

FOREST INSECTS AND DISEASES IN EIGHT
WESTERN CANADIAN NATIONAL PARKS
1973

by

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ABSTRACT

Forest insect and disease conditions were surveyed in eight Western Canadian National Parks in 1973. Forest tent caterpillar populations increased once more in Riding Mountain and Prince Albert Parks; the yellow-headed spruce sawfly severely damaged native spruce in Riding Mountain, Prince Albert, Elk Island, and Jasper Parks; and patches of spruce needle rusts were found in Yoho and Jasper Parks.

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TABLE OF CONTENTS

	Page
ABSTRACT	
INTRODUCTION	1
RIDING MOUNTAIN NATIONAL PARK	
(by F. J. Emond).....	2
PRINCE ALBERT NATIONAL PARK	
(by J. Petty).....	5
WATERTON LAKES NATIONAL PARK	
(by G. J. Smith).....	7
BANFF NATIONAL PARK	
(by G. J. Smith).....	9
KOOTENAY NATIONAL PARK	
(by G. J. Smith).....	11
YOHO NATIONAL PARK	
(by G. J. Smith).....	13
JASPER NATIONAL PARK	
(by J. Susut).....	15
ELK ISLAND NATIONAL PARK	
(by V. B. Patterson).....	17

INTRODUCTION

Forest tent caterpillar populations again increased in Riding Mountain and Prince Albert National Parks, causing moderate to severe defoliation of aspen stands at a number of locations. The yellow-headed spruce sawfly caused severe damage to planted and open-growing native spruce trees in Riding Mountain, Prince Albert, Elk Island and Jasper Parks. Spruce needle rusts were conspicuous in scattered patches in Yoho and Jasper Parks.

No surveys were conducted in Wood Buffalo National Park in 1973; an examination will be made in 1974.

RIDING MOUNTAIN NATIONAL PARK

by F. J. Emond

Forest Tent Caterpillar, Malacosoma disstria (Hbn.)

A notable increase in population levels and defoliation by this species was evident in some areas of the Park in 1973.

Moderate and severe damage was evident in the following areas: along the east slopes of the Park from a point approximately 8 miles northwest of McCreary south to Riding Mountain, in some sections of Wasagaming Campground, in the aspen areas along the south boundary of the Park between Onanole and Rossburn, and in an approximately 70-square-mile area in the west end of the Park.

Light to moderate defoliation was evident along the north and northeast slopes of the Park from the immediate area of the North Gate southeast through to the vicinity of Laurier.

Scattered light defoliation was noted in and around the Clear Lake Campground.

Sequential samples were taken near Onanole to determine egg abundance. Results of the samples indicate that severe defoliation can be expected in 1974.

Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.)

This insect was again responsible for damage to planted ornamental and native spruce in several areas of the Park.

Moderate and severe defoliation was noted in the following

general areas: Wasagaming Townsite, in Wasagaming Campsite, near the junction of Highway 10 and the Lake Audy Road, and on individual native regeneration along Highway 10 between Wasagaming Townsite and Moon Lake.

Light and moderate defoliation was noted on planted spruce in the Wilson Creek Watershed area and in another small plantation area situated west of Highway 10, approximately 12 miles north and west of Wasagaming.

Light defoliation was evident on mature white spruce in and around Clear Lake Campground.

OTHER NOTEWORTHY INSECTS AND DISEASES

<u>Causal Agent</u>	<u>Host</u>	<u>Remarks</u>
Insect		
Black-headed budworm, <u>Acleris variana</u> (Fern.)	W. spruce	Low populations in most spruce stands.
Spruce gall aphids, <u>Adelges</u> spp.	W. spruce C. spruce	Moderate to high incidence in the Clear Lake area. Light incidence in the Wilson Creek Watershed.
Ugly-nest caterpillar, <u>Archips cerasivoranus</u> (Fitch)	Chokecherry	Some tents noted near Russell Station and along Norgate Road.
Large aspen tortrix, <u>Choristoneura conflictana</u> (Wlk.)	T. aspen	Low populations persisted in Wasagaming and Clear Lake Campgrounds and in the west end of the Park.
Spruce budworm, <u>Choristoneura fumiferana</u> (Clem.)	W. spruce	Low populations present on mature trees in the Clear Lake area.

