

**AN ANNOTATED CHECKLIST OF THE SPHECIFORM WASPS OF ONTARIO
(HYMENOPTERA: AMPULICIDAE, SPHECIDAE AND CRABRONIDAE)**

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Abstract

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A checklist of Ontario spheciform wasps (Ampulicidae, Sphecidae, Crabronidae) is presented based on a comprehensive study of all collections with major holdings of Ontario material, a critical review of previously published records and extensive field work. A total of 278 species is recorded, including 114 new provincial and 53 new Canadian records. The Palearctic species *Pemphredon morio* is recorded for the first time from North America, and seven species, *Passaloecus borealis*, *Tachysphex alpestris*, *Solierella levis*, *Trypoxylon bidentatum*, *T. sculleni*, *Mellinus abdominalis* and *Nysson hesperus* are recorded for the first time from the eastern Nearctic. The distribution of Ontario sphecids is discussed with special emphasis on species with odd distribution patterns and introduced species.

Introduction

The spheciform wasps (Ampulicidae, Sphecidae and Crabronidae, from here on simply referred to as "sphecids") are a group of aculeate Hymenoptera that has attracted much interest because of their complex breeding behaviour. Adults of this group include very small and inconspicuous insects as well as some of the largest and most spectacular wasps of our fauna. Besides their fascinating biology this group is of interest to ecologists and conservation biologists because many of its species inhabit vulnerable and endangered habitats. The taxonomy of most genera is comparatively well known, at least for the eastern Nearctic species. Despite this, the Canadian sphecid fauna has been very poorly studied except for the province of Quebec and the Yukon Territory (Finnamore 1982, 1997).

The present study aims towards narrowing this gap by providing the first annotated checklist of Ontario sphecids, including over a hundred new records for the province. Because most species reach the northern or northeastern limit of their range somewhere within the province, this checklist also provides an important reference for anyone interested in the biogeography of Nearctic sphecids. Furthermore, this work is relevant for the development of national species protection strategies because many Canadian sphecid species (ca. one quarter of the species known from Ontario) occur in no other Canadian province or territory except Ontario. This area is also the most densely populated in the country and some of the species in question are restricted to habitats that are very sensitive to human disturbance.

Up to now only about 165 sphecid species have been reported from Ontario (Krombein 1979, and other authors: see Table I), insignificantly more than the 163 species recorded from Quebec (Provancher 1883, 1885-1889, Finnamore 1982, additions by Dollfuss 1995; misidentifications and doubtful records excluded). Considering the more southern location of Ontario, which includes parts of the Carolinian life zone, one would expect a much higher number of species than in Quebec. In fact, the present work demonstrates that the previously recorded 165 species represent less than 60 % of the total fauna.

The earliest works on the sphecoid fauna of Ontario were published by Provancher (1883, 1885-1889) and Harrington (1902). Harrington (who included all of Provancher's records) reported 73 valid species from the Ottawa region. Despite being published over a century ago, his work remains by far the most extensive previously published paper on Ontario sphecids. Later, Walker (1913) published a list of species from Toronto (26 species) and Brown (1934) studied the fauna of the Temagami [= Timagami] area in northern Ontario (16 species). Fye (1965) reported on the biology of three species of Pemphredoninae. Only recently, further faunistic papers were published: Blades and Marshall (1994) listed 11 species taken in pan traps in south-central Ontario peatlands. Sugar et al. (1998) recorded 39 species from oak savannah habitats in southern Ontario and Skevington et al. (2001) provided a checklist of the species of Lambton County in southwestern Ontario including 28 taxa. In an unpublished report to Parks Canada Marshall et al. (2001) recorded 57 species from Bruce County in southcentral Ontario.

The present paper represents the first checklist on Ontario spheciform wasps. The preparation of this list involved a critical review of all previously published species records, a comprehensive study of all major collections, and four years of field work. The distribution of Ontario sphecids is discussed with emphasis on species with unusual distribution patterns and introduced species.

Materials and Methods

Material examined. The present checklist is based mostly on material in the following five major collections: University of Guelph, Department of Environmental Biology (Guelph); Canadian National Collection of Insects (Ottawa); Laurence Packer collection (York University, Toronto); Royal Ontario Museum (Toronto); and University of Manitoba, Entomology Department (Winnipeg). The study involved a review of Ontario material from these collections including verification of previous determinations and identification of all previously unidentified specimens. In the case of material from the Canadian National Collection previous identifications were only reviewed in their entirety for taxonomically difficult groups, for rare species, and for unpublished Ontario records; otherwise only a few voucher specimens per species were checked. A.V. Antropov (*in litt.*) provided data on some specimens of *Trypoxylon* currently on loan to him from their collection. Occasional records from other collections were included if available (see list of depositories below). F.E. Kurczewski (*in litt.*) kindly provided additional data from his collection, and H.S. Court and W.J. Pulawski (*in litt.*) contributed records from the collection of the California Academy of Sciences. Two records were included based on photographs of live specimens taken in the field by H. Goulet (Canadian National Collection).

Classification and Identification. The nomenclature used in this paper follows almost entirely¹ the "Catalog of Sphecidae sensu lato" which is available on the internet and is constantly updated (Pulawski 2004). Following Melo (1999) the following families and subfamilies of Ontario spheciform wasps are recognised: Ampulicidae, Sphecidae (including only Sphecinae sensu Bohart and Menke 1976), and Crabroninae²: (including subfamilies Pemphredoninae, Astatinae, Crabroninae [incl. Larrinae], Bembicinae and Philanthinae). The systematic arrangement of taxa largely follows Krombein (1979) except where conflicting with modern classification. In a few cases new synonymies and revised species concepts (within *Hoplisoides*, *Nysson* and *Epinysson*) are being used that will be discussed in detail in separate publications (Buck, in prep.). Identifications

¹ The proposed synonymy of *Synnevrus* with *Nysson* is not adopted here because it has never been published formally.

² Melo's controversial placement of the Ammoplanina and Mellinini in the Astatinae and the Crabroninae, respectively, is not adopted here.

for certain species of the following groups were checked by specialists: *Podalonia* (A.S. Menke, Ammophila Research Institute, Arizona), *Tachysphex*, *Tachytes* (W.J. Pulawski, California Academy of Sciences), and the *Trypoxylon figulus*-group (A.V. Antropov, Zoological Museum, Moscow State University). Helen S. Court (California Academy of Sciences) provided crucial help in identifying some species of *Nysson* and *Synnevrus*.

Recording standards for new Ontario records. The current edition of the “Catalog of the Hymenoptera in America North of Mexico” (Krombein 1979) often provides distribution ranges rather than explicit provincial or state records. Therefore the presence or absence of certain species in Ontario is not always clear. In the absence of other explicit literature records the following standard was adopted for interpreting distribution ranges in Krombein (1979): Species with entries in the form of “Canada and U.S. east of 100th meridian”, or “transcontinental in Transition and Austral Zones” were considered published Ontario records if the presence of the species was confirmed by specimens in collections. However, species with catalog entries like “Upper and Lower Austral Zones of North America” were treated as unrecorded because the Upper Austral Zone merely touches extreme southwestern Ontario along the shore of Lake Erie, including the Niagara Peninsula (see Scudder 1979, Fig. 3.11).

Recording species distributions within Ontario. The locality records under each species are arranged according to Ontario’s primary administrative divisions (Figs 1, 2). Unfortunately, names for these divisions sometimes vary according to the source (e.g., Natural Resources Canada 2004, Ontario Road Atlas 2003). The names adopted here are the ones used by Natural Resources Canada (2004) on their website ‘Geographical Names of Canada’. The following administrative divisions have alternative names (names used in Ontario Road Atlas (2003) given in parentheses): Carleton (City of Ottawa), Kent (Municipality of Chatham-Kent), Victoria (City of Kawartha Lakes), Wentworth (City of Hamilton). The following divisions have been amalgamated according to some sources: Toronto and York (Regional Municipality of York), Lincoln and Welland (Regional Municipality of Niagara), Haldimand and Norfolk (Haldimand-Norfolk Region). Formerly Ontario’s administrative divisions were either termed ‘counties’ or ‘districts’. Recently many counties have adopted alternative terms like ‘regional municipality’, ‘municipality’, ‘city’ or even ‘management unit’ (Ontario Road Atlas 2003). For the sake of simplicity only the names proper (excluding all attributes like ‘regional municipality’, ‘county’, ‘district’, etc.) are used in the presentation of data below.

Prey records. Prey records are given in a separate paragraph under each species where available. Females that were collected with prey are indicated by asterisks (*) or superscript numbers (e.g., ¹) in the data paragraph. Most prey items were identified by S.M. Paiero (University of Guelph) (all Hemiptera, Coleoptera, Tettigoniidae, Tridactylidae and Blattaria) except for Acrididae, which were determined by D.L. Johnson (Agriculture Canada, Lethbridge), and some Apoidea and Diptera identified by the author.

Specimen depositories. All material is deposited in the University of Guelph Insect Collection (DEBU) unless indicated otherwise: BAR – private collection of Brad Arnal and Harold Duggan, Waterloo, Ontario; BCPM – Royal British Columbia Museum, Victoria, British Columbia; CASC – California Academy of Sciences, Department of Entomology, San Francisco, California; CNCI – Canadian National Collection of Insects, Ottawa, Ontario; EDUM – J.B. Wallis Museum, Entomology Department, University of Manitoba, Winnipeg, Manitoba; FEK – collection of Frank E. Kurczewski, Syracuse, New York; LEMQ – Lyman Entomological Museum, McDonald College, McGill University, Ste-Anne-de-Bellevue, Quebec; LPC – collection of Laurence Packer, York University, Toronto, Ontario; PMAE – Provincial Museum of Alberta, Edmonton, Alberta; ROME – Royal Ontario Museum, Toronto, Ontario; TAMU – Department of Entomology, Texas A&M University, College Station, Texas; ULQC – University of Laval, Department of Biology, Quebec, Quebec; USNM – United States National Museum, Washington, D.C.

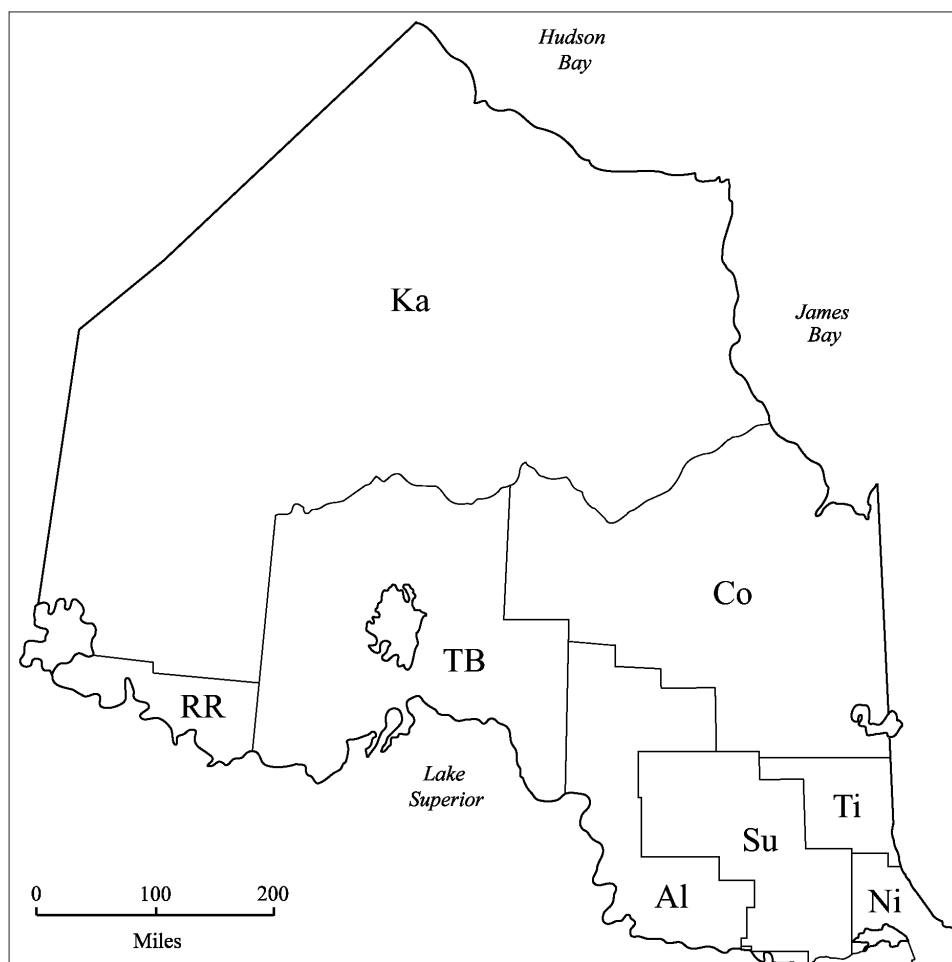


FIGURE 1. Districts of northern Ontario.

Abbreviations: Al – Algoma; Co – Cochrane; Ka – Kenora; Ni – Nipissing; RR – Rainy River; Su – Sudbury; TB – Thunder Bay; Ti – Timiskaming. Modified from: Brock University Map Library. Ontario – regional municipalities, counties & districts (PDF file). Software edition. St. Catharines, Ontario: Brock University Map Library. 2004. File name: ontario.pdf.

Other Abbreviations. Abbreviations for provinces and territories in Canada and for states in the United States are the same ones that are used by the postal systems in both countries (e.g. MB = Manitoba, MI = Michigan). Only one exception applies: records from the Province of Newfoundland and Labrador are recorded separately as “LB” (= Labrador) and “NF” (= Newfoundland excluding Labrador). Further abbreviations: ANSI = Area of Natural and Scientific Interest.

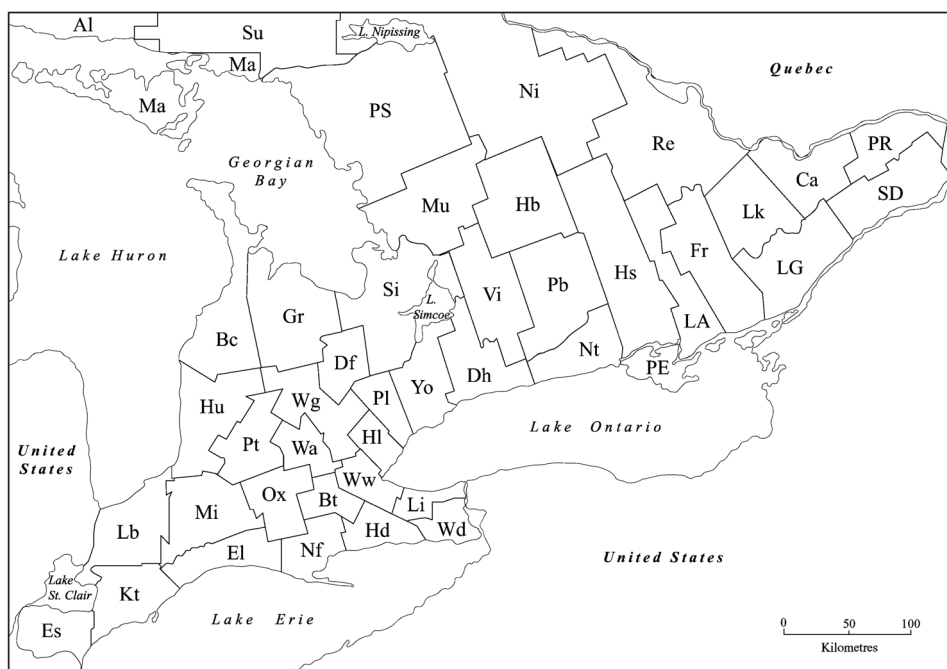


FIGURE 2. Counties and districts of southern Ontario.

Abbreviations: Al – Algoma; Bc – Bruce; Bt – Brant; Ca – Carleton; Df – Dufferin; Dh – Durham; El – Elgin; Es – Essex; Fr – Frontenac; Gr – Grey; Hb – Haliburton; Hd – Haldimand; HI – Halton; Hs – Hastings; Hu – Huron; Kt – Kent; LA – Lennox and Addington; Lb – Lambton; LG – Leeds and Grenville; Li – Lincoln; Lk – Lanark; Ma – Manitoulin; Mi – Middlesex; Mu – Muskoka; Nf – Norfolk; Ni – Nipissing; Nt – Northumberland; Ox – Oxford; Pb – Peterborough; PE – Prince Edward; Pl – Peel; PR – Prescott and Russell; PS – Parry Sound; Pt – Perth; Re – Renfrew; SD – Stormont, Dundas and Glengarry; Si – Simcoe; Su – Sudbury; Vi – Victoria; Wa – Waterloo; Wd – Welland; Wg – Wellington; Ww – Wentworth; Yo – York. Modified from: Brock University Map Library. Southern Ontario (PDF file). Software edition. St. Catharines, Ontario: Brock University Map Library. 2004. File name: sont.pdf.

Results

A complete list of Ontario sphecid species is given in Table I. The table includes previous literature records (examples only), gives brief information on the distribution in Canada and North America, and records the presence of species in the five major collections studied. The following section (starting on p. 32) deals only with the species newly recorded from Ontario. Specimen data is only provided for species newly recorded from Ontario, supplemented with brief information on the overall distribution, biology, and prey records from examined material. New records from other provinces were also included if available. Table II gives an overview of the distribution of newly recorded species in Ontario counties, regions and districts. The status of some rare (but previously recorded species) is discussed on p. 74. Species that were erroneously recorded from Ontario are treated on pp. 75-76. Other misidentifications in previous papers (Harrington 1902; Walker 1913; Brown 1934; Blades and Marshall 1994) are corrected in a separate section (pp. 76-77).

TABLE I. Checklist of the spheciform wasps (Ampulicidae, Sphecidae, Crabronidae) of Ontario.

G	C	R	P	M	Species	Distribution (CDN)	Distr. (N.Am.)	Literature Records
Ampulicidae								
x	x		x		<i>Dolichurus greenei</i> Rohwer, 1916	Carol., Trans.	eastern	Krombein 1979
x	x		x		<i>Ampulex canaliculata</i> Say, 1823	Carol., Trans.	eastern	Finnamore & Michener 1993 *)
Sphecidae								
x		x			<i>Chlorion aerarium</i> Patton, 1879	Carolinian	transcont.	O'Brien 1989b
x	x	x	x	x	<i>Chalybion californicum</i> (Saussure, 1867)	NS to QC, BC	transcont.	H 1902, W 1913, F 1982
x					<i>Podium luctuosum</i> Smith, 1856	Carolinian	eastern	new (CDN)
x	x	x	x	x	<i>Sceliphron caementarium</i> (Drury, 1773)	NS to QC, PE, BC	transcont.	H 1902, W 1913, BM 1963, SCS 2001
x	x	x	x	x	<i>Sphex ichneumoneus</i> Linnaeus, 1758)	QC, BC	transcont.	W 1913, BM 1963, SCS 2001
x	x		x		<i>Sphex pensylvanicus</i> Linnaeus, 1763	QC	transcont.	new
x					<i>Isodontia apicalis</i> (Smith, 1856)	Carolinian	w. to AZ	new (CDN)
x	x	x			<i>Isodontia auripes</i> (Fernald, 1906)	(Carolinian)	eastern	new (CDN)
x	x		x		<i>Isodontia mexicana</i> (Saussure, 1867)	QC	e. of Rockies	BM 1963
			x		<i>Palmodes dimidiatus</i> (DeGeer, 1773)	(Carolinian)	transcont.	new (CDN)
x	x	x		x	<i>Prionyx atratus</i> (Lepeletier, 1845)	QC, SK, BC	transcont.	BM 1963
					<i>Prionyx canadensis</i> (Provancher, 1887)	MB to BC	transcont.	BM 1963
x			x		<i>Prionyx parkeri</i> Bohart & Menke, 1963	(Carolinian)	transcont.	new (CDN)
x	x	x			<i>Podalonia luctuosa</i> (Smith, 1856)	transcontinental	transcont.	H 1902, W 1913, Murray 1940
x	x	x	x		<i>Podalonia robusta</i> (Cresson, 1865)	transcontinental	transcont.	Murray 1940
x	x	x	x		<i>Podalonia violaceipennis</i> (Lepeletier, 1845)	QC	eastern	Murray 1940, SFG 1998
x	x	x	x		<i>Eremnophila aureonotata</i> (Cameron, 1888)	QC	e. of 100°W	SCS 2001
x	x	x			<i>Ammophila azteca</i> Cameron, 1888	transcontinental	transcont.	Krombein 1979 (n.e.)
x			x		<i>Ammophila cleopatra</i> Menke, 1964	AB, BC	transcont.	new
x	x	x			<i>Ammophila evansi</i> Menke, 1964	NS, QC	eastern	Menke 1964
			x		<i>Ammophila fernaldi</i> (Murray, 1938)	QC	w. to AZ	new
x	x	x	x		<i>Ammophila harti</i> (Fernald, 1931)	QC to AB	w. to UT	Menke 1965
x	x	x	x		<i>Ammophila kennedyi</i> (Murray, 1938)	transcontinental	transcont.	Krombein 1979 (n.e.)
x	x	x			<i>Ammophila mediata</i> Cresson, 1865	transcontinental	transcont.	Menke 1965
x		x			<i>Ammophila nigricans</i> Dahlbom, 1843	Carol., Trans.	eastern	new
x	x	x	x		<i>Ammophila pictipennis</i> (Walsh, 1869)	(Carolinian)	eastern	new (CDN)
x	x	x		x	<i>Ammophila procera</i> Dahlbom, 1843	QC to BC	transcont.	H 1902, W 1913
x	x	x	x	x	<i>Ammophila urnaria</i> Dahlbom, 1843	QC	eastern	SFG 1998
Crabronidae, Pemphredoninae								
x	x	x	x	x	<i>Mimesa cressonii</i> Packard, 1867	QC to BC	transcont.	F 1983
x	x		x	x	<i>Mimesa dawsoni</i> Mickel, 1916	MB, AB	w. to UT	F 1983
x	x		x		<i>Mimesa ezra</i> (Pate, 1944)	NB, QC, AB	w. to CO	F 1983, SFG 1998
x	x		x		<i>Mimesa foxi</i> Finnamore, 1980	NF to AB, PE, NT	w. to WY	F 1983
x	x	x			<i>Mimesa gregaria</i> (Fox, 1898)	NS to BC, LB, NT, YT	transcont.	F 1983
x	x		x	x	<i>Mimesa huron</i> Finnamore, 1980	NS to QC	eastern	F 1983, SFG 1998
x	x	x			<i>Mimesa lutaria</i> (Fabricius, 1787)	LB to BC, PE, NT, YT	Holarctic	F 1983
x	x	x	x		<i>Mimesa maculipes</i> Fox, 1893	QC	eastern	F 1983
x	x	x	x	x	<i>Mimesa pauper</i> Packard, 1867	NF to BC, PE, NT	transcont.	F 1983, SFG 1998
x					<i>Mimesa pygidialis</i> (Malloch, 1933)	MB to AB	central	new
x	x	x			<i>Mimusesa atratina</i> (Morawitz, 1891)	LB, AB, BC, NT, YT	Holarctic	new
x	x	x	x	x	<i>Mimusesa canadensis</i> (Malloch, 1933)	transcontinental	transcont.	Krombein 1979
x					<i>Mimusesa clypeata</i> (Fox, 1898)	LB, SK, AB, NT, YT, (AK)	north. -mont.	new
x	x		x		<i>Mimusesa leucopus</i> (Say, 1837)	QC	eastern	new
x	x	x	x		<i>Mimusesa longicornis</i> (Fox, 1898)	NB	eastern	new (CDN)
x	x				<i>Mimusesa mellipes</i> (Say, 1837)	QC	eastern	new
x	x	x	x	x	<i>Mimusesa nigra</i> (Packard, 1867)	transcontinental	transcont.	H 1902, W 1913, B 1934, BMa 1994, SFG 1998
x	x	x			<i>Mimusesa propinqua</i> (Kincaid, 1900)	QC, AB, YT	transcont.	BMa 1994
x					<i>Mimusesa</i> sp.n. A	QC	northern	undescribed species
x	x				<i>Pseneo simplicicornis</i> (Fox, 1898)	QC	eastern	new
			x		<i>Psen barthi</i> Viereck, 1907	QC	eastern	new
x	x				<i>Psen erythropoda</i> Rohwer, 1910	QC	eastern	Krombein 1979
x	x				<i>Psen monticola</i> (Packard, 1867)	QC	eastern	Krombein 1979
x	x	x	x	x	<i>Psenulus pallipes</i> (Panzer, 1798)	QC	Holarctic	SFG 1998
x	x	x			<i>Psenulus trisulcus</i> (Fox, 1898)	QC	eastern	new
x			x		<i>Diodontus adamsi</i> Titus, 1909	SK to BC, YT	transcont.?	new (CDN)
x	x	x	x		<i>Diodontus bidentatus</i> Rohwer, 1911	NB, QC, AB	transcont.	new
x	x				<i>Diodontus flavitarsis</i> Fox, 1892	YT	transcont.	new
x	x	x	x	x	<i>Diodontus minutus</i> (Fabricius, 1793)	QC, BC	Holarctic	new
x	x				<i>Diodontus spiniferus</i> (Mickel, 1916)	AB, QC	transcont.	new
x	x	x		x	<i>Diodontus virginianus</i> (Rohwer, 1917)	Carolinian	transcont.	new (CDN)
x		x			<i>Pemphredon baltica</i> Merisuo, 1972	NB, BC, NT, YT	Holarctic	Dollfuss 1995
x	x	x	x	x	<i>Pemphredon foxii</i> Rohwer, 1917	NB to MB, AB	w. to AZ	Dollfuss 1995

