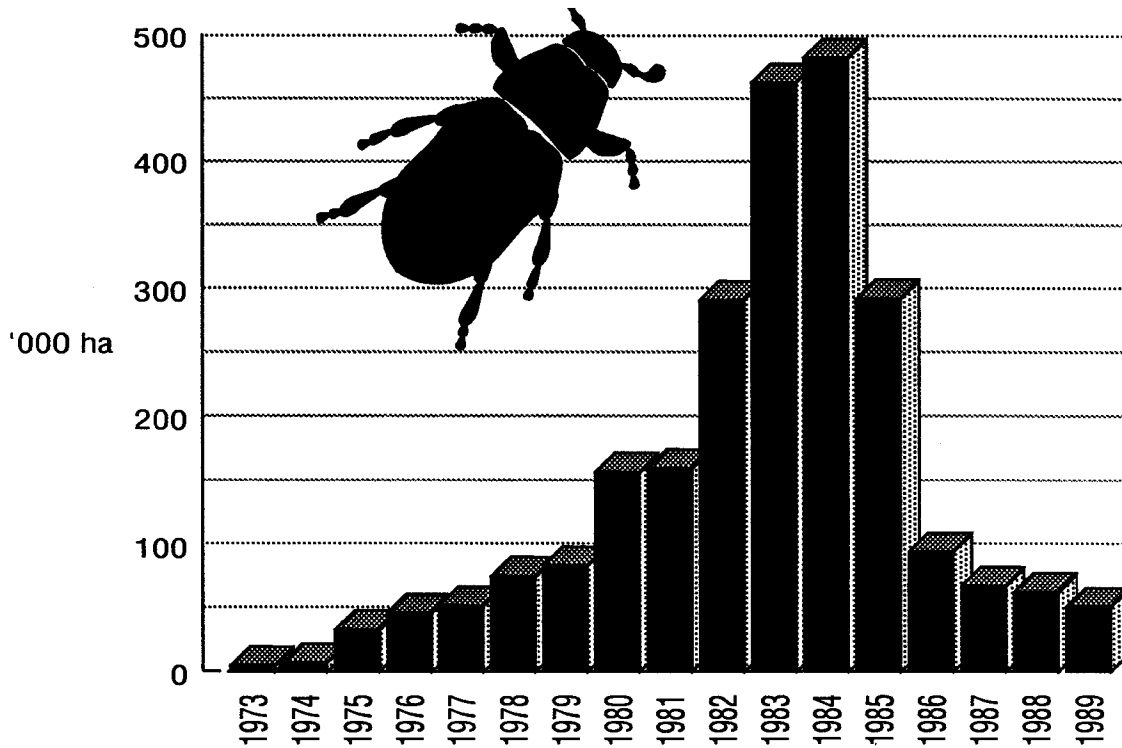


# Forest Insect and Disease Conditions

Yukon Territory  
1989

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Mountain Pine Beetle in British Columbia

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Appendices - Available on request from the Forest Insect and Disease Survey at the above address.

- I. Summary of Svenska Cellulose lodgepole pine trials in B.C. and the Yukon.
- II. Detailed map of large aspen tortrix defoliation in the Yukon.

## INTRODUCTION

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This report summarizes forest insect and disease conditions in the Yukon Territory in 1989. Pests are listed by host with emphasis given to those capable of sudden damaging outbreaks.

During the 12-day survey in late June over 70 insect and disease samples were collected at over 30 permanent and 40 random sites (MAP 1) in stands from Watson Lake west to the Haines Road and the Alaska border on the Alaska Highway, along the Klondike and Robert Campbell highways, and along the Mayo-Elsa Road. Thirty-eight percent of beating samples at permanent sampling stations were positive, up from thirty-four percent in 1988 but still low, reflecting the generally cool damp late spring and early summer weather. Special surveys included assessments of larch sawfly populations north of Watson Lake, Svenska Cellulose lodgepole pine trials near Takhini, further collections of an aspen leaf disease found for the first time in the Yukon in 1987, assessments of large aspen tortrix populations near Takhini, and collections and assessments of winter damage.

Yukon Forest Service personnel were contacted at Whitehorse where two meetings were held with headquarters staff to discuss pest problems. Contact was also made with the Yukon Forest Service at Carmacks, Watson Lake, Teslin and Haines Junction. Don White of the Yukon Forest Service sent in several additional pest samples, including the first collection of the ambermarked birch leafminer in the Yukon.

