

## BREEDING BIRD CENSUS: 1989

Habitat	State/ Prov.	Compiler	Plot Size (ha)	Terr. per 40 ha	Num. sp./ ha	Hrs obs.	Yrs study
<b>Broadleaf Forest</b>							
1. Lowland Hardwood Riparian Forest	CA	M.B. Gross	13.7	404	38	95	4
2. Riparian Woodland	CA	K.L. Weaver	11.7	652	35	21	1
3. Coast Live Oak Woodland	CA	K.L. Weaver	5.1	752	24	12	1
4. Second-growth Hardwood Forest	CT	A. Magee	10.1	392	36	10	23
5. Oak-Hardwood Forest	CT	M. Dudek	15.7	163	26	25	3
6. Mixed Hardwood Poletumber	CT	A. Magee	8.5	444	33	11	23
7. Mixed Upland Broadleaf Forest	DC	S.A. Briggs	14.2	578	31	76	31
8. Mature Deciduous Floodplain Forest	MD	D. Gauthey	7.6	437	24	69	37
9. Mature Tuliptree-Oak Forest	MD	M. O'Brien	14.5	317	30	34	5
10. Isolated Tuliptree-Beech Forest	MD	M. O'Brien	17.8	307	41	45	1
11. Selectively Logged Mature Tuliptree-Oak Forest	MD	M. O'Brien	14.5	336	43	35	5
12. Isolated Moist Tuliptree-Red Maple Upland Forest	MD	C.S. Robbins	21.4	277	29	39	1
13. Old-growth Woods and Swamp	MI	L. Knapp	28.3	299	45	28	1
14. Upland Second-growth Oak-Hickory Forest	MS	H. Moore	10.1	560	34	17	1
15. Isolated Beech-Maple Woods	NY	R.T. Engstrom	13.5	157	23	26	1
16. Mature Urban Deciduous Forest	NY	D.S. Kürnsler	10.1	403	28	57	3
17. Mature Beech-Maple Forest on Lake Ontario Shore	NY	G.R. Maxwell	16.2	195	23	17	1
18. White Ash-Maple Forest	NY	G.R. Maxwell	16.2	158	29	10	4
19. Floodplain Forest	NC	S. Hall	12.6	279	38	13	13
20. Mixed Deciduous Forest	NC	S. Hall	12.6	231	30	14	14
21. River Floodplain Broadleaf Forest	OH	W.E. McGill	18.0	263	36	18	1
22. Riparian Deciduous Forest	OH	E.J. Tramer	18.0	250	38	23	1
23. Oak-Maple Slope Forest	PA	L. Goodrich	16.9	61	15	19	8
24. Oak-Maple Ridgeline Forest	PA	S.E. Senner	19.4	44	12	15	8
25. Virgin Hardwood Swamp Forest	SC	K.P. Bradley	8.9	550	17	16	4

## BREEDING BIRD CENSUS: 1989 (Continued)

Habitat	State/ Prov.	Compiler	Plot Size (ha)	Terr. per 40 ha	Num. spp.	Hrs obs.	Yrs study
<b>Broadleaf Forest</b>							
26. Tuliptree–Hickory Forest	VA	M.V. McDonald	10.0	212	19	25	2
27. Mesophytic Forest I	VA	M.G. Smith	6.1	698	22	22	8
28. Mesophytic Forest II	VA	E. Fisher	6.1	639	22	19	8
29. Chestnut Oak–Red Oak–Hickory Forest	VA	J.L. Dellett	6.1	127	16	13	2
<b>Broadleaf/Coniferous Forest</b>							
30. Oak–Hemlock Forest	CT	R.A. Askins	23.1	175	33	29	19
31. Young Mixed Hardwood–Conifer Stand	CT	A. Magee	8.5	522	42	8	12
32. Climax Hemlock–White Pine Forest with Transition Hardwoods	CT	A. Magee	10.5	356	35	13	23
33. Upland Oak and Hemlock Forest	CT	J. Zickefoose	10.5	352	24	8	1
34. Isolated Oak–Tuliptree–Pine Upland Forest	MD	C.S. Robbins	15.0	185	28	30	1
35. Tamarack Bog and Hardwood Forest	MI	J. Mullins	8.5	136	19	8	14
36. Upland Mixed Pine–Spruce–Hardwood Plantation	NY	E.W. Brooks	16.6	212	35	18	16
37. Young Spruce Forest	ME	K.L. Crowell	4.5	235	22	12	9
38. Mixed Oak–Pine Forest I	PA	D.A. Gross	6.0	336	34	22	13
39. Mixed Oak–Pine Forest II	PA	D.A. Gross	11.1	292	34	30	13
40. Hemlock–White Pine–Mixed Hardwood Forest	VA	K.R. Hinkle	6.1	262	14	14	4
41. Mountaintop Habitat	VA	C. Turner	8.6	167	13	8	3
42. Second-growth Broadleaf–Coniferous Forest	WA	D. Smith	21.4	48	24	13	3
<b>Coniferous Forest</b>							
43. Spruce–Hemlock Forest	AK	L. Prussin	8.1	120	10	27	2
44. Old-growth Mixed-coniferous–Red Fir Forest Transition	CA	S.N. Kee	42.3	164	27	89	5

## BREEDING BIRD CENSUS: 1989 (Continued)

Habitat	State/ Prov.	Compiler	Plot Size (ha)	Terr. per 40 ha	Num. spp.	Hrs obs.	Yrs study
<b>Broadleaf Forest</b>							
45. Ponderosa Pine Forest	CO	L. Hering	8.1	167	15	17	25
46. Mature Red Spruce Forest	ME	T.P. Skalina	16.0	136	24	25	1
47. Heavily Thinned White Spruce Plantation	ME	J.K. Markowsky	4.1	429	28	22	5
48. Jack Pine Forest	MI	J. Kaplan	16.0	60	12	28	5
49. Upland Christmas Tree Farm	NY	E.W. Brooks	10.7	211	22	16	7
50. Upland Scotch Pine Plantation	NY	E.W. Brooks	9.3	227	22	15	21
51. Mature Spruce Forest	ME	K.L. Crowell	4.0	105	11	3	3
52. Pinyon-Juniper Woodland	UT	D. Fagan	31.3	166	20	13	7
<b>Mixed Habitat (Forest/Non-forest)</b>							
53. Mature Upper Mixed-coniferous Forest-Montane Chaparral	CA	K. Purcell	42.3	285	36	87	5
54. Grazed Oak-Pine Woodland	CA	K. Purcell	29.7	158	24	83	5
55. Ungrazed Oak-Pine Woodland	CA	K. Purcell	29.7	126	23	84	5
56. Mountain Meadow and Open Coniferous Forest	CO	H.J. Stiles-Wainwright	13.0	200	24	39	9
57. Conifer-Brush-Grass Foothills Ecotone	CO	R.G. Bedleman	28.3	138	19	25	3
58. Mixed Habitat	CT	M. Dukek	15.0	517	52	30	4
59. Transition Forest and Thicket	CT	R.A. Askins	6.5	206	23	9	19
60. Bulrush and Cattail Marsh in Conifer Forest	MT	M.M. Bishop	40.5	181	56	17	15
61. Deciduous Forest with Pond and Brook	NJ	J. Brotherton	16.2	108	25	10	26
62. Suburban Bird Sanctuary	NY	W.J. Koldoniak	4.2	457	20	15	7
63. Abandoned Upland Pasture	NY	V.M. Pitrick	8.0	750	30	26	6
64. Oak-Hickory, Pine Stand, Edge, and Pond	OH	A.H. Claugus	14.2	163	29	49	49

## BREEDING BIRD CENSUS: 1989 (Continued)

Habitat	State/ Prov.	Compiler	Plot Size (ha)	Terr. per 40 ha	Num. spp.	Hrs obs.	Yrs study
65. Scattered Mixed-coniferous Forest in Subalpine Meadows and Spruce Bogs	OR	R.A. Hudson	32.4	43	10	14	17
66. Mixed-mesophytic Woods and Brush	TN	R.W. Simmers, Jr.	22.9	129	35	41	1
<b>Shrubland</b>							
67. Disturbed Coastal Scrub A	CA	G.R. Geupel	4.7	217	20	163	15
68. Disturbed Coastal Scrub B	CA	G.R. Geupel	8.1	123	17	199	16
69. Coastal Scrub	CA	G.R. Geupel	8.1	254	17	173	15
70. Abandoned Pasture-Scrubland	ON	C. Ellingwood	9.0	288	35	19	8
<b>Grassland</b>							
71. Coastal Prairie	CA	J.P. Kelly	31.0	32	12	8	2
72. Tallgrass Prairie I	IA	P.E. Lowther	16.0	80	16	6	6
73. Tallgrass Prairie II	IA	P.E. Lowther	65.7	71	13	9	6
74. Tallgrass Prairie III	IA	P.E. Lowther	44.8	127	19	9	6
75. Subirrigated Grassland	NE	G. Lingle	16.2	83	7	5	6
76. Subirrigated Native Hay	NE	G. Lingle	16.2	92	6	6	6
77. Kentucky Bluegrass Prairie	ND	D.H. Johnson	4.8	29	7	3	18
78. Mixed Prairie I	ND	D.H. Johnson	10.0	74	16	7	18
79. Mixed Prairie II	ND	D.H. Johnson	6.1	39	9	4	18
80. Mixed Prairie III	ND	D.H. Johnson	6.1	26	7	4	18
81. Mixed Prairie IV	ND	D.H. Johnson	6.1	30	10	3	18
82. Mixed Prairie V	ND	D.H. Johnson	6.1	66	9	4	18
<b>Wetlands</b>							
83. Desert Riparian-Freshwater Marsh and Ponds	CA	E. Cardiff	15.4	429	34	23	13
84. Coastal Freshwater Marsh	CA	J.P. Kelly	10.5	2209	17	12	5
85. Shrubby Swamp and Sedge Hummocks	CT	A. Magee	8.1	553	19	11	23

## BREEDING BIRD CENSUS: 1989 (Continued)

Habitat	State/ Prov.	Compiler	Plot Size (ha)	Terr. per 40 ha	Num. spp.	Hrs obs.	Yrs study
86. Gulf Coast Salt Marsh	FL	M.V. McDonald	20.0	132	3	8	10
87. Wetland Sedge Meadow I	NE	G. Lingle	16.2	119	9	6	6
88. Wetland Sedge Meadow II	NE	G. Lingle	16.2	122	7	6	5
89. Mixed Hardwood Swamp	OH	D. Hochadel	12.1	198	24	29	1
<b>Fields and Cultivated</b>							
90. Field, Ridge, and Shubby Trees	ON	M.F.G. Clark	6.6	775	23	15	1
91. Brushy Field with Trees and Hill	ON	M.F.G. Clark	6.3	374	20	10	1
92. Conventional Cash Crop Farm	PA	J.H. Blew	30.4	147	28	17	1
93. Organic Mixed Crop-Pasture Farm	PA	J.H. Blew	34.4	135	31	20	1
94. Conventional Dairy Farm	PA	J.H. Blew	23.1	191	37	18	1
95. Organic Pasture-Grain Farm	PA	J.H. Blew	18.4	380	31	22	1
<b>Residential/Urban</b>							
96. Suburban Cemetery	AL	T.A. Imhof	15.0	176	23	21	9

## 1. LOWLAND HARDWOOD RIPARIAN FOREST BOSQUE BAJO RIVEREÑO

MARGUERITE B. GROSS AND ROBIN L.C. LEONG  
321 Franciscan Drive  
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**Location:** California; Solano Co.; Cordelia; 38°16'N, 122°10'W. **Continuity:** Established 1937; 4 intermittent yrs. **Size:** 13.7 ha. **Description of Plot:** See *J. Field Ornithol.* 60(suppl.): 25–26 (1989). **Weather:** Temperature range 6 to 29°C. Persistent rain was avoided and only on a few days was high fog encountered. Wind was either up or down canyon and would often reach 40 kph in treetops, but was considerably less near the ground. The rainfall in March extended the life of much herbaceous cover. **Coverage:** 95 hrs; 15 visits (15 mornings); 1, 8, 14, 19, 29 April; 6, 9, 13, 20, 24, 27 May; 6, 10, 18, 24 June. **Census:** Black-headed Grosbeak, 11.5 (34/40 ha); House Wren, 11 (32; 5N); Rufous-sided Towhee, 10 (29; 1N); Orange-crowned Warbler, 8.5 (25); Song Sparrow, 8 (23; 1N); Warbling Vireo, 7 (20); Brown Towhee, 7; Western Flycatcher, 6.5 (19; 2N); Steller's Jay, 5 (15; 2N); Anna's Hummingbird, 4.5 (13; 2N); Chestnut-backed Chickadee, 4.5; American Robin, 4.5 (5N); Western Wood-Pewee, 4 (12; 3N); Bushtit, 4 (1N); Bewick's Wren, 3.5 (10); Solitary Vireo, 3.5 (1N); Dark-eyed Junco, 3.5 (1N); Nuttall's Woodpecker, 3 (9; 2N); Plain Titmouse, 3 (1N); California Quail, 2.5 (1N); Purple Finch, 2.5 (1N); Downy Woodpecker, 2 (1N); Brown Creeper, 2; Western Tanager, 2; Lesser Goldfinch, 2 (1; 1N) Black Phoebe, 1.5 (1N); Acorn Woodpecker, 1.5 (1N); Ash-throated Flycatcher, 1.5 (1N); Scrub Jay, 1.5; Hutton's Vireo, 1.5; Wilson's Warbler, 1 (1N); Allen's Hummingbird, 1 (1N); Brewer's Blackbird, 1 (2N); Brown-headed Cowbird, 1; Mourning Dove, 0.5 (1N); Violet-green Swallow, 0.5; European Starling, 0.5 (1N); Wild Turkey, + (1N). **Total:** 38 species; 138.5 territories (404/40 ha). **Visitors:** Green-backed Heron, Cooper's Hawk, Red-shouldered Hawk, Mountain Quail, Western Screech-Owl, Great Horned Owl, Belted Kingfisher, Hairy Woodpecker, Northern Flicker, Pileated Woodpecker, Barn Swallow, White-breasted Nuthatch, Blue-gray Gnatcatcher, Wrentit, Northern Oriole, House Finch.

**Remarks:** There was a 32% decline in Black-headed Grosbeak territories this year *vs* last year (17 *vs* 11.5). Not finding a single nest was startling and we noted no evidence of nest building, whereas 10 nests were found last year. However, some breeding did occur, as juveniles were noted. Turkey Vulture, Common Raven, and White-throated Swift nested on high cliffs above the upper end of the plot. Cooper's Hawk and Red-shouldered Hawk probably nest just off the plot. During 3 night visits to part of the plot (visits averaged 1.5 hrs) Western Screech-Owl, Great Horned Owl, and Northern Pygmy Owl were recorded, but no density estimates were made. **Other Observers:** John Lovio, Michael Rippey. **Acknowledgments:** Many thanks to Linda Adams, Dr. Luis Baptista, Joanne Castro, Harold Connor, Tim Jenkins, and Karen Rippey for invaluable assistance through all phases of the project. Steve Rae and Jake Ruygt's botanical expertise facilitated the vegetation work and analysis. We also thank the the City of Vallejo, Clyde and Diane Low, Arthur Garben, and the Twin Creeks Condominium Homeowner's Association for permission to use their private land. The financial support of the Napa-Solano Audubon Society is especially appreciated.

## 2. RIPARIAN WOODLAND BOSQUE RIVEREÑO

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**Location:** California; San Diego Co.; Fallbrook; 33°25'N, 117°14'W; Temecula Quadrangle, USGS. **Continuity:** New. **Size:** 11.7 ha. **Description of Plot:** See *Am. Birds* 38:105 (1984).

This area was included in a slightly larger area in a BBC conducted in 1982. An atypical 1.05 ha area with a sparse covering of mulefat was excluded from this census. **Weather:** Typical for season, clear on four visits, otherwise overcast. **Coverage:** 21 hrs; 11 visits; 27, 28, 30 March; 22, 30 April; 13, 27 May; 3, 8, 18 June; 7 July. **Census:** Song Sparrow, 28 (96/40 ha); Yellow Warbler, 21 (72); Yellow-breasted Chat, 15 (51); Lesser Goldfinch, 15; Bushtit, 14 (48); Common Yellowthroat, 13 (44); House Wren, 10 (34); Rufous-sided Towhee, 8 (27); Western Wood-Pewee, 6 (21); Band-tailed Pigeon, 5 (17); Mourning Dove, 5; Downy Woodpecker, 5; Western Flycatcher, 5; Warbling Vireo, 5; Black-headed Grosbeak, 5; Black-chinned Hummingbird, 4 (14); Plain Titmouse, 4; Swainson's Thrush, 4; Orange-crowned Warbler, 4; Brown-headed Cowbird, 4; Nuttall's Woodpecker, 2; Ash-throated Flycatcher, 2; Northern Rough-winged Swallow, 2; Wrentit, 2; Black Phoebe, 1; Northern Flicker, 1; Scrub Jay, 1; Red-shouldered Hawk, +; Great Blue Heron, +; Mallard, +; Turkey Vulture, +; California Quail, +; Great Horned Owl, +; Belted Kingfisher, +; Common Raven, +. **Total:** 35 species; 191 territories (652/40 ha). **Visitors:** Vaux's Swift, Willow Flycatcher, Bewick's Wren, Hutton's Vireo, Blue Grosbeak. **Remarks:** A number of riparian species that rarely breed elsewhere in San Diego County, such as Belted Kingfisher, Downy Woodpecker, Swainson's Thrush, and Warbling Vireo, were recorded on this plot. This area is also outstanding for the variety and numbers of breeding neotropical migrants. Although cowbirds were present on the plot, no young were observed. However, the federally-endangered Bell's Vireo, present in 1982, was not found this year. It is a common host of the cowbird. The most surprising finding was the occurrence of Band-tailed Pigeons since these birds typically breed at elevations of 1066 m or greater in San Diego County. The pigeons fed in oaks on the fringe of the plot. This area is threatened by a proposed dam. **Acknowledgments:** This census was conducted with the support of the Palomar Audubon Society.

### 3. COAST LIVE OAK WOODLAND

#### BOSQUE COSTANERO DE ROBLE DE HOJA MENUDA

KENNETH L. WEAVER

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**Location:** California; San Diego Co.; Fallbrook; Santa Margarita Ecological Reserve; 33°26'N, 117°11'W; Temecula Quadrangle, USGS. **Continuity:** New. **Size:** 5.1 ha.; irregular shape, measured with compass and measured pace. Plot length: 571.3 m; plot width varied from 30.5–121.9 m. **Description of Plot:** This oak woodland occupies a shallow canyon and parallels an E-W creekbed. A creek flowed throughout the plot in extreme E and extreme W, only through April in mid-section. A dirt road parallels the entire length of the creek. Quantitative vegetation survey using 5 circular plots totaling 0.2 ha gave trees 7.6 cm diameter and over: 455 tree stems/ha (note: live oaks on this plot typically split 30–60 cm above ground level into 2–5 stems); total basal area 116.7 m<sup>2</sup>/ha. Species comprising 95% of the total number of tree stems [figures after each are trees/ha, relative density (%), relative dominance (%), and frequency (%)]: Coast Live Oak, 351, 77, 91, 100; California Sycamore, 30, 7, 7, 20; Hollyleaf Cherry, 20, 4, 1, 40; dead snags, 30, 7, 1, 40. Trees by diameter size class [figures after each are trees/ha, relative density (%), basal area in m<sup>2</sup>/ha, and relative dominance (%)]: A (7.6–15.2 cm) 44, 10, 1, 40; B (15.2–22.9 cm) 10, 2, 1, 40; C (22.9–38.1 cm) 35, 8, 2, 60; D (38.1–53.3 cm) 35, 8, 4, 80; E (53.3–68.6 cm) 49, 11, 8, 60; F (68.6–83.8 cm) 54, 12, 11, 100; G (83.8–101.6 cm) 84, 18, 20, 100; H (101.6+ cm) 143, 31, 52, 100. Shrub stems/ha, 5136; ground cover 64.2%; canopy cover 90+%, average canopy height 11 m. Ground cover determined by 121.9 m of line intercept sampling gave: Poison Oak 46%, Coast Live Oak 44.3%; Hollyleaf Cherry 5.7%; Desert Grape 3.0%; others 1%. **Edge:** Riparian woodland continues E and W of plot, N and S edges bordered by chaparral. **Elevation:** 146.3–182.9 m. **Weather:** Typical for season, clear on three visits, overcast otherwise. **Coverage:** 12 hrs; 10 visits (all mornings); 31 March; 9, 15 April; 7, 20, 29 May; 4, 11, 22 June; 10 July. In addition, 2 hrs of owling were conducted. **Census:** Rufous-

sided Towhee, 12 (94/40 ha); House Wren, 11 (86); Hutton's Vireo, 10 (78); Black-chinned Hummingbird, 9 (71); Plain Titmouse, 8 (63); Song Sparrow, 8; Bushtit, 7 (55); Nuttall's Woodpecker, 5 (39); Lesser Goldfinch, 5; Western Flycatcher, 4 (31); Scrub Jay, 3.5 (27); Western Screech-Owl, 3 (24); Northern Flicker, 2; Acorn Woodpecker, 1.5; California Thrasher, 1.5; Black Phoebe, 1; Hairy Woodpecker, 1; Bewick's Wren, 1; Orange-crowned Warbler, 1; Common Yellowthroat, 1; California Quail, 0.5; Red-shouldered Hawk, +; Mourning Dove, +; Great Horned Owl, +. **Total:** 24 species; 96 territories (752/40 ha). **Visitors:** Ash-throated Flycatcher, Wrentit, Phainopepla. **Remarks:** Lesser Goldfinches displayed no definite territoriality, numbers represent average seen. Chaparral birds showed little penetration of the woodlands. High level of hole-nesting birds present, although European Starlings were notably absent. **Acknowledgments:** Thanks to Dr. John Tenhunen of San Diego State University for permission to conduct the census. Edward and Ilene Littlefield, Esther McNeil, and Donna Weaver helped with the census. Erin and Justin Weaver helped mark the plot and aided in the vegetation survey. This census was conducted with the support of the Palomar Audubon Society.

#### 4. SECOND-GROWTH HARDWOOD FOREST

##### BOSQUE SECUNDARIO

ANDREW MAGEE

*White Memorial Conservation Center  
Litchfield, Connecticut 06759*

**Location:** Connecticut; Litchfield Co.; Morris; 41°42'N, 73°12'W; Litchfield Quadrangle, USGS. **Continuity:** Established 1965; 23 intermittent yrs. **Size:** 10.1 ha. **Description of Plot:** See *Aud. Field Notes* 19:590-591 (1965). **Weather:** Temperatures were about average (20 to 28°C). The sky was usually partly cloudy; winds were light. **Coverage:** 10 hrs; 4 visits (1 morning, 2 afternoons, 1 evening); 5, 7, 20, 21 June. **Census:** Ovenbird, 17 (67/40 ha); Red-eyed Vireo, 13 (51); Veery, 12 (48); American Redstart, 5 (20); Black-capped Chickadee, 4 (16); Wood Thrush, 4; White-breasted Nuthatch, 3 (12); Common Yellowthroat, 3; Northern Flicker, 2; Eastern Wood-Pewee, 2; American Robin, 2; Gray Catbird, 2; Blue-winged Warbler, 2; Chestnut-sided Warbler, 2; Black-and-white Warbler, 2; Louisiana Waterthrush, 2; Scarlet Tanager, 2; Rufous-sided Towhee, 2; Song Sparrow, 2; Ruffed Grouse, 1; Downy Woodpecker, 1; Hairy Woodpecker, 1; Eastern Phoebe, 1; Great Crested Flycatcher, 1; Blue Jay, 1; American Crow, 1; Tufted Titmouse, 1; Brown Creeper, 1; House Wren, 1; Blue-gray Gnatcatcher, 1; Yellow-throated Vireo, 1; Northern Cardinal, 1; Rose-breasted Grosbeak, 1; Brown-headed Cowbird, 1; Pileated Woodpecker, 0.5; Northern Oriole, 0.5. **Total:** 36 species; 99 territories (392/40 ha). **Acknowledgments:** Gordon Loery of the White Memorial Conservation Center wrote up the report.

#### 5. OAK-HARDWOOD FOREST

##### BOSQUE DE ROBLE

MIKE DUDEK

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Sharon, Connecticut 06069*

**Location:** Connecticut; Litchfield Co.; Sharon; 41°53'N, 73°25'W; Sharon Quadrangle, USGS. **Continuity:** Established 1987; 3 consecutive yrs. **Size:** 15.7 ha. **Description of Plot:** See *J. Field Ornithol.* 60(suppl.):26. **Weather:** Generally a very wet June. Average rainfall, almost 5 cm above normal. Temperatures ranged from 5.6 to 24.4°C. **Coverage:** 25.3 hrs; 12 visits (8 mornings, 4 evenings); 2, 6, 9, 12, 17, 19, 21, 26, 28, 29 June; 1 July. **Census:** Ovenbird, 9.5 (24/40 ha); Eastern Wood-Pewee, 6 (15); Scarlet Tanager, 4 (10); Veery, 3.5 (9); Red-eyed Vireo, 3.5; Downy Woodpecker, 3 (8); Blue Jay, 3; Wood Thrush, 3; Rufous-sided Towhee, 3; Yellow-throated Vireo, 2.5; Yellow-bellied Sapsucker, 2; Northern

Flicker, 2; Black-capped Chickadee, 2; White-breasted Nuthatch, 2; Winter Wren, 2; Hermit Thrush, 2; Black-and-white Warbler, 2; Rose-breasted Grosbeak, 2; Ruby-throated Hummingbird, 1; Hairy Woodpecker, 1; Pileated Woodpecker, 1; American Robin, 1; Cedar Waxwing, 1; Common Yellowthroat, 1; Northern Oriole, 1; Ruffed Grouse, 0.5. **Total:** 26 species; 64.5 territories (163/40 ha). **Visitors:** Turkey Vulture, Red-tailed Hawk, Eastern Phoebe, Brown Creeper, Solitary Vireo. **Other Observers:** The census is run annually by seasonal interns and supervised by permanent staff of the Miles Wildlife Sanctuary.

## 6. MIXED HARDWOOD POLETIMBER

### BOSQUE MIXTO MADERERO

ANDREW MAGEE

*White Memorial Conservation Center  
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**Location:** Connecticut; Litchfield Co.; Bantam; 41°42'N, 73°13'W; Litchfield Quadrangle, USGS. **Continuity:** Established 1965; 23 intermittent yrs. **Size:** 8.5 ha. **Description of Plot:** See *Aud. Field Notes* 19:609–610 (1965). This plot was an abandoned hillside pasture sprinkled with small trees and shrubs – a hawthorn-barberry-fescue grass community. By a process of succession it has now become a maple, ash, Gray Birch poletimber stand with a dense understory. There are some crumbling stone walls and old fences in and around the plot. No bodies of water, rock outcrops, buildings or roads. **Weather:** Temperatures were about average (21 to 28°C). The sky was usually partly cloudy; winds were light. **Coverage:** 10.5 hrs; 4 visits (all afternoons); 5, 11, 19, 21 June. **Census:** Red-eyed Vireo, 11 (52/40 ha); Gray Catbird, 10 (47); Wood Thrush, 9 (42); Veery, 8 (38); Common Yellowthroat, 6 (28); Black-and-white Warbler, 5 (24); Ovenbird, 5; Black-capped Chickadee, 4 (19); Chestnut-sided Warbler, 4; American Redstart, 4; Blue Jay, 3 (14); Rufous-sided Towhee, 3; Ruffed Grouse, 2; American Woodcock, 2; American Robin, 2; Blue-winged Warbler, 2; Northern Cardinal, 2; American Goldfinch, 2; Brewster's Warbler, 1; Northern Flicker, 1; Eastern Wood-Pewee, 1; Cedar Waxwing, 1; Nashville Warbler, 1; Yellow Warbler, 1; Scarlet Tanager, 1; Rose-breasted Grosbeak, 1; American Crow, 0.5; Tufted Titmouse, 0.5; White-breasted Nuthatch, 0.5; Song Sparrow, 0.5; Northern Oriole, 0.5; Black-billed Cuckoo, +; Eastern Kingbird, +. **Total:** 33 species; 94.5 territories (444/40 ha). **Remarks:** The 5-year decline in the number of territorial males in this successional habitat was reversed this year. Red-eyed Vireos, at their highest point in 23 years, replaced catbirds as the most abundant species. The Veery was also found in peak numbers, but is still outnumbered by Wood Thrush. Blue-winged Warblers continued their decline to a new low of 2 territorial males. **Acknowledgments:** Gordon Loery of the White Memorial Conservation Center wrote up the report.

## 7. MIXED UPLAND BROADLEAF FOREST

### BOSQUE MIXTO DE HOJA LARGA EN ALTURAS

SHIRLEY A. BRIGGS

*7605 Honeywell Lane  
Bethesda, Maryland 20814*

**Location:** District of Columbia; Washington DC; 38°55'N, 77°05'W; Washington West DC-MD-VA Quadrangle 7.5 minute series, USGS. **Continuity:** Established 1959; 31 consecutive yrs. **Size:** 14.2 ha. **Description of Plot:** See *Aud. Field Notes* 14:502–503 (1960). **Weather:** Temperatures ranged from 5.3 to 29.4°C; days mostly clear and calm. **Coverage:** 76 hrs; 28 visits; 25.5 complete coverages (24 mornings, 3 afternoons, 1 evening); 2, 15, 23, 24 April; 6, 13, 18, 20, 22, 27 May; 3, 11, 12, 13, 14, 18, 19, 20, 25, 26, 30 June; 8, 15, 21, 28 July. **Census:** Gray Catbird, 25 (70/40 ha); Northern Cardinal, 24 (68); Carolina Wren, 23 (65; FL); Carolina Chickadee, 18 (51); Tufted Titmouse, 16 (45); Veery, 13 (37);

Rufous-sided Towhee, 11 (31); Red-bellied Woodpecker, 10 (28; adults carrying food); Wood Thrush, 8 (23); Red-eyed Vireo, 8; Northern Flicker, 7 (20); Downy Woodpecker, 5.5 (15); American Robin, 5 (14; FL); American Crow, 4.5 (13; FL); Blue Jay, 4 (11); Acadian Flycatcher, 3 (8); White-breasted Nuthatch, 3; Common Grackle, 3; European Starling, 2.5; House Finch, 2.5; Mourning Dove, 2; Eastern Wood-Pewee, 2; Pileated Woodpecker, 1.5; Hairy Woodpecker, 1; House Wren, 1; Common Yellowthroat, 1; House Sparrow, 1; Chimney Swift, +; Great Crested Flycatcher, +; Northern Mockingbird, +; Song Sparrow, +. **Total:** 31 species; 205.5 territories (578/40 ha). **Visitors:** Wood Duck, Mallard, Black Vulture, Turkey Vulture, Red-shouldered Hawk, Red-tailed Hawk, Yellow-billed Cuckoo, Eastern Screech Owl, Eastern Phoebe, Fish Crow, Blue-gray Gnatcatcher, Northern Parula, American Redstart, Ovenbird, Scarlet Tanager, Brown-headed Cowbird, American Goldfinch. **Remarks:** Totals were generally in line with recent counts with this amount of coverage. White-tailed Deer and Raccoon were seen. **Other Observers:** Mary D'Imperio, Ann Feather, and Olive Holbrook.

## 8. MATURE DECIDUOUS FLOODPLAIN FOREST

BOSQUE DECIDUO MADURO INUNDABLE

DICK GAUTHHEY

6603 Reynard Drive  
Springfield, Virginia 22152

**Location:** Maryland; Montgomery Co.; Glen Echo; Cabin John Island; 38°58'N, 77°08'W; Falls Church Quadrangle, USGS. **Continuity:** Established 1947; 37 intermittent yrs. **Size:** 7.6 ha. **Description of Plot:** See *Aud. Field Notes* 1:212-213 (1947). **Weather:** Temperatures ranged from 4 to 27°C at the start of the counts; winds ranged from 0 to 4 (Beaufort scale).

The entire breeding season was one of the wettest on record and until mid-May one of the coolest. High water prevented access to the areas most of the first two weeks in May. **Coverage:** 69 hrs; 20 visits (all mornings); 8, 14, 16, 18, 21, 23, 25, 27 April; 3, 12, 15,

19, 22, 26, 28 May; 1, 4, 10, 14 June. **Census:** European Starling, 16 (84/40 ha); Carolina Chickadee, 7 (37); Northern Parula, 7; Acadian Flycatcher, 5 (26); Tufted Titmouse, 5; Blue-gray Gnatcatcher, 5; Northern Cardinal, 5; Downy Woodpecker, 4.5 (24); Carolina Wren, 4.5; Red-eyed Vireo, 4 (21); Wood Duck, 2; Red-bellied Woodpecker, 2; Eastern Wood-Pewee, 2; Great Crested Flycatcher, 2; Yellow-throated Warbler, 2; Song Sparrow, 2; Hairy Woodpecker, 1; Northern Flicker, 1; Pileated Woodpecker, 1; White-breasted Nuthatch, 1; Indigo Bunting, 1; Brown-headed Cowbird, 1; Northern Oriole, 1; House Finch, 1. **Total:** 24 species; 83 territories (437/40 ha). **Visitors:** Mourning Dove, Barred Owl, Ruby-throated Hummingbird, Blue Jay, American Crow, Warbling Vireo, Common Grackle, Orchard Oriole, American Goldfinch. **Remarks:** Most breeders were near the high end of normal variation in numbers resulting in the highest total number of territorial males (83) since 1975. The only neotropical migrant that has shown an increase in the last few years is Northern Parula, which had 7 territorial males this year. This is the highest number since 1973. **Other Observers:** John Eliot, Dick Homan, Letty Limbach, Reetta Raag, Marc Whitlow.

