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PEST REPORT

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SPRUCE BEETLE IN THE BOREAL CORDILLERA AND TAIGA PLAIN ECOZONES OF THE YUKON TERRITORY

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As partial fulfillment of a Memorandum of Understanding between the Canadian Forest Service Forest Health Network (FHN) and the Department of Indian and Northern Development (DIAND), forest health surveys were conducted by FHN personnel in Yukon over a two-week period in July of 1996.

Though a number of major disturbances were identified, the primary emphasis of the survey was evaluation of a large spruce beetle, *Dendroctonus rufipennis*, epidemic. The infestation which this year expanded to 59 000 ha from 47 000 in 1995, and occurred mostly in the **St. Elias Mountains Ecoregion** of the **Boreal Cordillera Ecozone** in the Shaskwak Valley near Haines Junction and Kluane National Park (Map). An additional special survey assessed the potential for continued tree mortality caused by the spruce beetle in the **Muskwa Plateau Ecoregion** of the **Taiga Plain Ecozone** along the La Biche and Beaver river corridors in the extreme southeast of the Yukon.

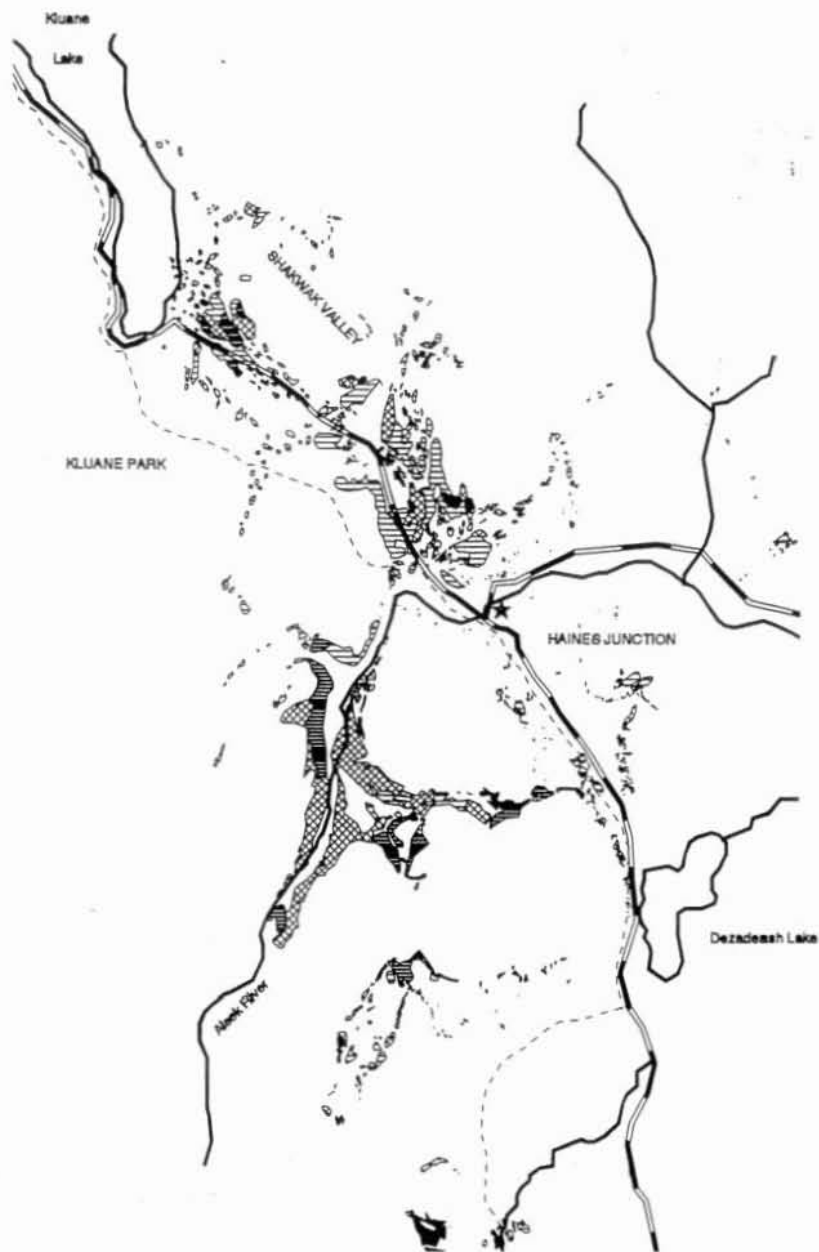
In the three years since spruce beetles were identified infesting white spruce in southwestern Yukon, the infested area has doubled and tree mortality has intensified to the degree that in many stands, most notably in the in the Alsek River corridor within Kluane National Park and between Kloo Lake and Kluane Lake in the north Shaskwak Valley, few mature trees remain unattacked. Within Kluane National Park, 1996 aerial surveys mapped recently-killed trees over 33 000 ha. Infestations had intensified along Mush Lake and expanded southward along the east side of Bates Lake. Infestations in Tatshenshini Provincial Park in B.C. continued to expand northward into the Yukon with a large new infestation at Onion lake in addition to well established large patches of mortality along the Bridge River and the mouth of Silver Creek. Numerous new small infestations were mapped along the west side of Dezadeash Lake.

