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PRELIMINARY STUDIES OF SOME INVERBRATE PREDATORS OF THE LARCH SAWFLY, PRISTIPHORA ERICHSONII HTG.

by

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Studies of the inverbrate predators of the larch sawfly were begun by the author in 1960 and continued in 1961. The work to date has been largely exploratory, and has had three objectives:

1) to determine the species of possible predators that are present in the tamarack bogs;

2) to determine which of these species attack larch sawfly;

and 3) to devise a suitable technique (or techniques) for obtaining population estimates or indices of the more important species.

This is a brief progress report.

A collection of spiders was obtained during routine sampling of larch sawfly populations in 1960 (Table 1) but no attempt was made to determine if they were preying on larch sawfly. Pentatomids collected in 1960 were reared on larch sawfly larvae and records kept of the numbers of larvae eaten. Fifty-four specimens of Podisus serieventris Uhl. were reared from the egg to the adult stage on sawfly larvae placed on tamarack foliage. The nymphs were reared in colonies until the third instar. They were then separated and reared singly until development was complete. Of the 54 insects reared, 28 were females and 26 males. Both sexes required the same average amount of food (12 larvae) and the same period of time (30 days) to complete development. There was no correlation between the duration of the nymphal stage and the amount of food eaten.

Although P. serieventris was the principal pentatomid collected in 1960, two other species, P. modestus Uhl. and Apateticus bracteatus Fitch, have been observed feeding on larch sawfly larvae in the field and have been reared successfully on this insect in the laboratory.

In 1961 the studies developed along the lines mentioned in the objectives, with special emphasis on cage tests of various small hemipterous nymphs and adults and lacewing larvae. The results of these tests (Table 2) do not necessarily provide conclusive proof that the insects are predacious upon larch sawfly under field conditions. However, it appears that the Deraeocoris, Tetraphleps and Ceratocapsus groups are probably important egg predators, and that Chrysopa polorbunda Fitch, Anatis mali Say and Coccinella nivicola monticola Muls. attack larch sawfly larvae.

Spider specimens collected in 1961 have not been submitted for identification, but the results of the feeding trials for this group have not yet indicated that spiders are important mortality agents of the sawfly.

Two types of ultra-violet light were tested in light traps in 1961: three two-watt argon glow lamps in one unit and a fifteen-watt mercury vapor fluorescent tube in the other. Precise records were not kept of the numbers of insects caught in each trap, but it was readily apparent that the mercury

vapor lamp was by far the more effective. The insects caught in the light traps (Table 3) include a number of species that are believed to be predators and other groups (especially the wasps) that may be predators but have not yet been tested. Light traps will be operated near all lifetable plots in 1962 to test whether the method is feasible for obtaining population indices of attracted species.

A series of identified specimens is being retained at the laboratory as an aid to future identification. The author would like to express appreciation to the following persons for identification of the various groups: C. D. Dondale - Arachnida; A. R. Brooks - Neuroptera; L. A. Kelton - Hemiptera; and C. D. Miller - Vespidae.

TABLE 1

Spiders collected on Tamarack
in eastern Manitoba during the summer of 1960

Family	Species	Number of Specimens	Collection dates
Thomisidae	Philodromus pernix Blackwall	6	July 27-Aug. 24
	P. placidus Banks	2	Aug. 1-22
	P. rufus Walckenaer	1	July 27
	Coriarachne versicolor (Walckenaer)	1	Aug. 4
Salticidae	Metaphidippus flavipedes (Packham)	1	Aug. 22
	Paraphidippus marginatus (Walckenaer)	4	July 13-Aug. 29
Clubionidae	Clubiona canadensis Emerton	1	Aug. 8
Tetragnathidae	Tetragnatha straminea Emerton	1	Aug. 29
	T. versicolor Walckenaer	4	July 20-Aug. 18
Argiopidae	Araneus patagiatus Clerck	5	July 1-Aug. 18
	Araniella displicuta (Hentz)	3	July 19-Aug. 29
	Cyclosa conica (Pallas)	1	July 12
	Eustala anastera (Walckenaer)	11	July 1-Aug. 31
Theridiidae	Theridion mumarium Emerton	2	July 13-27
Linyphiidae	Linyphia marginata Kock	1	July 27

TABLE 2

Summary of tests to determine whether various insects prey on larch sawfly eggs or larvae

