



Rare Warblers of Northeastern British Columbia

*Loss of old-growth forest
habitat is the most serious
threat to these warblers.*





Who are the Northeast Warblers?

Warblers, or more correctly wood-warblers, are small, active, colourful songbirds. They are confined to the Western Hemisphere and are strongly migratory, breeding mainly in temperate and boreal North America and wintering in central America, northern South America and the Caribbean islands. They are well represented in British Columbia, where 31 species have been recorded in spring and summer.

Eight of the warbler species found in British Columbia have very restricted breeding season distributions in the northeast corner of the province. Three of these – the Palm, Black and White and Mourning warblers – are not currently considered at risk. The other five – the Bay-breasted, Connecticut, Black-throated Green, Canada and Cape May warblers – are candidates for designation as Endangered or Threatened under the British Columbia Wildlife Act and are the focus of this brochure.

Where and when are they found?

The northeast corner of British Columbia is a distinctive region that differs from the rest of the province in its topography and climate, and much of its flora and fauna. Known as the Alberta Plateau, this triangle located northeast of the Rocky Mountains is part of the immense Great Plains of central North America. The flat to rolling landscape of the Alberta Plateau is sometimes perceived to be monotonous, but eroded

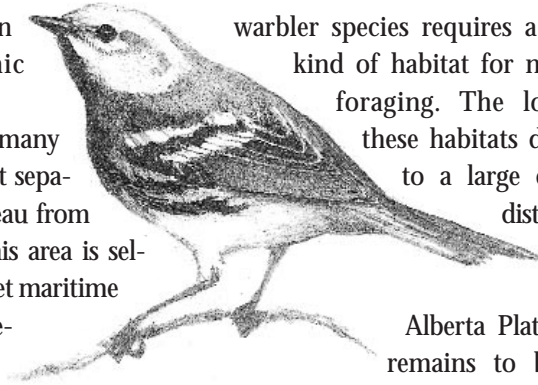
escarpments around remnants of the original plateau and deeply cut valleys of major rivers like the Peace and Fort Nelson provide topographic variety.

Because of the many mountain ranges that separate the Alberta Plateau from the Pacific Ocean, this area is seldom influenced by wet maritime air masses and consequently has a relatively dry climate. It has no such protection from Arctic air, however, and in winter it is one of the coldest parts of the province. Although boreal or boreal-like forests occur in some valleys west of the Rockies, the Alberta Plateau is the only substantial area of true boreal vegetation in British Columbia. Here, the “spruce-moose zone” – a continuous belt of boreal forest that stretches from Newfoundland to the Yukon – rolls without interruption across the British Columbia border to the foothills of the northern Rockies.

The vegetation of British Columbia’s northeast corner is dominated by, but not restricted to, white and black spruce forest. Aspen groves are scattered around Dawson Creek and Fort St. John, grassy “breaks” cover the steep, south-facing slopes of the Peace River and many of its tributaries, and cottonwood forests stretch out across the floodplains of numerous rivers. Much of the plateau surface is dotted with marshes, bogs and lakes. Agricultural lands, featuring extensive grainfields, provide an additional dimension.

During the breeding season, the Alberta Plateau is home to approximately 16 species of birds that are

almost entirely absent elsewhere in British Columbia. Among them are the five warblers listed above. Each warbler species requires a particular kind of habitat for nesting and foraging. The location of these habitats determines, to a large extent, the distribution of the birds across the Alberta Plateau. Much remains to be learned



BLACK- about the nesting season

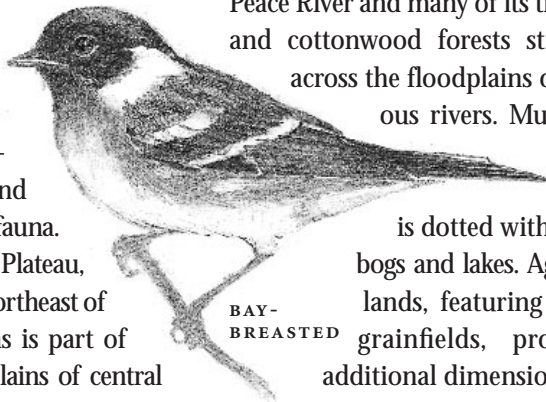
habitats of these warblers within British Columbia, but the following facts have been gleaned from recent preliminary surveys.