## 9. MATURE TULIPTREE-OAK FOREST

BOSQUE MADURO DE ÁLAMO-ROBLE

MICHAEL O'BRIEN AND BARBARA A. DOWELL

*Patuxent Wildlife Research Center*  
Laurel, Maryland 20708

**Location:** Maryland; Prince Georges Co., 5.9 km SSW of Bowie; 38°35'45"N; 76°45'46"W, Lanham Quadrangle, USGS. **Continuity:** Established 1947; 5 intermittent years. **Size:** 14.5 ha. **Description of Plot:** See *Am. Birds* 31:17-23. A quantitative survey of the present

vegetation (James and Shugart, *Aud. Field Notes* 24:727-736) is as follows: Trees 8-cm dbh and over, based on seven 0.4 ha samples, 424/ha; total basal area, 39.8 m<sup>2</sup>/ha. Species comprising 93% of the trees >8 cm dbh [figures after each give number of trees/ha, relative density (%), relative dominance (%), frequency (% of samples), in that sequence]: Tuliptree, 46, 10.8, 43.0, 57; White Oak, 25, 5.8, 19.1, 71; Northern Red Oak, 14, 3.0, 14.6, 57; Black Tupelo, 56, 13.0, 7.5, 57; dead trees, 35, 8.3, 6.7, 57; Flowering Dogwood, 187, 44.2, 4.5, 100; Pignut Hickory, 46, 10.8, 2.1, 71. Trees by diameter size class [figures after each class give number of trees/ha, relative density (%), basal area in m<sup>2</sup>/ha, relative dominance]: S (sapling, 3-8 cm dbh), 657, -, 1.6, -; A (8-15 cm) 272, 64.2, 2.5, 6.3; B (15-23 cm) 28, 6.7, 0.8, 2.0; C (23-38 cm) 32, 7.5, 2.4, 5.9; D (38-53 cm) 28, 6.7, 4.7, 11.9; E (53-69 cm) 14, 3.3, 4.1, 10.2; F (69-84 cm) 35, 8.3, 16.1, 40.3; G (84-102 cm) 14, 3.3, 9.3, 23.4. Density board readings (% of 10 × 10 cm squares more than 50% obscured by green vegetation from a distance of 11.35 m, n = 28): 0-0.3 m, 60; 0.3-1 m, 39; 1-2 m, 36; 2-3 m, 38. Foliage profile (% occurrence of green vegetation based on 140 vertical sightings): 0-0.5 m, 44; 0.5-1 m, 2; 1-1.5 m, 0; 1.5-2 m, 2; 2-2.5 m, 6; 2.5-3 m, 11; 3-4 m, 19; 4-6 m, 43; 6-8 m, 24; 8-10 m, 24; 10-15 m, 23; 15-20 m, 20; 20-25 m, 15; 25-30 m, 43; 30-35 m, 57. Shrub stems/ha, 7150; ground cover, 43%; canopy cover, 96%; average canopy height, 28.7 m (range, 9-35). **Edge:** The plot is bordered on three sides by a patchwork of field and forest. The immediate S and E borders are medium to heavy-duty roads (Church Road and Central Avenue). The NW corner of the plot is continuous with a patch of young woods. Since the last breeding season, a housing development has replaced the formerly wooded corridor on the E. **Topography and Elevation:** 43-55 m, sloping gradually to the S and toward the center. **Coverage:** 34 hrs; 8 complete visits, plus an evening Wood Thrush census on 29 June; 22 May through 10 July. **Census:** Wood Thrush, 30 (83/40 ha; 17N; FL); Red-eyed Vireo, 25.5 (70; 4N; FL); Acadian Flycatcher, 7.5 (21; 8N; FL); Eastern Wood-Pewee, 5.5 (15); Ovenbird, 5.5 (FL); Carolina Wren, 5 (14; FL); Northern Cardinal, 5 (1N; FL); Red-bellied Woodpecker, 4 (11; 1N; FL); Downy Woodpecker, 4 (1N; FL); Scarlet Tanager, 3.5 (10; FL); Tufted Titmouse, 3 (8; FL); Carolina Chickadee, 2.5 (FL); Brown-headed Cowbird, 2 (FL fed by a Red-eyed Vireo); Blue Jay, 1.5 (FL); Kentucky Warbler, 1.5 (FL); Hooded Warbler, 1.5 (1N); Ruby-throated Hummingbird, 1; Hairy Woodpecker, 1 (2N; FL); Northern Flicker, 1 (1N; FL); Great Crested Flycatcher, 1; American Crow, 1; White-breasted Nuthatch, 1; American Robin, 1 (1N); Mourning Dove, 0.5; Pileated Woodpecker, 0.5; Yellow-throated Vireo, 0.5; Yellow-billed Cuckoo, +; Eastern Kingbird, +; Indigo Bunting, +; Common Grackle, +. **Total:** 30 species; 116 territories (317/40 ha). **Remarks:** The density of Wood Thrushes seemed unusually high with nearly twice the 1977 population. Notable decreases since 1977 (50% or more) included Red-bellied Woodpecker, Downy Woodpecker, Eastern Wood-Pewee, and Kentucky Warbler. Several severe storms in June may have affected some species. Species found in the buffer strip surrounding the census plot included Northern Bobwhite, American Woodcock, Eastern Kingbird, Prairie Warbler, Common Yellowthroat, Yellow-breasted Chat, Rufous-sided Towhee, and Field Sparrow. **Acknowledgments:** We greatly appreciate Robert Whitcomb's help in relocating census lines he had used in 1977. Cherry Keller conducted the evening Wood Thrush census.

## 10. ISOLATED TULIPTREE-BEECH FOREST

BOSQUE AISLADO DE ÁLAMO-HAYA

MICHAEL O'BRIEN AND BARBARA A. DOWELL

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**Location:** Maryland; Prince Georges Co., 2.4 km SW of Bowie; 38°56'N, 76°46'20"W, Lanham Quadrangle, USGS. **Continuity:** New. **Size:** 17.8 ha. **Description of Plot:** An isolated, upland, Tuliptree and American Beech forest with a mixed understory and intermittent streams and swampy areas. Much of the periphery of this 45 ha tract is second growth. The more mature core of 17.8 ha was selected for study. A quantitative survey of the vegetation (James and Shugart, *Aud. Field Notes* 24:727-736) is as follows: Trees 8-cm

dbh and over, based on seven 0.04 ha circular samples, 466/ha; total basal area, 25.9 m<sup>2</sup>/ha. Species comprising 90% of the trees >8 cm dbh [figures after each give number of trees/ha, relative density (%), relative dominance (%), frequency (% of samples), in that sequence]: Tuliptree, 106, 22.7, 39.0, 86; American Beech, 78, 16.7, 12.2, 71; White Oak, 14, 3.0, 9.5, 29; Sweetgum, 71, 15.2, 9.0, 86; ash, 14, 3.0, 7.6, 29; Southern Red Oak, 11, 2.3, 4.3, 14; dead trees, 49, 10.7, 3.9, 71; Virginia Pine, 11, 2.3, 3.0, 14; Red Maple, 32, 6.8, 2.8, 86; Black Tupelo, 32, 6.8, 2.3, 43; Black Walnut, 11, 2.3, 0.9, 14. Trees by diameter size class [figures after each class give number of trees/ha, relative density (%), basal area in m<sup>2</sup>/ha, relative dominance]: S (sapling, 3–8 cm dbh), 417, –, 1.0, –; A (8–15 cm) 194, 41.7, 1.8, 7.0; B (15–23 cm) 92, 19.7, 2.5, 9.8; C (23–38 cm) 106, 22.7, 7.9, 30.4; D (38–53 cm) 64, 13.6, 10.6, 41; E (53–69 cm) 11, 2.3, 3.1, 11.8. Density board readings (% of 10 × 10 cm squares more than 50% obscured by green vegetation from a distance of 11.35 m, n = 28): 0–0.3 m, 55; 0.3–1 m, 35; 1–2 m, 29; 2–3 m 36. Foliage profile (% occurrence of green vegetation based on 140 vertical sightings): 0–0.5 m, 38; 0.5–1 m, 4; 1–1.5 m, 1; 1.5–2 m, 4; 2–2.5 m, 6; 2.5–3 m, 4; 3–4 m, 4; 4–6 m, 11; 6–8 m, 14; 8–10 m 15; 10–15 m, 23; 15–20 m, 15; 20–25 m, 29; 25–30 m, 49; 30–35 m, 24. Shrub stems/ha, 11,650; ground cover, 53%; canopy cover, 100%; average canopy height, 28 m (range 18–35). **Edge:** The plot is bordered on the N by open fields with a small airport, on the E by a patchwork of second-growth woods and fields, on the S by a ball field, and on the W by a brushy powerline cut across from which is a small patch of woods. **Topography and Elevation:** 37–49 m, with steep hills and a network of swampy streams throughout. **Coverage:** 45 hrs; 8 complete visits, 8 June–7 July; plus 5 partial visits 12–31 May. **Census:** Red-eyed Vireo, 30.5 (69/40 ha; FL); Ovenbird, 23 (52; 4N; FL); Wood Thrush, 20 (45; 8N; FL); Acadian Flycatcher, 13.5 (30; 6N; FL); Red-bellied Woodpecker, 5 (11; 1N; FL); Eastern Wood-Pewee, 5; Carolina Wren, 5 (FL); Northern Cardinal, 4 (9; 2N; FL); Tufted Titmouse, 3 (7; 1N; FL); Kentucky Warbler, 3 (FL); Scarlet Tanager, 3 (FL); Downy Woodpecker, 2; Carolina Chickadee, 2 (1N; FL); Yellow-billed Cuckoo, 1.5; Northern Flicker, 1.5; White-breasted Nuthatch, 1.5; Blue-gray Gnatcatcher, 1.5 (FL); Hooded Warbler, 1.5 (FL); Rufous-sided Towhee, 1.5 (1N; FL); Brown-headed Cowbird, 1.5 (FL one fed by Red-eyed Vireo, one by Kentucky Warbler); Ruby-throated Hummingbird, 1; Hairy Woodpecker, 1; Blue Jay, 1 (FL); White-eyed Vireo, 1; Northern Parula, 1; Louisiana Waterthrush, 1 (FL); Barred Owl, 0.5 (FL); Yellow-throated Vireo, 0.5; Red-tailed Hawk, + (FL); Pileated Woodpecker, +; Great Crested Flycatcher, +; American Crow, + (FL); American Robin, + (FL); Gray Catbird, +; Brown Thrasher, + (FL); Black-and-white Warbler, +; American Redstart, +; Common Yellowthroat, +; Indigo Bunting, +; Field Sparrow, + (FL); American Goldfinch, +. **Total:** 41 species; 136.5 territories (307/40 ha). **Remarks:** Several severe storms in June may have affected some species. Species found in the buffer strip surrounding the census plot were: American Woodcock, Eastern Kingbird, Eastern Bluebird, Northern Mockingbird, European Starling, Prairie Warbler, Yellow-breasted Chat, Blue Grosbeak, Song Sparrow, Common Grackle, Orchard Oriole, and House Finch. Worthy of special note are the unusually high densities recorded for Acadian Flycatcher and especially Ovenbird. **Acknowledgments:** We thank Deanna Dawson and Cherry Keller for their help in laying out census lines.

## 11. SELECTIVELY LOGGED MATURE TULIPTREE-OAK FOREST

BOSQUE MADURO ENTRESACADO DE ÁLAMO-ROBLE

MICHAEL O'BRIEN

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**Location:** Maryland; Prince Georges Co., 4.5 km S of Bowie; 38°55'N, 76°45'30"W; Lanham Quadrangle, USGS. **Continuity:** Established 1975; 5 intermittent years. **Size:** 14.5 ha.

**Description of Plot:** See *Am. Birds* 31:17–23 and 92–93 (1977). For quantitative vegetation survey see *J. Field Ornithol.* 60(suppl.):71–72 (1989), in which the following corrections

should be made on page 71: trees/ha for the eight tree species (including dead trees) should read 141, 116, 71, 28, 18, 14, 11, and 7, respectively, and shrub stems/ha should read 20,700. **Coverage:** 35 hrs; 6 complete visits, 8 June–3 July; 7 partial (80 to 90% of the plot) visits, 18 May–20 July. **Census:** Northern Cardinal, 21.5 (59/40 ha); Red-eyed Vireo, 21 (58); Wood Thrush, 10 (28); Acadian Flycatcher, 9 (25); Red-bellied Woodpecker, 5.5 (15); Carolina Wren, 5.5; Tufted Titmouse, 5 (14); Eastern Wood-Pewee, 4 (11); White-eyed Vireo, 4; Hooded Warbler, 3.5 (10); Downy Woodpecker, 3 (8); Blue-gray Gnatcatcher, 3; Scarlet Tanager, 3; Northern Flicker, 2.5; Carolina Chickadee, 2; Gray Catbird, 2; Indigo Bunting, 2; Brown-headed Cowbird, 2; Mourning Dove, 1.5; American Robin, 1.5; Eastern Kingbird, 1; Blue Jay, 1; Brown Thrasher, 1; Yellow-throated Vireo, 1; Ovenbird, 1; Kentucky Warbler, 1; Common Grackle, 1; Orchard Oriole, 1; Yellow-billed Cuckoo, 0.5; Hairy Woodpecker, 0.5; American Crow, 0.5; Northern Mockingbird, 0.5; Yellow Warbler, 0.5; Ruby-throated Hummingbird, +; Pileated Woodpecker, +; Great Crested Flycatcher, +; White-breasted Nuthatch, +; Cedar Waxwing, +; Northern Parula, +; Common Yellowthroat, +; Chipping Sparrow, +; Northern Oriole, +; American Goldfinch, +. **Total:** 43 species; 122 territories (336/40 ha). **Remarks:** Several severe storms in June may have affected some species. The greatest decreases since last year (50% or more) were in Mourning Dove, Yellow-billed Cuckoo, Red-bellied Woodpecker, Hairy Woodpecker, American Crow, and Kentucky Warbler. Species with notable increases were Acadian Flycatcher, Carolina Wren, and Blue-gray Gnatcatcher. Other species found in the buffer strip surrounding the census plot were Red-tailed Hawk, Yellow-breasted Chat, Blue Grosbeak, Field Sparrow, Song Sparrow, and House Finch. **Acknowledgments:** I thank Cherry Keller for clearing the census lines and conducting six partial census visits.

## 12. ISOLATED MOIST TULIPTREE-RED MAPLE UPLAND FOREST

BOSQUE AISLADO DE ÁLAMO-ARCE EN ALTURA

CHANDLER S. ROBBINS

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**Location:** Maryland; Howard Co.; 1 km E of Clarksville; 39°12'N, 76°55'30"W; Clarksville Quadrangle, USGS. **Continuity:** New, but partial census and intensive nest study were conducted in 1988. **Size:** 21.4 ha. **Description of Plot:** Two irregular fragments of mature piedmont forest (12.5 and 8.9 ha), separated from each other at one corner by a 10-m strip of mowed field. No point in the forest is more than 150 m from an edge, so the entire undisturbed portion of the forest was censused. Selective removal of oaks and walnuts about 23 years ago has resulted in heavy dominance by Tuliptrees (57%); there is a dense understory of Flowering Dogwoods (65% of saplings with dbh of 3–8 cm), and Spicebush is the dominant shrub. Trees, 8-cm diameter and over, based on seven 0.04 ha samples, 600/ha; total basal area, 39.3 m<sup>2</sup>/ha. Species comprising 92% of the trees > 8 cm dbh [figures after each give number of trees/ha, relative density (%), relative dominance (%), frequency (% of samples), in that sequence]: Tuliptree, 213, 36, 57, 100; Red Maple, 52, 9, 9, 43; Black Tupelo, 42, 7, 6, 57; Pignut Hickory, 64, 11, 4, 86; dead trees, 57, 10, 3, 71; Virginia Pine, 15, 3, 3, 14; Flowering Dogwood, 77, 13, 2, 71; Blackhawk, 15, 2, 0.3, 14. Trees by diameter size class figures after each class give number of trees/ha, relative density (%), basal area in m<sup>2</sup>/ha, relative dominance]: S (sapling, 3–8 cm dbh), 643, –, 5.4, –; A (8–15 cm), 262, 44, 2.7, 7; B (15–23 cm), 101, 17, 2.9, 7; C (23–38 cm), 109, 18, 8.0, 20; D (38–53 cm), 96, 16, 15.7, 39; E (53–69 cm), 25, 4, 7.2, 18; F (69–84 cm), 7, 1, 3.2, 8. One ancient White Oak has a dbh of more than 146 cm. Density board readings (% of 10 × 10 cm squares more than 50% obscured by green vegetation from a distance of 11.35 m, n = 28): 0–0.3 m, 66; 0.3–1 m, 48; 1–2 m, 31; 2–3 m, 31. Foliage profile (% occurrence of green vegetation based on 140 vertical sightings): 0–0.5 m, 37; 0.5–1 m, 14; 1–1.5 m, 4; 1.5–2 m, 4; 2–2.5 m, 15; 2.5–3 m, 13; 3–4 m, 12; 4–6 m, 41; 6–8 m, 27; 8–10 m, 22; 10–15 m, 27; 15–20 m, 44; 20–25 m, 44; 25–30 m, 17; 30–35 m, 4. Shrub stems/ha, 17,500; ground cover, 49%; canopy

cover, 97%; average canopy height, 28.5 m (range 14.6–35.9). **Edge:** Bordered on the E by housing (beyond a 50-m buffer of woodland), on much of the N and S by hayfields, on the SW by young forest, and on the rest by brushy fields. **Topography and Elevation:** Gentle S slope; 105–130 m. **Weather:** Rainfall was unusually heavy from April through July. **Coverage:** 39 hrs (including time searching for nests and evidence of nesting success); 8 visits; 9 June–15 July; also 40 hrs operating mist nets (322 net-hrs), 19 July–25 August, to obtain additional evidence of nesting success. **Census:** Wood Thrush, 32 (60/40 ha; 23N; FL); Gray Catbird, 15 (28; 13N; FL); Red-eyed Vireo, 15; Red-bellied Woodpecker, 10 (19); Mourning Dove, 9 (17; 4N; FL); Acadian Flycatcher, 7.5 (14; 2N; FL); Tufted Titmouse, 7 (13; FL); Northern Cardinal, 5.5 (10; 4N; FL); White-breasted Nuthatch, 5 (9; FL); Carolina Wren, 5 (FL); Scarlet Tanager, 4.5 (8; FL); Rufous-sided Towhee, 4 (7; 2N; FL); Yellow-billed Cuckoo, 3 (6); Eastern Wood-Pewee, 3; Brown-headed Cowbird, 3 (FL fed by Red-eyed Vireo); Northern Flicker, 2.5; Carolina Chickadee, 2.5 (FL); Downy Woodpecker, 2 (FL); Kentucky Warbler, 2 (FL); Hooded Warbler, 2 (1N with Brown-headed Cowbird egg; FL); Blue Jay, 1.5; White-eyed Vireo, 1.5; Hairy Woodpecker, 1; Veery, 1; American Robin, 1 (FL); Ovenbird, 1; Barred Owl, 0.5; Pileated Woodpecker, 0.5; American Crow, 0.5 (FL). **Total:** 29 species; 148 territories (277/40 ha). **Visitors:** Green-backed Heron, Wood Duck, Red-shouldered Hawk, Yellow-throated Vireo, Common Grackle, House Finch. **Remarks:** A female Hooded Warbler that raised young in this plot had been banded (number 1710–32210) 15 km away near Colesville, Maryland, on 10 September 1987 by Nancy MacClintock. Note the extraordinary density of Wood Thrushes and the comparative scarcity of other neotropical migrants. For comparison with a more extensive upland forest on the same general soil types (part of a 2.6 km<sup>2</sup> woodland) 1.5 km away along the Middle Patuxent River, see census of Upland Tuliptree–Maple–Oak Forest (*Am. Birds* 25:971, 26:944–945, 27:965, 28:1002, 29:1088–1089, 31:39, 32:61–62, 33:113). **Acknowledgments:** I thank Robert Young of the Rouse Company for permission to study the birds of this site, and I thank Barbara Dowell for helping with the vegetation survey.

### 13. OLD-GROWTH WOODS AND SWAMP

#### 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°04'W; T3S, R6W. **Continuity:** New. **Size:** 28.33 ha. (Total preserve size=57.47 ha). **Description of Plot:** Most of the preserve is old-growth forest blending into swamp forest at the S end. Census route covers oldgrowth and swamp forest areas and swings by a small stream. There are many clearings from tree falls that are in earlier successional stages – shrubs, grasses, ground cover. The forest has an uneven age structure (seedlings to overmature trees) and is called a "shifting mosaic steady-state" oak-hickory forest. There are no roads or trails through the preserve. **Water:** A small stream or drainage ditch, fed by ground water and a small spring, runs slowly E-W through the spring and summer near the S end of preserve. Approximately 50 m of the stream was included in the plot due to inaccessibility from dense vegetation. The ground in the swamp forest area is spongy during breeding season and was flooded approximately 2 weeks in mid-June. **Edge:** Active farmland on E and W sides of preserve; abandoned field along N border; road on small section of N border; relatively large brushy clearing on S side. Immediate edges have dense brushy vegetation and some fruit trees (apple, cherry). **Topography and Elevation:** Flatland; 243.9 m. **Weather:** Temperatures ranged from 16 to 29°C with a mean 24°C. The wind speed ranged from 1–20 kph with a mean of 7 kph. The sky ranged from clear to overcast. **Coverage:** 27.8 hrs; 8 visits (3 mornings, 4 afternoons, and 1 evening); 15, 22, 29 May; 1, 6, 14, 29 June; 4 July. **Census:** Song Sparrow, 21 (30/40 ha); Tufted Titmouse, 11 (16); Veery, 10; (14); Gray Catbird, 10 Common Yellowthroat, 10; Northern Cardinal, 10; Eastern Wood-Pewee, 9;

(13); Blue Jay, 9; Yellow-throated Vireo, 9; Rose-breasted Grosbeak, 9; Indigo Bunting, 8 (11); Black-capped Chickadee, 7 (10); Red-eyed Vireo, 7; Great Crested Flycatcher, 6 (8); Ovenbird, 6; American Goldfinch, 6; Cedar Waxwing, 5 (7); Yellow Warbler, 5; American Robin, 4 (6); Scarlet Tanager, 4; Yellow-billed Cuckoo, 3 (4); Acadian Flycatcher, 3; White-breasted Nuthatch, 3; Blue-gray Gnatcatcher, 3; Wood Thrush, 3; Blue-winged Warbler, 3; Northern Oriole, 3; Black-billed Cuckoo, 2; Red-bellied Woodpecker, 2; Downy Woodpecker, 2; Hairy Woodpecker, 2; Northern Flicker, 2; American Crow, 2; Rufous-sided Towhee, 2; Brown-headed Cowbird, 2; Canada Goose, 1; Mallard, 1; Red-tailed Hawk, 1; Ruffed Grouse, 1; Eastern Screech Owl, 1; Great Horned Owl, 1; Willow Flycatcher, 1; Least Flycatcher, 1; House Wren, 1; Black-and-white Warbler, 1. **Total:** 45 species; 212 territories (299/40 ha). **Visitors:** Turkey Vulture, Ring-necked Pheasant, Sandhill Crane, Field Sparrow. **Remarks:** An abandoned field (N side) was plowed up in late August. This will affect edge species and cause some increase in human disturbance. Overall level of human disturbance is very low due to relative inaccessibility of interior, density of edge vegetation, and lack of trails. In mid-June exceptionally heavy rains occurred, flooding large area of the preserve. This could have affected ground feeders.

## 14. 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; 32°14'N, 90°49'W; Big Black-Mississippi 7.5 mi Quadrangle, USGS. **Continuity:** New. **Size:** 10.1 ha (square). **Description of Plot:** See Winter Bird Population Study this issue. **Weather:** Temperatures ranged from 8.9 to 23.9°C on census days with little or no wind in mornings. No rain fell during census days. **Coverage:** 17 hrs; 10 visits (all mornings); 25, 26 April; 2, 8, 11, 12, 15, 17, 20, 22 May. **Census:** Northern Cardinal, 17 (67/40 ha); Acadian Flycatcher, 11 (44); Red-bellied Woodpecker, 10 (40); Red-eyed Vireo, 10; Tufted Titmouse, 9 (36); Carolina Wren, 9; White-eyed Vireo, 8 (32); Blue-gray Gnatcatcher, 6 (24); Prothonotary Warbler, 6; Hooded Warbler, 6; Great Crested Flycatcher, 5 (20); Yellow-billed Cuckoo, 4 (16); Carolina Chickadee, 4; Wood Thrush, 4; Kentucky Warbler, 4; Downy Woodpecker, 3.5 (14); Summer Tanager, 3 (12); Brown-headed Cowbird, 3; Ruby-throated Hummingbird, 2; Worm-eating Warbler, 2; Louisiana Waterthrush, 2; Orchard Oriole, 2; Red-shouldered Hawk, 1; Wild Turkey, 1; Barred Owl, 1; Pileated Woodpecker, 1; Blue Jay, 1; American Crow, 1; Fish Crow, 1; Yellow-throated Vireo, 1; Northern Parula, 1; Yellow-breasted Chat, 1; Eastern Wood-Pewee, 0.5; Rufous-sided Towhee, 0.5. **Total:** 34 species; 141.5 territories (560/40 ha). **Visitors:** Black Vulture, Turkey Vulture, Chimney Swift, Purple Martin, Eastern Bluebird.

## 15. ISOLATED BEECH-MAPLE WOODS

BOSQUE AISLADO DE HAYA-ARCE

R. TODD ENGSTROM

Cornell Laboratory of Ornithology  
159 Sapsucker Woods Road  
Ithaca, New York 14850

**Location:** New York; Tompkins Co.; Ithaca; Sapsucker Woods; 42°29'N, 76°27'W; Ithaca East Quadrangle, USGS. **Continuity:** New, but the birds have been counted on the plot periodically since 1949. **Size:** 13.5 ha (300 × 450 m). **Description of Plot:** The plot is located in the W half of Sapsucker Woods Sanctuary, which was established in 1953 in an isolated woodlot. The plot had never been plowed for agriculture because the soil was too

wet; however, it was periodically grazed until 1920 and logged until 1953. The landscape surrounding the sanctuary was developed for agriculture starting in the late 18th century and reached maximum development in the late 19th century. (For an extensive description of the history, vegetation structure, and avifauna of Sapsucker Woods Sanctuary, see T.S. Litwin. 1986. "Factors affecting avian diversity in a northeastern woodlot.", Ph.D. thesis, Cornell University, Ithaca, New York. The short description above was derived from Litwin's thesis.) Currently, the landscape around the sanctuary is becoming increasingly suburban. Many beech trees are suffering from beech blight. A quantitative vegetation survey was conducted following the methods described by F.C. James and H.H. Shugart, Jr. (1970. *Aud. Field Notes* 24:727-736). Trees, 4 cm diameter and over, based on eight 0.04-ha circular samples, 1166/ha; total basal area 28.2 m<sup>2</sup>/ha. Species comprising 90% of the total number of trees [figures after each are trees/ha, relative density (%), relative dominance (%), and frequency (%)]: American Beech, 392, 34, 31, 100; Sugar Maple, 266, 23, 17, 88; Red Maple 133, 11, 18, 88; deciduous tree snag, 99, 8, 3, 100; Yellow Birch, 49, 4, 4, 63; Eastern Hophornbeam, 49, 4, 1, 13; American Hornbeam, 37, 3, 1, 13; Black Birch, 34, 3, 5, 63. Trees by diameter size class: [figures after each are trees/ha, relative density (%), basal area in m<sup>2</sup>/ha, and relative dominance (%)]: A' (4.0-7.6 cm) 469, 40, 1.3, 5; A (7.6-15.2 cm) 324, 28, 3.0, 11; B (15.2-22.9 cm) 179, 15, 5.0, 18; C (22.9-38.1 cm) 164, 14, 12.2, 43; D (38.1-53.3 cm) 19, 2, 3.1, 11; E (53.3-68.6 cm) 12, 1, 3.6, 13. Shrub stems/ha 880; ground cover 11%; canopy cover 94%; average canopy height 24 m (range 20-27 m). **Water:** Standing water up to 0.5 m deep in small depressions in the NE and especially the SW parts of the plot. The water disappeared by August. **Edge:** Similar habitat beyond S and N plot boundaries, except for a small portion (25 m) of SE corner which extends into an open swampy area. The E edge is 25 m from a hard road that splits the sanctuary. The W side of the plot is 15-25 m from a driveway and apartment complex. **Topography and Elevation:** The plot is generally level, but small depressions pock the surface especially in the NE and SW parts of the plot; 326 m. **Weather:** Temperatures ranged from 7.6 to 22.9°C during counts. Early June was very wet. **Coverage:** 26 hrs; 10 visits (all mornings); 9, 11, 14, 18, 23, 25, 29, 30 June; 3, 6 July. **Census:** Red-eyed Vireo, 10.5 (32/40 ha); Ovenbird, 5.5 (17; 1N); Black-capped Chickadee, 5 (15); Eastern Wood-Pewee, 4.5 (14); American Robin, 4 (12); Tufted Titmouse, 3.5 (11); White-breasted Nuthatch, 2.5; Downy Woodpecker, 2; Brown Creeper, 2; Scarlet Tanager, 2; Brown-headed Cowbird, 2; Great Crested Flycatcher, 1.5; American Crow, 1.5; Hairy Woodpecker, 1; Blue Jay, 1; Hermit Thrush, 1 (1N); Wood Thrush, 1; Solitary Vireo, 1 (1N); Northern Waterthrush, 1; Veery, 0.5; Barred Owl, +; Cooper's Hawk, + (1N); Northern Flicker, +. **Total:** 23 species; 53 territories (157/40 ha). **Visitors:** Northern Cardinal. **Remarks:** No cowbirds were observed on the plot after the third visit. We found evidence that the Cooper's Hawk either harassed or killed a crow and that nested near its' own nest. **Other Observers:** Greg Butcher and Steven Sibley. **Acknowledgments:** Jim Lowe helped to collect the vegetation data.

## 16. MATURE URBAN DECIDUOUS FOREST

### BOSQUE DECIDUO MADURO-URBANO

DAVID S. KÜNSTLER

*City of New York Department of Parks and Recreation  
Van Cortlandt and Pelham Bay Parks Administrator's Office  
1 Bronx River Parkway  
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**Location:** New York; Bronx County; Hunter Island, Pelham Bay Park; 40°52'N, 73°47'W; Mount Vernon Quadrangle, USGS. **Continuity:** Established 1987; 3 consecutive yrs. (The first two yrs are in the computerized database at the Cornell Laboratory of Ornithology.) **Size:** 10.12 ha. **Description of Plot:** Based on interpretation of 1885 accession map of the plot by the Cornell Laboratory for Environmental Applications of Remote Sensing, the land uses in 1885 were estimated to be: 3.68 ha deciduous forest; 2.12 ha (open) pasture; 2.09

ha open woods/pasture; 1.05 ha cropland; 0.35 ha meadow; 0.32 ha enclosed yards, paddocks, etc.; 0.16 ha open woods/meadow; 0.07 ha structures; 0.29 ha roads ( $>1020$  m). A description of the current vegetation composition has been adapted from a 1985 study by the Natural Resources Group of NYC Parks Dept. The plot is deciduous forest, but the vegetational composition of patches within the plot vary with past land uses. A large area where there was once an elaborate garden still retains many non-native plants today. The most common plants given roughly in order of dominance for the largest patches within the plot are listed as follows: very mature Red, White, and Black oaks, blackberry, Wild Geranium, rich herbaceous diversity and scattered Day-lily patches that date back to 1885 or older (4.01 ha); oaks, American Sycamore, Tuliptree, other natives and non-natives (e.g., Day-lily) planted on old estate, often dense shrubs (1.89 ha); mature Red Oak, White Oak, Tuliptree, Smooth Sumac, Sassafras, Black Birch, goldenrod, dogbanes, very open canopy (1.50 ha); Black Locust, Black Cherry, dense ground cover, formerly estate or pasture (1.36 ha). About 1174 m of trails, run through the plot. Some signs of vanished buildings still remain. The plot has also been affected by fire. Fires have often been set in spring in the large phragmites stand W of plot and occasionally have spread into plot. A fire on 30 March 1987 burned 3.06 ha of N and W plot. A fire break was cut in 1989 along E edge of phragmites adjacent to forest to reduce fire intrusion into the plot. In some areas, fires have greatly suppressed oak and other woody regeneration. Although shrubs (e.g., viburnum) are not spreading, blackberry has been promoted nearly throughout. **Edge:** Narrow wooded margin around N, E and W sides and bordered by small patches of salt marsh or phragmites. Elsewhere the woods abut the shoreline. The S edge extends into a mostly unbroken and contiguous 50.6 ha block of almost entirely deciduous forest except for two conifer stands totaling 0.8 ha. Hunter Island is no longer an island. It was connected to the mainland by a man-made beach and parking lot in the 1930's at the S end, 0.69 km from plot. **Topography and Elevation:** No sharp changes in elevation; 4.6–25.9 m. **Weather:** It was warm in May and cool in June. Little wind. Sometimes cloudy, sometimes clear. Drizzle twice and one visit was discontinued because of rain. Temperatures ranged from 8 to 29°C. **Coverage:** 56.7 hrs; 15 visits (all mornings); 21, 26, 28 Apr.; 3, 5, 9, 12, 18, 19, 26, 31 May; 2, 9, 14, 28 June. **Census:** European Starling 22 (87/40 ha; 14N); Gray Catbird 17 (67); Common Yellowthroat 13.5 (53; FL); Rufous-sided Towhee 9 (36; FL); Song Sparrow 7 (28); Tufted Titmouse 4 (16); Blue Jay 3.5 (14; FL); Northern Flicker 3 (12; 2N); Northern Oriole 3 (2N); Downy Woodpecker 2 (1N); American Robin 2 (1N); Northern Cardinal 2; Brown Thrasher 1.5; ♀ Brown-headed Cowbird 1.5; Red-bellied Woodpecker 1; Hairy Woodpecker 1; Great Crested Flycatcher 1; Eastern Wood-Pewee 1; Black-capped Chickadee 1; White-breasted Nuthatch 1 (1N); Red-eyed Vireo 1; Yellow Warbler 1; Ovenbird 1; Red-winged Blackbird 1; ♂ American Black Duck × ♀ Mallard 0.5 (1N); Wood Thrush 0.5; Ring-necked Pheasant +; Great Horned Owl + (1N). **Total:** 28 species; 102 territories (403/40 ha). **Visitors:** Yellow-billed Cuckoo, Ruby-throated Hummingbird, Eastern Kingbird, American Crow, Fish Crow, Northern Mockingbird, Cedar Waxwing, Blue-winged Warbler, American Redstart, Yellow-breasted Chat, Scarlet Tanager, Rose-breasted Grosbeak, Common Grackle. **Remarks:** Over the last three years, there has been a great increase in cowbird activity not indicated by count results. Corvids, especially jays, have probably been underrepresented due to their habits. In 1987, most bird activity was concentrated in W and S portions of plot possibly due to denser shrub layer. However, in 1988 and 1989, activity seemed to be more evenly distributed throughout the plot, possibly as a result of blackberry growth since 1987 fire. Owls nested at same site as last year and again raised three young. Pheasant were again among the prey items (Michael DeRaddo, pers. comm.). **Acknowledgments:** I thank Anthony Emmerich and Paul C. Berizzi of my office for their support.

