ANNUAL DISTRICT REPORT
NATIONAL PARKS DISTRICT
ALBERTA 1966

by

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FORESTRY BRANCH

DEPARTMENT OF FORESTRY AND RURAL DEVELOPMENT

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This report is an excerpt from the "Annual District Reports, Forest Insect and Disease Survey, Alberta - Northwest Territories - Yukon Region, 1966, Information Report A-x-6."

Information regarding insect and disease conditions in the remainder of the Region is on file at your Divisional Headquarters, or may be obtained from:

Regional Director,
Forestry Branch,
Canada Dept. of Forestry & Rural Development,
132 - 9th Ave. S.W.,
Calgary, Alberta.

INTRODUCTION

Defoliation by spruce budworm in the Saskatchewan Crossing area of Banff National Park was more severe than in 1965. An infestation of spruce budworm was also recorded along the Vermilion River in Kootenay National Park. The infestation of the poplar serpentine miner was again moderate to severe in Yoho and Kootenay national parks, more severe in Banff National Park and had almost disappeared in Jasper National Park. The lodgepole needle miner caused moderate discoloration on Mt. Norquay.

Spruce needle rusts were evident again on both primary and alternate hosts in many parts of the District. Two dwarf mistletoe outbreaks were re-examined.

BANFF NATIONAL PARK

INSECT CONDITIONS

Spruce Budworm, Choristoneura fumiferana (Clem.)

The infestation of two-year-cycle spruce budworm that has been present for a number of years in the Saskatchewan Crossing area, continued at the same level. Since 1966 was the second year of their life cycle, considerably more feeding occurred than in 1965. By mid-July when feeding was almost complete, moderate to severe injury was evident. Moderate injury occurred to the current growth of mature spruce and severe injury occurred to understory spruce and alpine fir. Lodgepole pine was also attacked and most of the current years needles were destroyed on young trees in open areas.

A tally of current years buds on spruce was made in early June. Larvae were present in 86 per cent of the buds on mature trees and in 64 per cent of the buds on immature trees.

Leaf beetle, prob. Chrysomela sp.

This leaf beetle caused moderate injury to 2 species of willow and to silverberry in the Snow Pass area on Mt. White. Severe injury occurred to willow near the confluence of the Alexandra and North Saskatchewan Rivers.

Needle Miner, Coleotechnites starki Freeman

The infestation of lodgepole needle miner was still active and populations were at about the same level as in previous years. As 1966

was the second year of its two-year life cycle, injury was considerably higher than in 1965. The highest population occurred at the 5400 foot level on Mt. Norwuay and severe discoloration was evident in this area by mid-July.

In order to record population trends throughout the National Parks, 15 permanent sampling stations were established in areas known to be infested. The results of sequential sampling in these plots is shown in Table IV.

Poplar Serpentine Miner, Phyllocnistis populiella Cham.

The infestation of the poplar serpentine miner was present in the same general area as in the past 2 years but increased in intensity in some locations.

Light to moderate injury occurred to aspen and balsam poplar in the Lake Minnewanka area and along Highway 1A from Eisenhower Junction to Lake Louise. In the Johnston Canyon - Mt. Eisenhower area severe injury occurred to aspen poplar.

DISEASE CONDITIONS

Spruce Needle Rust, Chrysomyxa empetri Schroet. ex Cumm.

This needle rust was recorded on the alternate host, crowberry, at 2 locations; severe damage occurred in the Hector Lake area and moderate damage occurred along the Smith Lake Trail.

Spruce Needle Rust, Chrysomyxa weirii Jacks.

This needle rust was present early in the summer on the 1965 foliage of white and Engelmann spruce. Moderate damage occurred to white spruce from Mile 2 to Mile 9 on the Spray River Road; moderate damage occurred to Engelmann spruce for one-half mile up the Paradise Valley Trail; light damage occurred on the Banff Golf Course, along Brewster Creek and along the Red Earth Trail.

Poplar Leaf Spot, Marssonina tremuloidis (Ell. & Ev.) Kleb.

In Banff Townsite, aspen poplar at several points throughout the town were moderately to severely infected with this leaf spot. Severe injury occurred along the Trans Canada Highway, approximately 6 miles east of Eisenhower Junction. In this area, which extended for about a mile along the Highway, foliage of aspen poplar appeared very ragged due to

the presence of the leaf spot combined with injury caused by 2 insect species, gall mites and poplar serpentine miner. Premature leaf-drop occurred in both areas.

