# Mountain Birdwatch 2005

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## Abstract

Mountain Birdwatch is a long-term monitoring program for songbirds that breed in high-elevation forests of the Northeast. Since 2001, the Vermont Institute of Natural Science (VINS) has prepared skilled volunteers to conduct annual surveys along 1-km point count routes located in Massachusetts, New York, Vermont, New Hampshire, and Maine. Primary emphasis is placed on Bicknell's Thrush, a montane fir specialist that breeds only in the northeastern U.S. and adjacent portions of Canada. Other focal species include Blackpoll Warbler, Swainson's Thrush, White-throated Sparrow, and Winter Wren. In 2005, Mountain Birdwatchers gathered observations from 132 locations, with point count surveys completed on 109 routes. Bicknell's Thrush occurred in greater numbers than in previous years and was detected by point count on 66% of the routes, the highest rate of encounter since Mountain Birdwatch surveys began. This rise ended a four-year period of decreasing abundance. White-throated Sparrow and Blackpoll Warbler, which had also been declining in the survey area since 2001, showed similar signs of recovery. Counts of Swainson's Thrush and Winter Wren generally matched or exceeded previous levels.

In addition to monitoring populations region-wide, VINS collaborated with the US Forest Service on trend analyses for mountain birds in Vermont's Green Mountain National Forest and New Hampshire's White Mountain National Forest (1992-2003). The resulting manuscripts (enclosed) demonstrate significant declines in three of the Forest Service's management indicator species for montane spruce-fir habitat: Bicknell's Thrush, Magnolia Warbler, and Yellow-bellied Flycatcher. The White-throated Sparrow population declined sharply in surveyed areas of the Green Mountains, but was stable or increasing on White Mountain routes. Boreal Chickadee numbers were also steady or growing in the White Mountains during the survey period. We disseminated these findings and related information in oral presentations, technical reports, and popular articles. We also responded to data requests from twenty-three separate parties, including landowners, conservation organizations, and local, state, and federal natural resource agencies.

## BACKGROUND AND RATIONALE

Bicknell's Thrush (*Catharus bicknelli*), once considered a subspecies of Gray-cheeked Thrush (*C. minimus*), was identified as a separate species in 1995 (American Ornithologists' Union 1995). Since then, it has been recognized as one of the most vulnerable passerines in eastern North America. Partners in Flight (PIF) identified Bicknell's Thrush as the highest conservation priority among neotropical-nearctic migrants in Northern New England (Hodgman and Rosenberg 2000) and the Eastern Spruce-Hardwood Forest (Rosenberg and Hodgman 2000). The PIF continental Watch List (Rich et al. 2004) places Bicknell's Thrush in the highest priority group due to multiple causes for concern across its entire range. The International Union for the Conservation of Nature classifies the songbird as vulnerable on its list of threatened species (BirdLife International 2000).

A number of factors contribute to the vulnerability of Bicknell's Thrush, including its limited breeding range. In the United States, Bicknell's Thrush breeds in montane fir forests of New York and northern New England (Atwood et al. 1996, Lambert et al. 2005) and is often associated with recently disturbed areas characterized by vigorous regrowth (Wallace 1939, Rimmer et al. 2001a). In southeastern Canada, it inhabits montane fir (Ouellet 1993), maritime spruce-fir (Erskine 1992), and regenerating mixed forest (Nixon et al. 2001). The species is similarly restricted in its wintering distribution, occurring primarily in wet, broadleaf forests of the Dominican Republic (Rimmer et al. 2001a). These forests have been reduced to less than 10% of their historic extent in the last 30 years (Stattersfield et al. 1998).

Loss of the Northeast's montane fir habitat may also threaten Bicknell's Thrush. Expansion of recreation areas, cell tower construction, and wind power development have received the most regulatory attention, as each can result in highly visible forest loss. Effects of airborne pollutants on Bicknell's Thrush are unclear, but potential threats include forest decline from acid deposition (Johnson et al. 1992) and heavy metal toxicity (Gawel et al. 1996), mercury poisoning by uptake in the food chain (Rimmer et al. 2005), and egg-laying irregularities associated with calcium limitation, a possible consequence of acidified soils (Graveland et al. 1994). A study in the eastern United States suggests that acid deposition may have contributed to recent Wood Thrush declines by reducing the

abundance and size of prey. The authors found that negative effects of acid rain on the predicted probability of breeding were greatest in high-elevation zones with low pH soils (Hames et al. 2002). Climate change poses another threat to the species. A warming climate is expected to cause incremental, but widespread changes in the composition and structure of mountain forests. Forest ecologists predict that balsam fir (*Abies balsamea*) will be substantially diminished, if not lost from the Northeast if atmospheric concentrations of $CO_2$ double, as expected within the next century (Iverson and Prasad 2002). A moderate increase in summer temperatures (3 °C) could enable upslope encroachment by temperature-limited hardwoods and reduce Bicknell's Thrush habitat by as much as 98% (Lambert and McFarland 2004).

Volunteers for the Vermont Institute of Natural Science's Forest Bird Monitoring Program surveyed 12 mountains from 1993 to 1999 in order to monitor changes in the status of Bicknell's Thrush and other high-elevation songbirds. In 2000, VINS piloted Mountain Birdwatch in Vermont on fifty additional routes, offering observers the option to concentrate on five species: Bicknell's Thrush, Swainson's Thrush (*Catharus ustulatus*), Blackpoll Warbler (*Dendroica striata*), White-throated Sparrow (*Zonotrichia albicollis*), and Winter Wren (*Troglodytes troglodytes*). The following year, we expanded the survey region to include over one hundred new routes in New York, New Hampshire, and Maine. Since 2000, we have assessed Mountain Birdwatch's power to detect population trends (Lambert et al. 2001); examined the influence of landscape structure on high-elevation bird communities (Lambert et al. 2002); measured habitat characteristics on 45 survey routes (Lambert 2003); produced and validated a Bicknell's Thrush distribution model (Lambert et al. 2005); and projected effects of climate change on Bicknell's Thrush distribution (Lambert and McFarland 2004). We have also identified key management units and conservation opportunities for Bicknell's Thrush (Lambert 2003).

During the 2005 breeding season, we monitored 109 routes and gathered observations of Bicknell's Thrush from 23 additional mountains. Since then, we prepared and submitted two manuscripts reporting on mountain bird trends in the Green and White Mountain National Forests. Both papers are currently being revised for publication in peer-reviewed journals. We present 2005 Mountain Birdwatch results in the body of this

report, as well as excerpts from the national forest trend analyses. We also enclose the complete draft manuscripts for US Fish and Wildlife Service review.

