TAXONOMY AND FAUNISTICS IN ONTARIO, 1952–2012: PUBLICATIONS IN THE "JOURNAL OF THE ENTOMOLOGICAL SOCIETY OF ONTARIO"

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Publications on taxonomy and faunistics that appeared in the Journal of the Entomological Society of Ontario over a 60-year period beginning in 1952 are tabulated. These consist of 60 papers on taxonomy with a total of 700 species, including 125 new ones, described and/or keyed. Almost 100 papers on faunistics (lists, new distributions for North America or parts of North America) were published, with a total of 4700 species mentioned. A brief overview of taxonomy and faunistics as given in JESO volumes is provided.

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Introduction

Although the Entomological Society of Ontario (ESO) began in 1863, the first report was published in 1871 (covering the year 1870) and publication continued as Annual Reports up to 1958, then from 1959–2001 as the Proceedings of the Entomological Society of Ontario (PESO), and finally from 2002–present as the Journal of the Entomological Society of Ontario (JESO). Because the main goal of the Society at its inception was to publish research on pest insects the first volume was titled "First Annual Report of the Noxious Insects of the Province of Ontario" and subtitled "Prepared for the Agricultural and Arts, and Fruit Growers' Associations of Ontario, on Behalf of the Entomological Society of Canada." The first two articles in it were by the Rev. C. J. S. Bethune, entitled "Insects affecting the apple" and "Insects injurious to grape." The 61 magnificent black-and-white illustrations throughout Vol.1 and the 694 others in the next twelve volumes (illustrations summarized in detail in Vol. 13) stand as a testament to the careful attention to detail in the published papers.

Forward to the 1950s. Glen (1956) compiled a historical overview of entomology in Canada with contributions by different authors in 16 categories, one being Systematic Entomology by G. Holland. One category not treated by Glenn as a separate subdiscipline was faunistics, probably because most taxonomy and biology papers included information on insect distributions, even if it was for a single (usually pest) species, so "faunistics" was too vague to treat as a subdiscipline. To mark the 150th Anniversary of the Entomological Society of Ontario, papers in these two subdisciplines are compiled and briefly discussed

here. Only the past 60 years are treated, beginning with publication date 1953 (vol. 84) to provide a slight overlap with Holland (1956). The subdiscipline of taxonomy, "systematic entomology" of Holland, is complemented with a summary of papers on faunistics. The latter were written by both taxonomists and non-taxonomists, but the non-taxonomists relied heavily on taxonomists for specimen identifications. Over the past six decades both groups of entomologists added a lot of new information on insect distributions in Ontario or Canada. Because they do not include identification keys or taxon descriptions the papers on faunistics are summarized separately from those on taxonomy. Except for 19 papers on particular insect species, and five on insect associations with certain plant species, the faunistics papers exclude studies that detail the biology of single species, most of which are economically important as pests or biological control agents. Such papers are treated by P. Mason (this volume).

Taxonomy

Only about 1 taxonomy paper per year (60 in total) was published over the past 60 years (Table 1). These covered almost 700 species of which 125 were described as new. Twenty-five of the papers treated Ontario insects only. Most of them (47) included identification keys, usually to adults but sometimes to larvae or pupa. Somewhat surprisingly, 25 of the papers treated Diptera, 25 treated Hymenoptera but only 7 treated Coleoptera and 1 treated Lepidoptera. About 36 family group taxa and 50 genera were covered. A few papers were more general, treating Lepidoptera, Aculeata, and Symphyta. Two were on nomenclature and type specimens, respectively.

Although most publications in the Annual Reports over its first 80 years treated pest biology and control, the occasional paper foreshadowed the trend over the next 60 years towards more papers on taxonomy and faunistics of insects in general. Fletcher (1902), the founder of the Canadian National Collection of Insects, therefore began an Entomological Record. His aim was not to record facts connected to economic entomology—he called it "practical" entomology—but instead to publish information about other insects, including 1) a record of special rarities taken by collectors, with the various locations and dates, 2) the names of specialists who have devoted particular attention to some order, genus, species, or phases of taxonomic study, 3) the names of any books of note affecting entomology, or connected with any branch of it, which may have been published during the year. For the year, Fletcher summarized collecting thus "The season of 1901 in almost all parts of Canada has been characterized as 'poor' by nearly all collectors heard from." Most of Fletcher's publication gives a literature summary, lists of names and locations of collectors (36 for Lepidoptera, 10 for Coleoptera, and three each for Hymenoptera and Orthoptera), and 8 pages of "notes on captures" compiled by himself and, for Orthoptera, by E. M. Walker. The next year, Fletcher (1903) stated that he hoped at least some of the general collectors in all parts of the country might become specialists on particular taxa because they were urgently needed. He noted that the Lepidoptera and Coleoptera were always fairly well worked but specialists in the other orders were few. Fernald's (1916) paper on life zones in entomology and Felt's (1926) paper on insect distributions presage Walker's (1955) discussion on climate change, mentioned below. So right from the beginning of the 1900s there was interest and concern about taxonomy and distributions, particularly changing ones, of the insect fauna of Canada in general and Ontario in particular.