JASPER NATIONAL PARK

INSECT CONDITIONS

Black-headed Budworm, Acleris variana (Fern.)

Low populations of black-headed budworm were present in the vicinity of Patricia and Edith lakes and along the Celestine Lake Road. In the area west of Celestine Lake where moderate injury occurred in 1964 and 1965, injury in 1966 was light.

Cooley Spruce Gall, Adelges cooleyi (Gill.)

This spruce gall aphid was common throughout the Park. Old and new galls were present on white and Engelmann spruce at most locations inspected. High populations of nymphs were found in all stands of Douglas-fir, which is an alternate host for this species of insect.

Needle miner, Coleotechnites starki Freeman

Low populations of lodgepole needle miner were present along the Mt. Edith Cavell Road and near Sunwapta Falls. Results of sequential sampling carried out in these areas is shown in Table IV.

Bark Beetle, Dendroctonus ponderosae Hopkins

Along the Mt. Edith Cavell Road, numerous pine were attacked by these and a complex of other bark beetles. All infested trees were on the lower side of the road, where, due to road construction in recent years the base of the trunk had been covered with soil to a depth of 10-12 inches. It was in this area of the trunk that the injury occurred. Several of the trees had died recently and several others were dying.

DISEASE CONDITIONS

Dwarf Mistletoe, Arceuthobium americanum Nutt. ex Engelm.

Re-examination of the dwarf mistletoe outbreak in Jasper Townsite

was carried out in the fall. Four representative areas were chosen and a total of 2071 trees tallied. The results are shown in Table VI.

Three hyperparasites of dwarf mistletoe were recorded at a number of locations in the Park (Table V). In Jasper Townsite all 3 species were found on the same tree.

Spruce Needle Rust, Chrysomyxa empetri Schroet. ex Cumm.

Light injury caused by this needle rust was recorded on the alternate host, crowberry, at 3 locations: along the Sunwapta River near Sunwapta Falls, on Mt. Edith Cavell, and along the Pyramid Tower Road.

Needle Cast, Elytroderma deformans (Weir) Darker

This needle cast caused light to severe injury to lodgepole pine along the Athabasca Valley from Jasper Townsite to Athabasca Falls. In several areas, foliage was sparse due to recurring infection over the past few years.

YOHO NATIONAL PARK

INSECT CONDITIONS

Poplar Serpentine Miner, Phyllocnistis populiella Cham.

An infestation of poplar serpentine miner occurred in the same general area as in 1965. Severe injury occurred to aspen along the Kicking Horse Valley from Field to the south end of the Park. Moderate injury occurred in the Amiskwi, Otterhead and Ottertail valleys and along the road to Emerald Lake.

DISEASE CONDITIONS

Spruce Needle Rust, Chrysomyxa empetri Schroet. ex Cumm.

The alternate host of this rust, crowberry, was moderately infected in the Amishkewi Valley and severely infected on the north side of Lake Ohara.

KOOTENAY NATIONAL PARK

INSECT CONDITIONS

Spruce Budworm, Choristoneura fumiferana (Clem.)

An infestation of spruce budworm was present along the Vermilion River from the Paint Pots to a point approximately 8 miles south of Vermilion Crossing, a total distance of 25 miles. Light to moderate injury occurred to the current years growth on spruce and fir throughout the area. The most severe injury occurred in the Numa Creek area. Near the Paint Pots, light injury was observed on lodgepole pine.

Poplar Serpentine Miner, Phyllocnistis populiella Cham.

The poplar serpentine miner was present throughout the same area as in 1965. Moderate to severe injury occurred from Hector Gorge to the south end of the Park and through Sinclair Pass to Radium.

DISEASE CONDITIONS

Spruce Needle Rust, Chrysomyxa weirii Jacks.

A high incidence of this needle rust occurred on white spruce for 2.5 miles along the south end of Settlers Road and at the north end of this Road near its junction with Highway 93. In the Vermilion River Valley light to moderate injury occurred from Hector Gorge north to Numa Creek, a distance of 20 miles.