TABLE I. – continued

G	C	R	P	M	Species	Distribution (CDN)	Distr. (N.Am.)	Literature Records
x	x	x	x	x	<i>Pemphredon inornata</i> Say, 1824	NS to BC, NT, YT	Holarctic	H 1902, Dollfuss 1995
x	x	x	x	x	<i>Pemphredon lethifer</i> (Shuckard, 1837)	NF to QC, PE, BC	Holarctic	Dollfuss 1995, SFG 1998
x	x	x			<i>Pemphredon lugubris</i> (Fabricius, 1793)	NF, NS, QC, AB, BC, YT	Holarctic	H 1902, Dollfuss 1995
x	x	x			<i>Pemphredon menkei</i> Bohart, 1993	NF, NB to MB, NT, YT	transcont.	Dollfuss 1995
x	x	x	x	x	<i>Pemphredon montana</i> Dahlbom, 1845	NF to BC, PE, YT	Holarctic	B 1934, Dollfuss 1995
x					<i>Pemphredon morio</i> vander Linden, 1829	?	intr., eastern	new (CDN)
			x		<i>Pemphredon pulawskii</i> Dollfuss, 1993	Carol., Trans.	eastern	Dollfuss 1995
x	x	x	x	x	<i>Pemphredon rugifer</i> (Dahlbom, 1844)	QC	intr.?, eastern	Dollfuss 1995
x	x	x	x	x	<i>Passaloecus annulatus</i> (Say, 1837)	MB, AB	e. of Rockies	H 1902
x	x		x		<i>Passaloecus areolatus</i> Vincent, 1878	Carol., Trans.	eastern	SFG 1998, SCS 2001
x					<i>Passaloecus borealis</i> Dahlbom, 1844	QC, BC, NT, YT	Holarctic	new
x	x	x	x	x	<i>Passaloecus cuspidatus</i> Smith, 1856	NS to BC, NT, YT	transcont.	H 1902, W 1913, Fye 1965, V 1978
x	x	x	x	x	<i>Passaloecus gracilis</i> (Curtis, 1834)	QC, AB	intr., eastern	new
x	x	x	x		<i>Passaloecus lineatus</i> Vincent, 1878	Carol., Trans.	eastern	SFG 1998
x	x		x		<i>Passaloecus monilicornis</i> Dahlbom, 1842	NB, QC, SK to BC, NT	Holarctic	Fye 1965, V 1978, SFG 1998
x	x	x	x	x	<i>Passaloecus singularis</i> Dahlbom, 1844	QC, BC	Holarctic	V 1978
x	x	x	x	x	<i>Stigmus americanus</i> Packard, 1867	transcontinental	transcont.	BMA 1994
x	x	x			<i>Stigmus fraternus</i> Say, 1824	QC	eastern	H 1902
	x				<i>Spilomena amplexipes</i> Krombein, 1952	Carol., Trans.	eastern	new (CDN)
x	x		x		<i>Spilomena barberi</i> Krombein, 1962	QC	transcont.	Krombein 1979
x	x				<i>Spilomena pusilla</i> (Say, 1837)	Carol., Trans.	transcont.	new (CDN)
	x				<i>Ammoplanus lenape</i> Pate, 1937	Carol. to Can.	disjunct	new (CDN)
Crabronidae, Astatinae								
x	x	x	x		<i>Diploplectron peglowi</i> Krombein, 1939	SK, NT, YT	transcont.	new
					<i>Astata bakeri</i> Parker, 1962	SK to BC	transcont.	Parker 1962
x	x	x			<i>Astata bicolor</i> Say, 1823	transcontinental	e. of Rockies	Krombein 1979 (n.e.)
x	x	x			<i>Astata leuthstromi</i> Ashmead, 1897	transcontinental	transcont.	Krombein 1979 (n.e.)
x					<i>Astata nubecula</i> Cresson, 1865	QC, AB, BC, NT	transcont.	new
x			x		<i>Astata occidentalis</i> Cresson, 1881	BC, Carolinian	transcont.	new
x	x	x	x		<i>Astata unicolor</i> Say, 1824	transcontinental	transcont.	H 1902, W 1913
Crabronidae, Crabroninae								
x	x				<i>Liris argentatus</i> (Beauvois, 1811)	BC, Carolinian	transcont.	Krombein 1979
x			x		<i>Liris beatus</i> (Cameron, 1889)	Carolinian	transcont.	new (CDN)
x	x	x	x	x	<i>Larropis distincta</i> (Smith, 1856)	transcontinental	transcont.	H 1902, SFG 1998, SCS 2001
x	x	x			<i>Tachytes aurulentus</i> (Fabricius, 1804)	eastern Canada	eastern	Krombein 1979 (n.e.)
x	x	x	x		<i>Tachytes crassus</i> Patton, 1881	Carolinian	eastern	new (CDN)
x		x			<i>Tachytes harpax</i> Patton, 1881	Carol., Trans.	eastern	new (CDN)
x			x		<i>Tachytes intermedius</i> (Viereck, 1906)	Carol., Trans.	eastern	new (CDN)
x	x				<i>Tachytes pennsylvanicus</i> Banks, 1921	QC	transcont.	new
x	x	x	x	x	<i>Tachytes validus</i> Cresson, 1872	QC	w. to CO	Krombein 1979
x	x	x	x		<i>Tachysphex acutus</i> (Patton, 1880)	NB, MB	eastern	Pulawski 1988
x	x	x	x		<i>Tachysphex aethiops</i> (Cresson, 1865)	QC to BC, NT	transcont.	Pulawski 1988
x	x				<i>Tachysphex alpestris</i> Rohwer, 1908	MB to BC, NT, YT	west., e. to NE	new (CDN)
x	x	x	x		<i>Tachysphex antennatus</i> Fox, 1894	BC	transcont.	new
x					<i>Tachysphex apicalis</i> Fox, 1893	AB, BC, Carolinian	transcont.	new
x	x		x		<i>Tachysphex pechumani</i> Krombein, 1938	Carol., Trans.	eastern	Kurczewski 1998a, SCS 2001
x	x	x	x		<i>Tachysphex pompiliiformis</i> (Panzer, 1805)	NS to BC, PE, NT, YT	Holarctic	H 1902, Pulawski 1988
x	x	x			<i>Tachysphex semirufus</i> (Cresson, 1865)	SK to BC, YT	transcont.	Pulawski 1988
x	x		x	x	<i>Tachysphex similis</i> Rohwer, 1910	NB to AB, NT	w. to MT, UT	Pulawski 1988
x	x	x	x	x	<i>Tachysphex tarsatus</i> (Say, 1823)	QC to BC	transcont.	Pulawski 1988, SCS 2001
x	x	x	x	x	<i>Tachysphex terminatus</i> (Smith, 1856)	NS, PE, QC, MB, AB	w. to AZ	H 1902, Pulawski 1988
x	x				<i>Tachysphex texanus</i> (Cresson, 1872)	AB	transcont.	new
x	x	x	x	x	<i>Lyroda subita</i> (Say, 1837)	transcontinental	transcont.	H 1902, SFG 1998
x	x		x		<i>Plenoculus davisii</i> Fox, 1893	QC, BC	transcont.	new
x			x		<i>Solierella levis</i> Williams, 1950	Carol., Trans.	disjunct	new (CDN)
x	x		x		<i>Solierella peckhami</i> (Ashmead, 1897)	Carol. to Can.	transcont.	new (CDN)
x	x				<i>Solierella plenoculoides</i> (Fox, 1893)	Carol. to Can.	transcont.	new (CDN)
x	x		x	x	<i>Miscophus americanus</i> Fox, 1890	AB, NT	w. to CO	new
x					<i>Nitela cerasicola</i> Pate, 1937	Carolinian	eastern	new (CDN)
x	x	x	x		<i>Nitela virginiensis</i> Rohwer, 1923	QC	eastern	new
x					<i>Pison koreense</i> (Radoszkowski, 1887)	Carol., Trans.	intr., eastern	new (CDN)
x	x	x	x	x	<i>Trypoxylon attenuatum</i> Smith, 1851	QC	intr., eastern	new (CDN)
	x				<i>Trypoxylon bidentatum</i> Fox, 1891	BC	disjunct	new (CDN)
x	x		x		<i>Trypoxylon carinatum</i> Say, 1837	Carol., Trans.	e. of 100°W	new (CDN)
x	x				<i>Trypoxylon clarkei</i> Krombein, 1962	Carolinian	eastern	new (CDN)
x	x	x	x	x	<i>Trypoxylon clavicerum</i> Lep. & Serville, 1828	Carol., Trans.	intr., eastern	Coville 1984
x	x		?		<i>Trypoxylon figulus</i> (Linnaeus, 1758)	QC	intr., eastern	Pulawski 1984, SFG 1998
x	x	x	x	x	<i>Trypoxylon frigidum</i> Smith, 1856	transcontinental	transcont.	H 1902, S 1940, SFG 1998

TABLE I. – continued

G	C	R	P	M	Species	Distribution (CDN)	Distr. (N.Am.)	Literature Records
x	x		x		<i>Trypoxylon johnsoni</i> Fox, 1891	Carolinian	eastern	Krombein 1979, SFG 1998
x	x		?		<i>Trypoxylon kolazyi</i> Kohl, 1893	Carol., Trans.	intr., eastern	new (CDN)
x	x	x	x	x	<i>Trypoxylon pennsylvanicum</i> Saussure, 1867	QC	w. to CO	S 1940, BMa 1994, SFG 1998
	x	x			<i>Trypoxylon richardsi</i> Sandhouse, 1940	Carolinian	eastern	Krombein 1979
		x			<i>Trypoxylon sculleni</i> Sandhouse, 1940	AB, BC	disjunct	new
x	x				<i>Trypoxylon clavatum</i> Say, 1837	Carolinian	e. of Rockies	S 1940
x	x	x	x		<i>Trypoxylon collinum</i> Smith, 1856	QC	eastern	S 1940, Coville 1982
x	x	x	x	x	<i>Trypoxylon lactitarse</i> Saussure, 1867	QC	w. to AZ	H 1902
x	x	x	x		<i>Trypoxylon politum</i> Say, 1837	(Carolinian)	eastern	Coville 1982
x					<i>Trypoxylon tridentatum</i> Packard, 1867	BC, Carolinian	transcont.	new
x	x	x	x	x	<i>Oxybelus bipunctatus</i> Olivier, 1811	NS to QC	intr., eastern	Kurczewski 1998b
	x				<i>Oxybelus cressonii</i> Robertson, 1889	Carolinian	w. to UT	new (CDN)
	x				<i>Oxybelus decorosus</i> (Mickel, 1916)	Carol. to Can.	e. of 100°W	new (CDN)
x	x	x	x	x	<i>Oxybelus emarginatus</i> Say, 1837	transcontinental	transcont.	H 1902
		x			<i>Oxybelus inornatus</i> (Robertson, 1901)	Carol., Trans.	eastern	new (CDN)
x					<i>Oxybelus laetus</i> Say, 1837	Carolinian	e. of 100°W	new (CDN)
x	x	x	x		<i>Oxybelus niger</i> Robertson, 1889	QC	eastern	Krombein 1979 (n.e.)
	x				<i>Oxybelus sericeus</i> Robertson, 1889	Carol. to Can.	transcont.	new (CDN)
x					<i>Oxybelus subcornutus</i> Cockerell, 1895	Carol., Trans.	w. to AZ	new (CDN)
x	x	x	x		<i>Oxybelus subulatus</i> Robertson, 1889	QC	w. to CO	Krombein 1979 (n.e.)
x	x	x	x	x	<i>Oxybelus uniglutinis</i> (Linnaeus, 1758)	transcontinental	Holarctic	H 1902, W 1913
x	x	x	x	x	<i>Anacrabro ocellatus</i> Packard, 1866	e. of Rockies	e. of Rockies	H 1902
x					<i>Entomognathus lenapeorum</i> Viereck, 1904	Carolinian	eastern	new (CDN)
x	x		x		<i>Entomognathus memorialis</i> Banks, 1921	Carolinian	eastern	new (CDN)
x	x	x	x	x	<i>Lindenius armaticeps</i> (Fox, 1895)	e. of Rockies	w. to CO	Krombein 1979 (n.e.)
x	x	x	x		<i>Lindenius columbianus</i> (Kohl, 1892)	transcontinental	transcont.	Krombein 1979 (n.e.)
x	x	x	x		<i>Rhopalum clavipes</i> (Linnaeus, 1758)	QC, AB	Holarctic	SFG 1998
x	x	x	x		<i>Rhopalum coarctatum</i> (Scopoli, 1763)	e. of Rockies	intr.?, eastern	BMa 1994, SFG 1998
x	x	x			<i>Rhopalum occidentale</i> (Fox, 1895)	QC, BC	transcont.	new
x	x	x	x		<i>Rhopalum pedicellatum</i> Packard, 1867	Carol. to Can.	w. to CO	new (CDN)
x	x	x	x		<i>Rhopalum rufigaster</i> Packard, 1867	QC	e. of 100°W	new
x					<i>Crossocerus unicus</i> (Patton, 1897)	QC, MB	w. to MT	new
x	x	x	x	x	<i>Crossocerus annulipes</i> (Lep. & Brullé, 1834)	NS to BC	Holarctic	SFG 1998, L 2000, SCS 2001
x	x	x			<i>Crossocerus barbipes</i> (Dahlbom, 1845)	QC to BC	Holarctic	H 1902, Pate 1944
x	x	x			<i>Crossocerus harringtonii</i> (Fox, 1895)	transcontinental	transcont.	Pate 1944, SFG 1998
x	x	x	x		<i>Crossocerus impressifrons</i> (Smith, 1856)	QC	eastern	H 1902, SFG 1998, L 2000, SCS 2001
x	x	x			<i>Crossocerus leucostoma</i> (Linnaeus, 1758)	transcontinental	Holarctic	H 1902, Pate 1944
					(syn.: <i>cinctipes</i> Provancher, 1882)			
x	x	x	x	x	<i>Crossocerus maculipennis</i> (Smith, 1856)	NB to BC	transcont.	H 1902, SFG 1998
x	x	x			<i>Crossocerus nigrilus</i> (Lepeletier & Brullé, 1835)	transcontinental	Holarctic	H 1902, B 1934, Pate 1944, L 2000
					(syn.: <i>nigricornis</i> Provancher, 1888)			
x	x		x		<i>Crossocerus nitidiventris</i> (Fox, 1895)	QC	eastern	Krombein 1979
x	x				<i>Crossocerus stictochilos</i> Pate, 1944	Carol., Trans.	eastern	L 2000
x	x				<i>Crossocerus tarsalis</i> (Fox, 1895)	QC	w. to ID	Krombein 1979
x	x	x	?		<i>Crossocerus elongatulus</i> vand. Linden, 1829	NS, QC, AB, YT	Holarctic	SFG 1998, SCS 2001
x	x	x	?		<i>Crossocerus lentus</i> (Fox, 1895)	NB to BC, NT, YT	transcont.	SFG 1998, L 2000
x	x	x	x		<i>Crossocerus maculiclypeus</i> (Fox, 1895)	transcontinental	transcont.	F 1982, SFG 1998, SCS 2001
x	x				<i>Crossocerus minimus</i> (Packard, 1867)	NB, QC, AB, NT, YT	e. of Rockies	Krombein 1979
	x				<i>Crossocerus planifemur</i> Krombein, 1952	Carolinian	eastern	L 2000
x	x	x	x		<i>Crossocerus similis</i> (Fox, 1895)	Carolinian	eastern	Krombein 1979, L 2000
x	x	x			<i>Crossocerus tarsatus</i> (Shuckard, 1837)	transcontinental	Holarctic	Krombein 1979 (n.e.)
x	x	x	x	x	<i>Crabro advena</i> Smith, 1856	eastern Canada	e. of 100°W	H 1902, W 1913, SFG 1998
x	x	x	x	x	<i>Crabro argusinus</i> Bohart, 1976	transcontinental	transcont.	H 1902
x					<i>Crabro cognatus</i> Fox, 1895	AB	w. to MT, UT	new
x	x	x	x		<i>Crabro cribrellifer</i> (Packard, 1867)	NS, PE, QC	eastern	H 1902, Bohart 1976
	x				<i>Crabro digitatus</i> Bohart, 1976	QC	eastern	Bohart 1976
x	x	x			<i>Crabro latipes</i> Smith, 1856	transcontinental	transcont.	H 1902
x	x	x	x	x	<i>Crabro monticola</i> (Packard, 1867)	transcontinental	transcont.	Krombein 1979 (n.e.)
x					<i>Crabro nigriceps</i> Bohart, 1976	MB	eastern	new
x					<i>Crabro snowii</i> Fox, 1896	MB, SK	eastern	new
	x				<i>Crabro tenuiglossa</i> Packard, 1866	QC, AB	e. of Rockies	H 1902
x	x	x			<i>Crabro tenuis</i> Fox, 1895	QC to AB	transcont.	Krombein 1979 (n.e.)
x					<i>Crabro vernalis</i> (Packard, 1867)	NF, QC to MB, AB, BC, NT, YT	transcont.	new
x					<i>Ectemnius dilectus</i> (Cresson, 1865)	AB	transcont.	new
x	x	x			<i>Ectemnius rufifemur</i> (Packard, 1866)	e. of Rockies	e. of Rockies	Krombein 1979 (n.e.)
x	x	x	x	x	<i>Ectemnius lapidarius</i> (Panzer, 1804)	transcontinental	Holarctic	B 1934, BMa 1994, SFG 1998
x	x	x	x		<i>Ectemnius ruficornis</i> (Zetterstedt, 1838)	transcontinental	Holarctic	B 1934, BMa 1994
x	x	x	x		<i>Ectemnius cephalotes</i> (Olivier, 1792)	QC	intr., eastern	W 1913, SFG 1998

