

Boreal Forest Threats and Conservation Status

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North America's boreal forest region is considered one of the most intact and least disturbed of the globe's terrestrial forested ecosystems (Lee et al. 2006). Its nearly 600 million hectares span from interior Alaska across Canada to Labrador and Newfoundland (Fig. 1.1) and encompass some of the world's largest peatlands, lakes, and rivers (Schindler and Lee 2010, Wells et al. 2011), major stores of terrestrial carbon (Carlson et al. 2009, 2010; Tarnocai et al. 2009), large populations of carnivores (Canadian Boreal Initiative 2005, Cardillo et al. 2006, Bradshaw et al. 2009), and some of the world's last remaining unchecked large mammal migrations (Wilcove 2008, Hummel and Ray 2009).

This volume highlights new research that is illuminating the importance of the region to North America's avifauna and the complexity of avian ecological connectivity between the boreal forest region and ecoregions throughout the Americas. The contributions showcase a unique set of perspectives on the migration, wintering ecology, and conservation of avifaunal communities that are tied to the boreal forest in ways that may not have been previously considered.

In North America's boreal forest, as in its Southern Hemisphere counterpart, the Amazon, development and land-use management decisions are occurring at an accelerated rate. An

assessment in 1987 suggested that 26% of the "frontier forests" of North America (virtually all in the boreal forest region) were under moderate or high threat (Bryant et al. 1997). Another analysis ranked two southern boreal forest ecoregions as being in Critically Endangered condition, one as Endangered, and seven additional boreal forest ecoregions as Vulnerable (Ricketts et al. 1999)

Estimates of the amount of habitat in the southern boreal forest that is no longer intact range as high as 66% (Ricketts et al. 1999), encompassing 177 million hectares. Using satellite imagery, Lee et al. (2006) documented that less than 15% of the 71 million hectare Boreal Plains ecozone (the portion of the southern boreal extending from the eastern foothills of the Canadian Rockies to south-central Manitoba) remains in large, intact forest landscapes. Between 1990 and 2000 over 400,000 hectares of the southern boreal of Saskatchewan and Manitoba and over 2.4 million hectares of the boreal of Quebec was disturbed by human-caused influences including forestry, road-building, and other infrastructure development (Stanojevic et al. 2006a, 2006b).

Since 1975 over 31 million ha of Canadian forest have been harvested (Canadian Council of Forest Ministers 2010). Between 1990 and 2008 the total area harvested in Canada was 18,412,244 ha (Canadian Council of Forest Ministers 2010).

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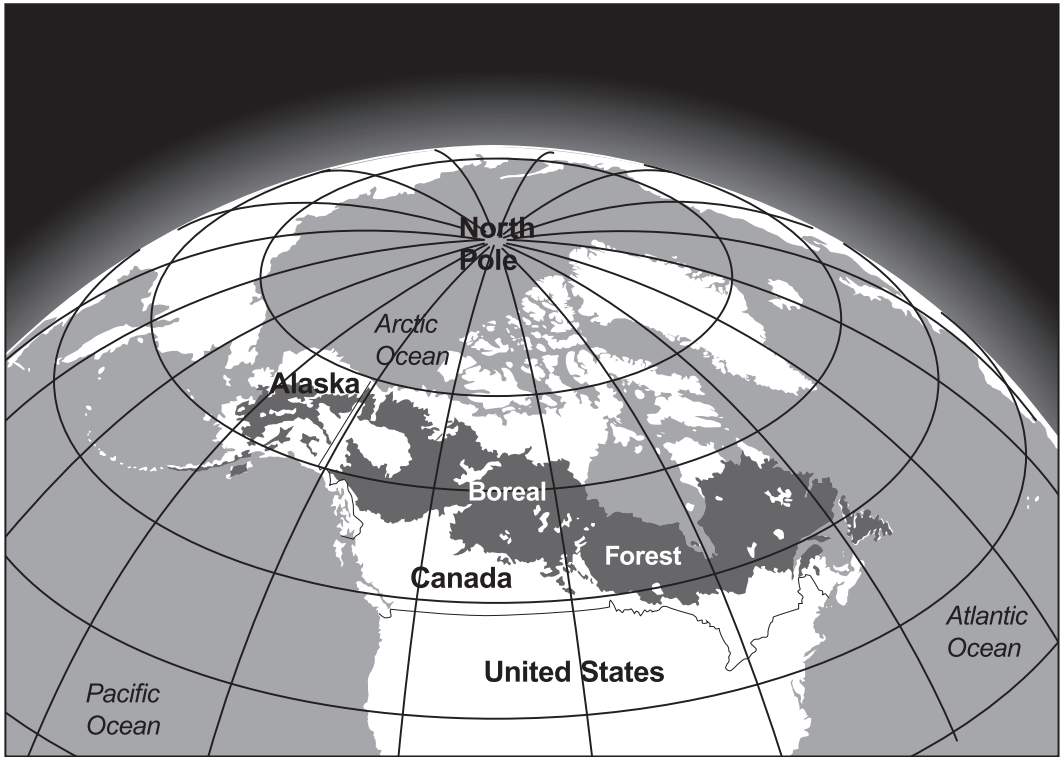


Figure 1.1. Extent of boreal forest in North America.

