Forest Pest Conditions in the Pacific and Yukon Region

A Mid-Season Summary

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INTRODUCTION

This report highlights the status of major forest insects and diseases and the effect of environmental factors currently active in the Pacific and Yukon Region up to mid-July 1995. A more comprehensive report will be available later in the year following the completion of aerial and late summer and fall surveys.

Surveys are conducted with the cooperation of the British Columbia Forest Service, the forest industry and research programs at the Pacific Forestry Centre.

Following the February 1995 federal budget, it was announced that the national Forest Insect and Disease Survey would be replaced in 1996 with a Forest Health Monitoring Network. This network will have fewer staff and a more nationally focused mandate. Despite the early departure of staff including Chief Ranger Colin Wood, Janice Hodge (Kamloops, south) and Mrs. J. Strobbe (secretary), a nearly normal survey is being attempted during this transition year. While this mid-season report is not as comprehensive as in previous years, the more condensed style should be appreciated by those with very busy schedules. Comments and suggestions as the transition is planned will be welcomed.

PINE PESTS

MOUNTAIN PINE BEETLE
Dendroctonus ponderosae

Mountain pine beetle populations have increased in the Cariboo, Kamloops Vancouver and Nelson Forest regions and remained basically static in Prince George and Prince Rupert regions.

In the Cariboo Region increases in beetle infestations were noted along Mackin and Narcosli creeks and north of Quesnel to the Blackwater River. Early aerial surveys indicate that previous infestations have already increased substantially in size from 1994 and new infestations have sprung up. As forecast, population increases also occurred in the Chilcotin Military Block.

Expansions have occurred in the Kamloops Region along the north Thompson River Valley from Avola to Blue River, especially in the Messiter Pass area. Increased numbers of red trees were observed in Lillooet District along Murray and Kwoiek creeks and the Nicomen River.

Increased populations occurred in the northern part of the east Kootenay Region, with the most active infestations occurring in Kootenay National Park extending north into the Golden Timber Supply Area, and in the Radium to Golden area. Populations remained generally low in the southern areas except in the Moyie Lake area. Drought has made the pine stands highly susceptible to mountain pine beetle attack. Overwintering survival and population ratios indicate increasing populations in six of the seven areas sampled.

Populations remain at endemic levels in the Nass River area, but have increased in the eastern portion of the Prince Rupert Region.

GOUTY PITCH MIDGE
Cecidomyia piniinopis

Increased numbers of drooping dead ponderosa pine shoots were evident in stands near Pritchard in the Kamloops Region. On many trees nearly every shoot was attacked. The gouty pitch midge has been identified as a significant contributor to ponderosa pine decline and deformity.

DROUGHT DAMAGE

Drought induced mortality of mainly lodgepole pine was mapped over 2200 ha in the East Kootenay of the Nelson Forest District. An estimated 32 000 m^3 of pine was killed and an equal volume of trees are severely stressed. Many of the dead and stressed trees have been attacked by Ips beetles and the stressed trees are very susceptible to mountain pine beetle attack.

PINE SHOOT BEETLE
Tomicus piniperda

No pine shoot beetles were found during surveys for this introduced pest. Over 1800 Scots pine at five locations in the Fraser Valley east of Vancouver were assessed for shoot flagging. This insect is considered a serious pest in Europe and Asia and was first detected in North America in Ohio in 1992.

PINE NEEDLE DISEASE
Lophodermella concolor

Discolouration and premature loss of year-old and older needles of lodgepole pine due to infection by needle disease was again severe and widespread in the province especially in the Cariboo Forest Region. Lodgepole pine of all ages was infected over almost 600 000 ha in 70 infestations from the Chilcotin to Clinton. The needle cast was widespread throughout the southwestern portion of the Prince George Forest District and the southern portion of the Vanderhoof Forest District. Infections were much reduced in the Kamloops and Prince Rupert regions.

SPRUCE PESTS

SPRUCE BEETLE
Dendroctonus rufipennis

Spruce beetle caused mortality of mature white and Engelmann spruce is expected to continue over more than 100 000 ha, similar to 1994. As in 1994 most of the beetle-killed trees are in the Prince George Region and the Yukon Territory and these infestations are expected to continue. The majority of the tree mortality in the Prince George Region is expected to occur north and west of Mackenzie.

Early assessments indicate that significant expansion has occurred in the Yukon Territory with new infestations reported along the Tatshenshini River, in the Alsek River drainage and north of Haines Junction towards Kluane Lake. More than 40 000 ha of spruce are infested, up from 33 000 ha last year.

