

BICKNELL'S THRUSH: A NORTHEASTERN SONGBIRD IN TROUBLE?

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Few birders experience the spiraling song and plaintive calling of the "Bicknell's" Gray-cheeked Thrush (*Catharus minimus bicknelli*), the Northeast's only endemic songbird. Fewer still may encounter this seclusive denizen of New England's mountaintop spruce-fir forests in the future. Absent from its only former Massachusetts haunt, Mount Greylock, since 1972 and from several areas of historic abundance in the Canadian Maritimes, the Bicknell's Thrush may be declining throughout its restricted breeding range. Yet so little is known of its current distribution and population levels that its conservation status cannot be accurately assessed.

Even the taxonomy of Bicknell's Thrush is in doubt. First recognized in 1881, when E. P. Bicknell discovered a small population on Slide Mountain in the Catskills of New York, Bicknell's Thrush is now classified as a subspecies of the Gray-cheeked Thrush, whose nominate form (*C. m. minimus*) is more northern and widely distributed. However, recent studies by Canadian taxonomists indicate that Bicknell's Thrush may be a distinct species (Ouellet 1991; Seutin 1991). Several lines of evidence suggest this.

Morphologically, the two forms show marked differences in plumage characters and size, as first reported by Wallace (1939) in his classic study of Bicknell's Thrush. Bicknell's Thrush is considerably smaller than the Gray-cheeked Thrush, with almost no overlap (although the largest male *bicknelli* may approach the smallest female *minimus* in size). The mean wing length of *bicknelli* measures a full 10 mm shorter than that of *minimus*. Typically, Bicknell's Thrushes' upperparts are a richer brown color than Graycheeks, which are more distinctly olive-gray. However, Wallace (1939) also reported that each subspecies is characterized by both a grayish and a brownish color phase, leading to considerable overlap. While the tail of *bicknelli* is almost invariably a dull chestnut color and contrasts with the browner back, the tail of *minimus* is olive-brown to olivaceous and shows little contrast to the back. Additionally, the pale area at the base of the mandible is distinctly yellowish in *bicknelli*, dull fleshy-pink in *minimus*. Although these two subspecies may be separable in the hand, accurate field identification is dubious at best.

Additional differentiation is provided by the songs of both forms. The nasal, gyrating song of Bicknell's Thrush tends to be higher in frequency than that of the Graycheek and ends on an even or ascending pitch, while the Graycheek's song descends. Playback experiments by Ouellet (1991) have confirmed that *bicknelli* completely ignore *minimus* songs, although the reverse experiments have not yet been attempted. Finally, biochemical analyses (protein

electrophoresis, mitochondrial DNA) have revealed significant differences between the two taxa, further suggesting that they may be distinct species (Ouellet 1991; Seutin 1991).

Regardless of their taxonomic differences, Bicknell's and Gray-cheeked thrushes occupy clearly demarcated breeding ranges. Historically, Bicknell's Thrushes bred from the north shore of the Gulf of St. Lawrence, the Gaspé Peninsula, and Seal Island (off southwestern Nova Scotia), south through the Adirondacks, the mountains of Vermont, New Hampshire, and Maine, to southern limits on Mount Greylock and in the Catskills. The breeding distribution of Gray-cheeked Thrushes extends from Newfoundland, Labrador, and northern Quebec across the Canadian and Alaskan taiga to eastern Siberia. No zone of intergradation has been found.

In New England and New York, Bicknell's Thrush inhabits montane forests, primarily those areas dominated by balsam fir and red spruce at elevations greater than 3000 feet. This restricted habitat faces a number of threats, including the damaging effects of acid precipitation and airborne pollution (Vogelmann 1982; Schreiber and Newman 1988), habitat loss from ski area development and transmission tower construction, and overuse by hikers. Severe diebacks of red spruce stands, thought to have resulted largely from acid precipitation damage, have been documented in the high peaks of the Green, White, and Adirondack mountains since the mid-1960s (Vogelmann 1982). Possible global climate changes may also profoundly impact the long-term health and viability of subalpine spruce-fir forests.

To date, no link between changes in breeding habitat quality and thrush populations has been established because detailed survey data are lacking. However, Bicknell's Thrush population declines have been reported by observers in New York, Vermont, Nova Scotia, and Quebec. After occupying the Mount Greylock summit since at least 1888, with six to eleven pairs estimated to have bred there annually between 1934 and 1960, Bicknell's Thrush numbers fell off gradually between 1961 and 1972, and no individual was reported after 1972 (Veit and Petersen in press). Seal Island's once dense breeding population disappeared in the mid-1950s, and the birds appear to be gone from the north shore of the Gulf of St. Lawrence, including the Magdalen Islands (J. Marshall, pers. comm. 1992).