Faunistics

In 1961, C.G. MacNay's yearly article "A summary of the more important insect infestations and occurrences in Canada in 19xx" ceased to be published. Although this series of articles focused almost exclusively on pest insects from across Canada, other noteworthy species were occasionally mentioned. Thus, for 1950 (eighty-first Annual Report) one and a half lines were written on one species not considered a pest: "The noticeable scarcity of reports of this insect [the Painted Lady, *Vanessa cardui* L. (Lepidoptera: Nymphalidae)] contrasts with its widespread abundance in 1949". The rest of the 19-page article summarized the abundance of pest species under several subheadings: general feeders, field crop insects, vegetable insects, fruit insects, insects affecting greenhouse and ornamental plants, insects affecting man and domestic animals, household insects, stored product insects. All the other articles in the volume related to pesticides—it was, after all, shortly after start of the pesticide heyday/revolution. Similar examples occur in the 1951 Annual Report [one mention of a Mourning Cloak butterfly larva, *Nymphalis antiopa* (L.) (Lepidoptera: Nymphalidae)]. Almost invariably the record was in the context of damage to something of economic interest. Preventing damage to crops/animals/humans was seen as perhaps the most important task of entomology. In 1952, 150 years after Fletcher implemented his 'Entomological Record', a section on new records of insects in Canada was added. It included 17 species (5 in Ontario) recorded for the first time either for North America or for Canada or for a particular province. From 1966–1972, H. W. Goble and others published articles under the subheading "Review of infestations and other pests" but restricted their coverage to insects (and nematodes) in Ontario only. Vol. 104 (1973) was the last year such pest summaries were compiled. Thereafter, relatively more attention was paid to insects not of economic importance.

In 1954, a symposium on changing faunal ranges was held, in which various speakers discussed examples (in Lepidoptera, Ephemeroptera, Orthoptera, Hymenoptera, and Araneae) of Carolinian zone insects that showed evidence of a northward shift in distribution. Some crop pests already present in southern Ontario or new entries of insects into the Niagara Peninsula were included. Also exemplified were extensions of faunal ranges in the Prairie Provinces, species spreading with agriculture, species whose ranges fluctuate with climatic cycles, and species with annual northern migrations. Northern shifts in populations of some bird species in the Prairie Provinces and alien pest insect species introduced from abroad were also listed. The eminent E.M. Walker (1955), of odonatological fame, summarized things thus: "But looking back over the sixty odd years since I began to collect insects at De Grassi Point, Lake Simcoe, I have witnessed the gradual decrease in numbers of some species that were once common, until they vanished altogether, and I have seen other species, never known in that territory before, arrive there and in the course of time become firmly established. The species that disappeared were chiefly northern ones, whereas the newcomers were all from the south. This last statement suggests a changing climate that is becoming warmer. The problem, however, is not quite as simple as it seems." I take the Baker symposium, mentioned in Table 2, and Walker's comments as the main post-war starting point for the shift in emphasis on controlling pests to documenting and understanding the Ontario insect fauna in general, with emphasis on changing distributions. However, over 150 years previously Webster (1902) noted general

trends in insect movements around North America. Fernald (1916) and Felt (1926) also wrote about distributions and their significance, showing that within about 30 years since publication of the Annual Reports began entomologists were aware of the importance of tracking insect distributions.

