
Saving a Rare Songbird

THE INTERNATIONAL CONSERVATION PLAN FOR BICKNELL'S THRUSH

Each spring, across a small section of North America, dawn comes with an event witnessed nowhere else on Earth. It happens in a zone of mountainous and coastal forest sites scattered across southeastern Canada and the northeastern United States. As the day begins, these forests come alive with the swirling song of the Bicknell's Thrush. Arriving after a 2,000-kilometer migration from wintering grounds in the Greater Antilles, the thrushes will breed and raise young in these forests, not far removed from population centers with millions of people. A scant four months later, they will depart and migrate south before the onset of winter. With each journey, north or south, Bicknell's Thrush flies toward an uncertain future.

Already one of the continent's rarest breeding songbirds, Bicknell's Thrush now faces threats at nearly every stage of its life. In response, a coalition of scientists, natural resource managers and conservation planners, forming the International Bicknell's Thrush Conservation Group (IBTCG), has been working to study and conserve this enigmatic, captivating songbird. The IBTCG's efforts have culminated in an innovative plan of action designed to keep Bicknell's Thrush from becoming endangered. The full report, *A Conservation Action Plan for Bicknell's Thrush (Catharus bicknelli)*, is available at the IBTCG's Web site: www.bicknellsthrush.org. This document is a summary of the plan.

Background

With a wingspan of about 30 centimeters, colored in rich brown feathers above with pale undersides and a speckled breast, the Bicknell's Thrush is a rare relative of a common backyard songbird, the American Robin. Yet unlike its familiar cousin, the thrush requires specialized habitat. Its breeding range is limited to a highly fragmented zone of forest sites, dominated by balsam fir, in the coastal and mountainous regions of the northeastern U.S. and southeastern Canada. Over much of this range, Bicknell's Thrush breeds high on mountains or in other forested uplands. But it also can nest in areas subject to disturbances from human activities or natural events: along forest openings and ski trails, for example, or



within dense regenerating forest stands after timber operations. In winter the thrush's known range is limited to the Greater Antilles, with most of its global population in mountainous forests of the Dominican Republic. Populations also overwinter in remnant forests of Haiti, Jamaica, Puerto Rico and eastern Cuba. Biologists know little about the migration routes of Bicknell's Thrush between its winter and summer ranges, but it is assumed that the species follows a flyway along or near the east coast of North America.

Bicknell's Thrush is scarce and declining over portions of its range. The global population is estimated at between 95,000 and 126,000, very small by comparison to other songbirds, with roughly 60 percent breeding in the U.S. and 40 percent in Canada. These levels position Bicknell's Thrush as a species of high continental conservation concern. The International Union for the Conservation of Nature (IUCN) has ranked the thrush as globally *vulnerable*. It is listed as a *Species of Special Concern* in every U.S. state within its range. And the Committee on the Status of Endangered Wildlife in Canada has recommended a federal status of *Threatened*.

Challenges and Threats

Its small global population and restricted habitat preferences present Bicknell's Thrush with inherent challenges. The species' low overall numbers and fragmented distribution may themselves limit the stability of its populations and potential for growth. But more troubling is that an array of human activities – contributing to habitat loss, pollution and climate change – threatens Bicknell's Thrush on its breeding and wintering grounds. These threats may be exacerbated by the songbird's own intrinsic limitations, and the two factors may be working in concert to produce a troubling scenario for Bicknell's Thrush. New research suggests that females are not surviving as well as males, in part because they occupy habitat of inferior quality in winter; this may have profound implications for the songbird's future. The IBTCG has identified major threats that, combined with intrinsic limits on the species, raise serious concerns about the future of Bicknell's Thrush.

HABITAT LOSS AND DEGRADATION

Threats related to habitat take many forms on the species' breeding and wintering grounds; these include forestry, commercial development, agricultural practices and fires.

Forestry Practices on Breeding Grounds – Thinning and clear-cutting in forests used for breeding could be reducing the suitability and quantity of habitat in Canada and northern Maine, where Bicknell's Thrush inhabits forests managed for timber harvests. Timber operations during the breeding season may directly cause the loss of nests, eggs and young.

- **Subsistence Farming and Logging on Wintering Grounds** – Farming, logging, charcoal production and human-caused fires have contributed to severe habitat loss on Hispaniola and elsewhere in the Greater Antilles, particularly in areas where female thrushes are concentrated. Only 10 percent of the historic forest in the Dominican Republic and 2 percent in Haiti remains.
- **Commercial Development and Human Disturbance on Breeding Grounds** – Wind power, telecommunications facilities and recreational skiing development threaten to remove, fragment or alter breeding habitat. Recreational hiking may also disturb nesting birds.
- **Commercial Development Along Migratory Routes** – Although biologists know little about the exact routes, stopover sites and habitats used by Bicknell's Thrush during migration, commercial and residential development, communications towers and wind power development are known to affect the migration habitat of other Neotropical migrants using the same eastern flyway.