Woolly elm aphid, <u>Erisoma americanum</u> (Riley)	Elm	Moderate damage to Elm foliage in the Clear Lake area.
Prairie tent caterpillar, <u>Malacosoma californicum lutescens</u> (N. & D.)	Chokecherry	Some tents noted along Audy Lake Road and along the Norgate Road.
White pine weevil, <u>Pissodes strobi</u> (Peck)	W. spruce	Light damage to terminal shoots in many areas of the Park.
A leaf roller, <u>Pseudexentera oregonana</u> Wlshm.	T. aspen	Low populations noted in most aspen stands.
Poplar borer, <u>Saperda calcarata</u> Say	T. aspen	Some infested trees noted along Lake Audy Road and in the East Gate area.

Disease

Pine needle rust, <u>Coleosporium asterum</u> (Diet.) Syd.	J. pine	Light needle damage in the Wilson Creek Watershed and along the Norgate Road.
Globose gall rust, <u>Endocronartium harknesii</u> (J.P. Moore) Y. Hiratsuka	J. pine	Common in pine stands along the Norgate Road.
White mottled rot, <u>Fomes fomentarius</u> (L.ex Fr.) Kickx	W. birch	Common in the Wilson Creek Watershed and in other stands of mature birch.
White trunk rot, <u>Fomes igniarius</u> (L.ex Fr.) Kickx	T. aspen	Light infections noted in most aspen stands in the Park.
Fir needle rust, <u>Pucciniastrum</u> sp.	W. spruce C. spruce	Light to medium infections common in Wilson Creek Watershed.
Aspen shoot blight, <u>Venturia macularis</u> (Fr.) E. Muell. & V. Arx.	T. aspen	Light infections common on regeneration throughout Park.
Wind damage	W. spruce B. spruce T. aspen W. birch	Substantial blowdown as a result of high winds in early July. High occurrences were most evident along road allowances and fringe areas.

PRINCE ALBERT NATIONAL PARK

by J. Petty

Forest Tent Caterpillar, Malacosoma disstria

Forest tent caterpillar was present throughout much of the Park in 1973. Moderate to severe defoliation occurred in a small area along the southeast side of Paquin Lake and in a larger triangular area between Lavallee, Wasa, and Lone Island lakes. Areas of light to moderate defoliation were recorded between Kingsmere and Crean lakes and on a large hill southwest of the First Narrows on Waskesiu Lake. Low populations were present around Waskesiu Lake, along 57 Trail, and south of Waskesiu along the highway to Halkett Lake.

Egg band sampling along Highway 263 south of Waskesiu did not indicate any appreciable increase of defoliation in 1974 although moderate infestations can be expected just outside the Park. Time did not permit extensive sampling within the Park.

Yellow-headed Spruce Sawfly, Pikonema alaskensis

Populations of this spruce sawfly increased notably from those reported the previous year. Moderate to severe defoliation of open grown, native regeneration was common along roadsides around Lake Waskesiu, and south along Highway 263 to Halkett Lake. Moderate defoliation was also noted on some of the larger trees in the west part of Waskesiu.

Pine Needle Cast, Lophodermella concolor

A needle cast reported in the Waskesiu Hills in 1972 was again present in 1973. Moderate infections of the current year's foliage was common throughout and some individual trees within the area had a high incidence of infection.