## METHODS

*Volunteer engagement*

We announced the opportunity to volunteer for Mountain Birdwatch on our web site (www.vinsweb.org/cbd/mtn_birdwatch.html) and in VINS publications. Cooperating conservation organizations publicized the project through electronic and print media. In all, about 175 people participated in the survey in 2005, including companions of the primary route monitors. Mountain Birdwatchers received maps, survey instructions, an identification guide to high-elevation songbirds, and a training tape with an auditory identification quiz. A perfect score on the quiz was a prerequisite for participation. Repeat surveyors were encouraged to review the written and recorded material in order to maintain a high level of proficiency. The Mountain Birdwatch listserv (http://groups.yahoo.com/group/MountainBirdwatch/) and volunteer newsletters (http://www.vinsweb.org/cbd/mbwpubs.html) help inform, coordinate, and engage participants in the survey.

*Site selection, route placement and coverage*

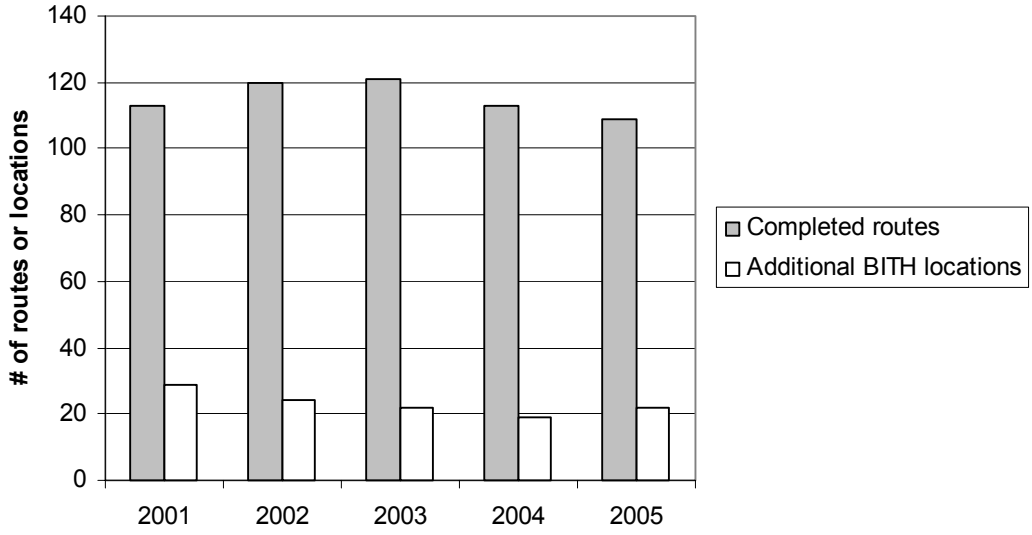
Site selection was based on a GIS model of potential Bicknell's Thrush habitat that incorporates elevation, latitude, and forest type (Lambert et al. 2005). The model depicts conifer-dominated forests above an elevation threshold that drops 81.63 m for every one-degree increase in latitude (-81.63 m/1º latitude). The threshold's slope corresponds closely with the latitude-elevation relationship for treeline in the Appalachian Mountain chain, which is -83 m/1º latitude (Cogbill and White 1991). Four routes have been established on peaks lying below the elevation threshold. Forty routes cross the threshold, due to the limited availability of trails or land area above the threshold. We made an attempt to randomize site selection by randomly assigning priority ranks to discrete units of high-elevation habitat. However, the choice of sites was constrained by the availability of volunteers and the location of existing trails.

When placing routes, we favored discrete starting points (e.g. trail junction), extensive conifer stands, and upper elevations. Volunteers establishing a route for the first time

placed five points at 200- to 250-m intervals along a mapped course. Monitors submitted a detailed description of each station in order to facilitate its location in future years.

In 2004, Mountain Birdwatchers completed 109 surveys in New York (35), Vermont (39), New Hampshire (23), Maine (11), and Massachusetts (1). Observers recorded all species on approximately one-third of the routes and only the five focal species on the remainder. We gathered Bicknell's Thrush records from 23 additional mountains. The number of routes surveyed in 2005 exceeded the goal of 100 routes, but was lower than the number completed in previous years (Fig. 1).

**Figure 1.** Mountain Birdwatch survey effort 2001-2004.




*Survey Methods*

Surveys were conducted under acceptable weather conditions (no precipitation, temperature >2 °C, wind speed <32 km/h) from 1 to 25 June. Surveys were conducted between 04:30 and 08:00 EDT; most were completed by 06:30 EDT. Observers listened quietly for ten minutes at each of five stations.[1] They recorded the number of each focal species seen or heard during three time periods: 0-3 minutes, 3-5 minutes, and 5-10 minutes. If Bicknell's Thrush was not detected during or between point counts, surveyors returned to each point and broadcast a one-minute recording of the bird's vocalizations,

[1] In 2003, we increased the 5-species point count length from five to ten minutes in order to gather more information and to achieve methodological consistency with the all-species protocols and with Canada's High-Elevation Landbird Program.

followed by a two-minute listening period. Prior to 2003, the broadcast duration was three minutes. We used audioplaybacks to elicit responses from present, but silent birds. Audioplaybacks were discontinued upon detection of one or more individuals. If no Bicknell's Thrushes responded to the broadcasts, the status of the species was classified as unknown. Monitors who completed their surveys without encountering Bicknell's Thrush were asked to conduct follow-up, audioplayback surveys at dusk or dawn before 15 July (after Atwood et al. 1996). If no observations of Bicknell's Thrush were made during the second visit, the species was presumed to be absent from that site.

*Data analysis: avian distribution and abundance*

To include data from as many routes as possible, we subsampled records of the five focal species from the first five minutes of each ten-minute count. Where two point count series were conducted, we used results from the first survey only. We measured frequency of occurrence and relative abundance for each of the focal species. To calculate frequency of occurrence, we divided the number of routes on which a species was detected during point counts (first five minutes only) by the total number of routes surveyed. For Bicknell's Thrush, we also calculated the proportion of survey routes on which the species was detected by any means (10-minute point count, chance, playback, or follow-up).

For between-year comparisons, we calculated the average number of individuals per point on a route by route basis. This correction was necessary because close to 30% of the routes surveyed in 2001 contained fewer than five stations (mean = 2.87 stations). These routes were extended below the original elevation threshold in 2002 to meet the 5-point standard. For each focal species, we averaged per-point values across routes to produce an overall index of relative abundance for 2001 through 2005. We did the same for the subset of routes that have been surveyed in every one of the five years (n = 35).

