Environment Canada | Environnement Canada
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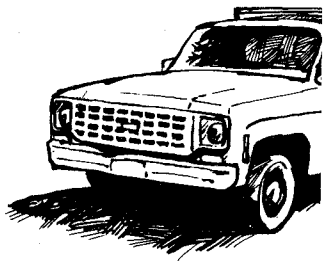

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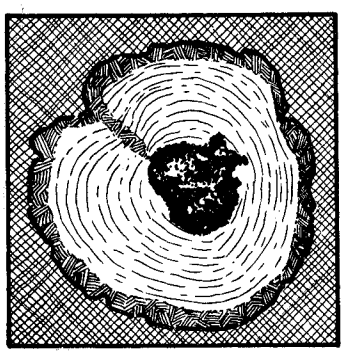

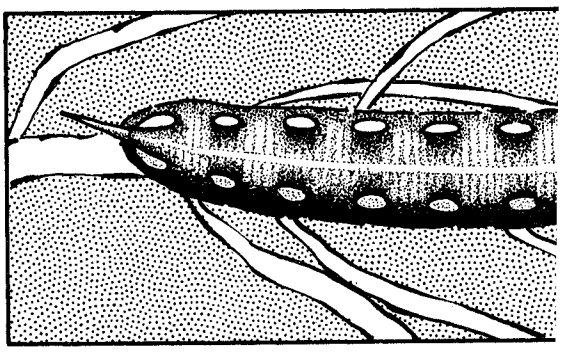

Canadian Forestry Service - Pacific Forest Re

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SUMMARY

This report outlines the status of forest insect and disease conditions in the Prince George Forest Region for 1980, emphasizing pests capable of sudden damaging outbreaks and are listed by importance according to their hosts.

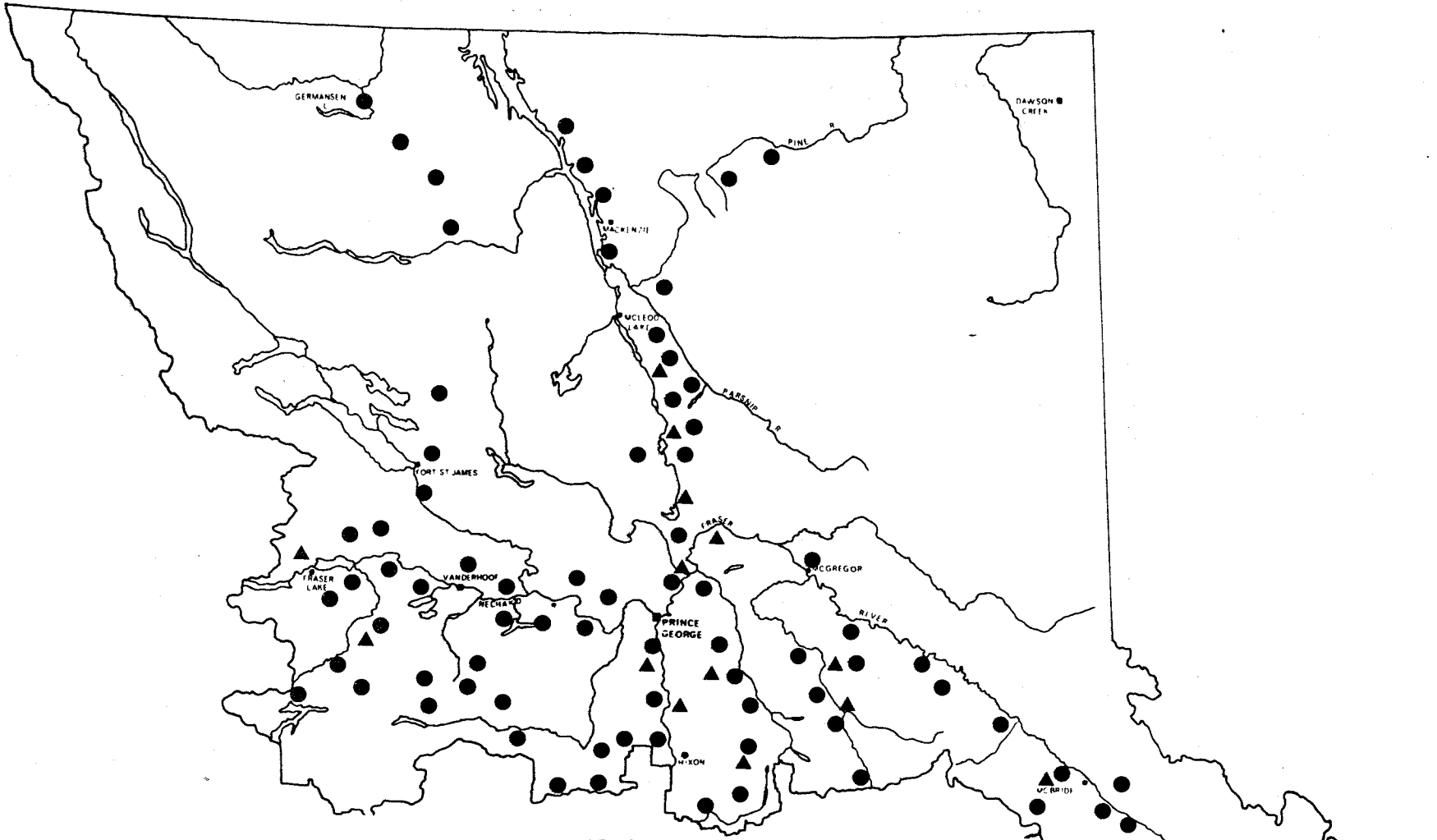
Spruce bark beetles killed white spruce over 64 400 ha. Major infestations persisted in the Bowron and Willow river drainages and in the Ft. St. James area while infestations in the Summit Lake area generally declined.

Mountain pine beetle killed 8 000 ha of lodgepole and western white pine in the Ft. St. James and Valemount areas. The two-year-cycle spruce budworm defoliated 115 000 ha of spruce balsam stands in the Willow and Bowron river valleys.