The **Cape May Warbler** (*Dendroica tigrina*) is found almost exclusively in mature white spruce forest, where it forages in the upper tree canopy. It also nests high in coniferous trees, 10 to 20 metres above the ground. Most records are from the Dawson Creek, Pouce Coupe, Tupper and Fort Nelson areas.

Despite being called warblers, these birds do not warble.

Black-throated Green Warblers (*Dendroica virens*) inhabit the mature, riparian white spruce or mixed-wood forest of the Peace River Lowlands and Tuchodi River valley. They also make forays into adjacent upland white spruce forest. These warblers can be found at forest edges as well as in the forest interior. They forage in the mid to upper canopy and nest in conifers, 2 to 8 m above the ground.

The **Bay-breasted Warbler** (*Dendroica castanea*) ranges across the Alberta Plateau and occasionally west of the Rockies. It is a resident of white spruce forest, either pure stands or those mixed with aspen, birch and cottonwood. It forages in the mid to



BAY-BREASTED

upper canopy and nests primarily in spruce or occasionally deciduous trees, 2 to 18 m above the ground.

Connecticut Warblers

(*Oporornis agilis*) frequent the Peace River Lowlands and Kiskatinaw River areas, and are occasionally seen near Fort Nelson. They prefer mature to old-growth aspen stands with a rich understorey, a habitat well suited to a bird that forages on or near the ground, and nests on the ground among herbs and grasses or a few inches off the ground in low shrubs.

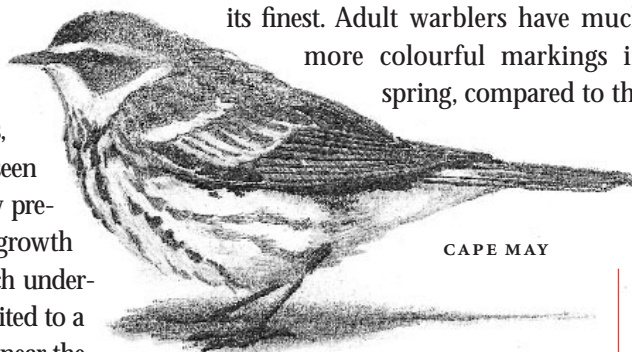
Canada Warblers (*Wilsonia canadensis*) have been most often reported along the Peace River and near Fort Nelson. They live in deciduous-dominated forests on riverside slopes or in wet sites. Canada Warblers forage in low shrubs and on the ground. They nest on or near the ground in mossy logs or stumps, under streambanks, or in grassy hummocks.

These five warbler species mostly migrate into British Columbia via Alberta in late May and early June. The males usually arrive first. After nesting, the adults start leaving the area in late July. Juveniles follow in August, and by mid-September all but the stragglers have departed.

What do they look like?

Warblers are mostly smaller than sparrows – generally 12 to 15 centimetres in length – and have slender, sharp-pointed bills. They often attract attention as they dart from place to place, foraging for insects. Distinguishing different species can be challenging, especially when they are half-hidden by foliage or flitting about high in the treetops, but it is worth persevering. The five species of concern here look quite distinct from one another.

Plumage colouring provides the best means for most people to identify various species of warblers, particularly in spring when the breeding plumage is at its finest. Adult warblers have much more colourful markings in spring, compared to the



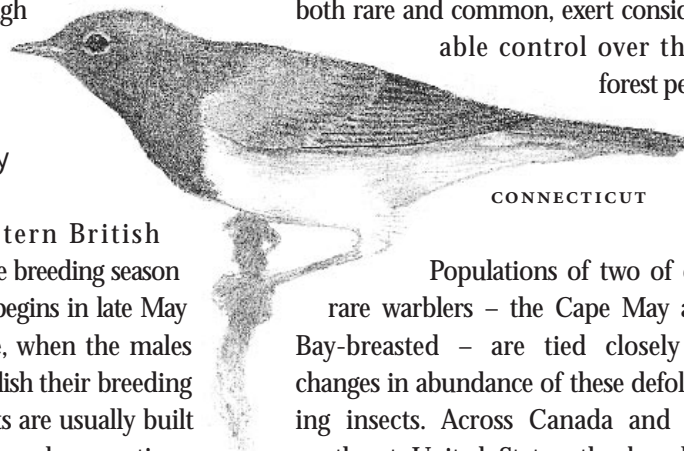
drab hues of autumn. The key field marks for breeding season males, which are more striking than the females, are as follows:

- Cape May Warbler: chestnut spot on cheek, striped chest.
- Black-throated Green Warbler: black throat, yellow cheek, green back.
- Bay-breasted Warbler: deep chestnut breast, white spot on side of neck.
- Connecticut Warbler: grey “hood” (head and neck), yellow abdomen.
- Canada Warbler: necklace of dark streaks on yellow underparts, no wing bars.

Despite being called warblers, these birds do not warble. Many of their high-pitched songs are not very musical, but they are wonderfully energetic and distinctive enough to aid in their identification.

How do they reproduce?

In northeastern British Columbia, the breeding season for warblers begins in late May or early June, when the males arrive and establish their breeding territories. Nests are usually built by females, with males sometimes helping. The cup-shaped nests may be placed high in trees, lower down in



shrubs, or even on the ground. The females lay their eggs in late June. The typical clutch size is four to six, but occasionally up to eight or nine eggs are produced.

Incubation, which is carried out entirely by the female, takes about 12 or 13 days. The downy nestlings are cared for by both parents. They spend only 10 to 12 days in the nest before fledging in early to mid July. Pairs usually raise only one brood each year. Most warblers first breed as one-year-olds. The maximum life-span for warblers is about four to eight years.

These warblers are major predators of forest insect pests.

What do they eat?

Like most warblers, those of north-eastern British Columbia are primarily insectivores. They eat flies, moths, beetles, small wasps, leafhoppers, spiders, gnats, ants and mites, as well as the larvae and eggs of many of these invertebrates. A few supplement this diet with berries, seeds, tree sap, nectar and pollen. Spruce budworms and forest tent caterpillars are particularly important foods on the breeding grounds. As a group, all the warblers, both rare and common, exert considerable control over these forest pests.

Populations of two of our rare warblers – the Cape May and Bay-breasted – are tied closely to changes in abundance of these defoliating insects. Across Canada and the northeast United States, the breeding distribution and local abundance of Cape May and Bay-breasted warblers

fluctuate in response to changes in budworm populations. Vast areas are sparsely populated by warblers during many years, probably due to low budworm levels. When budworms are plentiful, the clutch sizes of these warblers increase markedly, with Bay-breasted Warblers laying up to six or seven eggs and Cape May Warblers laying as many as nine.

The northeast warblers employ a variety of foraging strategies. Most glean their prey from foliage, but some, particularly the Canada Warbler, also catch insects in the air using a technique known as “hawking.” The Cape May, Black-throated Green and Bay-breasted warblers forage mainly in the middle to upper levels of the forest canopy, while the Connecticut and Canada warblers find their food in low shrubbery or on the ground. Some, like the Cape May, are foraging generalists that eat a wide variety of insects, berries and seeds, while others, like the Bay-breasted, specialize on budworms or tent caterpillars. Such varying strategies allow these and other species of warblers to co-exist on their boreal breeding grounds without serious competition with one another.

Why are they at risk?

The Bay-breasted, Connecticut, Black-throated Green, Canada and Cape May warblers are at risk in the province of British Columbia because of their restricted distribution, the small size of their populations, and threats to their breeding season habitat, particularly by forest harvesting.