## 17. MATURE BEECH-MAPLE FOREST ON LAKE ONTARIO SHORE

BOSQUE DE HAYA-ARCE MADURO EN EL LAGO ONTARIO

GEORGE R. MAXWELL

*RD 1 Box 179C  
Red Creek, New York 13143*

**Location:** New York; Cayuga Co.; Fair Haven; Cooper Bluff; 43°22'N, 76°40'W; Fair Haven Quadrangle, USGS. **Continuity:** New. **Size:** 16.2 ha. **Description of Plot:** Moist deciduous forest adjacent to Fair Haven State Park and is situated 0.4 km from lake shore. Plot is bisected by unpaved road and includes 1.6 ha of grassy field. The dominant forest tree is Sugar Maple. The understory is Speckled Alder, blackberry, and Flowering Raspberry. The ground cover is Jewelweed, Mayapple and Sensitive Fern. Trees 7.7 cm diameter and over, based on 5 circular samples 0.04 ha each, 434/ha; total basal area 20 m<sup>2</sup>/ha. Species comprising 98% of the total number of trees [numbers following each species are number/ha, relative density (%), relative dominance (%), frequency (%), in that order] are: Sugar Maple, 296, 68, 62, 100; White Ash, 30, 7, 9, 60; Shagbark Hickory, 30, 7, 10, 80; Yellow Poplar, 30, 7, 13, 60; American Elm, 10, 2, 1, 40; Sassafras 10, 2, 1, 40; American Beech, 15, 4, 1, 20; Yellow Birch, 5, 1, 2, 20. Trees by diameter size class [following each class are number/ha, relative density (%), basal area in m<sup>2</sup>/ha, relative dominance] are: A (7.6–15.2 cm) 168, 38, 1.6, 8; B (15.2–22.9 cm) 99, 23, 2.8, 14; C (22.9–38.1 cm) 133, 31, 9.9, 49; D (38.1–53.3 cm) 35, 8, 5.8, 29. Shrub stems/ha 9633; ground cover 85%; canopy cover 85%; average canopy height 23 m (range 11–34). **Edge:** Bounded by wetland, grassy fields, apple orchards, cultivated fields, and similar forest. **Topography and Elevation:** Rolling with slight rise away from wetlands; 76.2–97.6 m. **Weather:** Average temperature; 21°C; 6 days clear, 2 partly cloudy, 3 cloudy. **Coverage:** 16.5 hrs; 11 visits (10 mornings, 1 afternoon); 19, 22, 25, 27, 28, 29 June; 3, 4, 5, 6, 10 July. **Census:** American Redstart, 15 (37/40 ha); Red-eyed Vireo, 7 (17); Song Sparrow, 7; Veery, 6 (15); Common Yellowthroat, 6; Eastern Wood-Pewee, 5 (12); Wood Thrush, 5; Yellow Warbler, 4 (10); American Robin, 3 (7); Hooded Warbler, 3; Downy Woodpecker, 2; Gray Catbird, 2; Yellow-throated Vireo, 2; Rose-breasted Grosbeak, 2; Swamp Sparrow, 2; Red-bellied Woodpecker, 1; Great Crested Flycatcher, 1; Black-capped Chickadee, 1; Cerulean Warbler, 1; Northern Cardinal, 1; Indigo Bunting, 1; Chipping Sparrow, 1; Grasshopper Sparrow, 1. **Total:** 23 species; 79 territories (195/40 ha). **Visitors:** Northern Flicker, American Crow, Cedar Waxwing, Scarlet Tanager, Brown-headed Cowbird, American Goldfinch. **Other Observers:** S. Bennett, R. Bianco, R. Cancro, S. Danforth, H. Doerr, E. Earl, S. Kuhr, J. LaPar, M. Mathews, C. Murphy, D. O'Brien, J. Renner, M. Thomas. **Acknowledgments:** Thanks to Lori Tobler, M.D. for the use of the census area.

## 18. WHITE ASH-RED MAPLE FOREST

BOSQUE DE FRESCO BLANCO-ARCE

GEORGE R. MAXWELL

*RD 1 Box 179C  
Red Creek, New York 13143*

**Location:** New York; Wayne Co.; Fairhaven; 43°20'N, 76°44'W; Fair Haven Quadrangle, USGS. **Continuity:** Established 1986; 4 consecutive yrs. **Size:** 16.2 ha. **Description of Plot:** Young (23-year old) coastal zone forest. See *J. Field Ornithol.* 60(suppl.):69 (1989). **Weather:** It was cool and wet this spring. Mean temperature was 19°C on census days. There were 7 clear days, 2 cloudy days, and 1 partly cloudy day. **Coverage:** 10 hrs; 10 visits (9 mornings, 1 evening); 9, 10, 12, 17, 21, 26, 29, 30 June; 1, 4 July. **Census:** Yellow Warbler, 8 (20/40 ha); American Robin, 6 (15); Song Sparrow, 6; House Wren, 4 (10); Gray Catbird, 4; Wood Thrush, 3 (7); Cedar Waxwing, 3; Common Yellowthroat, 3; Veery, 2; Warbling Vireo, 2; Red-eyed Vireo, 2; Northern Cardinal, 2; Rose-breasted Grosbeak, 2; Red-winged

Blackbird, 2; Mourning Dove, 1; Ruby-throated Hummingbird, 1; Willow Flycatcher, 1; Least Flycatcher, 1; Tree Swallow, 1; American Crow, 1; Black-capped Chickadee, 1; European Starling, 1; Yellow-throated Vireo, 1; American Redstart, 1; Common Grackle, 1; Brown-headed Cowbird, 1; Northern Oriole, 1; House Finch, 1; House Sparrow, 1. **Total:** 29 species; 64 territories (158/40 ha). **Acknowledgments:** Thanks to my students for their assistance with this census.

## 19. FLOODPLAIN FOREST

### BOSQUE INUNDABLE

STEPHEN HALL

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*CB #3280 Coker*

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**Location:** North Carolina; Orange Co.; Chapel Hill; Big Oak Woods; 35°33'N, 79°00'W; Chapel Hill Quadrangle, USGS. **Continuity:** Established 1977, 13 consecutive years. **Size:** 12.6 ha. **Description of Plot:** See *Am. Birds* 32:63 (1978). **Weather:** All counts were conducted in calm or extremely light winds; there was no rain during the counts. **Coverage:** 12.8 hrs; 8 visits (all mornings); 17, 21, 22, 29 May; 4, 7, 10, 13 June. **Census:** Red-eyed Vireo, 16 (51/40 ha); Acadian Flycatcher, 9 (29); Blue-gray Gnatcatcher, 8.5 (27); Tufted Titmouse, 5.5 (17); Northern Cardinal, 5 (16); Red-bellied Woodpecker, 4.5 (14); Carolina Wren, 4.5; Carolina Chickadee, 4 (13; FL); Kentucky Warbler, 4 (FL); White-breasted Nuthatch, 3.5 (11); Ruby-throated Hummingbird, 2.5; Downy Woodpecker, 2; Wood Thrush, 2; American Redstart, 2; Northern Flicker, 1.5; Yellow-throated Vireo, 1.5; Yellow-billed Cuckoo, 1; Hairy Woodpecker, 1; Eastern Wood-Pewee, 1; Great Crested Flycatcher, 1; Prothonotary Warbler, 1; Ovenbird, 1; Louisiana Waterthrush, 1; Hooded Warbler, 1; Summer Tanager, 1; Indigo Bunting, 1; Northern Parula, 0.5; Yellow-throated Warbler, 0.5; Pine Warbler, 0.5; Scarlet Tanager, 0.5; Green-backed Heron, +; Red-shouldered Hawk, +; Mourning Dove, +; Pileated Woodpecker, +; Blue Jay, +; American Crow, +; Common Grackle, +; Brown-headed Cowbird, +. **Total:** 38 species; 88 territories (279/40 ha). **Visitors:** Red-winged Blackbird, American Goldfinch. **Other Observers:** H. Mueller, N. Mueller, and R. Godard.

## 20. MIXED DECIDUOUS FOREST

### BOSQUE MIXTO DECIDUO

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**Location:** North Carolina; Orange Co.; Chapel Hill; Botanical Garden Research Area; 35°54'N, 79°01'W Chapel Hill Quadrangle, USGS. **Continuity:** Established 1976; 14 consecutive years. **Size:** 12.6 ha. **Description of Plot:** See *Am. Birds* 31:41 (1977). **Weather:** All counts were conducted on mornings without rain and in calm or very light winds. **Coverage:** 13.5 hrs; 8 visits (8 mornings); 17, 21, 22, 29 May; 4, 7, 13, 18 June. **Census:** Red-eyed Vireo, 13 (41/40 ha); Tufted Titmouse, 5 (16); Blue-gray Gnatcatcher, 5; Wood Thrush, 4.5 (14); Acadian Flycatcher, 4 (13); Carolina Wren, 4 (FL); Hooded Warbler, 4 (FL); Carolina Chickadee, 3.5 (11); White-breasted Nuthatch, 3.5; Red-bellied Woodpecker, 2.5; Ovenbird, 2.5; Scarlet Tanager, 2.5; Northern Cardinal, 2.5; Ruby-throated Hummingbird, 2; Downy Woodpecker, 2; Summer Tanager, 2; Mourning Dove, 1.5; Yellow-billed Cuckoo, 1.5; Northern Flicker, 1.5; Yellow-throated Vireo, 1.5; Pine Warbler, 1.5;

Hairy Woodpecker, 1; Eastern Wood-Pewee, 1; Kentucky Warbler, 1; Red-shouldered Hawk, + (1N); Pileated Woodpecker, +; Blue Jay, +; American Crow, +; Common Grackle, +; Brown-headed Cowbird, +. **Total:** 30 species; 73 territories (231/40 ha). **Visitors:** Chimney Swift, Northern Parula, American Goldfinch. **Other Observers:** H. Mueller, N. Mueller, and R. Godard.

## 21. RIVER FLOODPLAIN BROADLEAF FOREST

BOSQUE INUNDABLE-ANEGADO 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°06'W; Oregonia Quadrangle, USGS. **Continuity:** New. **Size:** 18 ha. **Description of Plot:** Trees 7.5 cm diameter and over, based on five 0.04 ha circular plots, 922/ha; total basal area 43.6 m<sup>2</sup>/ha. Species comprising 100% of total number of trees: Boxelder, 302, 32, 13, 100; Sycamore 158, 17, 18, 80; Slippery Elm 125, 13, 5, 100; Eastern Cottonwood 67, 7, 40, 60; dead trees 48, 5, 5, 100; White Ash 34, 4, 2, 40; Osage Orange 29, 3, 3, 60; Northern Red Oak 28, 3, 3, 60; Chestnut Oak 24, 3, 6, 20; Hackberry 24, 3, 1, 20; Eastern Redcedar 24, 3, 1, 20; Ohio Buckeye 19, 2, 1, 20; Sugar Maple 14, 2, 0.5, 60; Eastern Redbud 14, 2, 0.3, 20; Honeylocust 10, 1, 1, 40; Trees by diameter class: A 446, 48, 4.14, 10; B 269, 29, 7.49, 18; C 120, 13, 8.92, 21; D 53, 6, 8.83, 20; E 19, 2, 4.14, 10; F 10, 1, 5.75, 13; H 5, 1, 4.3, 10. Shrub stems/ha 25,920; Ground cover 98%; Canopy cover 97%; Average canopy height 26 m (range 21.9 m - 28.7 m). **Topography and Elevation:** River floodplain, surrounded by 30 m high cliffs to the N and wooded hill slopes to the S; 219.5-259 m. **Edge:** Little Miami River Valley is to the W, Caesars Creek Reservoir to the E. Overgrown farmland dotted with Red Cedars to the S and N. All sides protected by the State of Ohio. **Water:** Caesars Creek flows through study area. Two smaller creeks flow into Caesars Creek. **Weather:** Temperatures ranged from 4 to 22°C at the start of the censuses; It was unusually wet this spring. **Coverage:** 18.2 hrs; 10 visits (8 mornings, 1 afternoon, 1 evening); 3, 4, 5, 10, 17, 21, 24, 28, 29 May; 11 June. **Census:** Blue-gray Gnatcatcher, 17.5 (39/40 ha; 1N); Northern Cardinal, 14.5 (32); Red-eyed Vireo, 11 (24); Acadian Flycatcher, 8 (18); Tufted Titmouse, 7 (16; 1N); House Wren, 6 (13); Indigo Bunting, 6; Carolina Chickadee, 4 (9); Wood Thrush, 4; Eastern Wood-Pewee, 3.5 (8); Blue Jay, 3 (7); Carolina Wren, 3; Yellow-throated Vireo, 3; Cerulean Warbler, 3; Red-bellied Woodpecker, 2; American Robin, 2 (1N); Northern Parula, 2; Kentucky Warbler, 2; Rufous-sided Towhee, 2; Canada Goose, 1 (3 yg.); Yellow-billed Cuckoo, 1; Belted Kingfisher, 1; Hairy Woodpecker, 1; Northern Flicker, 1; Pileated Woodpecker, 1 (1N); Black-capped Chickadee, 1; White-breasted Nuthatch, 1; Gray Catbird, 1; European Starling, 1; Blue-winged Warbler, 1; Yellow-throated Warbler, 1; Scarlet Tanager, 1; Song Sparrow, 1; American Goldfinch, 1; Barred Owl, +; Downy Woodpecker, +. **Total:** 36 species; 118.5 territories (263/40 ha). **Visitors:** Great Blue Heron, Green-backed Heron, Mallard, Turkey Vulture, Red-tailed Hawk, Spotted Sandpiper, American Woodcock, Mourning Dove, Black-billed Cuckoo, Great Horned Owl, Eastern Phoebe, Great Crested Flycatcher, American Crow, Black-and-white Warbler, Prothonotary Warbler, Ovenbird, Louisiana Waterthrush, Common Yellowthroat, Field Sparrow, Northern Oriole. **Remarks:** Kentucky and Cerulean Warblers kept to the wooded hillsides. Rufous-sided Towhees found near brush around overgrown pasture. Sixteen male cowbirds were seen, but no females. **Acknowledgments:** Thanks to Linda E. Morrison for help with the vegetation survey.

## 22. RIPARIAN DECIDUOUS FOREST

### BOSQUE RIVEREÑO DECIDUO

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The University of Toledo  
Toledo, Ohio 43606*

**Location:** Ohio; Lucas Co.; Waterville; Old Canal Lands; 41°28'N, 83°46'W; Grand Rapids Quadrangle, USGS. **Continuity:** New. **Size:** 18 ha. (1.7-km long strip that varies in width from 50 to 150 m). **Description of Plot:** A strip of floodplain, including a segment of the towpath and bed of the former Miami and Erie Canal, abandoned in 1903. Ecological succession over 86 years has produced a nearly mature riparian deciduous forest on the site, now protected by the Toledo Area Metroparks. The vegetation study was conducted in early August, 1988, a year before bird censuses were initiated. Since the plot is long and narrow, transects were run at right angles to the long axis of the plot at 100-m intervals. There were 16 transects in all; the length of each was 30 m. All trees within 10 m and all shrubs/saplings within 5 m of each transect were counted and the relative abundance of each species recorded as a percentage of the total number of trees and shrubs/saplings counted. Herbaceous vegetation cover was determined by estimating the percent cover of each species in a 1-m<sup>2</sup> circle located every 6 m along each transect. Thus, there were 5 sample circles per transect, and 80 (5 × 16) sample circles in all. Sometimes the sum of the percent cover values exceeded 100% for a circle because of vertical overlap of the leaves of different species. When this occurred the percentages were reduced proportionally to bring the sum for each circle down to 100%. Percent cover values for each species were summed over all sample circles and divided by 80; thus data for all 3 layers of vegetation may be considered to express percent relative abundances. Relative abundance (%) is given after each species name: (trees ≥ 15 cm) Boxelder, 13.8; American Basswood, 11.9; Hackberry, 10.8; Black Walnut, 9.7; Eastern Cottonwood, 9.0; American Elm, 8.8; Eastern Redbud, 6.8; Honeylocust, 6.6; Green Ash, 6.6; hawthorn, 3.4; Sycamore, 2.2; Ohio Buckeye, 1.8; Black Ash, 1.7; 11 other species, 6.8. (Shrubs and saplings): Boxelder, 42.6; Eastern Redbud, 11.6; American Elm, 10.4; American Basswood, 4.4; hawthorn, 3.7; Hackberry, 3.6; Black Walnut, 3.0; Tartarian Honeysuckle, 1.9; Green Ash, 1.7; 16 other species, 17.0. (Herbs): *Alliaria officinalis*, 22.6; *Rhus radicans*, 19.1; *Verbesina occidentalis*, 12.9; *Geum aleppicum*, 6.6; *Eupatorium rugosum*, 5.9; *Solanum dulcamara*, 2.5; *Glechoma hederacea*, 2.5; *Parthenocissus quinquefolia*, 2.1; *Sanicula gregaria*, 2.0; 32 other species, 23.8. **Water:** The Maumee River, more than 300 m wide, parallels the census tract. Within the plot, the old canal bed has two small but permanent streams, and numerous low spots that hold water for several days after heavy rains. **Edge:** The Maumee River provides a continuous edge of 1700 m along the southern boundary. The E and W ends of the plot are continuous with more riparian forest that extends for many km in both directions. To the N, the edge is either agricultural fields (corn or soybeans) or the backyards of homes that overlook the census plot. **Topography and Elevation:** Plot drops 12 m from the N edge southward toward the river. The old canal bed is 1–2 m lower than the towpath, both of which transect the entire length of the plot. 186–198 m. **Weather:** In general, cooler and considerably more rain than average. No violent windstorms until July 27. Temperatures ranged from 12 to 24°C. **Coverage:** 23 hrs; 9 visits (8 mornings, 1 afternoon); 20, 24 May; 5, 11, 17, 25, 29 June; 15, 22 July. **Census:** American Robin, 17 (38/40 ha); Song Sparrow, 11 (24); Northern Cardinal, 7 (16); Gray Catbird, 5.5 (12); Mourning Dove, 5 (11); House Wren, 5; Indigo Bunting, 4.5 (10); Common Grackle, 4.5; Northern Oriole, 4.5; Blue Jay, 3.5 (8); Tufted Titmouse, 3.5; Warbling Vireo, 3.5; Eastern Wood-Pewee, 3 (7); White-breasted Nuthatch, 3; Downy Woodpecker, 2.5; Red-winged Blackbird, 2.5; Northern Flicker, 2; Black-capped Chickadee, 2; Carolina Wren, 2; Wood Thrush, 2; Cedar Waxwing, 2; European Starling, 2; American Goldfinch, 2; Yellow-throated Vireo, 1.5; Red-eyed Vireo, 1.5; Yellow Warbler, 1.5; House Finch, 1.5; Red-headed Woodpecker, 1; Hairy Woodpecker, 1; Great Crested Flycatcher, 1; Eastern Kingbird, 1; Blue-gray Gnatcatcher, 1; Rose-breasted Grosbeak, 1; Chipping Sparrow, 0.5; Orchard Oriole, 0.5; Brown-headed Cowbird, 0.5; Ruby-throated Hummingbird, 0.5; Yel-

low-billed Cuckoo, 0.5. **Total:** 38 species; 114 territories (250/40 ha). **Visitors:** Wood Duck, Great Horned Owl, Red-bellied Woodpecker, Willow Flycatcher, Least Flycatcher, Brown Thrasher, Cerulean Warbler, American Redstart, Common Yellowthroat, Scarlet Tanager, House Sparrow. **Remarks:** Above-average precipitation during the period, and an unusually late snowfall May 7. Early-nesting species did not seem to be affected by this snowfall or the -1°C temperature that accompanied it. Starlings evicted Red-headed Woodpeckers from at least one nest snag in the plot.

## 23. 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.; Kempton; Hawk Mountain Sanctuary; River of Rocks; 40°45'N, 75°50'W; New Ringgold Quadrangle, USGS. **Continuity:** Established 1982; 8 consecutive yrs. **Size:** 16.9 ha. **Description of Plot:** See *Am. Birds* 37:55 (1983). **Weather:** Overcast, fog or drizzle for 5 days; 3 days of light winds, 2 days of strong winds; 4 days were clear and calm. Temperatures ranged from 5 to 21°C. **Coverage:** 18.5 hrs; 9 visits (all mornings); 25 April; 9, 19, 29 May; 1, 9, 16, 23, 28 June. **Census:** Ovenbird, 6.5 (15/40 ha); Scarlet Tanager, 2.5; Downy Woodpecker, 2; Great Crested Flycatcher, 2; Tufted Titmouse, 2; Red-eyed Vireo, 2; Eastern Wood-Pewee, 1.5; Black-and-white Warbler, 1.5; Hairy Woodpecker, 1; Blue Jay, 1; Black-capped Chickadee, 1; Wood Thrush, 1; Brown-headed Cowbird, 1; White-breasted Nuthatch, 0.5; Worm-eating Warbler, 0.5. **Total:** 15 species; 26 territories (61/40 ha). **Visitors:** Mourning Dove, Black-billed Cuckoo, Northern Flicker, Pileated Woodpecker, American Crow, Brown Creeper, Blue-gray Gnatcatcher, American Robin, Cedar Waxwing, Northern Cardinal, American Goldfinch. **Remarks:** In 1989 we had unusually heavy rainfall: in May 36.5 cm over 17 days; in June 21.2 cm over 18 days. In addition, gypsy moths (*Lymantria dispar*) were especially abundant this season. **Other Observer:** Jackie Bernstein. **Acknowledgments:** The census was sponsored by Hawk Mountain Sanctuary.

## 24. OAK-MAPLE RIDGETOP FOREST

### BOSQUE DE ROBLE-ARCE DE TOPE DE COLINAS

STANLEY E. SENNER

*Hawk Mountain Sanctuary*

R.D. 2

Kempton, Pennsylvania 19529

**Location:** Pennsylvania; Berks Co.; Kempton; Hawk Mountain Sanctuary; Owl's Head; 40°44'N, 75°50'W; New Ringgold Quadrangle, USGS. **Continuity:** Established 1982; 8 consecutive yrs. **Size:** 19.4 ha. **Description of Plot:** See *Am. Birds* 37:55 (1983). **Weather:** Skies were overcast or foggy on 6 of 8 census days; some wind present on 6 of 8 days; temperatures ranged from 4 to 23°C. **Coverage:** 15.4 hrs; 8 visits (all mornings); 3, 12, 19, 29 May; 1, 7, 21, 23 June. **Census:** Ovenbird, 6.5 (13/40 ha); Blue Jay, 3 (6); Common Yellowthroat, 2.5; Black-capped Chickadee, 2; Great Crested Flycatcher, 1.5; Rufous-sided Towhee, 1.5; Wood Thrush, 1; Scarlet Tanager, 1; Rose-breasted Grosbeak, 1; Hairy Woodpecker, 0.5; Eastern Wood-Pewee, 0.5; Hermit Thrush, 0.5. **Total:** 12 species; 21.5 territories (44/40 ha). **Visitors:** Mallard, Ruffed Grouse, Black-billed Cuckoo, Downy Woodpecker, American Crow, White-breasted Nuthatch, Black-and-white Warbler, Northern Cardinal, Indigo Bunting, Chipping Sparrow, Brown-headed Cowbird. **Remarks:** See Oak-Maple Slope Forest. A lower number of bird species may have been recorded this

season because of adverse weather conditions on census days. **Other Observer:** Jackie Bernstein. **Acknowledgments:** The census was sponsored by Hawk Mountain Sanctuary.

## 25. VIRGIN HARDWOOD SWAMP FOREST

### BOSQUE PANTANOSO VIRGEN DE MADERAS DURAS

KATHIE P. BRADLEY

*Route 1, Box 600  
Hartleyville, South Carolina 29448*

**Location:** South Carolina; Dorch.-Berk. Co.; Hartleyville; Francis Beidler Forest in Four Holes Swamp; 33°13'N, 80°20'W Pringleton Quadrangle, USGS. **Continuity:** Established 1979, 4 intermittent years. **Size:** 8.9 ha. **Description of Plot:** See *Am. Birds* 34:50 (1980). During the beginning of the survey, the majority of the study plot was covered with standing water. Some areas were approximately 3 cm deep. **Weather:** Overall conditions were ideal for hearing birds on most days. There were two evening surveys, with one being quite unproductive. Temperatures were relatively cool and winds were light to non-existent. There was no rain or drizzle. Early summer temperatures and rainfall were normal. Temperatures ranged from 14.4 to 28.1°C. **Coverage:** 16.2 hrs; 3, 5, 11, 12, 17, 24, 25, 26 May; 3, 16 June. **Census:** Blue-gray Gnatcatcher, 29.5 (133/40 ha); Tufted Titmouse, 13 (58); Red-eyed Vireo, 13; Carolina Wren, 11.5 (52); Acadian Flycatcher, 10 (45); Red-bellied Woodpecker, 9.5 (43); Northern Parula 8 (36); Great Crested Flycatcher, 6.5 (29); Downy Woodpecker, 4.5 (20); Yellow-throated Warbler, 3.5 (16); Yellow-billed Cuckoo, 2.5; Pilated Woodpecker, 2.5; White-breasted Nuthatch, 2.5; Prothonotary Warbler, 2.5; Summer Tanager, 2; Chimney Swift, 1; Common Yellowthroat, 0.5. **Total:** 17 species; 122.5 territories (550/40 ha). **Visitors:** Yellow-crowned Night-Heron, Wood Duck, Red-shouldered Hawk, Barred Owl, American Crow, Fish Crow, Carolina Chickadee, Wood Thrush, Yellow-throated Vireo, Pine Warbler, American Redstart, Swainson's Warbler, Kentucky Warbler, Northern Cardinal, Brown-headed Cowbird. **Remarks:** We are particularly concerned with the continued decrease in the numbers of Northern Parula. In 1984 we found 19.5 pairs. Their numbers fell to 10 in 1986 and this year they fell to 8. There was no habitat change on the plot that obviously caused this drop. Also, this bird is a good singer and easily heard. In all previous study years, Carolina Chickadee, Northern Cardinal and Yellow-throated Vireo nested on this plot, but none did so this year. We feel strongly that cardinals were nesting, but we simply did not hear them often enough to include them. Blue-gray Gnatcatcher and Red-eyed Vireo increased from 1986 to 1989. The Carolina Wren continues to show a slow but steady increase since 1979. The Chimney Swift continued the steady decline it began in 1984. Our list of the five most abundant species changed significantly from 1986 to 1989. **Other Observer:** Norman L. Brunswig.

## 26. TULIPTREE–HICKORY FOREST

### BOSQUE DE ALAMO–NOGAL

MARY VICTORIA McDONALD

*Conservation and Research Center of the Smithsonian NZP  
Front Royal, Virginia 22630*

**Location:** Virginia; Warren Co.; Front Royal; 38°52'N, 78°08'W; Front Royal Quadrangle, USGS. **Continuity:** Established 1988; 2 consecutive yrs. **Size:** 10 ha. **Description of Plot:** See *J. Field Ornithol.* 60(suppl.):32. **Weather:** Five visits of light rain or fog; five visits of clear weather. Temperatures ranged from 15–20°C. **Coverage:** 24.5 hrs; 10 visits (all mornings); 7, 8, 9, 12, 13, 19, 22, 23, 25, 26 June. **Census:** Acadian Flycatcher, 6 (24/40 ha); Red-eyed Vireo, 6; White-breasted Nuthatch, 5 (20); Wood Thrush, 5; Red-bellied Woodpecker, 4 (16); Eastern Wood-Pewee, 4; Carolina Wren, 3 (12); Tufted Titmouse, 3; Scarlet Tanager, 3; Yellow-billed Cuckoo, 2; Carolina Chickadee, 2; Blue-gray Gnatcatcher,

2; Indigo Bunting, 2; Pileated Woodpecker, 1; Hairy Woodpecker, 1; Yellow-throated Vireo, 1; Cerulean Warbler, 1; Rufous-sided Towhee, 1; Northern Cardinal, 1. **Total:** 19 species; 53 territories (212/40 ha). **Visitors:** Ruby-throated Hummingbird, Northern Flicker, Blue Jay, American Crow, Common Raven, Louisiana Waterthrush, Common Grackle, Brown-headed Cowbird. **Remarks:** The Conservation and Research Center is a protected area and no hunting is allowed. The deer are also confined by electric and high-tension wire fences in order to keep them separate from captive animals and to control study subjects. This causes a highly dense deer population which affects the vegetation markedly. **Other Observer:** William J. McShea.

## 27. MESOPHYTIC FOREST I

BOSQUE MESOFÍTICO I

MICHAEL G. SMITH

Rt. 3, Box 301  
Elkton, Virginia 22827

**Location:** Virginia; Green Co.; Elkton; Cabin Plot; 38°24'N, 78°30'W; Fletcher Quadrangle, USGS. **Continuity:** Established 1981; 8 intermittent yrs (1989). **Size:** 6.1 ha. **Description of Plot:** See *J. Field Ornithol.* 60(suppl.):32–33. **Weather:** The temperatures were seasonal for the study period. The rainfall was above average. Temperatures ranged from 16 to 24°C. **Coverage:** 21.8 hrs; 23 visits (14 mornings, 9 evenings); 15, 25, 27, 31 May; 2, 11, 12, 13, 15, 16, 18, 19, 22, 23, 26, 27, 28, 29, 30 June. **Census:** American Redstart, 15 (98/40 ha; 1N); Wood Thrush, 13.5 (89); Veery, 13 (85); Eastern Wood-Pewee, 8 (52); Chestnut-sided Warbler, 7.5 (49); Ovenbird, 7.5; Rufous-sided Towhee, 7 (46); Hooded Warbler, 6 (39); Black-throated Blue Warbler, 5.5 (36); Red-eyed Vireo, 5 (33); Scarlet Tanager, 4.5 (30); Acadian Flycatcher, 4 (26); Cerulean Warbler, 2.5; White-breasted Nuthatch, 2; Great Crested Flycatcher, 1; Tufted Titmouse, 1; Blue-gray Gnatcatcher, 1; Solitary Vireo, 1; Indigo Bunting, 1; Gray Catbird, 0.5; Pileated Woodpecker, +; Canada Warbler, +. **Total:** 22 species; 106.5 territories (698/40 ha). **Visitors:** Broad-winged Hawk, Yellow-billed Cuckoo, Red-bellied Woodpecker, Downy Woodpecker, Hairy Woodpecker, Common Raven, American Robin, Blackburnian Warbler, Black-and-white Warbler, Kentucky Warbler, Rose-breasted Grosbeak, Dark-eyed Junco, Brown-headed Cowbird, American Goldfinch. **Remarks:** The gypsy moth invasion began in large numbers on 19 June. The oaks especially were defoliated. It is too early to tell what effects that this caterpillar invasion might have on the bird population on the plot. Although coverage hours decreased by 22% from last year, the abundances of Eastern Wood-Pewee, Wood Thrush, Ovenbird, Chestnut-sided Warbler, Hooded Warbler, and Rufous-sided Towhee increased. **Acknowledgments:** Thanks to Kathleen Finnegan, Diane Holsinger, Betty Rosson, Carrie Stanovick, and Charles Zigenfus for the plot layout and vegetative survey. Also thanks to the personnel of the Shenandoah National Park for their cooperation in the study.

