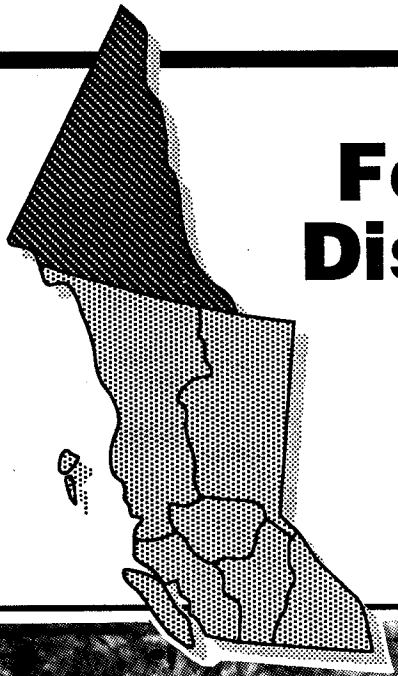
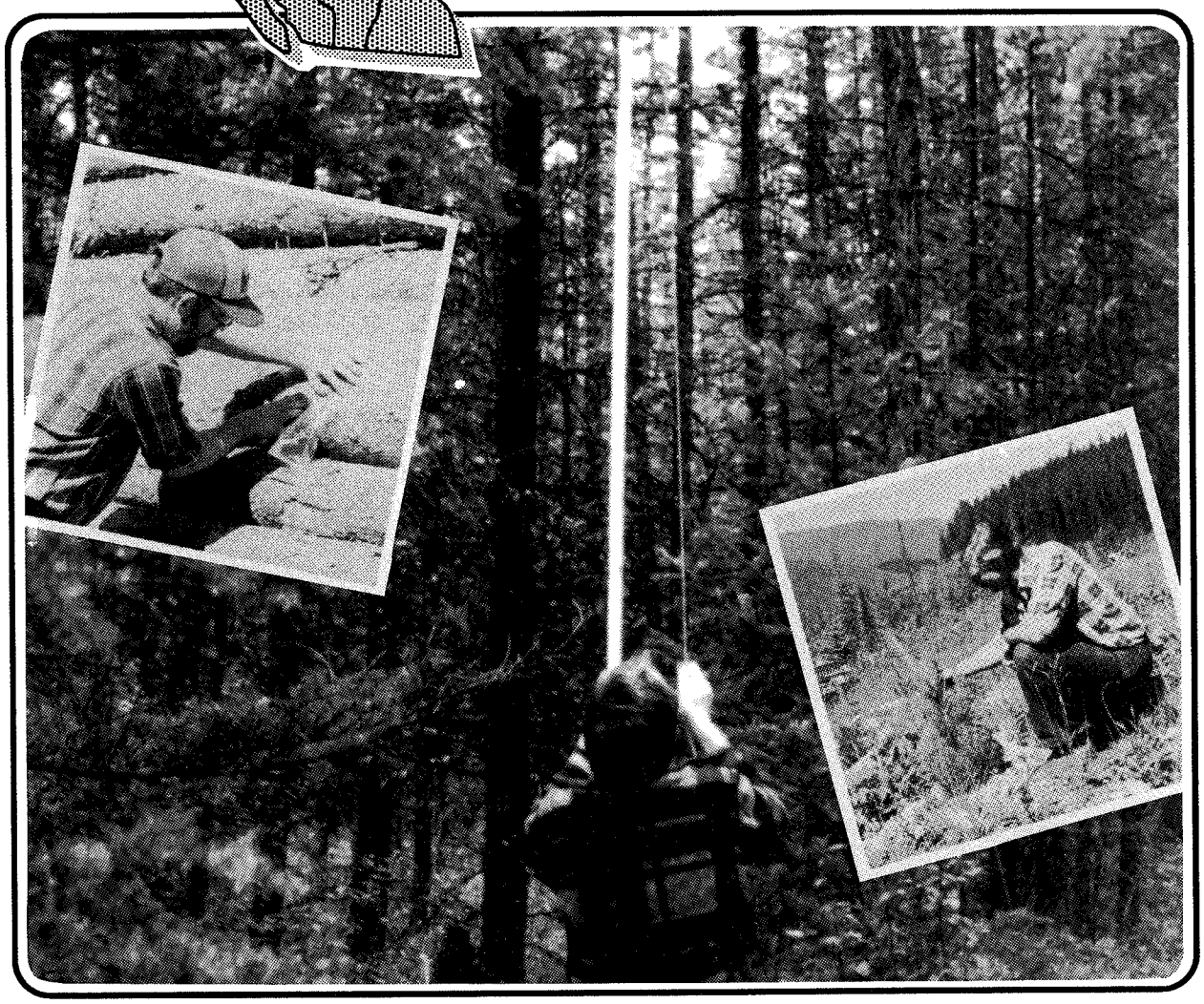