Different methods were used for the 1992-2003 study of mountain bird populations in the Green Mountain National Forest and White Mountain National Forest. Please refer to the enclosed manuscripts for detailed descriptions.

## RESULTS

Bicknell's Thrush was detected by five-minute count on 58% the survey routes (Table 1) and by ten-minute count on 66% of the routes. Chance observations and use of audioplaybacks

confirmed the species' presence on 86 of 93 routes (92.5%) that were thoroughly surveyed (point count, playback, and follow-up playback, as needed). The species occurred in higher numbers than in previous years (Figs. 2 & 3), ending a four-year, regional decline. White-throated Sparrow and Blackpoll Warbler, which had also been declining in the survey area since 2001, showed similar signs of recovery. Counts of Swainson's Thrush and Winter Wren matched or exceeded previously recorded levels. Overall abundance of the five focal species showed a U-shaped pattern between 2001 and 2005 (Fig. 4).

**Figure 2.** Relative abundance of focal species on 35 routes surveyed each year, 2001-2005.

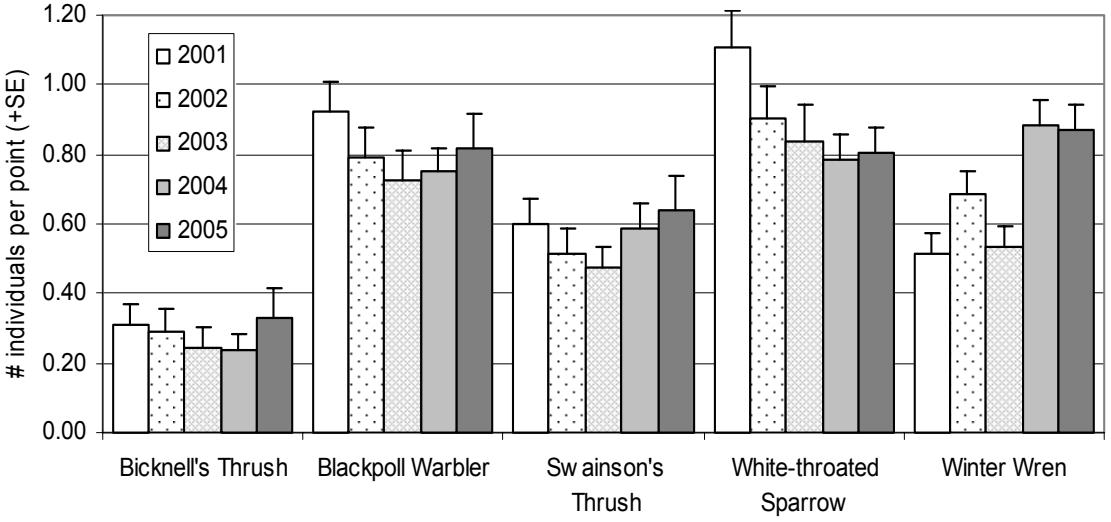



**Figure 3.** Relative abundance of focal species in 2001 (n = 113 survey routes), 2002 (n = 120), 2003 (n = 121), 2004 (n = 113), and 2005 (n = 109).

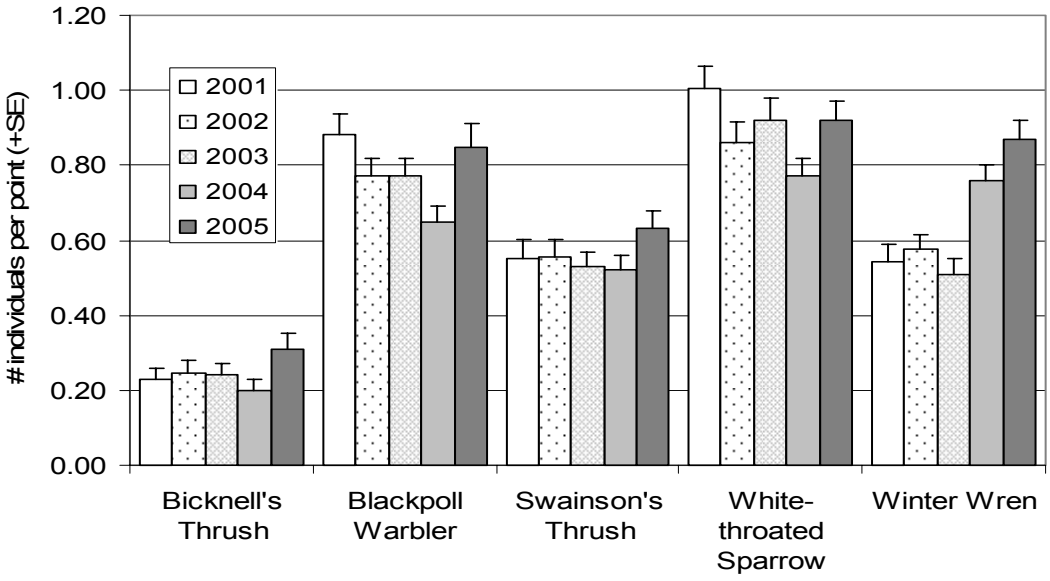
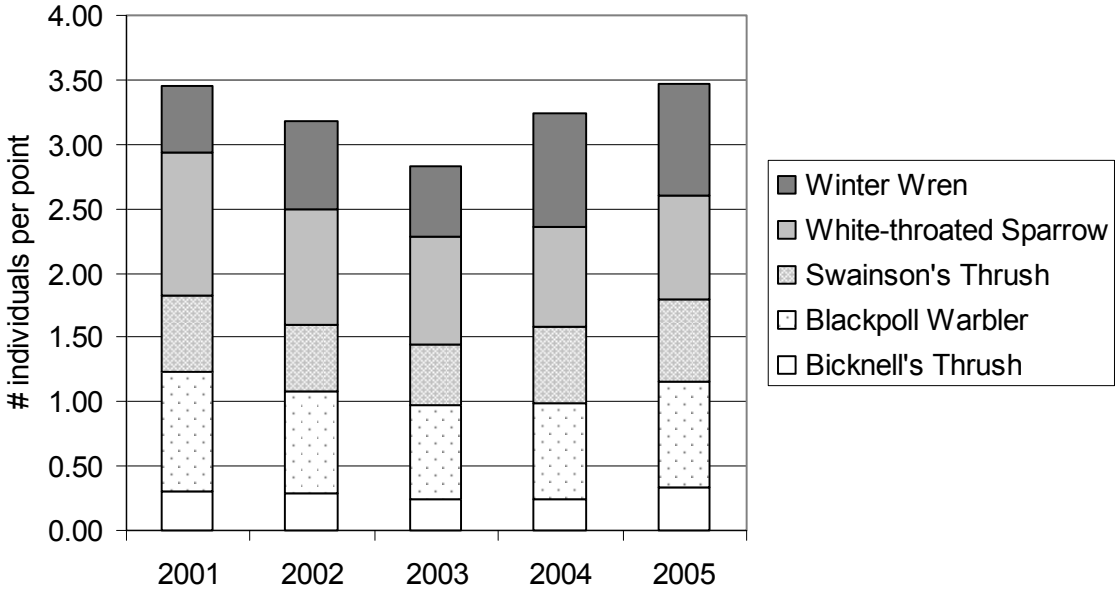


