were largely visitors on Dundas Valley 1. The woodland section of this plot may still be too small to support Scarlet Tanager, Wood Thrush, and Eastern Wood-Pewee.

69. SCATTERED MIXED CONIFEROUS FOREST IN SUBALPINE MEADOWS AND SPRUCE BOG

BOSQUE MESOFÍTICO DISPERSO EN PRADERAS SUBALPINAS Y ABETOS

ROBERT A. HUDSON

P.O. Box 81

Bates, Oregon 97817

Location: Oregon; Grant Co.; Bates; Malheur National Forest; 44°45'N, 118°45'W; Desolation Butte Quadrangle, USGS. **Continuity:** Established 1973; 18 yr. **Size:** 32.4 ha. **Description of Plot:** See *Am. Birds* 27:1002-1003 (1973). **Weather:** Temperatures ranged from 4 to 11°C. Spring precipitation was well below normal. **Coverage:** 14 h; 9 visits (mornings); 20, 23, 25, 26, 27, 28, 29, 30 June; 2 July. **Census:** White-crowned Sparrow, 6.0 territories (7/40 ha); Yellow-rumped Warbler, 5.0 (6); Ruby-crowned Kinglet, 4.0 (5); Chipping Sparrow, 4.0; Fox Sparrow, 4.0; Lincoln's Sparrow, 3.0 (4); Cassin's Finch, 3.0; Spotted Sandpiper, 2.0 (1N, FL); American Robin, 2.0; Blue Grouse, 1.0 (5FL); Northern Flicker, 1.0 (1N, FL); Steller's Jay, 1.0; Mountain Chickadee, 1.0; Mountain Bluebird, 1.0; Brown-headed Cowbird, 1.0. **Total:** 15 species; 39 territories (48/40 ha). **Visitors:** Clark's Nutcracker, Red-breasted Nuthatch, Red Crossbill, Pine Siskin, Evening Grosbeak. **Remarks:** First nesting record for Blue Grouse on plot as well as first cowbirds in a territorial situation. **Acknowledgments:** I am grateful to the Malheur Forest Staff for their cooperation.

70. MIXED LOWLAND FOREST AND MEADOW WITH STREAM

BOSQUE BAJO MIXTO Y PRADERAS CON ARROYOS

DONALD B. SNYDER

Department of Biology & Health Services

Edinboro University of PA

Edinboro, Pennsylvania 16444

Location: Pennsylvania; Erie Co.; Edinboro; Riparian Big Conneauttee Creek; 41°52'N, 80°8'W; Cambridge Springs Quadrangle, USGS. **Continuity:** Established 1981, 4 intermittent yr. **Size:** 8.1 ha. **Description of Plot:** See *Am. Birds* 37:75 (1983). There have not been any significant changes in habitat since the 1983 census. Several of the largest trees have gone down, and the portion of the area which is not pastured or mowed continues to age through ecological succession. **Weather:** Mean temperature 15.2°C (range 4–25°C). All counts were conducted in calm or light winds. **Coverage:** 18.3 h; 15 visits (11 morning, 2 afternoon, 2 evening); 5, 11, 19, 22, 30, 31 May; 1, 6, 16, 24, 26, 27, 28 June; 5 July. **Census:** American Robin, 10.0 territories (49/40 ha; 4N); Song Sparrow, 10.0 (FL); Gray Catbird, 7.0 (35); European Starling, 7.0 (4N); Yellow Warbler, 4.0 (20; 1N); American Goldfinch, 3.0 (15); Brown-headed Cowbird, 2.5 (FL); Mourning Dove, 2.5 (FL); Blue Jay, 2.5 (2N); House Wren, 2.5 (1N); Red-eyed Vireo, 2.5; Common Yellowthroat, 2.5; Common Grackle, 2.5 (1N); Cedar Waxwing, 2.0; Northern Cardinal, 2.0; Downy Woodpecker, 1.5; Northern Flicker, 1.5 (1N); Black-capped Chickadee, 1.5 (FL); White-breasted Nuthatch, 1.5 (1N); Chipping Sparrow, 1.5; Red-winged Blackbird, 1.5; Mallard, 1.0 (FL);

Eastern Wood-Pewee, 1.0; Willow Flycatcher, 1.0; Least Flycatcher, 1.0; Wood Thrush, 1.0; Warbling Vireo, 1.0; Rose-breasted Grosbeak, 1.0; Indigo Bunting, 1.0; Northern Oriole, 1.0; House Finch, 1.0; American Woodcock, 0.5; Belted Kingfisher, 0.5; Eastern Kingbird, 0.5 (1N); Northern Rough-winged Swallow, 0.5; Field Sparrow, 0.5; Spotted Sandpiper, +; Great Blue Heron, +; Green-backed Heron, +; Chimney Swift, +; Barn Swallow, +; American Crow, +. **Total:** 42 species; 84 territories (415/40 ha). **Visitors:** Cooper's Hawk, American Kestrel, Killdeer, Ruby-throated Hummingbird, Pileated Woodpecker, Red-headed Woodpecker, Hairy Woodpecker, Great Crested Flycatcher, Alder Flycatcher, Carolina Wren, Brown Thrasher, House Sparrow. **Remarks:** The investigator lives on the edge of the study plot. Consequently, quite a bit more observation time was actually spent in the area than the coverage summary indicates.

71. MIXED MESOPHYTIC WOODS AND BRUSHLAND

BOSQUE MESOFÍTICO MIXTO-BREÑAL

RICHARD W. SIMMERS, JR.

8187 Macedonia Road
Cookeville, Tennessee 38501

Location: Tennessee; Putnam Co.; Macedonia; Barnes Hollow; 36°10'N, 85°22'W; Monterey Quadrangle, USGS. **Continuity:** Established 1989; 2 yr. **Size:** 22.9 ha. **Description of Plot:** See *J. Field Ornithol.* 61 (suppl.):67-68 (1990). **Weather:** Mean temperature 13°C (range 9-17°C). **Coverage:** 31.7 h; 11 visits (mornings); 20, 26 April; 1, 9, 14, 19, 24, 30 May; 2, 9, 14 June. **Census:** Red-eyed Vireo, 12.5 territories (22/40 ha); Northern Cardinal, 5.5 (10); Blue-gray Gnatcatcher, 4.5 (8; 1N); Ovenbird, 4.0 (7); Tufted Titmouse, 3.5 (6); Scarlet Tanager, 3.5; Worm-eating Warbler, 3.0 (5); Kentucky Warbler, 2.5; Downy Woodpecker, 2.0; Carolina Chickadee, 2.0; Black-and-white Warbler, 2.0; Hooded Warbler, 2.0; Indigo Bunting, 2.0; Rufous-sided Towhee, 2.0; White-breasted Nuthatch, 1.5; White-eyed Vireo, 1.5; Summer Tanager, 1.5; Yellow-billed Cuckoo, 1.0; Ruby-throated Hummingbird, 1.0; Red-bellied Woodpecker, 1.0; Pileated Woodpecker, 1.0; Acadian Flycatcher, 1.0; Blue Jay, 1.0; Carolina Wren, 1.0; Wood Thrush, 1.0; Prairie Warbler, 1.0; Yellow-breasted Chat, 1.0; Brown-headed Cowbird, 1.0; Hairy Woodpecker, 0.5; Eastern Phoebe, 0.5; Yellow-throated Vireo, 0.5; American Goldfinch, 0.5; Broad-winged Hawk, +; Mourning Dove, +; Whip-poor-will, +. **Total:** 35 species; 68.5 territories (120/40 ha). **Visitors:** American Crow, Ruffed Grouse. **Remarks:** Red-shouldered Hawk pair abandoned their nest site before census began. There was a 24% decline in Red-eyed Vireo territories from 1989. Increases were shown by Ovenbird, Scarlet Tanager, Summer Tanager, Yellow-billed Cuckoo, Worm-eating Warbler, and Carolina Wren. Two male Ovenbirds, apparently, were unmated and left the study area in June.

