

Bicknell's Thrush

Catharus bicknelli

The Bicknell's thrush is a migratory passerine (or songbird) that summers in the northeastern U.S. and southeast Canada. This relative of the robin is an extreme habitat specialist, nesting primarily in stunted montane spruce-fir forests, found at or near the highest elevations of mountains. Conservationists throughout the species' range consider the Bicknell's thrush to face a multitude of threats as one of the rarest birds in North America.

Because of its specialized habitat requirements, Bicknell's thrush populations are extremely vulnerable. Monitoring data from the last 10 years indicates a stable population in the U.S. and steep declines in the Canadian population due to habitat loss, predation and pollution. Climate change may also be a threat to the Bicknell's thrush.

Characteristics

The Bicknell's thrush is a medium-sized bird, about 6.3 to 6.7 inches in length, and weighs about an ounce. It is characterized by its light olive-brown upper parts, white (and sometimes slightly yellow-tinted) belly and spotted breast, with some chestnut coloration on its tail and wings. Outside of breeding, males and females are only distinguishable by the male's larger size.

The Bicknell's thrush was once believed to be a subspecies of the grey-cheeked thrush, which it closely resembles. However, due to differences between the thrushes in behavior, song, habitat, distribution, morphology and genetics, ornithologists determined in 1995 that Bicknell's thrush is its own species.

Life Cycle

The Bicknell's thrush is a migratory bird that breeds in subalpine forests, which are composed of stunted fir and spruce thickets, in the



A banded Bicknell's thrush.

Credit: T.B. Ryder

northeastern U.S. and southeastern Canada. By early November, most Bicknell's thrushes have migrated and established winter territories in the broadleaf forests of the Greater Antilles, the group of Caribbean islands comprising Cuba, Puerto Rico, Jamaica, and Hispaniola (which includes Haiti and the Dominican Republic). Here they can be found throughout middle and high elevation sites.

By the end of May, both males and females have returned to their breeding grounds in the northeast. Males typically return several days earlier than females, and breeding begins upon the females' arrival.

The Bicknell's thrush begins breeding at about one year of age and is known to have a highly unusual mating system. The mating system, termed "female-defense polyandry," is unique to the Bicknell's thrush and one other passerine in North America. Females mate with more than one male per breeding season, ensuring multiple males for feeding and protection of the young. More than one male cares

for mixed paternity brood.

This highly specific bird prefers to nest in montane fir and spruce forests, usually in recently disturbed areas characterized by dense understory, low canopy, and an abundance of snags, shrubs, moss, stumps and deadfall for desirable shelter and nesting areas. Nests are constructed with twigs and are usually dense and cup shaped, with a lining of moss. Clutch sizes consist of around three to four bluish green eggs with light brown speckling.

Food

On its high elevation summer range, the Bicknell's thrush is primarily a ground forager, eating mostly insects, from larval moths, butterflies, and ants to bees, cicadas, and spiders. They may also feed on fruit, such as bunchberries, blueberries and wild grapes. Small fruits of similar size compose a great proportion of this thrush's winter and migration diet. Nesting females often eat snails, which are believed to provide much-needed calcium for strong egg production. During the



Bicknell's thrush with chicks.

winter, the Bicknell's thrush feeds on small fruits and insects at middle- and high-elevation sites.

Causes for Concern

Habitat Loss and Alteration

The Bicknell's thrush has been identified as a high conservation priority within the international birding community, as it is highly susceptible to several threats. Immediate threats to the species include habitat loss from forestry, energy and recreational developments on the breeding grounds and habitat loss from subsistence farming and logging on the wintering ground. A potentially significant threat in the future is the potential loss of habitat that could result from climate change, which might mean a nearly complete loss of this species' high elevation breeding habitat in the U.S. over the course of the next century.

As the climate warms, the montane spruce and fir forests may disappear from the Bicknell's thrush's current breeding range within the northeast U.S. These coniferous trees currently exist as "islands" of suitable habitat and are predicted to "migrate" northward and upwards in elevation as temperatures increase. This vegetative migration is expected to result in the nearly complete elimination of Bicknell's thrush habitat.

In addition, temperature increases could lead to more hurricanes and other severe weather events that would reduce forage opportunities and threaten long-term existence of the tropical forests that the Bicknell's thrush depends on. Biologists have not determined if the Bicknell's thrush will be able to adapt to these changes.

Another potential consequence of climate change for the Bicknell's thrush might be the creation of a variance between arrival time to the breeding grounds and the abundance of prey. Currently, the arrival time is regulated by day length, and the abundance of insects and fruits is linked to temperature. If temperatures rise and spring occurs earlier, the food supply may also peak earlier and late-arriving birds may not have adequate food supplies. As a result, the reproductive success of late-arriving birds may suffer.

Predation

Predation may also be a threat. In the thrush's breeding habitat, red squirrels live and feed mainly on spruce and fir cones in the montane forests. Red squirrel populations are cyclical and dependent on the production of large cone crop, which can be highly variable from year to year. In years when red squirrels are abundant, predation of eggs and nestlings can be high. Increased temperatures resulting from climate change could increase cone crops, and as a result, predation by red squirrels may also increase. While red squirrel predation of nestlings and eggs has been recognized as a concern for some time, predation of adults wasn't well documented. However, recently, researchers conducting studies on the wintering grounds in the Dominican Republic documented predation of adult Bicknell's thrush by introduced black and Norway rats. This predation is believed to occur while adults are night roosting. Researchers have not yet determined the effects of red squirrel or rat predation and its impacts to Bicknell's thrush populations.

Pollution

Biologists have also identified pollution from industrial sources as a concern for the Bicknell's thrush and its habitat. The decline of high elevation red spruce has been linked to accumulation of acidic ions in the atmosphere. This could be a result

of calcium removal from the already nutrient-poor soils typical of the Bicknell's high elevation breeding habitat. Mercury deposition, primarily from industrial sources is also a concern. Data demonstrates that accumulation rates are 2 to 5 times greater in some high elevation sites than in others. In addition, older birds have higher mercury blood concentration levels than do younger birds, suggesting that these birds are accumulating mercury through time. While this information is cause for concern, the effects that these mercury burdens will have on the Bicknell's thrush are not fully understood.

Taking Action

Recently, the U.S. Fish and Wildlife Service was petitioned to list the Bicknell's thrush as either a threatened or endangered species under the Endangered Species Act. As a result, the Service will conduct a thorough assessment of the status and threats to the Bicknell's thrush. In an effort to secure the future of existing Bicknell's thrush populations, the Service, other management agencies and conservation organizations have focused on predicting and monitoring the effects of climate change, managing and protecting habitat, and restoring existing populations.

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1 800/344 WILD
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