**Figure 4.** Relative abundance of focal species on 35 routes surveyed each year (2001-2005), based on five-minute counts..




During the five years of regional monitoring, frequency of occurrence has fluctuated by as little as 0.07 (Blackpoll Warbler) and as much as 0.25 (Winter Wren) (Table 1).

**Table 1**. Occurrence frequency of focal species, 2001-2005, based on five-minute point counts.

| | Bicknell's Thrush | | Blackpoll Warbler | | Swainson's Thrush | | White-throated Sparrow | | Winter Wren | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | All routes | 35 routes | All routes | 35 routes | All routes | 35 routes | All routes | 35 routes | All routes | 35 routes |
| 2001 | 0.43 | 0.49 | 0.93 | 0.89 | 0.71 | 0.83 | 0.91 | 0.94 | 0.73 | 0.74 |
| 2002 | 0.51 | 0.49 | 0.88 | 0.91 | 0.76 | 0.80 | 0.93 | 0.94 | 0.91 | 0.97 |
| 2003 | 0.50 | 0.40 | 0.91 | 0.89 | 0.76 | 0.74 | 0.89 | 0.86 | 0.80 | 0.89 |
| 2004 | 0.47 | 0.57 | 0.88 | 0.97 | 0.82 | 0.89 | 0.88 | 0.89 | 0.91 | 0.97 |
| 2005 | 0.58 | 0.54 | 0.87 | 0.86 | 0.87 | 0.86 | 0.95 | 0.94 | 0.97 | 0.97 |

The following figures report results of bird surveys conducted by the University of Vermont Spatial Analysis Lab on the Green Mountain National Forest (1992-2000) and by New Hampshire Audubon and US Forest Service personnel on the White Mountain National Forest (1993-2003). In the Green Mountains, Magnolia Warbler and White-throated Sparrow exhibited significant annual declines of 8% and 7%, respectively. In the White Mountains, Bicknell's Thrush declined by 7% per year, while counts of Yellow-bellied Flycatchers dropped by 5% per year. Boreal Chickadee and White-throated Sparrow were the only species to increase, however trend estimates were significant in just one of two separate White Mountain analyses.

**Fig. 5.** Fitted curve (solid) and 95% confidence interval (dotted) for Bicknell's Thrush population trends in the White Mountains. Trend lines depict 7% annual declines on 17 routes surveyed in 9 years (top) and 39 routes surveyed in 7 years (bottom) (from Lambert et al. *In Prep*).

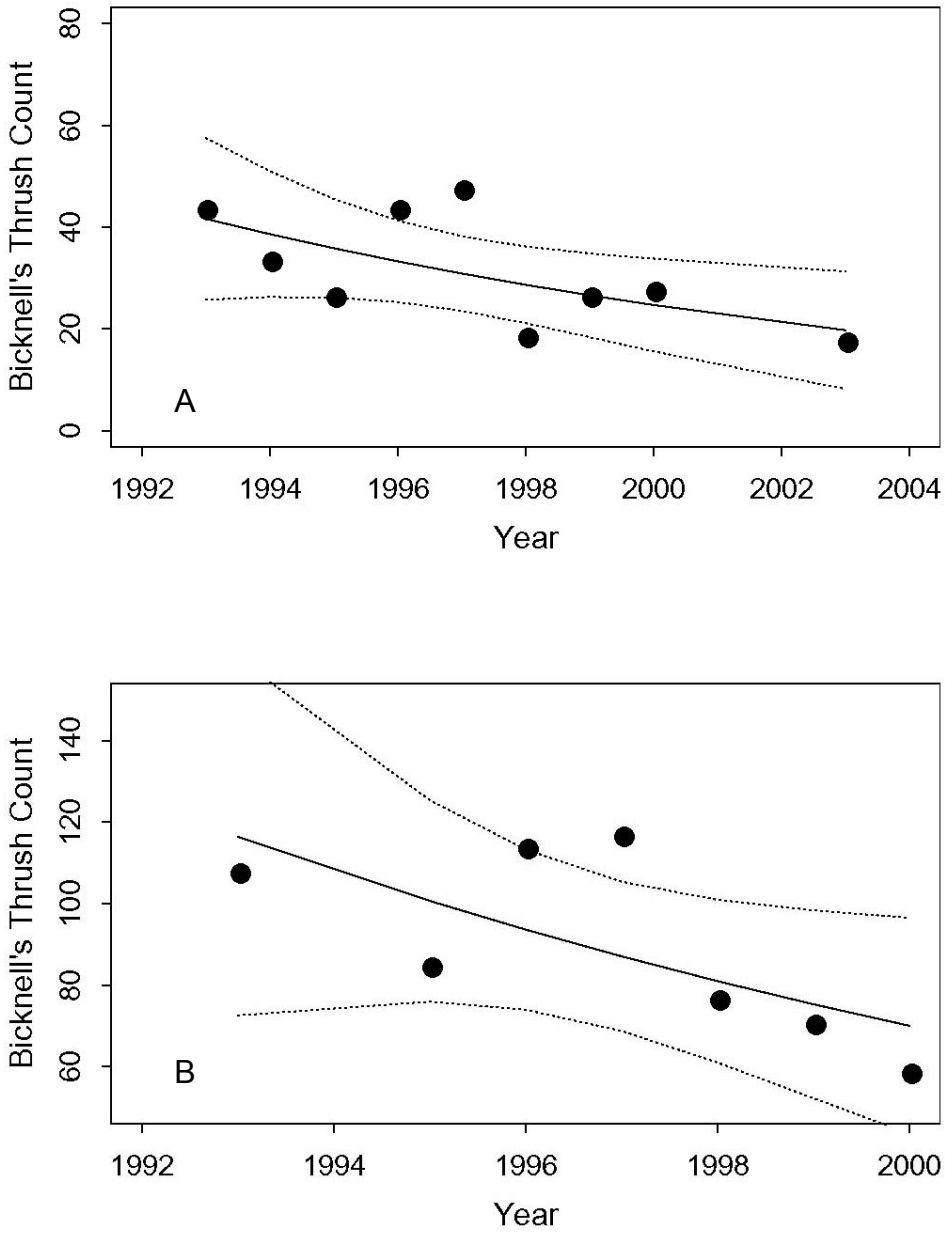


**Fig. 6**. Fitted curves and 95% confidence intervals for bird trends of species exhibiting significant trends for either the analyses of 1993,1995-2000 or all years 1993-2000, 2003 surveyed in montane spruce-fir areas of the White Mountains of New Hampshire (from King et al. *In Prep*).