## 28. MESOPHYTIC FOREST II

BOSQUE MESOFÍTICO II

ELWOOD FISHER

330 Paul St.  
Harrisonburg, Virginia 22801

**Location:** Virginia; Green Co.; Elkton; Pocosin Mission; 38°24'N, 78°29'W; Fletcher Quadrangle, USGS. **Continuity:** Established 1981; 8 intermittent yrs. **Size:** 6.1 ha. **Description of Plot:** See *J. Field Ornithol.* 60(suppl.):33 (1989). **Weather:** The temperature was seasonal for the study period. The rainfall was above average. Temperatures ranged from 16 to 26°C. **Coverage:** 18.7 hrs; 22 visits (13 mornings, 9 evenings); 15, 25, 27, 31 May; 2, 11, 12, 13, 15, 16, 18, 19, 23, 26, 27, 28, 29, 30 June. **Census:** American Redstart, 13.5 (89/40 ha);

Wood Thrush, 12 (79); Veery, 11.5 (75); Ovenbird, 11.5; Eastern Wood-Pewee, 9 (59); Scarlet Tanager, 7 (46); Red-eyed Vireo, 6 (39); Acadian Flycatcher, 5 (33); Rufous-sided Towhee, 4.5 (30); Cerulean Warbler, 3 (20); Hooded Warbler, 3; Tufted Titmouse, 2; Solitary Vireo, 2; Chestnut-sided Warbler, 2; Rose-breasted Grosbeak, 2; Yellow-billed Cuckoo, 1; Great Crested Flycatcher, 1; Black-throated Blue Warbler, 1; Gray Catbird, 0.5; Downy Woodpecker, +; White-breasted Nuthatch, +; Brown-headed Cowbird, +. **Total:** 22 species; 97.5 territories (639/40 ha). **Visitors:** Red-bellied Woodpecker, Hairy Woodpecker, Pileated Woodpecker, Common Raven, chickadee sp., White-breasted Nuthatch, Solitary Vireo, Black-and-white Warbler, Worm-eating Warbler, Indigo Bunting, Dark-eyed Junco, American Goldfinch. **Remarks:** Although coverage hours decreased by 33% from last year, the abundances of Eastern Wood-Pewee, Wood Thrush, Ovenbird, Chestnut-sided Warbler, and Scarlet Tanager increased. See also Mesophytic Forest I for notes on gypsy moth invasion. **Acknowledgments:** Thanks to Kathleen Finnegan, Diane Holsinger, Betty Rosson, Carrie Stanovick, and Charles Zigenfus for the plot layout and vegetative survey. Also thanks to the personnel of the Shenandoah National Park for their cooperation in the study.

## 29. CHESTNUT OAK-RED OAK-HICKORY FOREST

BOSQUE DE ROBLE CASTAÑO-ROBLE ROJO-NOGAL

JON L. DELLETT

24 College Woods Dr.  
Bridgewater, Virginia 22812

**Location:** Virginia; Rockingham Co.; Harrisonburg; Mole Hill; 38°26'N, 78°57'W; Bridgewater Quadrangle, USGS. **Continuity:** Established 1982; 2 intermittent yrs. **Size:** 6.1 ha. **Description of Plot:** See *Am. Birds* 37:58 (1983). **Weather:** Morning temperature range: 11 to 22°C. **Coverage:** 13 hrs; 20 visits (18 mornings, 2 evenings); 24, 25, 26, 30, 31 May; 1, 5, 6, 7, 10 June. **Census:** Wood Thrush, 4 (26/40 ha); Tufted Titmouse, 2.5; Blue Jay, 2; Northern Cardinal, 2; Great Crested Flycatcher, 1.5; Scarlet Tanager, 1.5; Mourning Dove, 1; Red-bellied Woodpecker, 1; Hairy Woodpecker, 1; Eastern Wood-Pewee, 1; Red-eyed Vireo, 1; Rufous-sided Towhee, 1; Northern Flicker, +; White-breasted Nuthatch, +; American Robin, +; Brown-headed Cowbird, +. **Total:** 16 species; 19.5 territories (127/40 ha). **Visitors:** Yellow-billed Cuckoo, Chimney Swift, Pileated Woodpecker, Purple Martin, American Crow, Gray Catbird, Canada Warbler, Common Grackle, American Goldfinch. **Other Observer:** Clair Mellinger. **Acknowledgments:** Thanks to Kathleen Finnegan for help in plot layout and data analysis.

## 30. OAK-HEMLOCK FOREST

BOSQUE DE ROBLE-PICEA

ROBERT A. ASKINS AND WENDY 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°07'W; Uncasville Quadrangle, USGS. **Continuity:** Established 1953; 19 intermittent yrs. **Size:** 23.1 ha. **Description of Plot:** See *Am. Birds* 31:57-58 (1977) and Hemond, et al. (1983. Bull. Torrey Bot. Club 110:184-194). **Weather:** Temperatures ranged from 7 to 24°C with a mean of 15°C. The wind was calm on most visits and breezy on a few. The sky ranged from clear to foggy. **Coverage:** 29 hrs; 10 visits (all mornings); 13 May to 8 July. **Census:** Veery, 11 (19/40 ha); Red-eyed Vireo, 8 (14); Tufted Titmouse, 7.5 (13); Black-capped Chickadee, 7 (12); Rufous-sided Towhee, 7; Ovenbird, 6.5 (11); Black-and-white Warbler, 6 (10); Gray Catbird, 5.5 (10); Common

Yellowthroat, 3.5 (6); Hooded Warbler, 3.5; Brown-headed Cowbird, 3.5; Northern Cardinal, 3.5; Eastern Wood-Pewee, 3 (5); Great Crested Flycatcher, 3; Blue Jay, 3; House Wren, 2; Carolina Wren, 1.5; Wood Thrush, 1.5; Scarlet Tanager, 1.5; Broad-winged Hawk, 1; Barred Owl, 1; Northern Flicker, 1; Red-bellied Woodpecker, 1; Downy Woodpecker, 1; Eastern Phoebe, 1; American Crow, 1; Hermit Thrush, 1; White-eyed Vireo, 1; Blue-winged Warbler, 1; Chestnut-sided Warbler, 1; Louisiana Waterthrush, 1; Hairy Woodpecker, 0.5; White-breasted Nuthatch, 0.5. **Total:** 33 species; 101 territories (175/40 ha). **Visitors:** Mourning Dove, Acadian Flycatcher, American Robin, American Redstart, Worm-eating Warbler, Song Sparrow, Common Grackle. **Remarks:** May and June were exceptionally rainy and cool. The overall abundance of forest-interior birds (most of which are neotropical migrants) has declined since 1983, but the abundance of these species is still considerably higher than during the 1970s, when several species suffered precipitous declines. **Acknowledgments:** We are grateful for the support we received from Glenn Dreyer and the rest of the staff of the Connecticut College Arboretum.

### 31. YOUNG MIXED HARDWOOD-CONIFER STAND

BOSQUE JOVEN-MIXTO DE MADERAS DURAS/RODAL DE CONÍFEROS

ANDREW MAGEE

*White Memorial Conservation Center  
Litchfield, Connecticut 06759*

**Location:** Connecticut; Litchfield Co.; East Morris; 41°42'N, 73°10'W; Litchfield Quadrangle, USGS. **Continuity:** Established 1978; 12 consecutive yrs. **Size:** 8.5 ha. **Description of Plot:** Formerly "Red Pine Plantation." See *Am. Birds* 33:72 (1979). This plot was a 60-year old Red Pine plantation with a mixed hardwood subcanopy, but almost all the Red Pine were cut and removed in the winter of 1978-79. It has now become a mixed hardwood/conifer sapling stand with a dense understory. A small stream runs along the SW border and there is a wetland area at the S end of the plot. There are some remains of old stone walls at the north end but no buildings or roads on the plot. **Weather:** Temperatures were about average (23 to 24°C). The sky was usually partly cloudy; winds were light. **Coverage:** 8 hrs; 4 visits (1 morning, 1 afternoon, 2 evenings); 6, 20, 21 June. **Census:** Gray Catbird, 13 (61/40 ha); American Redstart, 12 (56); Veery, 10 (47); Wood Thrush, 10; Chestnut-sided Warbler, 8 (38); Blue-winged Warbler, 6 (28); Common Yellowthroat, 5 (24); Red-eyed Vireo, 4 (19); Black-capped Chickadee, 3 (14); American Robin, 3; Rose-breasted Grosbeak, 3; Ovenbird, 2.5; Ruffed Grouse, 2; American Woodcock, 2; Ruby-throated Hummingbird, 2; Scarlet Tanager, 2; Rufous-sided Towhee, 2; Northern Oriole, 2; Eastern Wood-Pewee, 1.5; Brewster's Warbler, 1; Yellow-bellied Sapsucker, 1; Northern Flicker, 1; Great Crested Flycatcher, 1; Blue Jay, 1; Blue-gray Gnatcatcher, 1; Yellow-throated Vireo, 1; Yellow Warbler, 1; Black-throated Blue Warbler, 1; Black-and-white Warbler, 1; Louisiana Waterthrush, 1; Indigo Bunting, 1; Song Sparrow, 1; Brown-headed Cowbird, 1; Purple Finch, 1; Downy Woodpecker, 0.5; Hairy Woodpecker, 0.5; Tufted Titmouse, 0.5; Solitary Vireo, 0.5; Pine Warbler, 0.5; Northern Cardinal, 0.5; Black-billed Cuckoo, +; Hermit Thrush, +. **Total:** 42 species; 111 territories (522/40 ha). **Remarks:** This is the 11th breeding season since Red Pine were clear-cut in the winter of 1978-79. The numbers of species and territorial males remains higher than the pre-cutting numbers. Gray Catbird, American Redstart, Wood Thrush, Veery, Chestnut-sided Warbler, and Blue-winged Warbler were all at or near peak numbers this year. This group of common species reflects the successional state of the habitat. Ovenbird, Solitary Vireo, and Blackburnian Warbler have had the most difficulty recovering from the cutting. American Woodcock, Brewster's Warbler, Yellow Warbler, Indigo Bunting, Pine Warbler, Black-billed Cuckoo, and Hermit Thrush were new to the cumulative list of species for the plot. The unusually heavy rains this spring (28.55 cm in May and 14.43 cm in June) may have reduced successful nesting. **Acknowledgments:** Gordon Loery of the White Memorial Conservation Center wrote up the report.

## 32. CLIMAX HEMLOCK-WHITE PINE FOREST WITH TRANSITION HARDWOODS

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

ANDREW MAGEE

*White Memorial Conservation Center  
Litchfield, Connecticut 06759*

**Location:** Connecticut; Litchfield Co.; Litchfield; 41°43'N, 73°12'W; Litchfield Quadrangle, USGS. **Continuity:** Established 1965; 23 intermittent yrs. **Size:** 10.5 ha. **Description of Plot:** See *Aud. Field Notes* 19:594-595 (1965). There are no bodies of water, rock outcrops or buildings. The only road through the plot is a dirt woods road which is closed to cars. **Weather:** Temperatures were about average (22 to 27°C). The sky was usually at least partly cloudy. Winds were light. **Coverage:** 13.3 hrs; 6 visits (2 mornings, 2 afternoons, 2 evenings); 5, 6, 7, 11, 19, 20 June. **Census:** Blackburnian Warbler, 11 (42/40 ha); Ovenbird, 11; Red-eyed Vireo, 9 (34); Veery, 8 (30); Black-throated Green Warbler, 7 (27); Solitary Vireo, 5 (19); Black-capped Chickadee, 4 (15); Eastern Wood-Pewee, 3 (11); Great Crested Flycatcher, 3; Blue Jay, 3; Red-breasted Nuthatch, 3; Hermit Thrush, 3; Wood Thrush, 3; Pine Warbler, 3; Downy Woodpecker, 2; Brown Creeper, 2; Yellow-rumped Warbler, 2; Purple Finch, 2; Scarlet Tanager, 1.5; Hairy Woodpecker, 1; American Crow, 1; White-breasted Nuthatch, 1; Black-and-white Warbler, 1; Northern Waterthrush, 1; Brown-headed Cowbird, 1; American Robin, 0.5; Common Yellowthroat, 0.5; Northern Cardinal, 0.5; Song Sparrow, 0.5; Green-backed Heron, +; Turkey Vulture, +; Northern Goshawk, +; Great Horned Owl, +; Pileated Woodpecker, +; Eastern Kingbird, +. **Total:** 35 species; 93.5 territories (356/40 ha). **Remarks:** The number of territorial male Hermit Thrushes and Great Crested Flycatchers were both at 23 year highs. The number of Scarlet Tanagers was at a new low. The Green-backed Heron was a new species for the plot. **Acknowledgments:** Gordon Loery of the White Memorial Conservation Center wrote up the report.

## 33. UPLAND OAK AND HEMLOCK FOREST

BOSQUE ROBLE Y PICEA DE ALTURAS

JULIE ZICKEFOOSE AND 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:** New. **Size:** 10.5 ha. **Description of Plot:** S of the Dolbia Hill Lane, the plateau, now dominated by White Oak, was pastured about 60 yrs ago. Many invading hemlocks, killed by gypsy moth defoliation in 1981, are still standing. The canopy is somewhat open permitting a herbaceous ground cover of sedges. The lower W and S slopes, comprising about 50% of the plot, are dominated by healthy hemlocks. The trail, marked by 20 m stations, starts at the E end at the top of the ledge. The dominant canopy species are White Oak, Eastern Hemlock, and Pignut Hickory; the shrub layer is Mountain-Laurel and Black Huckleberry; ground cover is comprised of the sedges *Carex swanii* and *Carex pensylvanica*. Flora of area published in 1987 (Goodwin, R.H., *Studies in Human Ecology* No. 13a, Connecticut College, New London, CT). **Water:** A 0.2 ha vernal pool with maximum depth of 2 m lies at the N edge of the plot. Strong Brook runs parallel to and 150 m SE of the boundary. **Edge:** The census plot is part of a 647 ha unbroken tract of forest, surrounded by deciduous forest to the N and E, and predominantly coniferous forest to the S and W. **Topography and Elevation:** A 2 ha plateau on the NE drops 12 m over ledges to ground sloping gently to the S and W; 107-137 m. **Weather:** Temperatures ranged from 13 to 21°C with a mean of 17°C. The wind was calm on 6 visits with a maximum of a light breeze on 2. The sky was cloudy 60% of the time with rain on two visits. **Coverage:** 8 hrs; 8 visits (all mornings); 23, 29 May;

1, 6, 12, 17, 21, 28 June. **Census:** Ovenbird, 12 (46/40 ha); Red-eyed Vireo, 11.5 (44); Black-throated Green Warbler, 7 (27); Cerulean Warbler, 7; Eastern Wood-Pewee, 6 (23); Yellow-throated Vireo, 5 (19); Black-capped Chickadee, 5; Tufted Titmouse, 4 (15); Blue-gray Gnatcatcher, 4; Black-and-white Warbler, 4; Worm-eating Warbler, 4; American Redstart, 4; Scarlet Tanager, 4; Wood Thrush, 3 (11); Hermit Thrush, 3; Veery, 3; Acadian Flycatcher, 2; Wild Turkey, 1; Great Crested Flycatcher, 1; Brown Creeper, 1; Red-bellied Woodpecker, 0.5; Hairy Woodpecker, 0.5; Red-tailed Hawk, +; Red-shouldered Hawk, +. **Total:** 24 species; 92.5 territories (352/40 ha). **Visitors:** Downy Woodpecker, Eastern Phoebe, Blue Jay, American Crow, White-breasted Nuthatch, Eastern Bluebird, Cedar Waxwing, Blackpoll Warbler, Northern Cardinal, Rose-breasted Grosbeak, Rufous-sided Towhee, Brown-headed Cowbird, House Finch. **Remarks:** Precipitation for May and June was 32.5 cm, the most for the period in the past 5 years. A Wild Turkey nest was found on 4 May, but by 18 May the nest was destroyed by predation. On 12 June a Blue Jay was observed robbing a Red-eyed Vireo nest. Solitary Vireos were nesting in the area in 1987. **Other Observer:** Richard H. Goodwin.

### 34. ISOLATED OAK-TULIPTREE-PINE UPLAND FOREST

BOSQUE AISLADO DE ROBLE-ÁLAMO-PINO EN ALTURA

CHANDLER S. ROBBINS

*Patuxent Wildlife Research Center  
Laurel, Maryland 20708*

**Location:** Maryland, Howard Co.; High Ridge County Park (undeveloped), 1 km NW of Laurel; 39°07'N, 76°52'W; Laurel Quadrangle, USGS. **Continuity:** New. **Size:** 15 ha.

**Description of Plot:** Remnant forest in a rapidly urbanizing region. In 1957 this was part of 5,000 contiguous hectares of forest along the Patuxent River. Now only 48 hectares of contiguous forest remain between the City of Laurel and Highway I-95. This study site consists of the one remaining block of upland forest, excluding a buffer strip around its edge. Primarily mature oak forest, but with Tuliptree the dominant species in basal area, and remnant Virginia Pines still prominent in portions of the site. Black Tupelo is the commonest understory species (27% of live saplings with dbh of 3–8 cm), and Mountain-Laurel is the dominant shrub. Trees, 8-cm dbh and over, based on seven 0.04 ha samples, 745/ha; total basal area, 30.3 m<sup>2</sup>/ha. Species comprising 92% of the trees >8 cm dbh [figures after each give number of trees/ha, relative density (%), relative dominance (%), frequency (% of samples), in that sequence]: White Oak, 71, 10, 10, 57; Southern Red Oak, 56, 8, 13, 57; Tuliptree, 131, 18, 26, 57; Virginia Pine, 138, 19, 19, 71; dead trees, 60, 8, 4, 100; Black Tupelo, 67, 9, 2, 57; Red Maple, 49, 7, 8, 71; Black Locust, 39, 5, 2, 29; Northern Red Oak, 25, 3, 6, 29; Black Oak, 21, 3, 4, 43; Chestnut Oak, 18, 2, 3, 43; Eastern Redcedar, 18, 2, 1, 14. Trees by diameter size class [figures after each class give number of trees/ha, relative density (%), basal area in m<sup>2</sup>/ha, relative dominance]: S (sapling, 3–8 cm dbh), 1140, –, 2.7, –; A (8–15 cm), 388, 52, 3.9, 13; B (15–23 cm), 148, 20, 4.2, 14; C (23–38 cm), 159, 21, 11.6, 38; D (38–53 cm), 39, 5, 6.4, 21; E (53–69 cm), 4, 1, 1.0, 3; F (69–84 cm), 7, 1, 3.2, 11. 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): 0–0.3 m, 60; 0.3–1 m, 48; 1–2 m, 39; 2–3 m, 42. Foliage profile (% occurrence of green vegetation based on 140 vertical sightings): 0–0.5 m, 26; 0.5–1 m, 9; 1–1.5 m, 7; 1.5–2 m, 6; 2–2.5 m, 9; 2.5–3 m, 14; 3–4 m, 9; 4–6 m, 41; 6–8 m, 34; 8–10 m, 37; 10–15 m, 40; 15–20 m, 27; 20–25 m, 6; 25–30 m, 2. Shrub stems/ha, 14,100; ground cover, 40%; canopy cover, 95% (26% pine); average canopy height, 22.9 m (range 10.0–34.0). **Edge:** Beyond a 50-m buffer strip the study site is bounded on the E and NW by housing, on the N by hayfields, and on the W by dense young pines. The S boundary follows the top edge of the steep south-facing slope of the wooded Patuxent River gorge. **Topography and Elevation:** Gentle S slope except for two steep gullies that traverse the study site from N to S; 50–85 m. **Weather:** Rainfall, unusually heavy from April through July, kept the two small streams flowing until mid-August; no evidence of detrimental effect on nesting birds other than Louisiana Waterthrushes, which

apparently were washed out repeatedly. **Coverage:** 29.5 hrs (including time searching for nests and evidence of nesting success); 8 visits; 15 May–7 July; also 47 hrs operating mist nets (367 net-hrs), 18 July–31 August, to obtain additional evidence of nesting success. **Census:** Tufted Titmouse, 7 (19/40 ha; FL); Carolina Chickadee, 5.5 (15; FL); Ovenbird, 5 (13; FL); Northern Cardinal, 5 (1N; FL); Red-bellied Woodpecker, 4.5 (12; FL); Carolina Wren, 4.5 (FL); Wood Thrush, 4 (11; 1N; FL); Red-eyed Vireo, 4 (FL); Downy Woodpecker, 3.5 (9; FL); Rufous-sided Towhee, 3.5 (FL); Eastern Wood-Pewee, 2.5; Northern Flicker, 2 (FL); Great Crested Flycatcher, 2; Blue Jay, 2 (FL); Hooded Warbler, 2 (FL); Scarlet Tanager, 2 (FL); Hairy Woodpecker, 1.5 (1N; FL); Yellow-billed Cuckoo, 1; American Crow, 1 (FL); White-breasted Nuthatch, 1 (FL); American Robin, 1 (FL); Louisiana Waterthrush, 1; Kentucky Warbler, 1; Brown-headed Cowbird, 1; Red-shouldered Hawk, 0.5; Great Horned Owl, 0.5; Pileated Woodpecker, 0.5; Veery, 0.5 (FL). **Total:** 28 species; 69.5 territories (185/40 ha). **Visitors:** Acadian Flycatcher, Eastern Phoebe, Fish Crow, White-eyed Vireo, Yellow-throated Vireo, Pine Warbler, Common Grackle, House Finch, House Sparrow. **Remarks:** This was part of a study of comparative nesting success of residents, temperate zone migrants, and neotropical migrants in small isolated woodlots. **Acknowledgments:** I thank Jeffrey A. Bourne, Chief of Parks for Howard County, for permission to use High Ridge Park as a study site, and I thank Barbara Dowell and Eleanor Robbins for helping with the vegetation survey.

## 35. TAMARACK BOG AND HARDWOOD

PANTANO DE TAMARAK-MADERAS DURAS

JAMES MULLINS

2558 Locust Lane  
Stevensville, Michigan 49127

**Location:** Michigan; Berrien Co.; Stevensville; 41°59'N, 86°33'W; Bridgman Quadrangle, USGS. **Continuity:** Established 1976; 14 consecutive yrs. **Size:** 8.5 ha. **Description of Plot:** See *Am. Birds* 30:1049 (1976). **Weather:** The weather on all count days was clear and calm. Rainfall and temperature was near normal. It was ideal nesting with no storms. **Coverage:** 8 hrs; 8 visits (all mornings). **Census:** Red-eyed Vireo, 3 (14/40 ha); Great Crested Flycatcher, 2; Eastern Wood-Pewee, 2; Wood Thrush, 2; Canada Warbler, 2; Scarlet Tanager, 2; Red-headed Woodpecker, 1; Downy Woodpecker, 1; Northern Flicker, 1; Blue Jay, 1; Black-capped Chickadee, 1; Tufted Titmouse, 1; White-breasted Nuthatch, 1; Veery, 1; American Robin, 1; Gray Catbird, 1; Ovenbird, 1; Common Yellowthroat, 1; Northern Cardinal, 1. **Total:** 19 species; 29 territories (136/40 ha). **Visitors:** Hairy Woodpecker, Pileated Woodpecker, Pine Warbler, Northern Waterthrush, Brown-headed Cowbird.

## 36. UPLAND MIXED PINE-SPRUCE-HARDWOOD PLANTATION

PLANTACIONES MIXTAS DE PINO-ABETO MADERAS DURAS EN ALTURA

ELIZABETH W. BROOKS

1435 Waterwells Road  
Alfred Station, New York 14803

**Location:** New York; Allegany Co.; Alfred; 42°08'N, 77°45'W; Andover Quadrangle, USGS. **Continuity:** Established 1974; 16 consecutive yrs. **Size:** 16.6 ha. **Description of Plot:** See *Am. Birds* 28:699–700 (1974). **Weather:** Average daily temperatures in May (11.67°C) and June (18.53°C) were warmer than normal; July (19.76°C) was normal. Precipitation in May (16.46 cm) and June (20.78 cm) was above average; July (4.90 cm) about normal. Although May was warmer than average, a cold, wet period from 1 May to 12 May and heavy downpours and flash flooding on 20 June may have negatively influenced breeding

success of some species. **Coverage:** 17.8 hrs; 12 visits (10 mornings, 2 afternoons); 8, 22 April; 14, 21 May; 3, 10, 18, 25 June; 1, 12, 18 July; 2 August. **Census:** Black-throated Green Warbler, 11 (27/40 ha); Magnolia Warbler, 11; Blackburnian Warbler, 9 (22); Golden-crowned Kinglet, 8 (19); Dark-eyed Junco, 8; Black-capped Chickadee, 6 (14); Red-breasted Nuthatch, 5 (12); Blue Jay, 3 (7); Brown Creeper, 3; Chipping Sparrow, 3; American Robin, 2; Solitary Vireo, 2 (1N); Yellow-rumped Warbler, 2; Common Yellowthroat, 2; Sharp-shinned Hawk, 1; Broad-winged Hawk, 1 (1N); Wild Turkey, 1 (1N); House Wren, 1 (2N); Winter Wren, 1; Wood Thrush, 1; Chestnut-sided Warbler, 1; Ovenbird, 1; Mourning Warbler, 1; Indigo Bunting, 1; Song Sparrow, 1; Brown-headed Cowbird, 1; Purple Finch, 1; Barred Owl, +; Red-shouldered Hawk, +; Ruffed Grouse, +; Hairy Woodpecker, +; Pileated Woodpecker, +; Great Crested Flycatcher, +; White-breasted Nuthatch, +; Veery, +. **Total:** 35 species; 88 territories (212/40 ha). **Visitors:** American Crow, Common Raven, Hermit Thrush, Cedar Waxwing, Red-eyed Vireo, Scarlet Tanager, Rose-breasted Grosbeak, American Goldfinch. **Remarks:** Magnolia Warbler, which had experienced a steady decline in recent years, was back up to pre-1984 levels. Red-breasted Nuthatch, chickadee, and junco numbers were up. A Black Bear (*Ursus americana*) with cub residing in the study area made for alert censusing. **Acknowledgments:** Appreciation to Rick Walker for weather data.

### 37. YOUNG SPRUCE FOREST

BOSQUE DE ABETOS JOVEN

KENNETH L. CROWELL

*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; 9 intermittent yrs. **Size:** 4.5 ha. **Description of Plot:** See *Am. Birds* 32:72 (1978). **Weather:** Warm and dry, but foggy. **Coverage:** 12 hrs; 18 visits (17 mornings, 1 evening); 1, 2, 3, 4, 5, 6, 26, 27, 28, 29, 30 June; 2, 3, 4, 6 July. **Census:** Magnolia Warbler, 5 (44/40 ha); Black-throated Green Warbler, 4.5 (40); Blue Jay, 2; Black-and-white Warbler, 2; Mourning Dove, 1.5; Black-capped Chickadee, 1.5; Winter Wren, 1.5; American Robin, 1.5; Yellow-rumped Warbler, 1.5; White-throated Sparrow, 1.5; Ruffed Grouse, 1; Red-breasted Nuthatch, 1; Swainson's Thrush, 1; Common Raven, 0.5; Dark-eyed Junco, 0.5; Downy Woodpecker, +; Great Crested Flycatcher, +; American Crow, +; Golden-crowned Kinglet, +; Hermit Thrush, +; American Redstart, +; Ovenbird, +. **Total:** 22 species; 26.5 territories (235/40 ha). **Visitors:** Northern Flicker, Yellow-bellied Flycatcher, Tennessee Warbler, Red-winged Blackbird. **Remarks:** Bird song seemed noticeably diminished, but this impression was *not* reflected in census results. **Acknowledgments:** Thanks to Spencer L. Murphy, Jr. for access to his land.

### 38. MIXED OAK-PINE FOREST I

BOSQUE MIXTO DE ROBLE-PINO I

DOUGLAS A. GROSS

*Ecology III, Susquehanna Biol. Station  
R.D. 1, U.S. Rt. 11  
Berwick, Pennsylvania 18603*

**Location:** Pennsylvania; Luzerne Co.; Wapwallopen; Council Cup Forest; Pennsylvania Power and Light Company; 41°04'N, 76°07'W; Sybertsville Quadrangle, USGS. **Continuity:** Established 1977; 13 consecutive yrs. **Size:** 6 ha. **Description of Plot:** See *Am. Birds* 33:70 (1979). **Weather:** Overcast on 4 counts, clear on 3 counts, mostly cloudy on 1 count. The temperature ranged from 7 to 23°C. Winds were calm. Late May and most of June were very rainy. **Coverage:** 22 hrs; 21 April; 15, 25 May; 1, 9, 16, 26 June; 12 July.

**Census:** Red-eyed Vireo, 7 (47/40 ha; 1N); Black-capped Chickadee, 5.5 (37; 1N); Ovenbird, 5.5; Scarlet Tanager, 4.5 (30); White-breasted Nuthatch, 3 (20); Wood Thrush, 3 (1N); Cedar Waxwing, 3; Tufted Titmouse, 2.5; Brown-headed Cowbird, 2.5; Eastern Wood-Pewee, 2; Blue Jay, 1.5; Black-and-white Warbler, 1.5; Rose-breasted Grosbeak, 1.5; Downy Woodpecker, 1; Great Crested Flycatcher, 1; Brown Creeper, 1; Chipping Sparrow, 1; Black-billed Cuckoo, 0.5; Northern Flicker, 0.5; Pileated Woodpecker, 0.5; Blue-gray Gnatcatcher, 0.5; American Redstart, 0.5; Worm-eating Warbler, 0.5; Northern Oriole, 0.5; Red-tailed Hawk, +; Ruffed Grouse, + (FL); Wild Turkey, +; Yellow-billed Cuckoo, +; Hairy Woodpecker, +; American Crow, +; American Robin, +; Solitary Vireo, +; Northern Cardinal, +; Indigo Bunting, +. **Total:** 34 species; 50.5 territories (336/40 ha). **Visitors:** Mourning Dove, Ruby-throated Hummingbird, Eastern Bluebird, Blackburnian Warbler, Red-winged Blackbird. **Remarks:** Gypsy moth caterpillars were more common this summer than in the last 6 years, primarily attacking oaks and pines. Some parts of the plot were moderately defoliated while other parts were essentially untouched. **Acknowledgments:** Pennsylvania Power and Light Company provided support for this study. Thanks to Eric Supey for assistance.

## 39. MIXED OAK–PINE FOREST II

BOSQUE MIXTO DE ROBLE–PINO II

DOUGLAS A. GROSS

Ecology III, Susquehanna Biol. Station  
R.D. 1, U.S. Rt. 11  
Berwick, Pennsylvania 18603

**Location:** Pennsylvania; Luzerne Co.; Beach Haven; TR419 Forest; Pennsylvania Power and Light Company; 41°05'N, 76°08'W; Berwick Quadrangle, USGS. **Continuity:** Established 1977; 13 consecutive yrs. **Size:** 11.1 ha. **Description of Plot:** See *Am. Birds* 33:70 (1979). **Weather:** Clear on 3 counts, overcast on 2 counts, partly cloudy on 1 count, and partly cloudy turning to overcast and drizzle on 2 counts. Temperatures ranged from 4.5 to 25°C; winds calm. May and June were very rainy, which somewhat affected the counts. **Coverage:** 30 hrs; 27 April; 17, 30 May; 7, 15, 21, 27 June; 19 July. **Census:** Red-eyed Vireo, 13.5 (49/40 ha); Scarlet Tanager, 8 (29); Eastern Wood-Pewee, 7 (25); Tufted Titmouse, 6 (22); Wood Thrush, 5.5 (20); Black-capped Chickadee, 5 (18); Blue-gray Gnatcatcher, 4.5 (16); American Redstart, 4.5; Brown-headed Cowbird, 3 (11); Blue Jay, 2.5; Downy Woodpecker, 2; Cedar Waxwing, 2; Yellow-throated Vireo, 2; Hooded Warbler, 2; Northern Flicker, 1.5; House Wren, 1.5; Northern Cardinal, 1.5; Rose-breasted Grosbeak, 1.5; Red-tailed Hawk, 1; Yellow-billed Cuckoo, 1; White-breasted Nuthatch, 1; Pine Warbler, 1; Worm-eating Warbler, 1; Indigo Bunting, 1; Blackburnian Warbler, 0.5; Pileated Woodpecker, 0.5; Chipping Sparrow, 0.5; Hairy Woodpecker, +; Eastern Kingbird, +; American Crow, +; Black-and-white Warbler, +; Mourning Warbler, +; Rufous-sided Towhee, +; American Goldfinch, +. **Total:** 34 species; 81 territories (292/40 ha). **Visitors:** Great Crested Flycatcher, Fish Crow, Gray Catbird, Brown Thrasher, Chestnut-sided Warbler, Common Yellowthroat, Northern Oriole. **Remarks:** Fledglings of all common species were observed including Pileated Woodpecker. Mourning Warbler and Blackburnian Warbler were new species; the former is at an abnormally low elevation for the area in a blackberry thicket. Gypsy moth caterpillars were more common this summer than in the last 6 years, primarily attacking oaks on the W side of the plot. These oaks were moderately defoliated. **Acknowledgments:** Pennsylvania Power and Light Company provided support for this study. Thanks to Eric Supey for assistance.

## 40. HEMLOCK-WHITE PINE-MIXED HARDWOOD FOREST

BOSQUE MIXTO DE MADERAS DURAS-PICEA-PINO BLANCO

KENNETH R. HINKLE

Rt.2 Box 32 J  
Bridgewater, Virginia 22812

**Location:** Virginia; Rockingham Co.; Rawley Springs; 38°33'N, 79°04'W; Rawley Springs Quadrangle, USGS. **Continuity:** Established 1979; 4 intermittent yrs. **Size:** 6.1 ha. **Description of Plot:** See *Am. Birds* 34:58 (1980). **Weather:** Wetter than normal. Cooler than normal during the early part of the period. Foliage emerged about 1 week later this year than in 1987 and 1988. **Coverage:** 14 hrs; 9 visits (8 mornings, 1 evening); 18, 20, 25, 29, 31 May; 3, 8, 10, 25 June. **Census:** Acadian Flycatcher, 10 (66/40 ha); Red-eyed Vireo, 6 (39); Northern Parula, 5 (33); Louisiana Waterthrush, 4 (26); Wood Thrush, 3 (20); Scarlet Tanager, 3; Black-throated Green Warbler, 2; Ovenbird, 2; Tufted Titmouse, 1.5; Solitary Vireo, 1.5; Blue-gray Gnatcatcher, 1; Worm-eating Warbler, 1; Eastern Wood-Pewee, +; Winter Wren, +. **Total:** 14 species; 40 territories (262/40 ha). **Visitors:** Yellow-billed Cuckoo, Downy Woodpecker, Northern (Yellow-shafted) Flicker, Pileated Woodpecker, Blue Jay, Carolina Chickadee, White-breasted Nuthatch, Cedar Waxwing, Black-and-white Warbler, American Redstart, Rose-breasted Grosbeak, Rufous-sided Towhee, Brown-headed Cowbird. **Remarks:** The abundance of almost all species increased over past two years. Ovenbirds appeared later than previous years. Blue-gray Gnatcatcher and Worm-eating Warbler are new to the plot. Two Winter Wrens were heard on last visit. One had been heard on second and third visits in late May and believed to be migrating. **Acknowledgments:** Thanks to Rod Bodkin for help in bird species identification and plot layout and to Kathleen Finnigan for reviewing the data.

