A REVIEW OF IMPORTANT FOREST INSECT AND DISEASE PROBLEMS IN THE RED LAKE DISTRICT OF ONTARIO, 1950-1980

Compiled by

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FOREWORD

The first forest insect surveys in Ontario were carried out in 1936 from the Dominion Entomological Laboratory in Ottawa and continued from this location until 1944, when the province of Ontario was divided, for the purpose of these surveys, into northern and southern Ontario. In 1945, personnel from Ottawa continued to conduct and report on surveys in the area south of the Algonquin Park and Parry Sound forest districts, while personnel from the Forest Insect Laboratory in Sault Ste. Marie carried out surveys in the area to the north. In 1950 responsibility for reporting insects for all of Ontario fell to the Sault Ste. Marie laboratory. In 1952 the Forest Disease Survey was initiated with headquarters in Maple, Ontario, then was moved to Sault Ste. Marie in 1967. The results of these surveys of insects and diseases are reported in the Annual Report of the Forest Insect and Disease Survey (FIDS) published by Canadian Forestry Service headquarters in Ottawa. In addition, annual district and regional reports, begun in 1948, are prepared by FIDS technicians (Rangers) in Sault Ste. Marie. In 1980 a new provincial report was released in Ontario. The contents of the following review have been abstracted from these reports and compiled in alphabetical order by the scientific names of species in each of the following three categories:

Major Insects or Diseases

Capable of causing serious injury to or death of living trees or shrubs.

Minor Insects or Diseases

Capable of causing sporadic or localized injury but not usually a serious threat to living trees or shrubs.

Abiotic Damage

Damage caused by non-living factors.

All measurements in this review are in metric form and conversions from Imperial measurements from the earliest reports are taken to the second decimal point, [e.g., sq. mi. to km^2 = area (sq. mi.) x 2.59 = area km^2]. Infestation maps in this review were copied from the original maps in the FIDS technicians' reports. Abbreviations for the common names of the host tree species, along with the scientific names, are shown in appendices A and B. To facilitate the location of hosts, deciduous and coniferous species have been separated and listed alphabetically under the common names.

Appendix C is a series of annual maps for northwestern Ontario, grouped alphabetically by insect species or disease pathogen, and which show the location of infestations within a region or infestation boundaries that extend beyond regions.

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We also wish to acknowledge the following authors of the annual FIDS district and regional reports from which this review was abstracted:

1950	G.R. Carter, D.G. MacGillivray, W.J. Miller
1951	A.L. Rose, D.G. MacGillivray, W.J. Miller
1952-1955	P.E. Buchan, J.P. McPhee, W.J. Miller
1956-1960	P.E. Buchan, M.J. Hildebrand
1961-1965	P.E. Buchan, M.J. Thomson, G.G. Jackson
1966	P.E. Buchan, M.J. Thomson, H.J. Weir
1967-1969	P.E. Buchan, J. Hook, J. Mason
1970	C.A. Barnes, J. Hook, J. Mason
1971-1972	M.J. Thomson, C.A. Barnes
1971-1972	M.J. Thomson, C.A. Barnes
1973-1975	M.J. Thomson, E.L. Houser
1976-1979	M.J. Thomson, R. Sajan
1980	M.J. Thomson, V. Jansons

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INTRODUCTION

This is a review of significant forest insects and diseases that occurred in the Red Lake District between 1950 and 1980. The Red Lake District was formed in 1973 from the former Sioux Lookout District and parts of the Kenora District. In the selection of pests for this report, particular attention was paid to the major working groups of host species in the district, mainly jack pine, white spruce, black spruce, balsam fir and the tolerant hardwoods (white birch and poplar), as well as some ornamental and shade trees. The insects and diseases included are capable of causing, or have caused, tree mortality or a reduction in growth. Also included are abiotic problems that cause damage, i.e., drought, frost and winter drying.

SUMMARY

FOREST INSECTS

Birch Skeletonizer, *Bucculatrix canadensisella* Cham. [Major]
page

Defoliation by this insect seldom causes mortality of the host, but weakened trees are subject to attack by secondary insects and diseases. Large outbreaks of this insect usually last 3 to 4 years, then decline rapidly. Moderate-to-severe defoliation occurred in 1956 and 1970 and again in 1972 and 1973.

Large Aspen Tortix, *Choristoneura conflictana* (Wlk.) [Major]
pages

No tree mortality has been recorded as caused by this defoliator, which affects primarily aspen and poplar. From 1970 to 1973 high populations occurred in the district. Since 1974 no major infestations have been reported.

Spruce Budworm, *Choristoneura fumiferana* (Clem.) [Major]
pages

This insect is considered the most destructive insect pest of several coniferous hosts in eastern Canada, particularly white spruce and balsam fir. Though not major hosts, black spruce, eastern hemlock, and tamarack are attacked and considerable tree mortality can occur. Moderate-to-severe defoliation was reported from 1950 to 1955. In 1956 infestations began to decline and by 1959 virtually disappeared from the district. No infestations occurred from 1959 to 1980.

