ANNUAL DISTRICT REPORT

NATIONAL PARKS DISTRICT

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by

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INFORMATION REPORT

FOREST ENTOMOLOGY AND PATHOLOGY LABORATORY

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DEPARTMENT OF FORESTRY

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INTRODUCTION

Population levels of lodgepole needle miner declined markedly in the Mt. Norquay area during the period January to June, although discoloration was noted in stands of lodgepole pine in this and other areas in the Bow River Valley. Defoliation by spruce budworm was heavier near Saskatchewan River Crossing than in 1963 and an infestation appears to be building up in Kootenay National Park between Vermilion Crossing and Marble Canyon. Black-headed spruce budworm caused noticeable damage to regeneration spruce in many parts of the District. Severe infestations of the poplar serpentine miner were present in parts of Kootenay and Yoho national parks but decreased sharply in Jasper National Park.

Spruce needle rusts were evident in many areas of the District this past season and they caused much concern to personnel of the Parks. A new outbreak of stalactiforme rust was recorded and one old outbreak was re-examined. Needle casts of lodgepole pine were present south of Jasper and in the Bow River Valley between Eisenhower Junction and Sawback. One small area of red belt was recorded in Banff National Park. The area in Jasper National Park so severely damaged by red belt in previous years, showed signs of tree mortality.

INSECT CONDITIONS

Black-headed Budworm, Acleris variana (Fern.)

For the first time in many years black-headed budworm caused noticeable defoliation in some areas of the National Parks District. In Jasper National Park light defoliation was seen west of Jasper near Derr Creek and north of Jasper in the Snake Indian Valley between Celestine Lake and Seldom Inn. Light defoliation of spruce regeneration was evident in Yoho National Park along the Kicking Horse Valley from the mouth of the Yoho Valley to a point 15 miles southwest of Field. This budworm was also found in low numbers along the Emerald Lake Road ant at the lower end of the Ice River Road. In Kootenay National Park light damage was noted along the East Kootenay Fire Road. Collections of this budworm were made in most areas of Banff National Park but the amount of damage they caused was minimal.

Spruce Budworm, Choristoneura fumiferana (Clem.)

Populations of spruce budworm continued to cause damage in an overmature stand of spruce and alpine fir in the Saskatchewan Crossing

area of Banff National Park. The infestation extended south from the Warden Station along the Banff-Jasper Highway for a distance of 3 miles. In this area moderate defoliation, primarily to intermediate trees, was evident on the current year's foliage. Since moth flight occurred this past season, defoliation by late instar larvae was more noticeable than in 1963.

In Kootenay National Park spruce budworm caused light damage to spruce and alpine fir along the Vermilion River from a point 2 miles south of Vermilion Crossing north to Tokumm Creek. The center of this infestation is near Hawk Creek and gradually decreases in both directions along the Vermilion River.

Two areas of light defoliation were recorded in Yoho National Park. In one area, near the mouth of the Yoho Valley, low populations have been present for a number of years with very little change noted from year to year. The other area mentioned was at the lower end of the Ice River Road near the southern boundary of the Park.

Leaf Beetle, Chrysomela aeneicollis Schffr.

Infestations of these leaf beetles on willow were again evident in 1964 at the higher elevations in many areas of Banff, Yoho, and Kootenay national parks. In Banff National Park moderate defoliation was noted along the Cascade Fire Road from Flint Park turnoff to the Red Deer River. Light infestations were found up Healy Creek to Bourgeaux Cabin, up Redearth Creek to Shadow Lake, along Boom Creek, west of Lake Louise, and at a few locations along the Banff-Jasper Highway. Infestations were light in Yoho National Park along the Amiskwi Valley Road, 4.5 miles up the Otterhead River and near Lake O'Hara. Light damage was noted from Hawk Creek north and east to Marble Canyon and Vermilion Pass in Kootenay National Park.

Needle Miner, Evagora starki Free.

Nineteen sixty-four, the flight year for lodgepole needle miner, saw a decrease in populations of that generation in the Mt. Norquay area. Several factors entered into natural control of needle miner populations on Mt. Norquay. By June the population had declined to 25.6 per cent of what it was in the fall of 1963. Winter mortality, parasites and bird predation were the factors responsible for this loss.

