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FIDS REPORT 84-5
RECORD OF MICRO-ORGANISMS
ON FOREST INSECTS IN B.C.
1952 - 1983



Forest Insect and Disease Survey

Canadian Forestry Service
Pacific Forest Research Centre

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Introduction

The purpose of this report is to present a list of micro-organisms which have been identified on forest insects in British Columbia since 1952.

The report is compiled from records on file with the Forest Insect and Disease Survey and Biological Control Project, Canadian Forestry Service, Pacific Forest Research Centre, Victoria, B.C.

Western spruce budworm, Choristoneura occidentalis, was the host insect most often collected. A nuclear polyhedrosis virus (NPV) and Entomophthora were the most common micro-organisms.

The data is listed alphabetically by host insect with micro-organism causal agent. Enclosure slip registration number, FIDS ranger enclosure slip collection number and/or Forest Pest Management Institute (FPMI) accession number are quoted when available.

Organisms identified at the Pacific Forest Research Centre are identified by (P); at Forest Pest Management Institute by (F).

Additional information is available in: O.N. Morris, 1983. "Micro-organisms Isolated from Forest Insects of British Columbia". J. Entomol. Soc. B.C. 80:29-36.

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Host Insect	Host Tree ¹	Micro-Organism	Number Affected	Collection #		Year	Location
				PFRC	FPMI		
<u>Acleris gloverana</u>	WH	<u>Isaria</u> sp. (F) ²	-	1753-01		1974	Sandspit
" "	"	" " "	-	2192-01		1973	Zeballos
" "	"	" " "	3/13	1898-01		1972	Espinosa Inlet Zeballos
" "	"	" " "	-	2594-01		1971	Labour Day Lk.
<u>Actebia fennica</u>	Duff	N.P.V. ³ (P) ²	-	-	-	1983	Stoney Lake Prince George
" "	"	" "	-	-	-	"	Houston
<u>Antheraea polyphemus</u>	Al	<u>Bacillus</u> (F)	1/1	0964-01		1966	Victoria
<u>Caripeta divisata</u>	gF	Polyhedral virus (P)	-	2500-03		1952	Campbell R.
<u>Choristoneura</u>	alF	<u>Beauveria bassiana</u> (P)	10/28	1433-01		1982	Hazelton
<u>Choristoneura biennis</u>	eS	<u>Erynia radicans</u> (F) (<u>Entomophthora sphaerosperma</u>)	-	0904-01		1980	Hendrix Lake (Cariboo)
" "	alF	Entomopox virus (F)	1/3		3047	1980	Canal Flats
" "	"	<u>Entomophthora</u> sp. "	1/50		2513	1978	Horsefly
" "	eS	" "	-	1540-01		"	Canal Flats
" "	-	<u>Entomophaga</u> sp.	-		2179	1976	Hendrix Lake
" "	alF	Entomopox virus (F)	16/52	1363-01		1972	Canal Flats
" "	eS	" "	11/33	1367-01		"	" " "
<u>Choristoneura conflictana</u>	-	" " "	2/6		3279	1983	Alaska Hwy.
" "	tA	<u>Thelohania</u> sp. microsporidia	1/75	31-058 ⁴	3228	1981	Haines Jct.
" "	bPo	" "	-	31-073	3307	"	Beaver Ck., Yukon
" "	tA	<u>Plistophora</u> sp. microsporidia	-	1985-01		1978	Fort St. John
" "	"	<u>Thelohania</u> sp. microsporidia	-	1985-01		"	" " " "
" "	"	Entomopox virus	-	1985-01		"	" " " "

¹Index, page 9.³N.P.V. - Nuclear polyhedrosis virus²(F) identified by FPMI, (P) by PFRC⁴Ranger collection numbers