Jack Pine Budworm, *Choristoneura pinus pinus* Free. [Major]
pages

This is a destructive pest of pines that can cause mortality after about two years of severe defoliation. In 1954, moderate-to-severe defoliation occurred in the Irregular, Haggart and Bulging lake areas and continued until 1955. In 1956, the infestation began to collapse. From 1957 to 1980, no infestations were reported.

Aspen Twoleaf Tier, *Enargia decolor* (Wlk.) [Major]
page

No tree mortality has been recorded as caused by this defoliator, which affects aspen and cottonwood. However, heavy defoliation retards the growth and reduces vigor, leaving host trees susceptible to attack by other pests. Outbreaks of this insect last only a few years. In 1959, moderate-to-severe defoliation occurred over an area of 330 km-, but declined to light intensity in 1960. In 1969, light defoliation occurred from the Dryden District boundary along Hwy 105, north to the town of Ear Falls. No infestations have been reported since 1980.

Eastern Pine Shoot Borer, *Eucosma gloriola* Heinr. [Major]
page

This insect usually infests lateral shoots and causes only aesthetic damage. When high populations develop, some leaders are infested and killed, and the trees become deformed. This insect was recorded in the district for the first time in 1956 and since then only trace damage has occurred.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn. [Major]
pages

This caterpillar is widely distributed through North America. Infestations usually last an average of five years and high populations denude large areas of susceptible stands. The principal host attacked is aspen; however, many other deciduous species also suffer severe defoliation. Repeated defoliation retards tree growth and reduces vigor, leaving host trees susceptible to attack by other pests. Moderate-to-severe defoliation occurred from 1950 to 1952, from 1960 to 1965 and from 1973 to 1978.

Balsam Fir Sawfly, *Neodiprion abietis* complex [Major]
page

Severe defoliation can cause mortality of balsam fir and white spruce trees when an infestation persists over a period of years. From 1958 to 1980 varying degrees of defoliation were reported.

Pine Sawflies: Red Pine Sawfly, *Neodiprion nanulus nanulus* Schedl.; Jack Pine Sawfly, *N. pratti* banksianae Roh.; Redheaded Jack Pine Sawfly, N. virginianus complex [Major]
pages

The sawflies listed are capable of causing mortality of semimature and plantation pine trees when population levels are high. Varying degrees of defoliation occurred from 1954 to 1980, but no tree mortality was recorded.

Aspen Leafblotch Miner, *Phyllonorycter ontario* (Free.) [Major]
page

Although this insect has not been known to cause tree mortality, severe browning of foliage over a period of years can cause a reduction in growth. Varying degrees of defoliation have occurred since 1957.

Yellowheaded Spruce Sawfly, *Pikonema alaskensis* (Roh.) [Major]
page

This destructive insect has been categorized as a serious pest of young spruce plantations and open-growing ornamentals. High mortality can occur after successive years of severe defoliation. Since 1958, varying degrees of damage have occurred in the district.

White Pine Weevil, *Pissodes strobi* (Peck.) [Major]
pages

This weevil is considered the most destructive pest of white pine in North America. Successive weeviling over a period of years results in multiple-stemmed trees. In 1970, 18% of the trees were weeviled at one location in Heyson Twp; however, leader damage has generally been low.

Larch Sawfly, *Pristiphora erichsonii* (Htg.) [Major]
pages

The larch sawfly is the primary defoliating insect of native and most exotic species of larch. On good sites, larch trees can withstand six to nine years of severe defoliation before mortality occurs; on less favorable sites, mortality may follow three or more years of complete defoliation. Infestations of the insect have been sporadic over the past 30 years; however, moderate-to-severe defoliation was reported from 1950 to 1953, from 1966 to 1967, and in 1969 and 1973.

Other Noteworthy Insects [Major and Minor]
pages

Insects that have the potential for causing damage to stands, regeneration and plantations.

FOREST DISEASES

Armillaria Root Rot, *Armillaria mellea* (Vahl:Fr.) Kummer [Major]
page

This root rot disease often kills trees previously stressed by drought, insects, other pathogens or unfavorable environment. However, under some circumstances the fungus, or certain strains of the fungus, can kill vigorous trees. Both deciduous and coniferous trees are attacked. This fungus was reported at low levels periodically from 1971 to 1980.

Scleroderris Canker, *Ascocalyx abietina* (Lagerb.) Schläpfer-Bernhard
page

This disease is particularly damaging to young pine trees in plantations. Over a number of years, intensive surveys were carried out to determine distribution of the disease. The first recorded infection was observed in 1978 on regeneration at Wavell Lake.

Spruce Needle Rusts, *Chrysomyxa ledi* (Alb. & Schwein.) de Bary, *C. ledicola* (Peck.) Lagerh. [Major]
pages

These, the most widely spread rusts in the Canadian boreal forest, are of concern on mature trees, and the potential for damage in nurseries can be high. Varying degrees were reported from 1950 to 1980.