In the Kamloops Region, tree mortality is expected to continue in widely scattered pockets in previously infested stands mostly west of Lillooet. New infestations and expansion of previously infested stands have been reported along the Tulameen River in the Merritt Forest District.

SPRUCE BUDWORMS

Choristoneura spp.

As predicted, defoliation by the eastern spruce budworm, *Choristoneura fumiferana*, declined in the Fort Nelson area in 1995. Early reports indicate that feeding damage is scattered and mostly trace to light. The number of egg masses in 1994 averaged 180 per 10 m^2 of foliage, the lowest since 1989.

Defoliation of alpine fir and spruce forests in the northern portion of the Prince George Forest Region by the 2-year-cycle budworm, *Choristoneura biennis*, is expected. Early June aerial surveys noted trace to light defoliation in mature stands in the Mackenzie Forest District. Aerial surveys in late July will more accurately define the intensity and extent of feeding. In 1993 the budworm defoliated almost 80 000 ha in the Fort St. James and Mackenzie forest districts.

A CONIFER CUTWORM

Egira sp.

A conifer cutworm moderately defoliated Sitka spruce for 2-3 km along the Long Beach Highway in Pacific Rim National Park. The cutworm has completely stripped the semi-mature spruce of current foliage. This defoliator had not previously been recorded as causing noticeable defoliation on Sitka spruce in coastal British Columbia.

DOUGLAS-FIR PESTS

DOUGLAS-FIR BEETLE
Dendroctonus pseudotsugae

Mature Douglas-fir continue to be killed in scattered pockets of up to several hundred trees throughout the province. New areas of attack have been noted in the Quadra Timber Supply Area in the Vancouver Region. These attacks, mostly around Powell, Goat, Dodds, Horseshoe and Lois lakes are somewhat unusual as the tops of trees have been attacked and then in the following year emerging beetles have attacked the same tree in the lower bole.

Attacks in the Cariboo Region are down from last year in the Chilcotin Military Block.

New attacks of from 5 to 20 trees have also been reported along the North Thompson River in the Kamloops Region. Infestations were probably precipitated by stress from the western hemlock looper defoliation of Douglas-fir stands.

WESTERN SPRUCE BUDWORM
Choristoneura occidentalis

Western spruce budworm populations decreased throughout the province in 1995. Light defoliation of all age classes of Douglas-fir was reported along the Big Bar Lake Road north of Clinton in the Cariboo Forest Region. In the Kamloops Region most areas which were defoliated in 1994 show no signs of feeding this year. Light defoliation was noted at Della Creek south of Lillooet and along Trepanier Creek in South Kamloops. Aerial sprays by the British Columbia Forest Service were cancelled when the low level of population and infested buds were determined. Light defoliation was reported at Bugaboo Creek in the Nelson Forest Region. No budworm activity has been reported in the Vancouver Forest Region.

PHANTOM HEMLOCK LOOPER
Nepytia phantasmaria

Phantom hemlock looper has defoliated Douglas-fir over several residential blocks in Burnaby near Vancouver for the third consecutive year. Moderate to severe defoliation of individual trees have been reported at several locations with top-stripping of trees common. This is the first outbreak in the lower mainland since 1982.

TRUE FIR PESTS

BALSAM WOOLLY ADELGID
Adelges piceae

Surveys of grand fir and alpine fir for the balsam woolly adelgid in British Columbia continued in 1995. Laboratory examinations of the branch collections is progressing but results to date confirm the presence of the adelgid outside the northern boundary of the current quarantine zone on Vancouver Island. Surveys results will be reviewed by the Plant Protection Advisory committee this fall to determine possible actions.

WESTERN BLACKHEADED BUDWORM
Acleris gloverana

Only low numbers of western blackheaded budworm larvae in beating samples in 1995 indicate that very little defoliation can be expected in the Kamloops Forest and Nelson forest regions. Fewer than 75 larvae/beating were collected at a site near Revelstoke where more than 1200 ha were defoliated in 1994. No defoliation was evident in the previously defoliated stands along Eagle River.

BALSAM BARK BEETLE
Dryocoetes confusus

Mature alpine fir continues to be killed by the balsam bark beetle; the majority of the mortality is expected in the Prince Rupert and Prince George forest regions. Late spring aerial surveys in the southern portion of the Mackenzie Forest District detected alpine fir mortality over more than 13 000 ha.

