

Articles

Bicknell's Thrush in Ontario

by
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Introduction

The Gray-cheeked Thrush (*Catharus minimus*), a typical bird of the northern boreal forest, occurs during the breeding season from Newfoundland to Alaska but small populations have been recorded also in the northern New England states and in northeastern Siberia (A.O.U. 1983, Bent 1949, Stepanyan 1990, Godfrey 1986). Geographic variation was noticed and described by a few authors (Bicknell 1882, Ridgway 1882) mainly during the last century which led to the recognition of three subspecies (Wallace 1939, A.O.U. 1957). Of these, Bicknell's Thrush (*Catharus minimus bicknelli*) was described by Robert Ridgway (1882) from specimens taken in the mountains of New England. He reported that the specimens he studied had a smaller size and that their plumage was more brownish on the back when compared with specimens taken farther north, in Canada and in Alaska (Ridgway 1882, 1907). Several years later, in an important work that was to become a classic biosystematic study, George Wallace (1939) published the results of his studies of the distribution, life history, and taxonomy of the New England states population with comparisons based primarily on morphological aspects with breeding birds taken in other parts of the range. He established that birds from

Newfoundland belong to a different population from those of the mainland and that they should be recognized as a distinct subspecies and that mainland birds in the rest of the range belonged to another population.

Bicknell's Thrush has been recognized since by most authors as a subspecies of the Gray-cheeked Thrush. In addition to the marked morphological differences found in specimens from New England, Nova Scotia, and the Gaspé Peninsula (Quebec), the song of these birds was believed to be unlike that of other populations (Gillet 1935). Wallace (1939) confirmed the song differences but these were ignored by Stein (1956) and everybody else.

The winter distribution of Bicknell's Thrush remained relatively unknown and much confusion persisted about the wintering ranges of the three subspecies until Wallace (1939) reidentified the type and ascertained its origin. Following several periods of field observation, the examination of specimens in museum collections, and the comparison of song recordings from various parts of the range of the Gray-cheeked Thrush, in eastern Canada and the United States, I became aware of strong differences when birds of southern Quebec (*C. m. bicknelli*) were compared to birds

from Newfoundland, Labrador, and northern Quebec (*C. m. aliciae* and *minimus*). These peculiarities convinced me to undertake a detailed study of the southeastern population. I have examined breeding specimens of known sex in fresh or relatively fresh plumage from Labrador, Massachusetts, New Brunswick, Newfoundland, New Hampshire, New York, Nova Scotia, Québec, Saint-Pierre and Miquelon, and Vermont. I have studied also migratory and wintering specimens from Ontario, Quebec, the Maritime Provinces, Manitoba, Saskatchewan, Illinois, Iowa, Maryland, Massachusetts, Minnesota, Montana, Nebraska, New Jersey, New York, North Dakota, South Carolina, Virginia, Wisconsin, Belize, Bermuda, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Guyana, Honduras, Panama, Swan Islands (U.S.A.), and Venezuela to determine the migration patterns and winter range of the southeastern populations.

Results

Several color classes were determined using the dominant coloration of the specimens. Each specimen was then assigned to one of the color classes. I found that specimens of *bicknelli* usually have the dorsal regions "olive brown", and that "olive" is dominant in the *minimus* group, whereas "olive gray" does not occur in breeding *bicknelli*. Strong differences were found in the coloration of the tail of *bicknelli* where it is consistently "chestnut", in contrast with the "olive" or "olive brown" tail of *minimus* and *aliciae* specimens. My data also indicate that males of *bicknelli* have more buffy

throats than those of the other two groups and that the white of the under parts is duller in *bicknelli* than in the other samples, having a grayish tint or wash.

The color of the soft parts in *bicknelli* is different from that of the other two subspecies in being "bright pale yellow" at the base of the mandible, varying from "blackish brown" to "black" on the maxilla, and ranging from "light purplish flesh" to "purplish flesh" on the legs. The soles of the feet are pale and vary from "flesh" to "dull pale yellow" in *bicknelli* whereas they are brighter "yellow" in the other populations.

Series of measurements analyzed statistically show that *bicknelli* has the smallest measurements, and that specimens from northern Quebec, including northern Labrador, have the largest body dimensions, with the Newfoundland population being intermediate in size for most dimensions. Wing length is shortest in *bicknelli* (male: mean = 92.9mm; female: mean = 87.7mm) as well as tail length (male: mean = 68.7mm; female: mean = 65.6mm), tarsus length (male: mean = 29.2mm; female: mean = 28.9mm) and exposed culmen length (male: mean = 12.7mm; female: mean = 12.6mm).

Field recordings of songs by myself or provided by a colleague (J.T. Marshall) or obtained from the Cornell University Library of Natural Sounds were used in the analyses, comparisons of songs from different populations, and field experiments. The frequency of the *bicknelli* songs is consistently higher and does not fall towards the end of the song as in

minimus but remains constant or increases. This difference can be detected in the field by a careful listener and provides an accurate means of separating this population from the others. The high frequencies of the call notes are higher in *bicknelli* than in *minimus* but the low frequency is not different. Similarly, I found no difference in the duration of the call notes.

In a series of playback experiments, songs previously recorded in central and southern Quebec, including the Eastern Townships and the Gaspé Peninsula, were played back in various habitats and in areas where Gray-cheeked Thrushes had been recorded or which seemed suitable for this species. My results show that no reaction was obtained from the playbacks of *aliciae* or *minimus* songs in the range of *bicknelli*. However, songs of *bicknelli* drew reactions in over 45 per cent of the playbacks.

