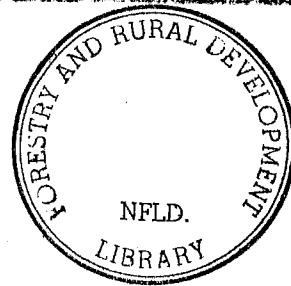


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**SUMMARY OF  
FOREST INSECT AND DISEASE CONDITIONS  
NEWFOUNDLAND  
LATE SUMMER AND FALL, 1966**

**FOREST RESEARCH LABORATORY  
CORNER BROOK, NEWFOUNDLAND  
INFORMATION REPORT N-X-10**

**DEPARTMENT OF FORESTRY**

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SUMMARY OF  
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LATE SUMMER AND FALL, 1966

By

W.C. Parrott

Chief Ranger

Forest Insect and Disease Survey

FOREST RESEARCH LABORATORY  
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DEPARTMENT OF FORESTRY

October, 1966

# SUMMARY OF FOREST INSECT AND DISEASE CONDITIONS

## NEWFOUNDLAND

LATE SUMMER AND FALL, 1966

### INTRODUCTION

This is the last of three seasonal reports by the Forest Insect and Disease Survey on insect and disease conditions for 1966. Field technicians collected 1,227 insect and 64 disease samples and flew over 40 hours in fixed-winged aircraft and 20 hours in a helicopter during the field season which terminated in late September. Fixed-winged aircraft were used for the detection and mapping of infestations of defoliating species and for broad coverage of otherwise inaccessible areas in each District. The helicopter was used for an intensive balsam woolly aphid survey to check selected stands which were considered highly susceptible to attack by the aphid, to map and assess the expanding boundaries of known infestations, and to carry out damage appraisal estimates using the Esterline Angus Recorder. The helicopter also was used for a detailed survey of balsam fir stands in Terra Nova National Park and to familiarize park officials from Eastern Canada with balsam woolly aphid conditions in the Park.

There was a decline in the population levels of most forest insects from the 1965 season and a decrease in the degree of defoliation by major pests. These were coincident with the abnormal weather conditions which prevailed throughout the Island during the spring. The incidence of common tree foliage diseases also were reduced from last year.

The balsam woolly aphid continued to be the major forest pest but only minor changes in infestation boundaries or intensity of damage were recorded. The larch sawfly was the only insect pest that caused severe defoliation over an extensive area. Black-headed budworm infestations were greatly reduced in central Newfoundland and terminated in eastern Newfoundland. Population levels of the spruce budmoth were high along coastal sections of eastern and western Newfoundland. The hemlock looper was reported over a wider area than in 1965 and larval numbers increased at several locations on the western coast suggesting the beginning of new outbreaks of this pest. Both the European spruce sawfly and the balsam fir sawfly were more widely distributed than in 1965 and larvae numbers were higher in some areas. The birch case-bearer caused severe browning in localized areas in the St. George's and Humber districts. The birch leaf miner and birch leaf-mining sawfly, alder leaf-miner and poplar leaf-miner occurred throughout the range of their host species on the Island. Mountain-ash sawfly, satin moth and mourning cloak butterfly larvae were the most common defoliators of hardwoods.

#### FOREST INSECTS

Balsam Woolly Aphid, Adelges piceae (Ratz.).

Aerial and ground surveys in September and October revealed only minor changes in the distribution and intensity of balsam woolly aphid attack in 1966.

An Esterline Angus recorder, on loan from the Insect and Disease Survey Section, Forest Research Laboratory, Sault Ste. Marie, Ontario, was used in a S 55-Sikorsky helicopter to aid in

the assessment of aphid injury symptoms along predetermined lines in the Flat Bay Brook and Bottom Brook watersheds. The results of this project will appear in the Annual District Reports, Forest Insect and Disease Survey, Newfoundland 1966.

#### Eastern Newfoundland

The status of the main infestation in the St. John's area on the Avalon Peninsula has remained unchanged for the past four or five years. Many of the dead and dying trees have been cut for fuel and balsam fir and white spruce reproduction have restocked most of the infested sites. Balsam fir reproduction appears healthy and free from aphid attack.