Forest Insect and Disease Conditions

Yukon Forest Region
1990

R. Ferris



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CONTENTS

The following Appendices are available on request from the Forest Insect and Disease Survey, Forestry Canada, 506 West Burnside Road, Victoria, B.C. V8Z 1M5.

I. Summary of Svenska Cellulose lodgepole pine trials in B.C. and the Yukon.

II. Detailed map of the large aspen tortrix defoliation in the Yukon.

INTRODUCTION

This report summarizes forest insect and disease conditions in the Yukon Territory in 1990. Pests are listed by host with emphasis given to those capable of sudden damaging outbreaks.

During the 13-day survey in early July, over 75 insect and disease samples were collected at permanent and random sites (MAP 1) in stands from Watson Lake along the Robert Campbell Highway through Whitehorse to Kluane National Park, along the Alaska Highway to Alaska and from Dawson City through Whitehorse to Watson Lake. Special surveys were conducted for pinewood nematode, large aspen tortrix, larch sawfly and winter damage.

Yukon Forest Service staff were contacted at Whitehorse, Carmacks, Teslin, Dawson City, Beaver Creek and Watson Lake. A meeting with headquarters staff was held at Whitehorse to inform them of Forestry Canada-FIDS work plans and to coordinate the aerial survey to map defoliation by large aspen tortrix which was paid for by the Yukon Forest Service. The assistance of Kim Rhymer and the rest of the staff of the Yukon Forest Service is gratefully acknowledged.

Forest Insect and Disease Survey (FIDS) is a nation-wide network within Forestry Canada with the responsibility of producing an overview of forest pest conditions and their implications. This includes maintaining records and surveys to support quarantine and facilitate predictions; supporting forestry research with records, insect collections and herbaria, providing advice on forest insect and disease conditions; developing survey techniques and conducting related biological studies. Surveys are carried out in both British Columbia and the Yukon Territory, collectively termed the Pacific Region.

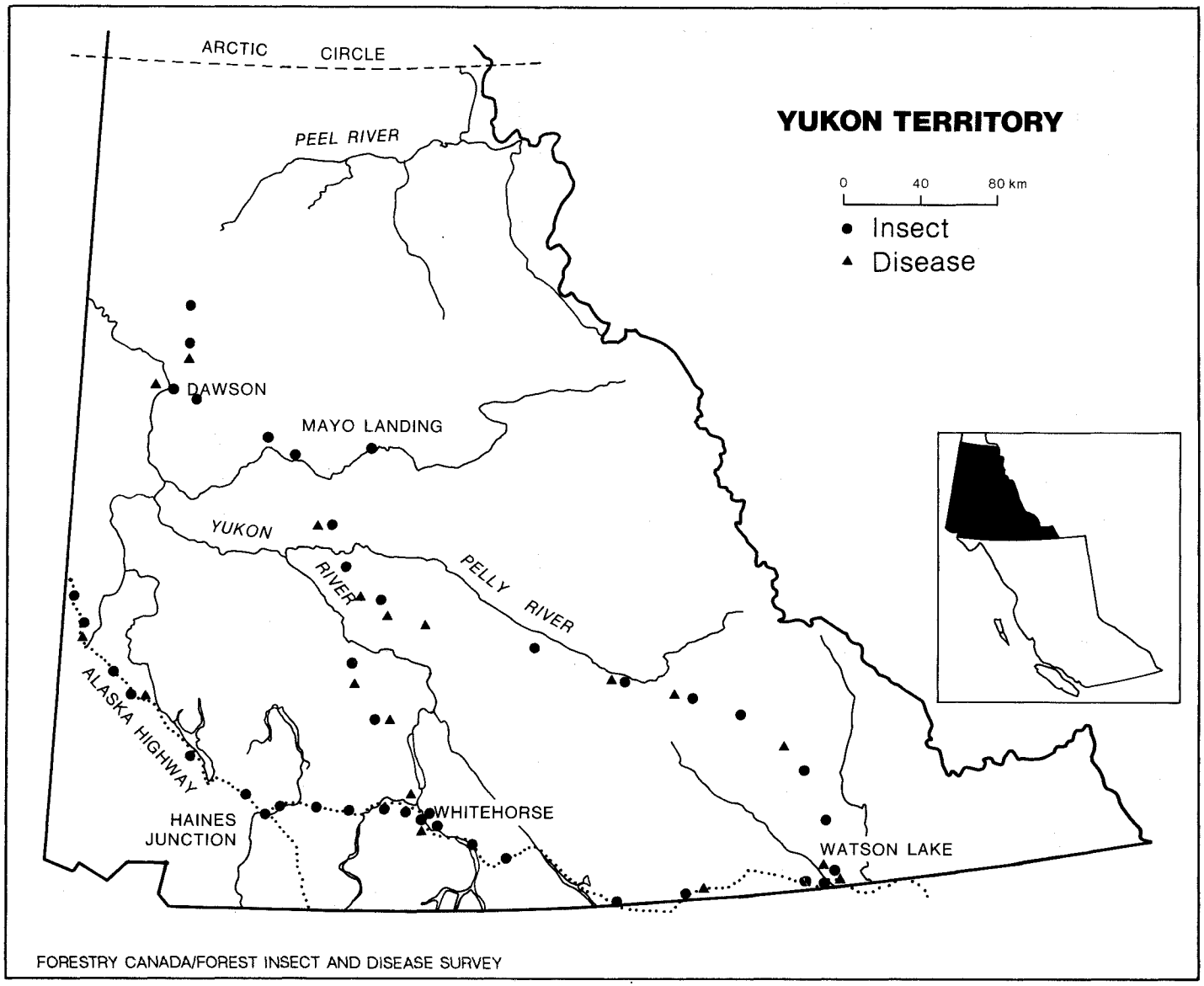
Correspondence and inquiries with respect to forest pest problems in the Yukon can be directed to the Forest Insect and Disease Survey (FIDS) at:

Pacific Forestry Centre
Forestry Canada
506 West Burnside Road
Victoria, B.C.
V8Z 1M5 Ph. 363-0600

During the field season, the ranger is based at:

Forest Insect and Disease Survey
Forestry Canada
R.R. 8, Site 25, Comp. 8
Prince George, B.C.
V2N 4M6 Ph. 963-7238

Detailed copies of maps, pest reports, leaflets and monographs, as well as regional pest histories, are available from the above addresses.



Map 1. Areas where one or more forest insect and disease samples were collected in 1990.

SUMMARY

Eastern spruce budworm populations increased for the second consecutive year and defoliation was observed in the La Biche River valley. Spruce beetle populations remained low; no outbreaks or mortality were reported.

Pinewood nematode was found for the first time during a special export-related survey near Watson Lake. A **pine needle cast** lightly infected lodgepole pine near Frances Lake causing premature needle loss. **Lodgepole pine terminal weevil** was found for the first time near Watson Lake. **Frost damage** continued to affect the young lodgepole pine and Siberian larch at the joint Canada-Sweden lodgepole pine trial near Takhini. A top dieback caused by **frost damage** has affected over 30% of the sapling lodgepole pine at the Watson Lake growth and yield plot.

Populations of **larch sawfly** decreased after 3 consecutive years of defoliation in the Finlayson and Frances lakes area. **Larch-willow rust** infections increased, causing light defoliation of tamarack near Finlayson and Frances lakes, but no significant damage is expected.

Winter damage increased, discoloring foliage and causing dieback of lodgepole pine, trembling aspen, spruce and birch, particularly in the areas south and east of Carmacks and near Beaver Creek.

For the third consecutive year **large aspen tortrix** populations continued, causing mainly light defoliation of trembling aspen over about 9 100 ha in the Takhini area.

Two new distribution records, **pinewood nematode** and **lodgepole pine terminal weevil**, were collected for the most northerly distribution records.

A table summarizing other noteworthy and minor pests is included in this report.

SPRUCE PESTS

Eastern spruce budworm, Choristoneura fumiferana

For the second consecutive year, defoliation of spruce was visible along the La Biche River in the southeast corner of the Yukon. This is an extension of a major outbreak in northeastern British Columbia where 398 150 ha were defoliated, more than triple the 123 700 ha in 1989. Defoliation also extends into the Northwest Territories along the Liard River. No aerial surveys were conducted in the Yukon due to time and budget constraints. Egg mass samples from northeastern British Columbia indicate continuing high populations in 1991.