Pine Needle Cast, Elytroderma deformans (Weir) Darker

This needle cast caused moderate to severe injury to lodgepole pine along the Settlers Road and the Cross River Fire Road at the south end of the Park. Moderate injury occurred to the lower canopy of open growing pine near the confluence of the Vermilion and Kootenay rivers.

TABLE I

SUMMARY OF INSECT AND DISEASE COLLECTIONS BY HOSTS

Host Coniferous	Collections Insect	Collections Disease	Host Deciduous	Collections Insect	Collections Disease
White spruce	22	8			
Engelmann spruce	15	21	Trembling aspen	3	6
Black spruce	1	0	Balsam poplar	0	3
Lodgepole pine	32	39	Willow	6	6
Douglas fir	8	4			
Alpine fir	2	25			
Misc. larch	4	0			
	84	97		9	15
Insect collections from miscellaneous hosts					3
Disease collections from miscellaneous hosts					69
GRAND TOTAL					277

TABLE II

OTHER NOTEWORTHY INSECTS AND DISEASES
WHICH OCCURRED IN THE NATIONAL PARKS DISTRICT, 1966

Causal Agent	Host	Remarks
Spruce bark beetle, Dendroctonus obesus (Mann.)	E. spruce A. fir	Collected from trees felled for ski runs in Marmot basin, J.N.P.
Bark beetle, Ips yohoensis Swaine	E. spruce	Collected from windfalls on Mt. Shanks, K.N.P. and near the Ya-ha-tinda gate, B.N.P.

TABLE II - Other Noteworthy Insects and Diseases - Cont'd.

Causal Agent	Host	Remarks
Miscellaneous		
Cone insects	E. spruce W. spruce A. larch	18 collections of cones were submitted for special rearing.
Disease		
Shoestring root rot, *Armillaria mellea* (Vahl ex Fr.) Quél.	D. fir	Numerous young trees were killed in Sinclair Pass K.N.P. Young and mature trees were killed near Banff School of Fine Arts, B.N.P.
Fir needle cast, *Bifusella abietis* Dearn.	A. fir	Moderate damage to individual trees at 4 locations: Numa Creek and Paint Pots, K.N.P., Spray River Road, B.N.P., Pyramid Fire Road, J.N.P.
Spruce needle rust, *Chrysomyxa* sp.	E. spruce W. spruce	Severe damage near Healy Creek Warden Station, B.N.P. and Jonas Creek, J.N.P. Light damage in other widely separated areas throughout the District.
Spruce cone rust, *Chrysomyxa pirolata* Wint.	Wintergreen B. spruce E. spruce	Alternate host was lightly infected at numerous locations throughout the District. Light damage to cones at 2 locations.
Pine needle rust, *Coleosporium asterum* (Diet.) Syd.	Lp. pine Goldenrod Aster	Moderate damage at a number of locations in Jasper, Kootenay and Yoho national parks
White pine blister rust, *Cronartium ribicola* J. C. Fischer	Current	Found on alternate host in Amiskwi Valley, Y.N.P. None found on pine.

TABLE II - Other Noteworthy Insects and Diseases - Cont'd.

Causal Agent	Host	Remarks
Snow mould, *Herpotricha nigra* Hartig	E. spruce A. fir Juniper	Common throughout the Parks at elevations above 6000 feet.
Pine needle cast, *Hypodermella concolor* (Dearn.) Darker	Lp. pine	Severe at west end of Maligne Lake J.N.P. and near Hector Lake, B.N.P. Light near Saskatchewan Crossing and along Briant Creek Trail, B.N.P.
Snow mould, *Neopeckia coulteri* (Pk.) Sacc.	Lp. pine	Found at 6500 foot level in Marmot Basin, J.N.P.
Stalactiforme rust, *Peridermium stalactiforme* Arth. & Kern	Dwarf mistletoe brooms on Lp. pine	Found on 3 separate brooms in Hector Lake area B.N.P. This substantiates belief that dwarf mistletoe is an alternate host for this rust.
Fir needle rust, *Pucciniastrum goeppertianum* (Kuehn) Kleb.	A. fir Blueberry	Light throughout the Parks on the alternate host, blueberry. Moderate near the Paint Pots, K.N.P. and severe along the Shanks Tower Road, K.N.P. Light on coniferous host at a few locations in each Park.
Tar spot, *Rhytisma salicinum* (Pers.) Fr.	Willow	Severe 10 miles north of Columbia Ice Fields, J.N.P. and in the Amiskwi Valley, Y.N.P.