Almost 100 papers on faunistics were published from 1953–2012 (Table 2), with a low of 8 papers in the 1950s to a high of 19 in the 1970s. Many of these are species lists, changes in distributions, or new provincial, country, or continent records. About 4700 arthropod (mostly insect) species in over 20 orders, especially Coleoptera, Diptera and Hymenoptera, are listed. A wide variety of faunistic topics are covered: insects on particular substrates, e.g., decaying mushrooms; in particular habitats, e.g., alvars; visitors to particular species of flowering plants, e.g., *Daucus carota* L. (*Apiaceae*); or natural enemies of particular, non-pest insects, e.g., *Bombus* spp. (Hymenoptera: Apidae). Almost every volume included at least one faunistics paper and a few volumes (104, 141, 142) as many as five. Most papers were restricted to insects of Ontario or parts of Ontario. Occasionally other provinces (Manitoba, Newfoundland, Nova Scotia, Quebec), or the USA or particular US states were treated. Sometimes all of Canada, the Nearctic region (usually America North of Mexico) or the entire New World (an abstract only) was covered.

Conclusions

Up to the 1950s the Annual Reports stressed pest biology and control, and many detailed papers appeared on their biology often accompanied by excellent line drawings. The Reports also included a smattering of more general papers discussing distributions (read faunistics) and taxonomy. Over the past six decades a greater diversity of papers has appeared, with relatively more emphasis on insects other than pests. On the whole, the Society's journal has provided a fair representation of entomological research in Ontario over most of the past 140 years. This has changed over the past decade. Fewer papers are published in JESO because of the greater number of competing, electronic journals, often with more specialized interests. JESO is therefore perhaps a less reliable tracker of entomological research in the province than previously. Nevertheless, JESO remains a good venue for publishing information on faunistics and taxonomy of Ontario insects.

TABLE 1. Publications on taxonomy in Volumes 82–140 (1952–2012) of the Entomological Society of Ontario.

Order	Family/other	Genus	Region	Key	# spp.	n. spp.	Author	Other details	Vol.	Year pub.
Araneae	Gnaphosidae	*Gnaphosa*	BC, USA (WA)	yes	2		Bennett et al.		137	2007
Coleoptera	Carabidae	*Coptodera*	New World	yes	43	12	Shpeley & Ball		124	1993
Coleoptera	Chrysomelidae	*Altica*	ne. N. Amer.	yes	2		LeSage	on *Vitaceae*	133	2003
Coleoptera	Dytiscidae		ON	yes	5		James	vernal pools	100	1970
Coleoptera	Monotomidae	*Monotoma*	Canada	yes	12	3	Bousquet & LaPlante		130	1999
Coleoptera	Pselaphinae		BC	yes	11		Chandler	Queen Charlotte Is.	131	2000
Coleoptera	Scarabaeidae	*Pedaridium*	Colombia	no	1	1	Gill & Vaz-de-Mello		133	2003
Coleoptera	Scolytinae	*Conophthorus*		no	1		De Groot	cuticular hydrocarbons	122	1991
Diptera	Anthomyiidae	*Hylemya*	ON	no	2		McLeod	crossing experiments	95	1965
Diptera	Camillidae	*Camilla*	Nearctic	yes	2		Kits et al.		143	2012
Diptera	Chamaemyiidae	*Pseudodinia*	New World	yes	17	5	Barber		116	1985
Diptera	Chironomidae	*Cricotopus*	ON, Salem Creek	yes	11	1	LeSage & Harrison		111	1981
Diptera	Clusiidae	*Sobarocephala*	Nearctic	yes	17	2	Lonsdale & Marshall		138	2007
Diptera	Culicidae		ON	yes	45		Steward and Wade		91	1961
Diptera	Empididae	*Wiedemannia*	USA (AZ)	no	1	1	Sinclair		137	2007
Diptera	Ephydridae	*Discomyia*	ON	yes	3		Buck et al.		137	2007
Diptera	Hybotidae	*Baeodromia*	New World	no	1		Cumming		137	2007
Diptera	Nycteribiidae	*Basilia*	Nearctic	yes	6		Peterson		90	1959
Diptera	Opomyzidae	*Geomyza*	Canada	no	2		Wheeler et al.		130	1999
Diptera	Phoridae	*Cyrtophorina*	Neotropical	yes	4	3	Brown		137	2007
Diptera	Simuliidae	*Cnephia, Simulium*	ON	yes	2	2	Wood		93	1963
Diptera	Simuliidae	*Prosimulium*		no	1		Peterson	nomenclature	95	1965
Diptera	Simuliidae		ON	yes	44		Davies et al.		92	1962
Diptera	Simuliidae		ON	yes	45				93	1963
Diptera	Sphaeroceridae	*Lotophila*	Holarctic	yes	5	2	Norrbom & Marshall		119	1989
Diptera	Sphaeroceridae	*Minilimosina*	New World	yes	21	21	Marshall		116	1985
Diptera	Sphaeroceridae	*Rachispoda*	New World	no	14	10	Wheeler	abstract	121	1990
Diptera	Sphaeroceridae	*Spelobia*	N. Amer.	no	1	1	Marshall		120	1989
Diptera	Sphaeroceridae		ON	yes	24	24	Marshall & Brown	decaying fungi, Guelph	115	1985
Diptera	Strongylophthalmyiidae	*Strongylophthalmyia*	Canada	yes	2	1	Barber		137	2007
Diptera	Tabanidae	*Atylotus*	e. N. Amer.	yes	10	3	Teskey		114	1984