TABLE I. – continued

G	C	R	P	M	Species	Distribution (CDN)	Distr. (N.Am.)	Literature Records
x	x	x			<i>Ectemnius maculosus</i> (Gmelin, 1790)	eastern Canada	e. of 100°W	H 1902, W 1913, B 1934
x	x	x	x		<i>Ectemnius arcuatus</i> (Say, 1837)	transcontinental	transcont.	Krombein 1979 (n.e.)
x	x	x	x	x	<i>Ectemnius continuus</i> (Fabricius, 1804)	transcontinental	Holarctic	H 1902, SFG 1998
x		x			<i>Ectemnius decemmaculatus</i> (Say, 1823)	Carolinian	e. of Rockies	new (CDN)
x					<i>Ectemnius scaber</i> (Lepeletier & Brullé, 1834)	(Carolinian)	eastern	new (CDN)
x	x	x	x	x	<i>Ectemnius stirpicola</i> (Packard, 1866)	eastern Canada	e. of 100°W	Krombein 1979 (n.e.)
x	x	x		x	<i>Ectemnius trifasciatus</i> (Say, 1824)	transcontinental	transcont.	H 1902, B 1934
x	x	x	x		<i>Ectemnius atriceps</i> (Cresson, 1865)	transcontinental	transcont.	H 1902
x	x	x	x		<i>Ectemnius borealis</i> (Zetterstedt, 1838)	transcontinental	Holarctic	SFG 1998
x	x	x	x	x	<i>Ectemnius dives</i> (Lepeletier & Brullé, 1834)	transcontinental	Holarctic	H 1902, B 1934, SFG 1998
x	x	x		x	<i>Lestica confluenta</i> (Say, 1837)	transcontinental	transcont.	H 1902, W 1913
x	x	x	x	x	<i>Lestica producticollis</i> (Packard, 1866)	transcontinental	transcont.	H 1902, B 1934, SFG 1998, SCS 2001
Crabronidae, Bembicinae								
x					<i>Mellinus abdominalis</i> Cresson, 1882	AB	west., e. to ON	new
x	x		x		<i>Mellinus bimaculatus</i> Packard, 1867	Carol. to Can.	eastern	H 1902, SFG 1998, SCS 2001
x	x	x			<i>Alysson conicus</i> Provancher, 1889	NB to MB	eastern	H 1902
x	x	x	x		<i>Alysson guignardi</i> Provancher, 1887	transcontinental	transcont.	H 1902, SFG 1998
x	x				<i>Alysson melleus</i> Say, 1837	QC to MB	e. of 100°W	H 1902
x	x	x			<i>Alysson oppositus</i> Say, 1837	NB to MB	e. of Rockies	H 1902
x	x	x	x	x	<i>Alysson triangulifer</i> Provancher, 1887	transcontinental	transcont.	H 1902
x					<i>Didineis dilata</i> Malloch & Rohwer, 1930	SK, AB	w. to AB?	new (CDN)
x	x				<i>Didineis latimana</i> Malloch & Rohwer, 1930	QC	eastern	new (CDN)
x					<i>Didineis texana</i> (Cresson, 1872)	Carolinian	w. to AZ	new (CDN)
x	x				<i>Nysson daeckei</i> Viereck, 1904	NS to AB	eastern	new
x	x				<i>Nysson gagates</i> Bradley, 1920	QC to BC, YT	transcont.	new
x			x		<i>Nysson hesperus</i> Bohart, 1968	NB, MB, SK, BC, NT, YT	transcont.	new
x	x		x	x	<i>Nysson lateralis</i> Packard, 1867	NS to MB ¹⁾	eastern	H 1902
x					<i>Nysson simplicicornis</i> Fox, 1896	Carolinian	eastern	new (CDN)
x	x				<i>Nysson subtilis</i> Fox, 1896	QC	eastern	new (CDN)
x					<i>Synnevrus aequalis</i> (Patton, 1879)	Carolinian	eastern	new (CDN)
x	x	x			<i>Synnevrus plagiatus</i> (Cresson, 1882)	QC	transcont.	new
x	x				<i>Epinysson mellipes</i> (Cresson, 1882)	MB, BC	transcont.	new
x	x		x		<i>Epinysson tramosericus</i> (Viereck, 1904)	MB ¹⁾	eastern	new (CDN)
x					<i>Epinysson tuberculatus</i> (Handlirsch, 1887)	Carolinian	eastern	new (CDN)
x	x	x		x	<i>Clitemnestra bipunctata</i> (Say, 1824)	QC, AB	transcont.	new
x	x				<i>Argogorytes nigrifrons</i> (Smith, 1856)	NS, QC	eastern	new
x	x	x		x	<i>Gorytes atricornis</i> Packard, 1867	transcontinental	transcont.	Krombein 1979 (n.e.)
x	x	x	x		<i>Gorytes canaliculatus</i> Packard, 1867	transcontinental	transcont.	H 1902
x	x	x	x		<i>Gorytes deceptor</i> Krombein, 1958	QC	eastern	Krombein 1979
x	x	x	x	x	<i>Gorytes similimus</i> Smith, 1856	NS to BC	w. to CO	H 1902, W 1913, B 1934
x	x	x	x	x	<i>Pseudoplisus phaleratus</i> (Say, 1837)	PE, QC	w. to CO, AZ	H 1902
x	x		x		<i>Lestiphorus cockerelli</i> (Rohwer, 1909)	NB, QC, NT	w. to CO	new
x				x	<i>Oryttus gracilis</i> (Patton, 1879)	Carolinian	e. of 100°W	new (CDN)
x	x		x		<i>Sphecius speciosus</i> (Drury, 1773)	Carolinian	e. of Rockies	RD 1991a, SCS 2001
x	x	x			<i>Hoplisoides costalis</i> (Cresson, 1872)	Carol., Trans.	eastern, AK	new (CDN)
x	x	x		x	<i>Hoplisoides nebulosus</i> (Packard, 1867)	NB, PE, QC ¹⁾	eastern	H 1902
x	x		x	x	<i>Hoplisoides placidus</i> (Smith, 1856)	QC	eastern	new (CDN)
x					<i>Stizoides renicinctus</i> (Say, 1823)	AB, BC	transcont.	new
x	x	x	x		<i>Bicyrtes quadrfasciatus</i> (Say, 1824)	Carol., Trans.	e. of Rockies	new (CDN)
x	x	x	x	x	<i>Bicyrtes ventralis</i> (Say, 1824)	transcontinental	transcont.	H 1902, W 1913
x	x	x	x	x	<i>Microbembex monodonta</i> (Say, 1824)	e. of Rockies	e. of Rockies	H 1902, W 1913, SCS 2001
x					<i>Stictia carolina</i> (Fabricius, 1793)	Carolinian	w. to NM	new (CDN)
x	x	x	x	x	<i>Bembix americana</i> Fabricius, 1793	NB to BC	transcont.	H 1902, SCS 2001
x					<i>Bembix pruinosa</i> Fox, 1895	MB, AB	transcont.	Evans & Matthews 1968
x	x				<i>Stictiella emarginata</i> (Cresson, 1865)	SK, AB	transcont.	new
Crabronidae, Philanthinae								
x	x		x	x	<i>Philanthus albopilosus</i> Cresson, 1865	Carol., Trans.	west., e. to NY	Krombein 1979
x	x	x	x	x	<i>Philanthus bilunatus</i> Cresson, 1865	NS to AB, PE	w. to CO, NM	H 1902, W 1913, B 1934, SCS 2001
x	x	x		x	<i>Philanthus gibbosus</i> (Fabricius, 1775)	QC to MB, BC	transcont.	SCS 2001
x	x		x	x	<i>Philanthus lepidus</i> Cresson, 1865	QC to MB	w. to CO	new
x	x	x	x	x	<i>Philanthus politus</i> Say, 1824	QC	eastern	H 1902, SFG 1998, SCS 2001
x	x	x	x	x	<i>Philanthus sanbornii</i> Cresson, 1865	MB	w. to NM	Krombein 1979
x	x	x	x	x	<i>Philanthus solivagus</i> Say, 1837	NS, QC	eastern	H 1902, W 1913, B 1934
x	x	x	x	x	<i>Philanthus ventrilabris</i> Fabricius, 1798	QC, AB, BC	transcont.	Krombein 1979 (n.e.)
x	x	x	x	x	<i>Aphilanthops frigidus</i> (Smith, 1856)	transcontinental	transcont.	H 1902, SCS 2001
x	x	x	x	x	<i>Cerceris arelate</i> Banks, 1912	QC	eastern	Scullen 1965

TABLE I. – continued

<u>G</u>	<u>C</u>	<u>R</u>	<u>P</u>	<u>M</u>	<u>Species</u>	<u>Distribution (CDN)</u>	<u>Distr. (N.Am.)</u>	<u>Literature Records</u>
x	x				<i>Cerceris astarte</i> Banks, 1913	Carol., Trans.	eastern	new
x	x	x	x	x	<i>Cerceris atramontensis</i> Banks, 1913	QC	eastern	Scullen 1965, SFG 1998
x	x				<i>Cerceris clypeata</i> Dahlbom, 1844	QC	eastern	Scullen 1965
					<i>Cerceris compacta</i> Cresson, 1865	Carolinian	transcont.	new (CDN)
x	x				<i>Cerceris crucis</i> Viereck & Cockerell, 1904	AB, BC	transcont.	new
x	x	x	x		<i>Cerceris dentifrons</i> Cresson, 1865	QC	eastern	Scullen 1965
x	x	x			<i>Cerceris deserta</i> Say, 1824	NB to AB	w. to CO	Scullen 1965
x	x				<i>Cerceris echo</i> Mickel, 1916	AB, BC, Carolinian	transcont.	new
x					<i>Cerceris finitima</i> Cresson, 1865	SK	transcont.	new
x	x	x	x		<i>Cerceris fumipennis</i> Say, 1837	BC, Carol., Trans.	transcont.	new
x	x				<i>Cerceris halone</i> Banks, 1912	MB	e. of Rockies	new
x					<i>Cerceris insolita</i> Cresson, 1865	Carolinian	w. to AZ	new (CDN)
x	x				<i>Cerceris kennicottii</i> Cresson, 1865	Carolinian	w. to CO	new
x	x	x	x	x	<i>Cerceris nigrescens</i> Smith, 1856	QC to BC, NT, YT	transcont.	H 1902, W 1913, Scullen 1965
					<i>Cerceris nitidoides</i> Ferguson, 1983	QC	eastern	new
x					<i>Cerceris occipitomaculata</i> Packard, 1866	Carol., Trans.?	w. to CO, AZ	new
x	x				<i>Cerceris prominens</i> Banks, 1912	MB	eastern	new
x	x	x	x		<i>Cerceris rufopicta</i> Smith, 1856 (syn.: <i>robertsonii</i> Fox, 1893)	QC	eastern	Scullen 1965
		x	x		<i>Eucerceris zonata</i> (Say, 1823)	Carol., Trans.	w. to WY, CO	W 1913, Scullen 1968
					Doubtful record:			
x					<i>Eucerceris flavocincta</i> Cresson, 1865	MB to BC	e. to MB	new (loc. data correct?)

Explanations: The first five columns indicate the presence or absence of the species in the five largest collections: G – University of Guelph, C – Canadian National Collection, R – Royal Ontario Museum, P – Collection of Laurence Packer, M – University of Manitoba. Distribution (CDN): Distribution in Canada by provinces and territories; for species that are known from Ontario only the life zone(s) in which the species occurs is indicated: Can. – Canadian life zone, Trans. – Transition life zone, Carol. – Carolinian life zone, (Carolinian) – mostly Carolinian life zone but with some localities slightly north of it; ¹) unpublished data (further locality information will be provided in upcoming reviews of the genera *Nysson*, *Epinysson* and *Hoplisoides*). Distr. (N.Am.): Distribution in North America (includes previously unpublished data of the author in some cases): intr. – introduced; Holarctic – Holarctic species with transcontinental distribution in North America. Literature records: Only a selection of literature records is given. The Catalog of Hymenoptera in America North of Mexico (Krombein 1979) is only included if this is the earliest or the only reference; (n.e.) – not explicitly mentioned from Ontario but indicated range includes Ontario (see section on recording standards in Materials and Methods); B – Brown, BM – Bohart and Menke, BMA – Blades and Marshall, F – Finnamore, H – Harrington, L – Leclercq, RD – Romel and Dykstra, S – Sandhouse, SCS – Skevington et al., SFG – Sugar et al., V – Vincent, W – Walker; *) – indirectly mentioned.

TABLE II. Distribution within Ontario of newly recorded species of spheciform wasps (Sphecidae, Crabronidae).

Abbreviations for counties, regions and districts (same as in Figures 1, 2): Bt – Brant, El – Elgin, Es – Essex, Hd – Haldimand, Hl – Halton, Kt – Kent, Lb – Lambton, Li – Lincoln, Mi – Middlesex, Nf – Norfolk, Ox – Oxford, Wd – Welland, Ww – Wentworth, Bc – Bruce, Du – Dufferin, Gr – Grey, Hu – Huron, Pl – Peel, Si – Simcoe, Wa – Waterloo, Wg – Wellington, Yo – York, Ca – Carleton, Fr – Frontenac, Hs – Hastings, LG – Leeds and Grenville, Lk – Lanark, Nt – Northumberland, Pb – Peterborough, PE – Prince Edward, Vi – Victoria, Ma – Manitoulin, Mu – Muskoka, Ni – Nipissing, PS – Parry Sound, Re – Renfrew, Al – Algoma, Co – Cochrane, Ka – Kenora, RR – Rainy River, Su – Sudbury, TB – Thunder Bay. Note: The area included under the Carolinian Southwest slightly exceeds the northern limit of the Carolinian life zone.

Table II – continued

	Carolinian Southwest												Southcentral												Southeast												Central					North					
Species	Bt	El	Es	Hd	Hi	Kt	Lb	Li	Mf	Ox	Wd	Ww	Bc	Df	Gr	Hu	Pl	Si	Wa	Wg	Yo	Ca	Fr	Hs	Lg	Lk	Nt	Pb	PE	Vi	Ma	Mu	Ni	PS	Re	Al	Co	Ka	RR	Su	TB	Σ					
<i>Tachytes pennsylvanicus</i>																				x																								1			
<i>Tachysphex alpestris</i>																																												2			
<i>Tachysphex antennatus</i>	x	x	x						x	x																																			9		
<i>Tachysphex apicalis</i>																																												1			
<i>Tachysphex texanus</i>																																												1			
<i>Plenocylus davisi</i>																																												3			
<i>Solierella levis</i>																																												19			
<i>Solierella peckhami</i>																																												2			
<i>Solierella plenoculoides</i>	x																																											18			
<i>Miscophus americanus</i>																																												10			
<i>Nitela cerasicola</i>																																												21			
<i>Nitela virginienis</i>																																												1			
<i>Pison koreense</i>																																												9			
<i>Trypoxylon attenuatum</i>																																												3			
<i>Trypoxylon bidentatum</i>	x																																											24			
<i>Trypoxylon carinatum</i>																																												1			
<i>Trypoxylon clarkei</i>																																												9			
<i>Trypoxylon kolazyi</i>																																												2			
<i>Trypoxylon sculleni</i>																																												1			
<i>Trypoxylon tridentatum</i>																																												2			
<i>Oxybelus cressonii</i>																																												3			
<i>Oxybelus decoratus</i>																																												3			
<i>Oxybelus inornatus</i>																																												1			
<i>Oxybelus laetus</i>																																												1			
<i>Oxybelus sericeus</i>																																												1			
<i>Oxybelus subcornutus</i>																																												4			
<i>Entomognathus lenapeorum</i>																																												1			
<i>Entomognathus memorialis</i>																																												4			
<i>Rhopalum occidentale</i>	x																																														

Table II – continued

[illegible]

Species newly recorded from Ontario

Family Sphecidae

Podium luctuosum Smith, 1856

Ontario: **Norfolk**, 1 ♀, Normandale Fish Culture Station, 24 July 2001, B. Arnal & H. Duggan (BAR); 5 ♀ ♀*, Turkey Point Provincial Park, east boundary, 42°42'37"N, 80°19'47"W, 17 August 2003, M. Buck.

Distribution. Genus and species newly recorded for Canada. Eastern U.S.: MI (O'Brien 1989b), NY to TX and FL, MO, KS (Bohart and Menke 1963; Krombein 1979).

Biology. Nests in borings in wood that are sealed with mud on the outer end. Prey are adults of *Parcoblatta uhleriana* (Saussure) and *P. virginica* (Brunner) (O'Brien 1989b).

Prey record. *) One nymphal roach, probably *Parcoblatta* sp.

Sphex pensylvanicus Linnaeus, 1763

Ontario: **Simcoe**, 1 ♂, Springwater Provincial Park, 44°26'33"N, 79°45'41"W, 2 September 2002, M. Buck. **Wellington**, Guelph, 3 ♂ ♂, 24 July 1978, B. Warner & S. Giamondi, 1 ♀, 18 August 1980, D.H. Pengelly, 1 ♀, 18 October 1995, H. Raikes; 1 ♀, Aberfoyle, 14 August 1983, W. Punchihewa. **Waterloo**, Cambridge, 1 ♂, 28 July 1975, S. Allan, 1 ♀, 4 August 1981, R.S. Onge, 1 ♂, 20 August 1984, grass field, M. Harvey. **Halton**, 1 ♀, Burlington, 16 August 1980, S. Appleby; Oakville, 1 ♂, 18 July 1976, 1 ♂, 31 August 1976, 1 ♂, 30 July 1977, 1 ♂, 3 August 1977, 2 ♂ ♂, 4 August 1978, W.A. Attwater, 1 ♀, 3 August 1977, A. Konecny, 3 ♂ ♂ 1 ♀, 4 July 1978, G. Sevean & M. Lichtenberg; 2 ♂ ♂ 1 ♀, Hamilton, Royal Botanical Garden, 22 August 1992, J. Skevington & A. Goering. **Wentworth**, Hamilton, 1 ♂, 17 August 1958, D.H. Pengelly, 1 ♀, 18 August 1975, no collector; 1 ♀, Hamilton, Cootes Paradise, 17 August 1959, no collector. **Brant**, 1 ♂, Brantford Railway Prairie, 43°10'N, 80°19'W, 24 August 2001, S.M. Paiero. **Oxford**, 1 ♀, Curries, 1955, C. Gracey. **Middlesex**, London, 5 ♂ ♂, 21 July, 1, 10 and 22 August 1990, R.W. Turnock (EDUM), 1 ♀, 2 August 1981, E. Zaborski. **Lambton**, 1 ♀, Forest, 17 July 1962, Kelton & Brumpton (CNCI). **Kent**, Rondeau Provincial Park, South Point Trail East, 1 ♂, 7 September 2002, oak savannah, M. Buck, 1 ♂, 16 July 2003, dunes, H. Carscadden, 1 ♂, 9 August 2003, oak savannah, M. Buck; 1 ♀, Rondeau Provincial Park, Spicebush Trail, 42°18'9"N, 81°51'6"W, 15 August 2003, Carolinian forest, S.M. Paiero; 1 ♂, Rondeau Provincial Park, Marsh Trail North, 42°18'N, 81°51'W, 15 August 2003, S.M. Paiero. **Essex**, Point Pelee, 1 ♀, 15 August 1971, B.K. Akey, 1 ♂, 28 July 1978, J. Cappleman, 1 ♀, 29 July 1978, D. Morris; Point Pelee National Park, West Beach, 1 ♂, 28 July 2003, M. Buck, 2 ♀ ♀¹), 13 August 2003, M. Buck & D. Cheung; Point Pelee National Park, Old Maintenance Yard, 41°56'54"N, 82°31'14"W, 1 ♂, 29 July 2003, 1 ♂, 14 August 2003, M. Buck; 1 ♀²), Point Pelee National Park, The Tip parking lot, 41°55'3"N, 82°30'37"W, 14 August 2003, D. Cheung; 1 ♂, Union-on-the-Lake, 23 August 1984, T.D. Galloway (EDUM); Kingsville, 1 ♀, 12 August 1964, F.R. Wetmore (CNCI), 1 ♂, 8 July 1977, W.A. Attwater; 1 ♂, River Canard, 10 July 1977, W.A. Attwater; 1 ♀, Harrow, 25 August 1997, K. Morneau; Windsor, 1 ♀, 1 August 1975, C.A. Schisler, 1 ♂, 27 July 1976, 1 ♀, 7 September 1976, J.F. Fortin, 1 ♀, 26 August 1984, E. Zaborski; 2 ♀ ♀, Windsor, Ojibway Prairie, 18 August 1983, K.N. Barber, 2 ♀ ♀, 1 August 1984, M.T. Kasserra, 1 ♂, 13-14 July 2001, 1 ♀, 30 August 2001, S.M. Paiero, 1 ♂, 20 July 2002, S.A. Marshall, 1 ♀, 26 August 2002, M. Buck; 1 ♂, Windsor, Springarden Road ANSI, 27 August 2002, M. Buck; 1 ♀, no locality or collector, 10 August 1951 (CASC).

Distribution. Newly recorded for Ontario. Canada: QC (adventitious? Finnamore 1982); transcontinental in U.S. except northwestern states, northern Mexico (Krombein 1979).

Biology. Nests in soft earth, often in sheltered areas. Tettigoniidae of the genera *Macrocentrum*, *Phaneroptera* and *Scudderia* are used as prey (Bohart and Menke 1976, O'Brien 1989b).

Prey records. ¹⁾ One adult male *Amblycorypha* cf. *oblongifolia* (De Geer) (Tettigoniidae). ²⁾ One adult female *Scudderia* cf. *furcata furcata* Brunner.

***Isodontia* (s. str.) *apicalis* (Smith, 1856)**

Ontario: Essex, Point Pelee National Park, Old Maintenance Yard, 41°56'54"N, 82°31'14"W, 1♂, 29 July 2003, 1♂ 3♀♀, 30 July 2003, 1♀, 14 August 2003, M. Buck.

Distribution. Newly recorded for Canada. Mostly eastern U.S.: NJ to FL, west to TX, also TN, NE, AZ (Bohart and Menke 1963).

