



TECHNOLOGY TRANSFER NOTE

A-001

FOREST INSECT AND DISEASE NOTES

DECEMBER, 1987

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BY WAY OF INTRODUCTION

These **NOTES** are the first in a series that we hope to produce on insect and disease problems in the Western and Northern region. We intend to publish **NOTES** three times a year; in March, July, and December. The purpose of the **NOTES** is to provide client groups with up-to-date information on the current insect and disease situation, insects and diseases, and new research. We shall also report on activities of the Forest Insect and Disease Survey

(FIDS) staff. It is our hope that client groups can make use of the information in their operational planning, field activities, and in-service training. These **NOTES** are designed to be compiled in a binder. We hope to provide an index to the **NOTES** in every third issue. You will find a reply sheet attached. Please take the time to fill it in and send it back to us. Let us know what you would like to see in future **NOTES** and any other comments you may have.

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WESTERN GALL RUST

by
Ken Mallett

Western gall rust, also called globose gall rust or pine-pine gall rust, is one of the most common and economically important diseases of hard pines (lodgepole, jack, Scots, ponderosa, and mugho) in the prairie provinces. The disease is easily recognized by the conspicuous, perennial, globose galls on the stems and branches. Trees that are infected are often weakened and malformed but seldom die. Damage occurs because stems and branches with galls are structurally weak and break easily in high winds or under heavy snow loads.

Western gall rust is caused by the rust fungus Endocronartium harknessii (J.P. Moore) Hiratsuka. This fungus is unique in that it does not require an alternate host to complete its life-cycle as do other rust fungi. The orange-yellow spores that are produced on the galls in late May through mid-July (depending upon location), are wind-blown to young, expanding shoots (candles) of pine where they can start new galls. Galls produce spores for 3 - 4 weeks at a given location. In natural stands of lodgepole or jack pine in the prairie provinces, high incidence of infection occurs in wave years once every 6 to 8 years, and low levels of infections recur in other years.

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Control:

- 1) If practical, cut or prune galls off infected trees. Avoid pruning when the galls are producing spores.
- 2) In thinning operations, remove infected trees, especially those with stem galls.
- 3) Trees with lower main stem galls should be destroyed.
- 4) Avoid establishing new stands near infected pine stands.
- 5) No fungicides are currently registered for western gall rust in forestry, nurseries, or tree farms.

- adapted from Northern Forestry Centre Pest Leaflet: Western Gall Rust. NFRC PL 27-85. By Y. Hiratsuka and P.J. Maruyama.

Further Reading:

Hiratsuka, Y. 1987. Forest tree diseases of the prairie provinces. Can. For. Serv., North. For. Cent., Edmonton, Alberta. Inf. Rept. NOR-X-286.

THE FOREST TENT CATERPILLAR

by
W. Jan A. Volney

The forest tent caterpillar, Malacosoma disstria (Hbn.), or FTC, is a perennial pest of aspen forests

in the prairie provinces. The blue and black caterpillars with white keyhole shaped markings damage trees

by feeding on leaves early in the spring. They stop feeding by early July and can completely defoliate trees. Most trees survive this defoliation and produce a second crop of leaves later in July. By this time the caterpillars have spun cocoons in which they become moths. The nondescript, brown moths emerge from these cocoons, mate, and the females lay eggs in bands around twigs on suitable trees by early August. A new generation of caterpillars develop within the eggs and overwinter in this stage. The cycle begins again when the caterpillars emerge the following spring.

Although trembling aspen is the principal food plant for the FTC, when the caterpillars are numerous and this food becomes scarce, the caterpillars often feed on a variety of other plants. They also become a nuisance to people who use the outdoors. Thus residents of rural areas, gardeners, campers, picnickers, and fishermen often become annoyed by caterpillars climbing on them or their belongings. These caterpillars are also annoying to livestock because of their habit of climbing up the first vertical object they encounter in their search for food.