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

Spruce bark beetle, Dendroctonus rufipennis

There were no active spruce beetle populations noted in the Yukon in 1990. Contact with the B.C. Forest Service at Atlin and Dease Lake indicated no current populations near the Yukon-British Columbia border, where populations were last reported in predisposed spruce in 1987. The Yukon Forest Service also reported no new damage or populations.

PINE PESTS

Pinewood nematode, Bursaphelenchus xylophilus

Pinewood nematode was found for the first time in the Yukon during a survey of woodborer-attacked spruce logs, at a sawmill near Watson Lake. The most common vectors of the nematode are the Monochamus sp. woodborers. Nematodes were extracted at the Pacific Forestry Centre from one of twenty-one samples collected in the Yukon in 1990. This is the most northern distribution record for this pest. The nematode is extremely rare in forests in the Pacific and Yukon Region, with only six positive collections in about 2000 samples taken since 1980 at widely distributed locations.

Surveys for pinewood nematode are required to assist in the phytosanitary certification of wood products for export to several countries. In Japan it has caused a disease in pines called pine wilt and European lumber buyers are concerned that it may be introduced to their forests.

A pine needle cast, Lophodermella concolor

Light infections of year-old needles were common near Frances Lake along the Robert Campbell Highway, where 2% of the foliage on 80% of the lodgepole pine was infected. Severe infections often result in considerable premature needle loss.

Lodgepole pine terminal weevil, Pissodes terminalis

Damaged leaders and larvae were found for the first time in a young lodgepole pine stand near Watson Lake. This is the northern-most distribution

record for this insect. The occurrence is very low with less than 1% of the pine infested.

This weevil attacks developing terminals and kills them down to the first branch whorl. Over time, this can cause significant leader mortality resulting in crooks and growth loss.

Joint Canada-Sweden lodgepole pine trial

Pest conditions in the 4-year-old lodgepole pine trials in the Takhini Forest Reserve were evaluated by FIDS during the annual Yukon survey.

Trees at this plot continue to exhibit the poorest growth and vigour of all the Svenska plots in the Pacific Region. Ten percent of the lodgepole pine are dead, 50% have cumulative leader damage and 2% have new leader damage, all caused by winter damage. Many of the Siberian larch have died and 30% of the remaining trees have leader damage, of which 20% is current.

This is the most northerly of five similar experimental plantations in the Pacific Region. Pest conditions at the plot will be assessed in 1991.

Watson Lake growth and yield plot

Winter damage caused 32% (range 10-75%) cumulative leader mortality with 2% current damage on the sapling lodgepole pine in the plot. Leader mortality can cause crooks and growth loss in the pine. Western gall rust and lodgepole pine terminal weevil were also found in the area, but at such low levels that they were not detected in the pests of young stands survey.

The plot was established near Watson Lake in 1961 by Forestry Canada to provide data on growth and yield. A report, "Growth of some pine-spruce stands in the Yukon: a 27-year record" by G.M. Bonnor, was published in 1989 and is available from Pacific Forestry Centre. This plot will be surveyed in 1991 to determine the impact of environmental damage on the stand.

LARCH PESTS

Larch sawfly, Pristiphora erichsonii

Larch sawfly populations declined after three consecutive years of light to moderate defoliation of tamarack near Finlayson and Frances lakes. Sampling indicated a declining population, with little if any defoliation expected in 1991. No further assessment is available as no aerial surveys were conducted. Further monitoring of larch sawfly populations will continue next year.

Larch-willow rust, Melampsora paradoxa

Larch-willow rust lightly infected tamarack, in conjunction with larch sawfly attack, near Finlayson and Frances lakes. About 20% of the foliage on 20% of the larch along the Robert Campbell Highway was infected, resulting in thinning of crowns similar to defoliation by larch sawfly. Light infections are expected in 1991. Monitoring of the larch-willow rust will continue next year.

MULTIPLE HOST PESTS

Winter Damage

Winter damage was found on lodgepole pine, spruce and aspen near Beaver Creek, from Fox Lake to Twin Lakes along the Klondike Highway and near Little Salmon Lake. Scattered occasional damage was found along the Robert Campbell Highway, from Whitehorse to Bear Flats along the Alaska Highway and from Dawson City to Carmacks along the Klondike Highway.