Host Insect	Host Tree	Micro-Organism	Number Affected	Collection #		Year	Location
				PFRC	FPMI		
<u>Choristoneura conflictana</u>	tA	Granulosis virus	-	1985-01		1978	Fort St. John
"	"	<u>Entomophthora</u> sp.	-	1985-01		"	" " " "
"	"	N.P.V.	-	1985-01		"	" " " "
<u>Choristoneura fumiferana</u>	wS	<u>Beauveria</u> sp. (F)	3/3	0671-01		1972	Fireside
"	"	Pathogenic fungus	-	0700-01		1966	Smithers Ldg.
<u>Choristoneura occidentalis</u>	-	N.P.F. (F)	6/92	1471-01		1983	Cache Creek
"	"	Granulosis virus	1/92	1471-01		"	" " "
"	"	N.P.V.	1/58	1472-01		"	" " "
"	"	Granulosis virus	1/58	1472-01		"	" " "
"	"	D-fir <u>Erynia radicans</u> (<u>Entomophthora sphaerosperma</u>)	-		3021	1980	Rock Creek
"	"	<u>Entomophthora</u> sp.	2/5	31-151	3081	"	Yale
"	"	" "	1/2	31-150	3085	"	Hope
"	"	" " (F)	1/5	31-149	3086	"	"
"	"	<u>Beauveria</u> sp.	" 3/25	31-124	2833	1979	"
"	"	" "	" 7/25	31-118	2832	"	Yale
"	"	" "	" 7/12	31-108	2831	"	Hope
"	"	<u>Entomophthora</u> sp.	" 1/25	1084-01		"	"
"	"	<u>Beauveria</u> sp.	" 3/52	1331-01		1978	North Bend (Vancouver)
"	"	<u>Isaria</u> sp.	" 1/52	1331-01		"	" " "
"	"	N.P.V.	" -	0321-01		"	Pemberton
"	"	<u>Beauveria</u> sp.	" -	0067-01		1977	Sicamous
"	"	wL " "	" 3/21	0655-01		"	Osoyoos
"	"	D-fir " "	" -	1164-01		"	Princeton
"	"	<u>Thelophania</u> sp. <u>microsporidia</u>	" 1/30	0651-01		"	Lillooet
"	"	N.P.V.	" -		2353	"	Shalalth
"	"	<u>Beauveria</u> sp.	" 2/13	0067-01		"	Sicamous

Host Insect	Host Tree	Micro-Organism	Number Affected	Collection #		Year	Location
				PFRC	FPMI		
<u>Choristoneura occidentalis</u>	-	Granulosis virus (F)	-		2156	1976	Kwoiek Cr. (Vancouver)
"	D-fir	N.P.V.	-		2176	"	Pemberton
"	"	<u>Entomophthora</u> sp.	-		2198	"	Hope
"	wH	" "	-		2188	"	Chase
"	D-fir	N.P.V.	-		2186	"	Shalalth
"	"	Microsporidia	15/100		1254-01	1974	Hope
"	"	<u>Beauveria</u> sp.	1/1		0335-01	1974	Cache Creek
"	"	Polyhedral virus (P)	1/1	0216-01		1968	Boston Bar
"	"	" "	1/1	0285-01		"	Hope
<u>Choristoneura orae?</u>	alF	<u>Beauveria bassiana</u> (P)	27/37	1435-01		1982	Stewart
<u>Choristoneura</u> spp.	alF	<u>Beauveria bassiana</u> (P)	5/5	0103-01		1983	Stewart
"	"	" "	7/10	0105-01		"	"
"	wS	" "	46/55	0135-01		"	Hazelton
"	-	" "	-	0251-02		"	Cedarvale
"	-	Polyhedral bodies (F)	-		3278	"	Kispiox
<u>Dendroctonus</u> sp.	lP	<u>Beauveria bassiana</u> (P)	-	0760-01		1983	Houston
<u>Ectropis crepuscularia</u>	-	Fungus?	(P) 2/26	0522-01		1969	Kitimat
"	-	Bacteria?	" 2/26	0522-01		"	"
"	-	Polyhedra?	" 19/26	0522-01		"	"
"	wH	Fungus?	" -	1666-01		1968	Kincolith Prince Rupert
"	wrC	<u>Entomophthora</u> sp. (F)	-	4058-02		1967	Egmont
"	"	" "	-	4059-01		"	"
"	wH	" "	-	4060-01		"	"
"	D-fir	" "	-	4061-02		"	"
"	wrC	" "	2/2	4049-01		"	Port Neville
"	"	Polyhedrosis	" 1/1	1854-01		1965	Hotsprings Cove

