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SUMMARY OF FOREST PEST CONDITIONS IN THE YUKON TERRITORY

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SPRUCE PESTS

Eastern spruce budworm, Choristoneura fumiferana

Aerial surveys conducted to map budworm defoliation of white spruce in the Liard and Fort Nelson river drainages of the Fort Nelson Forest District found damage to be considerably reduced this year. Ground observations in the Smith River area found trace-to-light defoliation. Though no aerial surveys were conducted in the La Biche River Valley in the extreme southeast corner of the Yukon, populations have synchronously risen and fallen with those in the Liard river drainage.

No spruce budworm larvae were collected in standard three-tree beating samples taken throughout southern areas of the Territory, with the exceptions of Haines Junction and Km 50 of the Dempster Highway, where eight and seven larvae, respectively, were found.

Defoliation by spruce budworm can cause growth loss. Repeated severe defoliation can cause branch mortality and top-kill.

PINE PESTS

A pine needle cast, Lophodermella concolor

This needle disease, prevalent in 1991, was even more widespread and the damage was more severe in 1992. Similar to 1991, the most severe damage occurred in the Watson Lake vicinity where 90% of young pines, particularly along roadsides, lost an average of 30% of their year-old lower crown needles with infection levels ranging as high as 100% of the 1991 needles. Overstory trees were only lightly infected. Light and moderate levels of needle loss were seen intermittently in roadside stands as far west as Rancheria, and for 150 km north of Watson Lake along the Robert Campbell Highway.

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Severe repeated infections can result in a considerable loss of growth potential.

Lodgepole pine terminal weevil, Pissodes terminalis

Following two successive years, when single pine terminal weevil attacks were found just north of Watson Lake, infestations of the weevil were seen in young lodgepole pine stands throughout the southern Yukon. Infestation levels ranging as high as 15% of the terminals were seen at Watson Lake (10%), Km 1085 Alcan Highway (15%), along the Atlin Road (5%), Takhini Hot Springs Road (1%), Spirit Lake near Carcross (10%) and scattered along the south ends of the Canol Road and Robert Campbell Highway (<1%). In almost every weevil-infested stand, most notably near Watson lake and Atlin, terminal buds of an equal or lesser number of trees had been attacked by the fir coneworm, Dioryctria abietivorella. Most had emerged before the late June survey was conducted.

Weevils attack developing terminals, killing them down to the first branch whorl. High incidences and repeated attacks over time can result in significant loss of growth potential. Damage on this scale is not anticipated in the Yukon; however, considering the dramatic increase in the weevil population in only one year, activity of this pest will be closely monitored in years to come.

LARCH PESTS

Larch sawfly, Pristiphora erichsonii

Larch sawfly populations remained low, similar to the 1991 levels. Early season examinations were conducted in late June to determine the frequency of oviposition (adult egg laying) in elongating lateral shoots. In stands along Highway 37 near the B.C.-Yukon border, an average of 1% or less of the shoots of all understory trees were crooked due to oviposition. In stands along the Robert Campbell Highway up to 200 km north of Watson Lake, only small numbers of branches were attacked (between 1 and 10% of the trees). At Km 175, evidence of localized moderate and severe 1991 defoliation lingered on some roadside trees in the form of bare branches, primarily in the upper crowns.

Larvae that hatch from a single oviposition site can defoliate one or more branches before reaching maturity, and even such a low frequency of oviposition as seen in the border stands he can result in trace-to-light defoliation on immature and understory trees. Severe defoliation can result in significant loss of growth potential. No noticeable damage is expected in stands north of Watson Lake. Historical fluctuation patterns suggest that populations will remain low in 1993.

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SPECIAL DIRECTED SURVEYS

Joint Canada-Sweden lodgepole pine trial

Pest conditions in the 6-year-old lodgepole pine trials in the Takhini Forest Reserve, were evaluated by FIDS during the annual Yukon survey.

Survival in the replicates of lodgepole pine was again fairly uniform. Of 14 randomly selected replicates that were examined, an average cumulative mortality of 11% was found. This means that out of 64 pine seedlings planted in 1986 in each plot, an average of 57 remained alive in 1992. These results were strongly influenced by one of the examined replicates (on the southeast corner of the plantation) in which 33 of the 64 trees had died, likely from a combination of frost and rodent feeding. With this plot removed, average mortality dropped to 8%.

Cumulative mortality in Siberian larch averaged 18%, 4% less than reported last year, following the dieback caused by frost in the winter of 1990-91. Some of the affected trees produced adventitious shoots from near the root collar and were able to survive.

Surviving seedlings of both species appeared much more vigorous in 1992 following a relatively mild winter and a collapse of the hare population that had been feeding within the plantation.

This is the most northerly of five similar experimental plantations established in the Pacific and Yukon Region, in co-operation with Svenska Cellulose, a Swedish forest company. Lodgepole pine in the plots were grown from seed produced in Swedish seed orchards. The parent trees had been grown from seed which originated from various northern B.C. provenances. The purpose of the trials is to determine how the trees, one generation removed from their native environment, respond when reintroduced. Pest conditions within the plots will be re-assessed in 1993.