Moderate discoloration in the lodgepole pine stands was notable in the following areas: between Stony Squaw Mountain and Mt. Norquay, on the northeast slopes of Massive Mt. above Wolverine Creek, on the slopes of Mt. Eisenhower to Johnston Creek, and on the southwest slopes of Mt. Ishbel from Johnston Creek to Massive Siding. On either side of

Johnston Creek infestations were more concentrated in the gullies than on the ridges between the gullies. Light discoloration of lodgepole pine was noted on the southwest slopes of Mt. Inglismaldie above Johnson Lake.

Results of sequential sampling in the fall were inconclusive due to the fact that hatching had not been completed. However, it did show the population trend. In Banff National Park medium-low populations were recorded one mile up Johnston Creek and at the 5,000 foot elevation on Massive Mountain above Wolverine Creek. In the Bow River Valley low populations were present between Banff and a point 11 miles northwest of Eisenhower Junction. In Kootenay National Park a medium-low population was recorded at Black Creek, and low populations were present at Hawk Creek and 1.8 miles west of Marble Canyon.

Sampling on Mt. Norquay was left until late in the fall to allow all the time possible for the eggs to hatch. Twenty trees were sampled in this area in mid-September and it was found that only two-thirds of the eggs had hatched.

Unfavorable weather conditions in August delayed the hatching of many eggs until the latter part of September. During this time many of the mined needles, in which the eggs are laid, dropped from the trees. This will undoubtedly be a controlling factor of the 1964-1966 generation.

Grey Willow Leaf Beetle, Galerucella decora Say

The grey willow leaf beetle was found in many areas of Banff and Jasper national parks this past season. In Banff National Park low populations were present along the Saskatchewan River near the east boundary of the Park and along the Red Deer River also near the east boundary. In Jasper National Park low populations were found north of Jasper near Patricia and Pyramid lakes, along the Snaring River 10 miles north of Jasper, in the Snake Indian Valley near Seldom Inn and between Medicine and Maligne lakes.

Spruce Spider Mite, Oligonychus ununguis (Jac.)

Moderate infestations of spruce spider mite caused discoloration of Douglas fir foliage near the Administration Building in Jasper. Spruce in Jasper Townsite and around Jasper Park Lodge supported low populations of mites. In Banff Townsite many spruce hedges had moderate infestations while the more open, individual trees along the boulevards had light infestations. Low populations occurred on Douglas fir near Sinclair Canyon in Kootenay National Park.

Poplar Serpentine Miner, Phyllocnistis populiella Cham.

The severe infestations that have been present in Jasper National Park for the past few years were greatly decreased in 1964. Moderate infestations were found northwest of Jasper to Patricia and Pyramid lakes and west of Jasper along the Yellowhead Highway from Geikie to the west boundary of the Park. Light infestations occurred around Jasper Townsite and north to Fiddle Creek, along the Miette Road, the Maligne Lake Road, and in the Athabasca Valley south from Jasper for 30 miles.

In Kootenay National Park severe infestations were present in the Kootenay Valley south from Kootenay Crossing to the Park Boundary. This severe infestation extended northeast of Kootenay Crossing to Wardle Creek and west from the main valley along the highway for a short distance towards Sinclair Summit. The infestation was light near Sinclair Summit and increased to moderate near Radium. At the south end of the Park near Stoddart Creek the infestation was moderate.

The infestation in Yoho National Park was severe between Leanchoil and the west entrance to the Park and south of Leanchoil along the Beaverfoot River to the Ice River. Northeast from Leanchoil along the Kicking Horse Valley, the intensity decreased gradually from severe to light in the vicinity of Field.

Infestations in Banff National Park were generally light except in the Bow River Valley between Lake Louise and Banff. Here a few small areas of moderate damage were recorded.

Engelmann Spruce Weevil, Pissodes engelmanni Hopk.