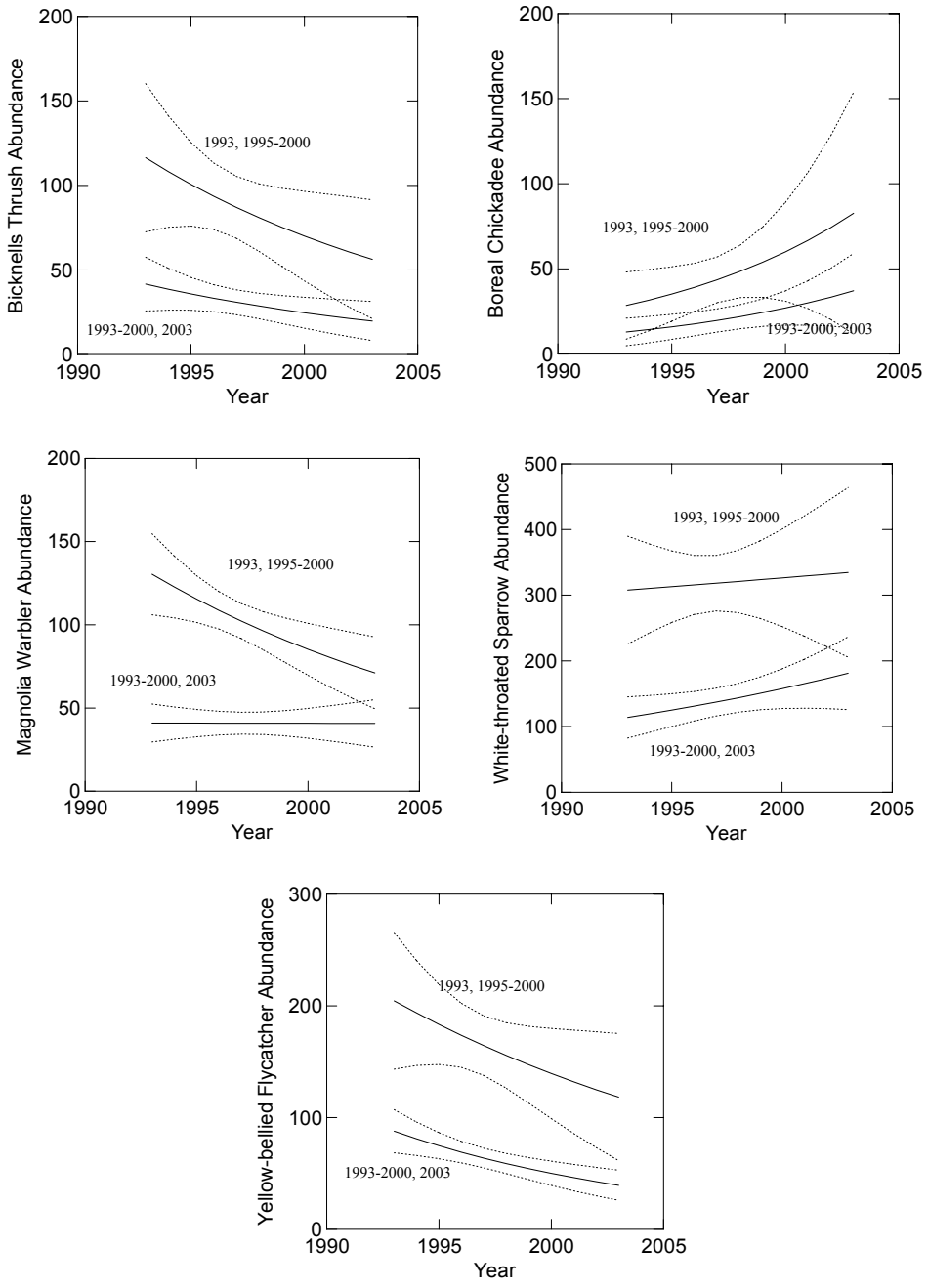
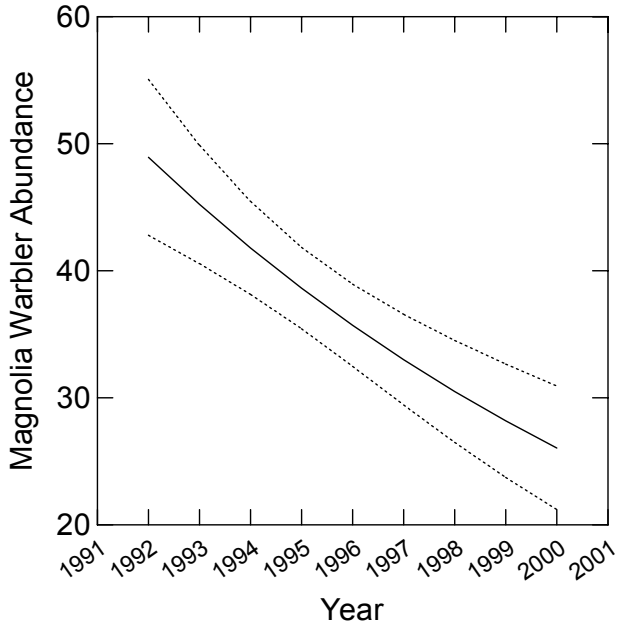
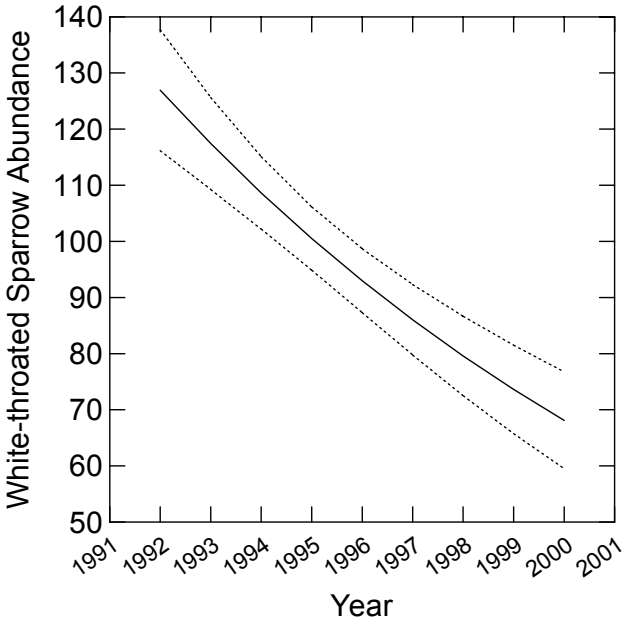