TABLE III

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	Re-examine 1969.
3-2	Sundance Canyon	Atropellis piniphila (Weir) Lohman & Cash	Re-examined 1965. 18% of pine infected. Re-examine 1969.
3-3	59.5 miles north Lake Louise Junction.	Peridermium stalactiforme Arth. & Kern	Re-examine 1968.
3-9	Snaring River	Arceuthobium americanum Nutt. ex Engelm.	Re-examine 1968.
3-13	Jasper Townsite	Arceuthobium americanum Nutt. ex Engelm.	Re-examined 1966. Average infection 44%.
3-14	Marmot Basin Trail	Atropellis piniphila (Weir) Lohman & Cash	Re-examined 1965. 32% of pine infected. Re-examine 1967.
3-19	Settlers Road	Peridermium harknessii J. P. Moore	Re-examined 1965. Only north end of outbreak tallied. 64% of pine infected. Re-examine 1967.
3-20	Between Mt. Eisenhower and Johnston's Canyon	Arceuthobium americanum Nutt. ex Engelm.	Re-examined 1966. Infection still active. Re-examine 1970.
3-21	Between Astoria and Whirlpool rivers	Arceuthobium americanum Nutt. ex Engelm.	Re-examine 1967
3-22	Between Astoria and Whirlpool rivers	Atropellis piniphila (Weir) Lohman & Cash	Re-examined 1965 but results inconclusive. Re-examine 1967.

