

# **Forest Insect and Disease Notes**

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Northwest Region

A-031

**December 1995**

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# UPDATE OF MAJOR FOREST PESTS IN 1995

by  
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The following article provides a brief overview of the status of major forest pests in Alberta, Saskatchewan, Manitoba, and the Northwest Territories. For more detailed information refer to the report titled *Forest insect and disease conditions in west-central Canada in 1995 and predictions for 1996*. Copies of the report are available at the Northern Forestry Centre.

## Spruce budworm

Spruce budworm (*Choristoneura fumiferana* [Clem.]) infestations continued in the Northwest Boreal and Northeast Boreal regions in Alberta in 1995. The total area of defoliation in these two regions was 203 741 ha, of which 83% (168 479 ha) was rated as severe and 17% (35 262 ha) was rated as moderate. Other small infestations were observed along the Red Deer River in Red Deer and along the North Saskatchewan River in Edmonton.

Spruce budworm infestations in the Northwest Boreal Region increased in area while the severity of defoliation remained about the same. The area

of defoliation mapped during aerial surveys of infested white spruce forests was 173 266 ha. Most areas of defoliation noted in 1994 were still present in 1995. New infestations were observed along the South Shekille River, in the Cameron Hills west of the hamlets of Steen River and Indian Cabins, along the James and Dizzy creeks, west of Zama Lake along the Hay River, south of Mount Watt near Highway 58, east of the Rainbow Lake townsite, east of John D'Or Prairie Indian Reserve, and near Dunvegan.

In the Northeast Boreal Region, the area and severity of defoliation increased slightly. The area of moderate and severe defoliation was 17 621 and 12 854 ha, respectively. The area of moderate defoliation included 695 ha of defoliation in Wood Buffalo National Park. Infested stands near the Athabasca and House rivers occurred in most of the same areas recorded in 1994. New infestations were observed along the Deadman and Loon creeks, and along the Algar River.

Aerial applications of the bacterial insecticide, *Bacillus thuringiensis* var. *kurstaki* (Btk; Foray 48B

formulation), were applied operationally to 110 923 ha of white spruce forests in the Northwest Boreal Region to protect spruce foliage and suppress budworm populations. To test the efficacy of these insecticides, an additional 665 ha were treated with Foray 76B and 1033 ha were treated with Dipel 48AF.

In Saskatchewan, the total area of defoliated white spruce–balsam fir forests was 98 910 ha. Spruce budworm infestations in the Prince Albert Region covered 65 079 ha. All defoliation was rated as moderate-to-severe. North of Big River defoliation occurred in five areas: east of Delaronde Lake, south and east of Smoothstone Lake, between Doré and Smoothstone lakes, and near Sled Lake. The infestation near Tibiska and Crean lakes in Prince Albert National Park increased in size in 1995 and included areas outside the park south of Leadley Lake and east of Montreal Lake. The two major infestations near Red Earth and Hudson Bay increased in area. Several new infestations were detected during surveys in 1995. One infestation consisted of several patches along the Sipanok Channel, the Saskatchewan River east of Tobin Lake, the Torch

River, and northwest of Potato Lake. The second occurred in several areas southwest of Prince Albert in and adjacent to the Nisbet Provincial Forest.

In the La Ronge Region, infestations covered 33 085 ha. These infestations included large areas of spruce forest between Wapawekka Lake, Lac la Ronge, Pinehouse Lake, and north of the Churchill River. New infestations were observed between Cumberland and Namew lakes. A previous spruce budworm outbreak occurred in this area near Namew Lake along the Saskatchewan-Manitoba border between 1951 and 1970. In the Meadow Lake Region, two small infestations were noted southeast of the town of Green Lake and along the Beaver River north of Green Lake.

Aerial applications of *Btk* (Foray 48AF) were applied by Saskatchewan Environment and Resource Management over 8550 ha of spruce budworm-infested stands to suppress budworm populations and reduce the risk of timber losses. There were two main spray blocks: one near Wapawekka Lake south of Lac la Ronge (1800 ha) and the other between Doré and Smoothstone lakes (6750 ha). Each spray block received two

applications.

Spruce budworm infestations in Manitoba occurred in five administrative sections: Aspen Parkland, Interlake, Lake Winnipeg East, Mountain, and Pineland. A total of 55 592 ha of white spruce and spruce-balsam fir forests were infested, of which 40 125 ha were classed as moderate and 15 467 ha were classed as severe. Infestations were found in the same general areas as those reported in 1994, but the area of defoliation increased by 15% in 1995. In the Aspen Parkland Section, a spruce budworm infestation, which has been present for several years, continued in the Spruce Woods Provincial Forest. An aerial survey was not conducted over this infestation.