**Fig. 7.** Fitted curves and 95% confidence intervals for bird trends of species exhibiting significant trends for survey years 1992, 1994-2000 in montane spruce-fir areas of the Green Mountains of Vermont (from King et al. *In Prep*).



## DISCUSSION

*Population Change*

Bird population levels change in response to a wide variety of natural and anthropogenic factors (Askins et al. 1990). Often, data gathered over brief periods belie long-term trends (Holmes and Sherry 2001). As a result, it is difficult to interpret short-term results with accuracy. Reaching meaningful conclusions may require many years of continuous effort and a thorough assessment of factors that influence bird populations, such as prey abundance, habitat change, climate, and conditions on the wintering grounds. Nonetheless, short-term changes in abundance warrant some consideration. Most notable in 2005 were increasing or stabilizing counts of three species that had been declining in the previous four years: Bicknell's Thrush, Blackpoll Warbler, and White-throated Sparrow numbers. Swainson's Thrushes and Winter Wrens maintained or exceeded their 2004 levels, following low counts in 2003. Possible causes for recovery include above-average nesting success in 2004 and/or low mortality between breeding seasons.

Measures of Bicknell's Thrush abundance held steady in New Brunswick in 2005, following a 44% drop in 2004. Counts of this species in Nova Scotia exhibited a steady decline, totaling 65%, between 2003 and 2005 (Campbell 2006). Continuing surveys throughout the northeastern U.S. and Atlantic Canada will further illuminate the spatial and temporal characteristics of population change in this rare species.

*Information Sharing*

With support from the Stone House Farm Fund of the Upper Valley Community Foundation, we disseminated information on mountain bird trends to several key audiences over the last year, including scientists, government agencies, conservation groups, and the general public. We reported recent trend results at the annual meeting of the New York State Ornithological Association in Albany, NY (September 2005), the New Hampshire-Vermont Birder's Conference in Fairlee, VT (October 2005), the Northeast Partners In Flight annual meeting in Greenwich, Connecticut (December 2005), and the Northeast Fish and Wildlife Conference in Burlington, VT (April 2006). At these meetings, we reached approximately 300 of the region's most prominent birdwatchers, wildlife biologists, and natural resource administrators.

In addition, we published popular articles highlighting mountain bird ecology in *Field Notes*, the VINS Conservation Biology Department's newsletter (circulation 4,000) and *AT Journeys*, the membership magazine of the Appalachian Trail Conference (circulation 40,000). With support from the Department of the Interior, we published a chapter on mountain birds in "Appalachian Trail Vital Signs", a National Park Service Report. Finally, since April 2005, we have responded to 23 separate requests for trend information, habitat maps, site-specific bird records, management recommendations, and/or information about mountain bird ecology. Requests were made by government agencies (local, state, and federal), conservation organizations, ski areas, and windfarm developers. Delivering useful information to land stewards remains a high priority for Mountain Birdwatch.


## ACKNOWLEDGMENTS

Julie Hart entered and prepared the 2005 Mountain Birdwatch data for analysis, with assistance from Bjorn Peterson and Robert Bees. We gratefully acknowledge the scores of volunteers who participate in Mountain Birdwatch and began entering their own data in 2005. This dedicated group was recruited with assistance from the Adirondack Mountain Club, the Appalachian Mountain Club, the Appalachian Trail Conservancy, New York Audubon, Maine Audubon, the Maine Department of Inland Fisheries and Wildlife, and the Wildlife Conservation Society. We are thankful for permission to conduct surveys on lands owned and/or managed by: the American Ski Corporation, the Carthusian Monastery, Essex Timber Company, LLC, the Green Mountain Club, the Maine Department of Inland Fisheries and Wildlife, the National Park Service, the New York State Department of Environmental Conservation, the U.S. Forest Service, and the Vermont Agency of Natural Resources. Mountain Birdwatch is funded by the U.S. Fish and Wildlife Service through a cooperative agreement administered by Assistant Nongame Bird Coordinator and Mountain Birdwatcher, Randy Dettmers. We also receive generous support from the Stonehouse Farm Fund of the Upper Valley Community Foundation, a division of the New Hampshire Charitable Foundation. Contracts with the National Park Service, the New Hampshire Natural Heritage Bureau, and the White Mountain National Forest helped support Mountain Birdwatch in 2005.

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**APPENDIX 1**. *Off-route observations of Bicknell's Thrush made during the 2005 breeding season. High count is presented where more than one record was received for a given location.*

| State | Mountain | # of BITH |
|---|---|---|
| ME | Bemis Mountain | 3 |
| ME | Goose Eye Mountain | 1 |
| ME | Saddleback Mountain | 1 |
| NH | Flume Peak | 5 |
| NH | Little Haystack Mountain | 1 |
| NH | Middle Carter Mountain | 1 |
| NH | Middle Huntington | 3 |
| NH | Mount Huntington | 2 |
| NH | Mount Jackson | 1 |
| NH | Mount Kancamagus | 1 |
| NH | Mount Liberty | 1 |
| NH | Mount Moriah | 1 |
| NH | Mount Pierce | 1 |
| NH | Sandwich Dome | 1 |
| NH | Scar Ridge | 2 |
| NY | Algonquin Peak | 1 |
| NY | Allen Mountain | 1 |
| NY | Bear Den Mountain | 1 |
| NY | Dix Mountain | 2 |
| VT | Big Jay | 5 |
| VT | Jay Peak | 1 |
| VT | North Jay | 1 |
| VT | Sterling Mountain | 4 |