Intensive ground investigations did not reveal any further extension of the Aphid around Northeast River Arm and the coastal section of Southeast Arm east of Placentia.

Balsam fir with "gouty tops" are becoming more conspicuous each year in the Bellevue Beach, Deep Bight and Swift Current infestations. However, there was no apparent expansion of the perimeter of these infestations. Routine thinning and cutting has removed many of the infested trees in each area.

The infestation north of Marystown on the Burin Peninsula expanded by the coalescence of a series of spot outbreaks. The boundaries of this infestation were very irregular, mainly because of the boggy terrain fringed by scrub, black spruce stands.

In Terra Nova National Park, a few aphid infested trees remain in and around the perimeter of the area marked for "control cut" in 1964, and scattered balsam fir with initial 'gout' symptoms were observed as far east as Dunphy's Pond Road, about 2.5 miles east of the area selected for "control cut". No aphids were found

on branch samples taken from 100 trees in the area between Dunphy's Pond road and the Charlottetown road.

### Central Newfoundland

The most noteworthy changes in the status of balsam woolly aphid infestations in central Newfoundland occurred as the result of accelerated salvage cutting programs by Bowaters (Nfld.) Ltd., Price (Nfld.) Ltd., and the Department of Mines, Agriculture and Resources.

Most of the aphid infested trees along the north shore of Gander Lake, about 3 miles east of King's Point, were cut by Bowaters. A spokesman for the Company said "1,500 cords of pulpwood were salvaged from the infested area during the 1965-66 winter and cutting will continue in the area during the 1966-67 winter.

Local lumber contractors, under the direction of the D.M.A.R. salvage-cut 600 cords of aphid infested timber in the Lewisporte area in 1965-66 and a much larger cut is planned for the Porterville area in 1966-67.

All of the infested stand near Red Indian Falls, along the Badger-Buchans Road has been cut by Price, except for a few individual trees along the road right-of-way. The Company has received permission from the D.M.A.R. to remove these infested trees and cutting operations will continue in this area within a month.

Although the condition of aphid infested stands in the Lloyd's River and Red Indian Lake watersheds remain relatively

unchanged from 1965, Price plans to commence salvage cutting the infested trees east of Shanadithit River during the coming winter. This operation will be extended to the infested stands near Quaker's Hat, as soon as the partially constructed bridge across Shanadithit River is completed.

#### Western Newfoundland

The boundaries of the main aphid infestations in western Newfoundland changed only slightly from 1965. However, a new spot outbreak was recorded near Goodyear's Cove, Hall's Bay, and injury symptoms were more conspicuous in the Lower Humber River Watershed.

The new spot infestation near Goodyear's Cove was investigated in late October and about 30 infested trees with very light to light gout symptoms were found. The majority of the infested trees were concentrated in a 3 to 4 acre stand of immature balsam fir along the east shore of Hall's Bay, near Goodyear's Beach. However, a few trees with the initial symptoms were found along the Trans Canada Highway between Goodyear's Cove and South Brook. Price and the D.M.A.R. are investigating the possibility of removing the infested trees during the coming winter.

The infestation in the Lower Humber River Valley is reaching its peak. Severe injury symptoms and many dead trees were prevalent along the southern slopes of the Valley, between Pynn's Brook and South Brook. This condition was also conspicuous between Steady Brook and Little Rapids.

Many dead and severely infested trees were apparent along the southeast shore of Grand Lake, especially in the area between Harry's Brook and Little Pond Point. Bowaters have salvaged several thousand cords of aphid infested wood along this shore, in the vicinity of Grand Pond Point.

There was no apparent extension of the boundaries of the Aphid in the Bonne Bay area. This area has been kept under close surveillance as it may become a part of a proposed National Park.

Black-headed Budworm, Acleris variana (Fern.)

Black-headed budworm infestations terminated in eastern Newfoundland and larval populations declined to endemic levels in central Newfoundland where severe defoliation of approximately 500 square miles of black spruce-balsam fir forest occurred in 1965.