Yoho and Kootenay national parks were the only areas where this weevil was found in 1964. A few terminals of regeneration spruce were destroyed by spruce weevils near Leanchoil and 3 miles up the Ottertail Valley in Yoho National Park. The infested area in Kootenay National Park was the same as that reported in previous years, that is along the Kootenay River Valley for its length within the Park. At the sample plot established near Kootenay Crossing 37 tips were weevilled in 1964 as compared to 39 tips weevilled in 1963.

Lodgepole Terminal Weevil, Pissodes terminalis Hopping

In Kootenay National Park light infestations were recorded in stands of regeneration lodgepole pine along the Settlers Road and near the campground at Radium. A few infested terminals were collected east of the bungalow camp at Saskatchewan Crossing in Banff National Park. There has been a light infestation in this area for several years

and many deformed tops have developed. In Jasper National Park several trees near Patricia Lake were infested.

Larch Sawfly, Pristiphora erichsonii (Htg.)

Larch sawfly was found in 3 widely separated areas of the National Parks District in 1964. Light damage to western larch was seen along the Settlers Road in Kootenay National Park. In a small stand of tamarack at Mile 4 of the Miette Road in Jasper National Park, a medium population was present. In this area the top two-thirds of the trees had very short needle growth which, from a distance, gave the appearance of moderate defoliation although the actual defoliation was light. The third area was near Snow Creek Pass along the Cascade Fire Road in Banff National Park. Alpine larch in this area supported low populations with the result that only light defoliation was evident.

DISEASE CONDITIONS

Spruce Needle Rusts, Chrysomyxa empetri (Pers.) Schroet., Chrysomyxa ledicola Lagerh., and Chrysomyxa ledi de Bary

Spruce needle rusts were evident in many areas of the National Parks District this past season and were the cause of much concern by personnel of the Parks. C. ledicola was collected most frequently but C. ledi and C. empetri were also found. Several areas in Banff, Yoho and Kootenay national parks were sampled with a view to obtaining intensity data (see table III). Infected spruce needles were found throughout Banff National Park but the most notable damage was caused in the following areas: Spray River Valley from Mile 4.8 to Mile 19 south of Banff, Cascade River Valley north of Banff from Mile 6 to Mile 7.5, along Highway 1 west of Banff at Mile 7, 1.5 miles up Healy Creek Fire Road, one mile up Redearth Creek, near Waterfowl Lakes, 2.8 miles south of Saskatchewan Crossing, and near Catarac Creek.

In Kootenay National Park moderate infections covered a large area in the northern section of the Park. The center of this outbreak was Marble Canyon and the Paint Pots and the outbreak extended south along the Vermilion River to Numa Creek Valley, northeast to Vermilion Summit, northwest along Ochre Creek and into Yoho National Park down the Ottertail River to within 3 miles of the Trans Canada Highway. A few moderately infected trees were also noted along the Dollyvarden Fire Road and on the east side of the Kootenay River near Dog Lake.

In addition to the previously mentioned area along the Ottertail River in Yoho National Park, moderate damage was noted near Sink Lake and 2 miles along the road to Lake O'Hara. Light damage occurred in an area 2 miles along the Ice River Road.

Spruce needle rusts were not prominent in Jasper National Park although light damage was noted along the Sunwapta River near Grizzly and Beauty creeks.

Darluca filum (Biv.) Cast., a hyperparasite, was found on many of the rust pustules in the Ottertail River area of Yoho National Park. This fungus prevents rust spore dissemination. It is the first record of this hyperparasite in the Alberta Region.

Needle Casts of Lodgepole Pine, Hendersonia pinicola Wehm., Hypodermella montivaga (Petrak) Dearn., Hypodermella sp.

Needle casts caused discoloration of the foliage of lodgepole pine in the Athabasca Valley south of Jasper and in the Bow Valley between Eisenhower Junction and Sawback. H. montivaga caused damage south of Jasper along both sides of the Athabasca River to Athabasca Falls in Jasper National Park. Light damage caused by a Hypodermella sp. was reported from Mt. Norquay and 8 miles west of Banff in Banff National Park. H. pinicola caused light damage along the Bow Valley between Eisenhower Junction and Sawback and along Brewster Creek from the mouth to its junction with Howard Douglas Creek.

