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FALSE HEMLOCK LOOPER INFESTATIONS IN THE KAMLOOPS FOREST DISTRICT, 1972

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In 1972 the western false hemlock looper, Nepytia freemani Munroe, caused noticeable, and in a number of instances, severe defoliation of approximately 3,200 acres of semi-mature Douglas-fir trees in the vicinity of Salmon Arm and Enderby (Map 1). The largest of 13 infestations in the Salmon Arm area was on the south and west slopes of Bastion Mountain. Near Sunnybrae 600 acres of Douglas-fir trees were severely defoliated and on the west slope of Bastion Mountain there were 100 acres of moderate, and 500 acres of light defoliation. Moderate to severe defoliation occurred near Celista, White Lake, Gleneden and between Salmon Arm and Canoe. Defoliation was lighter in the seven infestation areas between Enderby and Mara Lake (Table 1). Most of the affected trees were in almost pure stands of Douglas-fir on dry, often rocky sites, and usually on private property near residential or recreational areas.

Beating samples indicate that a rapid increase in population density of this looper had occurred at several of the sampling stations in the Salmon Arm region between 1970 and 1971.

The only other known serious epidemic of this looper in British Columbia occurred in the Windermere Valley from 1947 to 1949 and resulted in some top-killing and tree mortality over several thousand acres of Douglas-fir stands. False hemlock loopers were numerous in 1962 in the vicinity of Chase, Pritchard and Adams Lake. In 1963, larvae caused light defoliation of Douglas-fir on 100 acres south of Chase: the ensuing moth emergence and oviposition was successful. However, the infestation collapsed in June 1964, apparently caused by abnormally cool wet weather conditions while larvae were in their early instars.

Table 1. False hemlock looper infestations, Kamloops Forest District, 1972

Map Reference	Location	Areas of defoliation in acres	Defoliation intensity
1	Celista	100	Moderate
2	Blind Bay	100	Light
3	White Lake	300	Heavy
4	S.W. of Carlin	75	Moderate
5	Carlin	200	Moderate
6	W. of Bastion Mtn.	100	Moderate
7a	Sunnybrae	500	Light
7b	Sunnybrae	600	Heavy
8	Paradise Point	100	Heavy
9	Gleneden	100	Moderate
10	Broadview	100	Heavy
11	Broadview	50	Heavy
12	Broadview	25	Moderate
13	Canoe Cr.	75	Light
14a	Mara	200	Moderate
14b	Mara	100	Light
15	Grandview Bench	50	Light
16	Grindrod	25	Light
17a	Grindrod Jct.	100	Light
17b	Grindrod Jct.	50	Moderate
18	N.W. of Enderby	100	Light
19	N.E. of Enderby	50	Light
20	N.E. of Enderby	100	Light

Successful moth emergence and good weather conditions for egg laying prevailed in 1972. A large moth flight was reported in the Salmon Arm area late in August and early in September of 1972. To gain an insight on spread of the outbreak through moth dispersal, egg samples were taken in the center, and perimeter of some infestations, as well as at points several miles beyond known infested stands. Analysis of the sample data indicated that the majority of moths left the center of heavily defoliated areas and laid eggs on the foliage of trees near the perimeter. While most eggs were on needles, they frequently were laid on bare twigs in proximity to adventitious buds. The largest number of eggs were in and around areas of moderate 1972 defoliation, such as Carlin and Gleneden.

Since the western false hemlock looper has seldom reached outbreak proportions, little is known of the relationship between egg density and the amount of defoliation by larvae the following season. A comparison with closely related species of insects, suggests that the larvae from about 50 or more eggs per 18-inch branch-tip could cause moderate to severe defoliation. The highest count (near Carlin) averaged 180 eggs per branch (Table 2).