72. COASTAL FRESHWATER MARSH

PANTANO COSTANERO DE AGUA DULCE

JOHN P. KELLY

Audubon Cypress Grove Preserve
P.O. Box 808
Marshall, California 94940

Location: California; Marin Co.; Marshall; Livermore Marsh; 38°10'N, 122°53'W; To-males Quadrangle, USGS. **Continuity:** Established 1985; 6 yr. **Size:** 10.5 ha. **Description of Plot:** See *J. Field Ornithol.* 60 (suppl.):64 (1989). **Weather:** Mean temperature 12.2°C (range 10-16°C). **Coverage:** 9.9 h; 8 visits (mornings); 4, 13, 18, 25 April; 4, 16, 23, 31 May. **Census:** Red-winged Blackbird, 27.0 territories (103/40 ha); Cliff Swallow, 22.0 (84); Marsh Wren, 12.0 (46); Song Sparrow, 10.0 (38); American Coot, 6.0 (23; FL); Mourning Dove, 4.0 (15); Pied-billed Grebe, 2.0 (FL); Cinnamon Teal, 2.0 (FL); Ruddy

Duck, 2.0 (FL); Anna's Hummingbird (male), 2.0; Allen's Hummingbird (male), 2.0; Wrentit, 2.0; American Goldfinch, 2.0; Mallard, 1.0 (FL); Virginia Rail, 1.0; Common Moorhen, 1.0; Common Yellowthroat, 1.0; Northern Harrier, 0.5. **Total:** 18 species; 99.5 territories (379/40 ha). **Visitors:** Snowy Egret, Great Egret, Great Blue Heron, Green-backed Heron, Black-crowned Night-Heron, Bufflehead, Common Goldeneye, Gadwal, Killdeer, Common Snipe, California Quail, Sora, Turkey Vulture, Belted Kingfisher, Barn Swallow, Tree Swallow, Northern Rough-winged Swallow, Bewick's Wren, Swainson's Thrush, Yellow Warbler, Brewer's Blackbird, Tricolored Blackbird, Brown-headed Cowbird, White-crowned Sparrow, Golden-crowned Sparrow, Lincoln's Sparrow, Savannah Sparrow, Black-headed Grosbeak, House Finch, Pine Siskin. **Remarks:** Tricolored Blackbirds did not nest this yr, but were observed in evening roosts of up to 1000 birds in the lower marsh bulrushes. **Acknowledgments:** Financial support was provided by Chevron, USA, Inc., San Francisco, CA, and the Audubon Canyon Ranch, Stinson Beach, CA, as part of a larger restoration and management program. I thank Susan Kelly for help in summarizing the results.

73. COASTAL RIPARIAN MARSH

ANEGADO RIVERENO COSTANERO

JULES EVENS & RICHARD W. STALLCUP

P.O. Box 839

Point Reyes, California 94956

Location: California; Marin Co.; Point Reyes Station; Olema Marsh; 38°4'N, 122°49'W; Point Reyes Quadrangle, USGS. **Continuity:** New. Data for the yr since 1985 are available from the authors. **Size:** 17.5 ha. **Description of Plot:** Approximately 75% brackish to freshwater marsh, 25% riparian thicket, at the confluence of Bear Valley Creek and Lagunitas Creek. Estimated as percent cover, the plot is comprised of *Typha latifolia/Scirpus* sp. 56%, *Salix* sp./*Alnus* sp. 20%, open water 9%, grassland 9%, salt marsh 9%. The marsh section of the study plot was dredged in 1984 to create open water and promote drainage. Since then, there has been a progressive increase in vegetative cover of willows, especially on the spoils around the ponds. **Weather:** Mean temperature 11°C (range 9–24°C). 1990 was the fourth straight yr in which rainfall was below average, although marsh showed no signs of desiccation. **Coverage:** 21.4 h; 8 visits (mornings); 26 March; 17, 25 April; 6, 16, 22 May; 1, 10 June. **Census:** Red-winged Blackbird, 239 territories (546/40 ha); Marsh Wren, 152 (347); Song Sparrow, 135 (309); Wilson's Warbler, 60.0 (137); Common Yellowthroat, 45.0 (103); Warbling Vireo, 39.0 (89); Virginia Rail, 37.0 (85); American Goldfinch, 37.0; Tree Swallow, 32.0 (73); Chestnut-backed Chickadee, 28.0 (64); Swainson's Thrush, 27.0 (62); Orange-crowned Warbler, 21.0 (48); Brown-headed Cowbird, 21.0; Pacific-slope Flycatcher, 18.0 (41); Acorn Woodpecker, 18.0; Western Wood-Pewee, 17.0 (39); Wrentit, 16.0 (37); Brown Towhee, 15.0 (34); Bewick's Wren, 14.0 (32); Purple Finch, 14.0; Bushtit, 13.0 (30); Allen's Hummingbird, 13.0; Downy Woodpecker, 13.0; American Coot, 12.0 (27); Black-headed Grosbeak, 12.0; Scrub Jay, 9.5 (22); Mallard, 9.0 (21); California Quail, 9.0; European Starling, 9.0; Pied-billed Grebe, 8.0 (18); Black Phoebe, 8.0; Barn Swallow, 8.0; American Robin, 7.0 (16); Black-crowned Night-Heron, 6.0 (14); Green-backed Heron, 5.0 (11); Nuttall's Woodpecker, 5.0; Steller's Jay, 5.0; Pine Siskin, 5.0; Great Blue Heron, 4.0 (9); Plain Titmouse, 4.0; Hutton's Vireo, 4.0; House Finch, 4.0; Mourning Dove, 3.5 (8); Red-shouldered Hawk, 3.0 (7); Anna's Hummingbird, 3.0; Cliff Swallow, 3.0; Rufous-sided Towhee, 3.0; Western Bluebird, 2.5; Northern Rough-winged Swallow, 2.0. **Total:** 49 species; 1177.5 territories (2691/40 ha). **Visitors:** Cinnamon Teal, Bufflehead, Hooded Merganser, Turkey Vulture, Osprey, Cooper's Hawk, Red-tailed Hawk, Band-tailed Pigeon, Belted Kingfisher, Hairy Woodpecker, Northern Flicker, Ash-throated Flycatcher, Violet-green Swallow, Winter Wren, Cedar Waxwing, Phainopepla, Yellow-rumped Warbler, Swamp Sparrow, Golden-crowned Sparrow, White-crowned Sparrow, Brewer's Blackbird. **Remarks:** Apparent declines in population levels of Virginia Rail, Marsh Wren, and Song Sparrow may be the result of the drought, now in its fourth

yr. The population of Red-winged Blackbirds is enigmatic. Territories increased steadily from 1985 to 1989, but declined by 22% from 1989 to 1990. We attribute the increase in Red-winged Blackbirds to an increase in the willow canopy within the marsh and possibly to the concurrent decline in Marsh Wrens. The subsequent decrease may be an effect of the drought. An independent, intensive survey of Common Yellowthroat territories revealed that the plot contained seven to eight territories versus the 5.5 delineated during the BBC. In the riparian area there has been a slight decrease in hole nesting species over the last two yr, concurrent with the loss of several dead alders. Use of the marsh by Black-crowned Night-Heron and Green-backed Heron apparently is increasing with the increase in willow cover around the pond shore. The successful nesting of Nuttall's Woodpecker is at the western edge of the species' local range. Phainopepla is an extremely rare vagrant in Marin County. **Acknowledgments:** This work was supported by Chevron, U.S.A., Inc., San Francisco, California and Audubon Canyon Ranch, Inc. Thanks to John Kelly for design and consultation, and Skip Schwartz, General Manager of ACR, for ongoing support.

