Status of Insects in Kemptville District

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INFORMATION REPORTS - INSECT AND DISEASE SURVEYS

Ontario, 1968

FOREWORD

The Forest Insect and Disease Survey maintains a continuing interest in improving existing sampling methods and in developing new techniques for rating forest pests and appraising damage. In 1968, a new approach for evaluating incidence and levels of infection of a number of tree diseases was explored. This involved determining degrees of damage in random and non-random plots in relation to the basal area of infected stands, the ultimate objective being to provide information on the impact of the organisms on forest stands in Ontario. Studies during the winter to test the accuracy of the new sampling system will be useful for planning field work in 1969. Improvement of insect survey methods in 1968 was largely directed toward jack-pine budworm sampling with emphasis on egg population studies. To this end, the distribution of egg masses on individual branches and at various crown levels of sample trees was investigated as a basis for determining the nature and size of samples required to assess population levels. The value of these new approaches in disease and insect sampling will be proven with use in forthcoming field seasons.

Marked changes in insect and disease conditions were recorded in large areas of the Province in 1968. A sharp increase in population levels of the spruce budworm and jack-pine budworm occurred in many parts of Ontario. The largest areas of infestation of the spruce budworm were located in the Burchell Lake area in the Port Arthur District, in parts of the Chapleau, Kapuskasing and Swastika districts and in southeastern Ontario. Localized infestations were centered in Parkinson Township in the Sault Ste. Marie District and in Fairbanks Township west of Sudbury. Egg surveys in most of the above areas except Burchell Lake, indicated that infestations will increase in extent in 1969.

The chemical control operation undertaken by the Ontario Department of Lands and Forests against the spruce budworm in the Burchell Lake area dominated insect surveys in western Ontario during several periods from May until September. Technicians were involved in intensive sampling to delineate the area to be treated, to time the spray applications and to assess spruce budworm numbers before and after the control operation.

Infestations of the jack-pine budworm abated somewhat in the Kenora and Fort Frances districts but several years of severe defoliation, particularly on rocky sites, caused considerable crown damage. In parts of the Sault Ste. Marie and Pembroke districts very severe defoliation of both jack pine and red pine was reported. Other insects occurring in particularly high numbers in 1968 included the saddled prominent, larch casebearer and several species of cedar leaf miners.

Devastation of elm by Dutch elm disease continued in southern Ontario and numerous new centers of infection were found throughout a large part of the range of elm in central Ontario. A vector of Dutch elm disease, the smaller European elm bark beetle extended its range eastward along the north shore of Lake Ontario and St. Lawrence River. Hypoxylon canker of poplar proved to be a serious problem in many parts of Ontario. Evaluations revealed particularly high levels of infection in aspen stands in the Sault Ste. Marie and Sudbury districts. Scleroderris canker of pine again caused considerable

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mortality in young red pine and jack pine plantations in parts of central and northeastern Ontario. Fomes root rot usually associated with thinning operations, caused varying amounts of mortality in red pine plantations in southern Ontario. Four new centers of infection of this disease were found in Larose forest in the Kemptville District in 1968. Details on the above and other noteworthy insect and disease problems are contained in the report that follows.

J. E. MacDonald

STATUS OF INSECTS IN KEMPTVILLE DISTRICT

M. J. Applejohn

Black-headed Budworm, Acleris variana Fern.

Light infestations of this insect occurred on eastern hemlock along the south side of Rideau Lake in South Burgess Township and on white spruce plantings in the Leeds County Forest in South Crosby Township. Small numbers of larvae and pupae were found on beating samples at numerous locations. Five quantitative sample points were established in 1968 to measure populations (Table 7).

TABLE 7

Summary of Black-headed Budworm Larval Counts in the Kemptville District in 1968

Location (township)	Host	Av. d.b.h. of sample trees in inches	Total no. of larvae per 15-tray sample
South Burgess	eH	10	58
Fitzroy	wS	10	21
East Hawkesbury	wS	6	0
Cambridge	wS	6	3
South Crosby	wS	4	39

Cedar Leaf Miners, Argyresthia thuiella Pack, and Argyresthia freyella Wlshm.