Ink Spot of Aspen, *Ciborinia whetzelii* (Seaver) Seaver [Major]
page

This ink spot disease is widespread throughout the range of aspen in the district. Many poplar species and hybrids are susceptible, but trembling aspen is most commonly affected. Heavily infected trees may be defoliated prematurely and repeated attacks can reduce increment and even kill regeneration. Varying degrees of foliar damage have been reported at widely scattered locations in the district during the past 30 years.

Pine Needle Rust, *Coleosporium asterum* (Diet.) Syd.
pages

Severe infections can kill small trees and cause a reduction in growth of larger trees. Low levels of infection have been reported periodically during the past 30 years except in 1979, when 25% foliar damage occurred in the Dixie Lake area.

Western Gall Rust, *Endocronartium harknessii* (J.P. Moore) Y. Hirats. [Major]
pages

This gall rust can kill small trees and losses may be severe in nurseries and young forest stands. Since 1966, infection levels have varied from 2% to 43% (the latter reported in the Dixie Lake area in 1979).

Hypoxylon Canker, *Hypoxylon mammatum* (Wahl.) J.H. Miller [Major]
page

Mortality caused by this disease is usually restricted to trees in the 7-cm to 13-cm class growing on poor sites, but branch and top mortality may occur in trees of greater diameter. Since 1955, this disease organism has been found at damaging levels. From 1964 to 1967 mortality ranged from 23% to 26% at one location in the Red Lake area.

Shoot Blight, *Venturia macularis* (Fr.) Müller & Arx [Major]
page

Reduced stocking of regeneration aspen occurs when the incidence of this disease is high. Trees more than 5 years old are seldom affected and, therefore, the disease is of little economic importance in mature stands. Since 1962, this shoot blight has caused varying degrees of foliar damage.

Other Noteworthy Diseases
pages

These are diseases with the potential for causing damage to natural stands, regeneration and plantations.

ABIOTIC DAMAGE
page

Abiotic damage is caused by a variety of influences, e.g., frost, winter drying, salt, etc. Weakened trees are susceptible to a number of diseases.

I N S E C T S

Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

Host(s): birch [Major]

Year	Remarks
1950-1958	not reported
1956	Moderate-to-severe defoliation occurred across the southern part of the district.
1957	Populations declined to trace levels.
1958-1969	not reported
1970	severe skeletonizing recorded in the Red Lake area
1971	not reported
1972	Moderate-to-severe skeletonizing of foliage occurred throughout the entire district.
1973	Moderate-to-severe defoliation continued throughout the district.
1974	A marked decline in populations of this defoliator was reported in the district.
1975-1980	not reported

Large Aspen Tortrix, *Choristoneura conflictana* Wlk.

Host(s): poplar [Major]

Year	Remarks
1950-1969	not reported
1970	Pockets of moderate-to-severe defoliation, totalling approximately 103 km-, occurred in Baird and Balmer twps (see map, page 11). Light defoliation occurred in several townships around Red Lake.
1971	Moderate-to-severe defoliation occurred in Dome, Bateman, McDonough and Balmer twps (see map, page 12).
1972	Moderate-to-severe defoliation occurred from Mulcahy Twp north in a line from Pipestone Bay in Red Lake up to Little Vermilion Lake and south to the Gullrock Lake area (see map, page 13).
1973	Infestations persisted in the Red Lake area (see map, page 14).
1974	Light defoliation occurred in six townships in the vicinity of the town of Red Lake (see map, page 15).
1975	light defoliation reported in Heyson Twp
1976-1980	not reported

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

Host(s): bF, wS, bS [Major]

Year	Remarks
1950	Moderate-to-severe defoliation continued in the southern part of the district (see map, page 18).
1951	Moderate-to-severe defoliation continued, but there were no major changes in the boundaries (see map, page 19). Balsam fir whole-tree and top mortality occurred in the district (see map, page 20), especially in areas north of Ear Falls.
1952	Moderate-to-severe defoliation continued in the district (see map, page 21). The infestation merged with infestations in the Sioux Lookout, Kenora and Dryden districts and encompassed approximately 31,075 km-. Host-tree mortality covered an area of approximately 3,366 km- (see map, page 22).
1953	No major changes in the severity or boundaries of moderate-to-severe defoliation were reported in the district (see map, page 23). Mortality continued to spread in the district (see map, page 24).
1954	Moderate-to-severe defoliation continued to spread in an easterly direction (see map, page 25). Mortality also continued to spread in the district.
1955	No major changes were observed in the current boundaries of infestation (see map, page 26). Mortality was observed south from Red Lake to the district boundary and in six townships east of Trout Lake (see map, page 27).
1956	Population levels declined in the district to light intensity (see map, page 28). Mortality continued to spread in the district. Extensions occurred northwest of Red Lake, near Musclow, Sabourin and Larus lakes.
1957	Numerous small pockets of moderate-to-severe defoliation occurred at widely scattered locations in the district (see map, page 29).
1958	A small pocket of moderate-to-severe damage persisted in the Moar Lake area. Moderate-to-severe defoliation also occurred at the south end of Sydney Lake (see map, page 30).
1959	Population levels collapsed in the district.
1960	No new records of defoliation occurred in the district; however, mortality of balsam fir was widespread in the southern part (see map, page 31).
1961-1980	not reported

Jack Pine Budworm, *Choristoneura pinus pinus* Free.