An intensive mass sampling program was carried out in the Indian Arm Brook watershed in central Newfoundland where high larval numbers caused severe defoliation in 1965. Although 200 immature black spruce were sampled, only 10 larvae per tree were collected, and defoliation of current year's foliage was less than 15%.

The only other loss of foliage recorded in central Newfoundland occurred in an immature stand of black spruce near First Pond, Boyd's Cove, where 20 to 25% of the current year's needles on the top portion of the trees were defoliated.



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Eastern Hemlock Looper, Lambdina fiscellaria fiscellaria (Guen)

There was an appreciable change in the status of the hemlock looper in 1966. Slight increases in population levels and the range of distribution were reported throughout the Island.

The most significant rise in larval populations was recorded in a balsam fir - black spruce stand in the Bottom Brook watershed where an average of 9 larvae per tree sample were collected. However, loss of foliage was very light.

Only small numbers of larvae were found on pole-size balsam fir, white spruce and black spruce along Little Grand Lake Brook, between Little Grand and Grand lakes, where low to moderate numbers were collected in 1965.

Fairly large moth flights were reported in the Little Crabbes and Crabbes watersheds in late summer. Ground investigations were carried out in these watersheds in late September and hundreds of hemlock looper adults were found in pools of water on the logging roads and evidence of light defoliation was apparent on a few mature balsam fir. An aerial survey of the area in October revealed branch-tip browning of about  $\frac{1}{2}$  square mile of mature balsam fir forest along the height of land between Little Crabbes and Crabbes watersheds. The stand was already severely infested by the balsam woolly aphid and Bowaters were carrying out a salvage cutting operation in the immediate area. The cause of current browning in this stand can no doubt be attributed to feeding by the hemlock looper. The sudden rise in looper numbers, and the

degree of defoliation, suggests the beginning of a new outbreak of this pest.

Larch Sawfly, Pristiphora erichsonii (Htg.)

Both the scope and intensity of the larch sawfly infestations in central Newfoundland increased in 1966 and two new outbreaks were reported in Western Newfoundland. Elsewhere on the Island population levels were low.

The infestations around Red Indian Lake increased from 35 square miles in 1965 to approximately 100 square miles in 1966 and defoliation ranged from 50 to 100%. Although sawfly infestations have persisted in this area for the past 6 years, tree mortality has been very low.

A spot infestation of this sawfly also occurred in an immature larch stand near Long Pond, Hall's Bay. Defoliation averaged 50% over about 1 square mile.

Two small outbreaks of the larch sawfly were located in open-grown, immature larch stands near Deer Lake airport, and near Pynn's Brook in Western Newfoundland. Defoliation ranged from 50 to 60% at both locations.

The following larch sawfly defoliation estimates were recorded during the aerial survey:

Location	Area	Defoliation (per cent)
Harbour Round-Hungry Hill	65 sq. miles	95
Little Sandy Brook	3 sq. miles	50
Clench Brook-Sandy Brook	32 sq. miles	95
Long Pond, Hall's Bay	1 sq. mile	50
Deer Lake airport	$\frac{1}{2}$ sq. mile	40-60
Pynn's Brook	$\frac{1}{2}$ sq. mile	40-60

OTHER NOTEWORTHY INSECTS

<u>Insect Species</u>	<u>Host(s)</u>	<u>Locality</u>	<u>Remarks</u>
<u>Choristoneura fumiferana</u> (Clem.) Spruce budworm	wS	Codroy Valley	Populations lowest in yrs. A few larvae in Codroy Valley
<u>Coleophora fuscedinella</u> (Zell.) Birch casebearer	wB yB	St. George's Humber Dists.	Browning ranged from 10 to 50% in St. George's Dist. & Corner Brook area.
<u>Coleophora laricella</u> (Hbn.) Larch casebearer	L	Throughout Island	Browning generally light. Med. in small area in Terra Nova Nat. Park.
<u>Diprion hercyniae</u> (Htg.) European spruce sawfly	wS bS	Through-out Island	55 larvae per tree sample at Sop's Arm 20-25 larvae per tree sample in White Bay-Baie Verte area.
<u>Fenusa dohrnii</u> (Tischb.) Alder leaf miner	Al	Through-out Island	Clareville to Gambo 50% browning. Badger to Buchans 80-90% browning. St. George's to Robinsons 10-20% browning.
<u>Fenusa pusilla</u> (Lep.) Birch leaf-miner	wB	Through-out Island	Bishop's Falls area 70-90% browning. Terra Nova National Park 10-20% browning. Deer Lake Woodlot 50% browning.
<u>Heterarthrus nemoratus</u> (Fall.) Birch leaf-mining sawfly	wB	Through-out Island	This insect fed in association with the birch leaf miner.