ATMOSPHERIC POLLUTION

A variety of toxic substances carried in the atmosphere and deposited at breeding or wintering sites poses a wide range of threats to Bicknell's Thrush. Some toxics may be of particular risk in high-elevation habitats.

Mercury Bioaccumulation – Released into the atmosphere from waste incinerators, coal-burning power plants and industrial smelters, mercury can cause developmental problems and reduced survivorship in birds and other wildlife. Elevated concentrations of methylmercury, the element's toxic form, are found in the tissue of Bicknell's Thrush at breeding and wintering sites.

Acid Deposition and Calcium Depletion – Acid deposition depletes calcium from soils in areas of the northeastern U.S. Songbirds breeding in acidified areas may be unable to obtain sufficient high-calcium foods (such as land snails) for eggshell production. Acid rain, mist and fog can also weaken or kill red spruce by depleting calcium from the trees' needles. Increased spruce mortality may result in the encroachment of less-suitable trees into Bicknell's Thrush habitat, which may decrease the quality of a site for foraging or nesting.

CLIMATE CHANGE

Climate change presents an array of direct and indirect threats to Bicknell's Thrush populations across the species' breeding and wintering areas and its migratory routes.

Bicknell's Thrush Breeding Range



Typical Bicknell's Thrush montane forest breeding habitat.

Rising Temperatures and Forest Conversion – Warmer growing seasons could gradually push the thrush's breeding zone to progressively higher, smaller and more isolated mountain patches. An upward elevational shift in the lower spruce-fir zone may already be under way in mountains of the northeastern U.S., where hardwood tree species are encroaching into areas previously dominated by red spruce and balsam fir. By the end of this century, summer temperatures are projected to increase enough to potentially eliminate nearly all balsam fir habitat in the U.S. and possibly Canada, which could result in a dramatic reduction in Bicknell's Thrush breeding habitat.

Increased Precipitation and Storms – During the breeding season, an increase in the frequency of precipitation and wind, predicted to result from climate change, could cause more nests to fail. Increased storm frequency may also directly harm Bicknell's Thrushes during migration. At wintering sites, more frequent storms and erratic weather could limit foraging opportunities, reduce roosting cover, destroy lower-altitude habitats, or cause direct mortality of overwintering birds.

Pests, Pathogens and Fires – Climate change has the potential to cause various other deleterious impacts. These include: an expansion of forest pests and pathogens into high-elevation breeding areas; creation of drier tropical forests, which could result in fires that damage wintering habitat; and changes in the timing and abundance of insects and other organisms constituting the diet of Bicknell's Thrush.

A Conservation Plan for Bicknell's Thrush

Declining populations and steep rates of winter habitat loss warrant a new conservation initiative for Bicknell's Thrush. The IBTCG recommends an ambitious course of action with an attainable goal: to increase the global population of Bicknell's Thrush by 25 percent over the next 50 years and to avoid a reduction of the species' breeding distribution. The most effective means to this goal is the protection, management or restoration of Bicknell's Thrush breeding and wintering habitat.

CONSERVATION OF BREEDING HABITAT

The North American range of Bicknell's Thrush – high-elevation forests dominated by balsam fir – is a scarce natural resource with limited potential for expansion. Most of the habitat in New York and New England is already protected. A more practical course for increasing breeding populations is improved management of existing or potential habitat. In Maine and Canada, large tracts of potentially suitable habitat are managed for timber harvests. Implementing Best Management Practices (BMPs) that aim to minimize disturbance to Bicknell's Thrush habitat and encouraging the inclusion of Bicknell's Thrush habitat in forest management planning processes can foster and maintain suitable breeding habitat for Bicknell's Thrush. Conservation actions in breeding habitat are summarized below:

Partner with timber companies and managers of public lands to develop and implement practices, including BMPs, that enhance Bicknell's Thrush breeding habitat.

- Avoid or limit pre-commercial thinning (PCT) in areas occupied by Bicknell's Thrush, and conduct such activities outside the breeding season. Leave significant patches of unthinned forest within thinned stands.
- Employ a “no net habitat loss” policy so that the overall amount of Bicknell's Thrush habitat available in a given time period does not decrease. Do so by encouraging land managers to rotate harvests and create a mixed distribution of stand ages, which might undergo PCT and cutting at different times.
- Develop partnerships and stewardship plans with managers of public lands and incorporate BMPs into legislation or public land management practices.

