



EUROPEAN PINE SHOOT MOTH SURVEY
SOUTH COASTAL BRITISH COLUMBIA
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by
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AND RURAL DEVELOPMENT
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INTRODUCTION

An intensive survey for the European pine shoot moth, Rhyacionia buoliana (Schiff.), was made for the second consecutive year in 1966. This insect, found in southern B. C. since 1927, is of considerable importance in plantations of two- and three-needle pines in eastern North America, and while damage in British Columbia up to now has been confined largely to ornamentals, there remains the possibility that it might become established in natural stands and plantations. Surveys in 1963, 1964 and 1965 found larvae of the insect in ornamental plantings and nurseries near Victoria, in the Lower Fraser River and Okanagan valleys, and at Kamloops (Ross et al. 1965; Harris et al. 1965).

This report gives the results of a recent survey of ornamentals, plantations, nurseries and natural stands on southern Vancouver Island and the southern mainland coast. A report of a similar survey of the Kamloops-Okanagan area in the interior of the Province has been prepared (Ross et al. 1966).

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METHODS

The survey was conducted by personnel of the Department of Forestry and Rural Development, Forest Insect and Disease Survey, and Canada Department of Agriculture, Plant Protection Division, between May 17 and June 9. A four-man appraisal crew supported by Forest Insect and Disease Survey District rangers examined home gardens, municipal plantings, several nurseries and natural stands; Plant Protection Division personnel examined nurseries. The areas surveyed included southeastern Vancouver Island and the Lower Mainland from Powell River to the Fraser Valley, east to Hope and north to Lytton in the Fraser Canyon. Greater Victoria and Vancouver and several larger towns in the Lower Fraser Valley were omitted from the survey as the shoot moth was known to occur in these areas. Mined shoots were collected and sent to the Insectary at the Forest Research Laboratory in Victoria for rearing and identification.

RESULTS

Ornamental Plantings and Native Stands

Two hundred and eight ornamental plantings were examined on Vancouver Island (Table I and Map I). The European pine shoot moth was found at one municipal planting at Sidney (Table II). No shoot moth was detected in six naturally growing Vancouver Island pine stands.

On the Mainland, planted and naturally growing pines were examined at 352 locations (Table I and Map 2). Shoot moth larvae were present on ornamental pines at Vancouver, Mission City and Yarrow (Table II), but none were detected on naturally occurring native pine.

Several species of insects causing damage similar to that of the European pine shoot moth were found in native stands on Vancouver Island and the Mainland (Table III).

Nurseries

Fourteen nurseries were visited on Vancouver Island; eleven shoot moth infested trees were found of 2,648 pines examined (Table IV and Map 1). The infested trees were located at Wellington and Victoria (Table V).

Thirty-seven nurseries were visited on the Lower Mainland and 118 infested trees were found among a total of 105,954 pines examined (Table IV and Map 2). Infested trees occurred in seven nurseries in the municipalities of Richmond, Burnaby, Langley, Pitt Meadows, Sumas, and Chilliwack (Table V).

Several other shoot-damaging insects were collected during the nursery survey. These were Epinotia hopkinsana (Kearfott) on Pinus cembra, Dioryctria sp. on Pinus contorta and Microlepidoptera (damage only) on Pinus mugo.

The infested nursery stock had been introduced from Holland, eastern Canada and U.S.A. In some instances secondary spread had occurred to trees which were previously free of attack.

CONCLUSIONS

The European pine shoot moth continued to attack pines in gardens, parks and nurseries on southern Vancouver Island and the Lower Mainland as far east as Chilliwack but there was no extension of the boundaries of the infestation beyond that found in the 1965 Survey. The pest has eluded detection on imported stock and has been spread by the movement of infested stock, particularly from nurseries where increased numbers of shoot moth were found in 1966. The recommendations resulting from the 1965 survey are here reiterated; to safeguard native stands it is suggested that:

1. pines be fumigated as a condition of entry to the Province or they should be grown under post-entry quarantine for observation for one year before sale.
2. a method procedure for regulating inter-provincial shipments be established to help minimize the chance of spread from infested to non-infested regions.
3. commercial growers consider raising pine from seed rather than importing stock for planting.
4. infested shoots, particularly in nurseries, be clipped and destroyed; samples of such damage should be submitted to the Victoria laboratory. Infested pines should not be sold and where any infested trees are found all pines in the nursery should be sprayed with an insecticide effective against this pest.

Special sampling for the European pine shoot moth should be continued in 1967, but at a reduced intensity from the current year.