A general upsurge in population levels of these insects occurred throughout the district. Heavy infestations were observed along the Newboyne Road in Bastard Township along Highway 2 near Hoople Creek in Williamsburg Township and north of Cornwall in Cornwall Township. Small pockets of light and medium infestation were noted commonly in Lanark and Leeds counties and in the Alexandria area in Glengarry County.

Spruce Budworm, Choristoneura fumiferana (Clem.)

An appreciable increase in the extent and intensity of spruce budworm infestations was recorded in 1968. The heavy infestation which occurred in an area of about five square miles in Fitzroy and Huntley townships in 1967 spread into most spruce and balsam stands in Fitzroy, Torbolton, March, Huntley and the northeastern half of Pakenham Township. West of this area, a light infestation occurred in most host stands in the townships of Lavant, Darling, Lanark, Ramsay, and southwestern Pakenham (see map). Small pockets of heavy infestation occurred in Dalhousie, Marlborough, Mountain and Clarence townships. Small numbers of larvae were found in all stands examined throughout the remainder of the district. Egg sampling carried out in the fall and winter of 1968 indicates that heavy infestations will persist in 1969. Results of egg counts and defoliation estimates are summarized in Table 8.

TABLE 8

Summary of Spruce Budworm Egg Mass Counts and Defoliation Estimates in the Kemptville District in 1967 and 1968 and Infestation Forecasts for 1969

Location (township)	Host	Per cent current foliage destroyed 1967	Per cent current foliage destroyed 1968	Cumulative no. egg masses per 100 sq. ft. of foliage in 1968	Defoliation forecast for 1969
Clarence	wS	---	93	495	H
Clarence	wS	---	3	Nil	Nil
Marlborough	wS	---	63	817	H
Huntley	bF	17.2	88	800	H
Huntley	wS	---	81	1450	H
Fitzroy	wS	61.5	93	363	H
Pakenham	wS	---	91	400	H
Pakenham	bF	---	10	13	L
Dalhousie	bF	3.0	67	675	H

Larch Casebearer, Coleophora laricella Hbn.

After remaining at a low level for several years, population levels of the larch casebearer increased markedly in 1968 (Table 9). Heavy infestations caused severe browning of foliage in Oxford, Goulbourn, Ramsay and Lavant townships and medium infestations were noted in Augusta and Edwardsburg townships. Numerous light infestations occurred elsewhere in the district.