Biology. Probably non-fossorial like other species of the genus (Krombein 1979). *Amblycorypha* (Tettigoniidae) has been recorded as prey (Bohart and Menke 1976).

***Isodontia* (*Murrayella*) *auripes* (Fernald, 1906)**

Ontario: York, 1♀, Toronto, Don River, 9 July 1973, W.M.M. Edmonds (ROME); 1♀, Toronto, Waterfront, 7 August 1984, W.M.M. Edmonds (ROME). **Waterloo,** 1♀, Waterloo, nr. Albert McCormick Arena, July 2000, B. Arnal & H. Duggan (BAR). **Welland,** 1♀, Niagara Falls, Niagara Whirlpool, 1 July 2004, J. Klymko. **Middlesex,** 1♀, London, 15 August 1989, yellow pan, D. Ferris. **Kent,** 1♀, Thamesville, 30 June 1962, S.M. Clark (CNCI); 1♂, Chatham, 28 August 1947, R.J. Moore. **Essex,** 2♂♂, Point Pelee, 2 and 8 August 1920, "NKB" [= N.K. Bigelow] (ROME); 1♂, Point Pelee National Park, The Tip parking lot, 41°55'3"N, 82°30'37"W, 14 August 2003, D. Cheung; 2♂♂, Pelee I., 3 July 1950, V. Kohler (ROME); 2♂♂ 1♀, Kingsville, 8 July 1977, K.N. Barber; 1♀, River Canard, 10 July 1977, W.A. Attwater.

Distribution. Newly recorded for Canada. Eastern U.S.: NY and MI south to FL, west to KS and TX (Krombein 1979).

Biology. Has been reported to breed in burrows of *Melitoma* and *Anthophora* (Apidae) in a bluff, in carpenter bee burrows and in sumac stems (Bohart and Menke 1963). The prey consists of Gryllidae and Tettigoniidae (Krombein 1979).

***Palmodes dimidiatus* (DeGeer, 1773)**

Ontario: Lambton, 1♀, Pinery Provincial Park, powerline, 15 July 1986, L. Packer (LPC).

Distribution. Newly recorded for Canada. Transcontinental in U.S.: MA to FL (incl. NY, PA, MI), west to ID and CA; northern Mexico (Bohart and Menke 1963).

Biology. Nests in sand. Tettigoniidae of the genera *Atlanticus*, *Dissosteira* and *Pediocetes* are used as prey (Krombein 1979).

***Prionyx parkeri* Bohart & Menke, 1963**

Ontario: Wellington, 1♂, Guelph, 18 July 1976, W.A. Attwater. **Halton,** 2♂♂, Oakville, 7 July 1976, W.A. Attwater. **Lambton,** 1♀ (identification tentative, see below), Pinery Provincial Park, powerline, 15 July 1986, L. Packer (LPC).

Distribution. Newly recorded for Canada. Transcontinental in U.S.: CT and NY to WA, FL to CA (Bohart and Menke 1963). Despite intensive research, the species has not yet been found in Michigan (O'Brien 1989b). Mexico south to Isthmus of Tehuantepec (Bohart and Menke 1963).

Biology. Nests in a variety of soils. Prey are Acrididae (Krombein 1979).

Note. The female from Pinery cannot be identified with certainty because the diagnostic pubescence of the pronotal lobes is worn off.

***Ammophila cleopatra* Menke, 1964**

Ontario: **Bruce**, 1♀, Inverhuron Provincial Park, 44°17'33"N, 81°35'28"W, 2 July 2003, front dunes, white pans, M. Buck. **Kent**, 1♀, Rondeau Provincial Park, South Point Trail, 42°15'35"N, 81°50'53"W, 7 September 2002, savannah, M. Buck. **Essex**, Seaclyffe, 2♂♂, 1 August 1975, 1♀, 15 August 1983, T.D. Galloway (EDUM); Point Pelee, 4♂♂ (2 from malaise trap), 17-18 July 1978, K.N. Barber & W.A. Attwater, 2♂♂ 1♀, 30-31 July 1978, J. Cappleman & W.A. Attwater, 1♂, 20 June 1981, C. Farivar, 1♂, 14 July 1982, C. Hare, 1♀, 17-18 July 2003, D. Cheung; Point Pelee National Park, Old Henry Camp, 41°57'35"N, 82°31'32"W, 2♂♂, 30 July 2003, M. Buck, 11♂♂ 5♀♀, white pans, M. Buck & D. Cheung; 7♀♀, Point Pelee National Park, The Tip parking lot, 41°55'3"N, 82°30'37"W, 14 August 2003, M. Buck; Point Pelee National Park, Visitor Centre, 1♀, 24 July 2003, S.M. Paiero, 1♀, 13 August 2003, M. Buck; Point Pelee National Park, West Beach, 1♂, 29 July 2003, 1♀, 13 August 2003, M. Buck; Point Pelee National Park, Old Maintenance Yard, 41°56'54"N, 82°31'14"W, 1♀, 29 July 2003, D. Cheung, 1♂, 30 July 2003, netted, M. Buck, 7♂♂ 3♀♀, 14-15 August 2003, yellow and white pans, M. Buck & D. Cheung; 1♂, Pelee I., Fish Point, 14 August 1993, B. Larson.

British Columbia: 2♂♂, Ashcroft, Hat Creek, hydro camp, 3 October 1999, malaise trap, C.S. Guppy (BCPM).

Distribution. Newly recorded for Ontario and British Columbia. Canada: AB; transcontinental in U.S. but absent from northeastern states (no records from east of MI and north of SC), mainly western and montane; northern Mexico (Menke 1965).

Biology. Prey are caterpillars of the families Notodontidae and Noctuidae (O'Brien 1989b). In Michigan the species is restricted to dune areas (O'Brien 1989b).

***Ammophila fernaldi* (Murray, 1938)**

Ontario: **Simcoe**, 1♀, Borden, 30 August 1948, V.W. Greene (EDUM). **Norfolk**, 1♂, Walsingham, Regional Road 60 5.5 km W Jct. Hwys 59 & 24, Pteraphylla Farm, 19 August 1991, P.J. Carson (LPC).

Distribution. Newly recorded for Ontario. Canada: QC (Finnamore 1982), MB; U.S. east of Rocky Mts.; south into Mexico (Krombein 1979).

Biology. Nests in sandy soil. Prey are caterpillars of the family Noctuidae (Krombein 1979).

***Ammophila nigricans* Dahlbom, 1843**

Ontario: **Northumberland**, 1♂, Bewdley, 27 August 1963, J.D. van Loon. **York**, 1♂, Toronto, Humber River nr. old mill, 4 September 1999, T. Romankova (ROME). **Halton**, 1♂, Milton, 16 Mile Creek & 4th Line, 43°29'5"N, 79°46'27"W, 12 August 2001, river valley, S.M. Paiero. **Norfolk**, Manestar Tract, 6 km NNW St. Williams, 42°42'17"N, 80°27'38"W, 1♂, 8 July 2000, 1♀, 25 July 2000, sandy field, M. Buck, 1♀, 3 August 2001, M. Parchami-Araghi. **Kent**, Rondeau Provincial Park, South Point Trail East, 42°15'35"N, 81°50'53"W, 5-7 September 2003, 2♀♀, white pans, 1♀, yellow pans, M. Buck. **Essex**, 1♂, Leamington, 17 August 1987, T.D. Galloway (EDUM); 1♂, Point Pelee, 18 July 1978, K.N. Barber; Windsor, Ojibway Prairie, 1♂, 13-14 July 2001, 1♂, 7 August 2001, 3♂♂, 8-9 July 2002, 1♂, 20 July 2002, 3♂♂ 3♀♀, 30-31 July 2002 (1♀ from white pans), 1♂, 13 August 2002, 1♂ 1♀, 26-27 August 2002, M. Buck, S.M. Paiero & S.A. Marshall; 1♀, Windsor, Ojibway Prairie nr. Sprucewood Avenue, 12-13 September 2002, yellow pans, M. Buck & S.M. Paiero.

Distribution. Newly recorded for Ontario. Eastern U.S. (incl. MI: O'Brien 1989b; NY: Kurczewski 1998c; VT: Finnamore 1982) south to TX (Krombein 1979). Menke (1965) recorded this species from "southern Canada" without mentioning a province.

Biology. Nests in sandy-clay soil. Prey are caterpillars of the family Noctuidae (Krombein 1979).

***Ammophila pictipennis* (Walsh, 1869)**

Ontario: **York**, Toronto, 1♂, 10 September 1952, M.E. Hearst (ROME), 1♂, 30 August 1963, J.D. van Loon. **Wellington**, Guelph, 1♀, 12 September 1959, R.E. Crawford, 1♀, 3 August 1975, J.M. Cumming, 1♀, 22 July 1979, G.M. Eden, 1♀, 4 August 1979, W.T. Nash, 1♂, 19 July 2000, M. Cripps, 1♀, 21 September 2002, gravelly wasteland, M. Buck; 1♂, Guelph, along Eramosa River, 8 August 1993, B. Larson & J. Glaser. **Welland**, 1♀, Niagara Falls, June 1956, H.W.H. Zavitz. **Lincoln**, 1♀, Jordan, 9 September 1914 (CNCI); 1♀, Vineland, 9 July 1929, W.L. Putman (CNCI); 1♀, Vineland Station, 9 September 1942, H.R. Boyce (CNCI). **Norfolk**, 1♂, Turkey Point, September 1943, E.G. Ford (ROME). **Lambton**, 1♀, Pinery Provincial Park, powerline, 15 July 1986, L. Packer (LPC). **Essex**, Point Pelee, 2♂♂ 2♀♀, 9 September 1954 (CNCI), 1♀, 1 July 1978, D. Morris; 1♂, Point Pelee National Park, Old Maintenance Yard, 41°56'54"N, 82°31'14"W, 14-15 August 2003, yellow pans, M. Buck & D. Cheung; 1♂, Point Pelee National Park, Old Henry Camp, 41°57'35"N, 82°31'32"W, 14-15 August 2003, white pans, M. Buck & D. Cheung; 1♀, Harrow, 6 September 1959, D.H. Pengelly.

Distribution. Newly recorded for Canada. Most of U.S. east of Rocky Mts. (incl. MI: O'Brien 1989b; NY: Kurczewski 1998c); south into central Mexico (Menke 1965).

Biology. Nests in sand. Prey are caterpillars of the families Noctuidae, Geometridae and Hesperidae (Menke 1965).

Family Crabronidae

Subfamily Pemphredoninae

***Mimesa pygidialis* (Malloch, 1933)**

Ontario: **Cochrane**, 2 ♀♀, Nellie Lake, 10 August 1961, G.K. Morris.

Distribution. Newly recorded for Ontario. Canada: MB, SK, AB; U.S.: MI, IL, WI (Finnamore, 1983), CO (Krombein 1979).

Biology. Unknown.

***Mimumesa atratina* (Morawitz, 1891)**

Ontario: **Cochrane**, 1♂, Nellie Lake, 10 August 1961, G.K. Morris. **Thunder Bay**, 15 ♂♂ 1♀, Neys Provincial Park, Prisoner's Cove nr. Little Pic River, 48°47'28"N, 86°37'48"W, 16 and 18 July 2002, beach, M. Buck. **Rainy River** (probably), 1♂ 1♀, Island Falls, 24 August 1959, S.M. Clark (CNCI). **Sudbury**, 1♀, Capreol, 15 August 1972, W.M.M. Edmonds (ROME).

Labrador: 10♂♂ 3 ♀♀, Goose Bay, 13 July-13 August 1948, H.C. Friesen & W.E. Beckel (CNCI). **Alberta:** McMurray, 1♂, 20 June 1953, 1♂ 1♀, 22 June 1953, G.E. Ball (CNCI). **British Columbia:** 32 mi SW Terrace, 1♀, 8 June 1960, 1♂, 6 July 1960, C.H. Mann (CNCI); 1♀, Lower Post, 19 June 1948, W.R.M. Mason (CNCI); 1♀, Port Nelson, 26 August 1948, W.R.M. Mason (CNCI). **Northwest Territories:** Norman Wells, 1♂, 15 July 1949, 2♀♀, 29 and 30 July 1949, W.R.M. Mason (CNCI).

Distribution. Newly recorded for Ontario, Labrador, Alberta, British Columbia and the Northwest Territories. Canada: YT (Finnamore 1997); Europe, Japan (Lomholdt 1975-76).

Biology. Nests in dry, decayed wood, often in abandoned insect borings. The prey consists of Issidae (Lomholdt 1975-76).

Species recognition. The female of this species keys to *M. propinqua* auctt. nec Kincaid in Malloch (1933). It can be distinguished from females of other *Mimumesa* species with broad pygidial plates by the black flagellum, the punctate (not longitudinally striate) mesoscutum, and the all-black metasoma. The male keys to *M. nigra* (Packard) in Malloch (1933). Both sexes differ from other Ontario species (except *Mimumesa* sp. n. A, see below) by the presence of an epicnemial carina (cf. Lomholdt 1975-76).

***Mimumesa clypeata* (Fox, 1898)**

Ontario: Thunder Bay, 1♂, Neys Provincial Park, Prisoner's Cove nr. picnic area, 48°46'49"N, 86°36'53"W, 18 July 2002, beach, M. Buck.

Distribution. Newly recorded for eastern Canada. Canada: AB (Finnamore 1994), YT (Finnamore 1997), NT; western U.S.: AK, WA, ID south to CA, NV, UT (Krombein 1979).

Biology. Unknown.

***Mimumesa leucopus* (Say, 1837)**

Ontario: Leeds and Grenville, 1♀, Greenbush, 9 September 1997, roadside, flight intercept trap, R. Hainault (CNCI). **Hastings,** 1♀, Trent River Prairie [NE of Stirling], 44°13'N, 77°34'W, 1-10 August 1994, J.T. Kerr & L. Packer (DEBU). **Halton,** 1♂, Bronte Creek Provincial Park, 11 August 2002, S.M. Paiero. **Wentworth,** 1♀, Ancaster, Newton Woods, 24 June-2 July 1996, forest, malaise trap, B. DeJonge. **Norfolk,** 1♀, Manestar Tract, 42°43'N, 80°27'W, 27-30 June 1992, oak savannah, malaise trap, P.J. Carson (LPC); 2♀♀, Simcoe Jct., 42°51'N, 80°18'W, 14-26 August 1994, oak savannah, malaise trap, J.T. Kerr, M. deGiusti & L. Packer (LPC). **Kent,** 1♂, Rondeau Provincial Park, 16 July-18 September 1979, mature forest, L. Masner (CNCI). **Essex,** 1♂, Point Pelee, 25 June 1979, W.A. Attwater; 3♀♀, Windsor, Ojibway Prairie, 18-19 June 2002, yellow pans (excl. 1♀), M. Buck & S.M. Paiero.

Distribution. Newly recorded for Ontario. Canada: QC (Finnamore 1982), AB; eastern U.S.: NH, MD, DC, VA, IN, IL (Krombein 1979). Blades & Marshall (1994) erroneously recorded the species from Ontario (see section on misidentifications [pp. 76-77]).

Biology. Unknown.

Species recognition. The species is interpreted here following Finnamore (1982). His key to *Mimumesa* species was based on information provided by J.P. van Lith who intended to revise the genus. Unfortunately, van Lith's work was never published. In Malloch (1933) females of both *M. leucopus* and *M. propinqua* (Kincaid) key to the former. Malloch's female *M. propinqua* is in fact *M. atratina* (Morawitz).

***Mimumesa longicornis* (Fox, 1898)**

Ontario: Norfolk, 1♀, Normandale, 4 September 1954, C.D. Miller (CNCI); 1♀, Manestar Tract, 42°43'N, 80°27'W, 4-12 August 1992, oak savannah, malaise trap, J.T. Kerr, M. deGiusti & L. Packer (LPC). **Lambton,** 1♂, Walpole I. Potawatomi Prairie, 42°33'N, 82°29'W, 19-25 July 2001, malaise trap, Guidotti et al. (ROME). **Essex,** 1♀, Point Pelee, 19 July 1978, K.N. Barber; Windsor, Ojibway Prairie, 1♀, 28-30 August 2001, unburnt prairie, yellow pans, S.M. Paiero, 1♀, 12-13 September 2002, yellow pans, M. Buck, 1♀, same except on earth between roots of fallen tree, S.M. Paiero.

New Brunswick: 1♀, Kouchibouguac National Park, 15 August 1978, S.J. Miller (CNCI).

Distribution. Newly recorded for Canada (ON, NB). Eastern U.S.: RI, NY to FL, LA, IA; Cuba, Central America (Krombein 1979).

Biology. Unknown.

***Mimumesa mellipes* (Say, 1837)**

Ontario: Carleton, 2♀♀, Ottawa, 9 July 1983, L. Leblanc (CNCI). **Wellington,** 1♀, Guelph, 29 June 1978, malaise trap, K.N. Barber; 1♀, Guelph, University Arboretum, 1-15 July 1991, malaise trap, M. Montes Castillo. **Wentworth,** 1♂, Flamborough, Lawson Farm, 43°18'58"N, 80°2'26"W, 30 June 2003, alvar, yellow pans, M. Buck.

Distribution. Newly recorded for Ontario. Canada: QC (Finnamore 1982); eastern and central U.S.: NY, MD, DC, OH, IN, IL, IA, NE (Krombein 1979).

Biology. Unknown.

***Mimumesa* sp. n. A**

Ontario: Algoma, 1♂, Lake Superior Provincial Park, 18 June 1972, B.D. Beam.

New Brunswick: 1♂, Kouchibouguac National Park, 6 July 1978, S.J. Miller (CNCI).

Distribution. Ontario, New Brunswick, also in northern Quebec (Buck, in prep).

Biology. Unknown.

Species recognition. This species is related to *M. atratina* with which it shares the complete epicnemial carina. The male differs from that species in having relatively broad elliptical tyloids on flagellomeres V-IX (less developed ones on FIV and FX) thus resembling the Palearctic species *M. dahlbomi* (Wesmael). Female unknown. The specimen from Lake Superior Provincial Park bears a determination label "*Psen (Mimumesa) columbianus* Gittins ♂ det. van Lith 1976". *M. columbianus* Gittins is a manuscript name that was never published.

***Pseneo simplicicornis* (Fox, 1898)**

Ontario: Renfrew, 1♀, Griffith, 17 August 1985, B.E. Cooper (CNCI). **Norfolk,** 1♀, Manestar Tract, 6 km NNW St. Williams, 42°42'17"N, 80°27'38"W, 25 July 2000, sandy field, white pans, M. Buck.

Distribution. Genus and species newly recorded for Ontario. Canada: QC (van Lith 1975); eastern U.S.: NJ, PA to NC (Krombein 1979).

Biology. The species nests in dead wood and uses leafhoppers of the genus *Graphocephala* as prey (Krombein 1979).

***Psen barthi* Viereck, 1907**

Ontario: Leeds and Grenville, 1♀, St. Lawrence Is. National Park, McDonald I., 4 August 1976, A. Carter (CNCI). **Carleton:** 1♂ (identification tentative, see below), Ottawa, 8 July 1989, J.R. Vockeroth (CNCI).

Distribution. Newly recorded for Ontario. Canada: QC; eastern U.S.: WI, PA, CT, MD, GA (Krombein 1979).

Biology. Nests in wood. Prey are species of the genera *Atymna*, *Cyrtolobus* and *Micrutalis* (Membracidae) (Krombein 1979).

Note. The male is only tentatively identified as this species because the metasomal petiole is unusually long (twice as long as tergite 1). No other species of *Psen* is known from eastern North America besides the three species recorded from Ontario (see Table I).

***Psenulus trisulcus* (Fox, 1898)**

Ontario: Algoma, 1♀, Hilton Township, 23 August 1992, edge of hardwood forest and field, malaise trap, J.E. Swann. **Carleton,** 1♀, Ottawa, no date/collector (CNCI). **Leeds and Grenville,** 1♀, St. Lawrence Is. National Park, Grenadier I. Centre, 24 June 1975, malaise trap (CNCI). **Hastings,** 1♀, Trent River Prairie [NE of Stirling], 44°13'N, 77°34'W, 1-10 August 1994,

J.T. Kerr & L. Packer (LPC). **Norfolk**, Manestar Tract, 42°43'N, 80°27'W, 2♀♀, 18-30 July 1992, oak savannah, malaise trap, P.J. Carson (LPC, DEBU); same except 1♀, 30 July-4 August 1992, 1♀, 4-12 August 1992, J.T. Kerr, M. deGiusti & L. Packer (LPC). **Lambton**, Pinery Provincial Park, powerline, 1♂, 4-6 June 1986 (DEBU), 2♂♂, 7-10 June 1986, 1♂, 18-21 June 1986, L. Packer (LPC). **Kent**, 1♀, Rondeau Provincial Park, South Point Trail, east parking lot, 42°15'42"N, 81°50'49"W, 16-29 July 2003, oak savannah, malaise trap, S.A. Marshall. **Essex**, 1♂, Point Pelee National Park, de Laurier Trail, 8 June 2000, O. Lonsdale.

Distribution. Newly recorded for Ontario. Canada: QC (Finnamore 1982); eastern and central U.S.: NH to TN, MO, KS (Krombein 1979).

Biology. Species of this genus nest in pre-existing cavities in twigs, stems, grass or beetle-borings in wood. Prey are Aphididae and Psyllidae (Krombein 1979).