Acid Rain National Early Warning System (ARNEWS)

In an expansion of the nationwide program designed to monitor deposition of airborne pollutants, a long term-study plot was established this year in the Takhini Forest Reserve, near Whitehorse. During this establishment year, the plot boundaries were laid out and each tree falling within the 10 x 40 meter plot was tallied, measured and numbered. In addition, all herbaceous plants and species of lichen were identified within subplots. Foliage and soil samples taken from within the plot will be chemically analyzed and the results of this analysis will provide base line constituent data against which all future samples will be compared. During the course of the study plot trees will be remeasured and certain samples taken on a yearly basis, with more detailed analyses being done every five years.

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MULTIPLE HOST PESTS

Winter Damage

Winter cold and wind desiccation are two of the most common and consistent agents of damage in Yukon forests. The damage can be expressed in many ways; from needle discoloration, to top and branch dieback, and full tree mortality.

For more than five years, white spruce decline has been an evident and expanding problem in a number of locations within the Territory. All areas where dieback and, in some instances, full tree mortality were reported in 1991 remained affected in 1992. Significantly increased discoloration was evident in all age class white spruce at the height of land along the Klondike Highway between Whitehorse and Carcross. However, recent damage resulting in further discoloration and dieback was reduced in all areas including Burwash Landing, the Klondike Highway from Stewart Crossing to Carmacks and along Little Atlin Lake.

The decline is slow and progressive with the browning and shedding of needles beginning in the upper crowns and branch tips. Samples sent to Pacific Forestry Centre (PFC) for analysis revealed no signs of any insect or disease activity, and damage is thought to be a result of combined drought and winter climatic stress.

Physical damage to foliage resulting from winter cold was much less common than in 1991. Moderate and severe discoloration of lodgepole pine foliage along the Atlin Road near the B.C.-Yukon border possibly resulted from frost and wind following an unusually warm spell in February. Similar but much lighter damage affected young pine along the Alcan Highway, just south of Whitehorse.

DECIDUOUS TREE PESTS

Large aspen tortrix, Choristoneura conflictana

Damage to trembling aspen caused by the large aspen tortrix increased significantly in the Tagish Lake area of the southwestern Yukon causing widespread moderate and severe defoliation. Though the infested area was not aerially mapped, the defoliated area has been estimated to be in excess of 10 000 ha, based on ground observations. Approximately 5 km north of Carcross, light and moderate defoliation occurred on both sides of the Klondike Highway, with large patches of severe defoliation visible to the southwest, just north of Bennett Lake. Proceeding east toward Tagish, large patches of severe defoliation bounded by light and moderate patches occurred on the lower south-facing slopes of Caribou Mountain. The largest observed continuous area of infestation spanned 8 km, along both sides of the road just east of Tagish, with continuous severe defoliation for 1 km, and light and moderate defoliation

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within the aspen type for an additional 7 km. This was the same, area, though somewhat enlarged, where infestations were reported in 1991. Intermittent smaller patches of severe defoliation were also seen on south-facing slopes for 10 km, as far as Km 1382 of the Alcan Highway, west of Jakes Corner. South of Carcross, defoliation (more than half of which was severe) covered 1000+ ha above the northwest side of Tagish Lake along Windy Arm, and an additional 500 ha at the southeast end of the Arm.

North and west of Whitehorse no current feeding activity was seen, though light instances of rolled and tied aspen leaves occurred along the highway just north of the city, near Takhini Hot Springs and Champagne. In all instances, it appeared that predators (mainly foraging ants) had reduced the populations to such an extent that no living larvae could be found. Along the Haines Road, just east of the Takhanne River, balsam poplar, willow spp. and mountain alder were all lightly defoliated by the tortrix. No aspen occurred
in the area.

Mass collections of tortrix larvae were made near Carcross and Tagish. During collection, a high percentage of the larvae were observed to be supporting the eggs of an, as yet, unidentified parasite. These insects are currently in rearing at PFC. Levels of parasitism will be reported in the final Yukon Report later this year.

Defoliation by the tortrix will cause some growth loss and may kill branches or, with repeated severe defoliation, kill trees or tops. The high levels of parasitism in those areas severely infested this yearmay cause a significant reduction in populations for 1993.

MAMMAL DAMAGE

Along with environmental damage some of the most prevalent and visibly damaging forest pests in the Yukon are: the small mammals such as the snowshoe hare, squirrel, and vole.

Squirrels continued to cause damage to young lodgepole pine by their habit of stripping the immature cones from the trees during winter and early spring. Most notable this year were occurrences of damage between Whitehorse and Carcross, especially near Spirit Lake, where up to 10 tips were killed on 10% of the trees. Similar levels of damage were seen at the south end of the Canol Road, increasing to as high as 15 tips (avg. 5) on 40% of the trees. Along Little Atlin Lake, up to 5 attacks per tree were seen in scattered roadside pockets.

The stripping of the whorls of cones tears the cambium layer and effectively girdles branches, causing the death of the previous year's distal growth. The damage becomes quite apparent in the early summer when the branch tips turn red.

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Feeding damage to the stems of lodgepole pine and trembling aspen caused by snowshoe hare feeding was much reduced in all areas affected in 1991, due to a significant reduction or collapse of the hare population. Vole populations also remained low following collapses two and three years ago, depending upon the area.

A more complete summary of forest pest conditions in the Yukon will be printed later in the year.

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