OTHER NOTEWORTHY INSECTS AND DISEASES

<u>Causal Agent</u>	<u>Host</u>	<u>Remarks</u>
Insect		
Black-headed budworm, <u>Acleris variana</u>	W. spruce	Low numbers present.
Birch skeletonizer, <u>Bucculatrix canadensisella</u>	W. birch	Present throughout the Park but much lighter than in 1972.
Owlet moth, <u>Nycteola cinerea</u>	B. poplar	Common in southern part of Park. Light defoliation west of Waskesiu.
Spiny elm caterpillar, <u>Nymphalis antiopa</u>	B. poplar	Low populations at Namekus Lake.
Spruce terminal weevil, <u>Pissodes strobi</u>	W. spruce B. spruce	Common on regeneration along the road to the Narrows, 57 Trail and Highway 263.
Larch sawfly, <u>Pristiphora ericksonii</u>	Tamarack	Low populations around Lake Waskesiu and along 57 Trail.
Disease		
Spruce needle rust, <u>Chrysomyxa ledicola</u>	W. spruce B. spruce	Very low incidence throughout the Park.
Spruce cone rust, <u>Chrysomyxa pirolata</u>	B. spruce	Low incidence along the south side of Waskesiu Lake.
Poplar ink spot, <u>Ciborinia whetzellii</u>	T. aspen	Small patch of severe infection near Birch Bay on north side of Waskesiu Lake.
Western gall rust, <u>Endocronartium harknessii</u>	J. pine	Low incidence of galls throughout the Park.
White trunk rot, <u>Fomes ignarius</u>	T. aspen	Low incidence on mature trees throughout the Park.
Leaf blight, <u>Linospora tetraspora</u>	B. poplar	Low incidence on regeneration common throughout the Park.
Aspen shoot blight, <u>Venturia tremulae</u>	T. aspen	Very low on regeneration along north side of Lake Waskesiu and along Highway 263.

WATERTON LAKES NATIONAL PARK

by

G. J. Smith

Spruce Beetle, Dendroctonus rufipennis (Kirby)

When overmature spruce stands which had been infested in recent years were re-examined, beetles were found in fresh windfallen trees but not in standing living trees.

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

This root rot was prolific throughout the Park in conifer stands which had been severely winter-damaged in the past three years, and in such areas contributed to tree mortality. It is expected that the incidence of infection in such stands will remain high until trees regain their normal vigor.

White Pine Blister Rust, Cronartium ribicola J. C. Fischer

Deterioration of whitebark pine is becoming more apparent each year on the slopes rising from the east side of Cameron Lake. Although white pine blister rust appears to be the major cause of mortality, there are several other contributing agents, such as overmaturity, winter damage, and root rot, which could be overlooked during damage assessment. Hence, further examination of the forest on this slope is planned to determine the role of blister rust in relation to the overall deterioration process.

Climatic Damage

No new red belt was observed in the Park in 1973. However,

considerable tree mortality caused by past red belt damage was evident along the timberline and surrounding bare slopes in the Cameron and Pass Creek valleys and the Sofa Mountain-Belly River area.

OTHER NOTEWORTHY INSECTS AND DISEASES

<u>Causal Agent</u>	<u>Host</u>	<u>Remarks</u>
Insect		
Ugly-nest caterpillar, <u>Archips cerasivoranus</u> (Fitch)	Chokecherry	Sudden decline in populations. Only a few larval tents observed.
Poplar leaf roller, <u>Pseudexentera oregonana</u> Wlshm.	T. aspen	Populations declined. No noticeable defoliation observed.
Disease		
Black knot of cherry, <u>Apiosporina morbosa</u> (Schw.) Arx	Chokecherry	This fungus continued to spread, intensify and cause mortality in the Golf Course area and along Pass Creek Road.
Spruce needle rust, <u>Chrysomyxa weirii</u> Jacks	W. spruce E. spruce	A few mature trees along Bauerman Brook were severely infected.

BANFF NATIONAL PARK

by

G. J. Smith

Lodgepole Needle Miner, Coleotechnites starki Free.

During the summer of 1973 needle miner larvae were in the first year's growth of their normal two-year life cycle, and thus foliage discoloration was not visible when viewed from a distance. On close examination of individual tree crowns, partially mined needles were found along both slopes of the Bow River Valley, but larval populations were considered low.

Lodgepole Pine Mortality

An increase in the number of dead and dying lodgepole pines has been noted in the Banff Townsite area in recent years, particularly around the School of Fine Arts on the slope of Tunnel Mountain.

Although road and building construction may have had an adverse effect on root systems and ground water movement, this did not appear to be the primary cause of tree mortality. Since most of the affected trees were along stand fringes or in small groups in cleared areas, it appeared likely that the opening up of the stands had exposed the remainder to severe winter damage, which killed a few trees each year that it occurred.

Tree mortality in similarly exposed sites has been observed elsewhere in the Rocky Mountains, such as along cleared road rights of way and the edges of logged patches.