Assuming the same rate of harvest and that 65% of the Canada's timber harvest occurs in the boreal forest region, about 6 million ha will be harvested in Canada's boreal region over the next ten years.

Many other kinds of industrial disturbances are taking place within the boreal forest region. Oil and gas exploration and extraction activities, especially in the western boreal forest region, are rapidly increasing. In Canada, a record 22,800 oil and gas wells were drilled in 2004, and the number of new wells drilled annually is projected to continue increasing (Canadian Association of Petroleum Producers 2005). The industrial footprint from oil and gas extraction activities throughout Canada's boreal forest region as of 2003 was estimated at 46 million ha, or approximately 8% of Canada's boreal forest region (Anielski and Wilson 2005). Within Alberta's oil sands region, habitat that would have supported an estimated 58,000–402,000 breeding birds has already been lost (Timoney and Lee 2009) and future losses have been projected into the tens of millions (Wells et al. 2008).

In Canada, large hydropower projects developed in the 1970s and 1980s have flooded millions of

hectares (Wells et al. 2011), especially in parts of the eastern boreal forest region. For example, five reservoirs established in the La Grande River region of central Quebec flooded 1.1 million hectares of terrestrial habitat (Gauthier and Aubry 1996).

Currently, approximately 70% of bird species that regularly breed in Canada's boreal forest region show impacts from anthropogenic disturbance (road building, forestry, mining, etc.) within at least 10% of their distribution, while in only 11% of bird species is at least 10% of the range within protected areas (J. V. Wells, unpubl. data). For example, 24% of the breeding distribution of Canada Warbler (*Wilsonia canadensis*) in the Canadian boreal forest region is within areas impacted by anthropogenic disturbance, while 7% of its distribution is within protected areas (Fig. 1.2). In the case of the Evening Grosbeak (*Coccothraustes vespertinus*), 39% of its breeding distribution in Canada's boreal forest is within areas impacted by anthropogenic disturbance, while 9% is within protected areas (Fig. 1.3).

Fortunately, great strides have been and continue to be made in the conservation of North