Host(s): jack pine [Major]

Year	Remarks
1950-1953	not reported
1954	Moderate-to-severe defoliation occurred over an area of 390 km- in the vicinity of Irregular, Haggart and Bulging Lakes (see map, page 33).
1953	A slight decline in population levels occurred in the Irregular, Haggart and Bulging lakes areas.
1956	light defoliation reported in the Irregular, Haggart and Bulging lakes areas
1957-1980	not reported

Aspen Twoleaf Tier, *Enargia decolor* (Wlk.)

Host(s): aspen [Major]

Year	Remarks
1950-1958	not reported
1959	Moderate-to-severe defoliation occurred over an area of approximately 330 km-. The infestation occurred in the Longlegged Lake area and extended south to Rowdy Lake.
1960	The infestation declined to light intensity in the Longlegged Lake area.
1961-1968	not reported
1969	Light defoliation occurred along Hwy 105 from the Dryden District boundary north to the town of Red Lake.
1970-1980	not reported

Eastern Pine Shoot Borer, *Eucosma gloriola* Heinr.

Host(s): pine [Major]

Year	Remarks
1950-1955	not reported
1956	This was the first district record; small numbers of infested shoots occurred along the Uchi Lake Road north of Ear Falls.
1957-1962	not reported
1963	Trace populations reported in Balmer Twp
1964-1977	not reported
1978	trace populations
1979	2% leader damage reported at Pakwash Lake
1980	not reported

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Host(s): deciduous [Major]

Year	Remarks
1950	Moderate-to-severe defoliation occurred throughout Goodall, Dent and Knott twps, and in the Whitehead and Unexpected lakes area (see map, page 37).
1951	Moderate-to-severe defoliation continued in the district (see map, page 38). Small pockets of infestation appeared for the first time on the south shore of Bruce Lake and southeast of Wenasaga Lake.
1952	Moderate-to-severe defoliation continued in the district (see map, page 39). The infestation extended roughly from Sydney to Pakwash lakes and eastward to the district boundary.
1953	Population levels virtually collapsed as a result of severe frosts.
1954-1959	not reported
1960	A small pocket of severe defoliation was recorded on an island in Moar Lake and light defoliation occurred east of Camping Lake.
1961	Moderate-to-severe defoliation occurred over a small area at Moar Lake. Numerous other areas of moderate-to-severe damage occurred at Little Vermilion, Gullrock, Pakwash, Medicine Stone and Longlegged lakes (see map, page 40).
1962	Moderate-to-severe defoliation occurred at Moar Lake and in the southern part of the district (see map, page 41).

(cont'd)

Forest Tent Caterpillar, *Malacosoma disstria* Hbn. (concl.)

Year	Remarks
1963	Infestations in the Red Lake area declined. However, moderate-to-severe damage continued in the Sydney, Longlegged and Pakwash lakes area and southward to the Dryden boundary (see map, page 42).
1964	The boundary of infestation increased in the district (see map, page 43).
1965	Moderate-to-severe defoliation continued in the southern part of the district; however, the infestation in the Bulging and Haggart lakes area collapsed (see map, page 44).
1966	The infestation collapsed. This was attributed to severe cold weather during the first three weeks in May.
1967-1972	not reported
1973	New outbreaks were recorded in the Pakwash-Bruce lakes area, at Ear Falls and at Camping Lake.
1974	moderate-to-severe damage reported in the Bruce and Pakwash lakes area
1975	A marked increase in population levels occurred in the district. New infestations were mapped from the Ontario-Manitoba boundary eastward to the Red Lake area (see map, page 45).
1976	Moderate-to-severe defoliation continued in the district and defoliation of aspen stands occurred over approximately 24,605 km- (see map, page 46).
1977	Infestations increased throughout the district. Moderate-to-severe defoliation occurred over most of the district from the 13th baseline southward to the south boundary (see map, page 47).
1978	Moderate-to-severe defoliation occurred across the entire district and up to and beyond the 13th baseline.
1979	There was a total collapse of the infestation in the district.
1980	not reported

Balsam Fir Sawfly, *Neodiprion abietis* complex

Host(s): spruce, balsam fir [Major]