In the Interlake Section, spruce budworm infestations covered 11 562 ha, of which 9419 ha were rated as moderate and 2143 ha were rated as severe. Infestations in Management Unit 40 continued on Moose and Deer islands, near Ebb & Flow and Moose lakes, and south of Washow Bay. In Management Unit 41, infestations were observed near Lake St. George and Jackhead Lake.

In the Lake Winnipeg East Section, moderate

spruce budworm defoliation occurred on 28 249 ha and severe defoliation occurred on 8733 ha. In Management Unit 30, infestations persisted near Dorothy, Nutimik, Big Whiteshell, Little Whiteshell, Crowduck, Lone Island, West Hawk, and Falcon lakes. Infestations in Management Unit 31 continued in 1995 in the following areas: near the Hollow Water and Manigotagan villages, near Wanipigow Lake, in the Long and Quesnel lakes area, in the Garner and Gem lakes area, near the Sandy, Black, and O'Hanly rivers, east of the Winnipeg River near the Maskwa River, north and east of Lac du Bonnet, and in the Oiseau and Bernic lakes area. In Management Unit 35, infestations also continued on the east side of Lake Winnipeg across from Deer Island and near Loon Bay.

In the Mountain Section, budworm defoliation covered 1816 ha and occurred in the same area near Davey, Cutbank, Little Island, Snake, Noses, and Drugstore lakes reported in 1994. Spruce budworm outbreaks in the Pineland Section occurred in three areas (5232 ha). Two of these occurred in Management Unit 23 on the south side of Lac du Bonnet and on several islands in the

lake, and east of the Pinawa Channel. The third area was in Management Unit 20 south of East Braintree.

For the first time in several years, an operational spray program was conducted by Manitoba Natural Resources. *Bacillus thuringiensis* var. *kurstaki* (*Btk*; Dipel 48AF) was applied once over 450 ha and twice over 14 773 ha. The treated areas included those near Falcon, Dorothy, Garner, and Beresford lakes, Maskwa and Sandy rivers, Loon Straits, and Duck Mountain. Manitoba Natural Resources also continued an experimental trial using Mimic® 240 LV over 1260 ha near Garner Lake in Management Unit 31; this is the second year of the trial. The trial involved one or two applications of the insecticide at a rate of 70 g active ingredient per hectare. Spray trials were also conducted by the Canadian Forest Service in cooperation with Manitoba Natural Resources using various *Btk* products and Mimic®.

In the Northwest Territories, populations of spruce budworm dropped significantly in 1995. While the insect was still widespread throughout white spruce forests, the area of moderate-to-severe defoliation was much less — 36 822 ha in

1995 compared to 370 270 ha in 1994. Sporadic infestations were present along the Slave River from Great Slave Lake to the Alberta-Northwest Territories border, along the Taltson River, along the Martin River and on the slopes of the Martin Hills, along the Mackenzie River from its confluence with the Redknife River north to its confluence with the Dahadinni River, along the Willowlake River, and along the North Nahanni River near its confluence with the Mackenzie River. One new area of defoliation was observed along the upper Kotaneelee River near the Yukon-Northwest Territories border.

#### **Forest tent caterpillar**

In Alberta, the number of areas where moderate-to-severe forest tent caterpillar (*Malacosoma disstria* Hbn.) defoliation occurred increased in 1995. Many areas in the Northwest Boreal Region near Peace River, Guy, Nampa, Grimshaw, and Fairview were defoliated in 1995, as they were in 1994. The same was true for areas in the Northeast Boreal and Parkland regions near Cooking Lake and the southern portion of Elk Island National Park. New areas of defoliation were

detected near Moose and Muriel lakes in the Northeast Boreal Region; and southwest of Grande Prairie, west of the village of Bad Heart, along the Peace River near its confluence with the Ksituan River, near Dixonville and Hawk Hills, near the Twin Lakes, west of Wadlin Lake, and along Highway 58 east of the Chinchaga River in the Northwest Boreal Region. In the Northwest Boreal Region there was 17 553 ha of moderate defoliation and 146 202 ha of severe defoliation. In the Northeast Boreal Region there was 15 490 ha of moderate-to-severe defoliation and 6286 ha of severe defoliation, while in the Parkland Region, moderate-to-severe defoliation occurred over 36 486 ha.