A total of 148 insect and 17 disease samples were collected by Forest Insect and Disease personnel in 1980. The number of collections containing defoliator larvae increased slightly to 62% from 60% in 1979. Collection localities are shown on Maps 1, 1A.

The B.C. Ministry of Forests provided 30 hours of fixed wing flying time and 12 hours of helicopter time to map, photograph and assess bark beetle and defoliation infestation areas; the aerial survey flight lines are shown on Map 2.

The F.I.D.S. program extended from May 20 to October 10, and included the survey of permanent sampling stations, aerial surveys, specific assessments of managed stands; participation in workshops and seminars.



MAP 1

PRINCE GEORGE REGION

SOUTHERN HALF

LOCATION OF POINTS WHERE ONE OR MORE COLLECTIONS OR FIELD RECORDS WERE TAKEN IN 1980

INSECT ●

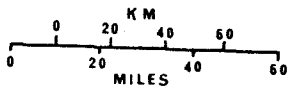
DISEASE ▲

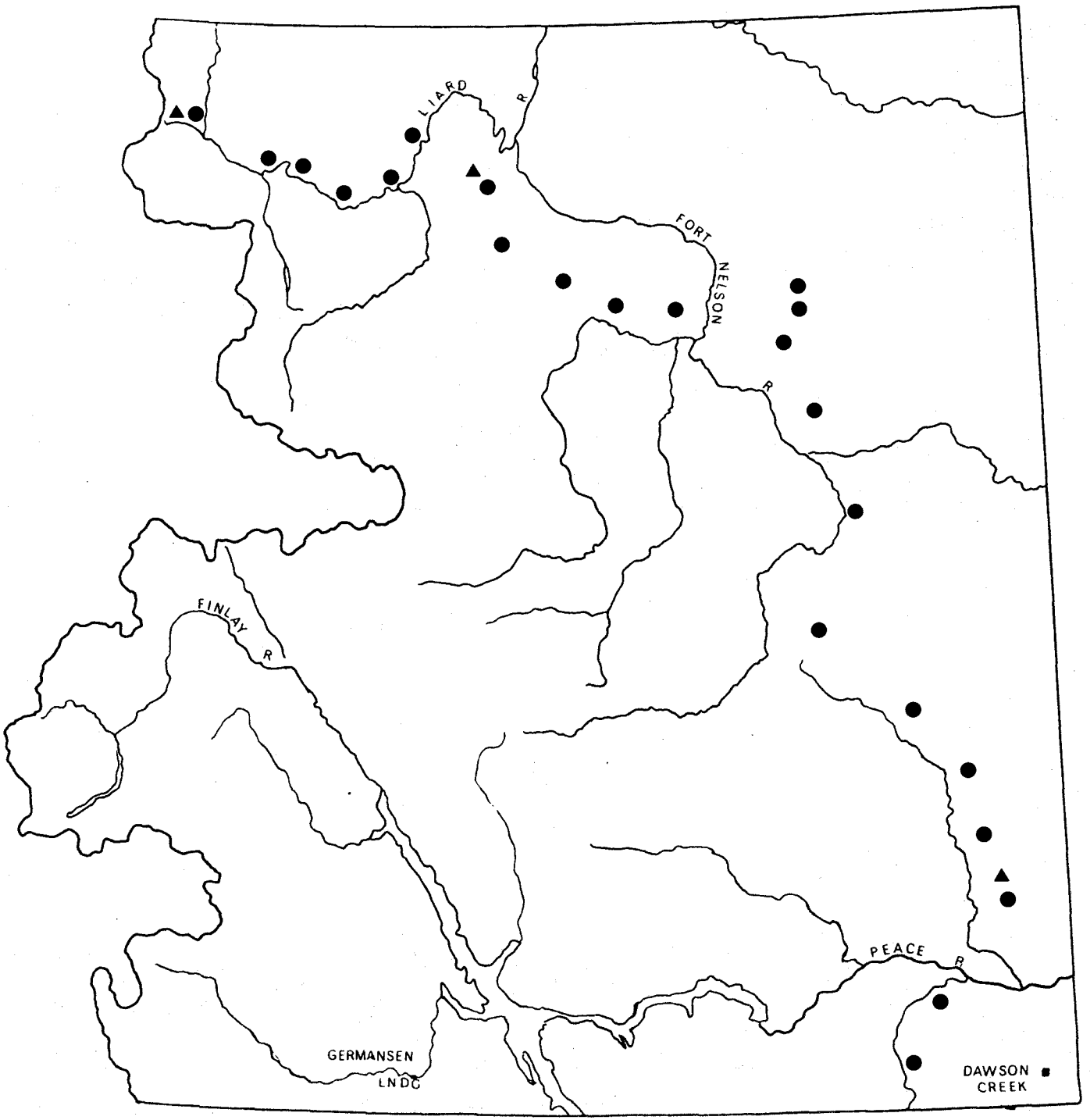
MAP 1A

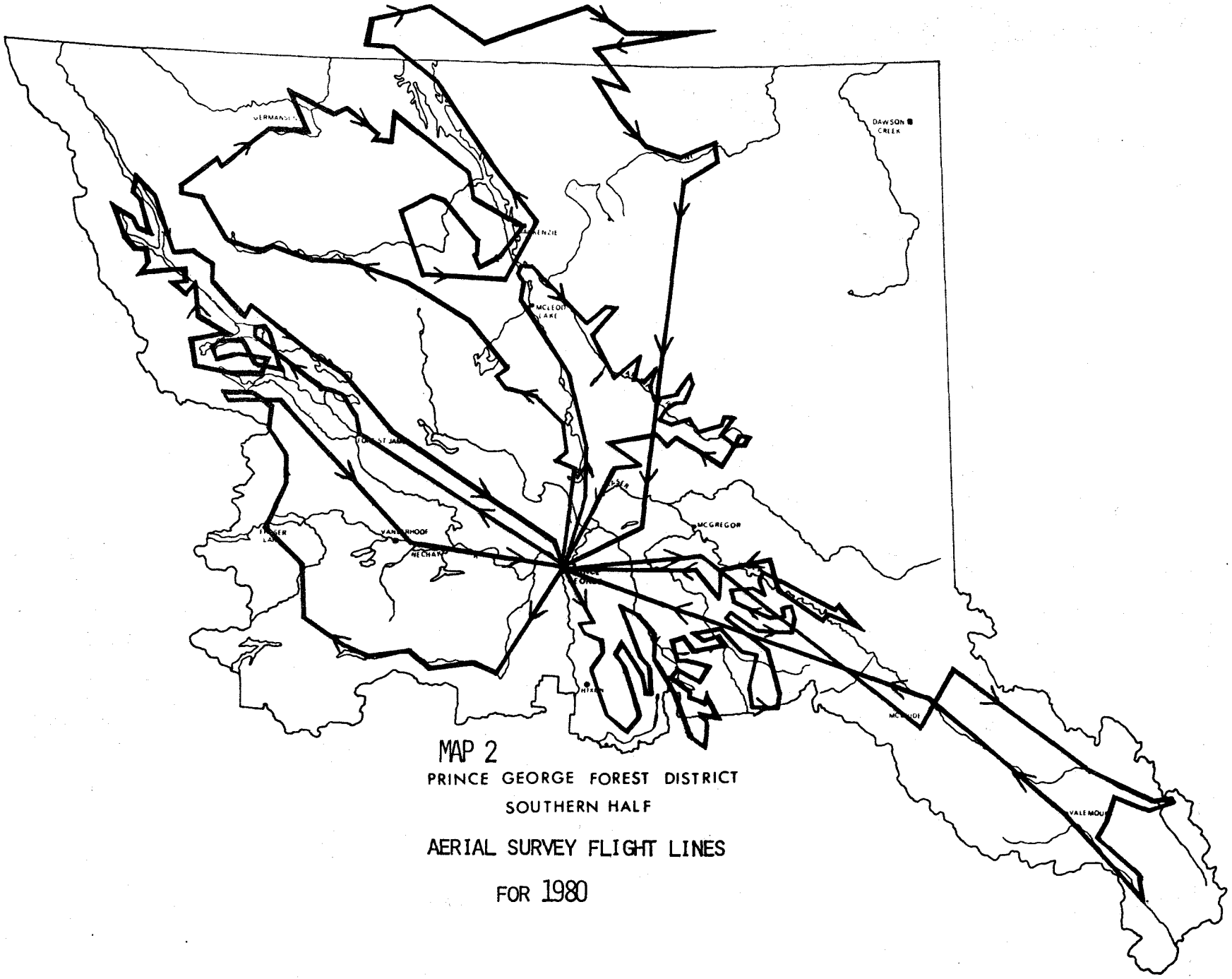
PRINCE GEORGE REGION
NORTHERN HALF