TABLE IV

NEEDLE MINER SEQUENTIAL SAMPLING OF
PERMANENT SAMPLE PLOTS

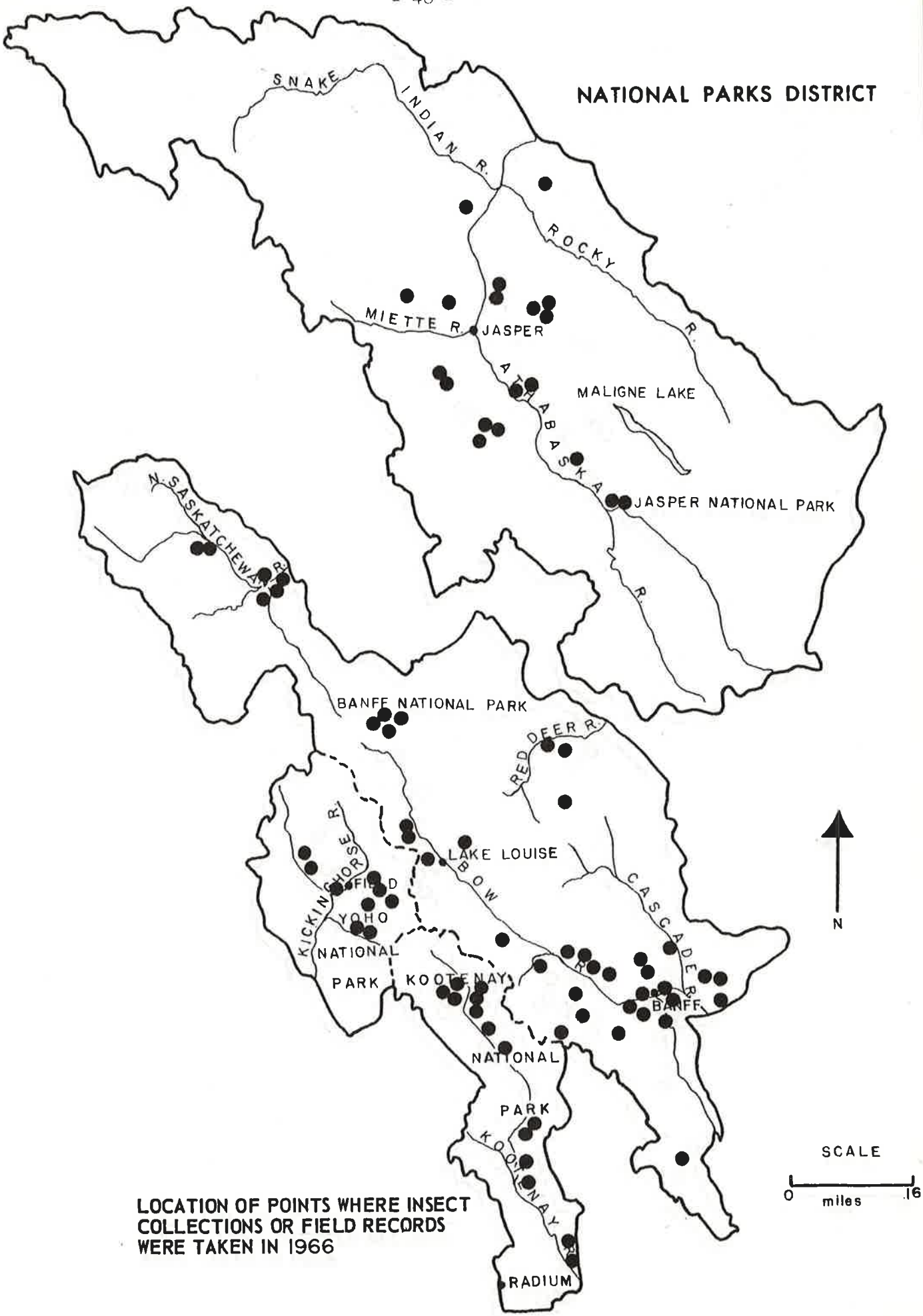
Locality	Grid	Elevation	Larvae per 5 year tip	Category
Jasper National Park				
Mt. Edith Cavell Road	11-42-584	4600	.025	Light
Sunwapta Falls	11-46-581	5000	.25	Light
Banff National Park				
Lake Minnewanka	11-60-567	5400	3.57	Light
Stony Creek	11-59-569	6000	.15	Light
Johnstons Canyon	11-58-567	5200	21.92	Medium-Low
Mt. Eisenhower	11-56-568	5300	9.80	Light
Mt. Norquay-Parking Lot	11-59-567	6000	12.25	Medium-Low
-Middle plot	11-59-567	5700	22.82	Medium-Low
-Lower plot	11-59-567	5400	22.67	Medium-Low
Sulphur Mt.	11-59-566	5300	.52	Light
Massive Mt.	11-58-567	5100	13.62	Medium-Low
Lake Louise	11-55-569	5700	0	Nil
Yoho National Park				
Field - west	11-53-569	3800	0	Nil
Field - east	11-54-569	4600	3.90	Light
Kootenay National Park				
Hawk Creek	11-56-580	4500	9.37	Medium-Low

TABLE VI

DWARF MISTLETOE SEQUENTIAL SAMPLING, JASPER TOWNSITE.

Location	Method	No. of trees infected	No. of healthy trees	No. of dead trees
C.N.R. South	Line tally	93-(51%)	89	4
Athletic Field	Total tally	296-(30%)	674	8
Garden Lots (east half)	Total tally	309-(45%)	351	23
C.N.R. North	Line tally	185-(82%)	5	34

Average per cent of living trees infected 44.