74. DESERT RIPARIAN-FRESHWATER MARSH

DESIERTO RIVEREÑO-PANTANO

EUGENE A. CARDIFF

2024 Orange Tree Lane
Redlands, California 92374

Location: California; San Bernardino Co.; Morongo Valley; Big Morongo Wildlife Reserve; 34°3'N, 116°35'W; Morongo Valley Quadrangle, USGS. **Continuity:** Established 1977; 14 yr. **Size:** 15.4 ha. **Description of Plot:** See *Am. Birds* 32:113-114 (1978). The source of water for this plot is the San Bernardino Mountains and local slopes. A stream that comes to the surface at the Reserve and flows yr round feeds the riparian and marsh habitats. These water sources are being tapped by expanding housing developments and the future of the wetlands is questionable. **Weather:** Mean temperature 8°C (range 3–18°C). The drought in the southeast has continued into its fourth yr and has been devastating to much of the Southern California desert. Riparian areas have been maintained by continuous stream flow, but the desert edge is very dry. **Coverage:** 23.3 h; 8 visits (mornings); 17 April; 2, 9, 16, 23, 30 May; 6, 15 June. **Census:** House Wren, 16.0 territories (42/40 ha); Song Sparrow, 16.0; Rufous-sided Towhee, 13.0 (34); Bewick's Wren, 10.0 (26); House Finch, 7.0 (18); Bushtit, 6.0 (16); Gambel's Quail, 5.0 (13); Virginia Rail, 5.0; Mourning Dove, 5.0; European Starling, 5.0; Common Yellowthroat, 5.0; Costa's Hummingbird, 4.0 (10); Ash-throated Flycatcher, 4.0; California Thrasher, 4.0; Brown-headed Cowbird, 4.0; Nuttall's Woodpecker, 3.0 (8); Yellow Warbler, 3.0; Yellow-breasted Chat, 3.0; Summer Tanager, 3.0; Lesser Goldfinch, 3.0; Anna's Hummingbird, 2.0; Black-chinned Hummingbird, 1.0; Brown-crested Flycatcher, 1.0; Plain Titmouse, 1.0; Black-headed Grosbeak, 1.0; Northern Oriole, 1.0; Blue Grosbeak, +; California Towhee, +; Spotted Dove, +; Vermilion Flycatcher, +; Western Kingbird, +; Verdin, +. **Total:** 32 species; 131 territories (340/40 ha). **Remarks:** Compared to the 1985 census (before the drought), the total number of breeding pairs has dropped from 216 to 131, a 46% decrease. Cooper's Hawk, Red-tailed Hawk, Barn Owl, Great Horned Owl, and Western Screech-Owl have not occurred on the plot since 1985, leaving the American Kestrel as the only bird of prey in the area. The number of Yellow Warblers was up this yr, possibly as a result of a successful cowbird trapping program. **Other Observers:** Gjon Hazard, Jessie Kniffen, Roy Kniffen, Chet McGaugh, Candy Dean. **Acknowledgments:** Special thanks to the San Bernardino Valley Audubon Society and the San Bernardino County Museum for supporting this study.

75. SHRUBBY SWAMP AND SEDGE HUMMOCKS

PANTANO ARBUSTIVO-MOGOTE

ANDREW MAGEE

*White Memorial Conservation Center**Litchfield, Connecticut 06759*

Location: Connecticut; Litchfield Co.; Litchfield; White Memorial Foundation-Bantam River Inlet; 41°43'N, 73°13'W; Litchfield Quadrangle, USGS. **Continuity:** Established 1965; 24 yr. **Size:** 8.1 ha. **Description of Plot:** See *Aud. Field Notes* 19:625-627 (1965). **Weather:** Mean temperature 20.4°C (range 17–22°C). **Coverage:** 11 h; 5 visits (1 morning, 4 evenings); 17, 21, 23, 24, 25 June. (*A minimum of eight visits during a four to six week period is recommended to insure adequate coverage and estimates of breeding bird densities. Ed.*) **Census:** Swamp Sparrow, 42.0 territories (207/40 ha); Red-winged Blackbird, 28.0 (138); Yellow Warbler, 20.0 (99); Common Yellowthroat, 14.0 (69); Willow Flycatcher, 9.0 (44); Gray Catbird, 9.0; Marsh Wren, 4.0 (20); Song Sparrow, 3.0 (15); Mallard, 2.0; Eastern Kingbird, 2.0; Tree Swallow, 2.0; Cedar Waxwing, 2.0; Brown-headed Cowbird, 2.0; American Goldfinch, 2.0; Virginia Rail, 1.0; American Black Duck, 0.5; Green-backed Heron, 0.5; Ruby-throated Hummingbird, 0.5; Veery, 0.5; American Redstart, 0.5. **Total:** 20 species; 144.5 territories (714/40 ha). **Remarks:** The water level was lower than last yr. Possibly the result of lower water levels, nearly all of the more common species increased in numbers, and the total number of territories was 32.5 higher than last yr. We recorded one territorial Virginia Rail, which was only the third observed since the last major flood in 1984. Four Marsh Wrens, absent as nesters since 1986, held territories this yr. Willow Flycatchers increased to nine, but Alder Flycatchers were absent again for the third yr. **Acknowledgments:** Gordon Loery of the White Memorial Conservation Center wrote up the report.

76. WETLAND SEDGE MEADOW I

PANTANO DE JUNCOS I

GARY LINGLE & WILLIAM S. WHITNEY

*Platte River Trust**2550 North Diers, Suite H**Grand Island, Nebraska 68803*

Location: Nebraska; Hall Co.; Doniphan; Mormon Island Crane Meadows (Plot 3); 40°47'N, 98°26'W; Alda Quadrangle, USGS. **Continuity:** Established 1981; 10 yr. **Size:** 16.2 ha. **Description of Plot:** See *Am. Birds* 36:105-106 (1982). **Weather:** Wet and cool. Temperature departure from average was -2.9°F and +1.5°F, and for precipitation, +1.1 cm and +11.4 cm, for May and June, respectively. **Coverage:** 6.6 h; 8 visits (mornings); 5, 6, 7, 11, 12, 13, 14, 18 June. **Census:** Bobolink, 16.0 territories (40/40 ha; 2N); Red-winged Blackbird, 15.0 (37; 12N); Brown-headed Cowbird, 9.0 (22); Wilson's Phalarope, 3.0 (7); Mallard, 2.0; Upland Sandpiper, 2.0; Dickcissel, 2.0; Blue-winged Teal, 1.0; Grasshopper Sparrow, 1.0; Killdeer, 0.5; Western Meadowlark, 0.5. **Total:** 11 species; 52 territories (128/40 ha). **Remarks:** Plot was not grazed or burned prior to census and contained very good residual cover. Sinuous sloughs were 95% wet. Surface water was gone by 12 June.

77. WETLAND SEDGE MEADOW II

PANTANO DE JUNCOS II

GARY LINGLE & WILLIAM S. WHITNEY

*Platte River Trust**2550 North Diers, Suite H**Grand Island, Nebraska 68803*

Location: Nebraska; Hall Co.; Doniphan; Mormon Island Crane Meadows (Plot 4); 40°47'N, 98°25'W; Alda Quadrangle, USGS. **Continuity:** Established 1982; 9 yr. **Size:** 16.2 ha.

Description of Plot: See *Am. Birds* 37:101 (1983). **Weather:** Wet and cool. Temperature departure from average was -2.9°F and $+1.5^{\circ}\text{F}$, and for precipitation, $+1.1$ cm and $+11.4$ cm, for May and June, respectively. **Coverage:** 3.9 h; 8 visits (mornings); 5, 6, 7, 11, 12, 13, 14, 18 June. **Census:** Bobolink, 13.0 territories (32/40 ha; 1N); Red-winged Blackbird, 12.0 (30; 4N); Brown-headed Cowbird, 6.0 (15); Upland Sandpiper, 3.0 (7); Wilson's Phalarope, 2.0; Mallard, 1.5; Blue-winged Teal, 1.5; Virginia Rail, 1.0; Sedge Wren, 1.0; Western Meadowlark, 1.0 (1N); Grasshopper Sparrow, 0.5; Killdeer, +. **Total:** 12 species; 42.5 territories (105/40 ha). **Remarks:** The plot was not grazed prior to the breeding season and contained good residual cover. Sinuous sloughs were 100% wet during first census, and gradually dried to about 10% wet by the last census.