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; maintaining records and surveys to support quarantines and facilitate predictions; supporting forestry research with records, insect collections and herbaria; providing advice on forest insect and disease conditions; and developing and testing 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 Territory 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. 388-0600

During the field season, the ranger is based at:

Forest Insect and Disease Survey  
Forestry Canada  
P.O. Box 687  
Prince George, B.C. V2L 4S8      Ph. 963-7394

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

**SUMMARY**

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**Eastern spruce budworm** populations increased, some defoliation was observed in the La Biche River Valley, and a **budworm species** caused trace damage west of Kluane Lake on the Alaska Highway. For the second consecutive year, a **spruce budmoth** lightly defoliated current foliage of white spruce in the Liard River area. Black spruce **dieback** was common along the Klondike Highway north of Carmacks and in the Mayo area.

**Winter flecking**, causing foliar discoloration and premature needle cast, was widespread on lodgepole pine throughout the southern Yukon. A **top dieback** affected over half the immature lodgepole pine in a Forestry Canada growth and yield plot near Watson Lake. **Frost damage**, combined with **secondary fungi**, continued to affect most young lodgepole pine and Siberian larch at a joint Canada-Sweden lodgepole pine trial near Takhini.

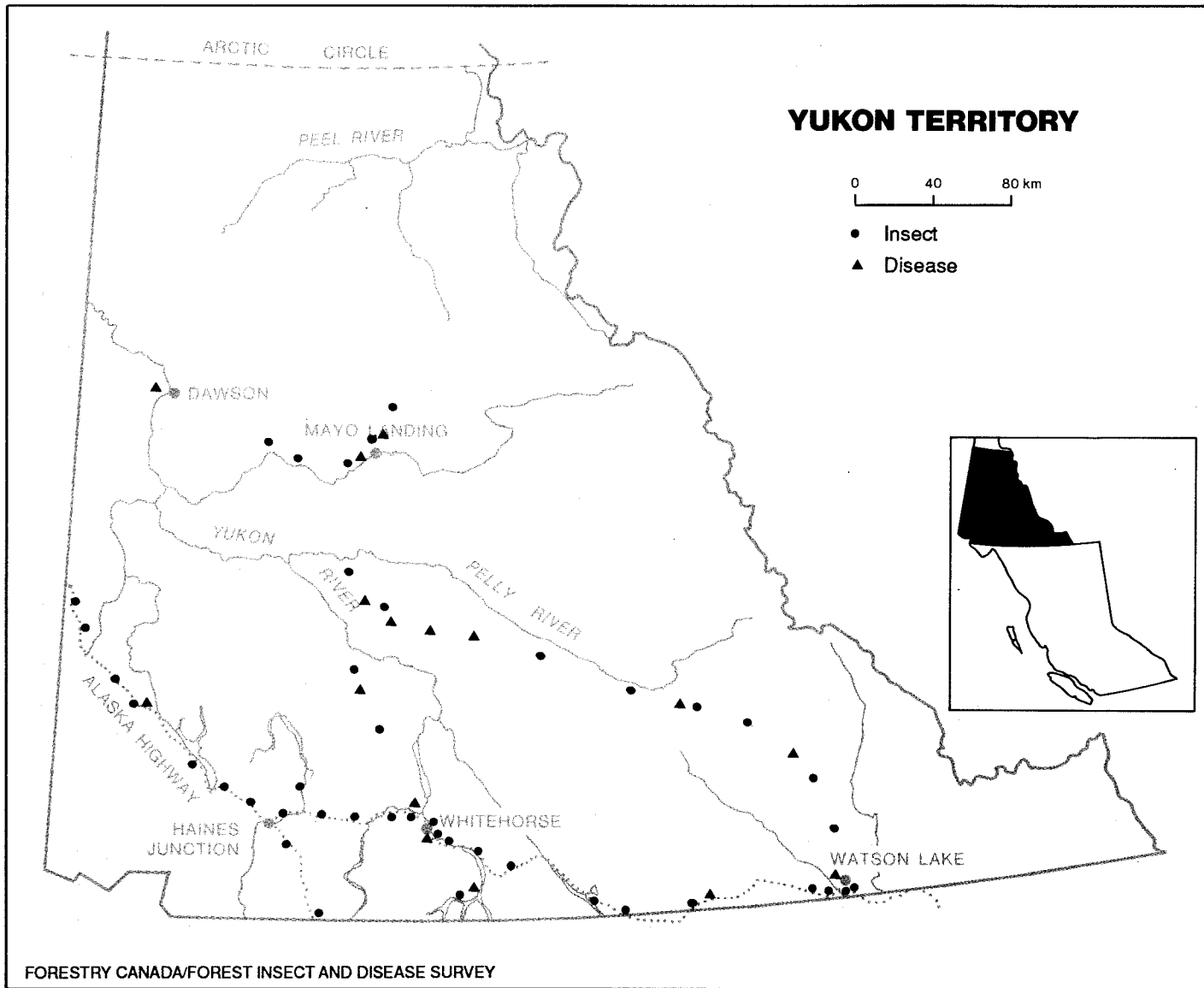
For the third consecutive year **larch sawfly** populations were active in mixed-aged tamarack stands in the Finlayson-Frances lakes, Tuchtua and Tungsten Road areas.