TABLE 1 continued....

Order	Family/other	Genus	Region	Key	# spp.	n. spp.	Author	Other details	Vol.	Year pub.
Diptera	Tabanidae	*Merycomyia*	Nearctic	no	2		Pechuman		94	1964
Diptera	Tabanidae		ON	yes	87		Pechuman et al.	list of MB species	91	1961
Hymenoptera	Aculeata	*Cerceris, Chelostoma*	e. Canada	yes	23		Buck et al.	new records	136	2006
Hymenoptera	Apidae	*Ceratina*	ON	yes	3		Rehan & Richards	problematic spp.	139	2008
Hymenoptera	Apidae		ON	yes	17		Romankova	Epeolini	135	2006
Hymenoptera	Braconidae	*Euphoriella*	Nearctic	yes	10	7	Loan & New		102	1972
Hymenoptera	Braconidae	*Leiophron*	ON	yes	2	2	Loan	on *Lygus*	100	1970
Hymenoptera	Braconidae	*Trachagathis*	South America	yes	3	2	Sharkey		137	2007
Hymenoptera	Chalcidoidea, Cynipoidea			no			Sarazin	primary types in CNC	118	1988
Hymenoptera	Chrysididae	*Elampus*	Nearctic	yes	7	2	Huber & Pengelly		108	1980
Hymenoptera	Chrysididae	*Elampus*	Cuba, Puerto Rico	yes	2	2	Huber & Pengelly		108	1980
Hymenoptera	Colletidae	*Colletes*	ON	yes	16		Romankova		134	2004
Hymenoptera	Colletidae	*Hylaeus*	ON	yes	8		Romankova		138	2007
Hymenoptera	Colletidae	*Hylaeus*	Canada	yes	2		Sheffield et al.	non-native bee list	142	2011
Hymenoptera	Crabronidae	*Hoplisoides*	Canada	yes	8		Buck		137	2007
Hymenoptera	Diprionidae	*Neodiprion*	ON	no	6		West et al.	serology	89	1958
Hymenoptera	Eucharitidae		Nearctic	yes	16	5	Heraty		116	1985
Hymenoptera	Megachilidae		ON	yes	5		Romankova	Anthidiini	134	2004
Hymenoptera	Mymaridae	*Anaphes*	Nearctic	yes	9		Huber	*fuscipennis* group	123	1992
Hymenoptera	Mymaridae	*Anaphes*	Nearctic	yes	13		Huber	*crassicornis* group	135	2006
Hymenoptera	Mymaridae	*Camptoptera*	World	yes		2	Huber & Lin	key to genera	130	1999
Hymenoptera	Mymaridae	*Eustochus*	World	yes	8	4	Huber & Baquero		138	2007
Hymenoptera	Mymaridae	*Ooctonus*	Nearctic	yes	14	5	Huber		143	2012
Hymenoptera	Mymaridae	*Stephanodes*	World	yes	5	1	Huber & Fidalgo		128	1997
Hymenoptera	Perilampidae	*Jambiya*	Israel, Yemen	no	1	1	Heraty & Darling		138	2007
Hymenoptera	Symphyta		ON	yes	23		Lindquist & Miller	on birch, alder	100	1970
Hymenoptera	Symphyta		ON	yes	14		Lindquist & Miller	on spruce, balsam fir	102	1972
Isopoda			ON	yes	18		Belaoussof et al.		129	1998
Lepidoptera			ON	yes	19		Lindquist & Miller	on alder	100	1970

TABLE 2. Publications on faunistics in Volumes 82–140 (1952–2012) of the Entomological Society of Ontario.