LOCATION OF POINTS WHERE ONE OR MORE COLLECTIONS OR FIELD RECORDS WERE TAKEN IN 1980

INSECT ●
DISEASE ▲







MAP 2

PRINCE GEORGE FOREST DISTRICT

SOUTHERN HALF

AERIAL SURVEY FLIGHT LINES

FOR 1980

SPRUCE PESTS

Spruce Beetle, Dendroctonus rufipennis

Spruce beetle increased dramatically to an estimated 64 400 ha on 730 infestation areas from 53 000 ha in 1979, in the Bowron, McGregor, Upper Parsnip River Valleys and Ft. St. James area but declined in the Carp and Weedon Lake areas, (Maps 3, 4). In infestations in the Upper Bowron River, Wendle Creek, upper Willow River, Narrow Lake, and Stoney Lake area tree mortality increased from 2 400 ha in 1979 to 34 800 ha in 300 separate infestation areas in 1980, with 20 200 severe, 11 500 moderate and 3 100 light[1/].

Less dramatic increases occurred in the Parsnip-McGregor area with 250 infestations on 8 100 ha (700 severe, 5 000 moderate, 2 400 light) an increase from 2 048 ha in 1979. In the Fort St. James area, 128 infestations were recorded on 13 800 ha, a slight increase from 11 600 ha in 1979.