For the second consecutive year **large aspen tortrix** populations increased, causing mainly moderate and severe defoliation of trembling aspen over approximately 10 200 ha in the Takhini area. A **leafminer** lightly infested most white birch in the Watson Lake-Simpson Lake and Mayo areas. A **leaf miner** caused minor damage to willow in the Haines Jct. area. A **leaf roller** lightly infested most willow and some alder in the southern Yukon.

**Winter damage** discolored foliage and caused dieback of lodgepole pine, trembling aspen, white birch and spruce, particularly in areas south and east of Carmacks.

Six tree diseases , four on coniferous hosts and two on deciduous hosts, were recorded by FIDS in the Yukon for the first time; these represent **new host and distribution records**.

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



Map 1. Areas where one or more forest insect and disease samples were collected in 1989.

**SPRUCE PESTS**

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**Spruce budworms**  
**Choristoneura spp.**

After a 1-year decline, eastern spruce budworm, Choristoneura fumiferana populations were again active in the La Biche River Valley in the extreme southeasterly corner of the Yukon Territory. A spruce budworm, Choristoneura sp., also caused light bud damage on most white spruce at km 1828 of the Alaska Highway.

Although no aerial surveys were conducted in the Yukon, defoliation was observed in the La Biche River Valley during aerial surveys for the eastern spruce budworm in northeastern B.C. The defoliation in the southeastern Yukon is an extension of a major outbreak which defoliated over 123 700 hectares, primarily in the Fort Nelson and Liard river valleys in B.C., and in the Liard River Valley in the Northwest Territories. Egg mass samples from northeastern B.C. indicate continuing high populations in 1990.

There were no spruce budworm pheromone traps placed in the Yukon in 1989. The taxonomic and distribution study has been concluded and the following distribution patterns have emerged: a budworm species, C. orae, is found throughout the forested area south of the North Fork Pass; the eastern spruce budworm, C. fumiferana, occurs throughout the Liard, Pelly and lower Yukon river valleys, in the Watson Lake, Carmacks, Moose Creek, Dawson City areas, and south of the North Fork Pass; and the 2-year-cycle spruce budworm, C. biennis, is found in the Haines Jct. and Atlin Lake areas. This is a brief summary of several years trapping data. A more detailed report on spruce budworm distribution patterns will be available through this lab at a later date.

**A spruce budmoth**  
**Zeiraphera fortunana**

Trace to light defoliation on buds of most white spruce occurred for the second consecutive year in the Liard River area just west of Watson Lake. Damage was found as far west as Big Creek, an expansion from 1988. The damage was not severe and it is not expected to have any long-term effects.

**A black spruce dieback**  
**Valsa abietis**

Both top-kill and tree mortality were observed along the Klondike Highway from Carmacks to Stewart Crossing and in the Mayo area. A sample taken from a dead tree near Five Mile Lake north of Mayo found an unidentified butt rot, and samples taken from a top-killed tree found a Cytospora canker, Valsa abietis. This disease is usually associated with dead or dying tissue and may have followed environmental stress. This collection represents a new host record in the Pacific Region.

## PINE PESTS

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### Winter flecking

Winter flecking, causing discoloration and premature casting of older foliage, was common for the second consecutive year on lodgepole pine at several locations in the Yukon. Affected needles, which occurred on most trees, were collected at Bearfeed Creek near Little Salmon Lake, the Takhini area, the Watson Lake and Rancheria areas, and between Finlayson Lake and Money Creek on the Robert Campbell Highway.

### Top dieback

Top dieback, common in lodgepole pine stands in parts of the southern Yukon, was particularly severe in the Watson Lake area. This damage, which appears to have been ongoing for several years, is a problem in Forestry Canada's growth and yield plots just west of Watson Lake. Surveys in the area found some 50% of lodgepole pine of all age classes suffering from top dieback, multiple tops with dieback, and stem deformity due to previous top-kill. Samples taken from these top-killed trees found several fungi usually associated with stressed trees. The fungi were Endothiella aggregata, Tympanis sp., and Cenangium ferruginosum. The last fungus represents a new collection record for the Yukon Territory. Additionally, several samples submitted by Yukon Forest Service personnel contained some different organisms, all considered to be secondary fungi. Similar dieback was also noted on a few spruce in this area.