Stalactiforme Rust, Peridermium stalactiforme A. & K.

The outbreak of stem rust at Mile 59 of the Banff-Jasper Highway was re-examined and no change was noted in the size of the infected area. In 3 sample plots established an average of 16.6 per cent of the trees were infected. A new outbreak near Saskatchewan Crossing was recorded and, samples taken at 6 locations along the right of way cut for the David Thompson Highway showed an average of 16 per cent of the trees were infected.

A high incidence of infection of this rust was found in a small stand of regeneration pine 5 miles up Brewster Creek Fire Road. Light damage caused by this stem rust was recorded north of Banff near Fortymile Creek and in the Spray River Valley 16 miles south of Banff.

Red Belt

Red belt damage to stands of lodgepole pine was noted in the Red Deer Valley 42 miles north of Banff. It occurred between the 5,600

and 6,000 foot elevation levels on both sides of the Valley. On the north side of the Valley it encompassed an area of about one square mile while on the south side it was about one half of that size. Red belt did not recur in 1964 along Ashler Ridge in Jasper National Park. Tree mortality was evident in this area as a result of severe damage in the 2 previous years.

TABLE I

SUMMARY OF INSECT AND DISEASE COLLECTIONS BY HOSTS

Host Coniferous	Collections Insect	Disease	Host Deciduous	Collections Insect	Disease
White spruce	38	4	Trembling aspen	22	1
Engelmann spruce	19	9	Balsam poplar	4	1
Misc. spruce	9	5	Birch	3	0
Lodgepole pine	55	14	Willow	32	0
Misc. pine	0	1			
Douglas fir	12	6			
Alpine fir	14	5			
Misc. larch	7	3			
	154	47		61	2
Insect collections from miscellaneous hosts					14
Disease collections from miscellaneous hosts					5
GRAND TOTAL					283

TABLE II

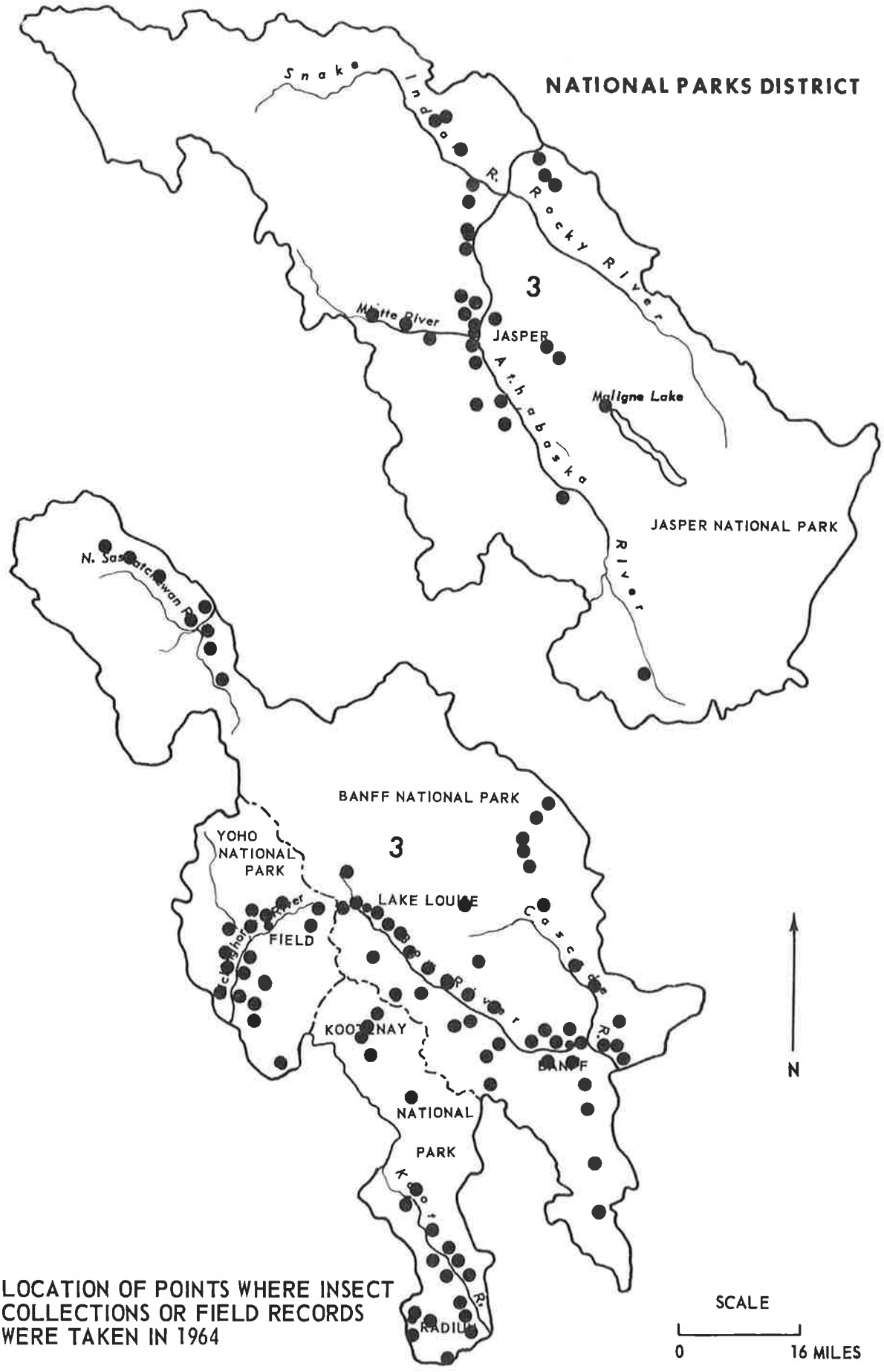
OTHER NOTEWORTHY INSECTS AND DISEASES
WHICH OCCURRED IN THE NATIONAL PARKS DISTRICT, 1964