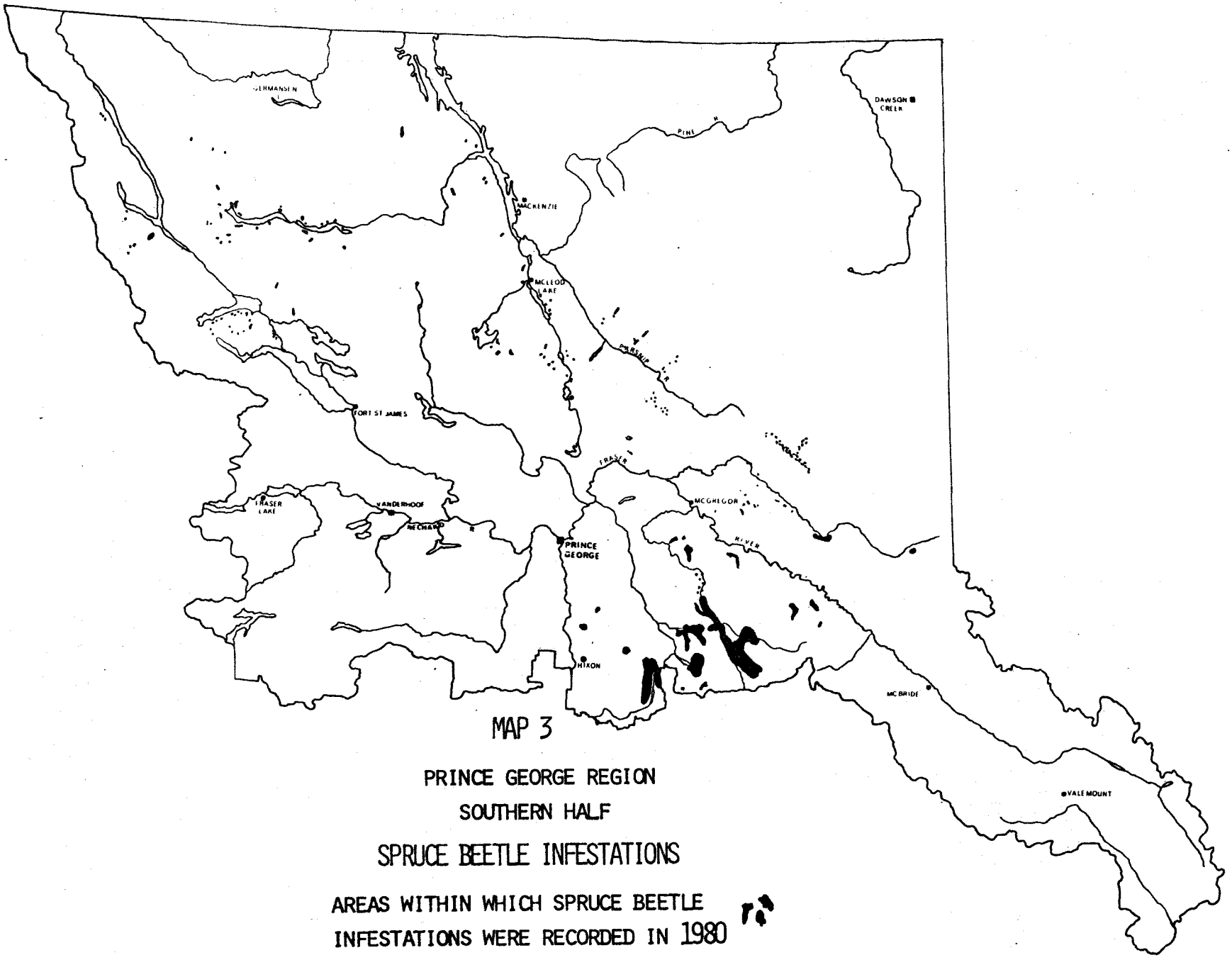
In the Summit, Carp and McLeod lakes area 51 infestations occurred on 7 700 ha, a decrease from 37 500 ha recorded in 1979.

Cruise strips with prism plots at 50 metre intervals were established at 19 locations in Septmeber to determine the status of spruce beetle attack (Table 1).

In the Prince George East District current attacks increased in all strips by an average of 19% from 1979, ranging from 3.6% to 57.8%, indicating continued expansion and mortality in 1981. Populations in the Ft. St. James District declined except at Tarnezell Creek where 14% currently infested spruce indicates broods may cause additional mortality in 1981. In the Prince George West District, at Carp and McLeod lakes current attacks have declined to 4% from 12% in 1979 and are not expected to cause noticeable mortality in 1981.

In 1980 the B.C. Ministry of Forests initiated trap tree programs in the Prince George Region to attract emerging adults from adjacent infested areas. Trap trees were effective where properly felled in the shade.

1/ Light = 1 to 5% of spruce infested
Moderate = 6 to 30% " " "
Severe = more than 30 % of spruce infested