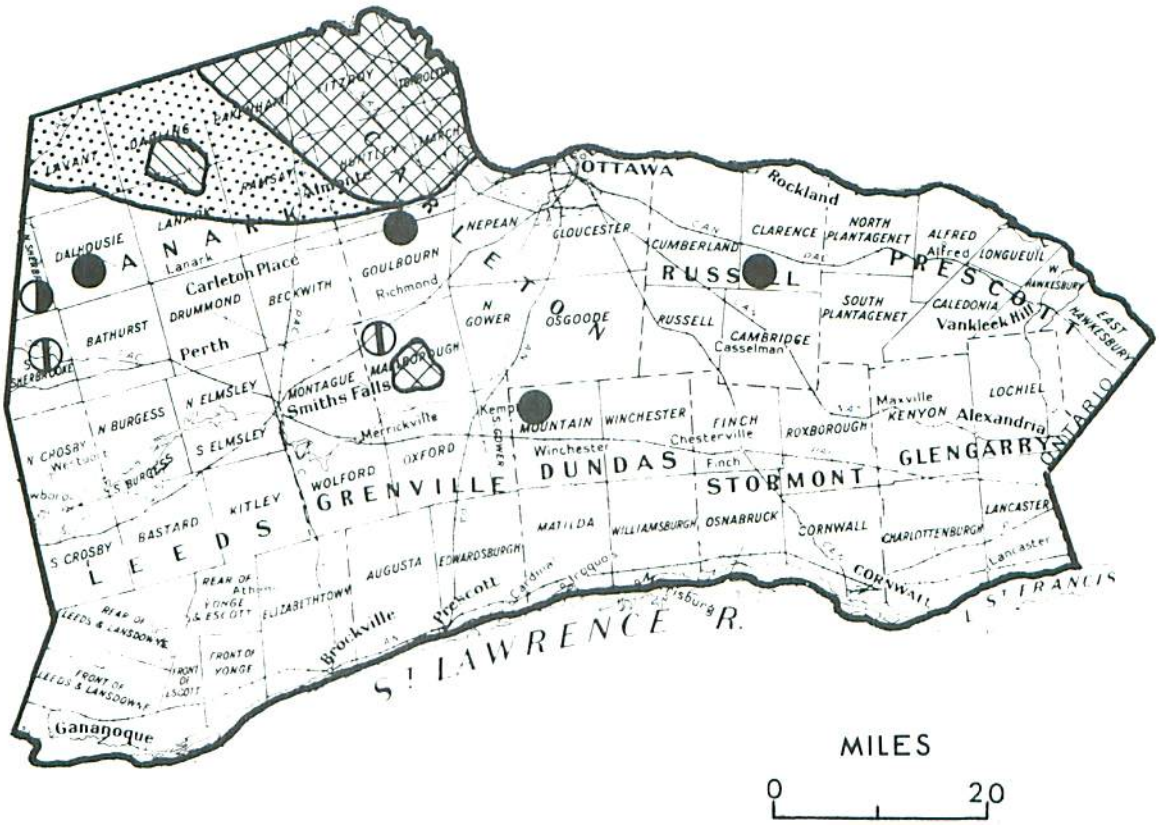
TABLE 9

Summary of Larch Casebearer Larval Counts in the Kemptville District from 1966 to 1968

Note: Counts were based on the examination of four 18-inch branch tips from each of four trees at each point.

Location (township)	Av. d.b.h. of sample trees in inches	Av. no. of larvae per 18-inch branch tip 1966	1967	1968
Dalhousie	4	3.7	4.1	18.3
Montague	3	10.3	8.9	6.3
Oxford	4	3.4	9.5	37.6
North Plantagenet	4	3.4	4.5	18.3
Beckwith	6	---	---	4.0

KEMPTVILLE DISTRICT



SPRUCE BUDWORM

Areas where infestations occurred in 1968

Legend

Light infestation ---------- or ◐

Medium infestation ---------- or ◑

Heavy infestation ---------- or ●

Nursery Pine Sawfly, Diprion frutetorum (F.)

An increase in numbers of this sawfly was recorded at four of five permanent sample points (Table 10). The highest populations occurred in Oxford Township where 76 larvae were counted on a 15-tray sample. Small numbers of larvae were recovered from beating samples from Scots and mugho pine in Oxford, Drummond, North Burgess and Clarence townships.

TABLE 10

Summary of Nursery Pine Sawfly Larval Counts in the Kemptville District in 1967 and 1968

Location (township)	Av. d.b.h. of sample trees in inches	Total no. of larvae per 15-tray sample 1967	1968
Marlborough	4	40	33
Oxford	6	15	76
Winchester	6	3	6
Beckwith	3	4	15
Bathurst	3	1	30

European Spruce Sawfly, Diprion hercyniae (Htg.)

Little change occurred in larval populations of this introduced sawfly in 1968. A medium infestation persisted in a white spruce windbreak in North Plantagenet Township where 139 larvae were counted in a 15-tray beating sample (Table 11). A light infestation recurred on open-grown white spruce near Point Fortune in East Hawkesbury Township, however, the infestation reported near Long Sault in Cornwall Township in 1967, disappeared in 1968. Larvae were found commonly in small numbers at numerous locations.

TABLE 11

Summary of European Spruce Sawfly Larval Counts in the Kemptville District in 1967 and 1968

Location (township)	Av. d.b.h. of sample trees in inches	Total no. of larvae per 15-tray sample 1967	1968
Beckwith	10	15	24
Oxford	5	12	15
Ramsay	5	20	10
South Crosby	5	29	36
North Plantagenet	6	158	139

Eastern Pine Shoot Borer, Eucosma gloriola Heinr.