Year	Remarks
1950-1957	not reported
1958	Light defoliation occurred at Cairns Lake.
1959	light defoliation reported at Moar and Frances lakes
1960	Light infestations were reported at Bigshell, McCusker and Moar lakes.
1961	not reported
1962	Moderate numbers were reported at Haggart and Douglas lakes.
1963	not reported
1964-1965	trace populations found east of Red Lake
1966	trace populations
1967-1973	not reported
1974	light defoliation reported in the Ear Falls area
1975	Moderate-to-severe defoliation occurred in Mitchell Twp.
1976	Trace defoliation was observed on fringe trees at numerous points in the district.
1977-1980	not reported

Jack Pine Sawflies, *Neodiprion pratti banksianae* Roh., *N. nanulus nanulus* Schedl., *N. virginianus* complex

Host(s): jP, rP [Major]

Year	Remarks
1950-1953	not reported
1954	*N. nanulus nanulus* - Light defoliation occurred along the east shore of Sydney Lake.
	N. virginianus - high numbers present on the west shore of Irregular Lake
1955-1958	not reported
1959	*N. pratti banksianae* - scattered colonies found at Frances, Cairns and Onepine lakes
	N. virginianus - moderate numbers observed at Ear Falls
1960	not reported

(cont'd)

Jack Pine Sawflies, *Neodiprion pratti banksianae* Roh., N. nanulus *nanulus* Schedl., *N. virginianus* complex (concl.)

Year	Remarks
1961	*N. virginianus* - trace populations
1962	*N. nanulus nanulus* - trace populations found at Haggart Lake
	N. virginianus - trace populations
1963-1965	*N. virginianus* - trace populations
1966-1971	not reported
1972	*N. pratti banksianae* - trace populations
	N. virginianus - trace populations
1973-1975	not reported
1976	*N. pratti banksianae* - trace populations
	N. nanulus nanulus - trace populations
1977-1980	not reported

Aspen Leafblotch Miner, *Phyllonorycter ontario* (Free.)

Host(s): aspen [Major]

Year	Remarks
1950-1956	not reported
1957	High populations were reported along Hwy 105.
1958-1960	trace populations
1961	Small pockets of medium-to-heavy infestations occurred at Pikangikum Lake.
1962-1963	Low populations occurred along Hwy 105 and in Baird Twp.
1964-1966	trace populations
1967-1970	not reported
1971	light and moderate-to-severe damage reported at many locations in the district
1972-1973	not reported
1974	light infestation reported at Know Lake
1975	moderate-to-severe defoliation reported along the Uchi Lake road
1976	trace populations
1977	Low populations were reported across the district.
1978-1979	not reported
1980	Small pockets of moderate-to-severe defoliation were recorded on fringe trees and along roadsides near Sandy Creek and at Lower Manitou Falls.

Yellowheaded Spruce Sawfly, *Pikonema alaskensis* (Roh.)

Host(s): spruce [Major]

Year	Remarks
1950-1957	not reported
1958	Moderate-to-severe defoliation occurred at Frances Lake and light defoliation was reported at Sydney and Unexpected lakes.
1959	not reported
1960	light defoliation reported in the Kirkland Lake area
1961-1964	not reported
1965	not reported
1966-1967	not reported
1970-1974	varying degrees of damage reported at widely scattered points
1975	low populations reported in the Whitemud Lake area
1976	low numbers reported in the southwest portion of the district
1977-1978	not reported
1979	Light defoliation occurred at widely scattered locations in the district.
1980	not reported

White Pine Weevil, *Pissodes strobi* (Peck)

Host(s): coniferous [Major]

Year	Remarks
1950-1953	not reported
1954	trace levels found at Central Patricia Airport
1955-1963	not reported
1964	causing 4% leader damage in the Ear Falls area
1965	not reported
1966	2% of terminals damaged in Baird Twp
1967	not reported
1968	trace populations
1969	not reported
1970	up to 18% of trees weeviled in Heyson Twp

(cont'd)

White Pine Weevil, *Pissodes strobi* (Peck) (concl.)

Year	Remarks
1971	causing 8% leader damage in Heyson Twp
1972	further population decline; 3% of trees weeviled in Heyson Twp
1973-1978	not reported
1979	7% of trees weeviled at one location along the Dixie Lake Road
1980	Quantitative sampling revealed 1% and 2% of trees weeviled in the Chukuni River area and at Pakwash Lake, respectively.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Host(s): larch [Major]

Year	Remarks
1950	Moderate-to-severe defoliation was observed at widely scattered locations. Infestations were reported as far north as Nungesser Lake, west to Murdock Lake, east to Whitemud Lakes and south to Ear Falls.
1951	medium-to-high populations reported in Heyson Twp and at several points in the Ear Falls area
1952	Infestation levels were comparable to those of previous years. Moderate-to-severe defoliation occurred throughout most townships east of Trout Lake and south of Lac Seul.
1953	Moderate-to-severe defoliation continued in the district. Defoliation throughout all areas surveyed averaged 75%.
1954	Population levels declined to light intensity in the district. This decline was attributed to an insect predator, the soldier bug, *Podisus maculiventris* (Say), which attacked the larvae.
1955-1962	low populations reported in the district
1963-1965	not reported
1966	Medium-to-heavy populations were reported near Red Lake and in the Ear Falls area.
1967	Medium-to-heavy infestations were reported in the Ear Falls area and light damage occurred in Baird and Heyson twps.
1968	Light infestations occurred in Baird and Heyson twps and in the Bruce and Pakwash lakes area.
1969	Medium-to-high populations occurred in several small stands.
1970-1972	not reported

(cont'd)

Larch Sawfly, *Pristiphora erichsonii* (Htg.) (concl.)