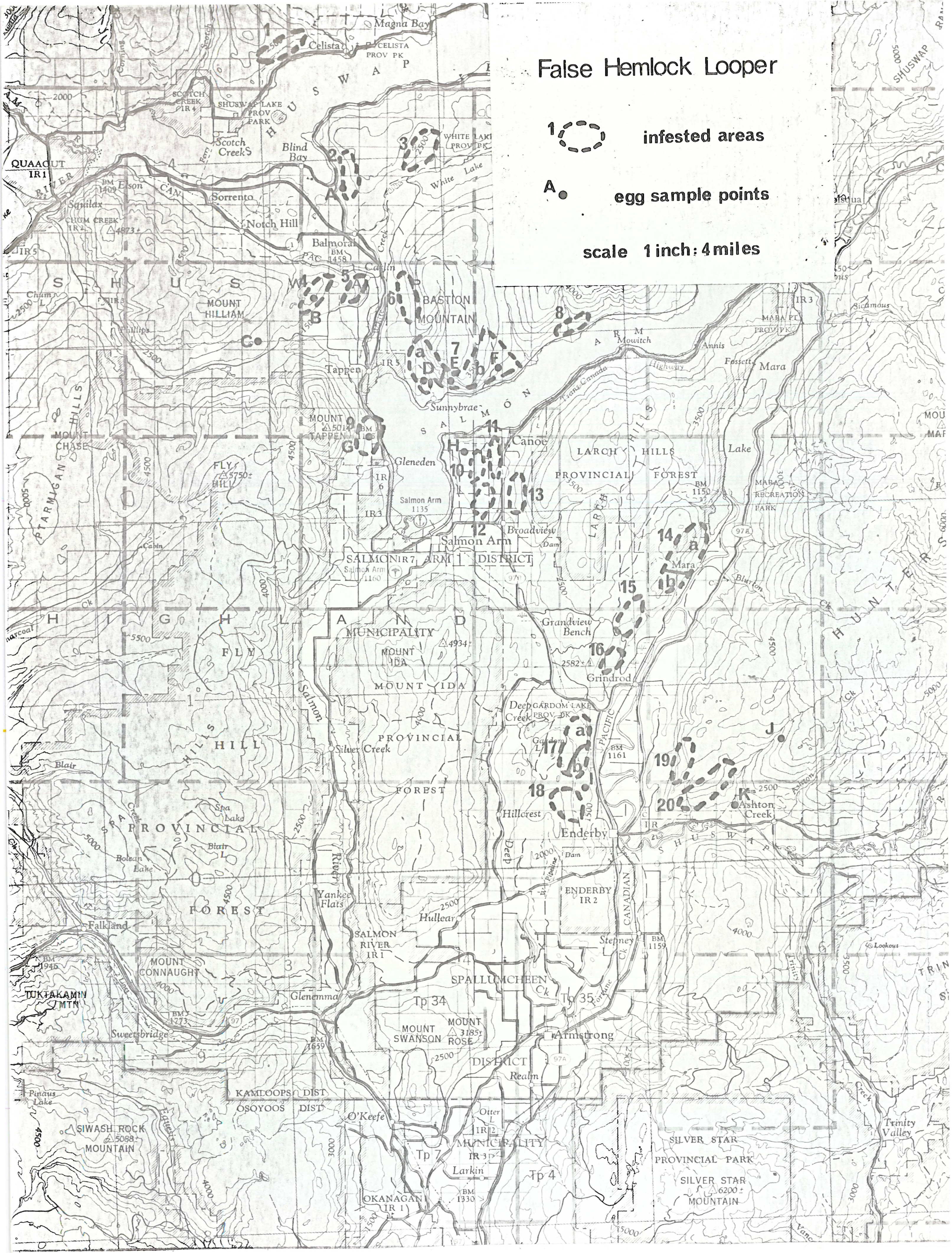
Table 2. Summary of false hemlock looper egg samples, Kamloops Forest District, 1972 and predicted 1973 defoliation

Map Reference	Location	Defoliation 1972	Avg. no. eggs per 18-inch branch	Anticipated 1973 defoliation
A	Blind Bay	Light	4.7	Light
B	S.W. of Carlin	Moderate	180.0	Heavy
C	Skimikin	Nil	2.3	Light
D	Mobley Rd.	Light	79.0	Heavy
E	Sunnybrae, mile 4	Heavy	42.0	Moderate 1/
F	Sunnybrae, mile 6	Heavy	46.8	Moderate 1/
G	Gleneden	Moderate	164.2	Heavy
H	Broadview	Moderate to Heavy	61.8	Heavy
I	Glenmary Rd. (Enderby)	Nil	4.3	Light
J	Brash Cr., mile 4	Nil	0.3	Nil
K	Brash Cr., mile 1	Nil	8.7	Light

1/ Moderate egg population, but enough larvae may hatch in 1973 to defoliate trees severely defoliated in 1972.

No tree mortality was noted even in the more heavily defoliated stands near Sunnybrae, White Lake and Broadview, although where defoliation exceeded 90%, twig and bud mortality was common in the upper crowns of the trees. On severely defoliated trees, normal buds for the 1973 growth formed in the lower crowns; adventitious buds were abundant in the upper crowns. However, since the insects will adapt to laying eggs on bare twigs, the resultant larvae are likely to quickly consume the scanty adventitious foliage produced in 1973. Top-kill and tree mortality may follow.

To date, natural control factors have not been significant. No virus diseases were detected in larvae and pupae collected during the summer. Parasites were common in pupal collections (up to 12%) but did little to deplete the large looper population. The infestation is expected to increase in area and intensity in 1973 unless weather conditions become unfavorable to the insect.



False Hemlock Looper
infested areas
egg sample points
scale 1 inch: 4 miles
Magna Bay
Celista
CELISTA PROV PK
SHUSWAP LAKE PROV PARK
Scotch Creek
Blind Bay
WHITE LAKE PROV PK
White Lake
QUAAOUT IR1
Squilax
Sorrento
Notch Hill
CHUM CREEK IR 2
Balmoral
Carlin
BASTION MOUNTAIN
MOUNT HILLIAM
Tappen
Sunnybrae
Mowitch
MOUNT TAPPEN
MOUNT CHASE
Gleneden
Canoe
LARCH HILLS PROVINCIAL FOREST
FLY HILL
Salmon Arm
Broadview
SALMON ARM DISTRICT
Mara
Annis
Fossett
MARA PT PROV PK
MARA RECREATION PARK
Grandview Bench
Grindrod
MUNICIPALITY
MOUNT IDA
MOUNT IDA PROVINCIAL FOREST
Silver Creek
Deep Creek
GARDOM LAKE PROV PK
Hillcrest
Enderby
Ashton Creek
ENDERBY IR 2
PROVINCIAL FOREST
Falkland
Yankee Flats
Hullcar
SALMON RIVER IR 1
MOUNT CONNAUGHT
Glenemma
SPALLUMCHEEN
MOUNT SWANSON
MOUNT ROSE
Armstrong
Stepney
Sweetsbridge
TUKTAKAMIN MTN
KAMLOOPS DIST
OSOYOOS DIST
O'Keefe
Realm
SIWASH ROCK MOUNTAIN
Larkin
OKANAGAN IR 1
SILVER STAR PROVINCIAL PARK
SILVER STAR MOUNTAIN
Trinity Valley