Identify and maintain a target amount of Bicknell's Thrush habitat in commercial forests.

- Estimate the current population of Bicknell's Thrush breeding on forestry lands and set a target population as a management goal.
- Set flexible targets for each jurisdiction where Bicknell's Thrush breeds on forestry lands in Canada and the U.S. because each jurisdiction has different management regimes and goals.

CONSERVATION OF WINTER HABITAT

On the Caribbean wintering range, habitat protection and restoration could significantly enhance the winter survival of Bicknell's Thrush, in turn increasing its global population.

Bicknell's Thrush Winter Range



Deforestation of Bicknell's Thrush winter habitat on Hispaniola.

Improve the protection of currently occupied winter habitat

- Identify priority areas for protection (both currently protected and unprotected) based on immediacy and severity of threats, presence of local conservation partners and likelihood of success on Hispaniola and elsewhere in the Caribbean.
- Strengthen staffing, training and infrastructure of local personnel to effectively monitor and enforce protection of habitat.

Develop winter habitat management plans for key forested areas on Hispaniola and secure implementation funding.

Habitat plans will:

- Acquire or manage buffer zones around protected forests.
- Develop community-based, sustainable agriculture, such as cacao or shade coffee agro-forestry.
- Develop economic incentives for landowners to conserve habitat under a system based on carbon, water or other markets (often called “Payments for Ecosystems Services”).

Develop pilot winter habitat restoration projects

- Develop explicit strategies to restore areas of degraded forest to conditions suitable for Bicknell's Thrush.
- Secure and distribute funds locally to obtain needed resources (e.g., paid staff, infrastructure, equipment) to implement habitat restoration efforts.

- Establish protocols to monitor the occupancy and use by Bicknell's Thrush and other species over time; evaluate the success of these efforts to guide future restoration projects.

Develop links with local partners in the Caribbean

- Form new partnerships, strengthen existing relationships and provide outreach and opportunities to local biologists, students, government officials, nongovernmental organizations and community members for implementation of conservation activities.
- Recruit additional IBTCG members from the Caribbean.
- Regularly hold IBTCG meetings in the Dominican Republic or other Caribbean countries.

Expand the Bicknell's Thrush Habitat Protection Fund and solidify a parallel fund on Hispaniola so that each effectively disburses grants to local partners for Bicknell's Thrush winter habitat conservation.

- Increase both the U.S. and Hispaniolan funds to \$50,000 each by the end of 2010.
- Expand the reach of the U.S. fund to other Caribbean islands and balance representation from those countries on each fund's Advisory Committee.
- Increase awareness of both funds among potential individual and corporate donors; within the North American ski, telecommunications, wind power and forest products industries; and to carbon sequestration organizations.

Research Actions

Bicknell's Thrush conservation is the driving force behind the IBTCG's work, yet reaching the conservation goal requires additional research to realize the most effective actions for reaching those goals.

The IBTCG identifies the following research as priorities during the next five years (2010–2014).

- Identify important migratory stopover sites, routes and patterns.
- Determine how Bicknell's Thrush populations respond to specific forestry practices on the landscape.
- Clarify winter distribution and habitat use on islands other than Hispaniola.
- Assess the effects of calcium depletion on Bicknell's Thrush.
- Better predict and monitor the effects of climate change.
- Determine how populations respond to varying habitat conditions on wintering grounds.

Evaluating Accomplishments

The Conservation Action Plan is a living document that provides an adaptive framework to guide Bicknell's Thrush conservation efforts. Evaluation of the plan's success will take two general forms.

Mountain Birdwatch 2.0 – Ongoing, standardized monitoring of Bicknell's Thrush breeding populations will be critical to evaluating progress toward the conservation goals outlined in this document. Mountain Birdwatch 2.0, based on a successful monitoring program operating since 2000, is an international, volunteer-based program to track Bicknell's Thrush populations across the breeding range. (Details are summarized at www.vtecostudies.org/MBW/MBW2.html.)

IBTCG meetings and Collaboration – The IBTCG will meet formally at least once per year to track progress on conservation and research actions, discuss funding needs and revise this plan as appropriate. Every effort will be made to ensure that emerging information is used to inform groups working to conserve Bicknell's Thrush across its range and to strengthen links among these groups.

The International Bicknell's Thrush Conservation Group is an alliance of scientists, natural resource managers and conservation planners advancing the study and conservation of Bicknell's Thrush through sound science and international cooperation.

www.bicknellsthrush.org