Vol.	Publ. year	Author(s)	Area	Locality	Key words	Order	Family	Genus	# spp.	Species
82	1952	Robinson	MB		predators of		Tetranychidae		23	
83	1952	Judd	ON	London	reared from galls	Diptera	Cecidomyiidae	*Rabdophaga*	16	*strobiloides* Walsh
84	1952	Fox & Stirrett	Can.		tobacco pests, catalogue				ca. 70	
84	1953	Pengelly	ON	southern	alfalfa pollination	Hymenoptera	Apoidea		ca. 25	
86	1955	Baker (symposium)	ON		changing faunal ranges					
87	1957	Miller	ON		pest range changes				6	
87	1957	Pechuman	Can.		new for country	Diptera	Tabanidae		12	
87	1957	Pengelly	ON	Bruce Co.	records	Araneae		*Latrodectus*		*mactans* (Fabricius)
88	1958	Hicks	ON		new for province	Coleoptera	Curculionidae	*Brachyrhinus*		*raucus* (Fabricius)
91	1961	Atwood	ON		list, review	Hymenoptera	Diprionidae		16	
91	1961	Teskey	ON		list	Diptera	Hypodermatinae		2	
92	1962	Knerrer & Atwood	ON		list	Hymenoptera	Halictidae (non-parasitic)		59	
93	1963	Benedict	ON	Windsor area	list	Diptera	Culicidae		17	
93	1963	Peterson	USA, Mex.		records	Diptera	Nycteribiidae		5	
94	1964	Knerrer & Atwood	ON		list	Hymenoptera	Andrenidae		70	
95	1965	Graves	ON		distribution	Coleoptera	Cicindellidae		13	
96	1966	Belton & Galloway	ON	Belleville area	phenology	Diptera	Culicidae		24	
97	1967	Vickery & Kevan	ON		list	Orthopteroidea s.l.			127	
97	1967	Judd	ON	London	pond-emerging insects				ca. 60	
97	1967	Knerrer & Atwood	ON	Toronto area	inquilines, parasitoids	Hymenoptera	social Halictidae		6	
98	1968	Riotte	ON	Halton Co.	new for province	Lepidoptera	Pieridae	*Pieris*		*virginiensis* Edwards
98	1968	McClanahan et al.	ON	Essex Co.	new for province	Coleoptera	Chrysomelidae	*Oulema*		*melanopus* (L.)

TABLE 2 continued...

Vol.	Publ. year	Author(s)	Area	Locality	Key words	Order	Family	Genus	# spp.	Species
98	1968	Judd	ON	Byron Bog	list	Odonata			22	
98	1968	Judd	ON	Byron Bog	list	Coleoptera	Dytiscidae, Hydrophilidae		26	
99	1969	Judd	ON	Byron Bog	insects visiting		*Asteraceae*	*Eupatorium*	43	*perfoliatum* L.
99	1969	Munroe	ON		distribution, postglacial origin					
100	1970	Judd	ON	southern	insects visiting		*Apiaceae*	*Daucus*	66	*carota* L.
100	1970	James et al.	ON	southeastern	list	Diptera	Culicidae, Chaoboridae		40	
101	1971	Judd	ON	Byron Bog	insects visiting		*Asteraceae*	*Taraxacum*	24	*officinale* Weber
101	1971	Dondale	ON	Belleville area	list, mown field	Araneae			150	
101	1971	Brower & Brower	ME		reared from pitcher plants	Lepidoptera			3	
102	1972	New & Loan	ON	Belleville area	list	Psocoptera			24	
102	1972	Judd	ON	Owen Sound	pollinating		Vespidae	*Epipactis*	4	*helleborine* (L.)
102	1972	Dutchback et al.	ON	Thunder Bay	new record for province	Coleoptera	Carabidae	*Trechus*		*crassiscapus* Lindroth
103	1973	Hagley & Hikichi	ON		unsprayed apple orchards, major pests	Lepidoptera, Diptera Coleoptera			20	
104	1974	Foott	ON	Essex Co.	corn fields	Coleoptera	Coccinellidae		6	
104	1974	MacFarlane	N.Am.		arthropod predators of	Hymenoptera	Apidae	*Bombus*	ca. 30	
104	1974	Watson	ON	Sudbury	new for province	Diptera	Cecidomyiidae	*Dasineura*		*aceris* (Shimer)
104	1974	Freitag & Ryder	ON	Granite I., Black Bay	arthropods in gull nests				ca. 30	
104	1974	Larochelle	QC	Anticosti I.		Coleoptera	Carabidae		83	
105	1975	Hagley & Hikichi	ON		predators in unsprayed apple orchards	Insecta, Acari			ca. 110	

TABLE 2 continued...