Population levels of this insect increased markedly for the second consecutive year. Particularly high populations occurred in a Christmas tree plantation in Beckwith Township where 940 infested lateral shoots were counted on 100 trees compared with 256 infested shoots in 1967. No infested leaders were observed at this location because the trees were examined after the completion of pruning. A significant increase in the number of attacked shoots was also noted in Cambridge Township (Table 12). Small to medium numbers of infested shoots were observed in numerous plantations throughout the district.

TABLE 12

Summary of Eastern Pine Shoot Borer Damage in the Kemptville District in 1967 and 1968

Location (township)	Host	Av. d.b.h. of sample trees in inches	No. trees examined	No. leaders infested		No. laterals infested	
				1967	1968	1967	1968
Matilda	wP	2	100	12	4	9	17
Oxford	wP	3	"	5	3	14	14
Cambridge	rP	2	"	1	2	12	77
Beckwith	ScP	3	"	0	0	256	940
Marlborough	ScP	3	"	—	2	—	24

Birch Leaf Miner, Fenusa pusilla (Lep.)

Although the area infested by this insect was slightly smaller than in 1967, heavy infestations persisted for the fifth consecutive year. Severe browning of white and wire birch foliage occurred in Prescott, Russell, Dundas, Glengarry, Stormont and the Eastern parts of Carleton and Leeds counties (see map). A small pocket of heavy infestation along the Fall River in South Sherbrook Township declined to medium intensity. Population levels in the second generation in August and September were considerably lower than the first generation. Quantitative sampling at five locations is summarized in Table 13.

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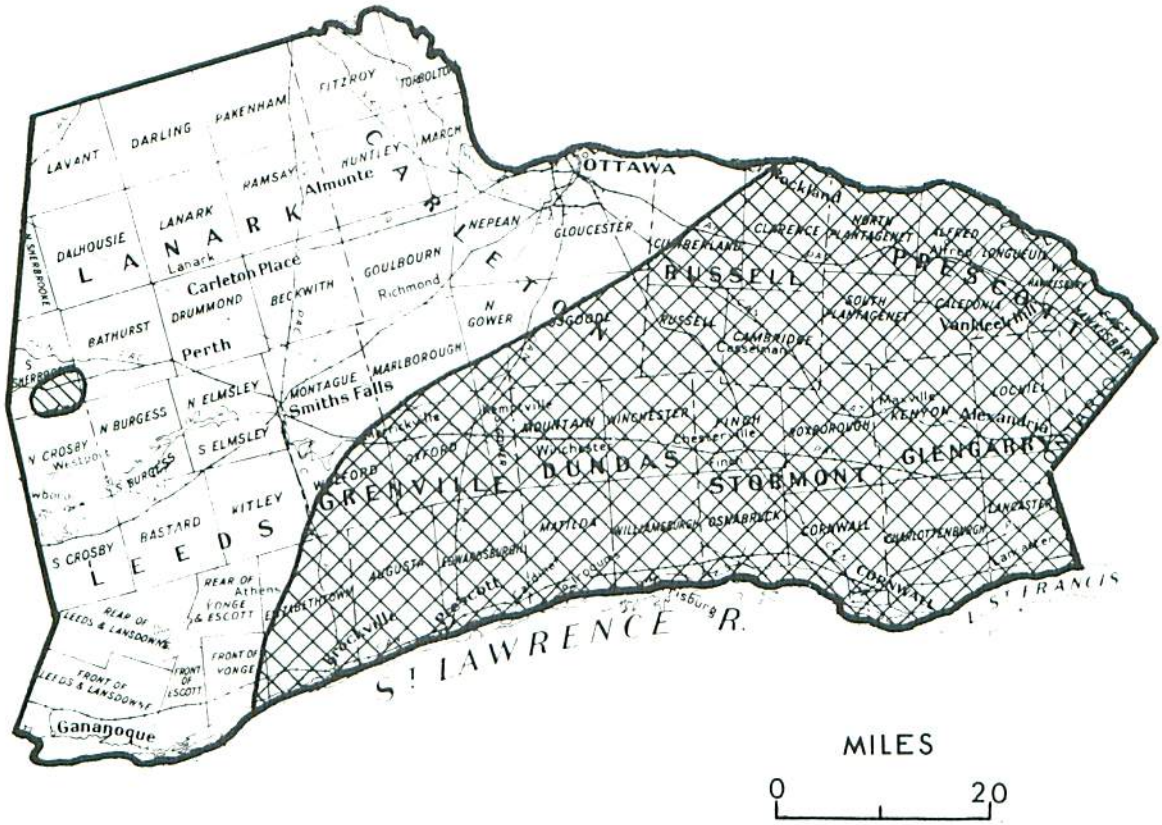