In Saskatchewan, the forest tent caterpillar infestation noted near Battleford in the Saskatoon Region in 1994 increased in area this season. Ninety-five percent of the 91 049 ha of defoliation near Battleford was rated moderate-to-severe; the remainder was rated as light. The infestation in the Battleford area now extends from Sweet Grass Indian Reserve northwest of Battleford to just west of Struan including areas east of Winniford Lake, Mosquito and Red Pheasant Indian reserves, and

the Eagle Hills Escarpment. Two areas were also noted east of North Battleford along Highway 40 and one area along the North Saskatchewan River near Sonningdale. In the Meadow Lake Region, additional areas of forest tent caterpillar defoliation were observed south of Glaslyn along Highway 4 and between Brightsand and Turtle lakes.

In Manitoba, little forest tent caterpillar defoliation occurred in 1995. Only 163 ha of moderate defoliation was mapped in the province: 32 ha in the Duck Mountain Provincial Forest in the Mountain Section, and 131 ha in Whiteshell Provincial Park in the Lake Winnipeg East Section.

A large outbreak of forest tent caterpillar was detected for the first time in the Northwest Territories. Several areas of defoliation were observed along the Liard River from south of Fort Liard to north of the Flett Rapids, along the Petitot River near its confluence with the Liard River, and southwest of Lake Bovie. Of the 32 459 ha of forest tent caterpillar defoliation in the Fort Liard area, there was 2864 ha of light defoliation, 7379 ha of light-to-moderate defoliation, 5841 ha of moderate defoliation, and 16 375 ha of moderate-to-severe defoliation.

### Other aspen defoliators

Two other insects caused significant aspen defoliation in the Northwest Region: large aspen tortrix (*Choristoneura conflictana* [Wlk.]) and aspen leafroller (*Pseudexentera oregonana* [Wism.]). In Alberta, large aspen tortrix caused 67 075 ha of defoliation in Wood Buffalo National Park, east of the Slave River, in several small isolated patches west of Edmonton and near Sundre, south of Wolf Lake, and between Tucker, Marie, and Cold lakes. There was 8365 ha of light-to-moderate defoliation, 42 401 ha of moderate defoliation, 14 247 ha of moderate-to-severe defoliation, and 2062 ha of severe defoliation.

Aspen leafroller caused patchy defoliation in many of the same locations in Alberta noted in 1994 along river valleys and adjacent aspen forests, but defoliation was less severe in 1995. Exceptions were two large areas with light-to-moderate defoliation: along the Smoky River northeast of Grande Cache in the Northwest Boreal (24 730 ha) and Northern East Slopes (22 248 ha) regions, and near Gregoire Lake south of Fort McMurray (19 939 ha) in the Northeast Boreal Region.

In Saskatchewan, populations of large aspen tortrix continued to decline from the peak in 1993; only 9947 ha of defoliation occurred in 1995. Large aspen tortrix defoliation was observed in five small patches in the Prince Albert Region along the north slopes of the Pasquia Hills and north and northeast of Smoky Burn. Other tortrix infestations were observed east of Green Lake and in two small patches north of Meadow Lake Provincial Park in the Meadow Lake Region. Aspen leafroller defoliation was observed in small patches north and northwest of Hudson Bay (698 ha) and in or near Greenwater Lake Provincial Park (1107 ha) in the Prince Albert Region.

No defoliation caused by large aspen tortrix or aspen leafroller was observed in Manitoba or in the Northwest Territories.

### Bark beetles

Mountain pine beetle (*Dendroctonus ponderosae* Hopk.) infestations remained low in Alberta in 1995. Beetles were detected at several locations by means of pheromone-baited trap trees. No mountain pine beetle-killed trees were detected when an aerial survey was conducted in

the Southern East Slopes Region. The flight, which occurred in August, included surveys of the Oldman, Castle, West Castle, Crowsnest, and Carbondale river valleys, and the Allison, Lynx, Racehorse, and Dutch creek valleys. In the Northern East Slopes Region, no mountain pine beetle-killed trees were observed during aerial surveys of the Jackpine, Muddywater, South Sulphur, and Wildhay river valleys, and the Pauline, Hardscrabble, Rock, and Sheep creek valleys in the Willmore Wilderness Provincial Park.