There was damage to 50% of the foliage (range 0-100%) on 95% of the young growth lodgepole pine for 2 km along the Klondike Highway south of Twin Lakes. This area had severe damage in 1989 with almost all the needles killed. There was less than 5% tree mortality in 1990; a similar amount is expected in 1991. Trembling aspen and white spruce were also affected in this area and scattered along the Klondike Highway. About 5% upper crown mortality, including dead buds, twigs and branches, occurred on 90% of the trembling aspen. Nearly 75% of the white spruce crowns have cumulative winter damage causing forks and multiple leaders.

Near Little Salmon Lake east of Carmacks, 20% of the foliage on 25% of the semimature lodgepole pine was damaged over 100 ha. Similar damage to mainly aspen and birch was found in this area in 1989, along the south-facing slopes above Little Salmon Lake.

Damage was visible for seven kilometers along the Alaska Highway, ten kilometers east of Beaver Creek where 40% of the foliage on 90% of the spruce was damaged over 5000 ha. The dead foliage occurs on the west side of the trees indicating an environmental influence from the west.

Along the following highways there was occasional scattered winter damage: from Watson Lake to Carmacks along the Robert Campbell Highway there was winter damage to 30% of the foliage on 5% of the spruce, pine and aspen; from Whitehorse to Bear Flats along the Alaska Highway, 20% of the foliage on 5% of the spruce was damaged; and, between Dawson City and Carmacks along the Klondike Highway, 50% of foliage on 5% of the spruce, pine and aspen was damaged.

Winter damage is believed to be caused by extreme winter temperatures combined with high winds. This is currently the most important problem in the Yukon and affects more trees over a larger areas than any other pest. Recovery from winter damage is usually good, with damage limited to growth reduction and crooks.

DECIDUOUS TREE PESTS

Large aspen tortrix, Choristoneura conflictana

Large aspen tortrix populations deceased slightly, defoliating trembling aspen over about 9 100 ha, down slightly from 10 200 ha in 1989. Aerial surveys in early July recorded 4 365 ha of severe, 1 775 ha of moderate and 2 960 ha of light defoliation. The defoliation was mapped on both sides of the Alaska Highway and the Takhini River from west of Arkell Creek to east of Takhini Hotsprings and between Flat Mountain and Lake Laberge.

Defoliation by the tortrix will cause some growth loss and may kill branches or with repeated severe defoliation, kill trees or tops. The infestation is expected to continue in 1991 and FIDS staff will continue to monitor large aspen tortrix populations during the annual Yukon survey in 1991.

OTHER NOTEWORTHY AND MINOR PESTS

Table 1. Other noteworthy and minor pests.

Pest	Location	Remarks
White Spruce		
Spruce broom rust *Chrysomyxa arctostaphyli*	Yukon Territory	common and widespread
Roundheaded woodborer Cerambycidae	Bear Flats and Yukon Pacific Forest Products	larvae boring into downed trees and logs
Yellowheaded spruce sawfly *Pikonema alaskensis*	Carmacks	low incidence in this area
Lodgepole pine		
A longhorned woodborer *Pachyta lamed liturata*	Watson Lake	adults found on log decks
Western gall rust *Endocronartium harknessii*	Watson Lake	moderate incidence, light intensity
Deciduous		
A gall mite *Eriophyes parapopuli*	Watson Lake, Takhini Hotsprings	near Watson Lake trace galling was found on Sitka alder and near Takhini Hotsprings 20% of the branches on 90% of the young trembling aspen were galled over 1 ha.
A leaf gall aphid *Thecabius populimonilis*	Bear Flats	10% of the foliage on 40% of the black cottonwood over 5 ha was damaged
Mourningcloak butterfly *Nymphalis antiopa*	Whitehorse	occurs on deciduous trees, occasionally defoliating single trees

Pest	Location	Remarks
Ambermarked birch leafminer *Profenusa thomsoni*	Whitehorse	collected on native paper birch
A stem galling fly Agromyzidae	36km Dempster Hwy	light damage to 60% of the willow over 1 ha
A leafroller *Archips rosanus*	Whitehorse	common on alder and willow but it is not known to cause damage to healthy trees
A leaf spot *Marssonina brunnea*	Teslin	found on the foliage of trembling aspen
Juniper broom rust *Gymnosporangium nidus-avis*	Whitehorse	found on Saskatoon-berry
A leaf curl *Taphrina ?occidentalis*	Salmon Lake	found on alder foliage, low incidence

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