OTHER NOTEWORTHY INSECTS AND DISEASES

<u>Causal Agent</u>	<u>Host</u>	<u>Remarks</u>
Insect		
Spruce budworm, <u>Choristoneura biennis</u> Free.	W. spruce E. spruce	Low populations in the Saskatchewan Crossing area.
Spruce beetle, <u>Dendroctonus rufipennis</u> (Kirby)	E. spruce	Low populations along the Boom Creek Valley. Potential hazard is high.
Disease		
Stalactiforme rust, <u>Cronartium coleosporioides</u> Arth.	Lp. pine	Killing saplings in the Saskatchewan Crossing area.
White pine blister rust, <u>Cronartium ribicola</u> J.C.Fischer	Ribes sp.	Present on this alternate host plant but no infected whitebark pines were found within the Park.
Red belt	Lp. pine A. fir	No new damage occurred during the winter of 1972-73. Trees made good recovery from damage sustained in winter of 1971-72. Very low tree mortality resulted.

KOOTENAY NATIONAL PARK

by

G. J. Smith

Spruce Budworm, Choristoneura biennis Free.

As 1973 was the first year of the normal two-year life cycle of this species, larvae were small and feeding was minimal; hence, defoliation was apparent only when observed from within the spruce-fir stands.

Light to moderate defoliation occurred in the understory along the Vermilion River Valley between Ochre Creek and the mouth of the Simpson River. A reduction in larval populations was noted from Vermilion northward and an increase noted in the area surrounding the mouth of the Simpson River.

Poplar Serpentine Miner, Phyllocnistis populiella Cham.

These leaf mining insects caused rather spectacular foliage discoloration on trembling aspen along the Vermilion and Kootenay River valleys. In many instances, 100 percent of the leaves were mined and entire stands were silver-grey in color.

Engelmann Spruce Weevil, Pissodes engelmanni Hopk.

There was a notable increase in the number of recently infested sapling spruce tops along the Kootenay River flats between Kootenay Crossing and McLeod Meadows. Several hundred infested tops were counted at random from the stretch of highway between the above-mentioned points.

OTHER NOTEWORTHY INSECTS AND DISEASES

<u>Causal Agent</u>	<u>Host</u>	<u>Remarks</u>
Insect		
Mountain pine beetle, <u>Dendroctonus ponderosae</u> Hopk.	Lp. pine	No known infested trees within the Park.
Douglas fir beetle, <u>Dendroctonus pseudotsugae</u> Hopk.	D. fir	Beetles had matured and vacated the previously reported infested trees near the south end of the Cross River Fire Road. No new activity was observed in the area.
Disease		
Shoestring root rot, <u>Armillaria mellea</u> (Vahl.ex.Fr.) Kummer	D. fir Lp. pine	Numerous dead and dying trees on the N.W. slope below Redstreak Camp-ground were infected. Primary cause of tree mortality here is not known.
Spruce needle rust, <u>Chrysomyxa ledicola</u> Lagh.	W. spruce	Moderate to severe infection in the area surrounding the mouth of the Simpson River.
Pine needle rust, <u>Coleosporium asterum</u> (Diet.) Syd.	Lp. pine	Light to moderate infection in the Hawk Creek area.

YOHO NATIONAL PARK

by

G. J. Smith

Atropellis Canker, Atropellis piniphila (Weir) Lohman & Cash

Two patches of dead and dying lodgepole pines on the east slopes of Mount Hunter and Mount King were visible from the Trans-Canada Highway. On-site examination revealed that the primary cause of death was the presence of Atropellis cankers on the stems of the trees. A secondary cause of mortality was the removal of living bark by porcupines feeding on the cankered zones of the trees. In many instances the bark had been removed from only a portion of the stem circumference and the tree was still living; however, where bark removal had been sufficient to girdle the stem the tree had died.

The feeding of porcupine on Atropellis-infected pine is not a common occurrence. However, this is an ideal porcupine denning area, and it seems, from past observations, that the offspring have developed a taste preference for the bark of cankered trees. This feeding habit has likely interrupted normal dispersal of the offspring and resulted in a local concentration of these animals.

