



Pest Report 93-31

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FOREST INSECT AND DISEASE CONDITIONS IN MOUNT REVELSTOKE AND GLACIER NATIONAL PARKS 1993

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Some of the more important forest insects and diseases in the Mount Revelstoke and Glacier Parks are discussed by host in this report. Most are continuous with outbreaks beyond park borders, discussed in more detail in the annual FIDS report of insect and disease conditions in the Nelson Forest Region. The most conspicuous are outbreaks of the **western hemlock looper**, Lambdina fiscellaria lugubrosa, in its fourth year currently defoliating 92 750 ha in the Nelson, Prince George, Kamloops and Cariboo Forest Regions, and the **mountain pine beetle**, Dendroctonus ponderosae, currently active on 7700 ha in the Nelson Forest Region.

In addition to the insects and diseases discussed below, an inspection was made with Roger Eddy of a potential extension of the Illecillewaet campground. Fruiting bodies of **heartrots**, Echinodontium tinctorium, Fomes pini, and F. pinicola were present on roughly 20% of the trees, a concern for any campsite development.

This report also fulfills the requirements for maintaining a Parks research and collection permit. Aerial surveys were completed by late August and covered most of the main drainages; limited ground surveys were conducted intermittently from May to October. Insect and disease conditions have, in most cases, been discussed with Parks personnel during the course of field surveys.

Pine

The **mountain pine beetle** infestation in Glacier Park declined slightly with an estimated 1140 white pine and some lodgepole pine killed over 30 ha, down from 1400 trees on 37 ha in 1992. Most activity remains near Mountain Creek, where an infestation has been ongoing since 1988. Broods examined were large, with a reproductive ratio of 11.4 indicating an increasing population. However, the local pine component is becoming sparse and new attacks are expected to be more widely dispersed. Groups of ± 10 trees continue to be killed annually along the Beaver River to Grizzly Creek.

Populations remained low in Mt. Revelstoke Park. Although no spot outbreaks were mapped during aerial surveys, scattered individual white pine infected by white pine blister rust were occasionally infested.

An introduced disease, **white pine blister rust**, *Cronartium ribicola*, continues to cause branch and top dieback, tree mortality, and reduced biodiversity throughout the ranges of western white and whitebark pines in both parks. Although no data was collected in the parks this year, rust-caused mortality was commonly observed in white pine stands along with the mountain pine beetle. In 11 stands assessed in 1993 beyond the parks, depletion of the white pine component averaged 32%, with an additional 41% stem-cankered but still alive and 12% branch-infected.

Western hemlock

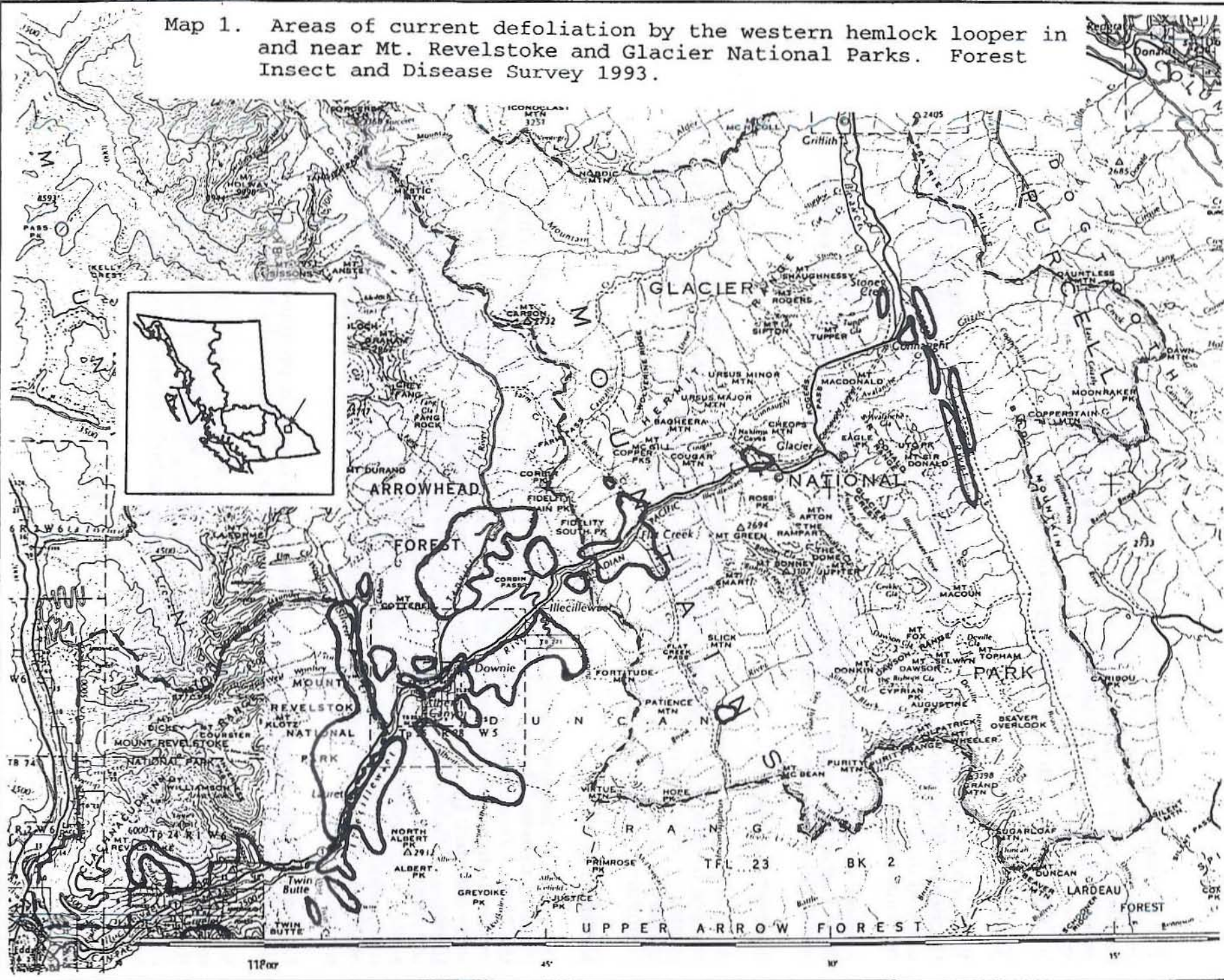
A total of 6400 ha of mature western hemlock and western red cedar in these parks were defoliated by the **western hemlock looper** (Map 1), up from 1300 ha in 1992. Defoliation expanded in area and increased in intensity west of Roger's Pass, with over 90% of the foliage lost at Cougar Brook. Generally moderate to severe defoliation along the Illecillewaet River and side drainages totaled 2800 ha in Glacier Park, 3300 ha in Mt. Revelstoke Park, and 7800 ha between the parks in stands subject to multiple use management. New light to severe defoliation was mapped over 1300 ha east of Roger's Pass, along the Beaver River.