78. MESQUITE-HACKBERRY RIPARIAN ASSOCIATION

ASSOCIATION RIVERENA DE MEQUITA-HACKBERRY

JOAN & ROBERT TWEIT

3116 N. Willow Creek Drive
Tucson, Arizona 85712

Location: Arizona; Pima Co.; Oro Valley; Sutherland Wash; $32^{\circ}26'N$, $110^{\circ}54'W$; Oro Valley Quadrangle, USGS. **Continuity:** Established 1985, 2 intermittent yr. **Size:** 11.2 ha. **Description of Plot:** See WBPS 30 (this issue). **Weather:** Mean temperature 17°C (range 9 – 30°C). **Coverage:** 14.5 h; 13 visits (mornings); 26 March; 9, 18, 22 April; 18 May; 4, 7, 8, 16 June. **Census:** Bell's Vireo, 16.0 territories (57/40 ha); Lucy's Warbler, 10.0 (36); Canyon Towhee, 7.0 (25); Verdin, 7.0; Northern Cardinal, 7.0; Gambel's Quail, 6.0 (21); White-winged Dove, 6.0; Brown-crested Flycatcher, 4.0 (14); Gila Woodpecker, 3.0 (11); Abert's Towhee, 3.0; Mourning Dove, 2.0; Northern Beardless-Tyrannulet, 2.0; Blue Grosbeak, 2.0; House Finch, 2.0; Brown-headed Cowbird, 1.0; Great Horned Owl, 1.0; Elf Owl, 1.0; Costa's Hummingbird, 1.0; Ladder-backed Woodpecker, 1.0; Ash-throated Flycatcher, 1.0; Cactus Wren, 1.0; Varied Bunting, 1.0. **Total:** 22 species; 85 territories (303/40 ha). **Visitors:** Cooper's Hawk, Common Poorwill, Greater Roadrunner, White-throated Swift, Black-chinned Hummingbird, Anna's Hummingbird, Broad-tailed Hummingbird, Gray Flycatcher, Black Phoebe, Western Kingbird, Scrub Jay, Bewick's Wren, Black-tailed Gnatcatcher, American Robin, Curve-billed Thrasher, Phainopepla, Summer Tanager, Black-headed Grosbeak, Rufous-crowned Sparrow, Chipping Sparrow, Black-throated Sparrow, White-crowned Sparrow, Bronzed Cowbird, Lesser Goldfinch. **Remarks:** The most striking change from 1985 was the increase in numbers of Bell's Vireo, from seven to 16. Cactus wrens, Curve-billed Thrashers, Bewick's Wrens and Phainopepla decreased considerably, perhaps as a result of a drier than normal yr in 1989. Varied Buntings may be extending their breeding range further north in southeastern Arizona.

79. COASTAL SCRUB

MATORRAL CASTANERO

ROBIN GUTSELL, MATTHEW ROGERS & GEOFFREY R. GEUPEL

Point Reyes Bird Observatory
4990 Shoreline Highway
Stinson Beach, California 94970

Location: California; Marin Co.; Bolinas; Palomarin Field Station; $37^{\circ}56'N$, $122^{\circ}45'W$; Bolinas Quadrangle, USGS. **Continuity:** Established 1971; 16 yr. **Size:** 8.1 ha. **Description of Plot:** See *Am. Birds* 25:1003-1004 (1971). **Weather:** Mean temperature 9.6°C (range 5 – 14°C). Drought conditions continue for the fourth straight yr. Total rainfall this yr was the lowest during the past 12 yr. **Coverage:** 163 h; 76 visits (71 morning, 4 afternoon, 1 evening); 1 April through 29 June. **Census:** Wrentit, 10.5 territories (52/40 ha; 17N); Song

Sparrow, 9.0 (44; 11N); Allen's Hummingbird, 5.5 (27); Rufous-sided Towhee, 4.5 (22; 2N); White-crowned Sparrow, 4.0 (20; 9N); Bewick's Wren, 3.5 (17; 1N); Purple Finch, 2.5; Orange-crowned Warbler, 1.5; Northern Flicker, 1.0; Scrub Jay, 1.0; Brown-headed Cowbird, 0.5; Red-tailed Hawk, +; Mourning Dove, +; American Robin, +; Wilson's Warbler, +; American Goldfinch, +. **Total:** 16 species; 43.5 territories (219/40 ha). **Remarks:** The 1990 total breeding bird density of this mature coastal scrub is the second lowest in the 16 yr of censusing. This decrease may represent a return to more average densities after last year's record high of 51.5 territories/40 ha. White-crowned Sparrow territories decreased by 38% and California Quail were absent from the plot for the first time in 6 yr. **Other Observers:** Oriane Williams. **Acknowledgments:** This is Point Reyes Bird Observatory Contribution No. 487.

80. DISTURBED COASTAL SCRUB A

MATORRAL PERTURBADO A

SHERIAN ALLEN & GEOFFREY R. GEUPEL

*Point Reyes Bird Observatory
4990 Shoreline Highway
Stinson Beach, California 94970*

Location: California; Marin Co.; Bolinas; Palomarin Field Station; 37°55'N, 122°45'W; Bolinas Quadrangle, USGS. **Continuity:** Established 1972; 16 yr. **Size:** 4.7 ha. **Description of Plot:** See *Am. Birds* 26:987-988 (1972). **Weather:** Mean temperature 9.6°C (range 5–14°C). Drought conditions continued for the fourth straight yr. Rainfall (53.7 cm) was lowest in 12 yr; however, May was the wettest in 23 yr. **Coverage:** 135 h; 61 visits (59 mornings, 2 afternoons); 2 April to 30 June. **Census:** Song Sparrow, 8.0 territories (68/40 ha; 22N); Wrentit, 2.5 (8N); Rufous-sided Towhee, 2.0; White-crowned Sparrow, 2.0 (4N); California Quail, 1.5; Anna's Hummingbird, 1.5; Bewick's Wren, 1.5; American Goldfinch, 1.5; Bushtit, 1.0; Purple Finch, 1.0; Northern Flicker, 0.5; American Robin, 0.5; Brown Towhee, 0.5; Red-tailed Hawk, +; Mourning Dove, +; Allen's Hummingbird, +; Scrub Jay, +; European Starling, +; Orange-crowned Warbler, +; Wilson's Warbler, +; Brown-headed Cowbird, +. **Total:** 21 species; 24 territories (204/40 ha). **Remarks:** The number of territories dropped slightly from 1989. The only species experiencing a significant change was Allen's Hummingbird, which decreased from last year's high of three to previous 1977 levels. Wrentit densities remained at low, pre-1980 levels. **Other Observers:** Oriane Williams. **Acknowledgments:** This is Point Reyes Bird Observatory Contribution No. 488.

81. DISTURBED COASTAL SCRUB B

MATORRAL PERTURBADO B

KAREN J. FERNANDEZ & GEOFFREY R. GEUPEL

*Point Reyes Bird Observatory
4990 Shoreline Highway
Stinson Beach, California 94970*

Location: California; Marin Co.; Bolinas; Palomarin Field Station; 37°55'N, 122°46'W; Bolinas Quadrangle, USGS. **Continuity:** Established 1971; 17 yr. **Size:** 8.1 ha. **Description of Plot:** See *Am. Birds* 25:1002 (1971). **Weather:** Mean temperature 9.6°C (range 5–14°C). Drought conditions continue for the fourth straight yr. Total rainfall this yr was the lowest during the past 12 yr. **Coverage:** 181 h; 65 visits (64 morning, 1 afternoon); 2 April through 30 June. **Census:** Song Sparrow, 13.0 territories (64/40 ha; 19N); Wrentit, 7.0 (35; 11N); Rufous-sided Towhee, 4.0 (20); Bewick's Wren, 3.5 (17); White-crowned Sparrow, 3.5 (6N); California Quail, 2.0; Anna's Hummingbird, 1.0; Allen's Hummingbird, 1.0; Northern Flicker, 1.0; American Goldfinch, 1.0 (1N); Scrub Jay, 0.5; Brown-headed Cowbird, 0.5; Red-tailed Hawk, +; Western Bluebird, + (1N); American Robin, +; Brown Towhee,

+; Purple Finch, +. **Total:** 17 species; 38 territories (188/40 ha). **Remarks:** The total number of territories on this successional plot increased from last year's low of 25. Six of nine residents increased by at least 50%. This increase, however, was not observed on our other two coastal scrub plots. The White-crowned Sparrow continued a 12-yr trend decreasing by 50% to pre-1978 levels. Allen's Hummingbird and American Goldfinch decreased by 60 and 50%, respectively. **Other Observers:** Oriane Williams. **Acknowledgments:** This is Point Reyes Bird Observatory Contribution No. 489.