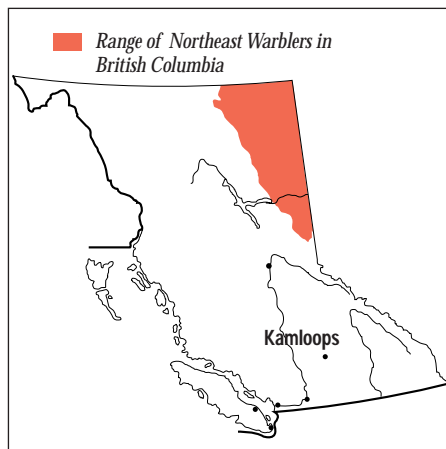
Direct loss of forest habitat used for nesting, foraging and cover is the most serious threat since most of these warblers need or prefer mature or old-growth stands. The clear-cutting and

short-rotation methods favoured by the forestry industry result in permanent removal of these old-growth stands, because managed forests never reach the old-growth stage. Aspen stands may not even be allowed to reach the mature stage. In the Peace River–Fort Nelson area, a moderate to rapid loss of mature spruce stands is predicted over the short and long term, and the demand for aspen and cottonwood for pulp is expected to rise sharply.

Four of these five species are on British Columbia's Red List.

Cutting of aspen is most critical for the Connecticut Warbler which faces a serious risk of near-extirpation in British Columbia if current aspen harvesting plans are carried out. Loss of old-growth spruce forests is the greatest threat to the Cape May Warbler, while the Black-throated Green Warbler is most affected by logging of floodplain cottonwood-spruce stands. Although also jeopardized by forestry activities, the Canada Warbler's apparent use of steep slopes that are often unsuitable for logging and the occurrence of Bay-breasted Warblers in stands some distance from mills, may give these two species a temporary reprieve. Nevertheless, logging also poses a significant threat to these warblers.

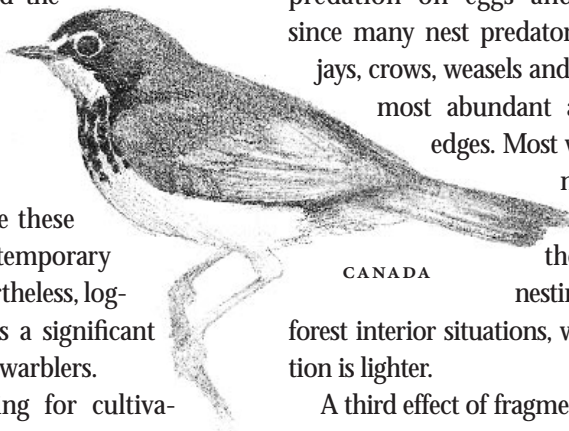
Land clearing for cultivation is permanently reducing habitat availability for some species, especially those that prefer aspen stands, such as the Connecticut Warbler, or floodplain cottonwood-spruce forests, such as the Black-



throated Green Warbler. Cattle grazing, which removes or simplifies understorey vegetation, is detrimental to species like the Connecticut and Canada warblers that nest and forage on or near the ground.

Logging, agricultural clearing and construction of seismic lines and roads – all of which are proliferating on the Alberta Plateau – also produce secondary impacts associated with habitat fragmentation. First and foremost, warblers require relatively large, continuous tracts of forest and will not use forest remnants less than three or four hectares in size. Fragmentation also increases the amount of forest edge habitat. This results in increased predation on eggs and fledglings since many nest predators, including jays, crows, weasels and coyotes, are most abundant along forest edges. Most warblers and many other birds have their highest nesting success in forest interior situations, where predation is lighter.

A third effect of fragmentation, particularly land clearing for cultivation, is the increased risk of “brood parasitism” by Brown-headed Cowbirds, which thrive in agricultural areas. Instead of building their own nests, cowbirds lay their eggs in the nests of



other birds, including warblers. Usually one cowbird egg is laid in each host nest. If the impostor egg is not detected or removed, the host parents incubate it and raise the aggressive young cowbird, often at the expense of some or all of their own young. There are records of Cowbird parasitism of Cape May and Canada warblers in the Peace River area and this problem is likely to become more widespread in the future.

Our northeast warblers may also be at increasing risk due to logging of their tropical wintering habitats. The impact of tropical deforestation varies between species since some use plantations and other disturbed lands in winter, while others prefer mature forests. Researchers estimate that loss of winter habitat is proceeding at a rate of about two percent of the forest area per year.

At present, however, they believe British Columbia warbler populations are threatened more by forest loss in this province than in the tropics.