The conservation status of Bicknell's Thrush is clouded by uncertainty about its wintering distribution and ecology. The only confirmed winter specimens have been collected in Haiti and the Dominican Republic (Wallace 1939; J. Marshall, unpublished data), with additional mist-netted birds and documented sightings in the Dominican Republic and Puerto Rico (Petersen 1990; J. Marshall, unpublished data). Winter sightings of Graycheeks from other Caribbean islands (Jamaica, Mona Island) may represent *bicknelli* (Arendt 1992). Wintering *minimus*, on the other hand, are known only from the

mainlands of South and Central America, extending from northern Peru and northwestern Brazil through Colombia, Venezuela, Trinidad, and Guyana as far north as Costa Rica.

Preliminary data suggest that the winter habitat of Bicknell's Thrush may be restricted to primary tropical forest (Arendt 1992; J. Marshall, unpublished data). These forests have been heavily clear-cut, burned, and converted to other uses throughout the Caribbean as a result of burgeoning human population pressures. While we will never know the full historic winter range and habitat associations of Bicknell's Thrush, changes seem certain to have occurred.

Thus, at both ends of its migratory spectrum, Bicknell's Thrush may be facing significant habitat degradation. The ingredients for a population freefall appear to be present: a small, geographically restricted breeding population that is fragmented throughout most of its range on habitat "islands"; documented deterioration of the breeding habitat itself; presumed concentration during winter on a small and rapidly shrinking range; and virtually no background data on which to assess the magnitude of any population changes or make informed conservation decisions. Given the relative infrequency with which birders visit its breeding and wintering habitats, let alone carefully monitor its numbers, the Bicknell's Thrush could slip to dangerously low levels before any alarms are sounded. The precedents for such a scenario are disturbingly common throughout recent human history.

Recognizing a need for baseline scientific information, the Vermont Institute of Natural Science (VINS) and the Manomet Bird Observatory (MBO) launched an investigation of the population status of Bicknell's Thrush in 1992. Still in its early stages, this project has two preliminary objectives: 1) to determine the current distribution of Bicknell's Thrush in New England and New York, and to compare this with historic information; and 2) to determine efficient censusing techniques and to generate density estimates for use in eventual estimation of population size and trends. Our overall goal is to assess the conservation status of the subspecies and ascertain whether formal protection under federal or state endangered species laws may be warranted.

Fieldwork in Bicknell's Thrush breeding habitat presents imposing logistic challenges. Most of the occupied peaks are geographically isolated and can be reached only on foot, often without the benefit of trails. High elevation spruce-fir forests typically consist of nearly impenetrable thickets on steep, rugged slopes. Wallace (1939) remarked that "only a freak ornithologist would think of leaving the trails [on Mount Mansfield] for more than a few feet [due to] the discouragingly dense tangles" of vegetation. The additional factors of unpredictably severe mountaintop weather, an abbreviated summer breeding season, and the reputation of Bicknell's Thrush for confining its vocal activity to dawn and dusk, have contributed to the long-standing paucity of knowledge on this bird. Clarifying the status of Bicknell's Thrush promises to be no simple

task.

To document current distribution, we coordinated a network of volunteer observers to cover the high peaks of New York, Vermont, New Hampshire, and Massachusetts (Maine, with its roadless expanses and extremely limited record of historic Bicknell's Thrush distribution, was beyond our scope for 1992). We identified 572 peaks at elevations greater than 915 meters (3000 feet) in those four states, and more than 200 additional peaks between 762 and 915 meters (2500 to 3000 feet). We especially targeted known historic sites, of which, from various published and unpublished sources, we have so far identified eighty-nine in the four states. Aided by volunteer coordinators in New York and New Hampshire, we assembled an impressive corps of 112 observers. Each was equipped with a set of standardized survey instructions, a tape recording of Bicknell's Thrush songs and calls, a USGS topographic map of his or her assigned site(s), and a data form. Observers were requested to visit each assigned site at least once between early June and mid-July, preferably at dawn or dusk, and to record the presence or absence of Bicknell's Thrushes. Follow-up visits were encouraged to sites where initial surveys failed to confirm the bird's presence. VINS and MBO staff covered many priority peaks for which no volunteers were available.