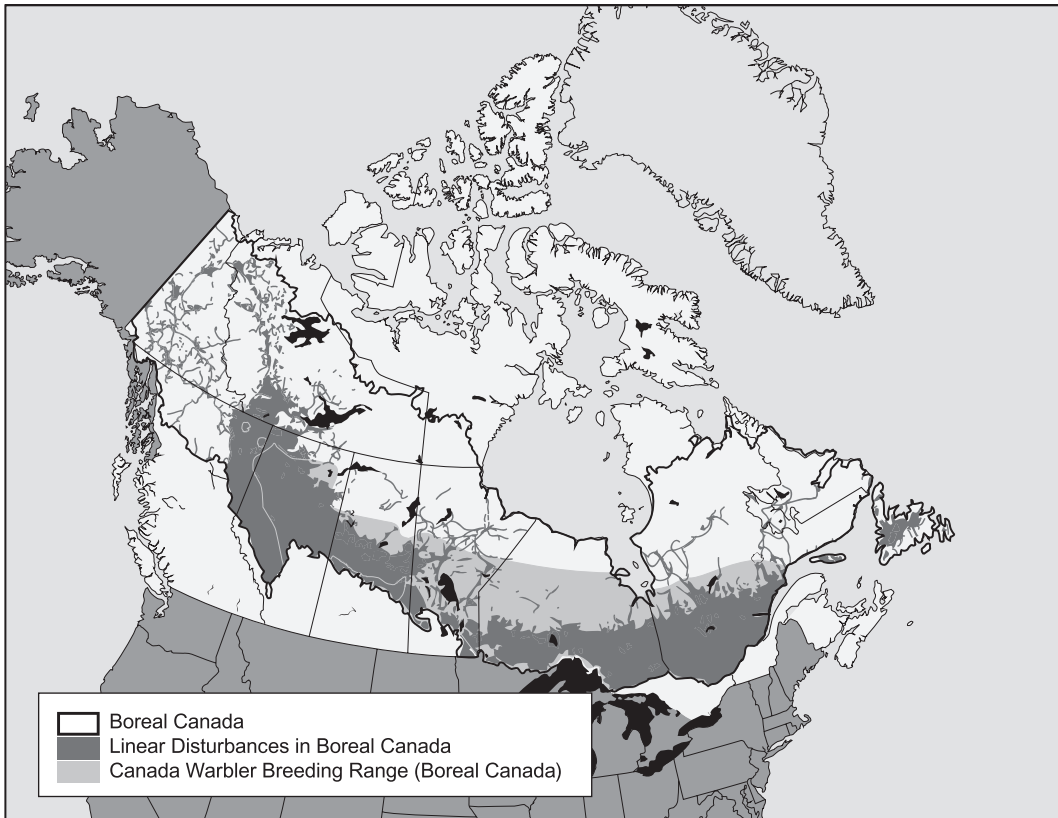


Figure 1.2. Overlap of Canadian boreal forest breeding range of Canada Warbler (light gray) and extent of anthropogenic disturbance (dark gray).

America's boreal forest. Over 45 million hectares of new protected areas have been established in Canada's boreal forest region since 2000 and 30 million hectares of forest tenures have been certified through the Forest Stewardship Council (S. Kallick, pers. comm.). The governments of Ontario and Quebec have pledged to establish another 80 million hectares of new protected areas and the federal government has continued to move forward on establishing new protected areas in the Northwest Territories that are co-managed with indigenous governments (Reid 2010). Many indigenous communities of Canada's boreal forest region have developed land-use plans that call for ambitious protected areas goals. For example, the Dehcho Land Use plan in the southern Northwest Territories calls for protecting at least 50% or nearly 11 million hectares of their lands (Charlwood and Wells 2007). In May of 2010, the Forest Products Association of Canada (FPAC) announced an agreement that it had reached with leading environmental organizations to halt

logging on 29 million hectares of forestry tenures held by FPAC member companies in especially sensitive habitats while a conservation plan is developed for the total 72 million acres of forestry tenures that they control (Kallick 2010, Pew Environment Group 2010).

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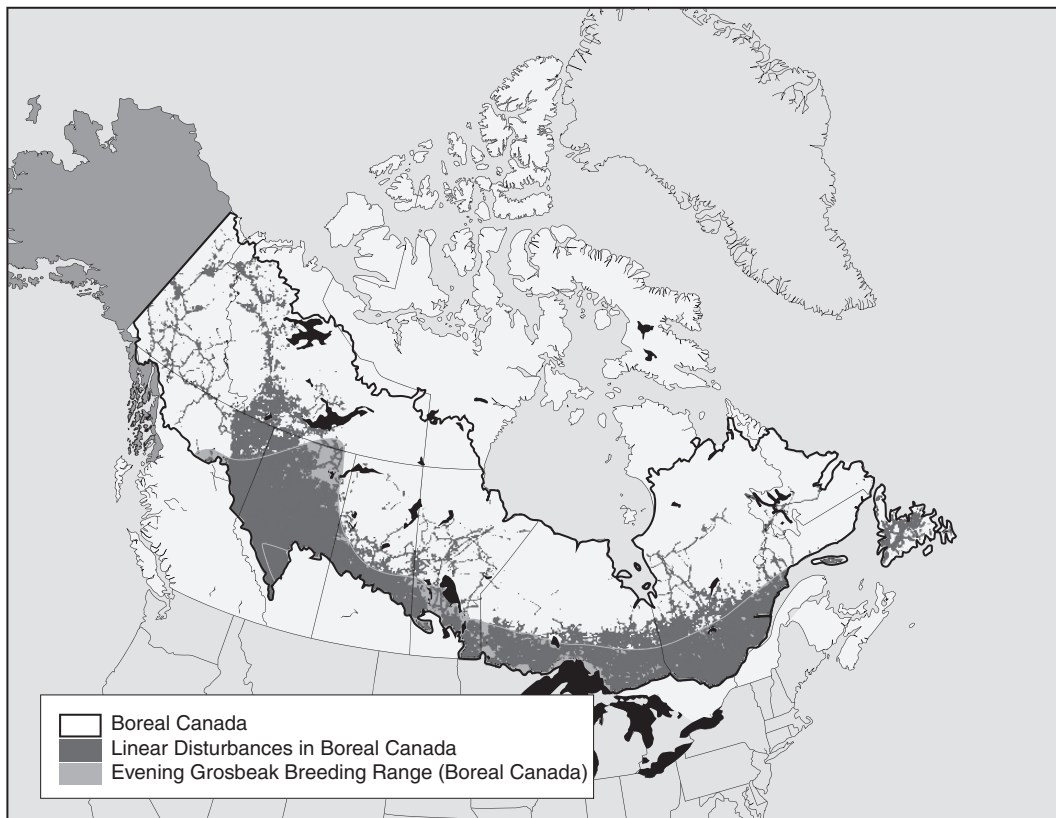


Figure 1.3. Overlap of Canadian boreal forest breeding range of Evening Grosbeak (light gray) and extent of anthropogenic disturbance (dark gray).

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