REFERENCES

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Report on the European pine shoot moth survey interior British Columbia, 1965. Can. Dept. For., For. Ent. Lab., Vernon. 4pp.
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Table I

Location and Species of Pines in Home Gardens and Municipal Plantings
Examined for European Pine Shoot Moth, South Coastal B. C., 1966

Location	Mugho	Scots	Austrian	Other Exotic Pines ^{1/}	Native Pines ^{2/}
Sooke	8	3	0	0	41
Sidney	41	6	0	0	90
Duncan	72	8	0	0	28
Crofton	7	1	0	0	2
Chemainus	2	4	0	0	4
Ladysmith	18	3	0	0	40
Nanaimo	39	11	0	10	122
Powell River	54	1	0	0	17
Sechelt	3	0	0	0	64
Gibsons Lndg.	5	0	0	0	9
Squamish	6	1	0	2	91
Horseshoe Bay	29	33	0	17	200
Greater Vancouver	211	175	5	18	568
Ladner	14	5	10	4	24
Tsawwassen	27	5	0	0	0
Boundary Bay	5	0	0	1	16
Pitt Meadows	0	100	0	0	0
Haney	0	9	0	4	46
Aldergrove	2	15	0	0	15
Mission City	14	206	0	213	42
Abbotsford	2	0	3	0	128
Yarrow	6	0	0	0	33
Sardis	6	0	0	0	7
Chilliwack	5	16	0	1	171
Rosedale	1	0	0	0	13
Agassiz	3	1	0	0	18
Hope	6	2	0	0	50
Yale	0	0	0	0	8
Totals	586	605	18	270	1,847

^{1/} "Other exotics" include the following:

<u>Pinus resinosa</u>	Red pine
<u>P. parviflora</u>	Japanese white pine
<u>Pinus spp.</u>	Hybrids

^{2/} "Native species" include the following:

<u>Pinus contorta</u> var. <u>latifolia</u>	Lodgepole pine
<u>P. monticola</u>	Western white pine
<u>P. ponderosa</u>	Ponderosa pine

Table II

Location and Species of Pines Infested by the European Pine Shoot Moth in
Home Gardens and Municipal Plantings, South Coastal B. C., 1966

Location	Species	No. of trees examined	No. of trees infested
Sidney	Mugho	41	5
Greater Vancouver	Mugho	211	22
	Red pine	4	1
	Scots	175	53
	Austrian	5	1
	Lodgepole	989	380
	Ponderosa	44	1
Yarrow	Mugho	6	1
	Austrian	5	3
	Lodgepole	24	20
	Western white	8	3
Mission City	Lodgepole	31	1

Table III

Shoot-mining Insects Encountered in Native Pine Stands Causing Damage
Similar to European Pine Shoot Moth, South Coastal B. C., 1966

Location	Tree species	No. trees in plot	Insect
Glen Lake	Lodgepole	100	Microlepidoptera
Saseenos	"	100	" - damage
Mount Finlayson	"	100	" - "
Spectacle Lake	"	100	"
Duncan + 8 mi. N.	"	100	<u>Epinotia hopkinsana</u> (Kearfott)
Fanny Bay	"	100	<u>Diorycetria</u> sp. - damage
Sechelt	"	100	<u>Diorycetria</u> sp. - damage
Horseshoe Bay	"	100	possible <u>R. buoliana</u> -damage
Lulu Island	"	300	Microlepidoptera
Port Coquitlam	"	100	possible <u>R. buoliana</u> -damage

Table IV

Incidence of European Pine Shoot Moth by Pine Species in 51 Nurseries
Inspected, South Coastal B. C., 1966

Species	No. trees examined	No. trees infested by shoot moth
<u>Pinus aristata</u>	606	0
<u>P. cembra</u>	59	0
<u>P. contorta</u>	1,643	12
<u>P. densiflora</u>	167	0
<u>P. excelsa</u>	7,400	0
<u>P. jeffreyi</u>	286	0
<u>P. monticola</u>	5,100	0
<u>P. mugo</u>	72,945	67
<u>P. nigra</u>	5,060	0
<u>P. parviflora</u>	84	0
<u>P. peuce</u>	1,400	0
<u>P. ponderosa</u>	278	0
<u>P. resinosa</u>	15	0
<u>P. strobus</u>	3,816	0
<u>P. sylvestris</u>	9,176	47
<u>P. thunbergii</u>	564	2
<u>Pinus sp.</u>	3	1
Totals	108,602	129

Table V

Location of Infested Nurseries and Origin of Infested Stock, South Coastal
B.C., 1966

Nursery	Species	No. trees examined	No. trees infested	Origin of stock
Green Thumb Nursery, Wellington, B.C.	<u>P. sylvestris</u>	25	3	Holland
Lakeview Gardens, Victoria, B.C.	<u>P. mugo</u>	10	5	Holland
	<u>P. sylvestris</u>	2	2	"
	<u>Pinus sp.</u>	3	1	"
H. M. Eddie & Sons, Richmond, B.C.	<u>P. contorta</u>	250	7	Unknown
	<u>P. mugo</u>	800	1	Holland
	<u>P. thunbergii</u>	180	2	Unknown
Dogwood Nursery, Aldergrove, B.C.	<u>P. contorta</u>	35	3	Local
Lloyd Smith Nursery, Pitt Meadows, B.C.	<u>P. mugo</u>	1,000	1	Holland
	<u>P. sylvestris</u>	50	3	Local
W. van Vloten Nursery, Pitt Meadows, B.C.	<u>P. mugo</u>	1,500	5	Holland
Frederickson Nursery, Burnaby, B.C.	<u>P. sylvestris</u>	200	18	Ontario
Reimer's Nursery, Yarrow, B.C.	<u>P. mugo</u>	2,000	9	U.S.A.
	<u>P. mugo</u>	5,000	40	Holland
Cannor Nursery, Sardis, B.C.	<u>P. contorta</u>	2	2	Local
	<u>P. mugo</u>	2,500	6	Holland
	<u>P. sylvestris</u>	350	21	Local