The presence of these fungi usually associated with stressed trees, and the ongoing nature of the problem indicate that the area undergoes periodic, if not annual environmental stress, which means that the damage will likely continue to occur and possibly intensify.

### Joint Canada-Sweden lodgepole pine trial

Pest conditions in the 3-year-old lodgepole pine trials in the Takhini Forest Reserve were again evaluated by FIDS during the annual Yukon survey.

Trees at this plot continue to exhibit the poorest growth and vigour of all of the Svenska plots in the Pacific Region. Ten percent of the lodgepole pine seedlings were dead, and approximately 60% have dead tops, probably as a result of repeated winter or frost damage, combined with infections by secondary organisms. A species of Sclerophoma sp., a secondary organism, was again isolated from lodgepole pine samples submitted from this plot. Most of the Siberian larch had continued top dieback. Phoma sp. and Epicoccum sp., considered to be secondary organisms, were isolated from larch samples from this location. Both of these collections represent new records for the Yukon Territory.

Assessments of pest conditions in this, the most northerly of five such experimental plantations in the Pacific Region, will continue.

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**LARCH PESTS**


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**Larch sawfly**  
**Pristiphora erichsonii**

Larch sawfly populations were active for the third consecutive year in mixed-aged stands in the Finlayson-Frances lakes, Tuchitua and Tungsten Road areas. Population levels at the time of sampling indicate the potential for scattered light to severe defoliation throughout the infested area. No further assessment is available as no aerial surveys were conducted. Further monitoring of larch sawfly populations will continue next year.

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**DECIDUOUS TREE PESTS**


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**Large aspen tortrix**  
**Choristoneura conflictana**

Large aspen tortrix populations increased significantly, defoliating approximately 10 200 ha of mainly trembling aspen, a 10-fold increase over the approximately 1000 ha defoliated in 1988. Aerial surveys conducted in late June delineated 2460 ha light, 2830 ha moderate and 4910 ha of severe defoliation. The defoliation was mapped on both sides of the Alaska Highway and the Takhini River from approximately 8 km west of the Ibex River to east of Takhini Hotspring. Defoliation was also recorded between Flat Mountain and the south end of Lake Laberge.

Defoliation in 1988 was confined to an area approximately 10 km long, stretching from the Takhini River Bridge on the Alaska Highway east towards the Klondike Highway junction. Although there was no sign of this pest elsewhere in the Yukon, defoliation was noted along the Alaska Highway west of U.S. Customs in Alaska. Large aspen tortrix populations also increased in northeastern B.C., with defoliation visible from km 110-220 and km 510-525 of the Alaska Highway.

Two mass collections of late-instar larvae and pupae were made in June, and preliminary results indicate relatively high levels of parasitism in late-instar larvae and pupae from both collections. The average level of larval parasitism was 76%, with Glypta conflictanae, Agathis sp., and Phytodietus sp. being the most common parasites. Pupal parasitism results, while still incomplete, show an average of 21% of emerged pupae parasitized. Although final parasitism figures will not be available until the spring of 1990, the current levels of parasitism indicate the potential for a population decline, if not collapse, in 1990.

FIDS staff will continue to monitor large aspen tortrix populations during annual surveys in the Yukon in 1990.

**A birch leafroller**

An unidentified species of leaf roller in birch was common throughout the Watson Lake-Simpson Lake and Mayo areas. All of the birch in the Watson Lake-Simpson Lake area were affected with an average of 20% of the foliage infested. Most of the birch in the Mayo area were also affected, with an



average of 5% of the foliage infested. Surveys will continue next year to try to determine more precisely the identification of the insects involved.

**A leaf miner**  
**Lyonetia sp.**

Damage caused by this pest was found on willow in the Pine Lake-Haines Jct.-Kathleen Lake area. Most of the willow was affected with an average of 20% of the foliage infested. Damage by this pest is considered minimal, and should have no long-term effects.

**A leaf roller**  
**Epinotia solandriana**

This leaf roller was collected in alder, near the Liard River at Albert Creek, and in willow along the Alaska Highway between Haines Jct. and Beaver Creek. All of the alder in the Albert Creek area were affected with an average of 10% of the foliage infested, while willow was infested at varying rates of intensity throughout the Beaver Creek-Haines Jct. area.