## 41. MOUNTAINTOP HABITAT

HÁBITAT DE TOPES MONTANOS

CRAIG TUMER

Rt. 1 Box 1072  
Port Republic, Virginia 24471

**Location:** Virginia; Augusta Co.; Briery Branch; 38°27'N, 79°15'W; Palo Alto Quadrangle, USGS. **Continuity:** Established 1981; 3 intermittent yrs. **Size:** 8.6 ha. **Description of Plot:** See *Am. Birds* 36:68 (1982). **Weather:** Although half of the days on which censuses were conducted were clear, this spring was unusually wet. Temperatures were generally quite cool. The cool wet conditions probably caused many of the birds to remain relatively quiet during the first two weeks of the census period. Temperatures ranged from 10 to 23.9°C. **Coverage:** 8 hrs; 8 visits (4 mornings, 4 evenings); 19, 23, 24, 30 May; 3, 12, 18, 22 June. **Census:** Canada Warbler, 6 (28/40 ha); Rufous-sided Towhee, 4.5 (21); Veery, 4 (19); Dark-eyed Junco, 4; Black-throated Blue Warbler, 3.5 (16); Black-capped Chickadee, 3 (14); Rose-breasted Grosbeak, 2.5; Wood Thrush, 2; Chestnut-sided Warbler, 2; Scarlet Tanager, 1.5; Blue Jay, 1; Gray Catbird, 1; Solitary Vireo, 1. **Total:** 13 species; 36 territories (167/40 ha). **Visitors:** Broad-winged Hawk, Mourning Dove, Black-billed Cuckoo, Chimney Swift, Eastern Wood-Pewee, Blue Jay, Common Raven, Tufted Titmouse, Cedar Waxwing, Red-eyed Vireo, Yellow-rumped Warbler, Black-and-white Warbler, American Goldfinch. **Remarks:** Species such as the Black-throated Blue Warbler, Rose-breasted Grosbeak, Wood Thrush, Scarlet Tanager and Solitary Vireo were concentrated in the hardwood-dominated sections of the plot. The pair of Gray Catbirds frequented the more open pine-dominated section, while all other species were evenly distributed throughout the plot. **Other Observers:** Kathleen Finnegan and John Dellett. **Acknowledgments:** Thanks to Kathleen and Michael Finnegan for marking the study plot.

## 42. SECOND-GROWTH BROADLEAF-CONIFEROUS FOREST

### BOSQUE SECUNDARIO DE HOJA ANCHA-CONÍFEROS

DORY SMITH

120 Olympic View Ave. So.  
Sequim, Washington 98382

**Location:** Washington; Clallam Co.; Sequim; 48°08'N, 123°12'W; Dungeness Quadrangle, USGS. **Continuity:** Established 1987; 3 consecutive yrs. **Size:** 21.4 ha. **Description of Plot:** See *J. Field Ornithol.* 60:18 (1989). The plot is essentially a flat area bordered along one side by the Strait of Juan de Fuca. It is subject to a great deal of wind, usually westerly, as a result. The climate is very dry, the plot being in the "rain shadow" of the Olympic Mts. Annual rainfall of 42–47 cm occurs mainly in fall, winter and spring. This slows the tree growth, though local irrigation systems enhance the water table. About one third of the plot has roads accessing 65 campsites, and the remainder has foot trails. There are no ponds or major rocky areas. The probable age of the vegetation is 25–30 years. **Weather:** Temperatures ranged from 9–14°C, winds light, almost no precipitation, sky usually partly to completely cloudy. **Coverage:** 13.3 hrs; 8 visits (all mornings); 19, 23, 25 May; 5, 14, 20, 22, 27 June. **Census:** Song Sparrow, 7 (13/40 ha); Rufous-sided Towhee, 4 (7); Orange-crowned Warbler, 4; American Goldfinch, 2.5; Chestnut-backed Chickadee, 2; Bewick's Wren, 1.5; American Crow, 1; American Robin, 1; Red-breasted Nuthatch, 1; Wilson's Warbler, 1; Golden-crowned Kinglet, 0.5; White-crowned Sparrow, 0.5; Western Flycatcher, 0.5; Rufous Hummingbird, 0.5; Swainson's Thrush, 0.5; Pileated Woodpecker, +; Hutton's Vireo, +; Yellow Warbler, +; Brown-headed Cowbird, +; California Quail, +; Olive-sided Flycatcher, +; Bushtit, +; Winter Wren, +; Purple Finch, +. **Total:** 24 species; 25.7 territories (48/40 ha). **Remarks:** I was not able to start censusing until mid-May, about 2 weeks later than I would have liked.

## 43. SPRUCE-HEMLOCK FOREST

### BOSQUE DE ABETO-PÍCEA

LARRY PRUSSIN

Glacier Bay National Park and Preserve  
Gustavus, Alaska 99826

**Location:** Alaska; Juneau Township; Glacier Bay Lodge; Bartlett Cove; 58°27'N, 135°53'W; Juneau (B-6) Quadrangle, USGS. **Continuity:** Established 1985; 2 intermittent yrs. **Size:** 8.1 ha. **Description of Plot:** The plot is contained in an area exposed by retreating glacial ice approximately 200 years ago. The uniform stand of Sitka Spruce trees are experiencing a spruce bark beetle (*Dendroctonus rufipennis*) infestation. **Water:** Largest pond is located in the northeast section of the plot. It drains to the NE via a series of smaller ponds and Alder Creek. **Edge:** Similar to habitat of census plot. A pond is located approximately 80 m from the S boundary of the plot. **Topography:** A glacial moraine with some scattered erratic boulders. The edge of the moraine runs from the SW corner to the E boundary (approximately midway along the N-S axis) presenting a steep slope rising approximately 22.9 m. **Weather:** Calm, cloudy, cool; temperatures ranged from 7.2 to 12.8°C. **Coverage:** 27.2 hrs; 8 visits (6 mornings, 2 evenings); 23, 30 May; 4, 11, 23, 27, 30 June; 8 July. **Census:** Varied Thrush, 7 (34/40 ha); Chestnut-backed Chickadee, 5 (25); Hermit Thrush, 4 (20); Hairy Woodpecker, 2; Winter Wren, 2; Three-toed Woodpecker, 1; Golden-crowned Kinglet, 1; Yellow-rumped Warbler, 1; Dark-eyed Junco, 1; Orange-crowned Warbler, 0.5; **Total:** 10 species; 24.5 territories (120/40 ha). **Visitors:** Blue Grouse, Tree Swallow, Common Raven, Ruby-crowned Kinglet, American Robin. **Remarks:** A black bear (*Ursus americanus*) was encountered. Red squirrels (*Tamiasciurus hudsonicus*) were seen and heard regularly. River otter (*Lutra canadensis*) tracks and scat were seen around the largest pond. **Acknowledgments:** Laurel Devaney, Michael Rivers, and Kenneth A. Russell.

## 44. OLD-GROWTH MIXED-CONIFEROUS-RED FIR FOREST TRANSITION

### BOSQUE MADURO DE TRANSICIÓN MIXTO DE CONÍFEROS-PINABETE ROJO

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2081 E. Sierra Ave.  
Fresno, California 93710*

**Location:** California; Fresno Co.; Wishon Village; 36°57'N, 119°02'W; Patterson Mountain NE Quadrangle, USGS. **Continuity:** Established 1985; 5 yrs. **Size:** 42.3 ha. **Description of Plot:** See 1985 report. **Weather:** Weather was generally fair during the census period. Starting temperatures ranged from -2 to 9°C. Ending temperatures ranged from 6 to 22°C. **Coverage:** 89 hrs; 12 visits (all mornings); 22, 23, 24 May; 1, 2, 5, 9, 12, 13, 19, 20, 21 June. **Census:** Fox Sparrow, 32.5 (31/40 ha); Golden-crowned Kinglet, 19.5 (18); Red-breasted Nuthatch, 16.5 (16; 11N); Dark-eyed Junco, 16.5 (3N); Dusky Flycatcher, 13 (12; 4N); Hammond's Flycatcher, 11.5 (11); MacGillivray's Warbler, 11 (10); Hermit Warbler, 7.5 (7); Mountain Quail, 6 (6); Western Tanager, 6 (1N); Brown Creeper, 5 (5; 2N); White-headed Woodpecker, 4.5 (4; 5N); Mountain Chickadee, 4.5 (2N); Hermit Thrush, 4 (4; 1N); Yellow-rumped Warbler, 3.5 (3); American Robin, 2.5 (1N); Red-breasted Sapsucker, 2 (3N); Northern Flicker, 1 (1N); Townsend's Solitaire, 1 (3); Warbling Vireo, 1; Nashville Warbler, 1; Cassin's Finch, 1; Hairy Woodpecker, 0.5 (1N); Pileated Woodpecker, 0.5 (1N); Steller's Jay, 0.5; Common Raven, 0.5 (1N); Solitary Vireo, 0.5. **Total:** 27 species; 173.5 territories (164/40 ha). **Visitors:** Sharp-shinned Hawk, Cooper's Hawk, Red-tailed Hawk, Band-tailed Pigeon, Northern Pygmy-Owl, Vaux's Swift, Anna's Hummingbird, Calliope Hummingbird, Western Wood-Pewee, Clark's Nutcracker, Black-headed Grosbeak, Green-tailed Towhee, Purple Finch, Pine Siskin, Evening Grosbeak. **Remarks:** All boundary territories were counted as 0.5 territories. **Acknowledgments:** This effort is part of a study of observer variability in spot mapping being conducted by Dr. Jared Verner, USDA Forest Service.

## 45. 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; 25 consecutive yrs. **Size:** 8.1 ha. **Description of Plot:** See *Aud. Field Notes* 8:372 (1954). Ponderosa Pine Forest with large meadow in center. The forest was drastically thinned in 1982. **Weather:** Mostly clear skies and warm temperatures. **Coverage:** 17.2 hrs; 12 visits (11 mornings, 1 afternoon); 6 April; 3, 13, 20 May; 2, 11, 18, 25 June; 1, 4, 25 July; 15 August. **Census:** Western Wood-Pewee, 8 (40/40 ha); Pygmy Nuthatch, 4 (20); American Robin, 4; Chipping Sparrow, 4; Mourning Dove, 3 (15); Violet-green Swallow, 2; Broad-tailed Hummingbird, 1; Hairy Woodpecker, 1; Hammond's Flycatcher, 1; Mountain Chickadee, 1; White-breasted Nuthatch, 1; Solitary Vireo, 1; Rufous-sided Towhee, 1; Brown-headed Cowbird, 1; Lesser Goldfinch, 1. **Total:** 15 species; 34 territories (167/40 ha). **Visitors:** Northern (Red-shafted) Flicker, Steller's Jay, Black-billed Magpie, Western Tanager, House Finch. **Remarks:** This is the largest nesting population in many years, especially since the forest was thinned in 1982. There were very few visits from Black-billed Magpies and none nested on the plot this summer. There were very few raiding Steller's Jays, which may have had an effect on the number of nesting birds. In previous summers, jays and magpies greatly disturbed other bird species. The raiding was especially noticeable after the forest was thinned in 1982. There was a

spell of heavy thunderstorms with bad winds in the middle of the nesting season. Some nesting was disrupted. **Acknowledgments:** Thanks to Vera Evenson for doing one count.

## 46. MATURE RED SPRUCE FOREST

### BOSQUE DE ABETO ROJO MADURO

THOMAS P. SKALING

10 Cumberland Street  
Brunswick, Maine 04011

**Location:** Maine; Somerset Co.; Upper Enchanted Twp.; Boise Cascade Tract; 45°20'N, 70°10'W; Pierce Pond Quadrangle, USGS. **Continuity:** New. **Size:** 16 ha. **Description of Plot:** Trees, 7.6 cm in diameter and over, based on five 0.04 ha circular samples: 1855/ha living, 200/ha standing dead (snags); total basal area 45 m<sup>2</sup>/ha living, 1.9 m<sup>2</sup>/ha standing dead. Species comprising 100% of the total number of living trees [figures after each give number of trees/ha, relative density (%), relative dominance (%), frequency (%), in that sequence]: Red Spruce, 1545, 83, 83, 100; White Birch, 155, 9, 6, 100; Northern White Cedar, 70, 4, 8, 40; Balsam Fir, 60, 3, 2, 40; Red Maple 25, 1, 1, 40. Living trees by diameter size class [figures after each class size give number of trees/ha, relative density (%), basal area in m<sup>2</sup>/ha, relative basal area (%), in that sequence]: A (7.6–15.2 cm) 1205, 64, 11.2, 25; B (15.2–22.9 cm) 385, 21, 10.8, 24; C (22.9–38.1 cm) 230, 13, 17.1, 38; D (38.1–53.3 cm) 35, 2, 5.9, 13. Snags by diameter size class (number of snags/ha, relative density (%), basal area in m<sup>2</sup>/ha, relative basal area (%), in that sequence): A (7.6–15.2 cm) 120, 60, 1.1, 59; B (15.2–22.9 cm) 60, 30, 0.55, 29; C (22.9–38.1 cm) 20, 10, 0.2, 12. Shrub stems/ha 35,582; ground cover 75%; canopy cover 88%; average canopy height 21 m (range 18–24 m). **Topography:** Terrain is rough with glacial boulders ranging in size from 2 to 10 m in diameter scattered throughout the plot. The plot is situated on a plateau with a S-facing slope. **Edge:** The same forest habitat surrounds the study plot. **Water:** Shallow, boulder-filled pond is located in NW quadrant of plot. Northern 10% of the shore line terminates in a 200 m<sup>2</sup> boreal bog with Leather Leaf, Labrador Tea and Rhodora shrubs predominating. Remaining 90% of the shore line is bold. **Elevation:** 445–482 m. **Weather:** Generally mild and clear with calm air except for light breezes toward the end of four counts. One visit was completed under a high overcast; another, following a heavy overnight rain, was accomplished in a light ground fog. No precipitation fell during census visits. **Coverage:** 25 hrs; 8 visits (all mornings); 27 May; 3, 18, 30 Jun.; 1, 8, 9, 12 Jul. **Census:** Red-breasted Nuthatch, 5.5 (14/40 ha); Yellow-rumped Warbler, 4.5 (11); Winter Wren, 4 (10); Golden-crowned Kinglet, 4; Blackburnian Warbler, 3.5 (9); Swainson's Thrush, 3 (8); Magnolia Warbler, 3; Yellow-bellied Flycatcher, 2; Black-capped Chickadee, 2; Boreal Chickadee, 2; Brown Creeper, 2; Hermit Thrush, 2; Solitary Vireo, 2; Northern Parula, 2; Common Yellowthroat, 2; Dark-eyed Junco, 2; Yellow-bellied Sapsucker, 1.5; White-throated Sparrow, 1.5; American Black Duck, 1; Hooded Merganser, 1; Sharp-shinned Hawk, 1; Blue Jay, 1; Nashville Warbler, 1; Pine Siskin, 1. **Total:** 24 species; 54.5 territories (136/40 ha). **Visitors:** Common Goldeneye, Belted Kingfisher, Downy Woodpecker, Hairy Woodpecker, Great-crested Flycatcher, Tree Swallow, American Robin, Cedar Waxwing, Bay-breasted Warbler, Rose-breasted Grosbeak, White-winged Crossbill, Evening Grosbeak. **Remarks:** Combined precipitation for May and June in this region resulted in the fourth wettest May-June period on record since 1895. Precipitation was 165% of normal. July was very dry with only 50% of normal rainfall. **Acknowledgments:** My thanks to Boise Cascade Paper Group, Rumford, Maine, for setting aside the study plot and 75 surrounding hectares for this long-term censusing project, and to Dr. Malcolm Hunter, Jr., Dept. of Wildlife, Univ. of Maine, Orono, Maine for his assistance in designing this project.

## 47. 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; 44°57'N, 68°41'W; Orono Quadrangle, USGS. **Continuity:** Established 1985; 5 consecutive yrs. **Size:** 4.05 ha. **Description of Plot:** See *J. Field Ornithol.* 60:35 (1989). This spruce plantation has had 2/3 of its area cut over in the winter of 1988–90, with understory removed as well as larger White Spruce and White Pine. White Spruce and White Pine in size class C (23–38 cm) were left. **Weather:** May was cool and very wet compared to normal. Temperatures ranged from 7.2 to 15.5°C for count days; no wind during the counts. **Coverage:** 22 hrs; 11 visits (10 mornings, 1 evening); 17, 20, 25, 30 May; 2, 3, 4, 6, 7, 14, 30 June. **Census:** White-throated Sparrow, 4 (40/40 ha); Black-capped Chickadee, 3 (30); Golden-crowned Kinglet, 3; Black-and-white Warbler, 3; Northern Parula, 2; Red-breasted Nuthatch, 2; Ruby-crowned Kinglet, 2; Nashville Warbler, 2; Magnolia Warbler, 2; Blackburnian Warbler, 2; Canada Warbler, 2; Black-throated Green Warbler, 1; Eastern Wood-Pewee, 1; Great Crested Flycatcher, 1; Brown Creeper, 1; Winter Wren, 1; Veery, 1; American Robin, 1; Solitary Vireo, 1; Red-eyed Vireo, 1; Cape May Warbler, 1; Yellow-rumped Warbler, 1; Pine Warbler, 1; Bay-breasted Warbler, 1; Ovenbird, 1; Rose-breasted Grosbeak, 1; Song Sparrow, 1; Purple Finch, 1. **Total:** 28 species; 44 territories (429/40 ha). **Visitors:** Ruffed Grouse, Yellow-bellied Sapsucker, Downy Woodpecker, Northern Flicker, Pileated Woodpecker, Eastern Kingbird, Blue Jay, Hermit Thrush, Cedar Waxwing, Scarlet Tanager, Northern Oriole. **Remarks:** Largest mosquito population (observed qualitatively) in years! Species richness and the number of territories was lower on the plot this year. Ovenbird numbers were down. Song Sparrow (attracted by large openings), Ruby-crowned Kinglet (presumably attracted by the reduced density of spruce), and Winter Wren (attracted by slash piles) were new to the plot.

## 48. JACK PINE FOREST

BOSQUE DE PINOS DE JACK

JOSEPH KAPLAN

*Whitefish Point Bird Observatory  
Paradise, Michigan 49768*

**Location:** Michigan; Chippewa Co.; Paradise; 46°45'N, 85°06'W; Vermillion SE and Shell-drake Quadrangles, USGS. **Continuity:** Established 1985; 5 consecutive yrs. **Size:** 16 ha. **Description of Plot:** See *J. Field Ornithol.* 60(suppl.):45 (1989). **Elevation:** 197 m. **Weather:** Mostly clear and calm on count days. Several days were humid with wet ground conditions. **Coverage:** 28 hrs; 11 visits (10 mornings, 1 evening); 11, 12, 16, 18, 20, 21, 22, 26, 28, 30 June. **Census:** Black-throated Green Warbler, 6 (15/40 ha); Ovenbird, 4.5 (11; carrying food); Nashville Warbler, 3.5 (9); Yellow-rumped Warbler, 3.5; Hermit Thrush, 2.5 (FL); Chipping Sparrow, 1.5 (carrying food); Dark-eyed Junco, 1.5; Brown Creeper, 1; Eastern Wood-Pewee, +; Red-breasted Nuthatch, +; Solitary Vireo, +; Pine Warbler, +. **Total:** 12 species; 24 territories (60/40 ha). **Visitors:** Mourning Dove, Common Nighthawk, Hairy Woodpecker, Northern Flicker, Blue Jay, American Crow, Common Raven, Black-capped Chickadee, Golden-crowned Kinglet, American Robin, Cedar Waxwing, Red Crossbill, Pine Siskin, Evening Grosbeak.

## 49. 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; 42°10'N, 77°50'W; Andover Quadrangle, USGS. **Continuity:** Established 1983; 7 consecutive yrs. **Size:** 10.7 ha. **Description of Plot:** See *Am. Birds* 38:91 (1984). **Weather:** See Upland Mixed Pine-Spruce-Hardwood Plantation. **Coverage:** 15.9 hrs; 11 visits (9 mornings, 1 afternoon, 1 evening); 5 Apr.; 2, 9, 17, 24 June; 1, 10, 17 July; 1, 9, 17 Aug. **Census:** Chipping Sparrow, 17 (64/40 ha; 10N); Song Sparrow, 12 (45); Field Sparrow, 6 (22; 1N); American Robin, 3 (11; 4N); Cedar Waxwing, 2; Savannah Sparrow, 2; Grasshopper Sparrow, 2; Bobolink, 2; Purple Finch, 2 (1N); American Woodcock, 1; Eastern Kingbird, 1; Gray Catbird, 1; Brown Thrasher, 1; Rufous-sided Towhee, 1; Red-winged Blackbird, 1; Brown-headed Cowbird, 1; American Goldfinch, 1; Common Yellowthroat, 0.5; Horned Lark, +; Yellow-rumped Warbler, +; Indigo Bunting, +; Vesper Sparrow, +. **Total:** 22 species; 56.5 territories (211/40 ha). **Visitors:** Chestnut-sided Warbler, Common Grackle, House Finch. **Acknowledgments:** Appreciation to Rick Walker for weather data and to Tom and Kathy Kent for permission to conduct the study on their land.

## 50. 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; 42°07'N, 77°45'W; Andover Quadrangle, USGS. **Continuity:** Established 1969; 21 consecutive yrs. **Size:** 9.3 ha. **Description of Plot:** See *Aud. Field Notes* 23:743-744 (1969) and an updated description in *Am. Birds* 38:38 (1984). **Weather:** See Upland Mixed Pine-Spruce-Hardwood Plantation. **Coverage:** 15.2 hrs; 11 visits (7 mornings, 3 afternoons, 1 evening); 8 Apr.; 1, 8, 16, 23, 30 June; 9, 16, 30 July; 8 Aug. **Census:** Chipping Sparrow, 8 (34/40 ha; 2N); Common Yellowthroat, 6 (26); Song Sparrow, 6; Field Sparrow, 5 (22; 2N); American Robin, 4 (17); Indigo Bunting, 3 (13; 1N); Alder Flycatcher, 2; Blue Jay, 2; Black-capped Chickadee, 2; Cedar Waxwing, 2; Magnolia Warbler, 2; Yellow-rumped Warbler, 2; Rufous-sided Towhee, 2 (1N); American Woodcock, 1.5; Ruffed Grouse, 1; Gray Catbird, 1; Dark-eyed Junco, 1; Brown-headed Cowbird, 1; Purple Finch, 1; Eastern Kingbird, 0.5; Black-throated Green Warbler, +; Blackburnian Warbler, +. **Total:** 22 species; 53 territories (227/40 ha). **Visitors:** Red-breasted Nuthatch, House Wren, Golden-crowned Kinglet, Veery, Blue-winged Warbler, Nashville Warbler, Ovenbird, Rose-breasted Grosbeak, House Finch, American Goldfinch. **Remarks:** Blackburnian Warbler was a new species. **Acknowledgments:** Appreciation to Rick Walker for weather data and to Cynthia Clements and Phil Foster for permission to conduct the study on their land.

## 51. MATURE SPRUCE FOREST

### BOSQUE DE ABETOS MADURO

KENNETH L. CROWELL

*St. Lawrence University  
Canton, New York 13617*

**Location:** Maine; Hancock Co.; Sunset; Stinson Point; 44°11'N, 68°42'W; Deer Isle Quadrangle, USGS. **Continuity:** Established 1987; 3 consecutive yrs. **Size:** 4 ha. **Description of**

**Plot:** See *J. Field Ornithol.* 60(suppl.):47 (1989). **Weather:** Warm and dry – especially at the end of the period; some fog. **Coverage:** 2.5 hrs; 7 visits (all mornings); 2, 5, 28, 29, 30 June; 5, 8 July. **Census:** Red-breasted Nuthatch, 2; Golden-crowned Kinglet, 2; Black-throated Green Warbler, 1.5; Northern Parula, 1; American Robin, 1; Yellow-rumped Warbler, 1; Dark-eyed Junco, 1; Eastern Wood-Pewee, 0.5; Winter Wren, 0.5; American Crow, +; Black-capped Chickadee, +. **Total:** 11 species; 10.5 territories (105/40 ha). **Visitors:** Purple Finch.

## 52. PINYON-JUNIPER WOODLAND

### BOSQUE DE PIÑÓN-JUNIPERO

DAMIAN FAGAN

Arches National Park  
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Moab, Utah 84532

**Location:** Utah; Grand Co.; Arches National Park; 38°48' N, 109°35'W; Arches National Park Quadrangle, USGS. **Continuity:** Established 1983; 7 consecutive years. **Size:** 31.25 ha. **Description of Plot:** See *Am. Birds* 38:137–138 (1984). **Weather:** Average temperature on the days of observation was 12.8°C; previous day high temperature averaged 23.9°C; night-time low temperature averaged 7.8°C. Data collected at Arches Visitor Center at 0745. **Coverage:** 13 hrs; 6 visits (all mornings); 29 April; 6, 12, 13, 20, 26 May. **Census:** Pinyon Jay, 36 (46/40 ha); House Finch, 18 (23); Plain Titmouse, 13 (17); Black-throated Sparrow, 13; Western Kingbird, 9 (12); Blue-gray Gnatcatcher, 8 (10); Say's Phoebe, 6 (8); Rock Wren, 5 (6); Brown-headed Cowbird, 5; White-throated Swift, 4 (5); Gray Vireo, 4; Scott's Oriole, 4; Mourning Dove, 3 (4); Violet-green Swallow, 2; Red-tailed Hawk, +; American Kestrel, +; Scrub Jay, +; Common Raven, +; Bewick's Wren, +; Northern Mockingbird, +. **Total:** 20 species; 130 territories (166/40 ha). **Visitors:** Black-chinned Hummingbird, Ash-throated Flycatcher, Ruby-crowned Kinglet, Solitary Vireo, Yellow-rumped Warbler, Black-throated Gray Warbler, Western Tanager, Chipping Sparrow, Lark Sparrow, Dark-eyed Junco. **Remarks:** A Common Raven nest was observed outside the transect for the second year in a row. Pinyon Jay and Western Kingbird nests were located within the transect, also. Pinyon Jay and Plain Titmouse were present in greater numbers than in 1988. Some species were recorded in higher numbers but these were either flying or silent. **Other Observers:** John McLaughlin, Sonja Paspal, Silvia McLaughlin, Beth Coker-Roy and Judith Morris.

## 53. MATURE UPPER MIXED-CONIFEROUS FOREST-MONTANE CHAPARRAL

### BOSQUE MADURO MIXTO DE CONÍFEROS Y CHAPARRAL MONTANO

KATHRYN PURCELL

Pacific Southwest Experiment Station  
2081 E. Sierra Avenue  
Fresno, California 93710

**Location:** California; Fresno Co.; 12 km E of Shaver Lake; 37°06'N, 119°04'W; Huntington Lake SW Quadrangle, USGS. **Continuity:** Established 1985; 5 consecutive yrs. **Size:** 42.3 ha (650 m square, measured with compass and tape). **Description of Plot:** See 1985 BBC. **Weather:** Starting temperatures ranged from -2 to 8°C. Ending temperatures ranged from 9 to 25°C. Conditions were generally fair. **Coverage:** 87 hrs; 12 visits (all mornings); 23, 24, 25 May; 2, 5, 6, 12, 13, 14, 20, 21, 22 June. **Census:** Fox Sparrow, 38.5 (36/40 ha); Hermit Warbler, 28.5 (27; 1N); Yellow-rumped Warbler, 22 (21); Golden-crowned Kinglet, 21 (20); Dark-eyed Junco, 20.5 (19; 8N); Hammond's Flycatcher, 17.5 (17); Dusky Flycatcher, 16.5 (16; 2N); Warbling Vireo, 15 (14; 2N); MacGillivray's Warbler, 14 (13);

Nashville Warbler, 13 (12; 1N); Solitary Vireo, 12 (11; 1N); Red-breasted Nuthatch, 11.5 (11; 2N); Western Tanager, 8.5 (8); Mountain Chickadee, 7.5 (7; 5N); Rufous-sided Towhee, 7.5; Purple Finch, 7 (7); Mountain Quail, 6.5 (6; 1N); Brown Creeper, 6 (6; 3N); Western Wood-Pewee, 5 (5; 2N); Hermit Thrush, 5 (1N); Steller's Jay, 3 (3); American Robin, 2.5 (2N); White-headed Woodpecker, 2 (2N); Wrentit, 2; Western Flycatcher, 1.5; Townsend's Solitaire, 1.5 (1N); Red-breasted Sapsucker, 1 (2N); Hairy Woodpecker, 1; Black-headed Grosbeak, 1; Band-tailed Pigeon, 0.5; Northern Flicker, 0.5; Pileated Woodpecker, 0.5; Olive-sided Flycatcher, 0.5; Common Raven, 0.5 (1N); Winter Wren, 0.5; Chipping Sparrow, 0.5. **Total:** 36 species; 302 territories (285/40 ha). **Visitors:** Sharp-shinned Hawk, Red-tailed Hawk, Blue Grouse, Great Horned Owl, Northern Pygmy-Owl, Spotted Owl, Northern Saw-whet Owl, Black Swift, Vaux's Swift, Calliope Hummingbird, Clark's Nutcracker, House Wren, Western Bluebird, Yellow Warbler, Wilson's Warbler, Lazuli Bunting, Green-tailed Towhee, Pine Grosbeak, Cassin's Finch, Red Crossbill, Pine Siskin, Lesser Goldfinch, Evening Grosbeak. **Remarks:** All boundary territories were counted as 0.5 territories. **Other Observers:** Dawn Breese and Matthew J. Georgeff. **Acknowledgments:** This effort is part of a study of observer variability in spot mapping being conducted by Dr. Jared Verner, USDA Forest Service.

## 54. GRAZED OAK–PINE WOODLAND

### ARBOLEDA DE ROBLE–PINO PASTADO

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2081 E. Sierra Avenue  
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**Location:** California; Madera Co.; Coarsegold; San Joaquin Experimental Range; 37°06'N, 119°44'W; Millerton Lake West Quadrangle, USGS. **Continuity:** Established 1985; 5 consecutive yrs. **Size:** 29.7 ha (450 x 660 m). **Description of Plot:** See *J. Field Ornithol.* 60(suppl.):35–36 (1989). **Weather:** Starting temperatures ranged from 9 to 17°C. Ending temperatures ranged from 19 to 29°C. The period from 5 April to 21 April was hotter than normal. 24 April to 28 April was cooler than normal with greater cloud cover, with .25 cm rain falling the night of 24 April. **Coverage:** 83 hrs; 12 visits (all mornings); 28, 29 March; 3, 4, 7, 10, 13, 14, 19, 20, 25, 26 April. **Census:** Plain Titmouse, 23.5 (32/40 ha; 19N); Mourning Dove, 11 (15; 3N); Ash-throated Flycatcher, 9 (12; 4N); California Quail, 7.5 (10; 1N); House Finch, 7 (9; 4N); Violet-green Swallow, 6.5 (9); Bewick's Wren, 6.5 (2N); Lesser Goldfinch, 6.5 (1N); Acorn Woodpecker, 4.5 (6; 5N); White-breasted Nuthatch, 4.5 (2N); European Starling, 4.5 (10N); Brown Towhee, 4.5 (5N); Scrub Jay, 4 (5; 3N); Brown-headed Cowbird, 3.5 (5); Lawrence's Goldfinch, 3 (4); Anna's Hummingbird, 2.5; House Wren, 2.5 (3N); Western Bluebird, 2.5 (4N); Bushtit, 1.5 (2N); Red-tailed Hawk, 0.5 (1N); American Kestrel, 0.5 (2N); Nuttall's Woodpecker, 0.5 (1N); Canyon Wren, 0.5 (1N); Hutton's Vireo, 0.5. **Total:** 24 species; 117.5 territories (158/40 ha). **Visitors:** Turkey Vulture, Cooper's Hawk, Golden Eagle, Killdeer, Barn Owl, Whip-poor-will, Hairy Woodpecker, Northern Flicker, Western Kingbird, Common Raven, Blue-gray Gnatcatcher, Lark Sparrow, Red-winged Blackbird, Western Meadowlark, Brewer's Blackbird, Northern Oriole. **Remarks:** All boundary territories were counted as 0.5 territories. Forty-four nest boxes were set out on this plot in the winter of 88–89. Eight of them were used this season. **Other Observers:** Tracy Tennant, Matthew Georgeff, and D. Parker Backstrom. **Acknowledgments:** This effort is part of a study of observer variability in spot mapping being conducted by Dr. Jared Verner, USDA Forest Service.