MULTIPLE HOST PESTS

WESTERN HEMLOCK LOOPER
Lambdina fiscellaria lugubrosa

Tree mortality caused by the western hemlock looper continued in stands that had been defoliated from 1991 to 1993. Populations collapsed last year and to date no new infestations or current defoliation has been reported. In previously infested stands in Cariboo Region an additional 10% of the trees have died since 1994 fall assessments, bringing the average stand mortality to 36% (range 11-57%). Secondary bark beetles will probably continue to kill weakened western hemlock and western red cedar trees over the next few years.

BLACK ARMY CUTWORM
Actebia fennica

Black army cutworm killed about 20% of the spruce in a 20 ha plantation on Blackwater ridge north of Golden in the Nelson Region. Approximately 80% of the herbaceous growth was completely stripped.

Infestations of the black army cutworm were also reported but only on herbaceous vegetation in several cutblocks of newly planted spruce and lodgepole pine in the Kamloops, Prince Rupert and Prince George forest regions. Included were two sites near the north end of Takla Lake, three sites north of Meziadin Lake and one site in the upper North Thompson River Valley.

DECIDUOUS AND ORNAMENTAL TREE PESTS

TENT CATERPILLARS
Malacosoma spp.

Defoliation of deciduous trees and shrubs by forest tent caterpillar, *Malacosoma disstria*, in the interior of British Columbia expanded in area to about 108 000 ha in the Cariboo and Prince George forest regions.

In the Prince George Forest Region defoliation of trembling aspen increased in area to almost 55 000 ha, up more than 30% from last year. Populations in the Prince George Forest District increased for the third consecutive year affecting 45 000 ha from Ahbau Creek in the south to McLeod Lake in the north. In the Robson Valley the area of defoliation increased to almost 7000 ha after a decrease last year. Complete defoliation of aspen stands was mapped over 114 separate infestations from west of McBride to McNaughton Lake. Populations increased in and around Dawson Creek and Taylor for the third consecutive year with defoliation reported over 2700 ha. For the first time in more than 15 years the tent caterpillar has caused serious defoliation east of Fort Nelson with patches totalling several hundred hectares along the Liard River.

In the Cariboo Region tent caterpillar lightly to severely defoliated mainly trembling aspen over 53 000 ha about the same as last year. The most widespread and severe defoliation occurred near Quesnel where large populations completely stripped aspen. Severe defoliation was mapped north of Quesnel to 10 Mile Lake, southeast along the Quesnel River to Deaver Creek, and northwest to the Blackwater River.

Northern tent caterpillar, *M. californicum pluviale*, increased for a fourth consecutive year and defoliated deciduous trees and shrubs in east coastal areas on Vancouver Island and the adjacent Gulf Islands. Populations again increased near Meziadin Lake east of Stewart.

Defoliation of a variety of trees and shrubs was again severe in the Victoria area, on the southern Gulf Islands and in the Log Creek drainage near Boston Bar in the lower Fraser Canyon. Increased numbers of larval colonies were noted from Sooke to Campbell River and in the Fraser Canyon. Severe defoliation of fruit trees was reported on Saturna, Texada and Saltspring islands.

Populations increased for the third consecutive year near Meziadin Junction in the western part of the Prince Rupert Region, but remained endemic in the Terrace area. A forecast for population levels in 1996 will be made when parasitism levels and egg surveys have been assessed.

SATIN MOTH

Leucoma salicis

Satin moth defoliated trembling aspen and cottonwood in the Prince George, Cariboo, Kamloops and Nelson forest regions. The largest infestations occurred in the Robson Valley in conjunction with forest tent caterpillar infestations. Satin moth larvae were found throughout the almost 7000 ha of mostly aspen defoliation reported from McBride to Valemount. Random surveys of the infested stands indicated that approximately 25% of the larvae were satin moth. The satin moth was first reported in this area last year when large moth flights occurred.

Elsewhere, much smaller infestations were detected. Severe defoliation of trembling aspen was observed in the Bluff Lake area of the Cariboo Region. In the Kamloops region a 30-ha infestation was noted along the Coquihalla Highway south of Merrit. Several scattered patches of feeding were reported in the Nelson Region near Bridesville, Rock Creek and Castlegar.

LARGE ASPEN TORTRIX

Choristoneura conflictana

Defoliation of trembling aspen by the large aspen tortrix continued in the Yukon Territory, Prince George and Prince Rupert regions in 1995.