Insect Species	Host(s)	Locality	Remarks
<u>Mindarus abietinus</u> (Koch.) Balsam twig aphid	bF	Throughout Island	Common but generally light. Med. injury in Victoria & Northwest Gander watersheds.
<u>Neodiprion abietis</u> complex Balsam fir sawfly	bF	Gallants Marystown	Small infestations. Light defoliation.
<u>Nymphalis antiopa</u> (L) Mourning-cloak butterfly	W	Western Nfld.	Conspicuous defol- iation of roadside willow.
<u>Phyllocnistis populiella</u> Cham Aspen leaf miner	tA	Hall's Bay	Severe browning along 1 mile of Old Hall's Bay Road.
<u>Pristiphora geniculata</u> (Htg.) Mountain ash sawfly	Mo	Throughout Island	Common. Defoliation ranged from 30-90 per cent in City of St. John's. At Badger and Botwood.
<u>Solenobia walshella</u> (Clem.) A bagworm	wS bF	Western & Eastern Nfld.	Abundant in West. 200 + larvae per tree sample on Glover Island. Low numbers in East.
<u>Stilpnotia salicis</u> (L) Satin moth	tA Lpo	Throughout Island	Defoliation ranged from 10-60 per cent at Corner Brook. 20 per cent defoliation in town of Clarenville
<u>Zeiraphera ratzeburgiana</u> (Sax.) Spruce budmoth	WS	Eastern & Western Nfld.	Common along coastal sections. Harbour Grace to Carbonear 75% current year's shoots attacked. Light defoliation near Clarenville and in Codroy Valley.

FOREST DISEASES

There were no new major infections by disease organisms in 1966. However, the more common diseases such as white pine blister rust, black knot of cherry, eastern dwarf mistletoe and yellow witches broom of balsam fir were abundant wherever the host trees occurred on the Island. Armillaria root rot was prevalent in balsam woolly aphid infested stands in Western Newfoundland. Leaf and twig blight of poplar, ink spot of aspen, needle rust of spruce and needle rust of balsam fir were reported to have caused light to medium injury in small isolated areas.

Armillaria Root Rot, Armillaria mellea (Vahl. ex Fr.) Kummer --

The roots of 200 balsam fir trees in balsam woolly aphid infested stands and 40 in non-infested stands, in western Newfoundland, were examined to study the relationship between the intensity of aphid damage and the incidence of Armillaria root rot. Preliminary results show that the incidence of Armillaria increased with an increase in the intensity of aphid damage in the following order:

Per Cent Trees Infected with <u>Armillaria mellea</u>			
<u>Aphid Damage Class</u>			
Light	Medium	Severe	Dead
10	14	26	82

The survey also showed that the incidence of Armillaria was much higher among living trees in aphid infested stands, 18.7% infected, than in non-infested stands, only 2.5 per cent infected.

However, a more thorough analysis of this introductory study indicates that such factors as tree size, age, dominance in the stand and some undetermined interrelationships between the decay organism and its host require intensive research before the true significance of the association between these biological organisms can be determined.

Leaf and Twig Blight of Poplar, Pollaccia radiosa (Lib.) Bald and Cif. and P elegans Serv.

Leaf and twig blight of poplar symptoms were reported to be widespread and resulted in light to medium injury at isolated locations throughout the island. The most conspicuous injury occurred on trembling aspen along the Trans-Canada Highway between Corner Brook and Deer Lake, between Sweet Bay and Plate Cove on the Burin Peninsula, and near Clarenville.