Spruce Needle Rust, Chrysomyxa weirii Jacks

For the second consecutive year patches of severely infected white spruce were observed in the Wapta Falls area. Some of the tree crowns will likely have a thinned appearance in 1974. Elsewhere, severely infected individual trees were noted in the area between the Mount Hunter Lookout Trail and the west boundary of the Park.

OTHER NOTEWORTHY INSECTS AND DISEASES

<u>Causal Agent</u>	<u>Host</u>	<u>Remarks</u>
Insect		
Poplar serpentine miner, <u>Phyllocnistis populiella</u> Cham.	T. aspen	Extensive leaf mining caused most of the aspen foliage to appear silver-grey.
Disease		
Pine needle rust, <u>Coleosporium asterum</u> (Diet.) Syd.	Lp. pine	Light to moderate infection on saplings along Emerald Creek.
Leaf rust on willow, <u>Melampsora epitea</u> Thuem.	Willow	Severe infection on lower east slope of Mt. King.
Tar spot, <u>Rhytisma salicinum</u> (Per s.) Fr.	Willow Menziesia	Severe infection along Otterhead Road.

JASPER NATIONAL PARK

by

J. P. Susut

Yellow-headed Spruce Sawfly, Pikonema alaskensis (Roh.)

High larval populations of this sawfly caused moderate and severe defoliation of white spruce in several locations in the Park. At Pocahontas, planted white spruce around the service station was severely defoliated. From this point southwest for 15 miles along Highway 16, light to moderate defoliation occurred on native spruce. Moderate defoliation was also observed at the junction of Celestine Lake Road and Highway 16 and near Cavell Warden Station.

Spruce Needle Rust, Chrysomyxa ledicola Lagh.

Moderate to severe infection of white and Engelmann spruce was observed along the Maligne Lake Road from Medicine Lake north for 6.5 miles.

OTHER NOTEWORTHY INSECTS AND DISEASES

<u>Causal Agent</u>	<u>Host</u>	<u>Remarks</u>
Insect		
Gall aphid on conifers, <u>Adelges</u> spp.	W. spruce	Severely infected trees were observed in several locations in the Park.
American aspen beetle, <u>Gonioctena americana</u> (Schaeff.)	T. aspen	Common in the Jasper area.
Beaked willow-gall sawfly, <u>Mayetiola rigidae</u> (O. & S.)	Willow	Common throughout the Park.
Pine root collar weevil, <u>Hylobius</u> spp.	Lp. pine	Mortality of a few trees 2 miles north of Athabasca Falls.

A gall aphid,
Pemphigus sp.

B. poplar

Common throughout
the Park.

Poplar serpentine miner,
Phyllocnistis populiella Cham.

T. aspen

Light throughout the
Park.

A sawfly,
Pontania sp.

Willow

Galls common willows.

Disease

Dwarf mistletoe,
Arceuthobium americanum Nutt ex.
Engelm

Lp. pine

Common throughout the Park.

Pine needle cast,
Hendersonia pinicola Wehm.

Lp. pine

Severe infection at 17
mile Celestine Lake Road.

Needle rust,
Pucciniastrum sp.

W. spruce

Light infection on white
spruce near Snake Indian
Falls.

ELK ISLAND NATIONAL PARK

by

V. B. Patterson

Yellow Headed Spruce Sawfly, Pikonema alaskensis

Populations of this defoliator were again high in 1973.

In the recreation area many open-growing white spruce were severely defoliated.

OTHER NOTEWORTHY INSECTS AND DISEASES

<u>Causal Agent</u>	<u>Host</u>	<u>Remarks</u>
Insect		
American aspen beetle, <u>Gonioctena americana</u> (Schaeff.)	T. aspen	Light damage in Oster Lake area.
Grey willow leaf beetle, <u>Pyrrhalta decora</u> (Say)	Willow sp. T. aspen	Light damage in Oster Lake area.
Disease		
White trunk rot, <u>Fomes igniarius</u> (L.ex Fr.)Kickx.	T. aspen	Common on mature aspen throughout the Park.
Hypoxylon canker, <u>Hypoxylon mammatum</u> (Wahl.)Miller	T. aspen	Common throughout on trees of all ages.

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