

# **MOUNTAIN BIRDWATCH: DEVELOPING A COORDINATED MONITORING PROGRAM FOR HIGH-ELEVATION BIRDS IN THE ATLANTIC NORTHERN FOREST**

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Birds occupying high-elevation forests in the northeast are perceived to be at risk from a variety of external forces, most notably the potential loss and alteration of habitat associated with global climate change and the increased deployment of wind-energy facilities. However, the Breeding Bird Survey (BBS), a standardized national monitoring scheme widely used to monitor trends in the size of bird populations, does not adequately sample populations in high-elevation forests. Furthermore, ad hoc monitoring efforts intended to address the lack of high-elevation BBS routes, each using different sampling methods, have yielded only site-specific information and were of limited use in drawing regionwide inference about the status of birds in high-elevation forests. As a consequence, estimates of population size and trend are lacking for nearly all of the species occupying this habitat type. Mountain Birdwatch was created to address these information gaps. In its initial incarnation, Mountain Birdwatch enlisted volunteers to conduct bird surveys at high-elevation sites throughout the northeastern United States. This effort produced valuable information about occupancy rates for a suite of species, including the endemic Bicknell's thrush, but its value as a monitoring tool was limited by a nonprobabilistic sampling scheme and an inability to account for variation in the detectability of birds. An effort to refine Mountain Birdwatch and address these shortcomings was begun in 2006. Major challenges in the creation of Mountain Birdwatch version 2.0 included defining an appropriate sampling frame, identifying measurable goals, evaluating alternative approaches for sampling bird populations, and analyzing the resultant data, standardizing data management protocols, and envisioning tools and applications for broadly disseminating results, all while working with a diverse, international group of stakeholders. The process of producing a refined Mountain Birdwatch, ready to implement in 2009, offers valuable lessons and insight that may prove useful in implementing rigorous monitoring schemes for high-elevation birds in other regions.

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