82. COASTAL PRAIRIE

PRADERA COSTANERA

JOHN P. KELLY

Audubon Cypress Grove Preserve
P.O. Box 808
Marshall, California 94940

Location: California; Marin Co.; Marshall; Cypress Grove Preserve; 38°10'N, 122°54'W; Tomales Quadrangle, USGS. **Continuity:** Established 1988; 3 yr. **Size:** 31.0 ha. **Description of Plot:** See *J. Field Ornithol.* 60 (suppl.):56 (1989). **Weather:** Mean temperature 12.2°C (range 10–16°C). **Coverage:** 7.1 h; 8 visits (mornings); 4, 13, 18, 25 April; 4, 16, 23, 31 May. **Census:** Song Sparrow, 17.0 territories (22/40 ha); American Goldfinch, 4.0 (5); Red-winged Blackbird, 3.5 (4); California Towhee, 3.0 (4); Black-shouldered Kite, 2.0 (1N); Bushtit, 1.0; Northern Harrier, 1.0 (2FL); Mourning Dove, 1.0 (1N); Anna's Hummingbird (male), 1.0; Allen's Hummingbird (male), 1.0; American Crow, 1.0 (1N); Bewick's Wren, 1.0; House Finch, 1.0 (1N); Western Meadowlark, 0.5. **Total:** 14 species; 38 territories (49/40 ha). **Visitors:** Great Egret, California Quail, Red-tailed Hawk, Turkey Vulture, Barn Swallow, Tree Swallow, Northern Rough-winged Swallow, Cliff Swallow, Chestnut-backed Chickadee, Scrub Jay, Common Raven, Brewer's Blackbird, Tricolored Blackbird, Brown-headed Cowbird, White-crowned Sparrow, Golden-crowned Sparrow, Lincoln's Sparrow, Savannah Sparrow, Purple Finch, Pine Siskin. **Remarks:** Song Sparrows, which occur primarily in patches of *Baccharis pilularis* and *Conium maculatum*, increased from nine pairs in 1989 to 17 pairs in 1990. Black-shouldered Kites, American Crows, House Finches, and Mourning Doves nested in a patch of *Cupressus macrocarpa* and *Pinus radiata*. California Towhees and Red-winged Blackbirds nested in woody shrubs along the edge of the freshwater marsh. **Acknowledgments:** This work was supported by Audubon Canyon Ranch, Stinson Beach, CA, as part of a larger coastal prairie restoration and management program. I thank Susan Kelly for help in summarizing the results.

83. TALLGRASS PRAIRIE I

PRADERA DE YERBAS ALTAS I

PETER E. LOWTHER

Field Museum of Natural History
Roosevelt Road at Lake Shore Drive
Chicago, Illinois 60605

Location: Iowa; Dickinson Co.; Milford; Iowa Lakeside Laboratory; 43°23'N, 95°11'W; Okoboji Quadrangle, USGS. **Continuity:** Established 1982, 7 yr. **Size:** 16.0 ha. **Description of Plot:** See *Am. Birds* 37:79 (1983). This plot is managed to maintain prairie community. **Weather:** Mean temperature 17.2°C (range 14–23°C). Despite above average precipitation in May and June, ground moisture content and regional water levels had not returned to pre-1988 conditions at time of census. **Coverage:** 6.5 h; 6 visits (mornings); 10, 11, 12, 13, 14, 15 June. (*A minimum of eight visits during a four to six week period is recommended to insure adequate coverage and estimates of breeding bird densities. Ed.*) **Census:** Yellow Warbler, 6.0 territories (15/40 ha; 4N); American Goldfinch, 4.0 (10); Common Yellowthroat, 3.0

(7); Red-winged Blackbird, 3.0 (5N); Mourning Dove, 2.0 (1N); Gray Catbird, 2.0 (1N); Song Sparrow, 2.0; Brown-headed Cowbird, 2.0; Willow Flycatcher, 1.0; House Wren, 1.0; American Robin, 1.0; Dickcissel, 1.0; Vesper Sparrow, 1.0; Savannah Sparrow, 1.0; Western Meadowlark, 1.0; Ring-necked Pheasant, 0.5 (1N); Black-billed Cuckoo, 0.5; Brown Thrasher, 0.5. **Total:** 18 species; 32.5 territories (81/40 ha). **Remarks:** Common Grackles had finished nesting by the time censusing began. Cowbird eggs were found in three warbler nests. **Acknowledgments:** R.W. Cruden, M. and J. Wehrspann at Iowa Lakeside Laboratory for logistic support and permission to census area. N. Bernstein assisted in nest finding.

84. TALLGRASS PRAIRIE II

PRADERA DE YERBAS ALTAS II

PETER E. LOWTHER

*Field Museum of Natural History
Roosevelt Road at Lake Shore Drive
Chicago, Illinois 60605*

Location: Iowa; Dickinson Co.; Milford; Cayler Prairie; 43°24'N, 95°15'W; Okoboji Quadrangle, USGS. **Continuity:** Established 1982, 7 yr. **Size:** 65.7 ha. **Description of Plot:** See *Am. Birds* 37:79 (1983). This plot is managed to maintain prairie community. **Weather:** Mean temperature 17°C (range 14–23°C). Despite above average precipitation in May and June, ground moisture content and regional water levels had not returned to pre-1988 conditions at time of census. **Coverage:** 9 h; 3 visits (morning); 10, 12, 14 June. (*A minimum of eight visits during a four to six week period is recommended to insure adequate coverage and estimates of breeding bird densities. Ed.*) **Census:** Bobolink, 28.0 territories (17/40 ha); Red-winged Blackbird, 26.0 (16; 22N); Common Yellowthroat, 14.0 (8); Grasshopper Sparrow, 14.0; Dickcissel, 13.0 (8); Western Meadowlark, 8.0 (5); American Goldfinch, 5.0 (3); Upland Sandpiper, 4.0 (2; 5N); Brown-headed Cowbird, 3.0 (2); Savannah Sparrow, 3.0; Mourning Dove, 2.0; Song Sparrow, 2.0 (1N); Swamp Sparrow, 2.0; Gray Partridge, 1.0; Ring-necked Pheasant, 1.0; Eastern Kingbird, 1.0; Sedge Wren, 1.0. **Total:** 17 species; 128 territories (78/40 ha). **Remarks:** Cowbird eggs were found in three Red-winged Blackbird nests. **Acknowledgments:** State Preserves Advisory board, Iowa Dept. of Natural Resources for permission to conduct census. N. Bernstein for finding nests.

85. TALLGRASS PRAIRIE III

PRADERA DE YERBAS ALTAS III

PETER E. LOWTHER

*Field Museum of Natural History
Roosevelt Road at Lake Shore Drive
Chicago, Illinois 60605*

Location: Iowa; Dickinson Co.; Milford; Freda Haffner Kettlehorn Preserve; 43°20'N, 95°13'W; Milford Quadrangle, USGS. **Continuity:** Established 1982, 7 yr. **Size:** 44.8 ha. **Description of Plot:** See *Am. Birds* 37:79 (1983). This plot is managed to maintain prairie community. Southern quarter was burned; elms and wild plums in burn area were girdled or cut. **Weather:** Mean temperature 17.3°C (range 16–19°C). **Coverage:** 8.3 h; 3 visits (mornings); 11, 13, 15 June. (*A minimum of eight visits during a four to six week period is recommended to insure adequate coverage and estimates of breeding bird densities. Ed.*) **Census:** Common Yellowthroat, 16.0 territories (14/40 ha); Bobolink, 16.0 (1N); Sedge Wren, 13.0 (12); Red-winged Blackbird, 13.0 (8N); Grasshopper Sparrow, 9.0 (8); Dickcissel, 7.0 (6); Brown-headed Cowbird, 6.0 (5); Song Sparrow, 6.0; American Goldfinch, 5.0 (4); Yellow Warbler, 4.0 (4; 2N); Western Meadowlark, 4.0 (1N); Willow Flycatcher, 3.0 (3); Mourning Dove, 2.0; Swamp Sparrow, 2.0; Savannah Sparrow, 1.5; Eastern Kingbird, 1.0; Gray

Catbird, 1.0 (1N); Chipping Sparrow, 1.0; Ring-necked Pheasant, 0.5. **Total:** 19 species; 111 territories (99/40 ha). **Remarks:** Cowbird eggs were found in four Red-winged Blackbird, two Yellow Warbler, and one Bobolink nests. **Acknowledgments:** Iowa Field Office, The Nature Conservancy, for permission to conduct census. N. Bernstein assisted with nest finding.