Ink Spot of Aspen, Ciborinia whetzellii (Seav.) Seav.

Medium to severe browning of aspen leaves occurred at four isolated locations in western and central Newfoundland. Browning, estimated at 70 per cent, was recorded on pole size trembling aspen along Adies Stream and near Birchy Lake and 90 per cent browning occurred on immature trembling aspen along the Northern Arm-Point Leamington Road. The areas of infection were about 1 acre at each location. Ten mature trembling aspen near Pamehac Brook, Badger, were severely infected by this disease which caused 90 per cent browning of the foliage by mid-August.

Anthracnose of Hardwoods, Gloeosporium apocryptum Ell. and Ev.

Anthracnose of red and mountain maple was common in Terra

Nova National Park, on the northern portion of the Bonavista Peninsula, and between Boat Harbour and Marystown on the Burin Peninsula. It occurred only occasionally in central and western Newfoundland.

Needle Rusts of Spruce, Chrysomyxa ledicola (Pk.) Lagerh. and C. ledi (A. and S.) de Bary.

These rusts were common but generally light on the current year's foliage of stunted black and white spruce in low-lying areas throughout the island. However, up to 90 per cent of the foliage was infected in small areas of stunted black spruce between Exploits Dam and Lake Ambrose in central Newfoundland, and near the southeast end of Middle Ridge Pond in eastern Newfoundland. These rusts were also conspicuous on small white spruce near Marystown on the Burin Peninsula.

Needle Rusts of Balsam Fir, Pucciniastrum pustulatum (Pers.) Diet and Milesia sp.

This disease was common for the second consecutive year on balsam fir regeneration in western Newfoundland. Light infections were also recorded on young balsam fir near Port Rexton, King's Cove, and Knight's Cove on the Bonavista peninsula; between Marystown and Fortune on the Burin Peninsula, and in the Whitbourne area in eastern Newfoundland. These rusts were also found on 10 trees along the south side of the Exploits River near Badger and 20 per cent of the current year's needles were infected.



Red Flagging of Balsam Fir

Red branches of balsam fir were common in exposed stands throughout central and western Newfoundland. These "red flags" were most conspicuous along roadsides in the Codroy Valley, St. Fintans and Robinsons area, and on the Port au Port, Northern and Baie Verte peninsulas, and in the Sandy Lake and Victoria Lake watersheds. The most prevalent injury was observed along 2 miles of road around Pistolet Bay on the Northern Peninsula.

OTHER NOTEWORTHY DISEASES

<u>Organisms</u>	<u>Host(s)</u>	<u>Locality</u>	<u>Remarks</u>
<u>Arceuthobium pusillum</u> Pk. Eastern dwarf mistletoe	bS	Throughout Island	Common
<u>Cronartium ribicola</u> J.C. Fischer White pine blister rust	wP	Throughout Island	Reported as medium throughout the range of wP.
<u>Dibotryon morbosum</u> (Schw.) Theiss and Syd. Black Knot of cherry	pCh	Throughout Island	Severe along T.C.H. and local roads where pCh were present.
<u>Gymnosporangium cornutum</u> Arth. ex Kern Leaf rust	Mo	Eastern Nfld.	Common in the Clarenville area; between Trinity and Port Rexton, and south of Boat Hr. on the Burin Peninsula.
<u>Hypodermella laricis</u> Tub. Needle cast of larch	L	Throughout range of larch	Most conspicuous in 1966 near St. George's and between Marystown and Fortune.
<u>Lophodermium</u> Sp Needle cast of balsam fir	bF	Port Blandford Area  Southwest River	Severe over $\frac{1}{2}$ acre.  Medium injury in small pockets of infection.

<u>Melampsoëlla caryophyllacearum</u> Schroet Yellow witches broom of balsam fir.	bF	Throughout Island	Common but gen- erally light. 25% bF along 1 mile of Exploits Dam- Lake Ambrose road affected.
<u>Taphrina robinsoniana</u> Gies. Catkin hypertrophy	Al  yB	Burgoynes Cove - Southern Bay - Steady Brook -	Severe  Medium  Light