Diodontus adamsi Titus in Adams, 1909

Ontario: Thunder Bay, 7♀♀, Neys Provincial Park, railway crossing, 48°46'30"N, 86°35'3"W, 17-18 July 2002, M. Buck; 1♀, Little Pic River at Hwy 17, 48°48'5"N, 86°37'47"W, 17 July 2002, M. Buck; 1♀, Sleeping Giant Provincial Park, 2.5 km S Visitor Centre, 48°20'53"N, 88°48'11"W, 9 July 2002, old sand pit, M. Buck; 1♀, Sleeping Giant Provincial Park, Tee Harbour, 48°19'32"N, 88°52'48"W, 12 July 2002, beach, M. Buck. **Algoma**, Icwater Creek watershed, 13.5 km NNE Searchmont, Whitman Dam Road mi 11.5, 2♀♀, 20 June 1986, 1♀*, 3 July 1986, sandy access road, K.N. Barber. **Sudbury**, 2♂♂, Sudbury, 16 and 18 June 1892, no collector (CNCI); 1♀, Noëlville, 28 June 1975, R.E. Roughley. **Renfrew**, 1♂, Petawawa, 7 June 1961, J.R. Vockeroth (CNCI). **Lambton**, Pinery Provincial Park, 1♀, 4-6 June 1986, malaise trap, L. Packer (LPC), 1♀, 10 June 1995, J. Skevington; 1♀, Pinery Provincial Park, powerline, 18-21 June 1986, malaise trap, L. Packer (DEBU); Port Franks, Watson Property nr. L-Lake, 2♀♀, 8-10 June 1996, 1♀, 13-15 June 1996, malaise trap, J. Skevington.

Saskatchewan: 1♀, Nipawin, 4 August, 1968, T.C. Taylor. **Alberta:** 2♀♀, Jasper, 2 and 7 July 1971, D.H. Pengelly. **British Columbia:** 17♂♂ 1♀, Atlin, 14 July 1955, H. Huckel (CNCI); 9♂♂ 3♀♀, Robson, various dates, May-June, 1947-50, H.R. Foxlee (CNCI). **Yukon Territory:** 1♀, Carcross, aspen parkland, 25-28 July 1988, M. Polak & M. Wood (CNCI).

Distribution. Newly recorded for Canada (ON, SK, AB, BC, YT). U.S.: MI (Eighme 1989).

Biology. Unknown. Members of this genus generally nest in the ground.

Prey record. *) One unidentified aphid.

Species recognition. Males of *D. adamsi*, *flavitarsis*, and *virginianus* cannot be identified with the current literature. The male of *adamsi* has not been described and is not included in Eighme's (1989) key. Both sexes of *D. adamsi* can be distinguished from the other two species by the denser and more extensive pubescence of the fore wing median cell (in *flavitarsis* and *virginianus* basal 2/3 of this cell largely bare to very sparsely setose except along fore margin) and the more densely punctate and less shining scutum. The colour of the pronotal lobe varies from black to yellow in *D. adamsi* males.

Diodontus bidentatus Rohwer, 1911

Ontario: Cochrane, 1♀, Moose Factory, 27 August 1959, S.M. Clark (CNCI); 1♂, Hearst, 22 August 1964, G. Knerer (ROME). **Thunder Bay**, 1♂, Neys Provincial Park, railway crossing, 48°46'30"N, 86°35'3"W, 17 July 2002, M. Buck; 4♂♂ 2♀♀, Neys Provincial Park, 1.6 km SW of gate house, 48°46'39"N, 86°36'32"W, 8-19 July 2002, *Vaccinium*/lichen, yellow pans, M. Buck; 2♂♂ 3♀♀, Little Pic River at Hwy 17, 48°48'5"N, 86°37'47"W, sand cliff, 15 and 17 July 2002, M. Buck; 1♂ 2♀♀, 28 km E Nipigon, 48°58'0"N, 87°58'47"W, 8 July 2002, M. Buck; 3♂♂ 5♀♀, Sleeping Giant Provincial Park, 2.5 km S Visitor Centre, 48°20'53"N, 88°48'11"W, 9 and

14 July 2002, old sand pit, M. Buck; 3♂♂ 1♀, Sleeping Giant Provincial Park, Marie Louise Lake Campground, 9-14 July 2002, white pans, M. Buck; 1♂, Thunder Bay, 1 July 1970, K.J.G. Deacon. **Nipissing**, 1♀, Algonquin Provincial Park, Lake Travers Road at hydro cut, 45°58'9"N, 77°50'37"W, 17 August 2002, M. Buck; 1♀, "Penage L." [= Penaish Lake?], 29 June 1961, *Rubus*, G. Knerer (ROME). **Parry Sound**, 1♂, Pointe au Baril, 6 August 1978, B. Warner. **Manitoulin**, 1♂, Manitoulin I., Carter Bay, 45°36'23"N, 82°8'27"W, 24 June 2003, dunes, M. Buck. **Carleton**, 1♂ 12♀♀, Ottawa, 10 and 16 September 1913, 9 and 10 October 1913, 30 August 1914, (1♀ from sand pit) F.W.L. Sladen (CNCI); 1♀, "J.F./Otta[wa]" (label cut off) from W.H. Harrington collection; Ottawa, 1♂, "30.7", 1♀, "11.6", "8. *P. mandibularis* carries a green aphid", 1♀, "139", "*Passaloecus mandibularis* Ar. 20.6.85", probably from Guignard's collection (CNCI). **Carleton or Renfrew**, 1♂, Arnprior, Marshall Bay, 4 August 1913, C.G. Hewitt (CNCI). **Hastings**, 1♂ 2♀♀, Madoc, 21 June 1954, J.C. Martin (CNCI); Marmora, 1♀, 10 July 1952, 2♀♀, 19 July 1952 (malaise trap), J.R. Vockeroth (CNCI); 1♂, Marmora area, 11 August 1959, L.K. Smith (CNCI); Chatterton, 1♀, 15 June 1955, 2♂♂, 24 July 1956, J.C. Martin (CNCI); Belleville, 1♀, 5 August 1931, W.E. Steenburgh (CNCI), 1♀, 16 July 1950, J.C. Fisher, 1♀, no date/collector (CNCI); 2♂♂, Frankford, 23 June 1954, J.C. Martin (CNCI); 1♀, Sydney Township, 17 June 1965, no collector (CNCI). **Northumberland**, 1♂, Brighton, 7 July 1954, J.C. Martin (CNCI). **Bruce**, 1♂, Tobermory, 23 June 2002, bog, S.A. Marshall; 2♀♀, Dyers Bay, 17 July 1953 and 20 July 1954, D.H. Pengelly. **Grey**, 1♀, Ceylon, 18 June 1959, D.H. Pengelly. **Simcoe**, 1♀, Baxter, Six-Mile Lake, 8 July 1981, L. Packer (LPC). **Dufferin**, 1♂, Primrose, 7 July 1960, D.H. Pengelly. **Wellington**, 1♂, Guelph, 11 July 1956, D.H. Pengelly; 1♂, Arkell, 23 June 1959, D.H. Pengelly; Eramosa, 1♂, 25 July 1959, 1♀, 18 July 1959, R.E. Crawford. **Wentworth**, 1♀, Ancaster, 8 August 1969, J.E.H. Martin (CNCI).

Quebec: 1♂, Kazabazua, 24 July 1913, F.W.L. Sladen (CNCI).

Distribution. Newly recorded for Ontario and Quebec. Canada: AB (Finnamore 1994), NB; U.S.: MI, NY, PA, ND, MT, ID, CO, AK (Krombein 1979; Eighme 1989).

Biology. Unknown.

Diodontus flavitarsis Fox, 1892

Ontario: **Carleton**, 2♂♂, Ottawa, 23 August 1959, J.R. Vockeroth (CNCI, DEBU); 1♂, same except 17 July 1989, damp second-growth *Acer-Betula* wood (CNCI). **Essex**, 1♀, Harrow, 13 August 1976, C.D. Neilsen.

Distribution. Newly recorded for eastern Canada. Canada: YT (Finnamore 1997); western U.S.: WA to CA, east to IA, MO, TX, rare in the east (PA, DC) (Eighme 1989).

Biology. Unknown.

Species recognition. Males of this species are difficult to separate from *D. virginianus* (see also note under *D. adamsi*). Eighme (1989) distinguished males of *flavitarsis* and *virginianus* based on the colour of the pronotal lobes. Unfortunately, this character is variable in *virginianus* (ranging from black to yellow). Both sexes of *flavitarsis* can be distinguished from *virginianus* by the slightly more produced and acute lateral angle of the transverse pronotal carina (difference usually clearer in females). Additionally, yellow coloration elements are usually developed better in *flavitarsis* males (tegula usually yellow to the summit, hind tibia yellow dorsally at least at base).

Diodontus minutus (Fabricius, 1793)

Ontario: **Manitoulin**, Manitoulin I., Carter Bay, 45°36'23"N, 82°8'27"W, 11♂♂ 8♀♀, 23-24 June 2003, 4♂♂ 1♀, 13 July 2003, dunes, M. Buck. **Carleton**, 16♂♂ 5♀♀, Ottawa, May-September, 1952-1975, various collectors (all except 2♂♂ CNCI). **Lanark**, 2♀♀, Fallbrook, 14 August 1974, J.T. Huber; 1♀, 20 mi Clayton Road, 12 September 1984, H. Goulet & L. Masner (CNCI). **Lanark or Leeds and Grenville**, 1♀, Smiths Falls, 11 September 1950, J.C. Martin (CNCI). **Leeds and Grenville**, 1♂, Gananoque, 26 September 1981, R. St. Onge. **Hastings**, 3♂♂ 2♀♀, Shannonville, 24 August 1949, J.C. Martin (CNCI); 1♀, Belleville, 16 July 1949, J.C. Martin (CNCI). **Peterborough**, 7♂♂ 6♀♀, Norwood, various dates, 1975, 1982-84, T.D. Galloway (EDUM); 1♀, Serpent Mounds Provincial Park, 8 August 1983, T.D. Galloway (EDUM). **Peterborough or Brant**, 1♀, Mt. Pleasant, 10 July 1958, L.A. Kelton (CNCI). **Northumberland**, 1♂, Brighton, 21 July 1954, J.C. Martin (CNCI). **Bruce**, Inverhuron Provincial Park, front dunes, 44°17'33"N, 81°35'28"W, 2♂♂ 3♀♀ (2♀♀ in yellow pans), 2 July 2003, 1♂, 25 July 2003, M. Buck, 2♀♀, 10 September 2003, M. Buck & S.M. Paiero. **Bruce or Grey**, 2♀♀, Hepworth, 4 July 1954 and 31 May 1977, D.H. Pengelly & K.N. Barber. **Grey**, 4♂♂, Clarksburg, 16 August 1964, B.K.W. Wyatt; 2♂♂, Meaford, 14 June 1975, J.T. Huber. **Huron**, 1♂, Goderich, 22 June 1977, K.N. Barber. **Simcoe**, 1♀, Honey Harbour, 26 August 1959, D.H. Pengelly; 4♂♂, Midland, 9 June-15 July 1974, J.T. Huber. **Dufferin**, 15♂♂ 12♀♀, Primrose, July, 1955-1974, D.H. Pengelly & J.T. Huber; Mono Cliffs Provincial Park, 1♂ 4♀♀, 31 August 2002, 4♂♂, 21 June 2003, M. Buck. **York**, 1♀, Toronto, 24 July 1981, L. Packer (LPC). **Peel**, Forks of the Credit, 2♂♂ 1♀, 22 June 1965, G. Knerer (ROME), 2♂♂ 4♀♀, 5, 15, 18 and 26 August 1969, P. MacKay (ROME), 3♀♀, June 1981, L. Packer (LPC); 4♀♀, Forks of the Credit, gravel pit NW of Provincial Park, 43°49'24"N, 80°0'57"W, 3 and 5 August 2002, M. Buck; 1♂, Brampton, Churchville Pk., 28 June 1978, P.W. Schefter (ROME). **Wellington**, 2♀♀, Belwood, 16 and 18 July 1972, D.H. Pengelly; 34♂♂ 11♀♀, Guelph, May-September, 1955-2002, various collectors; Aberfoyle, 1♀, 24 July 1974, W.D. Husby, 2♂♂, 25 June 1956, D.H. Pengelly; 8♂♂, Arkell, June-August, 1958, 1959, 1975, D.H. Pengelly & L.A. Barlow; 3♂♂, Elora, 6 September 1975 and 6 August 1981, L.A. Barlow & G. Aiudi. **Waterloo**, 5♀♀, Waterloo, 11 October 1976 and 31 July 1988, D. Levin & I.P. Smith; 1♀, Cambridge, 9 June 1980, C. Bolter. **Halton**, 2♂♂ 1♀, Aldershot, 7 July 1955, L.A. Kelton (CNCI); 1♀, Milton, Woodland Trails Camp, 4th Line Nassagaweya, 43°32'51"N, 79°59'35"W, 8 August 2002, S.M. Paiero; 1♂, Oakville, nr. Hwy 25 & Burnhamthorpe Road, 43°27'14"N, 79°47'32"W, 9-10 August 2003, S.M. Paiero. **Wentworth**, 1♂, Winona, 28 July 1948, G.G. Dustan (CNCI); 1♀, Ancaster, 8 August 1969, J.E.H. Martin (CNCI), 1♀, 9-15 July 1994, prairie, B. DeJonge. **Lincoln**, 3♀♀, Grimsby, 15 July 1955, D.H. Pengelly. **Brant**, 1♂, Ohsweken, 19 June 1979, D. Morris; 1♀, Paris, 24 June 1955, D.H. Pengelly; Brantford Railway Prairie, 43°10'N, 80°19'W, 1♀, 24 August 2001, yellow pans, 2♂♂, 12 July 2002, S.M. Paiero, 11♂♂ 2♀♀, 24 July 2002, M. Buck & S.M. Paiero. **Norfolk**, 1♀, Delhi-Simcoe Railway, 42°51'N, 80°23'W, 16 July 2002, S.M. Paiero; Manestar Tract, 1♀, 20-26 August 1993, oak savannah, malaise trap, J.T. Kerr, M. deGiusti & L. Packer (LPC), 19♀♀, 24 August-7 September 2001, 1♂ 4♀♀, 23 June 2002, sandy field, M. Buck & S.M. Paiero; 4♀♀, N limit of St. Williams Crown Forest, 42°43'4"N, 80°28'17"W, 29 August 2001, sandy road, M. Buck. **Middlesex**, Komoka Feed Mill Prairie, 42°58'N, 81°25'W, 1♂, 11 July 2001, sweeps, 1♀, 14-27 July 2001, yellow pans, S.M. Paiero. **Elgin**, 4♂♂ 1♀, Port Burwell, 4 July 1974, J.T. Huber. **Lambton**, 7♂♂, Walpole I., 11 July 1977 and 12 July 1979, K.N. Barber & W.A. Attwater. **Kent**, 1♂, Chatham, 26 July 1954, K.G. Davey (CNCI); 6♂♂ 2♀♀, Wheatley, 15 August 1982, T.D. Galloway (EDUM). **Essex**, 4♂♂ 4♀♀, Point Pelee, 20 and 28 July 1978, W.A. Attwater & D. Morris; Point Pelee National Park, Old Maintenance Yard, 41°56'54"N, 82°31'14"W, 5♂♂ 6♀♀, 29-30 July 2003, M. Buck, 4♂♂ 3♀♀, 14-15 August 2003, yellow and white pans, M. Buck & D. Cheung; 1♀, Point Pelee

National Park, De Laurier House, 29-30 July 2003, yellow pans, M. Buck & D. Cheung; 32♂♂ 4♀♀, Leamington, various dates, 1975, 1977, 1983-85, 1987 (EDUM); 1♂, Seacliffe, 15 August 1983, T.D. Galloway (EDUM); 2♂♂ 7♀♀, Harrow, July-August, 1973-1976, R.E. Roughley, J.T. Huber & C.D. Neilsen; 1♀, Windsor, Ojibway Prairie, 19 June 2002, on earth between roots of fallen tree, M. Buck.

Distribution. Newly recorded for Ontario. Canada: QC (Finnamore 1982), BC; transcontinental in U.S.: MA to VA (incl. NY, PA, MI), west to WA, CA (Krombein 1979; Eighme 1989). Palaearctic Region (Eighme 1989).

Biology. Nests gregariously in sand (Krombein 1979).

Diodontus spiniferus (Mickel, 1916)

Ontario: Thunder Bay, 1♂ 1♀, Little Pic River at Hwy 17, 48°48'5"N, 86°37'47"W, 17 July 2002, sand cliff, M. Buck. **Rainy River,** 4♂♂, Rainy River, 5 July 1960 and 3 August 1960, S.M. Clark (CNCI). **Carleton,** Ottawa, 1♂, "138.", "*Passaloecus mandibularis* St. 11.7.85" probably from Guignard's collection, 3♀♀, 30 August 1914, F.W.L. Sladen (CNCI). **Simcoe,** Midland, 2♂♂, 8 June 1974, 1♂, 9 June 1974, 3♂♂, 14 July 1974, 1♂ 1♀, 5 August 1974, J.T. Huber.

Quebec: 3♂♂ 3♀♀, Kazabazua, 4 August 1913, F.W.L. Sladen (CNCI).

Distribution. Newly recorded for eastern Canada (ON, QC). Western Canada: AB; U.S.: MD, IA, MO, MN, NE, MT, CO, CA (Eighme 1989).

Biology. Unknown.

Species recognition. The male of this species has never been described. It differs from all other Ontario species of *Diodontus* by the combination of a yellow mandible and a black pronotal lobe.

Diodontus virginianus (Rohwer, 1917)

Ontario: Halton, 1♀, Oakville, nr. Hwy 25 & Burnhamthorpe Road, 43°27'14"N, 79°47'32"W, 9 August 2002, S.M. Paiero. **Wentworth,** 3♀♀, Hamilton, 9-13 July 1981, M. Sanborne (CNCI); 2♀♀, nr. Carluke, 12-20 July 1996, wood pile, tepee trap, B. DeJonge. **Welland,** 1♀, Niagara Falls, Niagara Whirlpool, 1 July 2004, S.M. Paiero. **Norfolk,** 1♀, Delhi-Simcoe railway line, Simcoe Junction, 1-14 August 1994, J.T. Kerr & L. Packer (LPC); Manestar Tract, 42°43'N, 80°27'W, 2♀♀, 15-22 June 1992 (LPC, DEBU), 1♀, 27-30 June 1992, 1♀, 30 June-10 July 1992, 1♀, 10-18 July 1992, 2♀♀, 18-30 July 1992, oak savannah, malaise trap, P.J. Carson (LPC). **Elgin,** 1♀, Aylmer West, 13-17 July 1972, malaise trap, no collector (CNCI). **Essex,** 15♂♂ 27♀♀*, Windsor, Ojibway Prairie, 18-19 June 2002, females nesting in earth between roots of fallen tree, M. Buck & S.M. Paiero.

Distribution. Newly recorded for Canada. U.S.: VA, DC, MD, NY, OR, ID, CA (Eighme 1989).

Biology. Nests gregariously in flat soil or pockets of earth between roots, and provisions with Aphidae (Krombein 1979) and Adelgidae (see below). At Windsor, females of the cleptoparasitic fly *Leucophora sociata* (Meigen) (Anthomyiidae) were seen perching near and entering the *Diodontus* nests.

Prey records. *) Five unidentified Adelgidae.

Species recognition. See notes under *D. flavitarsis* and *D. adamsi*.

Pemphredon morio vander Linden, 1829

Ontario: Norfolk, 1♀, Manestar Tract, 6 km NNW St. Williams, 42°42'17"N, 80°27'38"W, 8 June 2001, exiting from insect boring in old log, M. Buck.

Distribution. Newly recorded for the Nearctic Region. Widespread in Palaearctic: Europe (except Mediterranean), Turkey, Kazakhstan, Russia, Japan (Dollfuss 1995). Apparently a recent introduction.

Biology. Nests in dead wood. Prey are wingless Aphididae (Lomholdt 1975-76).

***Passaloecus borealis* Dahlbom, 1844**

Ontario: Thunder Bay, 1 ♀, Prairie River at Hwy 17, 38 km E Terrace Bay, 48°48'4"N, 86°47'4"W, 15-19 July 2002, boggy spruce, malaise trap, M. Buck.

Quebec: James Bay Route km 66, 1 ♀, 4-12 June 1987, flight intercept trap, 2 ♀ ♀, 12 June-8 August 1987, malaise/flight intercept trap, L. Leblanc (CNCI, DEBU).

Distribution. Newly recorded for the eastern Nearctic (ON, QC). Canada: BC, NT (Vincent 1978), YT (Finnamore 1997); western U.S.: WA and MT south to UT, CO, NM (Vincent 1978).

Biology. Unknown. Other species of the genus nest in pithy plant stems, in borings in wood or abandoned galls, and prey on Aphididae and Lachnidae (Lomholdt 1975-76).

***Passaloecus gracilis* (Curtis, 1834)**

Ontario: Carleton, 5 ♀ ♀, Ottawa, 1, 5, 10 and 14 August 1989, damp second-growth *Acer-Betula* wood, J.R. Vockeroth (CNCI); 5 ♀ ♀, Metcalfe, 28 July 1993, B.E. Cooper (CNCI). **Grey,** 2 ♂ ♂ 1 ♀, Flesherton, Saugeen River, 2001, reared from trap nest, P.E. Hallett. **Wellington,** Guelph, 1 ♂, 10 June 1975, W.A. Attwater, 3 ♀ ♀, 26 June 1979, D.C. Murrell, 2 ♂ ♂, 28-29 June 1982, K.N. Barber. **Waterloo,** Cambridge, 1 ♀, 4 August 1981, C. Bolter, 1 ♀, 7 June 1984, grass field, M. Harvey. **Halton,** Milton, Derry Road & 4th Line, 43°31'31"N, 79°50'25"W, 1 ♂, 28 June 2002, 1 ♂, 19 June 2003, 1 ♀, 3 September 2003, S.M. Paiero; 1 ♂ 1 ♀, Oakville, 13 June 1976, W.A. Attwater; 1 ♀, Oakville, nr. Hwy 25 & Burnhamthorpe Road, 43°27'14"N, 79°47'32"W, 9-10 August 2003, S.M. Paiero. **Wentworth,** 1 ♀, Ancaster, 43°13'N, 79°59'W, 1-9 July 1994, prairie, B. DeJonge. **Welland,** 1 ♀, Fonthill, 7 August 1984, M.A. Luciani. **Norfolk,** 1 ♀, Manestar Tract, 42°43'N, 80°27'W, 20-26 August 1993, oak savannah, malaise trap, J.T. Kerr, M. deGiusti & L. Packer (LPC). **Elgin,** 1 ♀, St. Thomas, 26 June 1983, R.D. Smith. **Essex,** 1 ♂, Leamington, 7 August 1985, T.D. Galloway (EDUM).