86. KENTUCKY BLUEGRASS PRAIRIE

PRADERA DE "YERBA-AZUL" DE KENTUCKY

DOUGLAS H. JOHNSON & MICHAEL D. SCHWARTZ

*Northern Prairie Wildlife Research Center
Route 1, Box 96C
Jamestown, North Dakota 58401*

Location: North Dakota; Stutsman Co.; Woodworth; 47°8'N, 99°14'W; Goldwin Quadrangle, USGS. **Continuity:** Established 1972; 19 yr. **Size:** 4.8 ha. **Description of Plot:** See *Am. Birds* 26:972 (1972). This plot has been burned several times, most recently in fall of 1988. **Weather:** Generally moderate temperatures, fairly calm with precipitation during one visit. **Coverage:** 2.6 h; 8 visits (mornings); 30, 31 May; 6, 7, 12 June. **Census:** Bobolink, 3.0 territories (25/40 ha); Brown-headed Cowbird, 1.0; Killdeer, 0.5; Western Meadowlark, 0.5; Eastern Kingbird, +; Savannah Sparrow, +. **Total:** 6 species; 5 territories (42/40 ha). **Visitors:** Gadwall (1N), Common Snipe, Horned Lark, Bank Swallow, Barn Swallow, Common Grackle. **Remarks:** Continuing in a severe drought, with the fewest wet basins since records began in 1965, all wetlands on the plot were dry during the census period.

87. MIXED PRAIRIE I

PRADERA MIXTA I

DOUGLAS H. JOHNSON & MICHAEL D. SCHWARTZ

*Northern Prairie Wildlife Research Center
Route 1, Box 96C
Jamestown, North Dakota 58401*

Location: North Dakota; Stutsman Co.; Woodworth; 47°8'N, 99°15'W; Woodworth Quadrangle, USGS. **Continuity:** Established 1972; 19 yr. **Size:** 10.0 ha. **Description of Plot:** See *Am. Birds* 26:972 (1972). **Weather:** Moderate temperatures and winds with no precipitation during visits. **Coverage:** 5.9 h; 7 visits (mornings); 30, 31 May; 6, 7, 12 June. **Census:** Clay-colored Sparrow, 5.5 territories (22/40 ha); Yellow Warbler, 2.0; Bobolink, 2.0; Brown-headed Cowbird, 1.5; Willow Flycatcher, 1.0; Eastern Kingbird, 1.0; Western Meadowlark, 1.0; American Goldfinch, 1.0; Gray Catbird, +; Savannah Sparrow, +. **Total:** 10 species; 15 territories (60/40 ha). **Visitors:** Swainson's Hawk, Upland Sandpiper, Mourning Dove, Northern Flicker, Western Kingbird, Brown Thrasher, Common Grackle. **Remarks:** Continuing in a severe drought, with the fewest wet basins since records began in 1965, all wetlands on the plot were dry during the census period.

88. MIXED PRAIRIE II

PRADERA MIXTA II

DOUGLAS H. JOHNSON & MICHAEL D. SCHWARTZ

*Northern Prairie Wildlife Research Center
Route 1, Box 96C
Jamestown, North Dakota 58401*

Location: North Dakota; Stutsman Co.; Woodworth; 47°8'N, 99°15'W; Goldwin Quadrangle, USGS. **Continuity:** Established 1972; 19 yr. **Size:** 6.1 ha. **Description of Plot:** See

Am. Birds 26:972-973 (1972). **Weather:** Moderate temperatures and winds with no precipitation during census. **Coverage:** 3.3 h; 9 visits (mornings); 30, 31 May; 6, 7, 12 June. **Census:** Clay-colored Sparrow, 1.0 territories (6/40 ha); Eastern Kingbird, 0.5; Brown-headed Cowbird, 0.5; Western Kingbird, +; Bobolink, +; Western Meadowlark, +. **Total:** 6 species; 2 territories (13/40 ha). **Visitors:** Swainson's Hawk, Ferruginous Hawk, Killdeer, Upland Sandpiper, Bank Swallow, Cliff Swallow, Barn Swallow, Yellow Warbler, Common Yellowthroat, Savannah Sparrow, Grasshopper Sparrow, Red-winged Blackbird, American Goldfinch. **Remarks:** Continuing in a severe drought, with the fewest wet basins since records began in 1965, all wetlands on the plot were dry during the census period.

89. MIXED PRAIRIE III

PRADERA MIXTA III

DOUGLAS H. JOHNSON & MICHAEL D. SCHWARTZ

*Northern Prairie Wildlife Research Center
Route 1, Box 96C
Jamestown, North Dakota 58401*

Location: North Dakota; Stutsman Co.; Woodworth; 47°9'N, 99°14'W; Goldwin Quadrangle, USGS. **Continuity:** Established 1972; 19 yr. **Size:** 6.1 ha. **Description of Plot:** See *Am. Birds* 26:973 (1972). This plot has been burned several times, most recently during the fall of 1989. **Weather:** Moderate temperatures and winds with no precipitation during visits. **Coverage:** 2.3 h; 7 visits (mornings); 30, 31 May; 6, 12 June. **Census:** Upland Sandpiper, 0.5 territories (3/40 ha); Vesper Sparrow, +; Western Meadowlark, +. **Total:** 3 species; 0.5 territories (3/40 ha). **Visitors:** Swainson's Hawk, Killdeer, Willet, Common Snipe, Common Nighthawk, Western Kingbird, Eastern Kingbird, Barn Swallow, Clay-colored Sparrow, Brown-headed Cowbird, American Goldfinch. **Remarks:** Continuing in a severe drought, with the fewest wet basins since records began in 1965, all wetlands on the plot were dry during the census period.

90. MIXED PRAIRIE IV

PRADERA MIXTA IV

DOUGLAS H. JOHNSON & MICHAEL D. SCHWARTZ

*Northern Prairie Wildlife Research Center
Route 1, Box 96C
Jamestown, North Dakota 58401*

Location: North Dakota; Stutsman Co.; Woodworth; 47°8'N, 99°15'W; Woodworth Quadrangle, USGS. **Continuity:** Established 1972; 19 yr. **Size:** 6.1 ha. **Description of Plot:** See *Am. Birds* 26:973-974 (1972). This plot has been burned several times, most recently in the fall of 1988. **Weather:** Moderate temperatures and winds with occasional light drizzle. **Coverage:** 3 h; 8 visits (mornings); 30, 31 May; 7, 12 June. **Census:** Eastern Kingbird, 1.5 territories (10/40); Grasshopper Sparrow, 1.0; Bobolink, 1.0; Red-winged Blackbird, 0.5; Brown-headed Cowbird, 0.5; Upland Sandpiper, +; Western Meadowlark, +. **Total:** 7 species; 4.5 territories (30/40 ha). **Visitors:** Killdeer, Willet, Western Kingbird, Barn Swallow, Brown Thrasher, Common Yellowthroat, Clay-colored Sparrow, American Goldfinch. **Remarks:** Continuing in a severe drought, with the fewest wet basins since records began in 1965, all wetlands on the plot were dry during the census period.

91. MIXED PRAIRIE V

PRADERA MIXTA V

DOUGLAS H. JOHNSON & MICHAEL D. SCHWARTZ

*Northern Prairie Wildlife Research Center**Route 1, Box 96C**Jamestown, North Dakota 58401*

Location: North Dakota; Stutsman Co.; Woodworth; 47°8'N, 99°14'W; Goldwin Quadrangle, USGS. **Continuity:** Established 1972; 19 yr. **Size:** 6.1 ha. **Description of Plot:** See *Am. Birds* 26:974 (1972). This plot has been burned several times, most recently during April 1990. **Weather:** Moderate temperatures and winds with no precipitation during visits. **Coverage:** 2.9 h; 9 visits (mornings); 30, 31 May; 6, 7, 12 June. **Census:** Eastern Kingbird, 1.5 territories (10/40 ha); Western Meadowlark, 0.5; Upland Sandpiper, +. **Total:** 3 species; 2 territories (13/40 ha). **Visitors:** Swainson's Hawk, Common Nighthawk, Northern Flicker, Willow Flycatcher, Western Kingbird, Clay-colored Sparrow, Bobolink, Brown-headed Cowbird, Orchard Oriole, American Goldfinch. **Remarks:** Continuing in a severe drought, with the fewest wet basins since records began in 1965, all wetlands on the plot were dry during the census period.

