FOREST BIRD SURVEYS ON MT. MANSFIELD AND UNDERHILL STATE PARK

Christopher C. Rimmer
Vermont Institute of Natural Science
Woodstock, VT 05091

Abstract: Censuses of breeding bird populations on two Mount Mansfield sites were conducted for a second year in 1992. One site in Underhill State Park at ca. 2200 ft elevation consisted of mature northern hardwoods, while the second site on the Mt. Mansfield ridgeline at ca. 3700 ft elevation consisted of subalpine spruce-fir. Ten-minute counts at each of 5 sampling points in the two habitats were conducted twice during June. Eighteen species were recorded at Underhill State Park, with a maximum of 111 individuals (49 in 1991) on 26 June and a mean of 103.5 (38.5 in 1991) for both visits. Sixteen species were recorded on Mt. Mansfield, with a maximum of 141 individuals (94 in 1992) on 29 June and a combined mean of 133 (90 in 1991). Species diversity and numerical abundance were significantly higher at both sites in 1992 than in 1991. The reasons for this increase, whether reflecting actual changes in bird populations or an artifact of differing sampling conditions between the two years, are not entirely clear.

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Introduction: In 1992, breeding bird censuses were conducted for a second year on two permanent study sites on Mt. Mansfield, as part of a long-term Vermont Forest Bird Monitoring Program conducted by the Vermont Institute of Natural Science (VINS). This program was initiated in 1989 with the primary goal of conducting habitat-specific monitoring of forest interior breeding bird populations in Vermont and tracking long-term changes. As of 1992, VINS has selected, marked and censused 17 permanently protected sites of mature forest habitat in Vermont (Table 1). The specific objectives of the Mt. Mansfield study include: 1) adding a bird monitoring component to the integrated ecological research being conducted under the VMC; 2) adding two study sites to VINS' statewide monitoring program; and 3) sampling bird populations in the high elevation spruce-fir zone.

Methods: Survey methods were identical to those in 1991. Each site consists of a series of five sampling points spaced 200-300 meters apart. Preliminary site visits were made in late spring to check the condition of vinyl flagging and metal tree tags. Each site was censused twice during the height of breeding activities in June. Each census consisted of 10-minute counts of all birds seen and heard at each of the five sampling points. Field data were transcribed onto standardized forms and subsequently computerized, using DBASE3. Vegetation sampling was postponed until a future field season, pending development of a continentwide, standardized protocol for measuring habitat in relation to bird diversity and abundance.

Results and Discussion: Species diversity and numerical abundance were significantly higher at both sites in 1992 than in 1991 (Table 2). Eighteen species were recorded at Underhill State Park, with a maximum of 111 individuals (49 in 1991) on 26 June and a mean of 103.5 (38.5 in 1991) for both visits (Table 3). This increase appears to have resulted in part from the switch in 1992 to a more experienced observer, and possibly from more favorable weather conditions during the two 1992 counts. However, totals of the five most abundant species at Underhill (Ovenbird, Black-throated Blue Warbler, Black-throated Green Warbler, Red-eyed Vireo, and Canada Warbler) still fall below those from VINS' six other northern hardwoods sites. We do not yet know whether the apparently low bird densities at Underhill are related to habitat variables, insect prey populations, or other factors.

Sixteen species were recorded on Mt. Mansfield, with a maximum of 141 individuals (94 in 1992) on 29 June and a combined mean of 133 (90 in 1991) (Table 4). Of ten species recorded in both years, three declined slightly, while seven increased significantly (Table 2). Gray-cheeked (Bicknell's) and Swainson's thrushes, White-throated Sparrows, Dark-eyed Juncos, and Purple Finches all increased by at least 100%. Between-year count weather (similar) or observer bias (same observer in each year) do not account for these increases. Possible changes in insect food availability, migration or breeding season weather, interspecific competition, overwinter survival, or other factors may have influenced this short-term change. However, it is premature to interpret these data, as they constitute the first two years of a long-term database. Several years of additional data collection, and their correlation with other VMC data, will be necessary to elucidate population trends of various species and groups at the Mansfield and Underhill sites.

Future Plans: Future plans include continued monitoring at both sites, as well as detailed sampling of habitat characteristics. In addition, intensive research into the population ecology and conservation status of the Gray-cheeked (Bicknell's) Thrush in Mt. Mansfield's subalpine spruce-fir zone will be continued. Preliminary studies of this (sub)species were conducted in 1992.