Causal Agent	Host	Remarks
Insect		
Cooley spruce gall aphid, Adelges cooleyi (Gill.)	W. spruce D. fir	Present in all areas but lighter than in past years.
Lodgepole pine beetle, Dendroctonus murrayanae Hopk.	Lp. pine	Numerous trees, damaged by porcupine, supporting low populations near Beauty and Grizzly creeks, J. N. P.
Spruce coneworm, Dioryctria reniculleta (Grote)	W. spruce	Found in association with budwormsthroughout Y. N. P.
Needle miner, Evagora florae Free.	Lp. pine	Light infestation associated with E. starki on Mt. Norquay, B. N. P.
Caragana aphid, Macrosiphum carraganae Cholod.	Caragana	Light infestations on hedges in Banff and Jasper townsites.
Forest tent caterpillar, Malacosoma disstria Hbn.	T. aspen	Light defoliation to a few trees near Radium, K.N.P.
Western tent caterpillar, Malacosoma pluviale (Dyar)	Willow T. aspen W. birch Rose	Light damage recorded in southwestern sections of Yoho and Kootenay national parks.
Pine needle scale, Phenacaspis pinifoliae (Fitch)	Lp. pine D. fir	Light infestations persist near Radium, K.N.P.
Spruce bud scale, Physokermes piceae Schr.	Spruce	Light infestation along Spray River Valley, B.N.P.
Yellow-headed spruce sawfly, Pikonema alaskensis (Roh.)	Spruce	Severe damage to a few trees near Patricia Lake and 14 miles south of Jasper, J.N.P. Moderate on a few trees north of Banff, B.N.P.