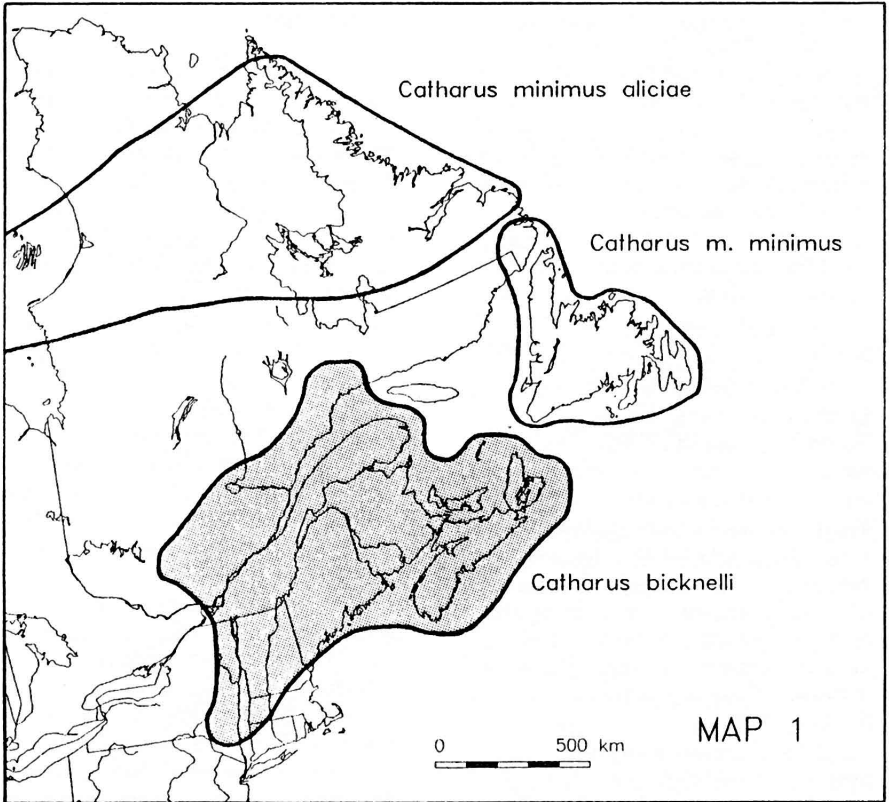
A biochemical analysis of mitochondrial DNA (mtDNA) revealed a strong differentiation between *Catharus minimus* and *C. m. bicknelli* and an important divergence between the two taxa. These results indicate that this divergence took place approximately 1 million years ago.

The Gray-cheeked Thrush occurs in the Boreal Forest Region (Rowe 1972) and is found primarily in mature coniferous stands and more rarely in tall shrubby growths in the taiga or above tree line (A.O.U. 1983; Godfrey 1986) in Labrador and northern Quebec. On the other hand, southern populations from southern Quebec, the Maritime Provinces, and the New England States have been

reported in scrubby coniferous stands, mostly spruce, up to tree line (Palmer 1949; Wallace 1939), and more rarely in deciduous habitats. My observations in the Gaspé Peninsula and elsewhere in southern Quebec show that the birds of the southern population are not restricted to thick stands of stunted conifers on steep mountain slopes or near tree-line but that they were more numerous in second growth stands characterized by relatively young conifers of small size, such as Balsam Fir and White Spruce mixed with early second growth deciduous species. It appears that it is now more numerous in this habitat than in the habitat that had been considered until now to be the typical habitat of the taxon.

The known distribution of Bicknell's Thrush (Map 1) has been established on specimens in collections, on published data recorded south of the St. Lawrence River, and on fully documented observations obtained during several breeding seasons. The breeding range of Bicknell's Thrush may have been broader in the past, particularly along the north shore of the Gulf of St. Lawrence, but there is little evidence to substantiate this hypothesis. It can be found in the highlands of New Brunswick (Squires 1976, *vide* A.J. Erskine), in Vermont (Laughlin and Kibbe 1985, Spear 1976, Perkins and Howe 1901), and in New York State (Bull 1974, Merriam 1884) and in northwestern Maine, northern New Hampshire, Massachusetts, and northern Vermont.

The migration pattern of Bicknell's Thrush is not well known but specimens in various collections



Map 1: Breeding distribution of Bicknell's Thrush in Eastern North America.

establish its presence in migration in Connecticut, New Jersey, New York, South Carolina, Virginia, New Brunswick, Nova Scotia, Quebec, Ontario, Bermuda, and the Bahama Islands. Bicknell's Thrush probably occurs more frequently in migration along the Atlantic coast from Quebec to Florida than what is revealed by the reports. In spite of the difficulty of identifying it in the field and the unpredictability of occurrence in the interior, it probably occurs in the interior of the continent as well but in smaller numbers. For this reason,

it is to be expected in Ontario, particularly during the fall migration, from mid-August to late September. A "rare migrant in the south" of Ontario (James 1991:62), I have identified only one fall *bicknelli* specimen originating in the province.

In winter, the range of Bicknell's Thrush appears to be restricted to islands in the Caribbean region but more information is needed to map its winter distribution and estimate its population on the islands. All the collections that I have studied

revealed no specimen of Bicknell's Thrush taken anywhere in Central or South America.

The partial results presented here and in a forthcoming more elaborate report (Ouellet 1993) show clearly that the *bicknelli* population of the Gray-cheeked Thrush (*Catharus minimus*) is different from it and that it satisfies all the requirements necessary to consider it as a full species. I have therefore proposed that it be considered as a full species: Bicknell's Thrush (*Catharus bicknelli*). Careful observations of migrating thrushes, particularly in the fall, and some luck, may reveal that this bird is a regular migrant in parts of Ontario, probably in the St. Lawrence River region.

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