Defoliation was mostly moderate and severe over 7000 ha in the Vanderhoof, Mackenzie, Dawson Creek and Fort Nelson forest districts. For the third consecutive year, defoliation was noted over approximately 2000 ha, in the Nechako River Valley from the Sinkut River to west of Fort Fraser. In the Dawson Creek and Mackenzie forest districts over 2500 ha of defoliation was mapped in each district. The tortrix, often in conjunction with the forest tent caterpillar, defoliated aspen north and east of Fort Nelson.

In the Prince Rupert Region severe defoliation was reported over approximately 1000 ha north of Kitwanga between Douse Lake and Cranberry River.

BIRCH LEAF MINERS, ASIAN AMBROSIA BEETLE

Fenusa pusilla
Lyonetia speculella
Xylosandrus germanus

Birch leafminer, *Fenusa pusilla*, lightly to severely defoliated white birch for 22 kilometres along Creighton Valley road east of Lumby. For the fourth consecutive year this leafminer defoliated white birch in the lower Fraser Canyon near Yale.

Another birch leafminer, *Lyonetia speculella*, severely discoloured birch stands in several areas in the West Kootenay of the Nelson Region. Damage was reported in the Tangier River-Jumping Creek area, along the Illecillewaet and lower Kaslo rivers.

Numerous adults of an Asian ambrosia beetle, *Xylosandrus germanus*, were recovered from Lindgren funnel traps placed near stressed white birch in the Richmond Nature Centre. This pilot survey is being done in cooperation with Agriculture Canada to monitor possible pest introductions around port areas and dunnage disposal sites. As well, *Hylocurus hirtellus*, a beetle usually associated with unthrifty alder and other hardwoods in California, was recovered. It is only the second record of this beetle for Canada.

JUMPING GALL WASP
Neuroterus saltatorius
and
OAK LEAF PHYLLOXERAN
Phylloxera sp. nr. glabra

The discolouration of Garry oaks in the Capital Regional District by jumping gall wasp decreased dramatically in 1995. However, defoliation by the oak leaf phylloxeran, which is often associated with the gall wasp, remained static. Near Maple Bay, and North Saanich, where infestations have only been active for a couple of years populations remain high. In areas where the gall wasp has been present for up to nine years, populations have declined, largely due to increased levels of predation and parasitism and host resistance.

WESTERN OAK LOOPER
Lambdina fiscellaria somniaria

The western oak looper has killed Garry oak and Douglas-fir trees over approximately 25 ha on the southern end of Saltspring Island. In 1994 the looper completely stripped mature Garry Oak and Douglas-fir trees in the Mount Maxwell Provincial Park, the adjacent Ecological Reserve and nearby private lands. Populations have subsided somewhat this year with light to moderate defoliation noted on scattered Garry oak trees.

OTHER NOTEWORTHY PESTS

Interagency cooperative surveys to detect introductions of **gypsy moth**, *Lymantria dispar*, continues for the eighteenth year. **Douglas-fir tussock moth**, *Orgyia pseudotsugae*, populations remain at endemic levels for the second consecutive year in the Kamloops Region. Pheromone traps for monitoring populations were again placed in previously infested stands as an early detection. **Rusty tussock moth**, *Orgyia antiqua badia*, defoliated single trees in Surrey.

The infestation of **cottonwood sawfly**, *Nematus currani*, that had been defoliating black cottonwood on islands in the Fraser River collapsed this year after three consecutive years of infestation. The decline has been attributed to a build up of insect pathogens, *Beauveria sp.* and *Entomophthora sp.*, isolated from larvae in 1993 when the defoliated area had decreased to 600 ha. The **Asian lady bird beetle**, *Harmonia axyridis*, an introduced predator in the U.S. for aphids was widespread and abundant in southwestern British Columbia, resulting in several queries from home owners. **European elm bark beetle**, *Scolytus multistriatus*, was collected in a pheromone trap at a nursery near Kelowna. The **spruce budmoth**, *Zeiraphera vancouverensis* in conjunction with the **green spruce aphid**, *Elatobium abietinum* lightly to moderately defoliated Sitka spruce at Pacific Rim National Park. Various apple trees were moderately defoliated by the **apple ermine moth**, *Yponomeuta malinella*, in the Vancouver Region. **Larch sawfly**, *Pristiphora erichsonii*, was found for the first time on ornamental larch near Whistler. Other larch pests, including **larch casebearer**, *Coleophora laricella* and **larch needle diseases** will be covered in later reports when summer surveys have been completed. A study to identify and record major pests and environmentally related problems and their impact on young stands continues in 1995 and will be reported later in the year.

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