Alberta: 1 ♀, Calgary, University Farm, 12 July 1988, L. Packer (LPC).

Distribution. Newly recorded for Ontario and Alberta. Canada: QC (Finnamore 1982); eastern U.S.: NJ, PA, OH, MI to TX along coast, IN (Krombein 1979). A western European species, probably introduced to the New World (Krombein 1979).

Biology. Nests in dry plant stems (e.g., *Phragmites*, *Sambucus*), in insect borings in dead wood, and cynipid galls on *Quercus*. Prey consists of Lachnidae and Aphididae (Lomholdt 1975-76).

Species recognition. The pale markings of this species are far more variable than indicated by Vincent (1978). Some of the examined specimens (males and females) have entirely black or dark brown mandibles, palpi, scapes, tibiae and pronotal lobes.

***Spilomena ampliceps* Krombein, 1952**

Ontario: Muskoka, 1 ♀, Arrowhead Provincial Park, 15-17 September 1975, sweeping in seepage area, I.M. Smith (CNCI).

New Brunswick: 1 ♀, Kouchibouguac National Park, 11 July 1977, M. Ivanochko (CNCI).

Distribution. Newly recorded for Canada (ON, NB). U.S.: MN, WV (Bohart and Smith 1994).

Biology. Presumably nests in old beetle borings in dead wood (Krombein 1979).

Spilomena pusilla (Say, 1837)

Ontario: Simcoe, 1♂, Penetang, 1 August 1955, J.G. Chillcott (CNCI). Halton, 1♀, Oakville, nr. Hwy 25 & Burnhamthorpe Road, 43°27'14"N, 79°47'32"W, 9 August 2002, S.M. Paiero.

Distribution. Newly recorded for Canada. U.S.: NY (Kurczewski and Miller 1991), CT to NC (incl. NY, PA), west to CA, AZ (Bohart and Smith 1994).

Biology. Nests in abandoned burrows of Anobiidae in dead wood. Prey are larval and adult Thysanoptera (Krombein 1979).

Ammoplanus (Ammoplanellus) lenape lenape (Pate, 1937)

Ontario: Manitoulin, 2♀♀, Barrie I., 45°55'N, 83°37'W, 1 July 1993, alvar, screen sweep, H. Goulet (CNCI).

Distribution. Genus and species newly recorded for Canada. Nominate subspecies otherwise known from type locality only (PA: Northampton County). Subspecies *olamentke* (Pate 1943) from MT, CA (Krombein 1979).

Biology. Species of the nominate subgenus are believed to nest in pre-existing holes or crannies in wood and possibly provision their cells with Thysanoptera (Krombein 1979).

Species recognition. This is one of only two described eastern Nearctic species within the predominantly western tribe Ammoplanini. Identification of these tiny and cryptic wasps remains tentative until the eastern Nearctic fauna is better known.

Subfamily Astatinae

Diploplectron peglowi Krombein, 1939

Ontario: Manitoulin, 2♀♀, Manitoulin I., south shore nr. Poplar, 18 August 1982, M. Sharkey (CNCI); Manitoulin I., Carter Bay, 45°36'23"N, 82°8'27"W, 3♂♂ 1♀, 24 June 2003, 3♂♂, 27 June 2003, 4♂♂ 3♀♀*, 13 July 2003, M. Buck; Manitoulin I., Sand Bay, 45°48'6"N, 82°47'36"W, 1♂, 25 June 2003, 1♀, 17 July 2003, M. Buck; 2♀♀, Manitoulin I., Misery Bay Provincial Park, 45°47'37"N, 82°44'11"W, beach, 12 July 2003, M. Buck; 12♂♂ 3♀♀, Manitoulin I., Union Road nr. Portage Lake, 45°46'5"N, 82°32'13"W, sandy field, 14 July 2003, M. Buck; 1♂, Manitoulin I., Portage Bay, 45°45'N, 82°32'W, dunes, 21 July 2003, M. Buck. **Carleton**, 1♀, Ottawa, 25 August 1954, W.R.M. Mason (CNCI); 1♂, Ottawa, Bruce Pit, 11-17 July 2000, yellow pans, L. Masner (CNCI). **Bruce**, Dorcas Bay, 45°11'N, 81°35'W, 1♀, 19-24 August 1997, 2♀♀, 5-13 June 1999, 1♂ 4♀♀, 30 June-21 July 2003, sand dune, malaise trap, S.A. Marshall; 5♂♂, Bruce Peninsula National Park, Singing Sands, 45°11'34"N, 81°34'58"W, dunes, 8 July 2003, M. Buck; Inverhuron Provincial Park, 2♂♂, 2 July 2003, M. Buck, 1♀, 28 June-8 July 2003, 2♀♀, 8-20 July 2003, malaise trap, S.A. Marshall. **Grey**, 1♀, Hepworth dunes, 44°37'N, 81°9'W, 5 July 2003, M. Buck. **Norfolk**, 1♀, Walsingham, Regional Road 60 5.5 km W Jct. Hwys 24 & 59, Pteraphylla Farm, 19 August 1991, P.J. Carson (LPC); Manestar Tract, 6 km NNW St. Williams, 42°42'17"N, 80°27'38"W, 1♂ 8♀♀, 24 August 2001, 3♂♂ 1♀, 29 August 2001, 2♂♂ 1♀, 7 September 2001, 1♂ 3♀♀, 23 June 2002, sandy field, M. Buck. **Lambton**, 1♀, Pinery Provincial Park, 1-30 June 1986, malaise trap, L. Packer (ROME); 1♀, Pinery Provincial Park, powerline, 18-21 June 1986, malaise trap, L. Packer (LPC). **Essex**, 1♀, Point Pelee, 21 June 1920 (CNCI).

Saskatchewan: 1♀, Great Sand Hills, 50°42'N, 109°17'W, 16-19 June 1988, W. Polak (CNCI).

Distribution. Newly recorded for Ontario and Saskatchewan. Western Canada: YT (Finnamore 1997), NT; western U.S.: WY, ID, CO, UT, NV, CA (Krombein 1979). Rare in east: NY (Oswego County), MI (Alger, Kalkaska, Livingston and Marquette Counties) (O'Brien 1984).

Biology. Nests in sand. Prey are nymphs of various species of the families Lygaeidae (s.l.) and Rhopalidae (Krombein 1979).

Prey record. *) One nymphal Rhyparochromidae (Lygaeidae, s.l.), probably *Emblethis vicarius* Horváth.

Astata nubecula Cresson, 1865

Ontario: Manitoulin, 2♂♂, Gore Bay, 16 July 1960, D.H. Pengelly. **Bruce,** 1♂, Dyers Bay, 8 July 1953, D.H. Pengelly; 1♀, Crane River Road, 29 July 1997, S.A. Marshall. **Norfolk,** 1♀*), Turkey Point Provincial Park, east boundary, 42°42'37"N, 80°19'47"W, 17 August 2003, M. Buck. **Essex,** 1♀, Windsor, Ojibway Prairie, 30-31 July 2002, S.M. Paiero.

British Columbia: 2♂♂, Penticton, 1 August 1974, B.K. Akey.

Distribution. Newly recorded for Ontario and British Columbia. Canada: AB (Strickland 1947), QC (Finnamore 1982), NT; western and northern U.S. south to VA (Krombein 1979).

Biology. Nests in hard, bare, stony soil or in sand. Prey are nymphs of various Pentatomidae (Krombein 1979).

Prey record. *) One nymphal *Dendrocoris humeralis* (Uhler) (Pentatomidae).

Astata occidentalis Cresson, 1881

Ontario: Halton, Milton, Woodland Trails Camp, 4th Line Nassagaweya, 43°32'51"N, 79°59'35"W, 2♀♀¹), 15 August 2002, S.M. Paiero, 9♀♀²), 18 August 2003, M. Buck; 1♀, Oakville, nr. Hwy 25 & Burnhamthorpe Road, 43°27'14"N, 79°47'32"W, 30 August 2003, S.M. Paiero. **Norfolk,** 1♀, Normandale Fish Culture Station, 42°43'7"N, 80°20'20"W, 23 August 2003, B. Arnal & H. Duggan (BAR). **Middlesex,** 1♀, London, 5 July 1990, R.W. Turnock (EDUM).

Distribution. Newly recorded for Ontario. Recorded by Parker (1962) from the "southern provinces of Canada" without mentioning a province in particular; entire U.S.; Mexico south to Michoacán and Baja California Sur (Parker 1962). Besides the specimens from Ontario no other Canadian material was found in collections.

Biology. Nests in bare, hard-packed clay and provisions with Pentatomidae of various genera (Krombein 1979).

Prey records. ¹) One adult *Banasa dimidiata* (Say) (Pentatomidae). ²) Five adult *Banasa dimidiata*, two adult *Elasmotethus cruciatus* (Say) (Acanthosomatidae). Several females were observed nesting in a small area of hard-packed soil on an abandoned unpaved road.

Subfamily Crabroninae (syn.: Larrinae)

Liris beatus (Cameron, 1889)

Ontario: Lambton, 2♀♀, Pinery Provincial Park, powerline, 15 July 1986, L. Packer (LPC, DEBU).

Distribution. Newly recorded for Canada. Transcontinental in U.S.: NY to TX, and WY, UT south to CA, NM (Krombein and Shanks Gingras 1984); Panama (Krombein 1979).

Biology. Preys on nymphs and adults of *Gryllus* species and *Acheta domesticus* L. (Gryllidae) (Krombein and Shanks Gingras 1984).

Tachytes crassus Patton, 1881

Ontario: Kent, 8♂♂, Rondeau Provincial Park, 14 July 1962, S.M. Clark (CNCI); 2♀♀*), Rondeau Provincial Park, Spicebush Trail, 42°18'9"N, 81°51'6"W, 15 August 2003, Carolinian forest, S.M. Paiero; Rondeau Provincial Park, South Point Trail, east parking lot, 42°15'42"N, 81°50'49"W, 3♀♀, 9-10 August 2003, oak savannah, nesting in sand below roots of fallen tree,

M. Buck, 1♂, 16 August 2003, dunes, S.M. Paiero; 3♂♂ 1♀, Rondeau Provincial Park, Lakeshore Road, Beach Access #11, 42°16'1"N, 81°50'39"W, 10 August 2003, dunes, M. Buck; 1♀, Wheatley, 9 July 1977, K.N. Barber. **Essex**, 1♀, Point Pelee, 30 July 1920, N.K. Bigelow (ROME); 1♂, Seacliffe, 1 August 1975, T.D. Galloway (EDUM); 1♂, Ojibway Prairie Reserve, 12 July 1982, K.N. Barber; 1♂, Ojibway Park, 1 August 1984, M.T. Kasserra.

Distribution. Newly recorded for Canada. Eastern U.S. (incl. NY, WI) to eastern TX, NE (Bohart 1994).

Biology. Nests in sand or in heavy clay-loam. Prey are nymphs and sometimes adults of *Orchelimum* and *Conocephalus* (Tettigoniidae) (Krombein 1979).

Prey record. *) One adult female *Conocephalus nigropleurum* (Bruner).

Tachytes harpax Patton, 1881

Ontario: Nipissing, 1♂ 2♀♀, Algonquin Provincial Park, Lake Travers Road NE km 36.5, 45°54'1"N, 77°42'45"W, 18-19 August 2002 (1♀ in yellow pans), M. Buck. **Bruce**, 1♂, Inverhuron Provincial Park, front dunes, 44°17'33"N, 81°35'28"W, 22 August 2003, yellow pans, M. Buck. **Peel**, 1♀, Caledon East, 7 July 1989, woodlot clearing, L. Packer (LPC). **Wellington**, Guelph, 1♀, 21 July 1977, K.N. Barber, 1♀, 11 August 1977, D.C. Murrell, 1♂, 28 July 1978, M.L.B. Farrell, 1♀, 31 July 1978, B. Warner. **Halton**, 1♀, Burns Conservation Area, 20 July 1980, J. Kircher. **Essex**, 1♀, Windsor, Ojibway Prairie, nr. Sprucewood Avenue, 26-27 August 2002, yellow pans, M. Buck & S.M. Paiero.

Distribution. Newly recorded for Canada. Eastern U.S. (incl. PA, MI, WI): MA to FL, IL and eastern TX (Bohart 1994; Krombein 1979).

Biology. Nests in fine silt and sand. Prey is *Conocephalus brevipennis* (Scudder) (Tettigoniidae) (Krombein 1979).

Tachytes intermedius (Viereck, 1906)

Ontario: Peterborough, 1♂, Norwood, 5 July 1977, T.D. Galloway (EDUM). **Lambton**, 1♀, Pinery Provincial Park, 5 August 1986, malaise trap, L. Packer (LPC). **Kent**, 3♀♀, Rondeau Provincial Park, South Point Trail, east parking lot, 42°15'42"N, 81°50'49"W, 9-10 August 2003, dunes, yellow and white pans, M. Buck; 1♂, Rondeau Provincial Park, South Point Trail East, 42°15'35"N, 81°50'53"W, 9-10 August 2003, savannah, white pans, M. Buck. **Essex**, Windsor, Ojibway Prairie, 1♀, 30-31 July 2002, 1♀, 26-27 August 2002, S.M. Paiero, 1♂ 2♀♀, 27 August 2002, 1♂ 2♀♀*, 13 September 2002, M. Buck.

Distribution. Newly recorded for Canada. Eastern U.S.: NY to FL, west to NE, TX (Krombein 1979).

Biology. Nests in sand and preys on nymphs and adults of *Neotridactylus apicalis* (Say) and *Ellipes minutus* Scudder (Tridactylidae) (Kurczewski and Kurczewski 1971).

Prey record. *) One nymphal *Ellipes minutus* Scudder.

Tachytes pennsylvanicus Banks, 1921

Ontario: Wellington, Guelph, 2♂♂, 14 August 1974, P.G. Mason (1♂ deposited in CASC). **Locality unknown**: 1♀, "E Ont. Can", no date/collector (CNCI); 1♀, "32" and "Ont. Evans", no date (CNCI).

Distribution. Newly recorded for Ontario. Canada: QC (Finnamore 1982); eastern U.S. (incl. NY) west to MT, NE and TX (Bohart 1994). Apparently, older records from further west (BC; OR, ID, CO, NM; see Krombein 1979) are due to misidentifications.

Biology. Species of the *pepticus* species group of *Tachytes* to which this species belongs are ground-nesting and prey on Acrididae (Krombein 1979).

***Tachysphex alpestris* Rohwer, 1908**

Ontario: Thunder Bay, 1 ♀, Mouth of Pic River, N side, 48°36'N, 86°18'W, 19 July 2001, sandy area, M. Buck; 11 ♂♂ 8 ♀♀, same data except 20 July 2001, sand dunes (1 ♂ 1 ♀ deposited in CASC, 1 ♂ in CNCI); same data except 19-22 July 2001, 1 ♀, malaise trap, 2 ♂♂ 1 ♀, yellow pans, sand dunes, M. & B. Buck; 1 ♀, Pukaskwa National Park, Beach Trail, 29 July 2003, dunes, S.M. Paiero; 8 ♂♂ 3 ♀♀, Neys Provincial Park, Dune Trail, 48°46'52"N, 86°36'53"W, 7 July 2002, M. Buck; 6 ♂♂ 5 ♀♀, Neys Provincial Park, Prisoner's Cove nr. Little Pic River, 48°47'28"N, 86°37'48"W, 16 and 18 July 2002, beach, M. Buck; 2 ♂♂, Neys Provincial Park, railway crossing, 48°46'30"N, 86°35'3"W, 17 July 2002, M. Buck; 1 ♂ 1 ♀, Terrace Bay, beach of Lake Superior, 48°46'19"N, 87°7'3"W, 15 July 2002, M. Buck; 1 ♀, Terrace Bay, 48°46'39"N, 87°6'29"W, 15 July 2002, sandy forest edge, M. Buck; 1 ♂, 28 km E Nipigon, 48°58'0"N, 87°58'47"W, 8 July 2002, M. Buck; 7 ♂♂, 8 ♀♀, Sleeping Giant Provincial Park, 2.5 km S Visitor Centre, 48°20'53"N, 88°48'11"W, 9 and 14 July 2002, old sand pit, M. Buck. **Manitoulin**, 4 ♀♀, Manitoulin I., Carter Bay, 45°36'23"N, 82°8'27"W, 23-24 June 2003, dunes, M. Buck & S.M. Paiero, 1 ♂, 13 July 2003, M. Buck.

The following specimens show characters intermediate with regard to *Tachysphex terminatus* (see note below): 2 ♂♂, Manitoulin I., Carter Bay, 45°36'23"N, 82°8'27"W, 13 July 2003, dunes, M. Buck; 5 ♂♂, Manitoulin I., Union Road nr. Portage Lk., 45°46'5"N, 82°32'13"W, 14 July 2003, sandy field, M. Buck.

Distribution. Newly recorded for the eastern Nearctic. Western Canada: YT (Finnamore 1997), NT, BC to MB; AK, western U.S. east to MT, NE, NM; Mexico: along Pacific and Gulf Coast south to Yucatan and Chiapas; Costa Rica (Limón) (Pulawski 1988).

Biology. Nests in the ground. Prey are immature Acrididae (Pulawski 1988).

Taxonomy. Pulawski (1988) indicated that this 'species' might just be a geographical race of *T. terminatus*. The two taxa are almost completely allopatric but Pulawski (l.c.) mentions seven localities in Canada, the U.S. and Mexico where both occur together. In Ontario *T. alpestris* is restricted to the north ranging south to Manitoulin I. (see specimen data) while *T. terminatus* is widespread in the south reaching Manitoulin I. in the north. On Manitoulin I. the two species appear to intergrade: The population from Carter Bay shows more similarity with *T. alpestris* (metapleural process small, apical metasomal segments of male black) but some specimens possess a relatively large metapleural process. In the population from Union Road most specimens resemble *T. terminatus* (metapleural process larger, apical metasomal segments of male red) but some specimens possess a fairly small metapleural process and the metasoma of some males is completely black (this colour form rarely occurs in *terminatus*, cf. Pulawski 1988; I have not seen it yet from Ontario). At neither of the two sites typical specimens of both *T. alpestris* and *T. terminatus* occur together, only typical specimens of one taxon and intermediate forms. The morphological extremes from each site are linked through intermediate forms and do not appear to be representative of different species. This could also be true for populations from other putative sympatric localities. These observations further support the hypothesis that *T. alpestris* is merely a subspecies of *T. terminatus*.

***Tachysphex antennatus* Fox, 1894**

Ontario: York, 1 ♂, King Township, Joker's Hill, Koffler Scientific Reserve, 44°3'N, 79°29'W, late August 2003, W. Godsoe. **Peel**, Forks of the Credit, 1 ♀, 17 June 1965, 1 ♂, 15 July 1965, G. Knerer (ROME), 1 ♂, 5 August 1969, 1 ♀, 26 August 1969, P. MacKay (ROME), 1 ♂, June 1981, L. Packer (LPC); 29 ♂♂ 31 ♀♀*, Forks of the Credit Provincial Park, 3 August 2002, M. Buck; Forks of the Credit, gravel pit NW of Provincial Park, 43°49'24"N, 80°0'57"W, 5 August 2002 1 ♂ 2 ♀♀, white pans, 3 ♂♂, M. Buck. **Wellington**, 1 ♂, Arkell, 22 July 1960, D.H. Pengelly;

Guelph, 1♀, 12 July 1978, B. Warner, 1♂, 8 August 1978, W.A. Attwater. **Halton**, 1♂ 2♀♀, Milton, Woodland Trails Camp, 4th Line Nassagaweya, 43°32'51"N, 79°59'35"W, 18 August 2003, M. Buck & S.M. Paiero. **Wentworth**, 1♂, Ancaster, 8 August 1969, J.E.H. Martin (CNCI); 25♂♂ 6♀♀ (10♂♂ 2♀♀ in yellow and white pans), Flamborough, Lawson Farm, 43°18'58"N, 80°2'26"W, 30 June-1 July 2003, alvar, M. Buck. **Brant**, Brantford Railway Prairie, 43°10'N, 80°19'W, 1♂, 24 August 2001, 6♂♂ 1♀, 12 July 2002, yellow pans, S.M. Paiero. **Norfolk**, 1♂, Turkey Point Tract at Regional Road 10, 42°42'2"N, 80°20'17"W, 23 August 2003, M. Buck. **Middlesex**, 1♂ 1♀, Komoka Feed Mill Prairie, 42°58'N, 81°25'W, 11-14 July 2001, yellow pans, S.M. Paiero. **Essex**, Windsor, Ojibway Prairie, 1♀, 26 August 2002, 1♂, 13 September 2002, M. Buck.

Distribution. Newly recorded for eastern Canada. Canada: southern BC; transcontinental in U.S.: NH and FL (incl. NY, PA, OH, MI) to OR and CA; Mexico south to Chiapas (Pulawski 1988).

Biology. Unlike most other members of the genus in Ontario this species nests in hard-packed soil. Prey are nymphal *Melanoplus* (Acrididae) (Pulawski 1988).

Prey record. *) One third-instar *Chorthippus curtipennis* (Harris) (Acrididae).

Tachysphex apicalis Fox, 1893

Ontario: **Essex**, 1♀, Windsor, Springarden Road ANSI, 31 July 2002, M. Buck.

Distribution. Newly recorded for Ontario. Canada: AB, BC; transcontinental in U.S. (incl. NY, MI, WI); most of Mexico south to Isthmus of Tehuantepec; Cuba; introduced to Hawaii (Pulawski 1988).