Host Insect	Host Tree	Micro-Organism	Number Affected	Collection #		Year	Location
				PFRC	FPMI		
<u>Enyptia griseata</u>	wH	<u>Entomophthora</u> sp. (F)	1/1	0131-03		1975	Mission
" "	"	" "	1/1	0263-01		1973	Jordan R.
<u>Epirrita</u>	wH	<u>Entomophthora</u> sp. (F)	-	1301-01		1976	Haines
" "	"	" "	-	0905-01		"	Terrace
" "	"	" "	-	0916-01		"	Kitimat
" "	"	" "	1/1	0310-01		1975	Hazelton
<u>Erannis vancouverensis</u>	W	N.P.V.	(F) -	0602-01		1975	Chase
" "	"	<u>Beauveria</u> sp.	" 4/100	0602-01		"	"
<u>Eupithecia</u> spp.	D-fir	Polyhedrosis	(F) 1/1	1440-01		1965	Hornby Island
" "	sS	"	" 1/1	1311-01		"	Terrace
" "	D-fir	"	" 1/1	1061-02		"	Boston Bar
<u>Feralia jocosa</u>	D-fir	<u>Cordyceps</u>	" 1/1	1112-01		1982	Hanceville
" "	wH	Bacteria?	-	1375-04		1968	Hazelton
<u>Feralia</u> sp.	wH	Fungus (small cocci)	(P) -	1398-01		1968	Hazelton
Geometridae	tA	<u>Thelophania</u> sp. microsporidia	(P) 13/50	0556-01		1978	Fort St. John
" "	"	Polyhedrosis	1/50	0556-01		"	" " "
" "	wS	Fungus?	" -	0229-05		1968	Hazelton
" "	Al	Microsporidia	(F) 1/1	1229-01		1965	Kitwanga
<u>Ips</u> sp.	lP	<u>Beauveria bassiana</u>	-	0760-01		1983	Houston
		(P)					
<u>Lambdina</u> f. <u>lugubrosa</u>	wH	Virus	(P) -	0932-01		1983	Likely
" "	"	<u>Entomophthora egressa</u>	-	0937-01		"	"
" "	"	" "	13/13	1237-01		"	Revelstoke
" "	"	<u>Entomophthora</u> sp. (F)	-	2249-01		1972	Sicamous
" "	wrC	" "	" -	2248-01		"	"

Host Insect	Host	Micro-Organism	Number Affected	Collection #		Year	Location
	Tree			PFRC	FPMI		
<u>Lambdina f. lugubrosa</u>	wH	<u>Entomophthora</u> sp. (F)	-		1456	1972	Coquitlam Lk.
" "	"	" "	" -	2543-01		"	Sicamous
" "	"	" "	" -	2542-01		"	"
" "	"	" "	" -	2541-01		"	"
" "	wrC	" "	" -	4056-01		1967	Egmont
" "	wH	<u>Beauveria</u>	1/25		1179	1971	
" "	-	<u>Isaria</u> sp.	2/25		1179	"	-
<u>Lambdina f. somniaria</u>	Oak	N.P.V.	(F) 27/27			1983	Saltspring Island
" "	"	<u>Beauveria bassiana</u> (P)	7/7			"	" "
Lepidoptera	wH	A polyhedrosis virus (F)	-	2202-01		1978	Prince George
"	"	<u>Entomophthora</u> sp.	" -	2202-01		"	" "
<u>Leucoma salicis</u>	bCo	<u>Beauveria</u> sp. (F)	6/50	0735-0		1975	Lillooet
<u>Lophocampa argentata</u>	D-fir	<u>Bacillus</u>	(F) -	0025-01		1966	Ganges
<u>Malacosoma disstria</u>	Al	N.P.V.	(F) -		1794	1973	Hixon or 1974?
" "	W	"	" -	0275-01		1977	McBride
" "	bCo	"	" -		2181	1976	Cranbrook
" "	shrubs	"	" -	1213-01		"	McBride
" "	tA	"	" -		2172	"	Golden
<u>Malacosoma californicum pluviale</u>	D-fir	Fungus disease?	(P) -	0120-01		1953	Vancouver
"	"	"	" -	0146-01		"	Hornby Island
"	Apple	"	" -	0195-01		"	Victoria
"	W	"	" 1/2	0839-03		"	N. Pender I.