Aerial surveys over Banff and Jasper national parks detected no recently killed trees. Areas aerially surveyed in Jasper National Park included the Smoky, Miette, Snaring, Athabasca, Whirlpool, Middle Whirlpool, Chaba, Astoria, and Sunwapta river valleys. Areas aerially surveyed in Banff National Park included areas near the Kicking Horse Pass, the North Saskatchewan, Alexandra, Howse, Spray, Mistaya, and Bow river valleys, and the Healy, Brewster, Redearth, Pharaoh, and Bryant creek valleys.

Spruce beetle (*D. rufipennis* [Kby.]) infestations in the Northwest Boreal Region in Alberta were mapped for the first time in several years. Several

patches of scattered spruce beetle-killed white spruce trees were mapped in an area bounded by Nina Lake to the east, Keg River to the north, 30 km west of the sixth meridian to the west, and the Hotchkiss River to the south. Two other isolated patches were observed: one was southwest of Bison Lake east of the Peace River, the second patch was on the Halverson Ridge southeast of the Chinchaga River. The total area of these patches of scattered dead spruce was 23 771 ha.

The infestation of Douglas-fir beetle (*D. pseudotsugae* Hopk.), which was initially reported in 1991 in Jasper National Park, continued to expand in 1995. While the number of areas containing killed Douglas-fir trees remained unchanged at about 63 areas scattered in the Athabasca River valley north and south of the Jasper townsite, the number of dead trees has increased since 1994. Most areas had less than 50 attacked trees that had been killed since the infestation began.

#### **Lodgepole pine dwarf mistletoe**

In 1995, surveys were conducted in Alberta and Saskatchewan to map severe infestations of



lodgepole pine dwarf mistletoe (*Arceuthobium americanum* Nutt. ex Engelm.). These surveys were a continuation of those initiated in 1994. Areas not previously mapped in Alberta included areas along the North Saskatchewan River near the Amelia, Bruderheim, Sniatyn, Smoky Lake, and Lindbergh townsites; near North Buck Lake northeast of Boyle; northwest of Algar Lake; and north of Lake Athabasca. All infestations occurred in jack pine forests. The total area of previously unmapped infestations in Alberta was 63 888 ha, bringing the total area of jack pine forest infested by dwarf mistletoe to 176 013 ha. The area of lodgepole pine forests infested in Alberta was up slightly to 54 528 ha; one area (199 ha) was mapped late in 1994 near the Livingstone River.

In Saskatchewan, an additional 12 723 ha of dwarf mistletoe-infested jack pine forests were mapped late in 1994 and in 1995. The new areas were located along the Saskatchewan River northeast of Squaw Rapids, southeast of Canoe Lake, northwest of the Torch River townsite, near Durocher Lake, north of Matheson Lake in Meadow Lake Provincial Park, and south of Hunters Lake in Prince Albert National Park. The

total area of jack pine forests severely infected by dwarf mistletoe was 136 705 ha, which included the 123 982 ha reported in 1994.

#### **Dutch elm disease**

Surveys to detect the incidence of Dutch elm disease (DED) (*Ophiostoma ulmi* [Buis.] Nannf.) in Alberta were continued in 1995 by Alberta Agriculture and the municipalities of Brooks, Medicine Hat, Lethbridge, Red Deer, St. Albert, Strathcona County No. 20, Calgary, and Edmonton. The smaller European elm bark beetle (*Scolytus multistriatus* [Marsh.]) was intercepted in traps in Calgary for the second consecutive year and in Edmonton (3 beetles in 3 traps) for the first time in 1995. The DED pathogen was not cultured from any of the captured bark beetle specimens.

In Saskatchewan, the distribution of DED was similar to its occurrence in 1994. The main areas of infestation included the Carrot, Saskatchewan, Red Deer, Souris and Qu'Appelle river valleys, and the Wascana and Brokenshell creek valleys.

The range of DED in Manitoba extended northward to the Red Deer River in the western portion of the province in 1995. Riparian forests

with a high incidence of DED included those adjacent to the Red, Assiniboine, Boyne, and Souris rivers. Urban centers with a high incidence of the disease included Brandon, Dauphin, Morden, Portage la Prairie, Selkirk, Steinbach, Winkler, and Winnipeg. Both the smaller European

elm bark beetle and the native elm bark beetle (*Hylurgopinus rufipes* [Eichh.]) occur in Manitoba, but only the native elm bark beetle plays a major role in the spread of the disease. The smaller European elm bark beetle is most prevalent in Winnipeg.

**This note, if cited, should be referred to as a personal communication with the author(s).**

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