Year	Remarks
1973	Several small pockets of moderate-to-severe damage occurred near the Nungesser and Sambells rivers north of Red Lake.
1974	light defoliation reported in the vicinity of Nungesser and Sambells lakes
1975	low populations reported in the district
1976-1980	not reported

Other Noteworthy Insects

Eastern Blackheaded Budworm, *Acleris variana* (Fern.)

Host(s): spruce, fir [Major]

Year	Remarks
1950-1960	not reported
1961	Low numbers occurred on mature black spruce trees approximately 10 km south of Red Lake along Hwy 105.
1962	Low numbers recurred approximately 10 km south of Red Lake.
1963	Low population levels occurred along Hwy 105 and in the Wenasaga Lake area.
1964	Moderate-to-high populations were reported along Hwy 105, and in the Uchi, Wenasaga and Longlegged lake areas.
1965-1967	Populations declined to trace levels in the district.
1968-1970	not reported
1971-1972	trace populations
1973	Light infestations were observed on shoreline black spruce trees in the Bulging Lake area.
1974	Trace populations were observed throughout the district.
1975-1980	not reported

Aspen Leaf Beetle, *Chrysomela crotchi* Brown

Host(s): aspen [Major]

Year	Remarks
1950-1961	not reported
1962	trace populations
1963	medium-to-heavy infestations reported in Baird Twp and at points along Hwy 105
1964	Medium-to-heavy infestations occurred approximately 18 km south of Red Lake.
1965-1980	not reported

Western Tent Caterpillar, *Malacosoma californicum pluviale* (Dyar)

Host(s): deciduous [Major]

Year	Remarks
1950-1958	not reported
1959	trace populations found at Moar Lake
1960-1962	not reported
1963	trace populations found in Baird Twp
1964	trace populations found in Baird Twp and in the Stone River area
1965	Trace populations recurred in Baird Twp.
1966-1971	not reported
1972	trace populations
1973-1975	not reported
1976-1977	trace populations
1978-1980	not reported

Northern Pitch Twig Moth, *Petrova albicapitana* (Busck)

Host(s): pine [Major]

Year	Remarks
1950-1958	not reported
1959	low numbers present in all jack pine stands
1960-1964	trace populations
1965	not reported
1966	trace populations
1967-1974	not reported
1975-1980	trace populations

Greenheaded Spruce Sawfly, *Pikonema dimmockii* (Cress.)

Host(s): spruce [Minor]

Year	Remarks
1950-1955	not reported
1956	trace populations
1957-1959	not reported
1960-1963	trace populations
1964	trace populations reported in the Ear Falls and Wenasaga Lake areas
1965-1968	trace levels reported along the Wenasaga Road, and at Haggart Lake, Cairns Lake and points along Hwy 105
1969-1971	not reported
1972	trace populations
1973-1980	not reported

Aspen Leafroller, *Pseudexentera oregonana* Wlshm.

Host(s): aspen [Major]

Year	Remarks
1950-1957	not reported
1958	trace populations reported in the Ear Falls area
1959-1980	not reported

Pine Tortoise Scale, *Toumeyella parvicornis* (Cock.)

Host(s): pine [Major]

Year	Remarks
1950-1955	not reported
1956	Light infestations were observed along the Gold Pines Road from Ear Falls to Wenasaga Lake.
1957-1959	not reported
1960	Light infestations occurred on jack pine trees near Balmertown.
1961-1980	not reported

D I S E A S E S

Armillaria Root Rot, *Armillaria mellea* (Vahl:Fr.) Kummer

Host(s): coniferous, deciduous [Major]

Year	Remarks
1950-1970	not reported
1971	7.5% mortality at one location along the Red Lake Highway
1972-1973	not reported
1974	caused 2% mortality at Aerofoil Lake and in Heyson Twp
1975-1978	not reported
1979	1% mortality recorded south of Pakwash Lake
1980	not reported

Scleroderris Canker, *Ascocalyx abietina* (Lagerb.) Schläfer-Bernhard

Host(s): pine, spruce

Year	Remarks
1950-1977	not reported
1978	severe infections recorded for the first time in the district in regeneration jack pine trees at Wavell Lake
1979-1980	no change in the status of this disease in the Wavell Lake area

Spruce Needle Rusts, *Chrysomyxa ledi* (Alb. & Schwein) de Bary, *C. ledicola* (Peck) Lagerh.