## 55. UNGRAZED OAK-PINE WOODLAND

### ARBOLEDA DE ROBLE-PINO NO PASTADO

KATHRYN PURCELL

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2081 E. Sierra Avenue  
Fresno, California 93710*

**Location:** California; Madera Co.; Coarsegold; San Joaquin Experimental Range; 37°05'N, 119°43'W; Millerton Lake West Quadrangle, USGS. **Continuity:** Established 1985; 5 consecutive yrs. **Size:** 29.7 ha (450 x 660 m). **Description of Plot:** See *J. Field Ornithol.* 60(suppl.):34-35 (1989). **Weather:** See Grazed Oak-Pine Woodland. **Coverage:** 84 hrs; 12 visits (all mornings); 28, 29 March; 3, 4, 7, 10, 13, 14, 19, 20, 25, 26 April. **Census:** Plain Titmouse, 15 (20/40 ha; 6N); California Quail, 12.5 (17; 1N); Mourning Dove, 11 (15; 1N); Bewick's Wren, 7 (9; 1N); Scrub Jay, 6.5 (9; 6N); Brown Towhee, 6 (8; 2N); House Finch, 5.5 (7; 1N); Ash-throated Flycatcher, 4.5 (6); Brown-headed Cowbird, 4 (5); Anna's Hummingbird, 4 (2N); Acorn Woodpecker, 3 (4; 3N); Lesser Goldfinch, 2.5; White-breasted Nuthatch, 2 (2N); Bushtit, 1.5 (1N); Blue-gray Gnatcatcher, 1.5 (2N); California Thrasher, 1.5 (2N); Northern Oriole, 1.5 (1N); European Starling, 1 (2N); Hutton's Vireo, 1; Red-tailed Hawk, 0.5 (1N); Nuttall's Woodpecker, 0.5; Western Kingbird, 0.5 (1N); Violet-green Swallow, 0.5. **Total:** 23 species; 93.5 territories (126/40 ha). **Visitors:** Turkey Vulture, Sharp-shinned Hawk, Cooper's Hawk, Golden Eagle, American Kestrel, Hairy Woodpecker, Northern Flicker, Common Raven, Rock Wren, House Wren, Western Bluebird, American Robin, Phainopepla, Red-winged Blackbird, Western Meadowlark, Brewer's Blackbird, Lawrence's Goldfinch. **Remarks:** All boundary territories were counted as 0.5 territories. **Acknowledgments:** This effort is part of a study of observer variability in spot mapping being conducted by Dr. Jared Verner, USDA Forest Service.

## 56. MOUNTAIN MEADOW AND OPEN CONIFEROUS FOREST

PRADERAS MONTANAS Y BOSQUES ABIERTOS DE CONÍFEROS

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*150 So. 36th Street  
Boulder, Colorado 80303*

**Location:** Colorado; Boulder Co.; Boulder; 39°58'12"N, 105°20'16"W; Eldorado Springs Quadrangle, USGS. **Continuity:** Established 1981; 9 consecutive yrs. **Size:** 13 ha. **Description of Plot:** See *Am. Birds* 36:90 (1982). **Weather:** Generally cold and rainy during May and June. Nesting slow. Late June to early August hot and dry. Temperatures ranged from 10 to 32.2°C. **Coverage:** 38.5 hrs; 13 visits (7 mornings, 6 afternoons); 23 April; 13 May; 11, 23, 24 June; 3, 4, 5, 18, 25, 29 July; 2, 20 August. **Census:** American Robin, 6 (18/40 ha); House Wren, 5 (15); Mountain Bluebird, 5; Chipping Sparrow, 5; Tree Swallow, 4 (12); Mountain Chickadee, 4; Western Bluebird, 4; Dark-eyed Junco, 4; Pine Siskin, 4; Yellow-rumped Warbler, 3 (9); Broad-tailed Hummingbird, 2; Northern Flicker, 2; Western Flycatcher, 2; Violet-green Swallow, 2; Barn Swallow, 2; Western Tanager, 2; Vesper Sparrow, 2; Blue Grouse, 1; Green-tailed Towhee, 1; Mourning Dove, 1; Steller's Jay, 1; Red-breasted Nuthatch, 1; White-breasted Nuthatch, 1; Lesser Goldfinch, 1. **Total:** 24 species; 65 territories (200/40 ha). **Visitors:** Wild Turkey, Common Nighthawk, Red-naped Sapsucker, Williamson's Sapsucker, Hairy Woodpecker, American Crow, Common Raven, Hermit Thrush, Brewer's Blackbird, Brown-headed Cowbird, Cassin's Finch and Red Crossbill. **Remarks:** Because we had 3 other bird censusing plots to work on this year (in connection with the Colorado Breeding Bird Census Project) we could not put in as many hours at this plot as we would have liked. Hours were erratic—we had to squeeze them in where we could. Thus the longer than usual list of visitors, most of which we suspect were breeding in the more inaccessible "wild areas" on or bordering our plot. These include a cliffy canyon on one side and a steep mountainside full of down timber on the other side,

from which we hear a lot of calls but can't really access. Spring was cold and wet and early visits didn't produce much activity, but we wanted to continue the reporting on this plot and we finally got more time to spend later in the season. **Other Observers:** Mary Jane Schock and Louise Hering.

## 57. CONIFER-BRUSH-GRASS FOOTHILLS ECOTONE

ECOTONO EN FALDA DE LA MONTAÑA DE  
CONIFERO-BREÑAL Y YERBAS

RICHARD G. BEIDLEMAN

*Department of Biology*

*Colorado College*

*Colorado Springs, Colorado 80903*

**Location:** Colorado; El Paso Co.; Colorado Springs; Cheyenne Mountain High School Environs; 38°48'N, 104°52'W; Colorado Springs Quadrangle, USGS. **Continuity:** Established 1964, 3 intermittent years. **Size:** 28.3 ha. **Description of Plot:** First described and censused during the winter of 1963-1964; See *Aud. Field Notes* 18:401-402 (1964). This ecotonal foothills slope is characterized by restricted pine woodland on narrow ridges and in ravines, disturbed grassland on large flats, and dense intervening brushland. A few cottonwoods occur along a lower intermittent creeklet, while some willows surround a small cattail bog. Upslope to the W, the Ponderosa Pine forest becomes more extensive. **Weather:** The weather fluctuated between chilly and wet to very hot and very dry. The breeding season was not preceded by the usual late-spring heavy snowfalls. Temperatures ranged from 10-28°C. **Coverage:** 25 hrs; 10 visits (9 mornings, 1 afternoon); 28 May; 4, 11, 17, 23, 25, 28 June; 2, 16, 31 July. **Census:** Rufous-sided Towhee, 30 (42/40 ha); Virginia's Warbler, 14 (20); Western Wood-Pewee, 8 (11); American Robin, 8; Broad-tailed Hummingbird, 6 (8); Black-headed Grosbeak, 6; Scrub Jay, 5 (7); Warbling Vireo, 4 (6); Solitary Vireo, 3 (4); Black-capped Chickadee, 2; Mountain Chickadee, 2; Blue-gray Gnatcatcher, 2; House Finch, 2; Mourning Dove, 1; Northern Flicker, 1; White-breasted Nuthatch, 1; Lazuli Bunting, 1; Chipping Sparrow, 1; Vesper Sparrow, 1. **Total:** 19 species; 98 territories (138/40 ha). **Visitors:** Sharp-shinned Hawk, Great Horned Owl, Black-billed Magpie, House Wren, Western Tanager, Green-tailed Towhee, Brown-headed Cowbird, Pine Siskin, Lesser Goldfinch, and a number of vagrants. **Remarks:** Over the quarter-century since the first Breeding Bird Census here, the site has not changed ecologically except that the brushland is more dense. However, recent housing developments to the N have heavily impacted similar habitats as well as a distant pinyon-juniper woodland. The dominant breeding species have remained the same, although Rufous-sided Towhees, Western Wood-Pewees and hummingbirds are more abundant, Virginia's Warblers and Mourning Doves less, and many species' territories are essentially identical with those in the past. The unusual gnatcatcher influx may be the result of house-building in pinyon woodland to the N. More inexplicable are the substantial numbers of the Warbling Vireo, ordinarily a deciduous woodland indicator in the Southern Rockies, but found here in the Ponderosa Pine draws. The location and ecological nature of this site have always attracted a great diversity of birds; it is thus unfortunate that plans already exist to convert this natural area into an extensive housing development. **Other Observer:** Reba E. Beidleman.

## 58. MIXED HABITAT

HÁBITAT MIXTO

MIKE DUDEK

95 West Cornwall Road  
Sharon, Connecticut 06069

**Location:** Connecticut; Litchfield Co.; Sharon; 41°53'N, 73°24'W; Sharon Quadrangle, USGS. **Continuity:** Established 1986; 4 consecutive yrs. **Size:** 15 ha. **Description of Plot:**

See *J. Field Ornithol.* 60(suppl.):66–67 (1989). **Weather:** Rainfall was approximately 5 cm above normal for June. Most mornings were overcast and/or foggy. Temperatures ranged from 7.2–25.6°C. **Coverage:** 30 hrs; 12 visits (9 mornings, 3 evenings); 30, 31 May; 5, 8, 14, 16, 18, 20, 22, 26, 27, 29 June. **Census:** Gray Catbird, 21 (56/40 ha); House Finch, 15 (40); Chestnut-sided Warbler, 12 (32); American Robin, 10 (27); Yellow Warbler, 10; American Redstart, 9 (24); Red-winged Blackbird, 9; Common Yellowthroat, 7 (19); Northern Oriole, 6 (16); Tree Swallow, 5 (13); Black-capped Chickadee, 5; Cedar Waxwing, 5; Song Sparrow, 5; Purple Finch, 5; Eastern Phoebe, 4 (11); Barn Swallow, 4; Yellow-throated Vireo, 4; Yellow-bellied Sapsucker, 3 (8); Veery, 3; Wood Thrush, 3; Red-eyed Vireo, 3; Blue-winged Warbler, 3; Black-and-white Warbler, 3; American Goldfinch, 3; Red-bellied Woodpecker, 2; Least Flycatcher, 2; Great Crested Flycatcher, 2; White-breasted Nuthatch, 2; Rose-breasted Grosbeak, 2; Rufous-sided Towhee, 2; Chipping Sparrow, 2; Common Grackle, 2; Brown-headed Cowbird, 2; Hooded Merganser, 1; Wild Turkey, 1; Mourning Dove, 1; Black-billed Cuckoo, 1; Ruby-throated Hummingbird, 1; Hairy Woodpecker, 1; Northern Flicker, 1; Eastern Kingbird, 1; Blue Jay, 1; Tufted Titmouse, 1; Eastern Bluebird, 1; Brown Thrasher, 1; European Starling, 1; Warbling Vireo, 1; Yellow-rumped Warbler, 1; Ovenbird, 1; Louisiana Waterthrush, 1; Scarlet Tanager, 1; Swamp Sparrow, 1. **Total:** 52 species; 194 territories (517/40 ha). **Visitors:** Great Blue Heron, Wood Duck, Mallard, Turkey Vulture, Red-tailed Hawk, Ruffed Grouse, American Woodcock, Downy Woodpecker, Eastern Wood-Pewee, American Crow, Golden-winged Warbler. **Other Observers:** The census is run annually by seasonal interns and supervised by permanent staff of the Miles Wildlife Sanctuary.

## 59. TRANSITION FOREST AND THICKET TRANSICIÓN DE BOSQUE-MATORRAL

ROBERT A. ASKINS AND WENDY 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°08'; Uncasville Quadrangle, USGS. **Continuity:** Established 1953; 19 intermittent yrs. **Size:** 6.5 ha. **Description of Plot:** See *Am. Birds* 31: 57–58 (1977). **Weather:** Temperatures ranged from 7 to 21°C with a mean of 15°C. The wind was calm on 10 visits with a slight breeze on 1. The sky ranged from clear to foggy. **Coverage:** 9 hrs; 11 visits (all mornings); 13, 19, 28 May; 3, 8, 14, 17, 22, 29, 30 June; 8 July. **Census:** Gray Catbird, 4 (25/40 ha); House Wren, 3.5 (22); Common Yellowthroat 3 (18); Blue-winged Warbler, 2.5; Carolina Wren, 2; Red-eyed Vireo, 2; White-eyed Vireo, 2; Tufted Titmouse, 1.5; Wood Thrush, 1.5; Chestnut-sided Warbler, 1.5; Northern Cardinal, 1.5; Rufous-sided Towhee, 1.5; Blue Jay, 1; American Robin, 1; Veery, 1; Northern Flicker, 0.5; Red-bellied Woodpecker, 0.5; Eastern Wood-Pewee, 0.5; White-breasted Nuthatch, 0.5; Ovenbird, 0.5; Hooded Warbler, 0.5; Northern Oriole, 0.5; Brown-headed Cowbird, 0.5. **Total:** 23 species; 33.5 territories (206/40 ha). **Visitors:** Mourning Dove, Black-capped Chickadee, Black-and-white Warbler, American Redstart, Scarlet Tanager, Common Grackle. **Remarks:** May and June were exceptionally rainy and cold. The species composition and relative abundance of species has not changed appreciably since 1982. **Acknowledgments:** We are grateful for the support we received from Glenn Dreyer and the rest of the staff of the Connecticut College Arboretum.

## 60. BULRUSH AND CATTAI 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°09'W; Wild Horse Island Quadrangle, USGS. **Continuity:** Established 1975; 15 consecutive yrs. **Size:**

**40.5 ha.** **Description of Plot:** See *Am. Birds* 31:84-85 (1977). **Weather:** Temperatures ranged from 8.8 to 25.6°C. **Coverage:** 17 hrs; 7 visits (5 mornings, 2 evenings); 29 April; 6, 24 May; 4, 12 June; 1 July; 12 August. **Census:** Yellow-headed Blackbird, 30 (30/40 ha); Red-winged Blackbird, 21 (21); Song Sparrow, 12 (12); Tree Swallow, 8 (8); American Robin, 8; Redhead, 7 (7); American Coot, 7; Mallard, 6 (6); Canada Goose, 5 (5); Ring-necked Duck, 5; Marsh Wren, 5; Cedar Waxwing, 5; Willow Flycatcher, 4 (4); Violet-green Swallow, 4; Black-capped Chickadee, 4; Common Yellowthroat, 4; Pine Siskin, 4; Pied-billed Grebe, 3 (3); Common Goldeneye, 3; Mourning Dove, 3; Northern Flicker, 3; Hammond's Flycatcher, 3; Red-breasted Nuthatch, 3; Ruby-crowned Kinglet, 3; MacGillivray's Warbler, 3; Dark-eyed Junco, 3; Common Nighthawk, 2; Great Blue Heron, 2; Wood Duck, 2; Osprey, 2; Ruffed Grouse, 2; Calliope Hummingbird, 2; Downy Woodpecker, 2; Western Wood-Pewee, 2; Barn Swallow, 2; Swainson's Thrush, 2; Warbling Vireo, 2; Yellow Warbler, 2; Brown-headed Cowbird, 2; Cassin's Finch, 2; Great Horned Owl, 1; Rufous Hummingbird, 1; Pileated Woodpecker, 1; Western Flycatcher, 1; Dusky Flycatcher, 1; Common Raven, 1; Mountain Chickadee, 1; Townsend's Solitaire, 1; Red-eyed Vireo, 1; Orange-crowned Warbler, 1; Yellow-rumped Warbler, 1; American Redstart, 1; Evening Grosbeak, 1; American Goldfinch, 1; Belted Kingfisher, 1; Ring-billed Gull, 0.5. **Total:** 56 species; 184 territories (181/40 ha). **Remarks:** The original reason for conducting censuses on this marsh was to encourage its preservation. The Nature Conservancy has purchased it this year and held a formal dedication at the site on 26 August. It has been renamed "Safe Harbor Marsh". It will be retained by the Conservancy with a portion to be used as an education site.

## 61. DECIDUOUS FOREST WITH POND AND BROOK

BOSQUE DECIDUO CON CHARCAS Y ARROYAS

JOHN BROTHERTON

249 E. Crescent Ave.

Mahwah, New Jersey 07430

**Location:** New Jersey; Bergen Co.; Mahwah; Campgaw Mountain Reservation; 41°04'N, 74°11'; Ramsey NJ-NY SW/4 Ramapo 15 Quadrangle, USGS. **Continuity:** Established 1964; 26 consecutive yrs. **Size:** 16.2 ha. **Description of Plot:** See *Aud. Field Notes* 19:623-624 (1965). **Weather:** Basically a wet period despite four good days. Temperatures ranged from 11.1 to 18.3°C. Wind generally light. **Coverage:** 9.5 hrs; 10 visits (all mornings); 16, 18, 23, 25, 30 May; 1, 6, 8, 13, 16 June. **Census:** Red-eyed Vireo, 4 (10/40 ha); Ovenbird, 4; Tufted Titmouse, 3 (7); Veery, 3; Gray Catbird, 3; Scarlet Tanager, 3; Red-bellied Woodpecker, 2; Black-capped Chickadee, 2; Wood Thrush, 2; Common Yellowthroat, 2; Northern Cardinal, 2; Yellow-billed Cuckoo, 1; Northern Flicker, 1; Pileated Woodpecker, 1; Eastern Wood-Pewee, 1; Great Crested Flycatcher, 1; Tree Swallow, 1; Blue Jay, 1; European Starling, 1; Yellow-throated Vireo, 1; Blue-winged Warbler, 1; Louisiana Waterthrush, 1; Song Sparrow, 1; Red-winged Blackbird, 1; Common Grackle, 1. **Total:** 25 species; 44 territories (108/40 ha). **Visitors:** Canada Goose, Wood Duck, Mallard, Mourning Dove, Downy Woodpecker, Least Flycatcher, Eastern Phoebe, American Crow, White-breasted Nuthatch, Brown Creeper, House Wren, Swainson's Thrush, Cedar Waxwing, Black-and-white Warbler, American Redstart, Rose-breasted Grosbeak, Northern Oriole. **Other Observers:** Nancy and John Bristow, Kathryn Sjolander, Jane White.

## 62. SUBURBAN BIRD SANCTUARY

SANTUARIO DE AVES SUBURBANO

WILLIAM J. KOLODICKI

Theodore Roosevelt Sanctuary

134 Cove Road

Oyster Bay, New York 11771

**Location:** New York; Nassau Co.; Oyster Bay; 40°52'N, 72°26'W; Hicksville Quadrangle, USGS. **Continuity:** Established 1983; 7 consecutive yrs. **Size:** 4.2 ha. **Description of Plot:**

See *Am. Birds* 38:125-126 (1984). **Weather:** Long periods of heavy rain. Temperatures ranged from 12.9 to 23.5°C. **Coverage:** 15.1 hrs; 11 visits (10 mornings, 1 evening); 27 April; 13, 14, 18, 20, 28, 29, 31 May; 11, 25 June; 2 July. **Census:** Common Grackle, 8 (76/40 ha; 6N); House Wren, 5 (48); American Robin, 5 (2N); Gray Catbird, 5; Northern Cardinal, 4 (38; 2N); Mourning Dove, 3.5 (33); Northern Oriole, 3 (29; 2N); White-breasted Nuthatch, 2 (2N); Red-eyed Vireo, 2; House Sparrow, 2 (2N); Wood Thrush, 1.5; Eastern Titmouse, 1; Great Horned Owl, 1 (1N); Red-bellied Woodpecker, 1; Chipping Sparrow, 1; Song Sparrow, 1; House Finch, 1; Black-capped Chickadee, 0.5; Ovenbird, 0.5; Cedar Waxwing, +. **Total:** 20 species; 48 territories (457/40 ha). **Visitors:** Chimney Swift, Downy Woodpecker, Hairy Woodpecker, Northern Flicker, Blue Jay, Veery, White-throated Sparrow. **Remarks:** Persistent rain made work difficult. **Other Observers:** Joseph Waldvogel, June Christensen, and Mike Brust.

### 63. ABANDONED UPLAND PASTURE PASTIZAL DE ALTURAS ABANDONADO

VIVIAN M. PITZICK

*Amity Lake  
Belmont, New York 14813*

**Location:** New York; Allegany Co.; Scio; Saunders Plot; 42°13'N, 77°59'; Wellsville North Quadrangle, USGS. **Continuity:** Established 1984; 6 consecutive yrs. **Size:** 8 ha. **Description of Plot:** See *Am. Birds* 39:112 (1985). **Weather:** Visits were usually made on days with no rain and little wind. For the study period, temperatures averaged 2.1°C above normal and precipitation for May and June averaged nearly 10 cm above normal. **Coverage:** 26 hrs; 13 visits (12 mornings, 1 evening); 4 April; 18, 24 May; 5, 12, 19, 26 June; 3, 26, 31 July; 8, 15, 22 August. **Census:** Song Sparrow, 22 (110/40 ha); Field Sparrow, 14 (70); Yellow Warbler, 12 (60; 5N); Common Yellowthroat, 12; Rufous-sided Towhee, 11 (55); Indigo Bunting, 9 (45); American Goldfinch, 9; Alder Flycatcher, 8 (40); Blue-winged Warbler, 8; Cedar Waxwing, 6 (30; 5N); Chestnut-sided Warbler, 6; Gray Catbird, 5 (25); American Woodcock, 4 (20; broken egg shells); Prairie Warbler, 4 (1N); House Wren, 3 (15; 3N); Tree Swallow, 2 (2N); Chipping Sparrow, 2; Broad-winged Hawk, 1; Red-tailed Hawk, 1; Ruffed Grouse, 1 (Adult w/yg); Blue Jay, 1; American Crow, 1; Black-capped Chickadee, 1; Eastern Bluebird, 1 (2N); Red-eyed Vireo, 1; Nashville Warbler, 1; Northern Cardinal, 1 (2N); Rose-breasted Grosbeak, 1; Brown-headed Cowbird, 1; Purple Finch, 1. **Total:** 30 species; 150 territories (750/40 ha). **Visitors:** Killdeer, Black-billed Cuckoo, Least Flycatcher, Barn Swallow, Tufted Titmouse, Tennessee Warbler, Ovenbird, Scarlet Tanager, Northern Oriole. **Remarks:** Numbers were up for the House Wren, Gray Catbird, Yellow Warbler, Chestnut-sided Warbler and Prairie Warbler, but Cooper's Hawk, American Robin and Red-winged Blackbird were absent. The Chipping Sparrow population was the lowest ever. Cool periods during the wet months of May and June, caused loss of some eggs and nestlings and delayed the ripening of the blackberry crop by about 10 days. White-tailed Deer (*Odocoileus virginianus*) and Raccoon (*Procyon lotor*) again were plentiful. **Acknowledgments:** Thanks are extended to Victor and Gail Funk for permission to use the property.

### 64. OAK-HICKORY, PINE STAND, EDGE, AND POND AREA DE ROBLE-NOGAL

A. H. CLAUGUS

*228 S. Lake St.  
Carey, Ohio 43316*

**Location:** Ohio; Licking Co.; Fallsburg; 40°11'N, 82°19'W; Newark Quadrangle, USGS. **Continuity:** Established 1927; 49 intermittent yrs. **Size:** 14.2 ha. **Description of Plot:** See

*Bird Lore* 39:379-380 (1937). The understory is the key to bird diversity, and it has been changing steadily over the years, becoming less dense, more "diffused" and thinned upward. The ground cover has changed also. Pine planting is dying out, and dogwood cover is much in evidence. **Weather:** This year's weather was very wet (third wettest April, May and June in history of Columbus). **Coverage:** 49 hrs; 4 visits; 3, 17 June; 25, 26 August. **Census:** Red-eyed Vireo, 6 (17/40 ha); Acadian Flycatcher, 5 (14); Wood Thrush, 5; Scarlet Tanager, 5; American Robin, 4 (11); Eastern Wood-Pewee, 3 (8); House Wren, 3; Red-bellied Woodpecker, 2; Downy Woodpecker, 2; Great Crested Flycatcher, 2; Tufted Titmouse, 2; Chipping Sparrow, 2; Ruby-throated Hummingbird, 1; Mourning Dove, 1; Yellow-billed Cuckoo, 1; Chimney Swift, 1; Eastern Phoebe, 1; Blue Jay, 1; Carolina Chickadee, 1; White-breasted Nuthatch, 1; Blue-gray Gnatcatcher, 1; Gray Catbird, 1; Yellow-throated Vireo, 1; Cerulean Warbler, 1; Ovenbird, 1; Kentucky Warbler, 1; Northern Cardinal, 1; Brown-headed Cowbird, 1; Northern Oriole, 1. **Total:** 29 species; 58 territories (163/40 ha). **Remarks:** I saw no young birds, no cowbirds or females feeding young; watched one pair of local robins trying to fledge young in wet weather - they did not. Birds were gone by mid-June, and almost completely absent on August visits; no migrants ever. Only four nests were found. Compare with 50 nests found in a few hours of field work during some years up to about 1975. **Acknowledgments:** Help of a camp ranger, wife, and family, and a few campers.

## 65. SCATTERED MIXED-CONIFEROUS FOREST IN SUBALPINE MEADOWS AND SPRUCE BOGS

BOSQUE MESOFÍTICO DISPERSO EN PRADERAS SUBALPINAS Y ABETOS

ROBERT A. HUDSON

P.O. Box 81  
Bates, Oregon 97817

**Location:** Oregon; Grant Co.; Bates; 44°45'N, 118°45'; Desolation Butte Quadrangle, USGS. **Continuity:** Established 1973; 17 consecutive yrs. **Size:** 32.38 ha. **Description of Plot:** See *Am. Birds* 27:1002-1003 (1973). **Weather:** Temperatures ranged from -2 to 14°C; Clear on 8 visits, partly cloudy on 1 visit. Precipitation amounted to 3.1 cm during nesting period 21 June to 31 July, 1989. Precipitation during fall, winter and spring was slightly above normal. **Coverage:** 13.5 hrs; 9 visits (all mornings); 21, 24, 27, 28, 30 June; 3, 5, 6, 10 July. **Census:** White-crowned Sparrow, 8 (10/40 ha); Yellow-rumped Warbler, 6 (7); Ruby-crowned Kinglet, 5 (6); Chipping Sparrow, 5; American Robin, 3 (4); Lincoln's Sparrow, 3 (1N w/4 eggs); Fox Sparrow, 2; Mountain Chickadee, 1; Mountain Bluebird, 1 (feeding young); Cassin's Finch, 1. **Total:** 10 species; 35 territories (43/40 ha). **Visitors:** Northern (Red-shafted) Flicker, Steller's Jay, Clark's Nutcracker, Red-breasted Nuthatch, Dark-eyed Junco, Evening Grosbeak. **Remarks:** There was a significant decline in territorial Cassin's Finches from 6 in 1988 to 1 this year. Also, the number of territories on the plot declined significantly. **Acknowledgments:** I am grateful to the Malheur Forest staff for their cooperation.

## 66. MIXED-MESOPHYTIC WOODS AND BRUSH

BOSQUE MESOFÍTICO MIXTO-BREÑAL

RICHARD W. SIMMERS, JR.

Rt. 6, Box 170  
Cookeville, Tennessee 38501

**Location:** Tennessee; Putnam Co.; Macedonia; Barnes Hollow; 36°10'N, 85°22'W; Monterey Quadrangle, USGS. **Continuity:** New (a portion of the plot has been studied since 1977). **Size:** 22.9 ha; nearly square. **Description of Plot:** The plot includes old-growth and second-growth (3.9 ha of woods selectively logged in 1985), mainly deciduous, woodland

and 2.6 ha of brushland. The brushland (pasture until late 1977) is variably overgrown with saplings and shrubs and scattered larger trees. There are scattered small limestone and sandstone outcrops on the plot. A dirt road crosses the plot along or near the bottomland. **Water:** Several now semi-permanent puddles along dirt road. There are 3 brooks and a creek, all temporary, crossing the plot. **Edge:** Wooded to N of plot; selectively logged woods and brushland to E; pasture on W end of S border. W end bordered by brushland and undisturbed woods (since 1977). **Topography and Elevation:** A valley or "hollow" to W; moderate slopes from N and S edges, also with a rather narrow flattish bottomland; several mostly temporary "brooks" drain these slopes; 332–427 m. **Weather:** Temperatures ranged from 5 to 26°C; wind calm to breezy; sky clear to fair on 8 visits, variably cloudy on 2 visits, overcast on 3 visits; no significant precipitation. Weather warm and dry in late April; cool and wet May–July, especially in June, with rainfall for these months above to much above normal. **Coverage:** 41 hrs; 13 visits (all mornings) 26, 28, 30 April; 11, 14, 17, 21, 24, 28 May; 1, 4, 11, 18 June. **Census:** Red-eyed Vireo, 16.5 (29/40 ha); Northern Cardinal, 6.5 (11); Blue-gray Gnatcatcher, 4.5 (8); Kentucky Warbler, 4 (7); Tufted Titmouse, 3.5 (6); Black-and-white Warbler, 3 (5); Indigo Bunting, 3; Downy Woodpecker, 2.5; Carolina Chickadee, 2.5; Scarlet Tanager, 2.5; Acadian Flycatcher, 2; Worm-eating Warbler, 2; Ovenbird, 2; Yellow-breasted Chat, 2; Rufous-sided Towhee, 2; White-breasted Nuthatch, 1.5; Ruby-throated Hummingbird, 1; Red-bellied Woodpecker, 1; Eastern Phoebe, 1; Blue Jay, 1; Wood Thrush, 1; White-eyed Vireo, 1; Yellow-throated Vireo, 1; Prairie Warbler, 1; Hooded Warbler, 1; Brown-headed Cowbird, 1; American Goldfinch, 1; Red-shouldered Hawk, 0.5; Mourning Dove, 0.5; Hairy Woodpecker, 0.5; Pileated Woodpecker, 0.5; Eastern Wood-Pewee, 0.5; Summer Tanager, 0.5; Barred Owl, +; Red-winged Blackbird, +. **Total:** 35 species; 74 territories (129/40 ha). **Visitors:** Broad-winged Hawk, Ruffed Grouse, Yellow-billed Cuckoo, American Crow, Yellow-throated Warbler, Cerulean Warbler, Field Sparrow. **Remarks:** Tufted Titmouse at peak levels since the study was started in 1977. Yellow-billed Cuckoo normally more numerous in plot area; only 2 registrations during count period, but still calling in early September.

## 67. DISTURBED COASTAL SCRUB A

MATORRAL PERTURBADO A

GEOFFREY R. GEUPEL AND ORIANE E. WILLIAMS

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

**Location:** California; Marin Co.; Bolinas; 37°55'N, 122°45'; Bolinas Quadrangle. **Continuity:** Established 1972; 15 intermittent yrs. **Size:** 4.7 ha. **Description of Plot:** See *Am. Birds* 26:987–988 (1972). **Weather:** See Coastal Scrub. **Coverage:** 163 hrs; 72 visits; 1 April through 30 June. **Census:** Song Sparrow, 8.5 (72/40 ha; 25N); Allen's Hummingbird, 3 (26); Wrentit, 2.5 (7N); California Quail, 2; Rufous-sided Towhee, 1.5; White-crowned Sparrow, 1.5 (6N); American Goldfinch, 1.5; Anna's Hummingbird, 1; Orange-crowned Warbler, 1; Purple Finch, 1; Wilson's Warbler, 0.5; Northern Flicker, 0.5; Bewick's Wren, 0.5; American Robin, 0.5; Red-tailed Hawk, +; Mourning Dove, +; Scrub Jay, +; Bushtit, +; Brown Towhee, +; Black-headed Grosbeak, +. **Total:** 20 species; 25.5 territories (217/40 ha). **Remarks:** The number of territories on this successional stage plot remained equal to the number in 1988. Decreases of some of the resident species were balanced by increases in migratory species. Species that increased include: Allen's Hummingbird (67%), Orange-crowned Warbler, and Song Sparrow (12%). Anna's Hummingbird density declined by 67%. Wrentits again, as on our other coastal scrub plots, dropped dramatically (54%) to pre-1980 levels. Wrentits responded to the low density by increasing territory size. House Finch was the only species absent from the plot that was normally present in previous years. This is Point Reyes Bird Observatory Contribution No. 453.

## 68. DISTURBED COASTAL SCRUB B

### MATORRAL PERTURBADO B

**GEOFFREY R. GEUPEL AND MELISSA M. HAYES**

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

**Location:** California; Marin Co.; Bolinas; 37°55'N, 122°46'; Bolinas Quadrangle. **Continuity:** Established 1971; 16 intermittent yrs. **Size:** 8.1 ha. **Description of Plot:** See *Am. Birds* 25:1002 (1971). **Weather:** See Coastal Scrub. **Coverage:** 199 hrs; 58 visits; 1 April through 30 June. **Census:** Song Sparrow, 8 (40/40 ha; 19N); White-crowned Sparrow, 5 (25; 4N); Wrentit, 3.5 (17; 12N); Allen's Hummingbird, 2.5; American Goldfinch, 2; California Quail, 1; Bewick's Wren, 1; Rufous-sided Towhee, 1; Northern Flicker, 0.5; Scrub Jay, 0.5 (1N); Red-tailed Hawk, +; Western Bluebird, +; American Robin, +; European Starling, +; Orange-crowned Warbler, +; Brown Towhee, +; Brown-headed Cowbird, +. **Total:** 17 species; 25 territories (123/40 ha). **Remarks:** The breeding bird density of this successional stage coastal scrub showed a substantial decrease (33%). The total density of 25 was the lowest since 1978 when shrub cover at that time was minimal. Seven of the 17 species recorded remained in the same density or showed slight (less than 0.5 territories) increases. The remaining 10 species declined, while 4 were absent. As in both of our other coastal scrub study plots, Wrentits showed the most dramatic decrease in abundance. Their breeding density, which has increased steadily for the past 10 years as the coastal scrub matured, dropped 50% to pre-1980 levels. Song Sparrow density also dropped sharply by 40%. Other substantial decreases were mostly of resident species, such as California Quail, Bewick's Wren, and Bushtit. The latter was absent from the plot for the first time in 12 years. Anna's Hummingbird was absent for the first time in 5 years. House Finch was absent for the first time in 11 years. The decrease of non-migratory species suggests a high winter mortality on the disturbed study plots only (see Coastal Scrub). Perhaps, the low survivorship resulted from the unusually cold winter temperatures. This is Point Reyes Bird Observatory Contribution No. 454.