BIRCH LEAF MINER

Areas where infestations occurred
in 1968

Legend

Medium infestation ----------

Heavy infestation ----------

TABLE 13

Summary of Damage Caused by the First Generation of the Birch Leaf Miner in the Kemptville District in 1967 and 1968

Note: Counts were based on examination of 100 leaves taken at random from three trees at each location.

Location (township)	Host	Av. d.b.h. of sample trees in inches	Per cent of leaves infested 1967	Per cent of leaves infested 1968	Total no. of mines 1967	Total no. of mines 1968
Elizabethtown	wB	4	99	100	215	271
East Hawkesbury	wiB	3	92	97	183	203
Williamsburg	wiB	2	91	100	228	310
Cambridge	wiB	3	100	89	237	190
Oxford	wB	3	93	100	218	281

Native Elm Bark Beetle, Hylurgopinus rufipes Eich.

Light to heavy infestations of this beetle occurred wherever dead or weakened elm trees were found in the district. Particularly high populations occurred in the southern parts of Elizabethtown and Augusta townships where heavy infections of Dutch elm disease provided an abundant source of brood material.

Fall Webworm, Hyphantria cunea (Drury)

A moderate increase in numbers of this insect was observed in 1968. Two pockets of heavy infestation persisted along the north shore of the St. Lawrence River near Prescott in Edwardsburg Township and east of Cornwall in Charlottenburg Township. Increased numbers of tents were observed on roadside shrubbery and in orchards throughout the district (Table 14).

TABLE 14

Summary of Fall Webworm Counts in the Kemptville District in 1967 and 1968

Location (township)	No. of tents per mile of roadside 1967	No. of tents per mile of roadside 1968
Osnabruck	18	24
Edwardsburg	23	37
South Gower	3	7
Walford	5	3
Fitzroy	3	8
Cornwall	18	24

Forest Tent Caterpillar, Malacosoma disstria Hbn.

A new pocket of heavy infestation comprising approximately four square miles occurred northeast of Hallville in Mountain Township in 1968. Trembling and largetooth aspen in this area were completely defoliated. Egg band counts made in September revealed an average of thirty-two egg bands per tree, indicating that heavy infestations will persist at this location in 1969. Two small pockets of heavy infestation which occurred in Cambridge and Clarence townships in 1967 declined to light intensity in 1968. Single colonies and individual larvae were common in the remainder of the district.

Balsam Fir Sawfly, Neodiprion abietis complex

High populations of this sawfly persisted for the second consecutive year. Small pockets of heavy infestation occurred in Fitzroy, Pakenham, March, Torbolton, Lanark and Darling townships. Medium infestations were noted in Bathurst, Oxford and Russell townships. Small numbers were observed commonly on beating samples throughout the district.

Red-headed Pine Sawfly, Neodiprion lecontei (Fitch.)

Populations of this sawfly declined abruptly in 1968 (Table 15). Heavy infestations which caused severe defoliation in Dalhousie, South Plantagenet, South Gower, and Oxford townships in 1967 declined to trace levels in 1968. The agent chiefly responsible for this decline was an unidentified egg parasite which destroyed in excess of 90 per cent of the eggs. Due to the very low populations, results of virus control demonstrations in two large plantations were inconclusive.