Host(s): wS, bS [Major]

Year	Remarks
1950	not reported
1951	trace levels
1952	not reported
1953	trace levels reported at Donald Lake
1954-1958	not reported
1959-1960	Varying degrees of damage occurred in the district.
1961	not reported
1962	Light infection occurred at widely scattered locations.
1963	not reported
1964	Light infection occurred along the Wenasaga Lake Road.
1965	not reported
1966	trace populations
1967	caused 23% foliar damage along the Wenasaga Lake Road
1968	not reported
1969-1970	trace levels
1973	light infections
1974	trace levels
1975	not reported
1976	Quantitative sampling at four locations revealed 1-3% defoliation.
1977	trace levels
1978	In a plantation at Dixie Lake, 22% of trees were infected and there was 25% foliar damage.
1979	70% infection levels at Dixie Lake and 2% foliar damage
1980	42% incidence at one location in the district; trace damage reported elsewhere

Ink Spot of Aspen, *Ciborinia whetzelii* (Seaver) Seaver

Host(s): aspen [Major]

Year	Remarks
1950-1954	not reported
1955	Pockets of moderate-to-severe foliar damage occurred along the highway from Madsen to Red Lake and southward to Perrault Falls.
1956-1958	not reported
1959	reported at numerous locations
1960	Medium-to-heavy foliar damage occurred near the town of Red Lake.
1961-1964	not reported
1965	Light infection occurred in the Young Lake area.
1966-1967	not reported
1968	low damage levels reported at Madsen
1969	not reported
1970	trace levels
1971	low damage levels reported in the district
1972-1974	not reported
1975	light defoliation reported in the district
1976-1980	not reported

Pine Needle Rust, *Coleosporium asterum* (Dietel) Sydow

Host(s): pine [Major]

Year	Remarks
1950-1964	not reported
1965	Light infection was common throughout the district.
1966-1969	not reported
1970	light infection throughout the district
1971-1975	not reported
1976	Defoliation levels ranged from 1% to 3% at four quantitative sample points.
1977	trace infection
1978	not reported
1979	At one location along the Dixie Lake Road, 22% of the trees were infected and foliar damage averaged 25%
1980	not reported

Western Gall Rust, *Endocronartium harknessii* (J.P. Moore) Y. Hirats.

Host(s): jack pine [Major]

Year	Remarks
1950-1965	not reported
1966	28% infection reported in Baird Twp
1967	Infection levels in Baird Twp declined to 10%.
1968	not reported
1969	100% incidence reported at one location in Red Lake
1970	15% incidence reported in Heyson Twp
1971-1972	2.5% mortality in Heyson Twp
1973	low levels of infection reported in the Longlegged Lake area
1974	caused 2% and 6% infection in trees in Heyson Twp and at Aerofoil Lake, respectively
1975	not reported
1976	9% mortality at one location along the Nungesser Lake Road
1977-1978	not reported
1979	43% of trees affected in the Dixie Lake area
1980	not reported

Hypoxylon Canker, *Hypoxylon mammatum* (Wahlenb.) J. Miller

Host(s): aspen [Major]

Year	Remarks
1950-1954	not reported
1955	found at widely scattered points
1956-1963	not reported
1964	23% mortality at one location near Red Lake
1965-1966	Mortality in the Red Lake area increased to 25%.
1967	Mortality in the Red Lake area increased to 26%.
1968	No change occurred in the status of this organism.
1969	10% infection recorded near Balmertown
1970-1977	not reported
1978-1980	found commonly in the district

Shoot Blight, *Venturia macularis* (Fr.) E. Müller & V. Arx.

Host(s): aspen [Major]

Year	Remarks
1950-1961	not reported
1962	trace levels
1963	not reported
1964	Quantitative sampling at Sydney Lake and along the Wenasaga Lake Road revealed that 37% and 66%, respectively, of regeneration was affected.
1965	81% infection of regeneration recorded at one point in Baird Twp
1966	50% of shoots damaged along the Wenasaga Lake Road
1967-1968	varying degrees of damaged reported in the district
1969	not reported
1970-1971	trace infections
1972	The incidence of this leaf blight ranged from 10% to 27% at quantitative sample points.
1973	not reported
1974	43% aspen regeneration infected at one location near Red Lake
1975	low infections reported in the district
1976	trace levels
1977	49% and 50% shoot mortality in the Chukuni River area
1978	26% leader mortality in the Chukuni River area
1979	Leader mortality declined from 26% to 8% in the Chukuni River area.
1980	trace infection reported at Stormer Lake and the Chukuni River area

Other Noteworthy Diseases

Dwarf Mistletoe, *Arceuthobium pusillum* Peck.