## 69. COASTAL SCRUB

### MATORRAL COSTANERO

**GEOFFREY R. GEUPEL, INGA KELLOGG, AND JENNIFER BARNES**

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

**Location:** California; Marin Co.; Bolinas; 37°56'N, 122°45'; Bolinas Quadrangle. **Continuity:** Established 1971; 15 intermittent yrs. **Size:** 8.1 ha. **Description of Plot:** See *Am. Birds* 25:1003-1004 (1971). **Weather:** The census period was preceded by a dry, cold winter and the second wettest March in 22 years. Early morning temperatures during the census period were warmer than normal; ranged from 6 to 20°C and averaged 10.3°C. Mid morning and early afternoon temperatures ranged from 10 to 31°C and averaged 15.2°C and 19.2°C respectively. Morning weather during the census period was overcast (28%), scattered (25%), clear (20%), fog (14%) or broken (11%). Rain (7.8 cm) fell on 1% of the census mornings, with most occurring (50%) in late April. Winds as normal, were out of the W and ranged from 0 to 7.7 m/sec. **Coverage:** 173 hrs; 72 visits; 1 April through 29 June. **Census:** Wrentit, 11 (54/40 ha; 22N); Song Sparrow, 9.5 (47; 19N); White-crowned Sparrow, 6.5 (32; 9N); Allen's Hummingbird, 5 (25); Rufous-sided Towhee, 5 (6N); Bewick's Wren, 4.5 (22); Orange-crowned Warbler, 2.5; Scrub Jay, 2 (1N); Purple Finch, 2; California Quail, 1.5; Northern Flicker, 1; Mourning Dove, 0.5; Brown-headed Cowbird, 0.5; Wilson's Warbler, +; Red-tailed Hawk, +; American Robin, +; Brown Towhee, +. **Total:** 17 species; 51.5 territories (254/40 ha). **Remarks:** The 1989 breeding bird density of this mature coastal

scrub (51.5 territories) represents the second highest in the 15 years of the study. Twelve of the 17 species recorded increased from 1988 densities. Although this is its less preferred habitat, Song Sparrow surprisingly recorded the largest increase of all species (21%) to the highest density ever recorded. This remarkable increase, especially in resident species, suggests that over-winter survival in mature scrub was substantially greater than on our disturbed scrub study plots (see Disturbed Coastal Scrub A and B). Wrentits, however, decreased by 24% to the lowest density since 1979. Other species decreasing include both Bushtit and starling, which failed to return, and Northern Flicker. This is Point Reyes Bird Observatory Contribution No. 452.

## 70. ABANDONED PASTURE-SCRUBLAND

PASTIZAL-MALEZA ABANDONADO

CHRIS ELLINGWOOD

1529 Weyburn St.

Ottawa, Ontario K1G 0Y4

**Location:** Ontario; Ottawa-Carleton Co.; 6.5 km N of Kanata; 45°21'N, 75°54'; NTS Quadrangle, Ottawa, 31 G/5, grid reference 293263. **Continuity:** Established 1982; 8 consecutive yrs. **Size:** 9 ha. **Description of Plot:** See *Am. Birds* 37:76-77 (1983). **Weather:** Average temperature: 10-18°C; usually clear skies; calm to light winds. **Coverage:** 19.4 hrs; 8 visits (all mornings); 3, 9 June; 5, 12, 15, 16, 22, 29 July. **Census:** Song Sparrow, 10.5 (47/40 ha); White-throated Sparrow, 6.5 (29); American Robin, 5.5 (24); Yellow Warbler, 5 (22); Gray Catbird, 4.5 (20); Field Sparrow, 4 (18); Black-and-white Warbler, 2.5; Cedar Waxwing, 2; Blue Jay, 2; Black-capped Chickadee, 2; House Wren, 2; Common Yellowthroat, 2; Northern Oriole, 2; Great Crested Flycatcher, 1.5; Eastern Kingbird, 1.5; Nashville Warbler, 1.5; Rose-breasted Grosbeak, 1.5; Ruffed Grouse, 1; Black-billed Cuckoo, 1; Northern Flicker, 1; Yellow-rumped Warbler, 1; Red-winged Blackbird, 1; Spotted Sandpiper, 0.5; Downy Woodpecker, 0.5; Eastern Wood-Pewee, 0.5; Red-breasted Nuthatch, 0.5; Veery, 0.5; Magnolia Warbler, 0.5; Indigo Bunting, 0.5; Purple Finch, 0.5; Hairy Woodpecker, +; White-breasted Nuthatch, +; Brown Thrasher, +; Red-eyed Vireo, +; American Redstart, +. **Total:** 35 species; 65 territories (288/40 ha). **Visitors:** American Woodcock, Blackburnian Warbler, Ovenbird.

## 71. COASTAL PRAIRIE

PRADERA COSTANERA

JOHN P. KELLY

Audubon Cypress Grove Preserve

P.O. Box 808

Marshall, California 94940

**Location:** California; Marin Co.; Marshall; 38°10'N, 122°54'; Tomales Quadrangle, USGS. **Continuity:** Established 1988; 2 consecutive yrs. **Size:** 31 ha. **Description of Plot:** See *J. Field Ornithol.* 60(suppl.):56 (1989). **Weather:** Generally mild; temperatures ranged from 10.5 to 15.5°C; wind ranged from 0 to 19 kph; cloud cover 0-100%; mostly stratus clouds. Winds up to 40 kph from the NW were common in the afternoon after count periods. **Coverage:** 8 hrs; 8 visits (all mornings); 12, 17, 20 April; 4, 11, 19, 24, 31 May. **Census:** Song Sparrow, 9 (12/40 ha); Mourning Dove, 2; Red-winged Blackbird, 2; Brown-headed Cowbird, 2; House Finch, 2; American Goldfinch, 2; Black-shouldered Kite, 1; California Quail, 1; Anna's Hummingbird, 1; Allen's Hummingbird, 1; American Crow, 1; Western Meadowlark, 0.5. **Total:** 12 species; 24.5 territories (32/40 ha). **Visitors:** Great Blue Heron, Great Egret, Mallard, Turkey Vulture, Northern Harrier, Black Phoebe, Western Kingbird, Tree Swallow, Violet-green Swallow, Northern Rough-winged Swallow, Cliff Swallow, Barn Swallow, Scrub Jay, Common Raven, Common Bushtit, Wrentit, European Starling,

California Towhee, Brown-headed Cowbird, Pine Siskin. **Remarks:** Black-shouldered Kites, American Crows, House Finches, Allen's Hummingbird, and Mourning Doves nested in the island patch of Monterey Pines in the study area. A pair of Northern Harriers defended a hunting area, but did not breed within the study area. **Acknowledgments:** This work was supported Audubon Canyon Ranch, Stinson Beach, California, as part of a larger monitoring and management program.

## 72. 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; NE quarter of NW quarter sect. 23, T99N R37W; Okoboji Quadrangle, USGS. **Continuity:** Established 1982; 6 intermittent yrs. **Size:** 16 ha. **Description of Plot:** See *Am. Birds* 37: 79 (1983). **Weather:** Mean high temperature: 26°C; mean low temperature: 14°C; precipitation: 4.5 mm. **Coverage:** 6 hrs; 6 visits (all mornings); 4, 5, 6, 7, 8, 9 June. **Census:** Yellow Warbler, 6 (15/40 ha; 5N); Common Yellowthroat, 4 (10); Song Sparrow, 4; Dickcissel, 3 (8); Brown-headed Cowbird, 2 (13 eggs in 4 Red-winged Blackbird nests and 4 warbler nests); American Goldfinch, 3; Red-winged Blackbird, 2 (4N); Willow Flycatcher, 1; American Robin, 1 (1N); Gray Catbird, 1 (1N); Brown Thrasher, 1 (1N); Western Meadowlark, 1; Ring-necked Pheasant, 0.5; Black-billed Cuckoo, 0.5 (1N); Eastern Kingbird, 0.5; House Wren, 0.5. **Total:** 16 species; 32 territories (80/40 ha). **Visitor:** Common Grackle. **Remarks:** This portion of Lakeside Laboratory managed to maintain tallgrass prairie habitat. Two Boxelder thickets were cut down (6 m diameter) this past year. This is second dry year in row. May-June precipitation only 67% of normal; areas usually marshy were dry. **Acknowledgments:** I thank the Iowa Lakeside Laboratory (R. V. Bovbjerg, M. & J. Wehrspann) for logistic support and permission to census area. N. Bernstein assisted in nest finding.

## 73. 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; NW quarter sect. 17, T99N R37W; Okoboji Quadrangle, USGS. **Continuity:** Established 1982; 6 intermittent yrs. **Size:** 65.7 ha. **Description of Plot:** See *Am. Birds* 37:79 (1983). **Weather:** Mean high temperature: 26°C; mean low 13°C; trace of precipitation. **Coverage:** 9 hrs; 3 visits (all mornings); 4, 6, 8 June. **Census:** Dickcissel, 26 (16/40 ha); Red-winged Blackbird, 20 (12; 4N); Grasshopper Sparrow, 20; Common Yellowthroat, 17 (10); Bobolink, 14 (9); Western Meadowlark, 14; Swamp Sparrow, 5 (3); Brown-headed Cowbird, 3 (2; 3 eggs in 2 Red-winged Blackbird nests); American Goldfinch, 3; Savannah Sparrow, 2; Gray Partridge, 1; Ring-necked Pheasant, 0.5; Upland Sandpiper, 0.5. **Total:** 13 species; 116 territories (71/40 ha). **Visitor:** Mallard. **Remarks:** Preserve managed to maintain prairie, second dry year in row, (See Tallgrass Prairie I). **Acknowledgments:** I thank the State Preserves Advisory Board, Iowa Department of Natural Resources, for permission to conduct census. N. Bernstein assisted in nest finding.

## 74. 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 Kettlehole Preserve; 43°20'N, 95°13'W; E half of SW quarter and SE quarter of NW quarter sect.33, T99N R37W; Milford Quadrangle, USGS. **Continuity:** Established 1982; 6 intermittent yrs. **Size:** 44.8 ha. **Description of Plot:** See *Am. Birds* 37:79 (1983). No standing vegetation in the pond in the kettlehole, only sedges around the shoreline this year. **Weather:** Mean high temperature: 27°C; mean low 15°C; precipitation 4.5 mm. **Coverage:** 9 hrs; 3 visits (all mornings); 5, 7, 9 June. **Census:** Dickcissel, 35 (31/40 ha); Common Yellowthroat, 24 (21; 1N); Bobolink, 15 (13); Red-winged Blackbird, 13 (12; 7N); Sedge Wren, 10 (9); Grasshopper Sparrow, 10; Song Sparrow, 7 (6); American Goldfinch, 6 (5); Western Meadowlark, 5 (4); Willow Flycatcher, 3 (3); Yellow Warbler, 3 (1N); Brown-headed Cowbird, 3 (8 eggs in 2 Red-winged Blackbird and 1 Yellow Warbler nest); Gray Catbird, 2; Swamp Sparrow, 2; Mourning Dove, 1; Eastern Kingbird, 1; Savannah Sparrow, 1; Blue-winged Teal, 0.5 (1N); Brown Thrasher, 0.5 (1N). **Total:** 19 species; 142 territories (127/40 ha). **Visitors:** Mallard, Killdeer, Upland Sandpiper. **Remarks:** Preserve managed to maintain prairie; second dry year in row, (see Tallgrass Prairie I). **Acknowledgments:** I thank the Iowa Field Office of The Nature Conservancy for permission to conduct this census. N. Bernstein assisted in nest finding.

## 75. SUBIRRIGATED GRASSLAND

### PRADERA SUBIRRIGADA

GARY LINGLE AND PAUL BEDELL

*2550 N. Diers Ave., Suite H  
Grand Island, Nebraska 68803*

**Location:** Nebraska; Hall Co.; Doniphan; 40°46'N, 98°26'W; Alda Quadrangle, USGS. **Continuity:** Established 1981; 6 intermittent yrs. **Size:** 16.2 ha. **Description of Plot:** Lies within a 81-ha pasture which was burned in April. Similar on S, W and N sides. East side has a shelterbelt about 20 m from the boundary. See *Am. Birds* 36:105 (1982). **Weather:** Sky was mostly clear throughout with light to moderate winds. No precipitation. **Coverage:** 5 hrs; 8 visits (all mornings); 2, 3, 4, 5, 6, 7, 8, 9 June. **Census:** Dickcissel, 7 (17/40 ha); Bobolink, 7 (2N); Brown-headed Cowbird, 6 (15); Grasshopper Sparrow, 4.5 (11); Red-winged Blackbird, 4 (10; 2N); Western Meadowlark, 3.5 (9); Upland Sandpiper, 2. **Total:** 7 species; 34 territories (83/40 ha). **Visitor:** Mallard. **Remarks:** Pasture was grazed during the census. There was no standing surface water due to drought. Temperature departure from average was +0.4 and -1.3°C and precipitation departure from average was -4.6 cm and 2.9 cm for May and June, respectively.

## 76. SUBIRRIGATED NATIVE HAY

### PASTO NATIVO SUBIRRIGADO

GARY LINGLE AND PAUL BEDELL

*2550 N. Diers Ave., Suite H  
Grand Island, Nebraska 68803*

**Location:** Nebraska; Hall Co.; Doniphan; 40°47'N, 98°27'W; Alda Quadrangle, USGS. **Continuity:** Established 1981; 6 intermittent yrs. **Size:** 16.2 ha. **Description of Plot:** Native

tallgrass prairie. See *Am. Birds* 36:105 (1982). **Weather:** Clear to partly cloudy with light to moderate winds. **Coverage:** 5.5 hrs; 8 visits (all mornings); 2, 3, 4, 5, 6, 7, 8, 9 June. **Census:** Bobolink, 12 (30/40 ha; 2N); Grasshopper Sparrow, 9 (22; 1N); Dickcissel, 7.5 (19); Upland Sandpiper, 3 (7); Western Meadowlark, 3; Brown-headed Cowbird, 3. **Total:** 6 species; 37.5 territories (92/40 ha). **Visitor:** Mallard. **Remarks:** Ungrazed this year. See also Subirrigated Grassland.

## 77. KENTUCKY BLUEGRASS PRAIRIE

### PRADERA DE "YERBA-AZUL" DE KENTUCKY

DOUGLAS H. JOHNSON AND MICHAEL D. SCHWARTZ

*Northern Prairie Wildlife Research Center*

P.O. Box 2096

Jamestown, North Dakota 58402

**Location:** North Dakota; Stutsman Co.; Woodworth; 47°08'N, 99°14'W; Goldwin Quadrangle, USGS. **Continuity:** Established 1972; 18 consecutive yrs. **Size:** 4.84 ha. **Description of Plot:** See *Am. Birds* 26:972 (1972). **Weather:** Generally moderate temperatures and fairly calm, with no precipitation. **Coverage:** 2.8 hrs; 9 visits (all mornings); 2, 6, 7, 8, 9, 12 June. **Census:** Killdeer, 1; Upland Sandpiper, 1; Eastern Kingbird, 0.5; Western Meadowlark, 0.5; Brown-headed Cowbird, 0.5; Willet, +; Horned Lark, +. **Total:** 7 species; 3.5 territories (29/40 ha). **Visitors:** Common Snipe, Black Tern, Mourning Dove, Barn Swallow, Savannah Sparrow, Bobolink, Red-winged Blackbird, Yellow-headed Blackbird, Common Grackle, American Goldfinch. **Remarks:** The seasonal wetlands on the plot were dry during the census period.

## 78. MIXED PRAIRIE I

### PRADERA MIXTA I

DOUGLAS H. JOHNSON AND MICHAEL D. SCHWARTZ

*Northern Prairie Wildlife Research Center*

P.O. Box 2096

Jamestown, North Dakota 58402

**Location:** North Dakota; Stutsman Co.; Woodworth; 47°08'N, 99°15'W; Woodworth Quadrangle, USGS. **Continuity:** Established 1972; 18 consecutive yrs. **Size:** 10 ha. **Description of Plot:** See *Am. Birds* 26:972 (1972). **Weather:** Moderate temperatures and winds with light drizzle during one visit. **Coverage:** 7.3 hrs; 10 visits (all mornings); 2, 6, 7, 8, 9, 12 June. **Census:** Clay-colored Sparrow, 5.5 (22/40 ha; 1N: 4 eggs); Willow Flycatcher, 2.5; Eastern Kingbird, 2; Bobolink, 2; Brown-headed Cowbird, 2; Yellow Warbler, 1; Common Yellowthroat, 1; Red-winged Blackbird, 1; Western Meadowlark, 1; Gadwall, 0.5 (1N: 8 eggs); Ring-necked Pheasant, +; Marbled Godwit, +; Mourning Dove, +; Western Kingbird, +; Grasshopper Sparrow, +; American Goldfinch, +. **Total:** 16 species; 18.5 territories (74/40 ha). **Visitors:** Mallard, Northern Harrier, Cooper's Hawk, Gray Partridge, Upland Sandpiper, Black Tern, Common Nighthawk, Barn Swallow, Gray Catbird, Common Grackle. **Remarks:** Ring-necked Pheasants had recently been released in the area.

## 79. MIXED PRAIRIE II

### PRADERA MIXTA II

DOUGLAS H. JOHNSON AND MICHAEL D. SCHWARTZ

*Northern Prairie Wildlife Research Center*

P.O. Box 2096

Jamestown, North Dakota 58402

**Location:** North Dakota; Stutsman Co.; Woodworth; 47°08'N, 99°15'W; Goldwin Quadrangle, USGS. **Continuity:** Established 1972; 18 consecutive yrs. **Size:** 6.1 ha. **Description**

**of Plot:** See *Am. Birds* 26:972–973 (1972) and *Am. Birds* 32:81–82 (1978). **Weather:** Temperate weather conditions with no precipitation. **Coverage:** 3.5 hrs; 10 visits (all mornings); 2, 6, 7, 8, 9, 12 June. **Census:** Yellow Warbler, 1; Clay-colored Sparrow, 1; Savannah Sparrow, 1; Western Meadowlark, 1; Brown-headed Cowbird, 1; Common Yellowthroat, 0.5; Bobolink, 0.5; Willet, +; Eastern Kingbird, +. **Total:** 9 species; 6 territories (39/40 ha). **Visitors:** Gadwall, Upland Sandpiper, Marbled Godwit, Common Snipe, Black Tern, Mourning Dove, Western Kingbird, Tree Swallow, Barn Swallow, Red-winged Blackbird, Common Grackle, American Goldfinch.

## 80. MIXED PRAIRIE III

### PRADERA MIXTA III

DOUGLAS H. JOHNSON AND MICHAEL D. SCHWARTZ

*Northern Prairie Wildlife Research Center*

P.O. Box 2096

Jamestown, North Dakota 58402

**Location:** North Dakota; Stutsman Co.; Woodworth; 47°09'N, 99°14'W; Goldwin Quadrangle, USGS. **Continuity:** Established 1972; 18 consecutive yrs. **Size:** 6.1 ha. **Description of Plot:** See *Am. Birds* 26:973 (1972) and *Am. Birds* 33:80 (1979). **Weather:** Moderate temperatures and winds with no precipitation during census. **Coverage:** 3.5 hrs; 9 visits (all mornings); 2, 6, 7, 8, 9, 12 June. **Census:** Clay-colored Sparrow, 1.5; Grasshopper Sparrow, 1; Brown-headed Cowbird, 1; Western Meadowlark, 0.5; Eastern Kingbird, +; Savannah Sparrow, +; Bobolink, +. **Total:** 7 species; 4 territories (26/40 ha). **Visitors:** Blue-winged Teal, Gadwall, Upland Sandpiper, Marbled Godwit, Common Snipe, Mourning Dove, Western Kingbird, American Goldfinch.

## 81. MIXED PRAIRIE IV

### PRADERA MIXTA IV

DOUGLAS H. JOHNSON AND MICHAEL D. SCHWARTZ

*Northern Prairie Wildlife Research Center*

P.O. Box 2096

Jamestown, North Dakota 58402

**Location:** North Dakota; Stutsman Co.; Woodworth; 47°08'N, 99°15'W; Woodworth Quadrangle, USGS. **Continuity:** Established 1972; 18 consecutive yrs. **Size:** 6.1 ha. **Description of Plot:** See *Am. Birds* 26:973–974 (1972). **Weather:** Moderate temperatures and winds with occasional light drizzle. **Coverage:** 3.3 hrs; 9 visits (all mornings); 2, 6, 7, 8, 9 June. **Census:** Vesper Sparrow, 1; Brown-headed Cowbird, 1; Killdeer, 0.5; Upland Sandpiper, 0.5; Eastern Kingbird, 0.5; Common Yellowthroat, 0.5; Clay-colored Sparrow, 0.5; Marbled Godwit, +; Red-winged Blackbird, +; Western Meadowlark, +. **Total:** 10 species; 4.5 territories (30/40 ha). **Visitors:** Ferruginous Hawk, Western Kingbird, Barn Swallow, Yellow Warbler, Common Grackle.

## 82. MIXED PRAIRIE V

### PRADERA MIXTA V

DOUGLAS H. JOHNSON AND MICHAEL D. SCHWARTZ

*Northern Prairie Wildlife Research Center*

P.O. Box 2096

Jamestown, North Dakota 58402

**Location:** North Dakota; Stutsman Co.; Woodworth; 47°08'N, 99°14'W; Goldwin Quadrangle, USGS. **Continuity:** Established 1972; 18 consecutive yrs. **Size:** 6.1 ha. **Description**

**of Plot:** See *Am. Birds* 26:974 (1972) and *Am. Birds* 32:82 (1978). **Weather:** Moderate temperatures and winds with occasional light drizzle. **Coverage:** 4.3 hrs; 10 visits (all mornings); 2, 6, 7, 8, 9, 12 June. **Census:** Clay-colored Sparrow, 5 (33/40 ha); Grasshopper Sparrow, 2; Eastern Kingbird, 1.5; Brown-headed Cowbird, 1; Bobolink, 0.5; Upland Sandpiper, + (1N: 4 eggs); Yellow Warbler, +; Western Meadowlark, +; American Goldfinch, +. **Total:** 9 species; 10 territories (66/40 ha). **Visitors:** Mallard, Marbled Godwit, Common Snipe, Mourning Dove, Willow Flycatcher, Western Kingbird, Barn Swallow, Gray Catbird, Red-winged Blackbird.

## 83. DESERT RIPARIAN–FRESHWATER MARSH AND PONDS

### DESIERTO RIVEREÑO-PANTANO

EUGENE CARDIFF

*San Bernardino County Museum  
2024 Orange Tree Lane  
Redlands, California 92374*

**Location:** California; San Bernardino Co.; Morongo Valley; Big Morongo Reserve; 34°03'N, 116°35'W; Morongo Valley Quadrangle, USGS. **Continuity:** Established 1977; 13 consecutive yrs. **Size:** 15.4 ha. **Description of Plot:** See *Am. Birds* 32:113–114 (1978). **Weather:** The weather was calm on 7 of the 8 days; 1 day was very windy; all 8 days were sunny. The beginning temperatures ranged from 4.5 to 15.5°C and from 21.5 to 29.5°C toward the end of the count period. **Coverage:** 23 hrs; 8 visits (all mornings); 17, 24 April; 1, 8, 15, 22, 31 May; 6 June. **Census:** Song Sparrow, 22 (57/40 ha); House Wren, 20 (52); Rufous-sided Towhee, 17 (44); Bewick's Wren, 14 (36); Mourning Dove, 10 (26); European Starling, 9 (23); Gambel's Quail, 8 (21); Virginia Rail, 7 (18); Lesser Goldfinch, 7; House Finch, 6 (16); Common Yellowthroat, 5 (12); Verdin, 4 (10); California Thrasher, 4; Brown-headed Cowbird, 4; Nuttall's Woodpecker, 3 (8); Plain Titmouse, 3; Bushtit, 3; Summer Tanager, 3; Brown-crested Flycatcher, 2; Yellow-breasted Chat, 2; Northern Oriole, 2; American Kestrel, 1.5; Costa's Hummingbird, 1.5; Ash-throated Flycatcher, 1.5; Cooper's Hawk, 1; Black-chinned Hummingbird, 1; Ladder-backed Woodpecker, 1; Yellow Warbler, 1; Black-headed Grosbeak, 1; Hooded Oriole, 1; Blue Grosbeak, +; Anna's Hummingbird, +; Western Kingbird, +; Brown Towhee, +. **Total:** 34 species; 165.5 territories (429/40 ha). **Remarks:** Rainfall in the Morongo Basin has been below normal for 3 consecutive years resulting in a very dry desert edge around the riparian areas of the plot. Some of the marshy areas are beginning to dry out, but the stream through the riparian area is still running through the year. Both Common Yellowthroats and Virginia Rails were down this year as a result of dry conditions. A pair of Ladder-backed Woodpeckers nested for the first time since 1979 displacing a Nuttall's Woodpecker. The pair of Cooper's Hawks nested on the plot this year. The last time they nested on the plot was in 1984. There was a killing frost the last week in April, which defoliated all of the new growth on the mesquite. The mesquite produced a second growth, but did not fruit. This late frost probably had some effect on nesting birds and will certainly reduce food supplies for wildlife later. A fire during mid-February burned from the W to the edge of the plot. The fire damaged the large cottonwood trees just outside the plot where the Red-tailed Hawk and Great Horned Owls nested. The Vermillion Flycatcher that nested on the W side of the plot last year did not nest there this year because of the burn. Song Sparrows were the most numerous breeding bird with 22 pairs. Nine years ago there were only 3 pair present. **Other Observers:** Gjon Hazard, Jessie Kniffen, Roy Kniffen, Chet McGaugh. **Acknowledgments:** Special thanks to the San Bernardino Valley Audubon Society and the San Bernardino County Museum for supporting this study.

## 84. 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; Tomales Quadrangle, USGS. **Continuity:** Established 1985; 5 consecutive yrs. **Size:** 10.5 ha. **Description of Plot:** See *J. Field Ornithol.* 60(suppl.):64 (1989). **Weather:** Generally mild; temperatures ranged from 10.5 to 15.5°C; wind ranged from 0 to 19 kph; cloud cover 0–100%; mostly stratus clouds. Winds up to 40 kph from the NW were common in the afternoon after count periods. **Coverage:** 11.5 hrs; 8 visits (all mornings); 12, 17, 20 April; 4, 11, 19, 24, 31 May. **Census:** Tricolored Blackbird, 500 (1905/40 ha); Red-winged Blackbird, 27 (103); Cliff Swallow, 16 (61); Marsh Wren, 10 (38); Song Sparrow, 6 (23); American Coot, 4 (15); Cinnamon Teal, 2; Ruddy Duck, 2; Mourning Dove, 2; Allen's Hummingbird, 2; Common Yellowthroat, 2; American Goldfinch, 2; Brown Towhee, 1; Wrentit, 1; Pied-billed Grebe, 1; Mallard, 1; Gadwall, 1. **Total:** 17 species; 580 territories (2209/40 ha). **Visitors:** Great Blue Heron, Great Egret, Black-crowned Night-Heron, Turkey Vulture, Black-shouldered Kite, Northern Harrier, California Quail, Virginia Rail, Sora, Killdeer, Anna's Hummingbird, Belted Kingfisher, Northern (Red-shafted) Flicker, Tree Swallow, Violet-green Swallow, Northern Rough-winged Swallow, Barn Swallow, Scrub Jay, American Robin, European Starling, Yellow Warbler, Black-headed Grosbeak, Western Meadowlark, Brewer's Blackbird, Brown-headed Cowbird, House Finch, Pine Siskin. **Remarks:** The Tricolored Blackbird colony initiated nest-building on the same day (19 May) as in 1988. However, the colony was 80% abandoned during the egg-laying period (1–5 June). Strong NW winds may have been a factor in the abandonment by reducing the availability of insects in the surrounding grasslands. Marsh Wren predation on the Tricolored Blackbird nests was heavy after the partial abandonment of the colony. Such predation was not clearly evident in 1988. Increased Arroyo Willow height and cover may account for an increase of 1 Common Yellowthroat territory since 1988; however, the additional territorial male apparently did not mate. A pair of singing Black-headed Grosbeaks, seen collecting nest material, may have also been attracted by increased predominance of willows, but apparently did not breed. A pair of Northern Harriers defended hunting areas along the N and S borders of the marsh but did not breed within the marsh. **Acknowledgments:** This work was supported by Chevron, U.S.A., Inc., San Francisco, California, and Audubon Canyon Ranch, Stinson Beach, California, as part of a larger monitoring and management program.

## 85. SHRUBBY SWAMP AND SEDGE HUMMOCKS

### PANTANO ARBUSTIVO-MOGOTE

ANDREW MAGEE

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**Location:** Connecticut; Litchfield Co.; Litchfield; 41°43'N, 73°13'W; Litchfield Quadrangle, USGS. **Continuity:** Established 1965; 23 intermittent yrs. **Size:** 8.1 ha. **Description of Plot:** See *Aud. Field Notes* 19:625–627 (1965). About 35% of the swamp consists of sedge hummocks and other non-woody plants; about 25% Buttonbush; about 40% shrubby willows, dogwoods, etc. There are also a few taller willows, Red Maples and elms around the edges. The water level varies from year to year. This year it was high. There are no rock outcrops, buildings or roads on the plot. **Weather:** Temperatures were about average (20 to 27°C). The sky was usually partly cloudy; winds were light. **Coverage:** 10.5 hrs; 5 visits (1 morning, 1 afternoon, 3 evenings); 5, 7, 11, 12, 19 June. **Census:** Swamp Sparrow, 38 (188/40 ha);

Red-winged Blackbird, 22 (109); Yellow Warbler, 18 (89); Common Yellowthroat, 9 (44); Song Sparrow, 6 (30); Willow Flycatcher, 5 (25); Gray Catbird, 3 (15); American Goldfinch, 3; Eastern Kingbird, 2.5; Canada Goose, 1; Mallard, 1; Tree Swallow, 1; Cedar Waxwing, 1; Brown-headed Cowbird, 1; Wood Duck, 0.5; Great Blue Heron, +; Black-billed Cuckoo, +; Veery, +; Common Grackle, +. **Total:** 19 species; 112 territories (553/40 ha). **Remarks:** There was unusually heavy rainfall this spring (28.6 cm in May and 14.4 cm in June). The very high water level submerged most of the sedge hummocks and much of the shrubby vegetation. The flood stayed higher for longer than in the recent flood years 1979, 1982, and 1984. The consistent high water this year and the combined effect of the 3 previous flood years, appeared to have a negative effect on nesting birds. We recorded fewer nesting species and fewer territorial males than in any previous year except for the 3 flood years. There were 14 territorial Virginia Rails on the plot as recently as 1981. We have only recorded 2 since the 1984 flood and this year there were none. Marsh Wrens were also absent. All other common nesting species had fewer territorial males than last year. **Acknowledgments:** Gordon Loery of the White Memorial Conservation Center wrote up the report.

## 86. GULF COAST SALT MARSH

PANTANO SALOBRE COSTANERO

MARY VICTORIA McDONALD

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Front Royal, Virginia 22630*

**Location:** Florida; Levy Co.; Cedar Key; 29°11'N, 83°01'W; Sumner Quadrangle, USGS. **Continuity:** Established 1980; 10 consecutive yrs. **Size:** 20 ha. **Description of Plot:** See *Am. Birds* 35:99,104 (1981). **Weather:** Clear and hot; slight breeze (typical for June on this marsh). Temperatures ranged from 21–31°C. **Coverage:** 7.5 hrs; 2 visits (1 morning, 1 evening); 4, 5 June. **Census:** Seaside Sparrow, 41 (82/40 ha); Clapper Rail, 13 (26); Marsh Wren, 12 (24). **Total:** 3 species; 66 territories (132/km<sup>2</sup>). **Visitors:** American White Pelican, Brown Pelican, Double-crested Cormorant, Great Egret, White Ibis, Osprey, Western Sandpiper, Least Sandpiper, Ring-billed Gull, Fish Crow. **Remarks:** This site was censused only during two visits this year. Prior clearance for this abbreviated coverage was obtained from the Bird Count Editor: R. Todd Engstrom. The reason for only two days' coverage was that I was only able to visit Florida 3–5 June 1989. I wanted to maintain the continuity of censusing for this plot, now in its 10th year. Returning males of this color-banded population were noted and additional birds banded. I am completely familiar with the breeding biology of the three resident species, having worked on this marsh for nine years. The Clapper Rail and Seaside Sparrow territories reported are probably accurate; less confidence should be placed in the Marsh Wrens, who had stopped singing for the most part. However, they were detected, and their abundance seemed similar to that of previous years. **Other Observer:** Ellen J. Burroughs.

## 87. WETLAND SEDGE MEADOW I

PANTANO DE JUNCOS I

GARY LINGLE AND PAUL BEDELL

*2550 N. Diers Ave., Suite H  
Grand Island, Nebraska 68803*

**Location:** Nebraska; Hall Co.; Doniphan; 40°47'N, 98°26'W; Alda Quadrangle, USGS. **Continuity:** Established 1981; 6 intermittent yrs. **Size:** 16.2 ha. **Description of Plot:** Located in a 364-ha meadow which is grazed on a rotation basis annually. Relic channels meander through the meadow. See *Am. Birds* 36:105–106 (1982). **Weather:** Clear to partly cloudy with light to moderate winds. **Coverage:** 5.5 hrs; 8 visits (all mornings); 2, 3, 4, 5, 6, 7, 8,

9 June. **Census:** Red-winged Blackbird, 13 (32/40 ha; 7N); Bobolink, 9 (22; 1N); Grasshopper Sparrow, 7 (17); Brown-headed Cowbird, 7; Upland Sandpiper, 4 (10); Western Meadowlark, 4; Dickcissel, 3 (7); Killdeer, 1; Eastern Meadowlark, 0.5. **Total:** 9 species; 48.5 territories (119/40 ha). **Visitor:** Northern Bobwhite. **Remarks:** Drought conditions. The plot was burned in April, but ungrazed. See also remarks for Subirrigated Grassland.