**APPENDIX 2.** *2005 Mountain Birdwatch results summarized by route.*

| State | Mountain | BITH status | # of BITH | # of BLPW | # of SWTH | # of WIWR | # of WTSP |
|---|---|---|---|---|---|---|---|
| MA | Mount Greylock | 4 | 0 | 2 | 2 | 3 | 6 |
| ME | Baldpate Mountain | 1 | 3 | 9 | 10 | 4 | 7 |
| ME | Big Spencer Mountain | 1 | 2 | 7 | 5 | 8 | 1 |
| ME | Cranberry Peak | 1 | 1 | 4 | 0 | 5 | 5 |
| ME | Little Bigelow Mountain | 2 | 0 | 2 | 0 | 4 | 0 |
| ME | Little Jackson Mountain | 1 | 2 | 0 | 1 | 4 | 10 |
| ME | Mount Carlo | 2 | 0 | 3 | 2 | 3 | 6 |
| ME | Mount Katahdin | 3 | 0 | 7 | 5 | 11 | 5 |
| ME | Old Blue Mountain | 1 | 3 | 6 | 2 | 5 | 5 |
| ME | Old Speck | 1 | 1 | 10 | 5 | 3 | 1 |
| ME | Surplus Mountain | 4 | 0 | 7 | 6 | 5 | 6 |
| ME | White Cap Mountain | 1 | 3 | 1 | 5 | 5 | 3 |
| NH | Cabot Mountain | 1 | 7 | 9 | 1 | 4 | 8 |
| NH | Cannon Mountain | 2 | 0 | 6 | 2 | 6 | 4 |
| NH | Carrigain Mountain | 1 | 4 | 4 | 3 | 6 | 6 |
| NH | Crescent Ridge | 5 | 0 | 2 | 1 | 4 | 6 |
| NH | Dixville Peak | 1 | 5 | 8 | 7 | 7 | 7 |
| NH | Mount Cardigan | 1 | 1 | 10 | 3 | 4 | 9 |
| NH | Mount Chocorua | 1 | 2 | 1 | 2 | 2 | 7 |
| NH | Mount Clay | 1 | 4 | 9 | 3 | 3 | 3 |
| NH | Mount Crawford | 1 | 1 | 10 | 8 | 5 | 11 |
| NH | Mount Cube | 3 | 0 | 6 | 1 | 3 | 10 |
| NH | Mount Hale | 1 | 3 | 4 | 3 | 4 | 9 |
| NH | Mount Kinsman | 1 | 2 | 6 | 2 | 6 | 6 |
| NH | Mount Lafayette | 1 | 1 | 0 | 0 | 4 | 7 |
| NH | Mount Madison | 2 | 0 | 5 | 0 | 5 | 4 |
| NH | Mount Moosilauke (South Peak) | 1 | 1 | 2 | 7 | 5 | 7 |
| NH | Mount Nancy | 2 | 0 | 7 | 4 | 5 | 7 |
| NH | Mount Starr King | 1 | 4 | 4 | 6 | 5 | 10 |
| NH | Mount Tecumseh | 1 | 2 | 5 | 5 | 4 | 5 |
| NH | Mount Washington | 1 | 1 | 9 | 3 | 8 | 1 |
| NH | Mount Wolf | 1 | 7 | 10 | 7 | 3 | 2 |
| NH | Sugarloaf | 1 | 1 | 0 | 9 | 0 | 1 |
| NH | West Royce Mountain | 1 | 3 | 3 | 3 | 3 | 3 |
| NH | Wildcat Mountain | 1 | 2 | 3 | 3 | 3 | 4 |
| NY | Ampersand Mountain | 2 | 0 | 3 | 4 | 5 | 6 |
| NY | Balsam Lake Mountain | 5 | 0 | 4 | 0 | 2 | 4 |
| NY | Big Crow Mountain | 2 | 0 | 0 | 2 | 1 | 3 |
| NY | Big Slide Mountain | 2 | 0 | 5 | 6 | 5 | 7 |
| NY | Blue Mountain | 1 | 9 | 8 | 3 | 8 | 8 |
| NY | Cornell Mountain | 1 | 3 | 8 | 0 | 8 | 8 |
| NY | Debar Mountain | 5 | 0 | 3 | 1 | 4 | 4 |
| NY | Giant Mountain (5 min) | 1 | 1 | 0 | 3 | 0 | 3 |
| NY | Gore Mountain | 1 | 2 | 2 | 1 | 4 | 6 |
| NY | Gothics | 1 | 3 | 6 | 5 | 8 | 5 |
| NY | Hopkins Mountain (5 min?) | 4 | 0 | 2 | 3 | 1 | 6 |
| NY | Kempshall Mountain | 4 | 0 | 3 | 3 | 5 | 4 |
| NY | Little Whiteface Mountain | 2 | 0 | 5 | 4 | 5 | 9 |