MAP 3

PRINCE GEORGE REGION

SOUTHERN HALF

SPRUCE BEETLE INFESTATIONS

AREAS WITHIN WHICH SPRUCE BEETLE INFESTATIONS WERE RECORDED IN 1980

KM 0 20 40 60

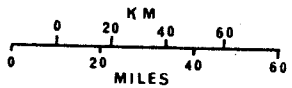
MILES 0 20 40

MAP 4

PRINCE GEORGE REGION
NORTHERN HALF

SPRUCE BEETLE INFESTATIONS

AREAS WITHIN WHICH SPRUCE BEETLE INFESTATIONS WERE RECORDED IN 1980



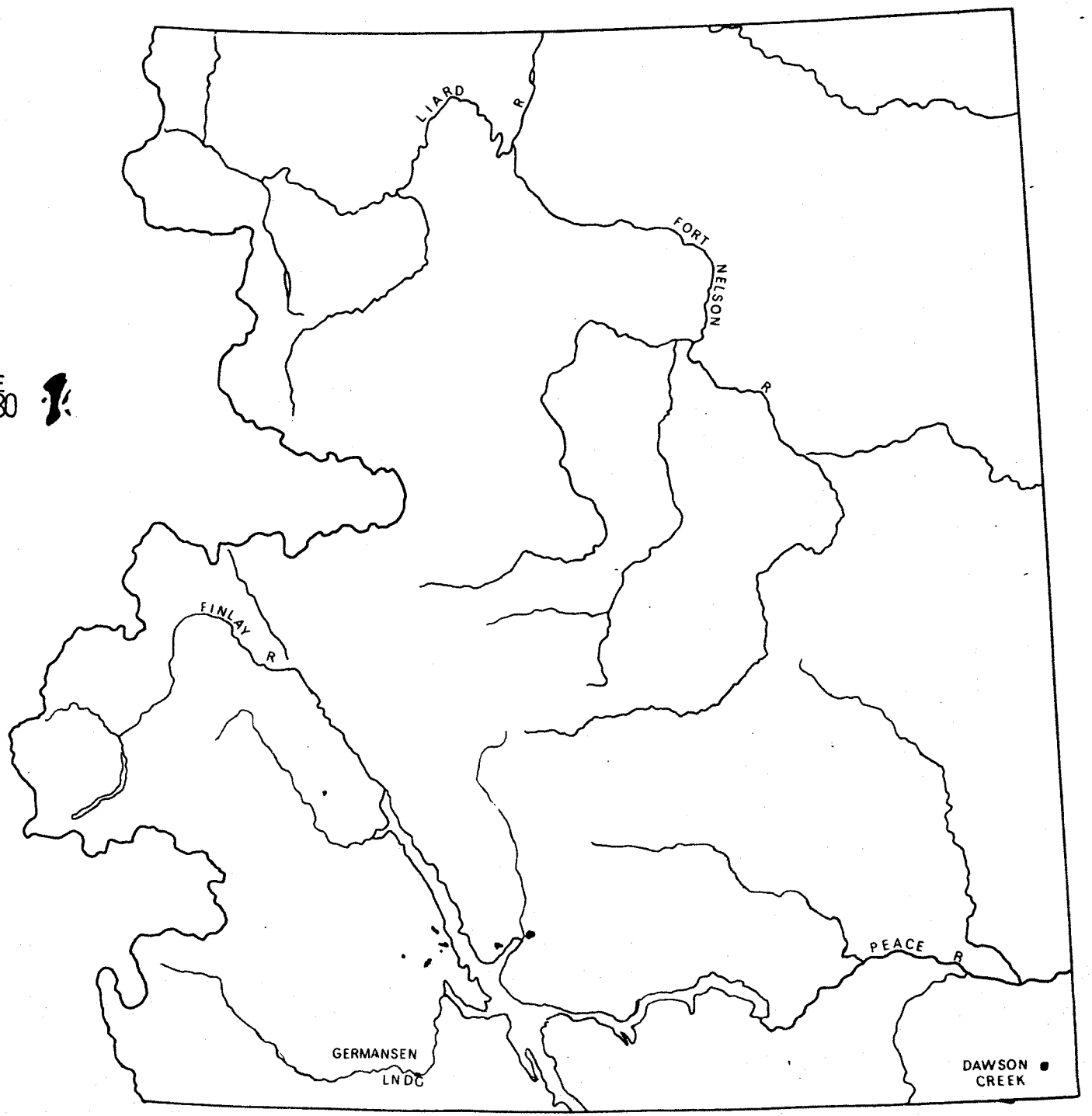


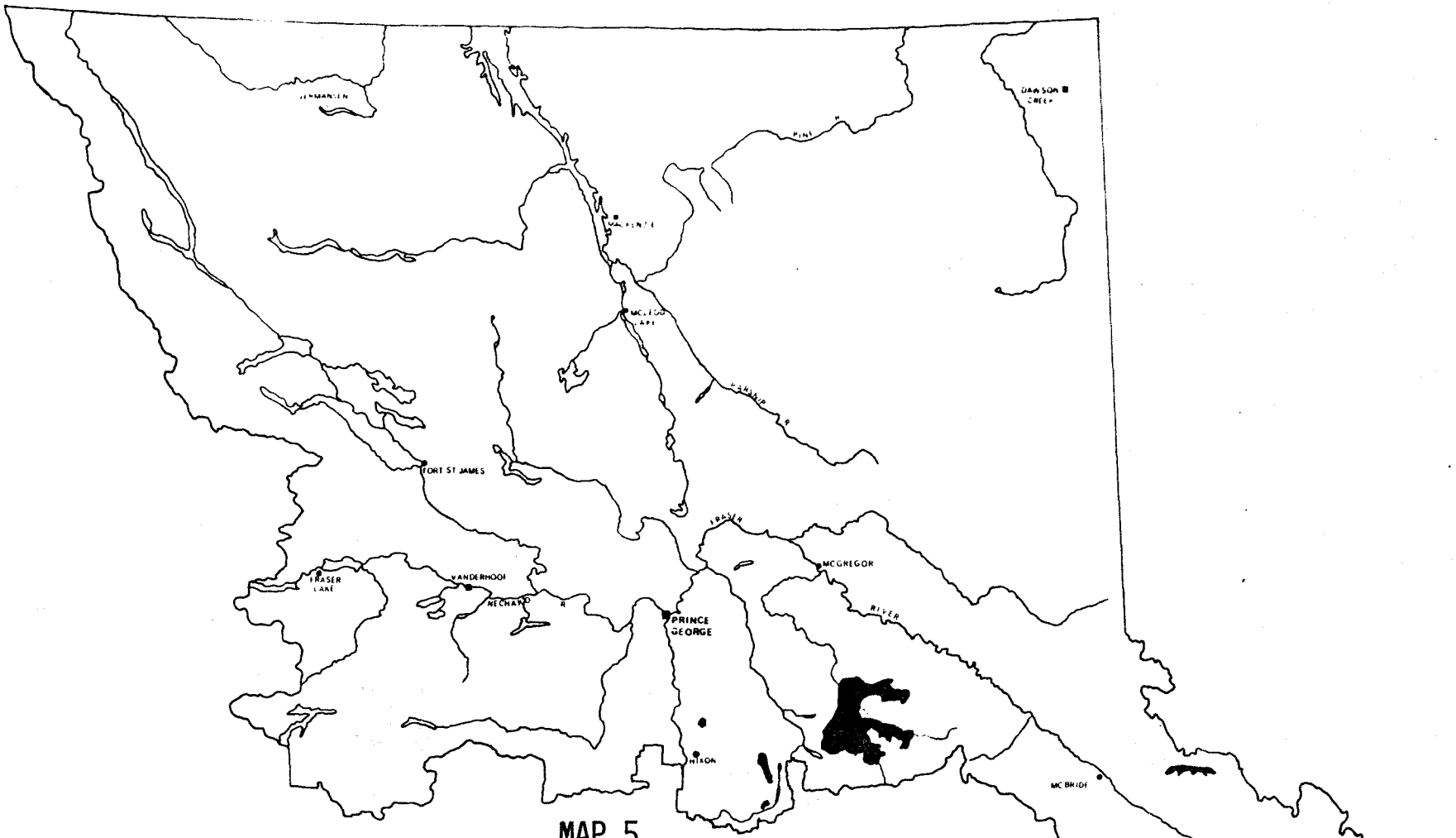
Table 1. Status of White spruce on cruise strips
Prince George Region, 1980