Biology. This species differs from most other *Tachysphex* by building its nest in sloping banks or cliffs, vertical parts of land tortoise holes, or even mortar between foundation rocks of a house. Prey are immature grasshoppers of various genera (Pulawski 1988).

Tachysphex texanus (Cresson, 1872)

Ontario: **Carleton**, 1♂, Ottawa, Innes Point, 10 July 1985, pan trap, L. Masner (CNCI). **Dufferin**, 1♂, Primrose, 17 July 1956, D.H. Pengelly. **Wellington**, 1♂, Eramosa, 25 July 1959, R.E. Crawford; 1♂, Arkell, 22 July 1960, D.H. Pengelly.

Distribution. Newly recorded for eastern Canada. Canada: southern AB; transcontinental in U.S.: MA and FL (incl. MI) to WA and CA; Mexico south to Jalisco (Pulawski 1988).

Biology. This species is ground-nesting and preys on immature Acrididae (Pulawski 1988).

Plenoculus davisi davisi Fox, 1893

Ontario: **Thunder Bay**, 1♂, Thunder Bay, 13 km ENE Jct. Hwy 17 & 527, 48°31'37"N, 88°58'41"W, 10 July 2002, M. Buck; 4♂♂, same except 16 km ENE Jct. Hwy 17 & 527, 48°32'7"N, 88°56'23"W. **Sudbury**, 1♀, Massey, 20 July 2002, sandy railway embankment, M. Buck. **Parry Sound**, 1♀, Powassan, 11 July 1978, J. Cappleman. **Manitoulin**, 1♂ 1♀, Manitoulin I., Carter Bay, 45°36'23"N, 82°8'27"W, 24 June 2003, dunes, M. Buck; 1♀, Manitoulin I., Misery Bay Provincial Park, 45°47'37"N, 82°44'11"W, 12 July 2003, beach, M. Buck; 5♂♂ 3♀♀, Manitoulin I., Union Road nr. Portage Lk., 45°46'5"N, 82°32'13"W, 14 July 2003, sandy field, M. Buck. **Carleton**, 2♀♀, Ottawa, 25 August 1954, W.R.M. Mason (CNCI); 1♂, Nepean, Slack Road [?], 10-15 August 1992, pan trap, L. Masner (CNCI). **Peterborough**, Norwood, 1♀, 23 July 1975, 2♂♂ 2♀♀, 5-6 August 1983, 5♀♀, 16 August 1984, T.D. Galloway (EDUM); 1♂, Serpent Mound Provincial Park, 8 August 1983, T.D. Galloway (EDUM). **Northumberland**, Brighton, 1♀, 17 July 1956, 1♂, 3 August 1956, malaise trap, no collector (CNCI); 1♀, Murray Township,

Murray Sand Hills, 28 July 1996, F.E. Kurczewski (FEK). **Bruce**, Inverhuron Provincial Park, front dunes, 44°17'33"N, 81°35'28"W, 2♀, 22 August 2003, yellow pans, 1♀, 2 July 2003, M. Buck. **Bruce or Grey**, 1♂, Hepworth, 26 June 1975, J.T. Huber. **Grey**, 2♂♂, Meaford, 14 June 1975, J.T. Huber; Hepworth dunes, 44°37'N, 81°9'W, 1♂ 1♀, 5 July 2003, 1♂, 22 July 2003, M. Buck. **Simcoe**, Midland, 1♀, 6 July 1974, 1♀, 14 July 1974, 1♂ 3♀, 26 August 1974, J.T. Huber; 1♀, C.F.B. Borden, 27 July 1996, F.E. Kurczewski (FEK). **Dufferin**, Primrose, 4♀, 30 June 1955, 1♂ 2♀, 17 July 1956, D.H. Pengelly; 1♀, same except 6 July 1974, J.T. Huber. **York**, 1♂, King Township, Joker's Hill, Koffler Scientific Reserve, 44°3'N, 79°29'W, 6 July 2003, W. Godsoe. **Peel**, Forks of the Credit, gravel pit NW of Provincial Park, 43°49'24"N, 80°0'57"W, 8♂♂ 2♀*, 3 August 2002, 4♂♂, 5 August 2002, M. Buck. **Wellington**, 1♂, Guelph, 27 July 1974, J.T. Huber; 2♂♂, Aberfoyle, 25 June 1956, D.H. Pengelly. **Halton**, 1♂ 1♀, Aldershot, 7 July 1955, L.A. Kelton (CNCI). **Wentworth**, 1♀, Ancaster, 18-25 June 1994, prairie, malaise trap, B. DeJonge. **Norfolk**, Manestar Tract, 6 km NNW St. Williams, 42°42'17"N, 80°27'38"W, 3♂♂ 1♀, 2 July 2000, 1♀, 8 July 2000, 3♂♂, 8 June 2001, 18♂♂, 15 June 2001, 3♂♂ 2♀, 25 June 2001, 2♀, 3 August 2001, 2♀, 24 August 2001, 4♂♂, 23 June 2002, sandy field, M. Buck; 2♀, Delhi-Simcoe Railway, 42°51'N, 80°23'W, 16 July 2002, S.M. Paiero. **Middlesex**, Strathroy, 2♂♂, June 1922, A.A. Wood (CNCI), 1♂, 3 July 1914, H.F. Hudson (CNCI). **Essex**, 1♀, Point Pelee, 19 July 1978, J.M. Cumming; Point Pelee National Park, Old Maintenance Yard, 41°56'54"N, 82°31'14"W, 7♂♂, 29-30 July 2003, 1♂, 14 August 2003, M. Buck, 1♂ 2♀, 14-15 August 2003, yellow and white pans, M. Buck & D. Cheung; 12♂♂ 5♀, Leamington, various dates, 1975, 1984-85, 1987, T.D. Galloway (EDUM); 2♂♂, Seacliffe, 1 August 1975, T.D. Galloway (EDUM); 3♂♂ 1♀, Windsor, Springarden Road ANSI, 31 July 2002, M. Buck.

Distribution. Newly recorded for Ontario. Canada: BC; U.S.: CT to FL, west to AK, ID, CA; Mexico (Krombein 1979). Finnamore (1982) recorded ssp. *atlanticus* Viereck from QC.

Biology. Nests in sand. Prey are nymphs and more commonly adults of various Miridae, *Arhyssus lateralis* (Say) (Rhopalidae) and immature Aphidae (Krombein, 1979).

Prey record. *) One adult male *Adelphocoris* cf. *lineolatus* (Goeze) (Miridae).

Solierella levis Williams, 1950

Ontario: Peel, Forks of the Credit, gravel pit NW of Provincial Park, 43°49'24"N, 80°0'57"W, 2♂♂ 1♀, 3 August 2002, 5♂♂ 1♀, 5 August 2002, along gravel road, M. Buck. **Essex**, 2♀, Leamington, 18 August 1987, T.D. Galloway (EDUM).

Distribution. Newly recorded for Canada. U.S.: CA (Krombein 1979). CASC has specimens from CA, AZ, NV, UT, western TX (Pulawski, *in litt.*).

Biology. Unknown. Specimens from Forks of the Credit were collected along an abandoned gravel road at the edge of an active gravel pit. Unlike *S. peckhami* and *S. plenoculoides* adults are not attracted by white or yellow pans.

Taxonomy. The Ontario specimens were thoroughly compared to specimens from California (material in CASC, USNM). Males differ consistently from California males by their less pointed clypeus. In both sexes the colour of the mandibles is darker than in California specimens. Otherwise eastern and western specimens are practically inseparable, including male genitalic characters (one male each examined from Forks of the Credit, ON, and Thousand Palms Canyon, Riverside County, CA, the latter in USNM).

Solierella peckhami (Ashmead, 1897)

Ontario: Thunder Bay, 1♂, Mouth of Pic River, N side, 48°36'N, 86°18'W, 19-22 July 2001, sand dunes, yellow pans, M. & B. Buck; 1♂, Terrace Bay, 48°46'39"N, 87°6'29"W, 15 July 2002, sandy forest edge, M. Buck. **Sudbury**, 1♂, Nairn Centre, Old Nairn Road nr. Hwy 17,

46°19'35"N, 81°37'6"W, 6 July 2002, M. Buck. **Manitoulin**, 1♂, Manitoulin I., Carter Bay, 45°36'23"N, 82°8'27"W, dunes, 24 June 2003, M. Buck. **Carleton**, 1♀, Ottawa, Innes Point, 10 July 1985, pan trap, L. Masner (CNCI); 7 km SW Carleton Place, 1♂, 20-26 May 1981, 2♂♂ 2♀♀, 19-29 June 1981, S.J. Miller (CNCI). **Leeds and Grenville**, St. Lawrence Is. National Park, Grenadier I. Centre, 1♂, 4 June 1975, pan trap, 1♀, 1 August 1975, E. Sigler (CNCI). **Hastings**, 1♀, Marmora, 8 September 1952, J.F. McAlpine (CNCI); 1♀, Chatterton, 15 June 1953, J.C. Martin (CNCI); Belleville, 1♂, 16 July 1949, 1♀, 2 September 1950, J.C. Martin (CNCI). **Northumberland**, 1♀, Brighton, 13 July 1956, no collector, malaise trap (CNCI). **Bruce**, Inverhuron Provincial Park, front dunes, 44°17'33"N, 81°35'28"W, 1♂, 2 July 2003, netted, 2♀♀, 26 July 2003, white and yellow pans, 2♀♀, 22 August 2003, white and yellow pans, M. Buck. **York**, 1♀, King Township, Joker's Hill, Koffler Scientific Reserve, 44°3'N, 79°29'W, 18-19 August 2003, sand pit, yellow pans, W. Godsoe. **Peel**, 1♀, Forks of the Credit Provincial Park, 3 August 2002, white pans, M. Buck; 3♂♂ 4♀♀, Forks of the Credit, gravel pit NW of Provincial Park, 43°49'24"N, 80°0'57"W, 3 and 5 August 2002, yellow and white pans (except 2♀♀) M. Buck. **Wellington**, Guelph, 1♂, 12 July 1953, 1♀, 31 June 1955, D.H. Pengelly. **Waterloo**, 1♀, Cambridge, 21 June 1984, forest, M. Harvey. **Halton**, 2♂♂, Milton, Woodland Trails Camp, 4th Line Nassagaweya, 43°32'51"N, 79°59'35"W, 18 August 2003, M. Buck. **Wentworth**, 6♂♂ 4♀♀ (4♂♂ 3♀♀ in white and yellow pans), Flamborough, Lawson Farm, 43°18'58"N, 80°2'26"W, 30 June-1 July 2003, alvar, M. Buck. **Brant**, Brantford Railway Prairie, 43°10'N, 80°19'W, 2♂♂ 3♀♀, 12 July 2002, yellow pans, 1♂ 1♀, 24 July 2002, S.M. Paiero. **Norfolk**, 1♀, Nixon West Prairie, 28 May 1998, yellow pans, H. Douglas (LPC); Manestar Tract, 6 km NNW St. Williams, 42°42'17"N, 80°27'38"W, 4♀♀, 25 July 2000, white pans, 1♀, 8 June 2001, yellow pans, 1♀, 15 June 2001, white pans, 3♀♀, 25 June 2001, white and yellow pans, 1♀, 3 August 2001, yellow pans, 2♀♀, 24 August 2001 white and yellow pans, 1♀, 7 September 2001, white pans, 2♂♂ 6♀♀, 23 June 2002, sandy field, Buck et al.. **Kent**, Rondeau Provincial Park, South Point Trail East, 7♂♂ 1♀, 29 June 2002, netted, 1♂, 7 September 2002, yellow pans, M. Buck, 1♀, 16-17 June 2003, yellow pans, S.M. Paiero, 2♂♂ 2♀♀, 9-10 August 2003, white pans, M. Buck, 1♀, 5-7 September 2003, yellow pans, M. Buck. **Essex**, 1♂, Leamington, 4 August 1985, T.D. Galloway (EDUM); 1♂, Point Pelee National Park, West Beach, 29 July 2003, M. Buck; Point Pelee National Park, Old Maintenance Yard, 41°56'54"N, 82°31'14"W, 1♂ 1♀, 29 July 2003, netted, M. Buck, 1♂ 1♀, 14-15 August 2003, yellow and white pans, M. Buck & D. Cheung; 1♂ 2♀♀, Point Pelee National Park, De Laurier House, 29-30 July 2003, white pans, M. Buck & D. Cheung; 3♀♀, Point Pelee National Park, Old Henry Camp, 41°57'35"N, 82°31'32"W, 14-15 August 2003, white pans, M. Buck & D. Cheung. **Locality unknown**, 1♀, "ex nursery in Ont.", no date/collector (CNCI).

Distribution. Newly recorded for Canada. Transcontinental in U.S.: NY to FL, west to ID, CA, introduced to Hawaii and Marshall Is. (Krombein 1979).

Biology. Nests in cavities in twigs and plant stems. Nymphal Lygaeidae (s.l.) are used as prey (Krombein 1979).

Solierella plenoculoides plenoculoides (Fox, 1893)

Ontario: **Thunder Bay**, 1♀, Pukaskwa National Park, Beach Trail, dunes, 29-30 July 2003, yellow pans, S.M. Paiero. **Carleton**, 1♂, Ottawa, 30 May 1914, F.W.L. Sladen (CNCI); 2♂♂, 7 km SW Carleton Place, 20-26 May 1981, S.J. Miller (CNCI). **Prince Edward**, 1♂ 2♀♀, Smith Bay nr. Picton, 1 July 1970, J.F. McAlpine (CNCI). **Bruce**, 1♀, Dyers Bay, 20 July 1955, D.H. Pengelly. **Grey**, 1♂, Meaford, 14 June 1975, J.T. Huber. **Welland**, 1♂, Wainfleet Bog 8 km S Welland, 7-13 June 1988, pan traps, A. Stirling. **Wentworth**, 1♂, Hamilton, 9-13 July 1981, M. Sanborne (CNCI). **Norfolk**, 1♂, Turkey Point Provincial Park, 1 June 2002, oak savannah, white

pans, M. Buck; Manestar Tract, 6 km NNW St. Williams, 42°42'17"N, 80°27'38"W, 1♂, 8 July 2000, on logs, 1♂, 23 June 2002, M. Buck. **Kent**, Rondeau Provincial Park, South Point Trail East, 1♀, 28 June 2002, M. Buck, 1♂, 29 May 2003, white pans, M. Buck & S.M. Paiero, 1♀, 9-10 August 2003, white pans, M. Buck, 1♂, 13-15 August 2003, yellow pans, S.M. Paiero. **Essex**, 1♂ 1♀, Point Pelee National Park, De Laurier House, 29-30 July 2003, yellow and white pans, M. Buck & D. Cheung; 1♀, Point Pelee National Park, Old Maintenance Yard, 41°56'54"N, 82°31'14"W, 14-15 August 2003, white pans, M. Buck & D. Cheung; Windsor, Ojibway Prairie, 1♂, 3-6 July 2001, 1♂, 10-13 July 2001, 2♀♀, 7-10 August 2001, 1♀, 21-24 August 2001, 1♀, 30 August-4 September 2001, 11♂♂ 2♀♀, 30 May 2002, yellow pans, S.M. Paiero, 4♂♂ 2♀♀, 18-19 June 2002, yellow pans (excl. 1♂ 1♀), M. Buck & S.M. Paiero, 2♂♂ 6♀♀, 30-31 July 2002, white and yellow pans (excl. 1♂ 2♀♀), Buck et al., 3♀♀, 26-27 August 2002, yellow pans, M. Buck, 1♂ 2♀♀, 25 July 2003, yellow pans, S.M. Paiero.

Distribution. Newly recorded for Canada. U.S.: NY (Kurczewski and Miller 1991), NH to VA, west to CO, TX, AZ (Krombein 1979).

Biology. Has been reported to nest in goldenrod galls caused by *Eurosta solidaginis* (Fitch) (Tephritidae) (Krombein 1979). The prey is unknown.

Miscophus americanus Fox, 1890

Ontario: Thunder Bay, 1♀, 28 km E Nipigon, 48°58'0"N, 87°58'47"W, 8 July 2002, M. Buck; 2♂♂, Terrace Bay, 15 July 2002, sandy forest edge, M. Buck. **Nipissing**, 1♂, Algonquin Provincial Park, Arowhon Road, Simm's Pit, 45°34'19"N, 78°42'41"W, 15-16 August 2002, yellow pans, M. Buck. **Parry Sound**, 1♂, Nobel Township N of Parry Sound, 3-4 August 2002, yellow pans, E.L. Westman. **Manitoulin**, Manitoulin I., Carter Bay, dunes, 45°36'23"N, 82°8'27"W, 5♂♂ 1♀, 24 June 2003, 2♂♂ 4♀♀, 13 July 2003, M. Buck; Manitoulin I., Providence Bay, dunes, 45°39'41"N, 82°15'40"W, 1♀, 26 June 2003, 2♂♂ 3♀♀, 18 July 2003, M. Buck; Manitoulin I., Sand Bay, dunes, 45°48'6"N, 82°47'36"W, 6♂♂ 2♀♀, 25 June 2003, M. Buck & S.M. Paiero, 1♂ 3♀♀, 17 July 2003, M. Buck; 6♂♂ 1♀, Manitoulin I., Shrigley Bay, 45°43'33"N, 82°29'5"W, 9 July 2003, dunes, M. Buck; 9♂♂, Manitoulin I., Misery Bay Provincial Park, 45°47'37"N, 82°44'11"W, 12 July 2003, beach, M. Buck; 4♂♂ 1♀, Manitoulin I., Union Road nr. Portage Lk., 45°46'5"N, 82°32'13"W, 14 July 2003, sandy field, M. Buck; 4♂♂, Manitoulin I., Dominion Bay, 45°42'19"N, 82°24'30"W, 16 July 2003, dunes, M. Buck; 2♂♂ 1♀, Manitoulin I., Square Bay, 45°42'N, 82°23'W, 19 July 2003, dunes, M. Buck; 1♂ 1♀, Manitoulin I., Portage Bay, 45°45'N, 82°32'W, 21 July 2003, dunes, M. Buck. **Carleton** 1♂, Ottawa, 25 August 1954, W.R.M. Mason (CNCI); 1♂, Ottawa, uplands sand pits, 25 August 1954, C.D. Miller (CNCI); 1♀, Ottawa Airport, 25 June-2 July 1985, pan trap, J. Denis (CNCI); 2♀♀, Merivale, 23 June 1953, C.D. Miller (CNCI). **Prince Edward**, 1♂ 1♀, Smith Bay nr. Picton, 1 July 1970, J.F. McAlpine (CNCI). **Peterborough**, Norwood, 1♀, 24 August 1982, 1♂ 2♀♀, 16 August 1984, T.D. Galloway (EDUM). **Northumberland**, 2♀♀, Brighton, 20 and 25 July 1956, malaise trap, no collector (CNCI). **Bruce**, Dorcas Bay dunes, 2♀♀, 19-24 August 1997, malaise trap, 1♀, 5-13 June 1999, malaise trap, 3♂♂, 5-19 June 1999, malaise pans, S.A. Marshall; Bruce Peninsula National Park, Singing Sands dunes, 45°11'34"N, 81°34'58"W, 1♂, 2 September 1997, malaise trap, S.A. Marshall, 7♂♂, 8 July 2003, M. Buck; 1♀, Lake Scugog, 45°7'N, 81°32'W, 1-17 August 2002, malaise trap, S.A. Marshall; Inverhuron Provincial Park, 49♂♂ 19♀♀ (19♂♂ 11♀♀ in white pans, 10♂♂ 6♀♀ in yellow pans), 2 July 2003, 18♂♂ 5♀♀ (7♂♂ 5♀♀ in white pans, 10♂♂ in yellow pans), 26 July 2003, 1♀, 22 August 2003, M. Buck. **Grey**, Hepworth dunes, 44°37'N, 81°9'W, 5♂♂ 5♀♀ (2♂♂ 3♀♀ in yellow pans, 2♂♂ 1♀ in white pans), 5 July 2003, M. Buck. **Huron**, 1♂ 2♀♀, Goderich, 22 June 1977, G.J. Umphrey, A.A. Konecny & K.N. Barber. **Simcoe**, 1♀, Springwater, 0.2 km E of Provincial Park, 44°26'11"N, 79°45'19"W, around gravel pit, 2 September

2002, M. Buck. **Dufferin**, 1 ♀, Primrose, 7 July 1960, D.H. Pengelly. **Peel**, 1 ♀, Forks of the Credit Provincial Park, 43°49'29"N, 80°0'14"W, 3 August 2002, white pans, M. Buck; 8 ♂♂ 5 ♀♀, Forks of the Credit, gravel pit NW of Provincial Park, 43°49'24"N, 80°0'57"W, 5 August 2002, M. Buck. **Wellington**, 1 ♂, Rockwood, 21 July 2004, on stone wall, M. Buck. **Halton**, 2 ♀♀, Milton, Woodland Trails Camp, 4th Line Nassagaweya, 43°32'51"N, 79°59'35"W, 18 August 2003, M. Buck & S.M. Paiero. **Norfolk**, Manestar Tract, 6 km NNW St. Williams, 42°42'17"N, 80°27'38"W, 1 ♂ 1 ♀, 2 July 2000, netted, 1 ♀, 8 July 2000, on logs, 1 ♂, 8 June 2001, netted, 1 ♀, 25 June 2001, white pans, sandy field, M. Buck, 1 ♀, 7 September 2001, white pans, M. Buck & S.M. Paiero. **Middlesex**, 1 ♀, Komoka Feed Mill Prairie, 11-29 September 2001, yellow pans, S.M. Paiero. **Lambton**, Port Franks, Watson Property nr. L-Lake, 1 ♀, 12-15 July 1996, malaise trap, 1 ♀, 19-26 August 1996, pan trap, 2 ♀♀, 26 August-3 September 1996, malaise trap, J. Skevington; 1 ♀, Pinery Provincial Park, 2 September 1994, S.A. Marshall; 1 ♀, Pinery Provincial Park, powerline, 18-21 June 1986, pan traps, L. Packer (LPC). **Kent**, Rondeau Provincial Park, South Point Trail East, 1 ♂ 2 ♀♀, 29 June 2002, 8 ♂♂ 12 ♀♀, 7 September 2002, yellow and white pans, M. Buck, 13 ♂♂ 12 ♀♀, June-September 2003 (various dates), savannah and dunes, yellow and white pans, malaise trap and netted, various collectors; 1 ♂, Rondeau Provincial Park, Marsh Trail North, 42°18'N, 81°51'W, 15 August 2003, S.M. Paiero. **Essex**, Point Pelee, 1 ♀, 8 September 1954, W.R.M. Mason (CNCI), 1 ♀, 24 August 1961, G.K. Morris, 1 ♀, 20 July 1978, pan trap, K.N. Barber, 4 ♀♀, 21-22 July 1979, pan trap, J.M. Heraty; Point Pelee National Park, forested area by W beach, 1 ♂, 4-10 August 1999, 1 ♀, 10-21 August 1999, 1 ♀, 10-23 September 1999, malaise/pan traps, O. Lonsdale; Point Pelee National Park, Old Maintenance Yard, 41°56'54"N, 82°31'14"W, 1 ♂, 29 July 2003, netted, M. Buck, 6 ♂♂ 1 ♀, 14-15 August 2003, yellow and white pans, M. Buck & D. Cheung; 1 ♂ 3 ♀♀, Point Pelee National Park, De Laurier House, 29-30 July 2003, white and yellow pans, M. Buck & D. Cheung; 3 ♀♀, Point Pelee National Park, Old Henry Camp, 41°57'35"N, 82°31'32"W, 14-15 August 2003, white pans, M. Buck & D. Cheung; Windsor, Ojibway Prairie, 30-31 July 2002, 1 ♀, yellow pans, S.M. Paiero & A. Staquet, 1 ♀, S.M. Paiero, 2 ♀♀, 19 June and 30 July 2002, on earth between roots of fallen tree, M. Buck.