| State | Mountain | BITH status | # of BITH | # of BLPW | # of SWTH | # of WIWR | # of WTSP |
|---|---|---|---|---|---|---|---|
| NY | Lyon Mountain | 1 | 2 | 5 | 4 | 6 | 7 |
| NY | Morgan Mountain | 4 | 0 | 2 | 8 | 2 | 7 |
| NY | Mount Adams | 1 | 3 | 4 | 4 | 6 | 2 |
| NY | Mount Coldent | 2 | 0 | 7 | 5 | 8 | 6 |
| NY | Mount Esther | 1 | 2 | 5 | 3 | 6 | 7 |
| NY | Mount McKenzie | 1 | 1 | 7 | 7 | 8 | 10 |
| NY | Noonmark Mountain | 1 | 1 | 0 | 4 | 4 | 3 |
| NY | Pillsbury Mountain | 1 | 5 | 7 | 8 | 7 | 8 |
| NY | Pitchoff Mountain | 4 | 0 | 3 | 12 | 6 | 6 |
| NY | Plateau Mountain | 1 | 10 | 5 | 6 | 8 | 2 |
| NY | Porter Mountain | 1 | 11 | 10 | 9 | 3 | 21 |
| NY | Saint Regis Mountain | 3 | 0 | 0 | 1 | 1 | 4 |
| NY | Santanoni Peak | 1 | 1 | 8 | 7 | 9 | 8 |
| NY | Slide Mountain | 1 | 3 | 5 | 4 | 5 | 2 |
| NY | Snowy Mountain | 1 | 2 | 2 | 5 | 7 | 3 |
| NY | Sugarloaf Mountain | 1 | 2 | 0 | 4 | 6 | 3 |
| NY | Sunrise Mountain | 2 | 0 | 0 | 8 | 6 | 4 |
| NY | Twin Mountain | 1 | 4 | 7 | 1 | 7 | 0 |
| NY | Vanderwhacker Mountain | 5 | 0 | 0 | 5 | 9 | 1 |
| NY | Wakely Mountain (5 min?) | 1 | 2 | 2 | 3 | 5 | 4 |
| NY | Weston Mountain | 4 | 0 | 2 | 5 | 6 | 7 |
| NY | Whiteface Mountain | 1 | 2 | 4 | 3 | 10 | 13 |
| VT | Bald Mountain (Westmore) | 1 | 3 | 6 | 3 | 6 | 6 |
| VT | Belvidere Mountain | 1 | 1 | 1 | 2 | 2 | 7 |
| VT | Bloodroot Mountain | 5 | 0 | 11 | 10 | 3 | 5 |
| VT | Bromley Mountain | 3 | 0 | 4 | 3 | 4 | 7 |
| VT | Burke Mountain | 1 | 1 | 7 | 0 | 6 | 9 |
| VT | Camels Hump | 1 | 6 | 11 | 2 | 10 | 6 |
| VT | Cape Lookoff Mountain | 1 | 1 | 6 | 1 | 5 | 2 |
| VT | East Mountain | 1 | 2 | 5 | 4 | 9 | 5 |
| VT | Gillespie Peak | 3 | 0 | 6 | 3 | 4 | 7 |
| VT | Gilpin Mountain | 1 | 1 | 3 | 1 | 4 | 0 |
| VT | Killington Peak | 1 | 5 | 1 | 0 | 5 | 4 |
| VT | Laraway Mountain | 5 | 0 | 4 | 5 | 3 | 5 |
| VT | Ludlow Mountain | 5 | 0 | 3 | 3 | 5 | 6 |
| VT | Madonna Peak | 1 | 6 | 11 | 11 | 12 | 6 |
| VT | Molly Stark Mountain | 1 | 1 | 5 | 10 | 5 | 8 |
| VT | Monadnock Mountain | 4 | 0 | 5 | 2 | 7 | 3 |
| VT | Morse Mountain | 1 | 2 | 9 | 1 | 11 | 9 |
| VT | Mount Ascutney | 4 | 0 | 0 | 0 | 10 | 6 |
| VT | Mount Ellen | 1 | 1 | 0 | 5 | 7 | 8 |
| VT | Mount Equinox | 1 | 1 | 4 | 3 | 6 | 3 |
| VT | Mount Glastenbury | 1 | 2 | 8 | 13 | 2 | 4 |
| VT | Mount Grant | 1 | 3 | 12 | 7 | 10 | 8 |
| VT | Mount Haystack (South) | 4 | 0 | 7 | 8 | 6 | 2 |
| VT | Mount Hunger | 1 | 1 | 5 | 2 | 6 | 14 |
| VT | Mount Ira Allen | 2 | 0 | 7 | 0 | 7 | 11 |
| VT | Mount Mansfield | 1 | 8 | 8 | 2 | 7 | 9 |
| VT | Mount Mansfield (Bear Head) | 1 | 10 | 7 | 4 | 5 | 9 |
| VT | Mount Mansfield (The Forehead) | 1 | 7 | 5 | 4 | 10 | 7 |

| State | Mountain | BITH status | # of BITH | # of BLPW | # of SWTH | # of WIWR | # of WTSP |
|---|---|---|---|---|---|---|---|
| VT | Mount Mayo | 1 | 1 | 1 | 0 | 1 | 3 |
| VT | Mount Snow | 1 | 3 | 11 | 15 | 5 | 10 |
| VT | North Glastenbury Mountain | 1 | 3 | 4 | 9 | 3 | 3 |
| VT | Peru Peak | 1 | 3 | 8 | 7 | 4 | 8 |
| VT | Ricker Peak | 1 | 2 | 10 | 5 | 4 | 8 |
| VT | Shrewsbury Peak | 1 | 2 | 7 | 3 | 4 | 10 |
| VT | Spruce Mountain | 2 | 0 | 0 | 1 | 2 | 3 |
| VT | Stark Mountain | 4 | 0 | 9 | 3 | 4 | 6 |
| VT | Stratton Mountain | 1 | 1 | 5 | 4 | 3 | 6 |
| VT | Styles Peak | 2 | 0 | 2 | 4 | 5 | 4 |
| VT | Tillotson Peak | 1 | 2 | 3 | 3 | 1 | 3 |

* Key to BITH status
1 = present, detected by point count
2 = present, detected by chance, playbacks, or on follow-up survey
3 = not detected during point counts, no playbacks or follow-up
4 = not detected during point counts or playbacks, no follow-up
5 = presumed absent, not detected by point count, playback, or follow-up

**APPENDIX 3.** Information requests fielded by Mountain Birdwatch in 2005 and 2006.

| Informatin Requested By | Purpose of Request |
|---|---|
| Androscoggin River Watershed Council | Assess conservation value of Mahoosuc Mountains (ME) |
| Appalachian Mountain Club | Develop standards for evaluating windfarm impacts |
| Appalachian Trail Conservancy | Evaluate windfarm development proposal |
| Bolton, Vermont Development Review Board | Evaluate ski area development proposal |
| Green Mountain Club / University of Vermont | Evaluate impacts of unauthorized glade creation at Jay Peak (VT) |
| High Peaks Audubon Society | Evaluate windfarm development proposal at Gore Mountain (NY) |
| Independent forester | Evaluate timber sale on Lyon Mountain (NY) |
| Maine Appalachian Trail Land Trust | Develop land conservation strategy |
| Multiple Resource Management | Guide ski area development on Mount Snow (VT) |
| National Park Service | Appalachian Trail Vital Signs report |
| New Hampshire Fish and Game Department | Develop critical habitat map for state wildlife action plan |
| New Hampshire Natural Heritage Bureau | Build natural heritage database |
| New York State Dept. of Environmental Conservation | Evaluate trail relocation in Catskill Forest Preserve |
| Residents Committee to Protect the Adirondacks | Evaluate windfarm development proposal at Gore Mountain (NY) |
| University students (2) | Produce GIS habitat models for coursework |
| UPC Wind Management | Assess status of Bicknell's Thrush on Hardscrabble Mountain (VT) |
| US Department of Defense | Assess status of Bicknell's Thrush on training properties (VT& ME) |
| Vermont Fish and Wildlife Department | Evaluate ski area and windfarm development proposals |
| Vermont Forests, Parks and Recreation Department | Review management plan for Coolidge State Forest |