NATIONAL PARKS DISTRICT
SNAKE
INDIAN R.
ROCKY
R.
MIETTE R.
JASPER
ATHABASKA
R.
MALIGNE LAKE
JASPER NATIONAL PARK
N. SASKATCHEWAN R.
BANFF NATIONAL PARK
RED DEER R.
KICKING HORSE R.
FIELD
YOHO
NATIONAL
PARK
LAKE LOUISE
BOW
R.
CASCADE R.
BANFF
KOOTENAY
NATIONAL
PARK
KOOTENAY
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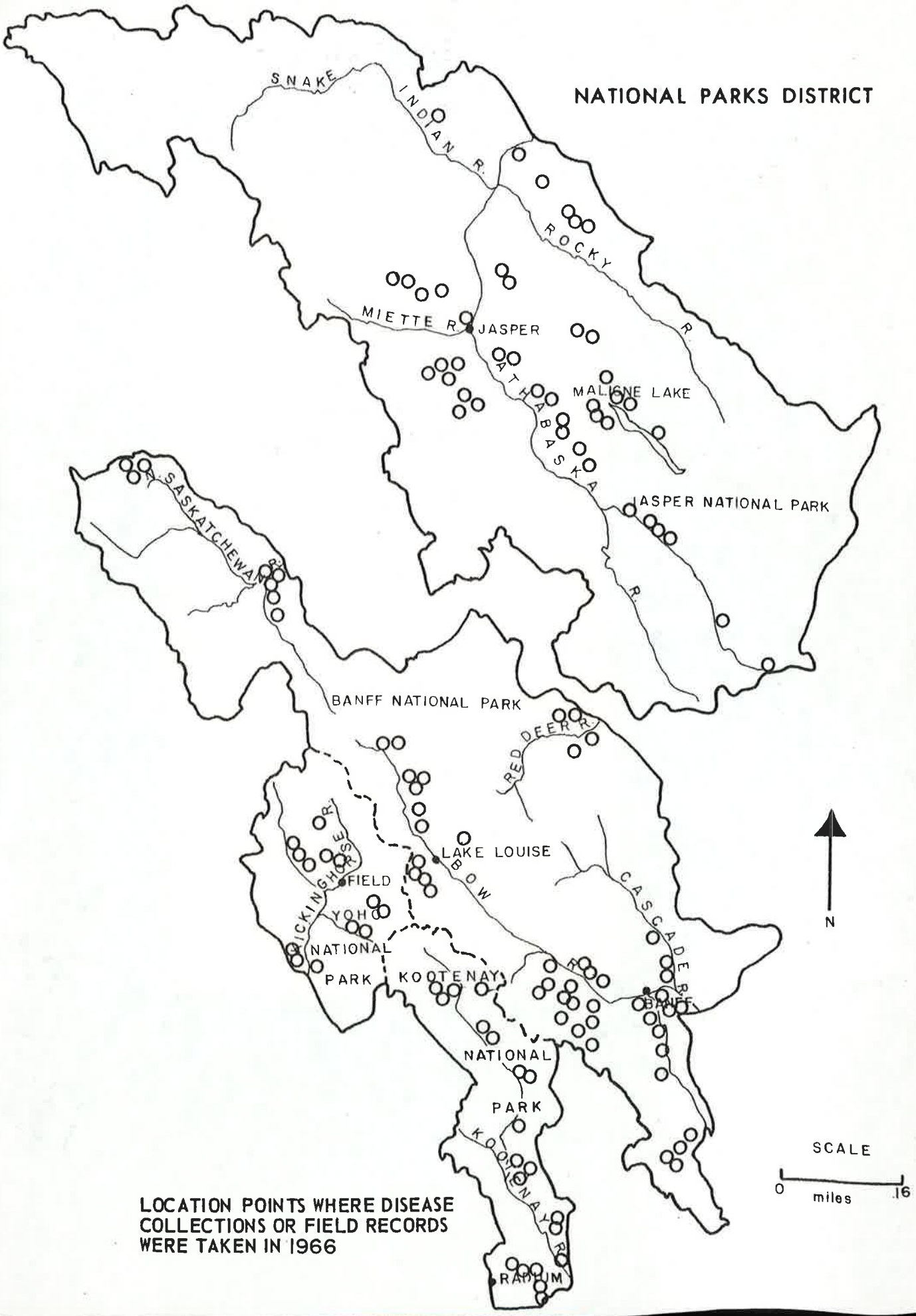
SCALE
0
miles
16
LOCATION OF POINTS WHERE INSECT
COLLECTIONS OR FIELD RECORDS
WERE TAKEN IN 1966


NATIONAL PARKS DISTRICT
SNAKE
INDIAN R.
ROCKY
R
MIETTE R.
JASPER
ATHABASKA
MALIGNE LAKE
R
N. SASKATCHEWAN R.
JASPER NATIONAL PARK
R
BANFF NATIONAL PARK
RED DEER R.
LAKE LOUISE
BOW
R.
KICKING HORSE
FIELD
YOHO
NATIONAL
PARK
KOOTENAY
CASCADE R.
BANFF
NATIONAL
PARK
KOOTENAY R.
RADIUM
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SCALE
0
miles
16
LOCATION POINTS WHERE DISEASE COLLECTIONS OR FIELD RECORDS WERE TAKEN IN 1966