Vol.	Publ. year	Author(s)	Area	Locality	Key words	Order	Family	Genus	# spp.	Species
105	1975	Vickery & Kerr	ON		list, additions	Grylloptera			26	
106	1976	Morris	NL		butterfly list	Lepidoptera			61	
107	1977	Judd	ON	Haldimand Co.	list	Isopoda			7	
108	1978	Judd	ON	Haldimand Co.	list	Opiliones			7	
109	1979	Tomlin & Nagy	ON	southwestern	new for province	Diplura	Japygidae		1	
110	1980	Broadbent & Tomlin	ON	Guelph, London	list, corn field, pasture	Acari			76	
110	1980	Tyler & Ellis	ON	Elora	corn fields	Coleoptera	Carabidae		23	
112	1982	Tomlin	ON	southern	new for province	Protura			> 2	
114	1984	Judd	ON	Haldimand Co.	insects visiting		*Dipsacaceae*	*Dipsacus*	41	*fullonum* L.
115	1985	Brown & Marshall	ON	Guelph, London	list, in decaying fungi	Diptera	Phoridae		36	
117	1987	Sinclair & Marshall	ON	southern	madicolous habitats				76	
117	1987	Pendreigh & Marshall	ON	Algonquin Prov. Pk.	sphagnum bog	Diptera	Sphaeroceridae		ca. 23	
118	1988	Williams & Williams	Can.		freshwater springs	Trichoptera			ca. 64	
118	1988	Peck & Kaulbars	USA		distribution, bionomics	Coleoptera	Silphidae		27	
118	1988	Vickery & Scudder	Can.		list	Orthopteroidea s.l.			300	
119	1989	Rothman & Lorne	ON	Toronto	landfill	Acari	Phytoseeidae		11	
120	1989	Nystrom & Evans	ON	Newmarket	new for North America	Hymenoptera	Tenthredinidae	*Scolioneura*		*betuleti* (Klug)
121	1990	Swann	ON	St. Joseph I.		Diptera	Sphaeroceridae		2	
121	1990	Wheeler	New World			Diptera	Sphaeroceridae		10	
122	1991	Smith	Can.	Guelph	new for Canada	Hymenoptera	Megachilidae	*Megachile*		*manicatum* (L.)
122	1991	Marshall	Can.		collections to track faunal change					

TABLE 2 continued...

Vol.	Publ. year	Author(s)	Area	Locality	Key words	Order	Family	Genus	# spp.	Species
125	1994	Harper & Ricker	ON		distribution	Plecoptera			78	
126	1995	Skidmore	Can., AK		list	Collembola			412	
126	1995	Myles	ON		new records	Isoptera			3	
127	1996	Bright	ON	Niagara area	parasitoids/predators	Coleoptera	Scolytinae	*Tomicus*	11	*piniperda* (L.)
127	1996	Catling	ON	southern, eastern	northward expansion	Odonata	Coenagrionidae	*Enallagma*		*civile* (Hagen)
128	1997	Skevington & Carmichael	ON	Lampton Co.	list	Odonata			66	
129	1998	Suger et al.	ON	southern	oak savannah	Hymenoptera	Symphyta, Aculeata		145	
129	1998	McCafferty & Randolph	Can.		list	Ephemeroptera			321	
131	2000	Paquin & Lesage	QC	Gaspésie Park	list	Araneae			105	
132	2001	McCorquodale	ON		new records	Coleoptera	Cerambycidae		14	
132	2001	Bouchard et al.	ON		Auchenorhyncha in alvars	Hemiptera			18	
132	2001	Paquin & Dupérré	QC	western	boreal forest	Coleoptera			757	
134	2004	Buck	ON		list	Hymenoptera	Sphecidae, s.l.		278	
134	2004	Paiero et al.	Can.		new for country	Hemiptera			39	
134	2004	Godsoe	ON		extirpation in	Hymenoptera	Pompilidae	*Ceropales*		*bipunctata* Say
134	2004	Paiero & Buck	Can.		new for Canada	Hymenoptera	Apoidea		4	
135	2006	Marshall et al.	Can.		new records/distributions	Orthoptera			16	
136	2006	Bouchard et al.	ON		alvars	Coleoptera	Carabidae		142	
137	2007	Galloway	MB		parasites of Caprimulgidae	Acari, Phthiraptera			2	

TABLE 2 continued...