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Table 1. Vermont Forest Bird Monitoring Sites - 1992

Site	Town	Habitat	Observer
1. Sandbar WMA	Milton	Floodplain	M. LaBarr
2. Pease Mountain	Charlotte	Oak-hickory	S. Staats
3. Cornwall Swamp	Cornwall	Maple Swamp	C. Darmstadt
4. Shaw Mountain	West Haven	Oak-hickory	N. Martin
5. Galick Preserve	West Haven	Hemlock-pine	W. Ellison
6. Sugar Hollow	Pittsford	N. Hardwoods	R. Pilcher
7. The Cape	Chittenden	N. Hardwoods	C. Rimmer
8. Dorset Bat Cave	E. Dorset	N. Hardwoods	C. Darmstadt
9. Roy Mountain WMA	Barnet	Cedar-spruce	C. Rimmer
10. Concord Woods	Concord	N. Hardwoods	C. Rimmer
11. May Pond Preserve	Barton	N. Hardwoods	D. Schell
12. Wenlock/Buxton's	Ferdinand	Spruce-fir	C. Darmstadt
13. Bear Swamp	Wolcott	Spruce-fir	B. Pfeiffer
14. Underhill S.P.	Underhill	N. Hardwoods	C. Darmstadt
15. Mt. Mansfield	Stowe	Subalpine	C. Rimmer
16. Camel's Hump	Huntington	Subalpine	C. Fichtel
17. Merck Forest	Rupert	Maple-beech-oak	C. Darmstadt

Table 2. Maximum counts of individual birds recorded on Mt. Mansfield and Underhill State Park sites, combining data from both visits in 1991 and 1992

Species	Mansfield		Underhill	
	1991	1992	1991	1992
Yellow-bellied Sapsucker				2
Pileated Woodpecker			2	1
Black-capped Chickadee				2
Blue Jay		1		
Red-breasted Nuthatch		2		
Winter Wren	20	18		
Ruby-crowned Kinglet		4		
Veery			2	2
Gray-cheeked Thrush	10	23		
Swainson's Thrush	6	16		2
Hermit Thrush				7
Wood Thrush			1	2
American Robin	2	7		
Cedar Waxwing		1		
Solitary Vireo			1	4
Red-eyed Vireo			5	8
Blue-winged Warbler				2
Nashville Warbler	4			
Magnolia Warbler	2	4		
Black-throated Blue Warbler			11	17
Yellow-rumped Warbler	22	21		
Black-throated Green Warbler			9	14
Blackpoll Warbler	20	18		
Black-and-white Warbler				6
American Redstart				6
Ovenbird			7	20
Canada Warbler			5	8
Rose-breasted Grosbeak			7	3
Lincoln's Sparrow	4			
White-throated Sparrow	14	28	2	
Dark-eyed Junco	8	17		6
Purple Finch	2	8		
Pine Siskin		1		
Evening Grosbeak		2		
Number of individuals	114	171	52	112
Number of species	12	16	11	18

Table 3. Numbers of individual birds recorded in Underhill State Park in 1992. Maximum count for each species represents relative abundance index to be used in future analyses.

Species	11 June	26 June
Yellow-bellied Sapsucker		2
Pileated Woodpecker	1	
Blue Jay		2
Black-capped Chickadee	2	1
Winter Wren	6	12
Veery		2
Swainson's Thrush		2
Hermit Thrush	4	7
Wood Thrush	2	
American Robin	1	
Solitary Vireo	4	4
Red-eyed Vireo	8	6
Blue-winged Warbler		2
Black-throated Blue Warbler	12	17
Black-throated Green Warbler	14	14
Black-and-white Warbler	6	4
American Redstart	6	2
Ovenbird	20	20
Canada Warbler	4	8
Rose-breasted Grosbeak	3	
Dark-eyed Junco	3	6
Number of individuals	96	111
Number of species	16	17

Table 4. Numbers of individual birds recorded on Mt. Mansfield in 1992. Maximum count for each species represents relative abundance index to be used in future analyses.

Species	10 June	29 June
Blue Jay	1	
Red-breasted Nuthatch		2
Winter Wren	14	18
Ruby-crowned Kinglet		4
Gray-cheeked Thrush	23	13
Swainson's Thrush	2	16
American Robin	7	3
Cedar Waxwing	1	
Magnolia Warbler		4
Yellow-rumped Warbler	21	16
Blackpoll Warbler	16	18
White-throated Sparrow	21	28
Dark-eyed Junco	8	17
Purple Finch	8	2
Pine Siskin	1	
Evening Grosbeak	2	
Number of individuals	125	141
Number of species	13	12