From a forestry perspective, the FTC may be one of the most important pests affecting the growth of aspen stands. By destroying leaves of trees the caterpillars interfere with tree growth. This is reflected by a reduction in the width of the annual rings laid down in the stems of defoliated trees. The FTC does not kill aspen outright, but several years of defoliation will cause twigs

and smaller branches to die. More importantly, this damage increases the risk of the tree becoming infected by tree-killing disease organisms such as the fungus that causes Hypoxyton canker. Studies in Minnesota showed that aspen stands defoliated for three consecutive years lost up to 49 percent of the stems over six years following the outbreak. In contrast, stands which experienced light defoliation for a single year lost 26 percent of their stems, on average. Damage is thought to increase when drought coincides with periods of defoliation.

No one really understands what causes outbreaks to begin, or what causes them to end. A variety of natural enemies and weather conditions normally keep populations under control. The mortality processes that are critical in determining population irruptions are, as yet, unknown. Until these processes are understood it is unlikely that we will be able to deal with outbreaks over a region as vast as the prairie provinces.

Direct control is feasible for protecting landscape plantings. Removing egg- or caterpillar clusters by scraping them from, or pruning branches on which they occur is feasible for smaller trees and shrubs. The bacterial insecticide Bacillus thuringiensis is recommended for most other situations.

Further reading:

Northern Forestry Centre Pest Leaflet: Forest tent caterpillar.
NFRC PL 17-77.

SYNOPSIS OF THREE MAJOR INSECT PESTS IN THE REGION--1987

by
Jim Emond

SPRUCE BUDWORM

Choristoneura fumiferana (Clem.)

Alberta

In 1987, the spruce budworm (SBW) defoliated 9,350 ha.

The SBW continued to cause moderate-to-severe defoliation in native white spruce stands of Alberta. The total area thus affected was 610 ha compared to 390 ha in 1986. Varying degrees of defoliation were noted in: Big Knife Provincial Park, near Castor; Morningside and Millet; and a small area north of Red Lodge Provincial Park.

In northern Alberta, moderate-to-severe defoliation occurred in spruce stands along the Chinchaga River west of High Level (8,640 ha) and along the Steen River southwest of Steen River Cabins (100 ha).

Saskatchewan

The total area defoliated by the SBW in Saskatchewan was 31,600 ha. This was a significant increase over that reported in 1986 (18,500 ha).

Moderate-to-severe defoliation was common in the Porcupine Hills again. The original infestation in the Tall Pines area is still present between Reserve and Usherville, and stretches east to the vicinities of Toboggan, Kidney, Decorby, and White lakes. However, the outbreak expanded westward to the Big Valley Lake area.

In the Red Earth area moderate-to-severe damage persisted and the infestation area increased to include spruce stands south of Hwy. 55 and northwest of the Carrot River.

Manitoba

The area defoliated by the SBW continued to decline in Manitoba. In 1986 34,318 ha were defoliated whereas only 15,540 ha were damaged in 1987. The areas still showing moderate-to-severe defoliation were confined to the Pineland, Lake Winnipeg East, and Interlake Forest Sections.

Northwest Territories

In the Northwest Territories the SBW caused 13,800 ha of light and moderate defoliation in white and black spruce stands. In 1986 11,800 ha were defoliated. Although the area infested actually increased in 1987, the intensity of defoliation decreased from moderate-to-severe to light-to-moderate in most areas. The area of the Liard River infestation changed slightly. This infestation now includes the area along the Liard River and extends northwest for 50 km along the Mackenzie River from its confluence with the Liard River. There was a slight expansion of the Slave River-Long Island outbreak. The outbreak in the Salt Mountain area collapsed in 1987.

JACK PINE BUDWORM

Choristoneura pinus pinus Free.

The area of Jack pine budworm (JPBW) infestations in Manitoba and Saskatchewan continued to decline. In 1987, 2,670 ha showed moderate-to-severe defoliation in contrast to 308,160 ha in 1986.

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Manitoba

The total area with moderate-to-severe defoliation was 100 ha, detected near Brereton Lake in the Whiteshell Provincial Park.

Saskatchewan

In Saskatchewan, moderate-to-severe defoliation occurred in the Torch River - White Gull Creek area (1,000 ha), in the Nisbet Forest west of Prince Albert and in pine plantation areas west of Macdowall (1,500 ha).