Location of Strips	Percentage of White Spruce Stems					Alpine fir Component (%)
	Healthy	Current[1]	Red[1]	Partial[1]	Grey[1]	
Prince George East						
Stoney Lake	9.3	61.6	3.8	7.5	17.8	10.0
Haggen Creek	46.9	18.2	3.1	13.6	18.2	13.1
Purden Lake	44.7	25.0	3.9	17.2	9.2	49.3
Narrow Lake	42.7	30.8	8.8	10.3	7.4	17.0
Wendle Lake	55.9	27.9	-	5.9	10.3	20.9
Naver Creek	42.8	23.8	7.2	14.3	11.9	12.5
Indianpoint River	52.9	29.5	7.9	6.1	-	12.8
Indian Lake	57.8	11.1	4.5	11.1	15.5	11.7
Lodi Lake	82.9	6.3	-	5.4	5.4	16.0
Pass Lake	92.8	3.6	-	1.8	1.8	34.1
Prince George West						
McLeod Lake	80.9	-	4.8	9.5	4.8	12.5
Bateman Road	65.8	5.3	18.4	2.6	7.9	21.9
Carp Lake	70.2	2.7	12.3	1.3	13.5	1.3
Ft. St. James						
Kazchek Lake	77.8	-	-	4.4	17.8	31.8
Kloch Lake	70.4	-	-	18.2	11.4	38.0
Tarnazell Creek	51.9	13.9	21.5	7.5	5.2	11.2
Upper Tarnazell Cr	70.0	-	10.0	6.6	13.4	21.0
Tchentlo Lake	93.4	-	-	-	6.6	13.0
Tchentlo Lake North	81.2	1.6	-	4.7	12.5	8.6

[1] Current = attacked & killed in 1980.
Red = attacked & killed in 1978 or 1979.
Partial = successful 1980 on only one side of tree.
Grey = killed prior to 1978.

Two-year-cycle spruce budworm, Choristoneura bennis

Spruce budworm defoliated 115 000 ha of mature white spruce and alpine fir stands in the Prince George Forest Region in 1980, compared with 76 000 ha in 1979 (Map 5, Table 2). Defoliation was generally moderate in the Bowron, Willow and Holmes rivers, southeast of Prince George. Ninety percent of the current years growth on alpine fir was defoliated with an average of 1.3 meters of top strip. Defoliation of white spruce was close to 60% of the 1980 growth.



MAP 5

PRINCE GEORGE REGION
SOUTHERN HALF

TWO-YEAR CYCLE SPRUCE BUDWORM INFESTATIONS

AREAS WITHIN WHICH TWO-YEAR CYCLE SPRUCE BUDWORM INFESTATIONS WERE RECORDED IN 1980

KM
0 20 40 60
0 20 40
MILES

Bud condition on 20 alpine fir branch samples showed 38% were in good condition, the remaining 62% had been damaged by larval feeding which resulted in branch and leader deformation. However, adventitious buds were prominent on all of the samples, which indicates that the trees will refoliate in 1981.

Egg masses from branch samples from 10 trees at Homes River averaged 167 per 10 m^2 of foliage which indicates a continuing larval population in 1981, however larvae will be early instar and defoliation of 1981 foliage is expected to be light.

Fifteen traps baited with a synthetic sex attractant were set out at Holmes River to attract male moths using three concentrations. The average number of male moths trapped indicates a continuing population.

Table 2. Areas and intensity of defoliation of alpine fir and white spruce trees by the two-year-cycle spruce budworm from aerial surveys.

Prince George Forest Region, 1979-1980.

Location	Defoliation Intensity					
	Light 1/		Moderate 1/		Severe 1/	
	1979	1980	1979	1980	1979	1980
Holmes River	4 864	-	-	8 935	-	
Bowron River	60 089	-	-	79 275	-	
Willow River	7 052	3 755	-	4 615	-	1 485
Ahbau Lake	4 742	-	-	1 885	-	
Trigger Creek	-	1 105	-	-	-	-
Lodi Lake	-	10 920	-	-	-	-
Mt. Robson Park	-	845	-	2 145	-	-
Totals	76 747	16 625	-	96 855	-	1 485

1/ Light = discolored foliage barely visible from the air, some branch tip and upper crown defoliation.
Moderate = pronounced discoloration, noticeably thin foliage, top third of many trees severely defoliated, some completely stripped.
Severe = bare branch tips and complete defoliated tops, most trees more than 50% defoliated.

PINE PESTS

Mountain pine beetle, Dendroctonus ponderosae

Mountain pine beetle killed lodgepole pine and western white ~~spruce~~ pine over 8 000 ha in 90 separate infestations (Maps 6 & 7). North and west of Ft. St. James infestations expanded to 2 000 ha in 1980 from 600 ha in 1979 at Tachie River, and Whitefish and Butterfield lakes.

Lodgepole pine on a cruise strip at Butterfield Lake was 20% current attack, 29% previous attack and 51% healthy. Although the infestations in this area are small, they occur in susceptible mature pine stands and further expansion is likely.

Near Valemount infestations in lodgepole pine expanded to 800 ha at Swift Creek and are expected to continue to cause mortality in 1981. The beetle has killed most of the mature western white pine on 4 400 ha south of Valemount along McNaughton Lake from Bulldog Creek to Baker Creek. Tree mortality is expected to continue within this area in 1981, where it has persisted since 1975.

ALPINE FIR PESTS

Western balsam bark beetle complex, Dryocoetes confusus - Ceratocystis dryocoetidis

Mortality of mature alpine fir, caused by this insect-disease complex, occurred on 715 ha at Bivovac Creek where up to 6% of the trees were killed; on 2 266 ha at Pyramid Peak near Takla Lake; and on 385 ha at Emerald Ridge in Mt. Robson Park. Previous years mortality were observed on 2 340 ha and 3 575 ha at Bivovac Creek and Pyramid Peak respectively.