Species	Number reared to adult	Number tested	Eggs presumed eaten	Total eggs exposed	Larvae presumed eaten	Larvae exposed
Deraeocoris fasciolus Kngt.	7	23	612	973	13	24
Deraeocoris brevis (Uhl.)	10	13	364	779	1	22
Deraeocoris laricicola Kngt.	0	2	74	91	3	6
Tetraphleps canadensis Prov.	2	23	399	1022	1	31
Ceratocapsus pumilus (Uhl.)	0	14	205	453	0	30
Ceratocapsus modestus (Uhl.)	0	1	64	90	-	-
Phytocoris conspurcatus Kngt.	1	3	56	76	0	6
Ligyrocoris sylvestris (L.)	0	1	20	34	-	-
Nabis rufusculus Reut.	0	4	35	84	25	39
Megalotomus 5 spinosus Say	0	1	2	18	-	-
Collaria meilleurii Prov.	0	1	6	32	0	2
Plagiognathus sp.	0	3	32	103	0	6
Chrysopa polorabunda (Fitch)	12	29	0	-	123	-
Chrysopa chi Fitch (?)	0	1	4	-	14	-
Anatis mali Say	1	1	-	-	46	-
Coccinella nivicola monticola Muls.	0	2	18	-	31	-

TABLE 3

List of possible insect predators
collected in tamarack bogs in 1961 from three sources
((recovery from a particular source)
indicated by a plus sign)

Family	Species	Emergence Traps	Larval Collections	Light Traps
Hemerobiidae	Hemerobius dorsatus Banks	-	-	+
	Hemerobius humulinus L.	+	-	+
	Hemerobius stigmaterus Fitch.	+	-	+
	Wesmaelius longifrons (Walker)	+	-	-
Sisyridae	Sisyra vicaria (Walker)	-	-	+
	Sisyra fuscata (Fabr.)	-	-	+
	Climacia areolaris (Hagen)	-	-	+
Chrysopidae	Chrysopa chi Fitch	-	-	+
	Chrysopa rufilabris Burm.	-	-	+
	Chrysopa downesi Smith	-	-	+
	Chrysopa oculata Say	-	-	+
	Chrysopa polorabunda Fitch	+	+	+
	Chrysopa sp. near lineaticornis	-	-	+
Alydidae	Megalotomus 5 spinosus Say	-	+	-
Anthocoridae	Tetraphleps canadensis	+	+	-
Aradidae	Aradus sp.	+	-	-
	Aneurus inconstans Ahl.	+	-	-
Lygaeidae	Eremocoris ferus Say	+	-	-
	Geocoris sp.	+	-	-
	Ischnorrhynchus ericae (Danz.)	-	+	-
	Ligyrocoris sylvestris (L.)	-	+	-
	Peritrechus sp.	+	+	-

TABLE 3 (continued)

Family	Species	Emergence Traps	Larval Collections	Light Traps
Miridae	Adelphocoris rapidus Say	+	-	-
	Ceratocapsus pumilus (Uhl.)	-	+	+
	Ceratocapsus modestus (Uhl.)	-	+	-
	Collaria meilleurii Prov.	-	+	-
	Deraeocoris brevis Uhl.	+	+	+
	Deraeocoris fasciolus Kngt.	+	+	+
	Deraeocoris laricicola Kngt.	-	+	+
	Eustictus sp.	-	-	+
	Hyaliodes harti Kngt.	-	-	+
	Lopidea lathyri Kngt.	-	-	+
	Orthotylus sp.	-	-	+
	Phytocoris neglectus Kngt.	-	-	+
	Phytocoris angustulus Reut.	+	-	+
	Phytocoris conspurcatus Kngt.	-	+	+
	Phytocoris conspersipes Reut.	-	-	+
	Plagiognathus sp.	-	+	+
	Prepops fraternus Kngt.	-	-	+
	Trigonotylus sp.	-	-	+
Nabidae	Nabis ferus L.	+	+	-
	Nabis rufuscalus Reut.	+	-	-
	Nabis limbatus Dahlb.	+	-	-
Vespidae	Vespula maculata (L.)	-	-	+
	Vespula arenaria (Fahr.)	+	-	-
	Vespula consobrina (Sauss.)	+	-	-
	Vespula acadica (Sladen)	+	-	-
	Vespula norvegicoides (Sladen)	+	-	-
	Vespula vulgaris (L.)	+	-	+
	Rygchium leucomeles (Sauss.)	-	-	+
	Ancistrocerus tigris tigris (Sauss.)	+	-	-
	Ancistrocerus catskill albophaleratus (Sauss.)	+	-	-
Coccinellidae	Anatis mali Say	+	+	-
	Coccinella nivicola monticola Muls.	+	+	-
	Hippodamia convergens Guer.	-	+	-
	Psyllobora virgintimaculata Say	+	-	+