**MULTIPLE HOST PESTS**

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**Winter Damage**

Winter damage was found on lodgepole pine, birch, aspen and, to a lesser degree, spruce, from north of Fox Lake to the Conglomerate Mountain area along the Klondike Highway, and in the Little Salmon Lake area east of Carmacks. Some winter-damaged birch were also collected in the City of Whitehorse.

All of the lodgepole pine for 1.5 km along the Klondike Highway in the Conglomerate Mountain area were almost completely red when visited in late June, and there was no evidence of any bud flush, indicating that the trees may have been completely killed. Trembling aspen and, to a lesser degree, white spruce, were also affected in this area and intermittently along the Klondike Highway to south of Braelorne. All of the trembling aspen exhibited upper crown, and in some cases, whole tree mortality. Buds were not flushed, and twigs and branches were dead. Terminal and lateral buds on white spruce were also not flushed. Extreme winter temperatures and high winds during the winter months, possibly following an unseasonably warm spell, may have caused the damage. Similar damage to aspen, lodgepole pine and birch was found in the Little Salmon Lake area, and partially flushed foliage was found on birch in the area, indicating the possibility of a late frost. However, large patches of aspen with upper crown mortality, along with reddened pine foliage were visible on south-facing slopes above Little Salmon Lake. This damage, similar to that at Conglomerate Mountain and Braelorne, indicates that extreme weather conditions also occurred here during the winter. White birch in the City of Whitehorse exhibited similar symptoms, unflushed buds and dead twigs and branches, probably caused by a similar phenomenon.

During next years annual Yukon survey, the lodgepole pine stand near Conglomerate Mountain will be surveyed to see if there is any recovery.

## OTHER NOTEWORTHY AND MINOR PESTS

Table 1. Other noteworthy and minor pests.

Host and Pest	Locations	Remarks
<b>White Spruce</b>		
Allegheny spruce beetle <u>Dendroctonus punctatus</u>	Wolf Lake Park	attacking single tree, no mortality
Pine leaf chermid <u>Pineus pinifoliae</u>	Nordenskiold River	low incidence and intensity in this area
Spruce beetle <u>Dendroctonus rufipennis</u>	Yukon Territory	endemic populations
Spruce broom rust <u>Chrysomyxa arctostaphyli</u>	Yukon Territory	common and widespread
<b>Lodgepole pine</b>		
A dieback <u>Sclerophoma pithyophila</u>	Mayo Road	found on foliage probably stressed by winter damage
A needle cast <u>Lophodermella montivaga</u>	North of Money Creek on Robert Campbell Highway	common on foliage along with winter flecking
Lodgepole pine beetle <u>Dendroctonus murrayanae</u>	Whitehorse	in individual trees in the City
<b>Tamarack</b>		
Larch-willow rust <u>Melampsora paradoxa</u>	Finlayson Lake area	low incidence, only second collection on this host in the Yukon
<b>Trembling aspen</b>		
A gall aphid <u>Parathecabius</u> sp.	southern Yukon	common on aspen from Haines Junction to Whitehorse
A gall mite <u>Eriophyes parapopuli</u>	Frenchman Lake	causing galls on 1% of trees in this area
A leaf gall mite <u>Phyllocoptes didelphis</u>	Snag Junction-Beaver Creek	common in this area
Aspen leaf miner <u>Phyllocnistis populiella</u>	Stewart Crossing-Dawson City	most trees lightly infested in this area

Host and Pest	Locations	Remarks
A poplar leaf spot <u>Marssonina populi</u>	Tatchun Lake area	affecting 15% of foliage on 50% of trees. A new collection record
Cankers	Tagish Road near Jakes Corner	on 50% of all trees, cause unknown
Purple-brown leaf spot <u>Pollaccia borealis</u>	Stewart Crossing-Dawson City	further collections for distribution records
A willow rust <u>Melampsora epitea</u> complex	west of Kluane Lake	light infections on 50% of foliage in this area
Hare damage <u>Lepus</u> sp.	southern Yukon	feeding on stems common, particularly north of Carmacks
<b>Black cottonwood</b>		
Cottonwood leaf beetle <u>Chrysomela</u> sp.	Haines Junction	low incidence, light intensity in this area
<b>Alder</b>		
An alder erineum leaf mite <u>Acalitus brevitarsus</u>	Teslin area	light infestation on 25% of foliage
<b>Ornamental birch</b>		
Ambermarked birch leafminer <u>Profenusa thomsoni</u>	Whitehorse	collected in City, new distribution record
<b>No host</b>		
Gypsy moth <u>Lymantria dispar</u>	Watson Lake area	five pheromone traps placed, all negative

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