## 88. WETLAND SEDGE MEADOW II

PANTANO DE JUNCOS II

GARY LINGLE AND PAUL BEDELL

2550 N. Diers Ave., Suite H  
Grand Island, Nebraska 68803

**Location:** Nebraska; Hall Co.; Doniphan; 40°47'N, 98°25'W; Alda Quadrangle, USGS. **Continuity:** Established 1982; 5 intermittent yrs. **Size:** 16.2 ha. **Description of Plot:** Located in a 364-ha meadow which is grazed on a rotation basis annually. Relic channels meander through the meadow. See *Am. Birds* 37:101 (1983). **Weather:** Clear to partly cloudy with light to moderate winds. **Coverage:** 5.5 hrs; 8 visits (all mornings); 2, 3, 4, 5, 6, 7, 8, 9 June. **Census:** Bobolink, 16 (40/40 ha); Red-winged Blackbird, 14 (35; 10N); Dickcissel, 10 (25); Brown-headed Cowbird, 4 (10); Upland Sandpiper, 3 (7); Western Meadowlark, 2; Grasshopper Sparrow, 0.5. **Total:** 7 species; 49.5 territories (122/40 ha). **Remarks:** Dry due to drought. Burned in April. Grazed during census. See also remarks for Subirrigated Grassland.

## 89. MIXED HARDWOOD SWAMP

BOSQUE PANTANOSO-MIXTO DE MADERAS DURAS

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**Location:** Ohio; Trumbull Co.; North Bloomfield; Mosquito Game Refuge; 41°26'N, 80°46'W; Bristolville Quadrangle, USGS. **Continuity:** New. **Size:** 12.1 ha. **Description of Plot:** Hardwood stand (40+ years old) with numerous openings dominated by willow and buttonbush shrubs. A quantitative vegetation analysis of ten 0.04 ha circles yielded the following results: trees 7.5 cm diameter and over: 439/ha living, 650/ha standing dead; total basal area 8.4 m<sup>2</sup>/ha living, 10.8 m<sup>2</sup>/ha standing dead. Species comprising 100% of the total number of living trees [figures after each give number of trees/ha, relative density (%), relative dominance (%), frequency (%), in that sequence]: Red Maple 119, 27, 29, 60; Black Ash 101, 23, 18, 80; American Elm 101, 23, 17, 60; Pin Oak 54, 13, 23, 40; Black Willow 32, 7, 6, 40; White Oak 27, 6, 6, 40; tupelo 5, 1, 1, 10. Living trees by diameter size class [number of trees/ha, relative density (%), basal area in m<sup>2</sup>/ha, relative basal area (%), in that sequence]: A (7.5-15 cm) 298, 68, 2.8, 33; B (15-23 cm) 104, 24, 2.9, 35; C (23-38 cm) 37, 8, 2.7, 32. Snags by diameter size class [number/ha, relative density (%), basal area in m<sup>2</sup>/ha, relative basal area (%), in that sequence]: A (7.5-15 cm) 485, 75, 4.5, 41; B (15-23 cm) 128, 20, 3.6, 33; C (23-38 cm) 37, 5, 2.8, 26. Shrub stems/ha 5335; ground cover 14%, canopy cover 31%; average canopy height 13.1 m (range 3.7-20.7 m). **Edge:** Same as plot to S and W. N and E boundaries slope gently upward to a moist woodland habitat. **Water:** The amount of water on the plot, which is within the Mosquito Creek floodplain, varies from year to year. Water up to 2 m deep covered 95% of the plot in 1989. **Elevation:** 274-276 m. **Weather:** Most visit days were cool and overcast with some light rain. Mean temperature: 13°C; range 9-18°C. Winds calm to light. **Coverage:** 28.5 hrs; 8 visits (all mornings); 13, 21, 27 May; 3, 11, 17, 18, 25 June. **Census:** Song Sparrow, 7 (23/40 ha); Yellow Warbler, 6 (20); Red-eyed Vireo, 4 (13; 1N); American Redstart, 4 (3N); Prothonotary Warbler, 4 (3N); Brown Creeper, 3.5 (12); House Wren, 3.5 (1N); Blue-

gray Gnatcatcher, 3.5; Canada Goose, 3 (10; FL); Eastern Wood-Pewee, 3 (1N); Red-winged Blackbird, 3; Great Crested Flycatcher, 2.5 (2N); Yellow-throated Vireo, 2; Black-capped Chickadee, 1.5 (1N); Northern Oriole, 1.5 (1N); Red-headed Woodpecker, 1 (1N); Red-bellied Woodpecker, 1 (1N); Hairy Woodpecker, 1 (1N); Northern Flicker, 1 (1N); Tree Swallow, 1 (1N); American Robin, 1 (1N); Cerulean Warbler, 1; Eastern Bluebird, 0.5 (1N); Northern Cardinal, 0.5 (1N). **Total:** 24 species; 60 territories (198/40 ha). **Visitors:** Great Blue Heron, American Black Duck, Blue-winged Teal, Bald Eagle, Cooper's Hawk, Mourning Dove, Ruby-throated Hummingbird, Downy Woodpecker, Acadian Flycatcher, Willow Flycatcher, Blue Jay, Tufted Titmouse, White-breasted Nuthatch, Veery, Wood Thrush, Cedar Waxwing, European Starling, Rose-breasted Grosbeak, Common Grackle, American Goldfinch. **Remarks:** Record rainfall in May and June resulted in very high water levels. Dry springtime conditions could result in both a change in nesting species and ground cover plant species. This was the first year of the census and no comparative data is available yet. **Acknowledgments:** Thanks to the Ohio Department of Natural Resources for permission to mark the plot and conduct the census.

## 90. FIELD, RIDGE, AND SHRUBBY TREES

CAMPOS, COLINAS Y ARBUSTOS

MICHAEL F.G. CLARK

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**Location:** Ontario; Hamiton-Wentworth Region; Dundas; Dundas Valley-Plot 1; 43°14'N, 79°54'W. **Continuity:** New. WBPS established 1986. **Size:** 6.6 ha. **Description of Plot:** See *J. Field Ornithol.* 60(suppl.):14 (1989). It seemed that because of heavy spring rains, the center and W sectors in the N half of the plot were extremely dense (grasses, brambles, low Roughleaf Dogwood) by 10 June. By 13 July grass and herbal ground cover ranged from approximately 1.2 to 1.8 m. in height throughout the plot. **Weather:** Count period temperatures ranged from 14°C (May 27) to 27°C (May 17). There were sunny skies on 6 visits (4 with clouds); it was overcast on 2 visits. Winds, ranging from 0 (2 counts) to 4-5 (5) on the Beaufort Scale, were mostly from the NW-NWW on five visits, and from the SW on one. While it did not rain during visits, rainfall during May and June was 29% above normal. **Coverage:** 15.3 hrs; 8 visits (6 mornings, 1 afternoon, 1 evening); 17, 27 May; 3, 10, 17, 24, 28 June; 13 July. **Census:** Yellow Warbler, 29.5 (179/40 ha); Song Sparrow, 25 (152); Gray Catbird, 20.5 (124); American Goldfinch, 7 (42); Willow Flycatcher, 6.5 (39); Field Sparrow, 6 (36); Red-winged Blackbird, 6; Northern Oriole, 5 (30); Brown-headed Cowbird, 3 (18); Common Yellowthroat, 2.5; Eastern Kingbird, 2; American Robin, 2; Brown Thrasher, 2; Cedar Waxwing, 2; Northern Cardinal, 2; Blue-winged Warbler, 1.5; Black-billed Cuckoo, 1; Black-capped Chickadee, 1; Warbling Vireo, 1; American Redstart, 1; Indigo Bunting, 1; Common Grackle, 0.5; Northern Mockingbird, +. **Total:** 23 species; 128 territories (775/40 ha). **Visitors:** Turkey Vulture, Mourning Dove, Red-bellied Woodpecker, Downy Woodpecker, Hairy Woodpecker, Northern Flicker, Blue Jay, American Crow, White-breasted Nuthatch, Chestnut-sided Warbler, Chipping Sparrow, House Finch. **Remarks:** Luxurious plant growth, promoted by 29% above normal rainfall and about average temperatures, may have affected normal breeding patterns. High winds on 5 of the visits were characteristically confined to the high ridge area of the plot, and did not appear to affect singing too adversely, with the notable exception of the late afternoon count on 24 June.

## 91. BRUSHY FIELD WITH TREES AND HILL

BREÑAL CON ARBOLES Y COLINAS

MICHAEL F. G. CLARK

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**Location:** Ontario; Hamiton-Wentworth Region; Dundas; Olympic Drive Field; 43°16'N, 79°56'W. **Continuity:** New BBC, but WBPS established 1986. **Size:** 6.3 ha. **Description**

**of Plot:** See unpublished 1984 WBPS. The raised central flat area has been extended by fill dirt, etc. to about one tenth the plot area; however, quickly invading low vegetation and large puddles were very attractive to a variety of species for foraging. The low SE sector was quite wet (approximately 3–5 cm) during the count period. Herb and grass height ranged from 0.3 to 0.9 m in most areas to a 2 m White Sweet Clover patch in the NW section by 14 July. **Water:** Large puddles in the NW and central sectors were used by several species throughout the count period. **Elevation:** 91.5–98.8 m. **Weather:** Temperatures ranged from 11°C (13 May) to 30°C (6 June). Winds, generally light on most (7) visits, were from the NW–NWW (3 visits), NEE (2), and SW–SWW (3). Skies were overcast on 2 visits, and sunny and clear on 5 others. No rain during visits. **Coverage:** 10.4 hrs; 8 visits (6 mornings, 2 evenings); 13, 27 May; 3, 11, 18, 24, 26 June; 14 July. **Census:** Bank Swallow, 9 (57/40 ha); Song Sparrow, 8.5 (54); Red-winged Blackbird, 8.5; Yellow Warbler, 5 (32); American Goldfinch, 5; Mourning Dove, 4 (25); Willow Flycatcher, 2.5; Northern Oriole, 2.5; American Robin, 2; European Starling, 2; Killdeer, 1; Spotted Sandpiper, 1; Belted Kingfisher, 1; Northern Flicker, 1; Eastern Kingbird, 1; American Crow, 1; Warbling Vireo, 1; Indigo Bunting, 1; Brown-headed Cowbird, 1; House Sparrow, 1. **Total:** 20 species; 59 territories (374/40 ha). **Visitors:** Canada Goose, Mallard, Blue-winged Teal, American Kestrel, Hairy Woodpecker, Tree Swallow, Gray Catbird, Cedar Waxwing, Palm Warbler, Northern Cardinal, Chipping Sparrow, Savannah Sparrow, Common Grackle and House Finch. **Remarks:** Despite periodic and potentially disruptive noises from the adjacent Public Works compound and to a lesser extent from a Waste Transfer Station approximately 100 m away, this plot supported 58 breeding pairs of 20 species. Also, occasional dumping in the plot center did not deter the nearby Bank Swallows, kingfishers and many other species from breeding; although the extension of the fill into the E grassy area may have prevented successful nesting for Savannah Sparrows. Heavy spring rains (29% above average in May and June) may have had some affect on breeding numbers.

## 92. CONVENTIONAL CASH CROP FARM

### CULTIVOS CONVENCIONALES

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**Location:** Pennsylvania; Lehigh Co.; Slatington; Clarence Weida's Farm; 40°43'N, 75°40'W; Slatedale Quadrangle, USGS. **Continuity:** New. **Size:** 30.4 ha (square). **Description of Plot:** This farmplot is surrounded by woods, hedges and farmland. Strips of crops have been designed to follow the elevational contours to avoid soil erosion. The plot includes a house, a lawn, a garden, and farmland, which is composed of corn (16.2 ha), wheat (6.9 ha), oats (6.5 ha), and fallow field (0.8 ha). None of the crops had been harvested by the end of this study. There is a 1360 m forest border, 180 m bordering an abandoned meadow with a small-tree hedgerow. Trees over 7.5 cm dbh in the forest border (ca 5 m into the woods) total 288. Species comprising 90% of total trees are [figures after each give total number of trees and relative density (%)]: Sassafras (75, 26.0); White Ash (51, 17.7); Black Cherry (30, 10.4); Northern Red Oak (20, 6.9); Chestnut Oak (18, 6.3); Red Mulberry (15, 5.2); Black Walnut (13, 4.5); Pignut Hickory (13, 4.5); Red Maple (12, 4.2); Mockernut Hickory (11, 3.8); brush cover is provided by Multi-flowered Rose, bramble, Sassafras, Staghorn Sumac, Witch Hazel. The herbaceous vegetation consists of Poison Ivy, Bullbrier, Umbrella Wort, Crown Vetch, and grass. Brush and herbs provide almost 100% ground cover. The hedgerow consists of 7 Red Mulberry, 6 Black Cherry, and 2 apple trees. The abandoned meadow is covered by goldenrod, Great and Common Ragweed, vergerette, and Pigeonberry. There is a 50 m row of spruces to the N of the private house. **Edge:** The N and E and S are bordered by woods, the SW and W are bordered by meadow, a house, a street, and farmland. **Topography and Elevation:** The farm is on an exposed S-facing slope, with the N and the E edges on steep slopes; 183–244 m. **Weather:** It was warm and

humid in the mornings, including two drizzly mornings. Temperatures ranged from 15.6 to 26.7°C. **Coverage:** 16.6 hrs; 8 visits (7 mornings, 1 evening); 1, 7, 14, 20, 25, 28, 30 June; 7 July. **Census:** Red-winged Blackbird, 22 (29/40 ha); Indigo Bunting, 13 (17); Gray Catbird, 8 (11); Grasshopper Sparrow, 8; Song Sparrow, 6.5 (9); Mourning Dove, 5 (7); Common Yellowthroat, 5; House Wren, 4 (5); European Starling, 4; Vesper Sparrow, 4; Northern Cardinal, 3.5 (5); Barn Swallow, 3 (4); American Robin, 3; Field Sparrow, 3; Bobolink, 3; House Finch, 3; Northern Mockingbird, 2; American Goldfinch, 2; Tufted Titmouse, 1.5; Hairy Woodpecker, 1; Willow Flycatcher, 1; Great Crested Flycatcher, 1; Blue Jay, 1; American Crow, 1; Red-eyed Vireo, 1; Scarlet Tanager, 1; Eastern Meadowlark, 1; Red-bellied Woodpecker, 0.5. **Total:** 28 species; 112 territories (147/40 ha). **Visitors:** Rock Dove, Yellow-billed Cuckoo, Northern Flicker, Eastern Wood-Pewee, Eastern Kingbird, Black-capped Chickadee, Wood Thrush, Brown Thrasher, Yellow Warbler, Rufous-sided Towhee, Chipping Sparrow, Common Grackle, Brown-headed Cowbird, Northern Oriole. **Remarks:** The birds are strongly limited to the edge habitat for singing perches and nesting sites, except for typical field birds (e.g. Grasshopper Sparrow, Red-winged Blackbird). The distribution of the birds would have been influenced by haying or harvesting, but none of these activities took place on this farm until the middle of July. There are no farm buildings on this plot. The Common Grackle breeding season was already past by the time the counts started, so they are not included in the census. **Acknowledgments:** I want to thank Clarence Weida for the permission to work on his farm and Alan Rex for his help in getting some background information. The cooperation of both these people is highly appreciated.

### 93. ORGANIC MIXED CROP-PASTURE FARM

#### CULTIVOS ORGÁNICOS MIXTOS-TIERRAS DE PASTAR

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**Location:** Pennsylvania; Lehigh Co.; Slatington; Alan D. Rex Farm; 40°43'N, 75°39'W; Slatedale Quadrangle, USGS. **Continuity:** New. **Size:** 34.4 ha. **Description of Plot:** The plot is composed of fields interspersed with hedgerows and thickets, buildings, abandoned areas, single trees, a swampy area, and bordering woodlots. It is surrounded by diverse farmland, streets and woodlots. The fields on the plot, which have been farmed organically for over 20 years, have been managed in compliance with erosion control. The fields contain alfalfa (10.3 ha), soybeans (4.0 ha), oats (1.0 ha), idle pasture (1.0 ha), corn (8.1 ha), rye (1.6 ha), and barley (1.2 ha). The soybeans emerged about 11 June; the rye was cut and removed by 16 June; alfalfa was first cut by 23 June (ca 30%) and 7 July (ca 70%). There are 1060 m of hedges, 860 m of forest border and 300 m lines of single trees. Trees over 7.5 cm dbh in the hedgerow: 183. Species comprising 90% of total trees are [figures after each give total number of trees and relative density (%)]: Black Cherry (52, 28.4); Black Walnut (31, 16.9); White Ash (29, 15.9); Sugar Maple (18, 9.8); Red Mulberry (12, 6.6); American Elm (11, 6.0); Staghorn Sumac (7, 3.8); pine (5, 2.7). Brush cover is dominated by Staghorn Sumac, Gray Dogwood, brambles and Multi-flowered Rose. Herbaceous vegetation is Poison Ivy, goldenrod, and grasses. Additional ground cover species include: White Ash, Black Cherry, Sugar Maple, Silverberry, Spotted Snapweed, and Pigeonberry. Trees in forest border over 7.5 cm dbh: 98. Species comprising 90% of total trees are [figures after each give total number of trees and relative density (%)]: Chestnut Oak (13, 13.3); White Oak (13, 13.3); Black Cherry (12, 12.2); Red Oak (11, 11.2); Black Birch (10, 10.2); Scarlet Oak (7, 7.1); Black Walnut (7, 7.1); spruce (5, 5.1); pine (4, 4.1); Red Maple (4, 4.1). Brush cover is Staghorn Sumac, Black Arrowwood, Sassafras, Witch Hazel and Gray Dogwood. There is little herbaceous ground cover in the woods; the dominant plants are brambles and some grasses at the borders. Number of trees in tree line over 7.5 cm dbh: 42. Species comprising 90% of total trees are [figures after each give total number of trees

and relative density (%): White Ash (17, 40.5); Black Cherry (6, 14.3); Weeping Willow (4, 9.5); apple (4, 9.5); Black Walnut (4, 9.5); Red Maple (3, 7.1); Shagbark Hickory (3, 7.1); White Oak (1, 2.4). There is heavy understory mainly from brambles and Great Burdock, with grasses inside and on the borders. The marshy habitat is located on the abandoned pasture with a thick cover of goldenrod, vergerette, brambles, Staghorn Sumac and grasses. **Water:** Both the stream and the marsh are only active in very wet periods. **Edge:** The land is bordered to the NE by woods and a fallow plot; to the NW and SW by agricultural habitat; to the W by agricultural habitat and a hedgerow that borders a street; and to the SE and E by woods, mainly oak. **Topography and Elevation:** The farm lies on a slight N-facing slope; 172- 214 m. **Weather:** A calm and humid June, little wind. Temperatures ranged from 12.8 to 32.2°C. **Coverage:** 19.8 hrs; 9 visits (8 mornings, 1 evening); 4, 8, 11, 16, 23, 27 June; 1, 11 July. **Census:** Red-winged Blackbird, 22 (26/40 ha); Song Sparrow, 10 (12); House Sparrow, 8 (9); European Starling, 6 (7); American Robin, 5 (6); Common Yellowthroat, 5; Indigo Bunting, 5; Grasshopper Sparrow, 5; Gray Catbird, 4.5 (5); House Wren, 4 (5); Vesper Sparrow, 4; Field Sparrow, 3.5 (4); Barn Swallow, 3 (3); Yellow Warbler, 3; Northern Cardinal, 3; Bobolink, 3; Chipping Sparrow, 2.5; Northern Flicker, 2; Willow Flycatcher, 2; Eastern Kingbird, 2; American Crow, 2; Northern Mockingbird, 2; House Finch, 2; Mourning Dove, 1.5; Downy Woodpecker, 1; Hairy Woodpecker, 1; Carolina Wren, 1; Brown Thrasher, 1; Savannah Sparrow, 1; American Goldfinch, 1; Tufted Titmouse, 0.5. **Total:** 31 species; 116.5 territories (135/40 ha). **Visitors:** Green-backed Heron, Red-tailed Hawk, Killdeer, Rock Dove, Belted Kingfisher, Red-bellied Woodpecker, Eastern Wood-Pewee, Eastern Phoebe, Great Crested Flycatcher, Blue Jay, Scarlet Tanager, Eastern Meadowlark, Common Grackle, Brown-headed Cowbird, Orchard Oriole, Northern Oriole. **Remarks:** See Conventional Cash Crop Farm. **Acknowledgments:** I want to thank Alan Rex for the permission to work on his farm and his help in getting some background information. His cooperation is highly appreciated.

## 94. CONVENTIONAL DAIRY FARM

### GANADERIAS CONVENCIONALES

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**Location:** Pennsylvania; Berks Co.; Kempton; N of Appalachian Mountains, near Hawk Mountain; Terry Kunkel's Farm; 40°37'N, 75°53'W; Hamburg Quadrangle, USGS. **Continuity:** New. **Size:** 23.1 ha. **Description of Plot:** The plot is composed of farmland, hedgerows with some big trees, a small orchard, buildings, single trees and woodlots. A road divides the farm into pasture to the W and cropland to the E. It is a conventional farm, with strips of crops for erosion control. The farmland is composed of cow pasture (8.1 ha), alfalfa (6.1 ha), corn (5.9 ha), soybeans (1.6 ha), and oats (1.4 ha). The soybeans emerged around 9 June; oats and alfalfa first cut by 19 June; corn was 150 to 180 cm high by 18 July; the cow pasture was mowed by 29 June. There is 370 m forest border (S and NE), 875 m hedges and a 500 m line with big trees (W). Trees over 7.5 cm dbh in hedges and on the treeline total 209. Species comprising 90% of total trees are [figures after each give total number of trees and relative density (%)]: White Ash (88, 42.1), Black Walnut (41, 19.6); Black Cherry (35, 16.8); Shagbark Hickory (7, 3.4); Sassafras (5, 2.4); Red Mulberry (4, 1.9); Southern Catalpa (4, 1.9); apple (3, 1.4); Norway Maple (3, 1.4). Brush cover is provided by Black Cherry, brambles, Poison Ivy, Staghorn Sumac, Gray Dogwood, Multi-flowered Rose, hawthorn. Herbaceous cover (together with brush cover almost always 100%) is dominated by grasses, goldenrod, Great Burdock and Spotted Snapweed. Trees over 7.5 cm dbh in the forest border (ca 5 m into the wood) total 93. Species comprising 90% of total trees are [figures after each give total number of trees and relative density (%)]: Tamarack (24, 25.8); Northern Red Oak (13, 14.0); White Ash (10, 10.8); Shagbark Hickory (10, 10.8); Black Cherry (9, 9.7); Chestnut Oak (8, 8.6); Black Birch (4, 4.3); Red Maple (4,

4.3). Brush cover includes White Ash, Black Cherry, Silverberry, Staghorn Sumac, hawthorn, Coralberry, Hackberry, and Witch Hazel. Herbaceous vegetation dominated by brambles, Multi-flowered Rose, and Poison Ivy. **Water:** A small stream originates between the soybean and alfalfa fields and extends through the pasture. **Edge:** The agricultural land is bordered in W by a fence along with large trees and an organic farm; to the S by a mature oak-hickory forest; to the E by hedges and agricultural habitat; to the NE by a younger larch-cherry-ash woodlot; and to the N by agricultural habitat. **Topography and Elevation:** The farm is on a S-exposed slope; 135–171 m. **Weather:** Humid throughout, no wind, relatively warm early in the mornings. Temperatures ranged from 12.8–26.7°C. **Coverage:** 18.3 hrs; 9 visits (8 mornings, 1 evening); 2, 9, 12, 19, 21, 26, 29 June; 6, 18 July. **Census:** Indigo Bunting, 11 (19/40 ha); Song Sparrow, 10 (17); House Sparrow, 10; Barn Swallow, 8 (14); Northern Cardinal, 6 (10); Field Sparrow, 6; Red-winged Blackbird, 6; European Starling, 5 (9); Gray Catbird, 4 (7); Common Yellowthroat, 4; American Robin, 3 (5); American Goldfinch, 3; Vesper Sparrow, 2.5; Ring-necked Pheasant, 2; Eastern Kingbird, 2; Blue Jay, 2; American Crow, 2; Tufted Titmouse, 2; House Wren, 2; Eastern Bluebird, 2; Northern Mockingbird, 2; Yellow Warbler, 2; Chipping Sparrow, 2; Killdeer, 1; Mourning Dove, 1; Downy Woodpecker, 1; Hairy Woodpecker, 1; Northern Flicker, 1; Eastern Wood-Pewee, 1; Willow Flycatcher, 1; Eastern Phoebe, 1; Eastern Meadowlark, 1; Northern Oriole, 1; Red-bellied Woodpecker, 0.5; Carolina Wren, 0.5; Wood Thrush, 0.5; Grasshopper Sparrow, 0.5. **Total:** 37 species; 110.5 territories (191/40 ha). **Visitors:** Green-backed Heron, Mallard, Red-tailed Hawk, American Kestrel, Rock Dove, Chimney Swift, Ruby-throated Hummingbird, Great Crested Flycatcher, Fish Crow, Black-capped Chickadee, Red-eyed Vireo, American Redstart, Scarlet Tanager, Brown-headed Cowbird, Orchard Oriole, House Finch. **Remarks:** See Conventional Cash Crop Farm. **Other Observer:** Rudy Keller. **Acknowledgments:** I want to thank Terry Kunkel for the permission to work on his farm and his help in getting some background information. His cooperation is highly appreciated. Also, I want to thank Rudy Keller for help with the habitat analysis.

## 95. ORGANIC PASTURE–GRAIN FARM

### CULTIVOS DE GRANOS–TIERRAS DE PASTAR

JAN H. BLEW

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**Location:** Pennsylvania; Berks Co.; Kempton; on the northern foot of the Appalachian Mountains, near Hawk Mountain; Lee Shrawder's Farm; 40°37'N, 75°53'W; Hamburg Quadrangle, USGS. **Continuity:** New. **Size:** 18.4 ha. **Description of Plot:** The plot is composed of farmland with hedgerows, thickets, single trees, and farm buildings. Two parts of the farm were censused: wheat and pasture N of the road, and farm buildings, a little orchard, and a wheat plot S of the road. Hedges and tree lines border the farm. The plot is composed of wheat (9.11 ha), fallow fields with many thistles (3.64 ha); meadow (3.24 ha); buildings, orchard, and mixed habitat (2.43 ha). The fallow plot was mowed by 22 June; the border rows of the meadow were mowed by 25 June, the rest was mowed by 29 June; the wheat was harvested by 14 July. There is 830 m hedgerow, 660 m with single tall trees, 250 m with thicket and creek, and 280 m of bushy meadow. Trees over 7.5 cm dbh in the hedges total 225. Species comprising 90% of total trees are [figures after each give total number of trees and relative density (%)]: Black Cherry (84, 37.3); White Ash (59, 26.2); Eastern Redcedar (12, 5.3); Red Oak (9, 4.0); apple (7, 3.1); Mazzard (6, 2.7); Black Birch (5, 2.2); fir (4, 1.8); Sugar Maple (4, 1.8); Sassafras (3, 1.3); Red Maple (3, 1.3); White Oak (3, 1.3); Red Mulberry (3, 1.3); elm (3, 1.3). Brush cover is provided by Staghorn Sumac, brambles, Black Arrowwood, Witch Hazel, Flowering Dogwood, Multi-flowered Rose. Herbaceous cover includes grasses, Poison Ivy, Spotted Snapweed, goldenrod, and Common Ragweed. Trees over 7.5 cm dbh in the tree lines total 42. Species totals are [figures after each give total number of trees and relative density (%)]: Black Cherry (20,

47.6), White Ash (10, 23.8); Black Walnut (4, 9.3); Sassafras (3, 7.1); Shagbark Hickory (2, 4.8); Northern Red Oak (2, 4.8); Red Mulberry (1, 2.4). Brush cover includes brambles, Multi-flowered Rose, Red Mulberry and Black Cherry; herbaceous vegetation is Poison Ivy, Virginia Creeper, grasses and goldenrod. Trees over 7.5 cm in the thicket along the creek total 71. Species totals are [figures after each give total number of trees and relative density (%)]: White Ash (12, 16.9); Red Maple (9, 12.7); Northern Red Oak (8, 11.3); White Oak (6, 8.5); Black Locust (5, 7.0); willow (5, 7.0); Shagbark Hickory (5, 7.0); Sassafras (5, 7.0); American Basswood (3, 4.2); Hazel Alder (3, 4.2); Sycamore (2, 2.8); American Beech (2, 2.8); American Hornbeam (2, 2.8); Sugar Maple (2, 2.8); Swamp White Oak (1, 1.4); Black Cherry (1, 1.4). Bushes are Multi-flowered Rose, Hazel Alder, Red-osier Dogwood; herbaceous vegetation is goldenrod, grape and Spotted Snapweed. The regrowth meadow consists of 80% goldenrod and 10% Great Burdock and 10% Common Ragweed. Shrubs (1.5 m tall), dispersed by an average distance of 10–18 m, include: Multi-flowered Rose, Black Raspberry, Sow-teat, Black Cherry, and planted pine. **Water:** A creek runs just off the N-part of the plot. **Edge:** The plot is bordered to the S by regrowth meadow; the E by a hedgerow with large trees and treeline; the N by large trees; the W by hedgerows with medium-sized trees. The plot is divided by a creek, a road, and marshy habitat. **Topography and Elevation:** The farm lies on S and N slopes; 125–171 m. **Weather:** Humid throughout, no wind, relatively warm early in the mornings. Temperatures ranged from 12.8–21.1°C. **Coverage:** 21.8 hrs; 9 visits (8 mornings, 1 evening); 5, 12, 15, 22, 25, 26, 29 June; 1, 14 July. **Census:** Red-winged Blackbird, 27 (59/40 ha); Rock Dove, 25 (54); House Sparrow, 20 (43); Song Sparrow, 16 (35); Barn Swallow, 11 (24); Gray Catbird, 7 (15); American Robin, 6 (13); Common Yellowthroat, 6; European Starling, 5 (11); Yellow Warbler, 5; Indigo Bunting, 5; Field Sparrow, 4.5 (10); Ring-necked Pheasant, 4 (9); Mourning Dove, 4; American Goldfinch, 3.5 (8); Willow Flycatcher, 3 (7); Chipping Sparrow, 3; Eastern Meadowlark, 3; House Finch, 3; Eastern Kingbird, 2; Northern Oriole, 2; American Crow, 1.5; Killdeer, 1; Chimney Swift, 1; Red-bellied Woodpecker, 1; Northern Flicker, 1; Eastern Phoebe, 1; House Wren, 1; Northern Mockingbird, 1; Northern Cardinal, 1; Wood Thrush, 0.5. **Total:** 31 species; 175 territories (380/40 ha). **Visitors:** American Bittern, Green-backed Heron, Canada Goose, Mallard, American Kestrel, Yellow-billed Cuckoo, Downy Woodpecker, Hairy Woodpecker, Eastern Wood-Pewee, Great-crested Flycatcher, Tufted Titmouse, Eastern Bluebird, Brown Thrasher, Cedar Waxwing, Red-eyed Vireo, Scarlet Tanager, Grasshopper Sparrow, Common Grackle, Brown-headed Cowbird, Orchard Oriole. **Remarks:** Rock Doves inhabited a whole building. See Conventional Cash Crop Farm. **Other Observer:** Rudy Keller. **Acknowledgments:** I want to thank Lee Shrawder for the permission to work on his farm and his help in getting some background information. His cooperation is highly appreciated.

## 96. SUBURBAN CEMETERY

CEMENTERIO SUBURBANO

THOMAS A. IMHOF

1036 Pike Road  
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**Location:** Alabama; Jefferson Co.; Birmingham; 33°29'N, 86°54'W; Bessemer Quadrangle, USGS. **Continuity:** Established 1978; 9 intermittent yrs. **Size:** 15 ha. **Description of Plot:** See *Am. Birds* 34:18–19 (1980). **Weather:** Conditions during counts were excellent. Temperatures during counts and during whole period were 6.5 to 28.5°C. **Coverage:** 21 hrs; 21 visits (all mornings); 18, 26, 27 March; 6, 11, 24, 28 April; 2, 6, 8, 11, 15, 30 May; 10, 14, 17, 24, 27, 30 June; 7, 19 July. **Census:** American Robin, 10 (27/40 ha); Northern Cardinal, 7.5 (20); Northern Mockingbird, 6 (16); Mourning Dove, 5 (13); European Starling, 5; House Sparrow, 5; House Finch, 4.5 (12); Blue Jay, 4 (11); Rufous-sided Towhee, 2.5; Great Crested Flycatcher, 2; Brown Thrasher, 2; Brown-headed Cowbird, 2; Red-bellied Woodpecker, 1.5; Red-headed Woodpecker, 1; Downy Woodpecker, 1; Northern Flicker, 1; Eastern Wood-Pewee, 1; Carolina Chickadee, 1; Tufted Titmouse, 1; Carolina

Wren, 1; Common Grackle, 1; Yellow-throated Vireo, 0.5; Red-winged Blackbird, 0.5. **Total:** 23 species; 66.1 territories (176/40 ha). **Visitors:** American Kestrel, Rock Dove (20+ pairs nest on nearby Interstate highway bridge), Chimney Swift, American Crow, White-breasted Nuthatch, Northern Parula, (all known to breed in immediate vicinity). **Remarks:** After three years of drought, May, June, and July had 30–35 cm of rainfall above average. Most of it was in the form of heavy afternoon thundershowers, and interfered very little with observations and avian reproductive activity. Although heavy plant growth resulted, the concurrent deficiency of sunshine delayed by up to a month the flowering and fruiting of many wild and cultivated plants. Of 23 breeding species and 6 nearby-breeding visitors, all but Chimney Swift, Red-headed Woodpecker, Eastern Wood-Pewee, Great Crested Flycatcher, Yellow-throated Vireo and Northern Parula were also recorded on the Winter Bird Population Study on same tract this year (23 year-round residents).