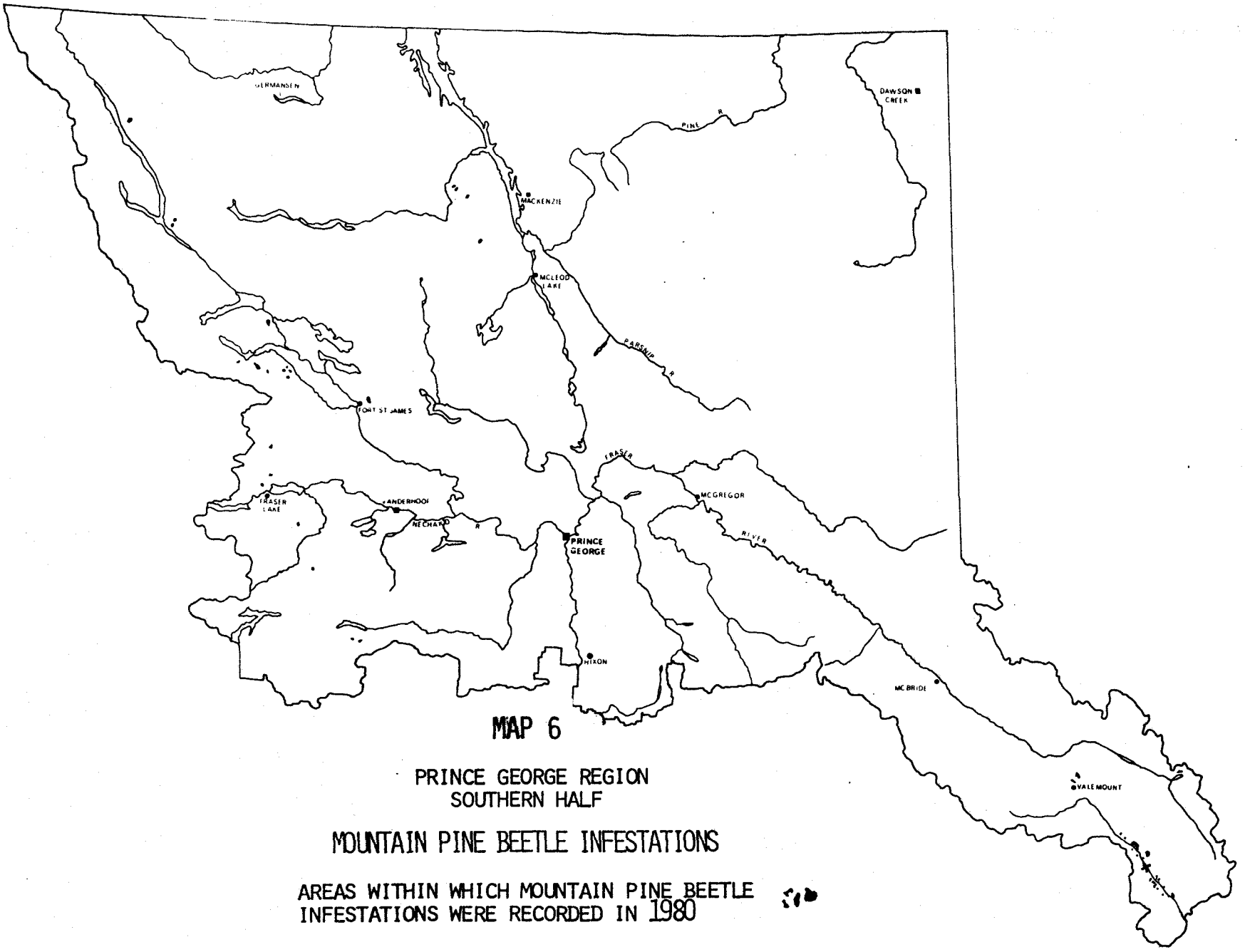
Fir - fireweed rust, Pucciniastrum epilobii

Severe needle rust infection discolored up to 90% of the current year's foliage of alpine fir trees in stands in the Bowron and Willow river valleys, near Aleza Lake, in Mt. Robson Park and in the Crooked River Forest.

PESTS OF NATURAL AND MANAGED SECOND GROWTH STANDS AND PLANTATIONS

Spruce weevil, Pissodes strobi

Thirteen percent of the terminals of immature spruce trees, less than 10 years old, were damaged in plantations north of Prince George. The leaders of 100 trees were examined at each of three locations to determine the incidence of attack of spruce weevil (Table 3).