Host Insect	Host Tree	Micro-Organism	Number Affected	Collection #		Year	Location
				PFRC	FPMI		
<u>Melanolophia</u> <u>imitata</u>	wH	<u>Entomophthora</u> sp.	3/3	1329-01		1983	Rosebery
"	"	Bacteria? (P)	-	1596-01		1968	Kyuquot
"	"	"	-	1593-01		"	"
"	"	"	-	1599-01		"	Gold River
"	"	"	-	1588-04		"	Hagensborg
"	"	Fungus?	-	1604-01		"	"
"	"	Bacteria?	-	1588-04		"	Alberni
"	"	"	-	1592-01		"	Zeballos
"	D-fir	"	-	1867-01		"	Hope
"	"	<u>Entomophthora</u> sp. (F)	-	3537-01		1967	Sechelt
"	wH	"	"	3476-01		"	Tahsis
"	"	"	"	3473-01		"	Zeballos
"	wrC	"	"	4055-01		"	Jervis Inlet
"	"	"	"	4056-03		"	Egmont
"	D-fir	"	"	4057-01		"	"
"	wrC	"	"	4058-01		"	"
"	wH	"	"	4060-02		"	"
"	D-fir	"	"	4061-01		"	"
"	"	"	"	4062-01		"	"
"	wrC	"	"	4043-01		"	Port Neville
"	D-fir	Fungus?	-	2210-01		1966	Stuart Island
"	wrC	<u>Bacillus</u> sp.	-	2226-01		"	"
"	wH	Fungus?	-	2231-01		"	"
<u>Neodiprion</u> spp.	wH	<u>Beauveria</u> sp.	19/19	1362-01		1976	Revelstoke
<u>Nepytia</u> <u>freemani</u>	D-fir	<u>Entomophthora</u> <u>egressa</u>	-		736	1983	Chase
"	-	N.P.V.	32/43	1473-01		"	Shuswap Lk.
"	D-fir	Polyhedral virus (possibly nuclear)	-	1390-01		1975	Canal Flats
"	"	N.P.V.	-		2044	"	Lavington
"	"	"	12/12	1686-01		"	"
"	"	"	1/100		1681	1973	Salmon Arm