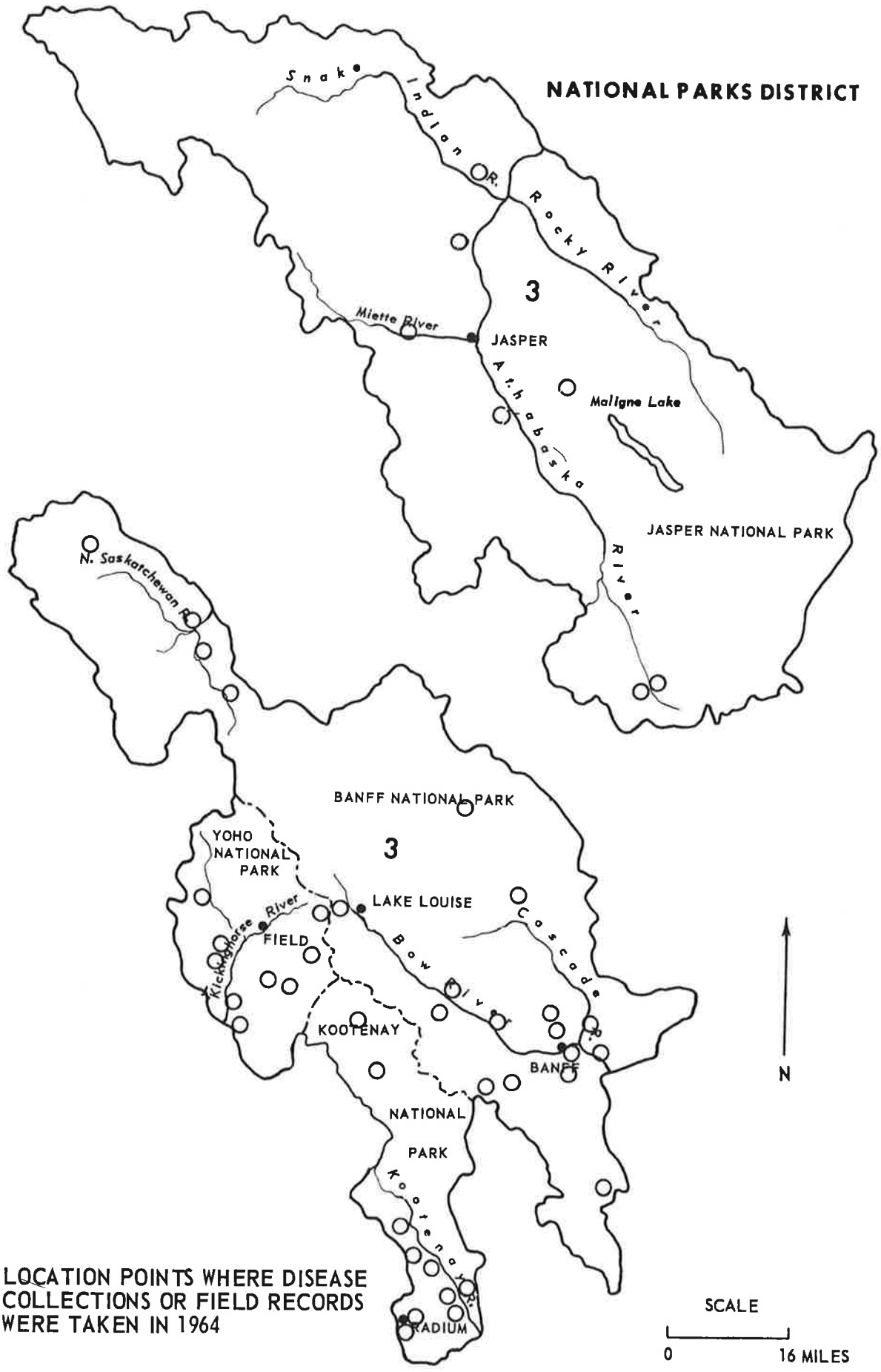
TABLE IV

SUMMARY OF RECORDED DISEASE OUTBREAKS
UNDER INVESTIGATION IN THE NATIONAL PARKS DISTRICT

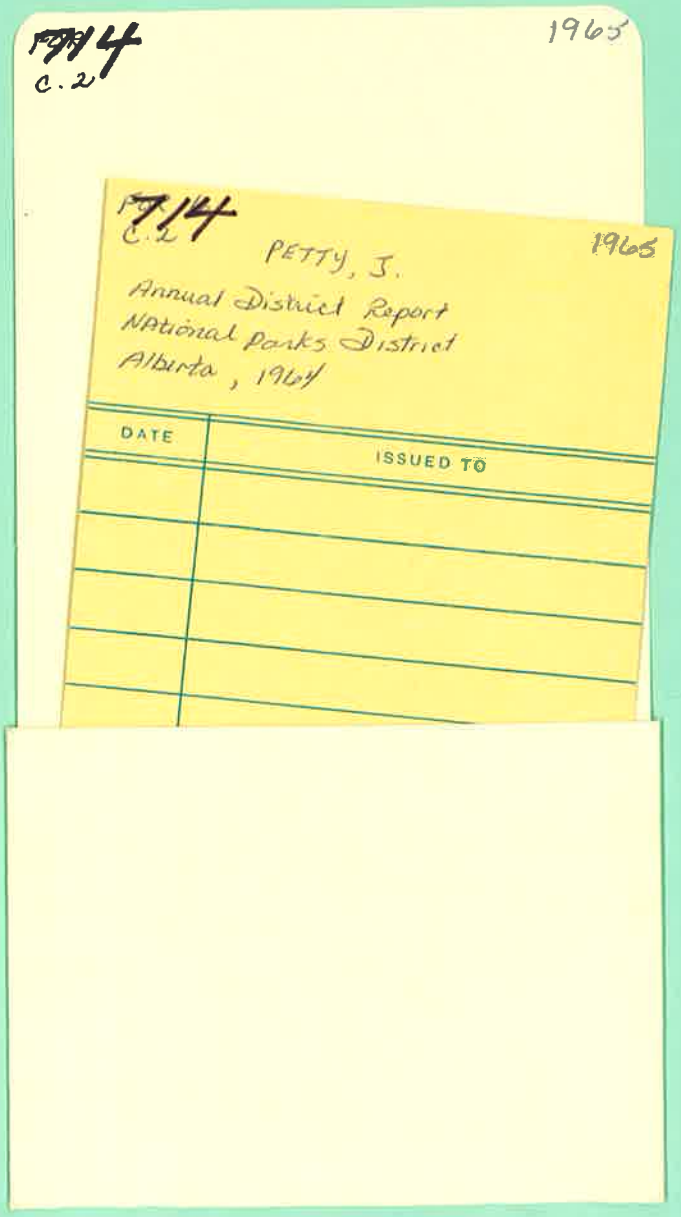
Outbreak number	Location	Causal Organism	Remarks
3-1	Geraldine Lake Road	Atropellis piniphila (Weir) Lohman & Cash	To be re-examined 1969.
3-2	Sundance Canyon	Atropellis piniphila (Weir) Lohman & Cash	To be re-examined 1965.
3-3	59.5 miles north Lake Louise Junction	Peridermium stalactiforme A. & K.	No noticeable change in area. 16.6% trees affected.
3-9	Snaring River	Arceuthobium americanum Nutt. ex Engelm.	Most trees dead. No aerial plants seen.
3-13	Jasper Townsite	Arceuthobium americanum Nutt. ex Engelm.	100 per cent infection. Trees dying.
3-14	Marmot Basin Trail	Atropellis piniphila (Weir) Lohman & Cash	To be re-examined 1965.
3-15	10 miles west of Banff	Rhabdocline pseudotsugae Syd.	Discontinued 1964.
3-18	Settlers Road	Hypodermella laricis Tub.	Discontinued 1964.
3-19	Settlers Road	Peridermium harknessii J. P. Moore	To be re-examined 1965.
3-20	Between Mt. Eisenhower and Johnstons Canyon	Arceuthobium americanum Nutt. ex Engelm.	To be re-examined 1966.
3-21	Between Astoria and Whirlpool rivers	Arceuthobium americanum Nutt. ex Engelm.	To be re-examined 1966.
3-22	Between Astoria and Whirlpool rivers	Atropellis piniphila (Weir) Lohman & Cash	To be re-examined 1965.



LOCATION OF POINTS WHERE INSECT COLLECTIONS OR FIELD RECORDS WERE TAKEN IN 1964



LOCATION POINTS WHERE DISEASE COLLECTIONS OR FIELD RECORDS WERE TAKEN IN 1964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