Farther north, large intense infestations continued along both sides of the Alsek River north of the Lowell Glacier, with only minor expansion eastward around Kathleen Lake and westward along the lower Kaskawulsh, Dusty and Jarvis rivers. In the Shawkak Valley, modest expansion was mapped to the north and south, while in the center attacks intensified near Haines Junction and Pine Lake. Along the south and east shores of Kluane Lake, infestations which were small in 1995, had coalesced and expanded along Inlet and Cultus creeks, and there were minor new infestations along Ostberg and Gladstone creeks. The most significant expansion was south of Haines Junction on mountain slopes just east of lower Kathleen Lake. If expansion continues, extensive stands of white spruce south and east of Dezadeash Lake could become threatened.

The extreme cold weather in early 1996 killed most of the overwintering larvae within the trees above the snowline throughout the infested area. These broods would have matured in 1997. The cold also killed a significant proportion of the mature broods residing at the root collars, thereby reducing the intensity of 1996 attacks as well. Probes in nine stands scattered throughout the infested area showed current attacks in 21% of the mature trees compared to 31% in 1995. Historically, spruce beetle populations have proven unable to rebound from such losses and for this reason the current infestation is expected to subside in 1997 and collapse completely within the next few years.

The effects of this unusually large and devastating infestation on the patterns and diversity of the local biota will be dramatic and long-lasting, especially in areas where no conifer understory existed. The removal of the white spruce overstory will promote a conversion to deciduous species such as aspen willow and scrub birch, and promote the growth of herbaceous plants such as grasses. In stands like those in the Trout Lake area within Kluane National Park with a healthy white spruce understory, deciduous conversion will be of shorter duration.

Ground probes were made at eight locations along the Beaver and LaBiche rivers to determine the cause of extensive recent white spruce mortality in both river corridors, and assess the potential for further damage. Spruce beetle, as suspected, was the main destructive agent, possibly aided by stresses brought on by repeated defoliation of the trees by the eastern spruce budworm, *Choristoneura fumiferana*, and infection by the root disease *Inonotus tomentosus*. Light current spruce beetle attacks were found at three of the sites and low levels of engraver beetle, *Ips* sp., and Allegheny spruce beetle, *Dendroctonus punctatus*, attacks were found at two other locations. The signs were of a beetle population in decline and no further significant beetle activity is expected.



SPRUCE BEETLE 1996

**Yukon
Territory**

FHN GIS

**Natural Resources Canada
Canadian Forest Service
Forest Health Network
Pacific Forestry Centre**

Scale 1: 1000000

Map Projection : Lambert

Map Produced 24 Sep 96

YUKON TERRITORY

Reference Map



Legend:

**Lakes &
Rivers**

Roads

**National
Park
Boundary**

Tree Mortality

Light
Moderate
Severe
Total

Number of Infestations

392
196
225
813

Area (ha)

22471
22052
13839
58362

Definitions: **LIGHT** 10 % or less of stand recently killed
MODERATE 11 - 29 % of stand recently killed
SEVERE 30 % + of stand recently killed