Host Insect	Host Tree	Micro-Organism	Number Affected	Collection #		Year	Location
				PFRC	FPMI		
<u>Nepytia phantasmaria</u>	wH	<u>Entomophthora</u> sp. (P)	-	1235-01		1982	Coquitlam L.
" "	"	<u>Paecilomyces</u> sp.	" -	1235-01		"	" "
" "	"	<u>Entomophthora</u> sp.	" -		1456	1972	" "
" "	-	<u>Isaria</u> sp.	7/41		1180	1971	-
" "	-	<u>Beauveria</u> sp.	3/41		1180	"	-
Noctuidae	D-fir	<u>Beauveria</u> sp.	(F) 1/1	0220-04		1974	Barnhart Vale
<u>Nycotobia limitaria</u>	alF	Fungus?	1/1	0813-01		1976	Houston
" "	S	Microsporidia	-	1794-01		1965	Bren River
<u>Nymphalis californicus</u>	shrub	Bacterial disease(P)	-	0548-01		1953	Blaeberry
<u>Orgyia a. badia</u>	1P	N.P.V.	(F) -		2201	1976	Kamloops
<u>Orgyia pseudotsugata</u>	D-fir	N.P.V.	(P) 10/20	1357-01		1983	Victoria
" "	"	"	8/10	1459-01		"	Rock Creek
" "	"	"	1/1	-		"	" "
" "	"	"	(F) -		1873	1973	Vernon
" "	"	"	-		2173	1976	Heffley Creek
" "	"	"	-		2194	"	Savona
" "	"	"	-		2202	"	Kamloops
" "	"	"	-	38-060	1998	1975	Heffley Creek
" "	"	"	-	1508-01		"	Westsyde
" "	"	"	-	1509-01		"	Heffley Creek
" "	"	"	-	1510-01		"	Cherry Creek
" "	"	"	-	2001-01		"	Kamloops
" "	"	"	-	1653-01		1974	"
" "	"	"	15/100	2545-01		1973	Westbank
" "	"	"	-	2368-01		"	Winfield
" "	"	"	-	1453-01		"	Kelowna

Host Insect	Host	Micro-Organism	Number	Collection #		Year	Location
	Tree			Affected	PFRC		
<u>Orgyia</u> <u>pseudotsugata</u>	D-fir	N.P.V.	-		1452-01	1973	Westbank
"	"	"	-		1451-01	"	Winfield
"	"	<u>Beauveria</u> sp.	1/100		1451-01	"	"
"	"	N.P.V.	-		0380-01	"	Osoyoos
"	"	"	-		0274-01	"	Kelowna
"	"	"	-		0273-01	"	Winfield
"	"	Polyhedral virus	1/50			1420	1972 Clearbrook
<u>Pero giganteus</u>	D-fir	Polyhedral virus (P)	1/1		0065-01	1953	Sooke
<u>Pikonema</u> <u>alaskensis</u>	sS	Fungus?	(F) 6/20		1061-01	1982	Hazelton
<u>Pikonema</u> <u>dimmockii</u>	"	Microsporidia	1/1		0192-01	1968	Sayward
"	S	Polyhedrosis	-		1779-03	1965	Bren R.
<u>Pristiphora</u> <u>erichsonii</u>	-	virus?	(P) 1/2		-	1983	
"	wL	<u>Beauveria bassiana</u> (P)	-		38-048 ³	"	Hosmer
"	"	<u>Paecilomyces</u> sp.	" -		38-048 ³	"	"
<u>Pseudohazis</u> <u>eglanterina</u>	shrub	Capsule virus disease	-		0065-01	1953	Langford
<u>Syngrapha</u> <u>octoscripta</u>	P	<u>Isaria</u> sp.	(F) -		0071-03	1974	Castlegar
<u>Syngrapha r.</u> <u>nargenta</u>	D-fir	<u>Beauveria</u> sp.?	" -		0653-03	1967	Nanaimo
<u>Zeiraphera</u> <u>improbana</u>	wL	<u>Verticillium</u> sp.	2/2		0214-01	1974	Edgewood

APPENDIX I

Summary of Collections of
Micro-organisms on Forest Insects by Year
in British Columbia 1952-1983

1952-1953:	1, 7.	=	8
1954-1964:	Collections made but disease identifications not confirmed.		
1965-1970:	7, 6, 18, 15, 3, 0.	=	49
1971-1980:	5, 12, 12, 7, 13, 18, 7, 15, 4, 7.	=	100
1981-1983:	2, 6, 29.	=	37

APPENDIX II

Host Tree Abbreviations

Al	alder	P	pine
alF	alpine fir	S	spruce
bPo	balsam poplar	sS	Sitka spruce
bCo	black cottonwood	tA	trembling aspen
D-fir	Douglas-fir	wH	western hemlock
Duff	duff	wrC	western red cedar
eS	Engelmann spruce	wL	western larch
gF	grand fir	wS	white spruce
lP	lodgepole pine	W	willow
Oak	oak	-	no host tree listed