92. SUBIRRIGATED GRASSLAND

PRADERA SUBIRRIGADA

GARY LINGLE & WILLIAM S. WHITNEY

*Platte River Trust**2550 North Diers, Suite H**Grand Island, Nebraska 68803*

Location: Nebraska; Hall Co.; Doniphan; Mormon Island Crane Meadows (Plot 1); 40°46'N, 98°26'W; Alda Quadrangle, USGS. **Continuity:** Established 1981; 10 yr. **Size:** 16.2 ha. **Description of Plot:** See *Am. Birds* 36:105 (1982). **Weather:** Wet and cool. Temperature departure from average was -2.9°F and +1.5°F, and for precipitation, +1.1 cm and +11.4 cm, for May and June, respectively. **Coverage:** 4.4 h; 8 visits (mornings); 5, 6, 7, 11, 12, 13, 14, 18 June. **Census:** Bobolink, 14.0 territories (35/40 ha; 1N); Grasshopper Sparrow, 4.0 (10); Brown-headed Cowbird, 4.0; Western Meadowlark, 3.5 (9); Upland Sandpiper, 3.0 (7); Dickcissel, 2.5; Red-winged Blackbird, 1.0. **Total:** 7 species; 32 territories (79/40 ha). **Remarks:** Plot was grazed during census, residual cover was spotty.

93. SUBIRRIGATED NATIVE HAY

PASTO NATIVO SUBIRRIGADO

GARY LINGLE & WILLIAM S. WHITNEY

*Platte River Trust**2550 North Diers, Suite H**Grand Island, Nebraska 68803*

Location: Nebraska; Hall Co.; Doniphan; Mormon Island Crane Meadows (Plot 2); 40°47'N, 98°27'W; Alda Quadrangle, USGS. **Continuity:** Established 1981; 10 yr. **Size:** 16.2 ha. **Description of Plot:** See *Am. Birds* 36:105 (1982). **Weather:** Wet and cool. Temperature departure from average was -2.9°F and +1.5°F, and for precipitation, +1.1 cm and +11.4 cm, for May and June, respectively. **Coverage:** 3.9 h; 8 visits (mornings); 5, 6, 7, 11, 12, 13, 14, 18 June. **Census:** Bobolink, 9.0 territories (22/40 ha; 1N); Upland Sandpiper, 3.0 (7); Grasshopper Sparrow, 2.0; Brown-headed Cowbird, 1.0; Western Meadowlark, 0.5.

Total: 5 species; 15.5 territories (38/40 ha). **Remarks:** South one-third of plot was grazed heavily by cattle. North two-thirds was hayed in the fall of 1989 and contained no residual cover.

94. TALLGRASS PRAIRIE REMNANT

REMANENTE DE PRADERA CON YERBAS ALTAS

DAVE MINNEY

The Nature Conservancy
1504 W. First Ave.
Columbus, Ohio 4312

Location: Ohio; Greene Co.; Fairborn; Huffman Prairie; 37°48'N, 84°4'W; Fairborn Quadrangle, USGS. **Continuity:** New. **Size:** 44.0 ha. **Description of Plot:** This plot lies within an area originally described in 1802 as a "wet boggy prairie" to "dry grassy prairie" extending over 4.5 km². Huffman Prairie is one of the last remnants of the once extensive black soil tallgrass prairie community. Native prairie dominates roughly a third of the tract and is found in scattered patches throughout; species include *Andropogon scoparius*, *Sorghastrum nutans*, *Sporobolus asper*, *Ratibida pinnata*, *Rudbeckia* sp. The 44-ha remnant prairie has been well drained and was cut for haycrops or seasonally bush-hogged until 1984. Approximately half of the prairie was burned in March of 1990. The majority of the vegetation reflects recent land use, introduced forage grasses and non-native forbs are well established throughout. The site came under the management of the Ohio Chapter of The Nature Conservancy in 1990. The vegetation was quantified using plant frequency sampling. Eight transects were established at 100-m intervals, and a 0.5 m² quadrat sample was taken at 10-m intervals along each transect. Species occurring in 15% or more of the sample quadrats include [values represent percent frequency of occurrence]: *Bromus inermis* 38%; *Pastinaca sativa*, *Agropyron repens* 29%; *Phleum pratense* 26%; *Ambrosia artemisiifolia*, *Convolvulus sepium*, *Daucus carota* 22%; *Dactylis glomerata*, *Trifolium pratense* 21%; *Andropogon gerardi* 17%; *Aster* sp., *Sorghastrum nutans* 15%. Low-lying areas dominated by a variety of non-native forbs (e.g. *Conium maculatum*, *Cirsium arvense*) and "rough" native forbs (e.g. *Urtica procera*, *Verbesina alternifolia*, *Helianthus tuberosus*) occupy < 10% of the total acreage. *Sambucus canadensis* is also present in these areas and provides the only substantial shrub cover during the breeding season. **Edge:** Maintained fields surround the plot on all sides. An airport occurs 0.4 km to the N. **Topography and Elevation:** Minimum elevation 244 m, maximum 246 m. At least two old road beds are slightly raised above the essentially flat topography. **Weather:** Mean temperature 16°C (range 4–24°C). Precipitation was above average during May and June. **Coverage:** 46.5 h; 9 visits (7 mornings, 2 afternoons, 4 evenings); 15, 21 May; 5, 12, 19, 25 June; 6, 10, 25 July. **Census:** Grasshopper Sparrow, 28.0 territories (26/40 ha); Red-winged Blackbird, 24.5 (22; 1N); Common Yellowthroat, 24.0 (22); Song Sparrow, 20.5 (19); Bobolink, 19.0 (17); American Goldfinch, 15.0 (14); Eastern Meadowlark, 11.0 (10; 1N); Savannah Sparrow, 8.0 (7); Willow Flycatcher, 6.0 (6); Indigo Bunting, 6.0; Brown-headed Cowbird, 3.0 (3); Eastern Kingbird, 1.0; Dickcissel, 1.0; American Kestrel, +; American Robin, +. **Total:** 15 species; 167 territories (152/40 ha). **Visitors:** Mallard, Killdeer, Chimney Swift, Purple Martin, Barn Swallow, European Starling, Henslow's Sparrow, Common Grackle, Northern Oriole. **Remarks:** American Goldfinches began nesting toward the end of the census period resulting in a rough estimate of territories. **Acknowledgments:** Wright-Patterson Air Force Base, U.S. Department of Defense.

95. FIELD AND SHRUBLAND

CAMPOS Y ARBUSTOS

THOMAS FORD

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Location: Connecticut; New London Co.; Groton, CT; Haley Farm State Park; 41°16'N, 71°59'W; New London Quadrangle, USGS. **Continuity:** New. **Size:** 24.0 ha. **Description of Plot:** The plot is composed of five connected, mowed fields with varying vegetation cover. The vegetation is dominated by grasses, primarily Redtop, Orchard Grass, Switch Grass, and Sweet Vernal Grass, with napweed, goldenrod, raspberry, and arrowwood interspersed. **Edge:** The W edge of the plot is bordered by shrubland/young forest. The E edge borders a salt marsh/cove, and the NE edge borders a residential area. **Topography and Elevation:** The plot slopes to the SE, with a minimum elevation of 3 m, and a maximum of 16 m. **Weather:** Mean temperature 18.1°C (range 11–24°C). **Coverage:** 19.8 h; 10 visits (mornings); 25, 31 May; 4, 10, 15, 22 June; 2, 9, 16, 19 July. **Census:** Red-winged Blackbird, 9.0 territories (15/40 ha); American Goldfinch, 7.0 (12); American Robin, 6.0 (10); Common Yellowthroat, 5.5 (9); Yellow Warbler, 3.5 (6); Northern Bobwhite, 3.0 (5; 15FL); Northern Mockingbird, 3.0; Gray Catbird, 3.0; Song Sparrow, 3.0; Blue-winged Warbler, 2.5; Blue Jay, 2.0; White-eyed Vireo, 2.0; Rufous-sided Towhee, 2.0; Northern Oriole, 2.0 (6FL); House Finch, 2.0; Northern Flicker, 1.0; Mourning Dove, 1.0; Eastern Kingbird, 1.0; Tree Swallow, 1.0; Black-capped Chickadee, 1.0; House Wren, 1.0; Cedar Waxwing, 1.0; Prairie Warbler, 1.0; Northern Cardinal, 1.0; Orchard Oriole, 1.0 (5FL). **Total:** 25 species; 65.5 territories (109/40 ha). **Visitors:** Black-crowned Night-Heron, Green-backed Heron, Great Egret, Belted Kingfisher, Osprey, Chimney Swift, Barn Swallow, Rough-winged Swallow, Common Grackle, Brown-headed Cowbird. **Remarks:** Future censuses of this plot will be used to monitor the success of management practices aimed at maintaining species that use fields. **Acknowledgments:** I want to thank Robert A. Askins for his help and guidance with this work. I also want to thank the Connecticut Forest and Park Association for financial support.