Alberta

In Alberta light-to-moderate defoliation was evident in the Tawatinaw - Clyde area where 70 ha of jack pine forest was affected.

FOREST TENT CATERPILLARMalacosoma disstria (Hbn)

The area defoliated by the forest tent caterpillar (FTC), in trembling aspen stands, increased significantly in Alberta and Saskatchewan. The outbreak in Manitoba declined in extent and intensity.

Alberta

The total land area of Alberta over which moderate-to-severe defoliation occurred in 1987 was 6,610,700 ha in 1987. This is in

marked contrast to the 3,160,890 ha defoliated in 1986. The main area infested was in the central part of the province. This area extended north to Lesser Slave Lake, west to the Lodgepole-Evansburg area, south to Drumheller and east to the Saskatchewan border, and north to the vicinity of Provost. Other areas of moderate-to-severe defoliation occurred in the Grande Prairie and Peace River districts and in the Pincher Creek-Waterton Lakes area.

Saskatchewan

In Saskatchewan the total land area affected by FTC defoliation was 1,250,000 ha in 1987 compared to 400,000 ha in 1986.

Large areas of moderate and severe defoliation occurred throughout the aspen-parkland region. This area extends from Yorkton to Pelly in the east across to Macklin and north to Bronson Forest in the west.

Manitoba

In Manitoba the area defoliated by FTC decreased from 17,094 ha in 1986 to 4,403 ha in 1987. Varying degrees of defoliation were detected in native aspen stands. Moderate-to-Severe defoliation was detected in the Nelson River (1,295 ha) and Saskatchewan River (3,108 ha) Forest Sections, and small isolated areas in the vicinity of Wabowden and Jenpeg Road.

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PLANTATION PEST SURVEYS

An outcome of the Regional Insect and Disease Technical Advisory Committee (RIDTAC) meeting held in April was the formation of the

Committee On Plantation Pest Surveys (COPPS - another acronym). This committee is presently composed of individuals representing federal,

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provincial, industrial and university departments that have an interest in pest damage to young conifer stands. The committee reports to RIDTAC and is open to anyone wishing to participate in these surveys.

The committee met on several occasions in the last 6 months and preliminary testing of a survey procedure has been conducted in the three prairie provinces. Three young conifer stands have been assessed in Manitoba, one in Saskatchewan, and 15 in Alberta. The comments of the survey crews and the problems they encountered were discussed at the COPPS meeting held in conjunction with the RIDTAC meeting in October. At present the survey is being conceived as a DETECTION survey.

This means that the stands will be surveyed for the incidence of pest damage, only. Later, more intensive surveys, involving detailed sample tree measurements, can be conducted at the forest manager's option and cost.

If you are interested in participating, have suggestions, know of plantation survey techniques, or wish to express a view please contact the COPPS chairperson: **Mrs. Marilyn Daoust-Savoie** at the Manitoba District Office or any member of the FIDS staff.

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NEW PUBLICATIONS

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| <p>1) Emond, F.J.; and H.R. Wong. 1987. Common insects attacking poplar stooling-beds in the prairie provinces. Can. For. Serv., North. For. Cent., Edmonton, Alberta. For. Mgt. Note. No. 42.</p> <p>2) Hiratsuka, Y. 1987. Forest tree diseases of the Prairie Provinces. Information Report Nor-X-286, Northern Forestry Centre, Edmonton, Alberta. (Limited distribution)</p> <p>3) Radvanyi, A. 1987. Snowshoe hares and forest plantations: a literature review and problem</p> | <p>analysis. Information Report NOR-X-290, Northern Forestry Centre, Edmonton, Alberta.</p> <p>4) Sutherland, J.R.; T. Miller; and R. Salinas Quinard. 1987. Cone and seed diseases of North American conifers. North American Forestry Commission Publication Number 1. Victoria, British Columbia, Canada.</p> <p>5) Wu, J. and H.R. Wong. 1987. Colonization of lodgepole pine stumps by ants (Hymenoptera: Formicidae). Canad. Ent. 119:397-398.</p> |
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Compiled by: Ken Mallett & W. Jan A. Volney, December, 1987.
 This note, if clear, should be referred to as personal communication with the author.

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