What is their status?

Like other native vertebrates in the province, the northeast warblers, their nests and eggs are protected under the British Columbia Wildlife Act against killing or destruction. As migratory species, they are also protected under the federal Migratory Birds Convention Act. However, the habitats they need to survive currently receive little protection.

Four of the five species discussed here – the Bay-breasted, Connecticut, Black-throated Green and Cape May warblers – are currently on British Columbia's Red List. This is the category

of most serious risk. Red-listed species are candidates for legal designation as Endangered or Threatened. One northeast warbler, the Canada Warbler, is on the provincial Blue List. Blue-listed species are considered to be vulnerable.

Being generally widespread across



BLACK-THROATED GREEN WARBLERS CAN BE FOUND IN WHITE SPRUCE AND MIXED-WOOD FOREST. Leah Ramsay photo

the Canadian boreal forest, these warblers are not at risk in a national context. Nevertheless, forest harvesting is a potential impact of long-term concern throughout their breeding range.

What can we do?

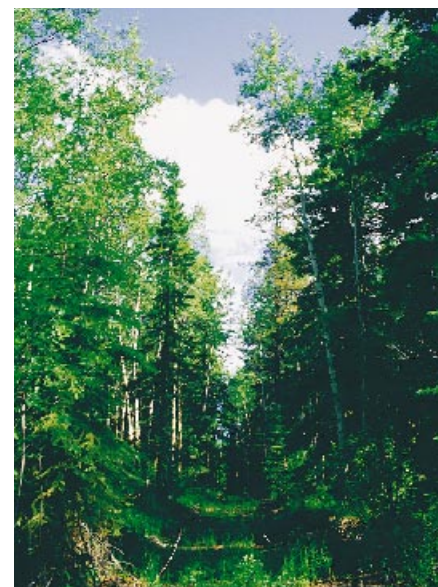
There is a major need for permanent protection or appropriate management of key habitats used by these birds. This requires information on their distribution, abundance and habitat requirements on the Alberta Plateau. Recognizing the plight of these warblers, the British Columbia Ministry of Environment, Lands and Parks sponsored preliminary surveys on these topics and prepared status reports for each species. This has greatly improved the information base, which previously was

scant or non-existent, but more intensive studies are urgently needed as time is running short for some species.

Provisions of the Forest Practices Code offer some promise for protection of warbler habitat. The Code requires that habitat maps be prepared for Red-listed species (four

of the five warblers discussed in this brochure) and stipulates that their habitat needs be addressed in forest operational plans. This may involve the establishment of Old-growth Reserves, Forest Ecosystem Networks, Riparian Management Areas and Wildlife Habitat Areas on Crown lands managed for forestry. Slightly different approaches may be needed for different species. Retention of large tracts of breeding habitat is probably the only feasible approach for dispersed species like the Cape May and Bay-breasted

warblers. Corridors connecting blocks of habitat are probably



CONNECTICUT WARBLERS PREFER ASPEN STANDS WITH UNDERSTOREY. Leah Ramsay photo




BAY-BREASTED WARBLERS OCCUPY WHITE SPRUCE HABITAT. Leah Ramsay photo



CANADA WARBLERS ARE OFTEN FOUND IN DECIDUOUS FORESTS IN WET SITES. Leah Ramsay photo

important for ground-dwelling species like the Canada and Connecticut warblers. Wildlife Habitat Areas may be a logical approach if concentrated breeding populations are found.

Establishment of additional, relatively large parks or other reserves in appropriate areas would greatly benefit these warblers and many other wildlife species. At present, the Alberta Plateau area of British Columbia is poorly represented with respect to protected areas.

Public support for the preservation of rare warblers and total biodiversity in northeastern British Columbia is crucial. People are urged to become more familiar with these threatened birds, to encourage enlightened forestry and land use practices, and to promote the establishment of protected landscapes. 



LARGE AREAS OF THE PEACE RIVER DISTRICT HAVE BEEN CONVERTED TO AGRICULTURAL USE. Leah Ramsay photo

FOR MORE INFORMATION ON NORTHEAST WARBLERS, CONTACT:

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