TABLE 15

Summary of Red-headed Pine Sawfly Colony Counts on Red Pine in the Kemptville District in 1967 and 1968

Location (township)	Av. d.b.h. of sample trees in inches	No. of trees examined in 1968	Av. no. of colonies per tree	
			1967	1968
Bathurst	1	100	0.80	0.02
Dalhousie	2	100	6.10	0.00
North Elmsley	2	50	0.90	0.00
Oxford	3	100	10.90	0.06
South Crosby	2	100	0.10	0.02

A Jack Pine Sawfly, Neodiprion pratti paradoxicus Roh.

Heavy infestations persisted on planted jack-pine in Lanark, South Crosby and Drummond townships and new, heavy infestations were recorded in Nepean, North Crosby and Clarence townships. Light to medium infestations occurred in Torbolton, Oxford and Goulbourn townships. Small numbers were observed on pitch pine near Ivy Lea. Five quantitative sample points were established in 1968 to measure larval populations (Table 16).

TABLE 16

Summary of Jack-pine Sawfly Colony Counts in the Kemptville District in 1968

Location (township)	Av. d.b.h. of sample trees in inches	Av. no. of colonies per tree 1968
Lanark	3	10.0 +
Nepean	3	6.6
Oxford	3	0.3
Torbolton	4	0.1
Bastard	2	0.9

Spring and Fall Cankerworms, Paleacrita vernata (Peck) and Alsophila pometaria Harr.

A continued upward trend in population levels of these insects was evident in 1968. Open-grown trees and small woodlots were severely defoliated in Fitzroy, Pakenham, North Gower and Beckwith townships and moderate defoliation was observed in Bathurst, Goulbourn and South Elmsley townships. Small numbers of larvae occurred at numerous other locations in the district. Elm and basswood were the preferred hosts but other deciduous species were also infested.

White-pine Weevil, Pissodes strobi Peck.

Populations of the white-pine weevil remained at a high level in 1968. Heavy infestation of 12-foot white pine trees occurred in a plantation in Dalhousie Township where 49 per cent of the trees examined were infested and on white pine reproduction in Fitzroy Township (Table 17). Medium infestations were noted on white pine reproduction in Torbolton and Lansdowne townships and small numbers of infested trees were common elsewhere in the district.

TABLE 17

Summary of Damage by the White-pine weevil in the Kemptville District in 1967 and 1968

Note: Counts were based on the examination of 100 white pine trees at each location.

Location (township)	Av. d.b.h. of sample trees in inches	Per cent of trees weeviled 1967	1968
Fitzroy	3	36	34
Bathurst	4	8	15
Cambridge	2	5	2
Dalhousie	3	49	49
Oxford	3	6	11

Larch Sawfly, Pristiphora erichsonii Htg.

A slight increase in numbers of the larch sawfly occurred in 1968. Small pockets of medium infestation occurred north of Lanark Road 12 in Dalhousie Township and west of Highway 29 in Montague Township. A small, light infestation was noted in Clarence Township and scattered individual colonies were observed throughout the district.

Smaller European Elm Bark Beetle, Scolytus multistriatus (Marsh.)