MAP 6

PRINCE GEORGE REGION
SOUTHERN HALF

MOUNTAIN PINE BEETLE INFESTATIONS

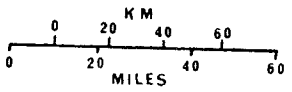
AREAS WITHIN WHICH MOUNTAIN PINE BEETLE INFESTATIONS WERE RECORDED IN 1980

MAP 7

PRINCE GEORGE REGION
NORTHERN HALF

MOUNTAIN PINE BEETLE INFESTATIONS

AREAS WITHIN WHICH MOUNTAIN PINE BEETLE INFESTATIONS WERE RECORDED IN 1980



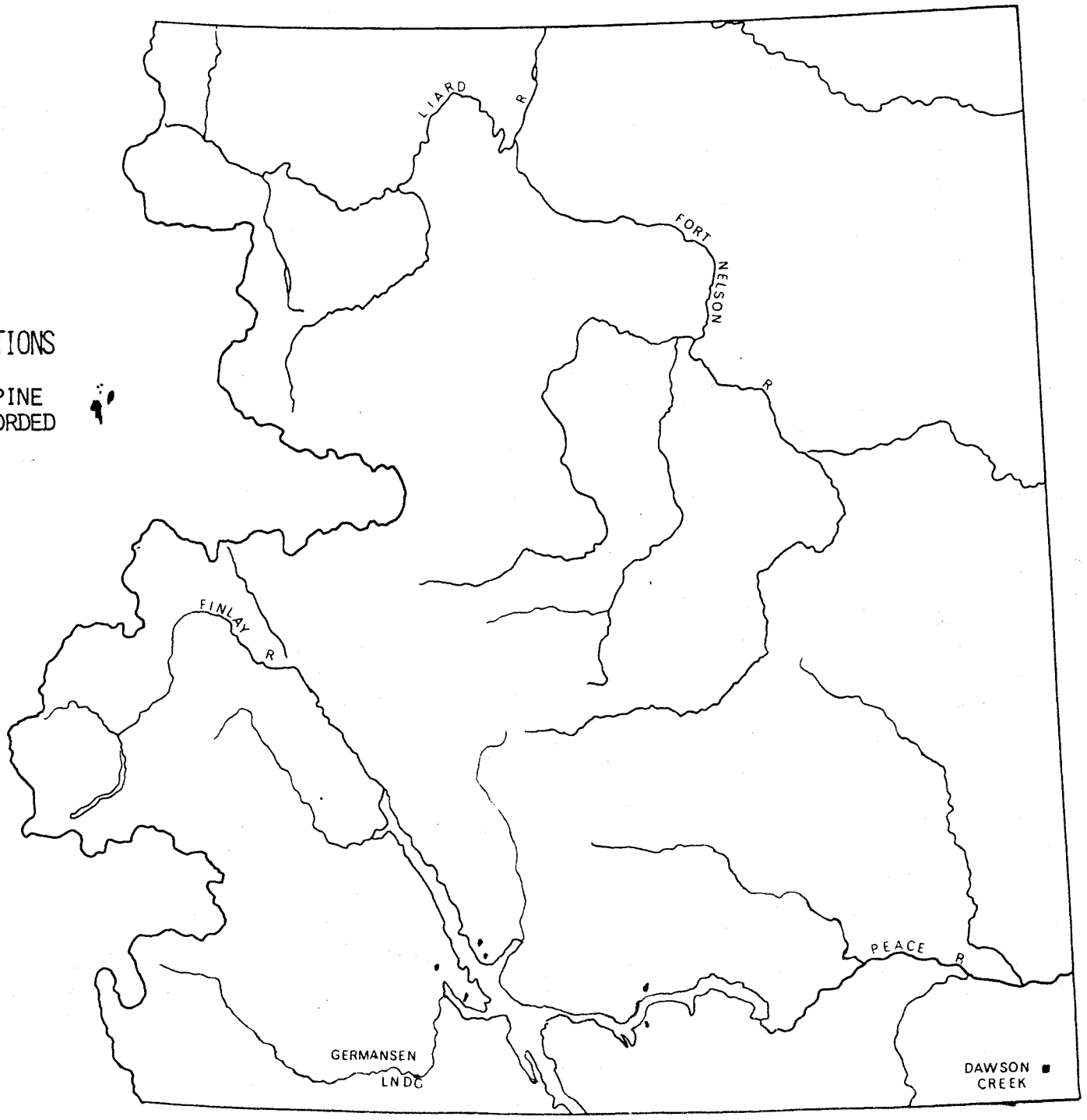


Table 3. Incidence of spruce weevil attack on three immature white spruce plantations.
Prince George Forest Region 1980.

Location	average height	exposure	site	percent of trees infested
Aleza Lake	4 m	open	wet	18%
Davie Lake	3 m	South	wet	12%
Yardley Lake	2 m	open	dry	9%

The Aleza Lake plantation had a higher incidence of attack and contained both new and old damage. The spruce weevil attacks will continue to damage leaders in 1981.

Cooley spruce gall aphid, Aldeges cooleyi

Immature white spruce trees 2 to 6 meters high throughout the Aleza Lake Experimental Forest had up to 90% of the new shoots infested with gall aphids, and at Wansa Lake 75% of the new growth on semi-mature white spruce trees contained galls. Spruce gall aphid infestations on young trees in nurseries and plantations cause branch mortality which often results in deformation and stunting of young trees.

Northern pitch nodule moth, Petrova albicapitana

Up to 75% of the lodgepole pine trees were infested by pitch nodule moth larvae in a large provenance trial at Red Rock Nursery south of Prince George. The infested stems may be weakened and subject to breakage by wind or heavy snowfall.

A lodgepole pine twig moth Dioryctria spp.

Occasional twig and shoot damaged caused by twig moth larvae occurred on less than 15% of lodgepole pine saplings at Red Rock Nursery. Single attacks caused light damage to pine regeneration along the Stuart River near Ft. St. James.

A lodgepole pine needle cast, Lophodermella concolor

The needle cast infected up to 90% of the old foliage on 75% of the lodgepole pine trees in provenance trials at Red Rock Forest Nursery. At Kenny Dam and Fraser Lake more than 50% of the old needles were infected in natural stands causing premature needle loss which may inhibit growth but seldom for more than one year.

Warren's collar weevil, Hylobius warreni

The root collar weevil girdled and killed single scattered lodgepole pine saplings in natural stands along the Naver Forest Access Road, but the incidence was generally light.

DOUGLAS FIR PESTS

Douglas-fir tussock moth, Orgyia pseudotsugata

Five sticky traps, baited with a pheromone, were set out in Douglas-fir stands at Genevieve Lake, Stone Creek and Punchaw Lake, south of Prince George, to determine if male moths were present, but results were negative. Small numbers of related moths of Dasychira grisefacta and Orgyia antiqua badia were caught, but these do not have a history of having caused serious defoliation of Douglas-fir stands in the Prince George Region.

DECIDUOUS TREE PESTS

Large aspen tortrix, Choristoneura conflictana

Light defoliation over 27 300 ha and moderate defoliation over 11 500 ha were mapped in the Vanderhoof area along Fraser, Stuart and Tezzeran lakes.

Defoliation of trembling aspen stands, infecting 75% of the trees was widespread east of Chetwynd; along the bench lands above the Peace River near Dawson Creek and Ft. St. John and along the Alaska Highway from Trutch to Ft. Nelson and west to Kledo Creek. Patches of light and moderate defoliation also occurred along Liard River near the B.C.-Yukon border.

Birch skeletonizer, Bucculatrix canadensisella

The larvae severly discolored birch stands along the upper Fraser Valley near McBride, Tete Jaune Cache and Albreda. The damage was highly visible but no tree mortality was observed and the trees are expected to recover in 1981.