Vol.	Publ. year	Author(s)	Area	Locality	Key words	Order	Family	Genus	# spp.	Species
137	2007	Turnock et al.	MB		canola fields	Hymenoptera	Apidae	*Bombus*	15	
138	2007	McCorquodale et al.	ON		species decline, loss	Coleoptera	Cerambycidae		11	
139	2008	Paquin	QC		additions	Araneae			8	
140	2009	Cutler & Rogers	NS		new for province	Coleoptera	Scarabaeidae	*Maladera*		*castanea* (Arrow)
140	2009	Skevington & Goolsby	AZ		new host records	Diptera	Pipunculidae		2	
141	2010	Vickruck et al.	ON	southern	natural enemies	Hymenoptera	Apidae	*Ceratina*	8	
141	2010	Catling et al.	ON		alvars	Orthoptera			89	
						Coleoptera, Araneae				
141	2010	Colla & Dumesh	ON		phenology	Hymenoptera	Apidae	*Bombus*	18	
141	2010	Procter et al.	ON	south, central	hardwood forests	Coleoptera	Curculionidae		26	
141	2010	Sheffield et al.	ON	St. Catharines	new for province	Hymenoptera	Apidae	*Megachile*		*ericetorum* Lepeletier
142	2011	Douglas	N. Am.		new records	Coleoptera	Elateridae		16	
142	2011	Beresford	ON	Polar Bear Prov. Pk.	insects, list				44	
142	2011	Fogain & Graff	Can.		new for country	Hemiptera	Pentatomidae	*Hyalomorpha*		*halys* (Stål)
142	2011	McAlpine & Olden	ON	Renfrew Co.	new for province	Isopoda	Trichoniscidae	*Hyloniscus*		*riparius* (Koch)
142	2011	Sheffield & Williams	AK	Attu I.	new for North America	Hymenoptera	Apidae	*Bombus*		*distinguendus* Morawitz
143	2012	Denomme-Brown & Otis	ON	southern	distribution	Lepidoptera	Lycaenidae	*Callophrys*		*gryneus* (Hübner)
143	2012	Huber & Read	ON	Niagara on the Lake	new for province	Hymenoptera	Cynipidae	*Dryocosmus*		*kuriphilus* Yasumatsu

References

Felt, E. P. 1926. The distribution of insects and the significance of extralimital data. *Fifty-sixth Annual Report of the Entomological Society of Ontario*, *1925*. Pp. 44–47.

Fernald, H. T. 1916. Life zones in entomology and their relations to crops. Forty-sixth *Annual Report of the Entomological Society of Ontario, 1915*. Pp. 87–92.

Fletcher, J. 1902. Entomological record, 1901. *Thirty-second Annual Report of the Entomological Society of Ontario, 1901*. Pp. 99–109.

Fletcher, J. 1903. Entomological record, 1902. *Thirty-third Annual Report of the Entomological Society of Ontario, 1902*. Pp. 97–101.

Glenn, R. 1956. Entomology in Canada up to 1956: a review of developments and accomplishments. *The Canadian Entomologist* **88**: 290–371.

Holland, G. P. 1956. Systematic Entomology. Pp. 300–304 *in* Glenn, R. (compiler), Entomology in Canada up to 1956: a review of developments and accomplishments. *The Canadian Entomologist* **88**: 290–371.

Walker, E. M. 1955. Summary of symposium. Pp. 37–38 *in* Baker, A. W. (co-ordinator), Symposium II. Changing faunal ranges. *Annual Report of the Entomological Society of Ontario* **86**: 23–39.

Webster, F. M. 1902. The trend of insect diffusion in North America. *Thirty-second Annual Report of the Entomological Society of Ontario, 1902*. Pp. 63–67.