Egg sampling at 4 locations near the Illecillewaet River indicated that moderate to severe defoliation will continue in the current areas with some expansion likely (Map 1). An egg sample from the mouth of the Beaver River indicated that defoliation would remain mostly light, though activity may be greater farther upstream, in Glacier Park. Egg parasitism in the 5 areas averaged 12% (range 8 to 18%), well below the 30% average preceding population collapses in previous outbreaks. Larval mortality from disease and parasitism was also low, averaging 6% and 3% in mass collections from the Tangier and Illecillewaet Rivers.

The impact of defoliation will be assessed after the infestation collapses and the extent of accumulated tree mortality, top dieback, and recovery can be determined. Previous studies indicated that top-kill starts with only 40% defoliation, some tree mortality follows 60% defoliation, and over half the trees die after 80% defoliation.

Although **blackheaded budworm**, *Acleris gloverana*, was not the primary cause of defoliation in the park, populations increased significantly in the same areas as hemlock looper. Larval beating counts increased up to 900 from only 60 in 1992.

Map 1. Areas of current defoliation by the western hemlock looper in and near Mt. Revelstoke and Glacier National Parks. Forest Insect and Disease Survey 1993.



Fall egg samples at Bostock Creek in Glacier Park, indicate that budworm populations will be large enough to cause moderate defoliation in 1994. While hemlock looper populations concentrate their activity in mature western hemlock stands, the blackheaded budworm will readily feed and build up populations in spruce--alpine fir stands. Consequently, defoliation could become more widespread through most forest types in the park.

True fir

Western balsam bark beetle, Dryocoetes confusus, remains a chronic pest along the Beaver River south of Grizzly Creek. Recently killed mature alpine fir were mapped in 20 small, scattered groups. Chronic scattered single attacks continued at higher elevations in Mt. Revelstoke National Park.

A **snow mould**, Herpotrichia juniperi, was common on the lower branches of alpine fir at higher elevations. Although not quantified, branch dieback was common and smaller saplings were occasionally killed.

Engelmann spruce

A small group of spruce mapped below Beaver Lookout, probably killed by the **spruce beetle**, Dendroctonus rufipennis, remained unchanged from 1992. No ground checks were made, but spruce beetle populations have been increasing in numerous areas of the Golden TSA, including upper Bachelor Creek adjacent to Mountain Creek in the Park.

Deciduous trees

Increased **leafminer** activity caused varying discoloration of birch, alder and black cottonwood throughout their ranges in the parks and the northern half of the Nelson Forest Region. Most prominent was, for the second year, extensive moderate to severe discoloration of birch from which the following leafminers were collected: Lyonetia speculella, L. nr. prunifoliella, and Profenusa thomsoni. Within the parks, damage was most conspicuous along slide paths and in relatively pure stands to the west of Roger's Pass. Scattered moderate to severe discoloration of alder was caused by Fenusa dohrni and light to moderate discoloration of black cottonwood by Phyllocnistis populiella. Previous outbreaks of severe discoloration by leafminers have not caused significant tree mortality.

No **gypsy moth**, Lymantria dispar, adults were caught in pheromone-baited traps at Illecillewaet and Loop Brook campgrounds and at Mt. Revelstoke Park.

Scattered individual willow branches and stems were again killed by an introduced insect, the **poplar and willow borer**, Cryptorhynchus lapathi, in Mt. Revelstoke Park. Since first collected in the Nelson Region in 1949, though likely present for several years prior, scattered attacks by this borer have become chronic through most of the host range.