Survey results indicated Bicknell's Thrushes to be surprisingly widespread. Overall, Bicknell's Thrushes were confirmed present on 145 of 229 (63 percent) surveyed peaks. Of the 191 peaks greater than 915 meters in elevation, thrushes were located on 141 (74 percent). Of the additional 37 surveyed mountaintops between 723 and 907 meters in height, Bicknell's Thrushes were found on four, the lowest at an elevation of 838 meters (2749 feet) in the Green Mountains. Birds were located on 27 of 39 New York peaks, 69 of 122 peaks in Vermont, 49 of 66 in New Hampshire, and neither of two peaks in Massachusetts. Although most observers did not attempt complete censuses, estimated populations ranged from only one or two pairs on 70 peaks to as many as 250 pairs on Mount Mansfield in Vermont. Of the 58 surveyed peaks with known historical records of Bicknell's Thrush, birds were located on 47 (81 percent). Due to the late date of some surveys and the marked decrease in responsiveness of territorial birds to broadcasts of taped calls, Bicknell's Thrushes on some peaks were undoubtedly missed.

The second phase of our 1992 fieldwork investigated census techniques and vocal behavior of Bicknell's Thrushes on Mount Mansfield in Stowe, Vermont, the site of Wallace's classic (1939) life history study. On a study plot located at approximately 1150 meters (3775 feet), we compared intensive mapping of thrush territories with fixed-width line transects and fixed-radius point counts, both with and without tape playbacks, at different times of day. Bicknell's Thrushes appeared to occur at relatively high density on the study plot. Mapping of territorial males yielded density estimates of about forty to fifty-five pairs per

forty hectares (or 100 acres). Both line transects and point counts underestimated density as compared with the maximum value from territorial mapping. However, given the difficulties of conducting fieldwork in high elevation habitats, we believe that none of these methods will suffice for actual population censuses throughout the breeding range of Bicknell's Thrush. More likely, future population estimates will have to be based on calculations, using infrared satellite photography, of the area of suitable habitat, applying average density estimates obtained from representative breeding sites.

Our studies of vocal activity showed that, while Bicknell's Thrushes called and sang frequently throughout the day during early and mid-June, vocalizations became more sporadic by late June, continuing through July. In particular, late-season calls and songs were increasingly restricted to dawn and dusk periods. A surprising resurgence of calling was recorded in mid-September. These results strongly suggest that presence-absence surveys for Bicknell's Thrush should be conducted during the first three weeks of June, and that later surveys should only be attempted at dawn or dusk, especially when accompanied by playback recordings of calls and songs to elicit vocal response.

Plans for 1993 involve tackling Bicknell's Thrush distribution in Maine, surveying additional historic sites in New England and New York that were not covered during 1992, resurveying selected peaks where birds were not located in 1992, and refining estimates of thrush density on Mount Mansfield. We plan to uniquely color-band breeders on the Mansfield study plot in 1993 and to begin collecting data that should provide a foundation for long-term population and ecological studies at the site. While our preliminary survey results suggest that the distribution of Bicknell's Thrush in New England and New York has not undergone significant recent change, questions remain about the population size and stability of Bicknell's Thrush. Mount Greylock birds are gone, and populations in the Canadian Maritimes appear to have plummeted. Whether these are local extinctions of little overall consequence or symptoms of habitat degradation at either or both ends of its range, Bicknell's Thrush bears close monitoring in the years to come. Little is known, yet much may be at stake.

As in 1992, we encourage participation by volunteer birders in 1993 distributional surveys of Bicknell's Thrush. Anyone who enjoys rigorous hiking and is intrigued by the possibility of encountering this mountaintop dweller is welcome. Additionally, we are anxious to add to our list of peaks historically occupied by Bicknell's Thrush. We would like to receive reports from anyone with breeding season records of Gray-cheeked (Bicknell's) Thrush prior to 1990 from New York, New England, or the Canadian Maritime provinces. We especially need records from Maine and the Adirondack Mountains. For each record, please report the site (peak) name, town or topographic quadrangle, date of encounter, elevation, number of birds encountered, and any other pertinent information. Please relay all information or expressions of interest in

volunteering for 1993 field surveys to Chris Rimmer at VINS, Woodstock, VT 05091, or call 802-457-2779.

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