Host(s): spruce [Major]

Year	Remarks
1950-1952	not reported
1953	brooms observed commonly on black spruce in the Ear Falls area
1954	trace infections
1955	High numbers of brooms were observed at Kirkness Lake.
1956-1980	not reported

Spruce Cone Rust, *Chrysomyxa pirolata* (Körn.) Winter

Host(s): spruce [Major]

Year	Remarks
1950-1963	not reported
1964	light infections reported
1965-1966	not reported
1967	trace damage to cones at Pikangikum Lake and light damage in the Chukuni River area
1968-1980	not reported

White Trunk Rot, *Phellinus igniarius* (L. ex Fr.)

Host(s): deciduous [Major]

Year	Remarks
1950-1962	not reported
1963	medium-to-heavy infection reported in the Ear Falls area
1964	not reported
1965	individual trees infected throughout the district
1966	light infections reported in the northern part of the district
1967-1968	trace levels observed throughout the district
1969	In the Wenasaga Lake area, an evaluation revealed an incidence of 47% and mortality of 25%.
1970-1980	not reported

Fireweed Rust, *Pucciniastrum epilobii* Otth.

Host(s): balsam fir [Major]

Year	Remarks
1950-1962	not reported
1963	light infections reported across the district
1964	not reported
1965	light infections reported in Baird Twp
1966-1967	not reported
1968	light infections reported throughout the district
1969	not reported
1970-1971	trace infections
1972-1978	not reported
1979	trace defoliation reported at Detector Lake north of Ear Falls
1980	not reported

ABIOTIC DAMAGE

Drought

Year	Remarks
1950-1969	not reported
1970	Unusually hot weather during the months of July and August resulted in premature yellowing and loss of foliage, especially on white birch.
1971-1980	not reported

Frost Damage

Year	Remarks
1950-1963	not reported
1964	Unusually late frosts during the latter part of May caused 17% damage to black spruce at Red Lake and 21% damage to balsam fir near Ear Falls.
1965	Quantitative sampling of black spruce and balsam fir in Baird Twp revealed 12% and 20% shoot damage, respectively.
1966-1977	not reported
1978	At one location along the Dixie Lake Road, 97% of the trees were affected and shoot mortality was 23%.
1979-1980	not reported

Winter Drying

Year	Remarks
1950-1957	not reported
1958-1971	Moderate-to-severe damage occurred in the Irregular Lake area.
1972	light damage observed throughout the district
1973-1980	not reported

A P P E N D I C E S

APPENDIX A

DECIDUOUS HOST

Common Name	Scientific Name	Abbreviations
Alder	*Alnus* spp.	Al
Apple	*Malus* spp.	Ap
Ash, black	*Fraxinus nigra* Marsh.	As
Aspen, largetooth	*Populus grandidentata* Michx.	lA
trembling	*tremuloides* Michx.	tA
Basswood	*Tilia* spp.	Ba
Beech	*Fagus grandifolia* Ehrh.	Be
Birch, white	*Betula papyrifera* Marsh.	wB
yellow	*alleghaniensis* Britt.	yB
Butternut	*Juglans cinerea* L.	Bu
Cherry, eastern choke	*Prunus virginiana* L.	eaCh
pin	*pensylvanica* L.f.	pCh
Elm, white	*Ulmus americana* L.	wE
Horse-chestnut	*Aesculus hippocastanum* L.	hChe
Ironwood	*Ostrya* spp.	I
Maple, Manitoba	*Acer negundo* L.	mM
red	*rubrum* L.	rM
sugar	*saccharum* Marsh.	sM
Mountain-ash, American	*Sorbus americana* Marsh.	aMo
Oak, bur	*Quercus macrocarpa* Michx.	bO
red	*rubra* L.	rO
Poplar, balsam	*Populus balsamifera* L.	bPo
Carolina	X *canadensis* Moench	cPo
Lombardy	*nigra* var. *italica* Muenchh.	lPo
silver	*alba* L.	sPo
Willow	*Salix* spp.	W

APPENDIX B

CONIFEROUS HOST

Common Name	Scientific Name	Abbreviations
Cedar, eastern white	*Thuja occidentalis* L.	eC
Fir, balsam	*Abies balsamea* (L.) Mill.	bF
Larch	*Larix laricina* (Du Roi) K. Koch	tL
Pine, Austrian	*Pinus nigra* Arn.	aP
eastern white	*strobus* L.	wP
jack	*banksiana* Lamb.	jP
mugho	*mugho* Turra var. *mughus* Zenari	mP
red	*resinosa* Ait.	rP
Scots	*sylvestris* L.	scP
Spruce, black	*Picea mariana* (Mill.) B.S.P.	bS
Colorado	*pungens* Engelm.	colS
Norway	*abies* (L.) Karst.	nS
red	*rubens* Sarg.	rS
white	*glauca* (Moench) Voss	wS

APPENDIX C

MAPS - NORTHWESTERN ONTARIO