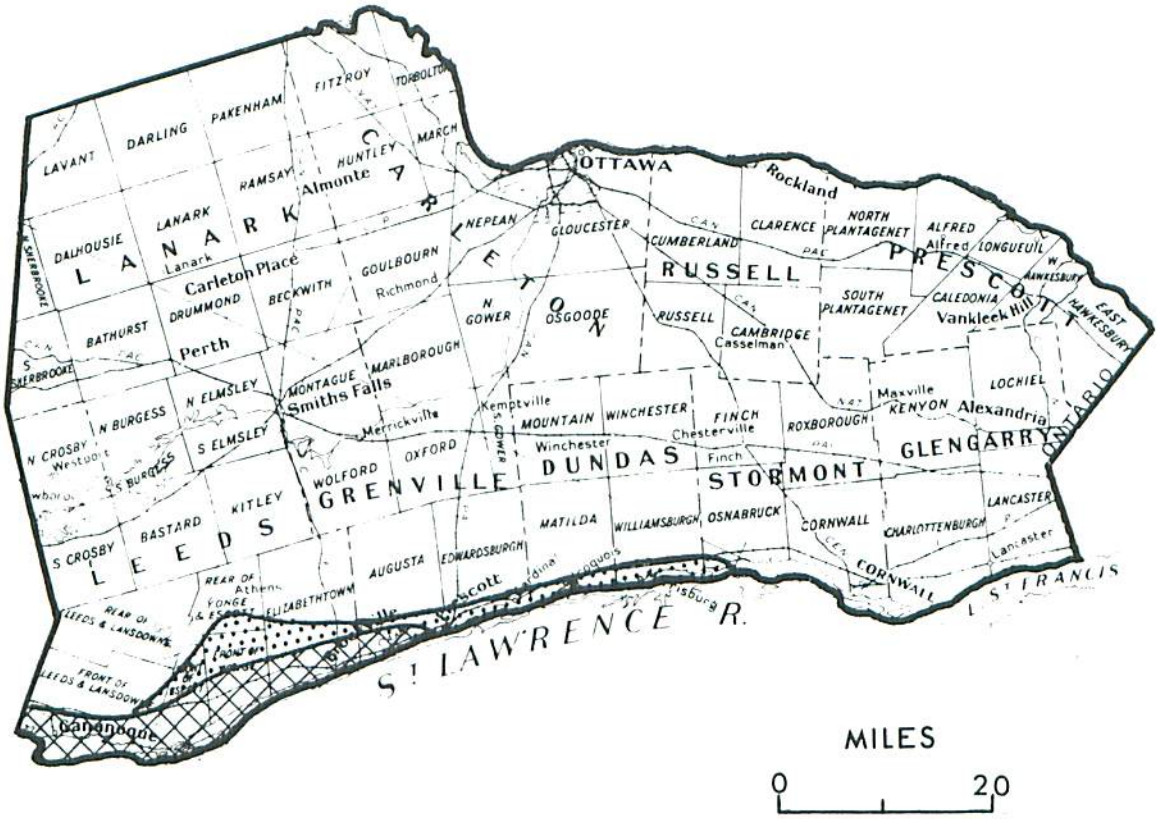
This introduced vector of Dutch elm disease extended its range along the St. Lawrence Valley from the town of Prescott to a point near Ingleside, approximately forty miles southeast of the Ontario-Quebec boundary (see map). The insect's range also extended north to a point near the town of Athens in Rear of Leeds and Escott Township. Throughout the area where a high incidence of Dutch elm disease occurrs, S. multistriatus was greatly outnumbered by the native elm bark beetle, H. rufipes Eich.

TABLE 17

Summary of Miscellaneous Insects Collected in the Kemptville District in 1968

Insect	Host(s)	Remarks
Acrobasis stigmella Dyar	Wa	Heavy infestation in walnut plantation in Roxborough Township
Aphrophora paralella Say.	jP, ScP	Common throughout district

KEMPTVILLE DISTRICT



SMALLER EUROPEAN ELM BARK BEETLE

Known distribution in 1967 & 1968

Legend

Distribution in 1967 ----------

Distribution in 1968 ----------

TABLE 18 (continued)

Insect	Host(s)	Remarks
Archippus packardianus Fern.	wS	Small numbers found commonly
Arge clavicornis (F.)	wB	Low population near Almonte
Arge pectoralis (Leach)	wiB, wB	Light infestation Oxford Township, single colonies common elsewhere
Argyrotaenia pinatubana (Kft.)	wP	Heavy infestation in March Township
Brachys aerosus Melsh	bO	Light infestation north side Hwy. 44, in Huntley Township
Bucculatrix ainsliella Murt.	rO	Light infestation along Hwy. 401 near Bridge Island.
Bucculatrix canadensisella Cham.	wB	Light infestation north of Maberley in South Sherbrooke Township
Caliroa sp.	rO	Heavy on ornamentals in the town of Almonte
Caripeta angustiorata Wlk.	Pitch pine	Common on pitch pine along the St. Lawrence River.
Caripeta divisata Wlk.	wS	Small numbers on beating sample from South Burgess Township
Coleophora ulmifoliella McD.	slE	Heavy on small trees near Rockport, Front of Escott Township
Corthylus punctatissimus (Zimm.)	sM	Light infestation in South Burgess Township
Corythucha juglandis Fitch	Ba	Heavy near Fallbrook
Corythucha ulmi O. & D.	wE	Heavy along highway 7 between Perth and Silver Lake.
Craterocerus quercivorus Roh.	wO	Medium infestation near Ivy Lea Bridge, Front of Leeds and Lansdowne townships