96. ABANDONED UPLAND PASTURE

PASTIZAL DE ALTURAS ABANDONADO

VIVIAN MILLS PITZRICK

Amity Lake
Belmont, New York 14813

Location: New York; Allegany Co.; Scio; Saunders Plot; 42°13'N, 77°59'W; Wellsville North Quadrangle, USGS. **Continuity:** Established 1984; 7 yr. **Size:** 8.0 ha. **Description of Plot:** See *Am. Birds* 39:112 (1985). **Weather:** Mean temperature 15.8°C (range 9–23°C). Visits were made on mostly fair days with negligible wind. **Coverage:** 25 h; 14 visits (11 mornings, 3 evenings); 10, 12 March; 24 April; 1, 9, 18, 28 May; 9, 20, 30 June; 10, 24, 30 July; 7, 15, 24, 31 August. **Census:** Song Sparrow, 24.0 territories (120/40 ha); American Goldfinch, 14.0 (70; 11N); Common Yellowthroat, 10.0 (50); Field Sparrow, 10.0 (4N); Yellow Warbler, 7.0 (35; 2N); Rufous-sided Towhee, 7.0; Alder Flycatcher, 6.0 (30; 1N); Chestnut-sided Warbler, 5.0 (25); Indigo Bunting, 5.0; American Woodcock, 4.0 (20); House Wren, 4.0 (7N); Gray Catbird, 4.0 (1N); Cedar Waxwing, 4.0 (4N); Blue-winged Warbler, 4.0; Tree Swallow, 3.0 (15; 3N); Black-capped Chickadee, 2.0 (3N); Prairie Warbler, 2.0; Rose-breasted Grosbeak, 2.0; Chipping Sparrow, 2.0 (1N); Broad-winged Hawk, 1.0; Red-tailed Hawk, 1.0; Ruffed Grouse, 1.0; Downy Woodpecker, 1.0; Great Crested Flycatcher, 1.0; Blue Jay, 1.0; American Crow, 1.0; Eastern Bluebird, 1.0 (3N); American Robin, 1.0 (1N); Nashville Warbler, 1.0; Black-and-white Warbler, 1.0; Northern Cardinal, 1.0; Brown-headed Cowbird, 1.0; Purple Finch, 1.0. **Total:** 33 species; 133 territories (665/40 ha).

Visitors: Green-backed Heron, Killdeer, Black-billed Cuckoo, Ruby-throated Hummingbird, Northern Flicker, Eastern Wood-Pewee, Least Flycatcher, Eastern Phoebe, Eastern Kingbird, White-breasted Nuthatch, Ruby-crowned Kinglet, Yellow-rumped Warbler, Mourning Warbler, Dark-eyed Junco, Red-winged Blackbird. **Remarks:** The number of Tree Swallows, Black-capped Chickadees, House Wrens, Common Yellowthroats, Rose-breasted Grosbeaks, Song Sparrows, and American Goldfinches increased, while the number of Alder Flycatcher, Gray Catbird, Cedar Waxwing, Blue-winged Warbler, Yellow Warbler, Chestnut-sided Warbler, Prairie Warbler, Indigo Bunting, Rufous-sided Towhee, and Field Sparrow decreased. Interesting for the future, as the habitat changes, will be the study of visitors. Previously only a visitor, the Black-and-white Warbler now nests on the plot. Although there was little loss of nestlings to weather, that to raccoons and crows was noteworthy. **Acknowledgments:** Thanks to Victor and Gail Funk for permission to use the property.

97. ABANDONED PASTURE SCRUBLAND

PASTIZAL-MALEZA ABANDONADO

JACK ROMANOW

31 Crystal Beach Drive
Nepean, Ontario K2H 5M6

Location: Ontario; Municipality of Ottawa-Carleton; Kanata; Innis Point; 45°21'N, 75°54'W. **Continuity:** Established 1982; 9 yr. **Size:** 9.0 ha. **Description of Plot:** See *Amer. Birds* 37: 76-77 (1983). **Weather:** Mean temperature 16.6°C (range 13-20°C). **Coverage:** 24 h; 8 visits (mornings); 2, 10, 16, 28, 30 June; 2, 11, 14 July. **Census:** Yellow Warbler, 12.0 territories (53/40 ha); White-throated Sparrow, 10.0 (44); Song Sparrow, 9.0 (40); American Robin, 8.0 (36); Gray Catbird, 5.5 (24); Black-capped Chickadee, 4.5 (20); Eastern Wood-Pewee, 3.0 (13); Great Crested Flycatcher, 3.0; Black-and-white Warbler, 3.0; Field Sparrow, 2.5; Northern Oriole, 3.0; Northern Flicker, 2.0; Red-breasted Nuthatch, 2.0; Cedar Waxwing, 2.0; Red-eyed Vireo, 2.0; Brown-headed Cowbird, 2.0; Eastern Kingbird, 1.5; Veery, 1.5; Ovenbird, 1.5; Ruffed Grouse, 1.0; Spotted Sandpiper, 1.0; Blue Jay, 1.0; House Wren, 1.0; Scarlet Tanager, 1.0; American Woodcock, +; Mourning Dove, +; Black-billed Cuckoo, +; Downy Woodpecker, +; Hairy Woodpecker, +; White-breasted Nuthatch, +; Nashville Warbler, +; American Redstart, +; Common Yellowthroat, +; Rose-breasted Grosbeak, +; Common Grackle, +. **Total:** 35 species; 83.0 territories (369/40 ha). **Visitors:** Killdeer, Brown Thrasher, Least Flycatcher, Indigo Bunting, Olive-sided Flycatcher, Chestnut-sided Warbler, Yellow-rumped Warbler, Canada Warbler, Red-winged Blackbird, American Goldfinch. **Other Observers:** William J. Murphy. **Acknowledgments:** Chris Ellingwood for assistance and for ensuring a smooth transfer to continue the uninterrupted monitoring of this plot.

98. MATURE CITRUS ORCHARD

CULTIVOS DE CITROSAS

FRED E. LOHRER

Archbold Biological Station
P.O. Box 2057
Lake Placid, Florida 33852

Location: Florida; Highlands Co.; Lake Placid; Buck Island Ranch Citrus Grove; 27°8'N, 81°12'W; Brighton NW, USGS. **Continuity:** New. **Size:** 13.7 ha. **Description of Plot:** See WBPS 30 (this issue). **Weather:** Mean temperature 14.6°C (range 9-20°C). Counts were conducted during normal temperatures on calm and clear mornings except four counts conducted on foggy mornings. **Coverage:** 16.1 h; 12 visits (mornings); 6, 7, 13, 16 March; 9, 10, 11, 14, 16, 17 April; 1, 3, May. **Census:** Northern Cardinal, 14.5 territories (42/40

ha); White-eyed Vireo, 10.5 (31); Brown Thrasher, 2.0. **Total:** 3 species; 27 territories (79/40 ha). **Visitors:** Red-shouldered Hawk, Mourning Dove, Blue Jay, American Crow, Red-winged Blackbird, Green-backed Heron, Northern Yellowthroat, Yellow-billed Cuckoo. **Remarks:** A single Red-shouldered Hawk was seen on five visits; all were in immature plumage. **Acknowledgments:** This is contribution No. 3 from the John D. MacArthur Agro-ecology Research Center of Archbold Biological Station.