TABLE 18 (continued)

Insect	Host(s)	Remarks
Datana integerrima G. & R.	Wa	Heavy on ornamentals near Cornwall and Smiths Falls. Light elsewhere
Datana ministra Drury	wE	Causing light defoliation to trees along Hwy. 17 in Gloucester Township
Dioryctria disclusa Heinr.	ScP	Light infestation in cones near Merrickville, Walford Township
Dioryctria reniculella Grote	wS	Light infestation on planted trees near Gravel Hill, Roxborough Township
Ectropis crepuscularia Schiff.	eH	Single collection from South Burgess Township
Elaphidionoides parallelus Newm.	biH	Light twig-pruner damage near Mallorytown Landing
Erannis tiliaria Harr.	Ba, wE	Small numbers of larvae found commonly
Eufidonia notataria Wlk.	eH, wB	Small numbers on beating samples at several locations
Eupithecia filmata Pears.	wS	Common on beating samples throughout district
Eupithecia palpata Pack.	wP pitch pine	Small numbers on beating samples at two locations
Exoteleia nepheos Free.	pitch pine	Low populations at several locations. New distribution and host record for the district
Exoteleia pinifoliella (Cham.)	ScP	Heavy near Phillipsville, light at several other locations
Lambdina fiscellaria fiscellaria Gn.	bF, eH	Small numbers of larvae on beating samples at several locations
Lapara bombycoides Wlk.	pitch pine	Small numbers at Browns Bay Park
Lecanium sp.	rO, wAs	Heavy infestation on red oak, Constance Bay area, and on white ash plantings along Hwy. 34 between Vankleek Hill and Alexandria.

TABLE 18 (continued)

Insect	Host(s)	Remarks
Lithocolletis aceriella Clem.	sM	Light infestation on maple reproduction near Maberley
Lithocolletis caryaefoliella Clem.	wO	Populations reduced to single pocket of heavy infestation in Front of Leeds and Lansdowne Township
Marmara sp.	wP	Heavy infestation along Highway 17 in March Township
Messa populifoliella Town.	cPo	Heavy infestation on roadside planting along Hwy. 16 in North Gower Township
Nematus ventralis Say	W	Single colony in North Sherbrooke Township
Neodiprion nanulus nanulus Schedl	pitch pine	Several colonies on reproduction near Brown's Bay Park, St. Lawrence River
Neodiprion pratti banksianae Roh.	jP	Single collection near Lanark
Oligonychus ununguis Jac.	eH	Heavy on roadside trees west of Rideau Ferry
Paraclemensia acerifoliella Fitch	sM	Light in South Burgess and Rear of Leeds and Lansdowne townships
Pareophora minuta MacG.	wAs	Light to heavy south of Arnprior
Petrova comstockiana (Fern.)	pitch pine	Light on young trees along St. Lawrence River
Pulicalvaria carbonaria Free.	common juniper	Light infestation along Highway 17 in Fitzroy Township
Scolytidae, probably Corthylus columbianus Hopkins	rM	Collected from red maple logs in Bastard Township
Semiothisa bisignata Wlk.	ScP	Larvae numerous at one location on the north shore of Dalhousie Lake
Sparganothis unifasciana Clem.	wP	Small numbers in webbed new shoots of white pine, Kenyon Township

TABLE 18 (concluded)

Insect	Host(s)	Remarks
Tenthredinidea #3	wB	Single large colony near Almonte
Tetralopha robustella Zell.	pitch pine	Light infestation on reproduction at Browns Bay Park
Zeiraphera canadensis Mut. & Free.	wS	Light infestation near Gravel Hill, Roxborough Township
Zelleria haimbachi Busck.	jP	Single collection from Bastard Township