Alberta: 1 ♀, Lethbridge, 28 July 1916, F.W.L. Sladen (CNCI).

Distribution. Newly recorded for Ontario and Alberta. Canada: NT; eastern U.S.: NY to FL, west to CO, KS and TX (Krombein 1979).

Biology. Nests in loose to well-packed sand. Small spiders of the genus *Theridion* (Theridiidae) are used as prey (Krombein 1979).

Prey records. ¹⁾ and ²⁾ One unidentified spider each.

Nitela cerasicola Pate, 1937

Ontario: **Halton**, Milton, Derry Road & 4th Line, 43°31'31"N, 79°50'25"W, 1 ♀, 13 July 2003, 1 ♂, 3 September 2003, on dead trunk, S.M. Paiero.

Distribution. Newly recorded for Canada. Eastern U.S.: NY (Krombein 1979). Apparently there are no other published records for this species besides the type series, which was collected on Long Island.

Biology. Unknown. The prey of Nearctic *Nitela* is unknown. Some Palearctic species prey on Psocoptera, Psyllidae and Aphididae (Krombein 1979).

Nitela virginiensis Rohwer, 1923

Ontario: **Hastings**, 1 ♂, Trent River Prairie [NE of Stirling], 44°13'N, 77°34'W, 1-10 August 1994, J.T. Kerr & L. Packer (LPC). **Northumberland**, 1 ♂, Brighton, 15 June 1955, A.P. Arthur (CNCI). **Bruce**, Dorcas Bay dunes, 1 ♂, 19-30 June 1999, 1 ♀, 2-25 August 1999, malaise trap, S.A. Marshall. **Wellington**, 1 ♂, Guelph, 11 July 1956, D.H. Pengelly. **Wentworth**, Ancaster, 1 ♀,

8 August 1969, J.E.H. Martin (CNCI), 6♂♂, 28 June-1 July 1994, malaise trap, B. DeJonge (CNCI); Flamborough, Lawson Farm, 1♂, 2-12 July 1996, 1♂, 29 June-5 July 1997, alvar, malaise trap, B. DeJonge. **Norfolk**, 1♀, Manestar Tract, 42°43'N, 80°27'W, 30 July-4 August 1992, oak savannah, malaise trap, J.T. Kerr, M. deGiusti & L. Packer (DEBU). **Elgin**, 1♀, Aylmer West, 17-20 July 1972, malaise trap, no collector (CNCI). **Lambton**, Pinery Provincial Park, 1♀, 1-30 June 1986, malaise trap, L. Packer, 1♂, 14-21 June 1986, malaise trap, D.C. Darling & L. Packer (both ROME); 1♀, Pinery Provincial Park, powerline, 18-21 June 1986, malaise trap, L. Packer (LPC); Port Franks, Watson Property nr. L-Lake, 1♂, 12-15 July 1996, 2♀♀, 26 August-3 September 1996, malaise trap, J. Skevington; 1♂ 1♀, Port Franks, Karner Blue Sanctuary, 19-26 August 1996, malaise trap, J. Skevington. **Kent**, 1♂, Rondeau Provincial Park, Tulip Tree Trail, 26 June 1985, K.N. Barber; 4♀♀, Rondeau Provincial Park, South Point Trail, east parking lot, 42°15'42"N, 81°50'49"W, oak savannah, 16-29 July 2003, malaise trap, S.A. Marshall.

Distribution. Newly recorded for Ontario. Canada: QC (Finnamore 1982); eastern U.S.: NY, MI, WI to FL, WV, MS (Krombein 1979).

Biology. Has been reported to nest in twigs of *Rhus glabra*. See also below previous species.

Pison koreense (Radoszkowski, 1887)

Ontario: Wellington, 1♂, Guelph, 21 July 1978, N. Pierce. **Halton**, 1♀, Burlington, 18 August 1986, riparian woods, K.N. Barber; 1♀, Milton, Derry Road & 4th Line, 29 June 1999, S.M. Paiero; 1♀, Oakville, nr. Hwy 25 & Burnhamthorpe Road, 43°27'14"N, 79°47'32"W, 9 August 2002, S.M. Paiero. **Essex**, 1♀, Windsor, ca. 1.5 km S Ojibway Prairie, 42°13'34"N, 83°4'27"W, 30 June-17 July 2001, forest-prairie edge, malaise trap, P. Pratt; 1♀, Windsor, Ojibway Prairie, 26 August 2002, on earth between roots of fallen tree, S.M. Paiero.

Distribution. Genus and species newly recorded for Canada. U.S.: NY, PA, MI, WI, IL, MD, VA, KS, TX (Kurczewski and Miller 1991; Antropov 1994). Russian Far East, eastern China, Korea, Japan (Antropov 1994). This Old World species was introduced to the eastern U.S. after World War II (Krombein 1979) and is apparently expanding its range (Kurczewski and Miller 1991).

Biology. *P. koreense* constructs mud cells, often in sheltered situations, and sometimes uses old nests of the mud dauber *Trypoxylon politum* (Say). Prey are spiders of the genera *Araneus* (Araneidae) and *Dictyna* (Dictynidae) (Menke 1988).

Trypoxylon (s. str.) *attenuatum* Smith, 1851

Ontario: Parry Sound, 1♀, N of Parry Sound, Nobel Township, 3-4 August 2002, yellow pans, E.L. Westman. **Carleton**, Ottawa, 2♀♀, August 1993 and 7 September 2002, J.R. Vockeroth (CNCI), 1♂, 25 May 1975, R.E. Roughley. **Lanark**, 3♀♀, 7 km SW Carleton Place, 4-11 September 1980, S.J. Miller (CNCI). **Leeds and Grenville**, 1♂, Prescott, 7 September 1978, K.N. Barber; 1♀, Greenbush, 25 August 1999, flight intercept trap, R. Hainault (CNCI); 23♂♂ 29♀♀, St. Lawrence Is. National Park, 1975-76 (CNCI), 1♂ 2♀♀, ditto, Grenadier I. Centre (CNCI), 1♀, ditto, McDonald I., 13 September 1976, malaise trap, W. Reid (CNCI). **Hastings**, 1♂, Foxboro, 10 June 1963, C.J. Edwards; 2♀♀, Trent River Prairie, [NE of Stirling], 44°13'N, 77°34'W, 23-31 August 1994, oak savannah, malaise trap, J.T. Kerr, M. deGiusti & L. Packer (LPC). **Peterborough**, 1♂, Miller Creek Conservation Area, 5 June 1999, W.J. Crins. **Bruce**, 1♂, Dunks Bay, 45°14'59"N, 81°38'27"W, 31 July 1997, malaise trap, S.A. Marshall; 1♂, Bruce Pen. National Park, Singing Sands, 45°11'34"N, 81°34'58"W, 26-31 May 2000, fen, pan traps, C.S. Onodera; Dorcas Bay, 45°11'N, 81°35'W, 1♀, 19-24 August 1997, 3♀♀, 30 June-21 July 2003, dune, malaise trap, S.A. Marshall; Emmett Lake, 1♂, 27 May-10 June 2000, 2♂♂ 1♀, 16 August 2000, malaise trap, S.A. Marshall; 1♀, 2 km W Tobermory, 1-3 July 1988, roadside fen, pan traps, D. Blades; 1♀, N of

Boat Lake, 22 July 1977, lush forest nr. swamp, D. Maddison (ROME); 1 ♀, Pike Bay (Bruce County?), 30 July-7 August 1996. L.L. Wood; 30 ♂♂ 24 ♀♀, Inverhuron Provincial Park, 6 June-10 September 2003 (various dates), dunes, yellow and white pans, malaise trap and netted, M. Buck & S.A. Marshall. **Grey**, 1 ♀, Meaford, 30 July 1964, B.K.W. Wyatt. **Huron**, 2 ♂♂, Goderich, 22 June 1977, A.A. Konecny & W.A. Attwater; 1 ♀, Goderich, Maitland River at Hwy 21, 20 July 1977, field, D. Maddison (ROME). **Simcoe**, 2 ♀♀, Beeton, 5 October 1979, D.N. Couture; 1 ♀, Barrie, April 1983, ex *Rhus* twig (emerged 4-6 June 1983), E.R. Fuller (ROME). **Simcoe or York**, 1 ♂, Schomberg, 14 September 1975, J.T. Huber. **Dufferin**, 1 ♂ 1 ♀, Mono Cliffs Provincial Park, 44°3'N, 80°4'W, 31 August 2002, yellow pans, M. Buck. **Peel**, 2 ♀♀, Forks of the Credit Provincial Park, 43°49'29"N, 80°0'14"W, 3 August 2002, white pans, M. Buck; 1 ♀, Forks of the Credit, gravel pit NW of Provincial Park, 43°49'24"N, 80°0'57"W, 5 August 2002, white pans, M. Buck. **Wellington**, 15 ♀♀, Wylde Lake bog 8 km E Arthur, 20 August-23 October 1987, pan traps, S.A. Marshall; 1 ♂, Rockwood, 21 September 1963, D.B. Stoltz; 1 ♀, Belwood, 21 June 1973, D.H. Pengelly; Guelph, 1 ♀, 11 September 1960, B.S. Heming, 1 ♀, 3 June 1974, R.E. Roughley, 1 ♂, 16 August 1976, P.R. Heels, 1 ♀, 23 August 1977, K.N. Barber, 1 ♂, 24-28 August 1981, 1 ♀, 7-12 September 1981, malaise trap, D. Yu, 1 ♀, 15 June 1983, G. Abayo, 1 ♂, October 1994, C. Brewer, 1 ♀, 7-10 September 2001, pan traps, J. Knopp; 1 ♂, Crieff, 2 km SE on 7th Conc., 43°24'57"N, 80°7'18"W, 30 August 2002, S.A. Marshall. **Waterloo**, 5 ♀♀, Elmira, 5-28 October 1977, L. LeSage (CNCI); 1 ♀, Cambridge, 15 June 1975, W.J. Moolenbeek; 1 ♀, Cambridge, Cambridge Research Station, 9-12 June 1992, malaise trap, J. Skevington; 2 ♂♂ 9 ♀♀, Oliver Bog 3 km S Galt, 13 May-11 October 1987, pan traps, D. Blades. **Halton**, 2 ♂♂, Oakville, 22 May and 13 June 1976, W.A. Attwater. **Wentworth**, 1 ♀, Ancaster, 43°13'N, 79°59'W, 28 May-4 June 1994, prairie, malaise trap, B. DeJonge; 1 ♂, Ancaster vicinity, 43°15'N, 80°0'W, 27 May-2 June 1995, bush/prairie, malaise trap, B. DeJonge; Ancaster, Newton Woods, 1 ♂, 10-17 June 1996, 1 ♂, 17-24 June 1996, forest, malaise trap, B. DeJonge. **Welland**, 2 ♀♀, Wainfleet Bog, 8 km S Welland, 14 September-5 October 1987, pan traps, A. Stirling; 1 ♀, Fonthill, 11 August 1984, malaise trap, M.A. Luciani. **Lincoln**, 1 ♂, Vineland, 24 June 1978, D. Yu. **Brant**, Brantford Railway Prairie, 43°10'N, 80°19'W, 1 ♂, 6 June 2002, yellow pans, 1 ♂, 12 July 2002, 1 ♀, 24 July 2002, M. Buck & S.M. Paiero. **Norfolk**, 1 ♀, Long Point – RARO, 20-23 June 1996, malaise trap, P.J. Carson (LPC). **Lambton**, 3 ♀♀, Port Franks, Watson property nr. L-Lake, 10 June-14 August 1996, malaise trap, J. Skevington; 1 ♂, Walpole I., 42°29.9'N, 82°29.3'W, 1-16 August 2001, marsh, malaise trap, Guidotti et al. (ROME); Walpole I., Potawatomi Prairie, 42°33'N, 82°29'W, 1 ♂, 11-19 July 2001, 1 ♀, 19-25 July 2001, 1 ♂, 1-16 August 2001, malaise trap, Guidotti et al. (ROME). **Kent**, Rondeau Provincial Park, South Point Trail East, 3 ♀♀, 29 June 2002, netted, 2 ♀♀, 7 September 2002, yellow pans, M. Buck, 2 ♂♂ 1 ♀, 29 May 2003, yellow pans, M. Buck & S.M. Paiero, 1 ♂ 2 ♀♀, 16-29 July 2003, malaise trap, oak savannah, S.A. Marshall; 2 ♂♂ 1 ♀, Wheatley Provincial Park, 9 June 2002, S.M. Paiero. **Essex**, 1 ♀, Point Pelee National Park, wooded area by W beach, 20-26 July 1999, malaise/pans, O. Lonsdale; 1 ♀, Point Pelee National Park, Visitor Centre, 29 May-9 June 2000, malaise /pans, O. Lonsdale; 1 ♀, Union-on-the-Lake, Erie beach, 18 August 1983, T.D. & C.A. Galloway (EDUM); Windsor, Ojibway Prairie, 1 ♀, 28-30 August 2001, 1 ♀, 4-7 September 2001, 1 ♀, 7-11 September 2001, 2 ♂♂, 30 May 2002, yellow pans, S.M. Paiero, 1 ♂, 19 June 2002, M. Buck; 2 ♀♀, Windsor, Ojibway Prairie nr. Sprucewood Avenue, 26-27 August 2002, white and yellow pans, M. Buck & S.M. Paiero.

Quebec: 2 ♂♂ 3 ♀♀, Ste-Anne-de-Bellevue, various dates, July, September, 1967, 1976, 1978, various collectors (LEMQ); 7 ♂♂ 12 ♀♀, Mont St. Hilaire, various dates, July-August 1977, A.T. Fimmamore (LEMQ).

Distribution. Newly recorded for Canada (ON, QC). A Palearctic species that was only recently discovered in the Nearctic (U.S.): VT (Antropov 2003). Nearctic specimens were previously

confused with the similar *T. pennsylvanicum*. The female collected in Guelph in 1960 represents the oldest known specimen from the Nearctic region.

Biology. Nests in hollow plant stems, usually *Phragmites*. Prey are spiders of various genera (Lomholdt 1975-76).

***Trypoxylon* (s. str.) *bidentatum* Fox, 1891**

Ontario: Prince Edward, 1♂, Smith Bay nr. Picton, 1 July 1970, J.F. McAlpine (CNCI, Antropov *in litt.*).

Distribution. Newly recorded for Canada. Western U.S.: WA, ID south to CA, AZ (Krombein 1979). According to Antropov (*in litt.*) also in BC (specimens in CNCI). Possibly adventitious in the east (see Discussion).

Biology. Nests in borings of *Sambucus* and was also reported from trap stems (Krombein 1979). Prey unknown, probably spiders.

***Trypoxylon* (s. str.) *carinatum* Say, 1837**

Ontario: Hastings, 1♀, Trent River Prairie [NE of Stirling], 44°13'N, 77°34'W, 19 July-2 August 1994, J.T. Kerr & L. Packer (LPC). **Halton or Peel**, Terra Cotta, 1♂ (head missing), reared from trap nest #50, 1♂ 4 specimens (heavily damaged), reared from trap nest #54289, 2001, T. Romankova. **Wentworth**, Dundas, 1♀, 7-11 August 1972, D.M. Wood (CNCI, not examined; information provided by A. Antropov, *in litt.*), 2♂♂, 8 July 1980, E.A. Menard; 1♂, nr. Carluke, 10 June-12 July 1996, logs, tepee trap, B. DeJonge; 1♀, Ancaster, Newton Woods, 12-20 July 1996, forest, malaise trap, B. DeJonge. **Lincoln**, 1♀, Vineland, 13 July 1979, D. Yu. **Norfolk**, Manestar Tract, 42°43'N, 80°27'W, 1♀, 10-18 July 1992, 2♀♀, 18-30 July 1992, 1♂ 1♀, 30 July-4 August 1992, malaise trap, oak savannah, P.J. Carson, J.T. Kerr, M. deGiusti & L. Packer (all LPC). **Lambton**, 1♂, Port Franks, Karner Blue Sanctuary, 27 June-2 July 1996, malaise trap, J. Skevington; 1♀, same data except 22-25 July 1996; Port Franks, Watson Property nr. L-Lake, 1♂, 8-12 July 1996, 1♀, 15-18 July 1996, malaise trap, J. Skevington. **Kent**, 1♀, Rondeau Provincial Park, 1-6 July 1973, malaise trap, no collector (CNCI). **Essex**, 1♀, Harrow, 11 July 1976, C.D. Neilsen. **Not located**: 1♂, "Byron, 23/7/[?]36". The name (if it does not indicate the collector) could refer to a Byron nr. London (Middlesex County) but it is not clear whether the specimen is from Ontario.

Distribution. Newly recorded for Canada. U.S.: east of 100th meridian, north to MA (Krombein 1979).

Biology. Nests in wood borings. Reported prey is the spider *Theridion lyricum* Walckenaer (Theridiidae) (Krombein 1979).

***Trypoxylon* (s. str.) *clarkei* Krombein, 1962**

Ontario: Halton, 1♀, Halton Hills, 24 July 1981, G. Aiudi; Oakville, nr. Hwy 25 & Burnhamthorpe Road, 43°27'14"N, 79°47'32"W, 1♀, 9 August 2002, 2♀♀, 16 August 2002, on earth between roots of fallen tree, S.M. Paiero. **Wentworth**, 1♂, Dundas, 4 July 1980, E.A. Menard; 1♀, Hamilton, 9-13 July 1981, M. Sanborne (CNCI); 1♂, nr. Carluke, 10 June-12 July 1996, logs, tepee trap, B. DeJonge; Ancaster, Newton Woods, 1♂, 2-12 July 1996, 1♀, 27 July-4 August 1996, 1♀, 4-10 August 1996, forest, malaise trap, B. DeJonge.

Distribution. Newly recorded for Canada. Eastern U.S.: MA, NY, IL to MO, FL, TX (Krombein 1979).

Biology. Reared from trap nests. Recorded prey is the spider *Mangora gibberosa* Hentz. (Araneidae) (Krombein 1979).

***Trypoxylon kolazyi* Kohl 1893**

Ontario: **Wellington**, Guelph, 3♂♂, 5 July 1965, 3♀♀, 12 and 19 July 1965, C.J. Edwards. **Waterloo**, 6♂♂ 11♀♀, Roseville, 5 May 1954, E.F. Cook; 1♀, Elmira, Salem Creek, 13 September 1977, L. LeSage (CNCI). **Wentworth**, 2♂♂, Winona, 10 July 1952, A.R. Gittins. **Middlesex**, 1♂, London, June 1957, N.R. Couling (CNCI, *Antropov in litt.*).

Distribution. Newly recorded for Canada. Introduced to eastern U.S. from Palaearctic Region: NY to GA, WV, IL, MO (Krombein 1979). Previous records from Ontario (Romel & Dykstra 1991b, Sugar et al. 1998, Skevington et al. 2001) are very likely based on misidentifications (see below).

Biology. Nests in abandoned anobiid borings in wood. Prey are adult and subadult Linyphiidae and Micryphantidae spiders (Krombein 1979).

Note. Most of the previous Ontario records of this species (Romel & Dykstra 1991b, Sugar et al. 1998) were under the synonym *T. backi* Sandhouse, 1940. At the time when this species was described the very similar *T. clavicrum* Lepeletier & Serville, another introduced Palaearctic species, was not yet recorded from the Nearctic Region. In the most recent key to Nearctic *Trypoxylon* (s. str.) (Sandhouse 1940) *T. clavicrum* keys to *T. backi*, leading to confusion between the two species. Even though *T. clavicrum* had been present in eastern North America from at least the late 1940s the species was not recorded before 1984 (Coville 1984). Coville's small note is the only Nearctic reference to distinguish between the two species. *T. clavicrum* is fairly common and widespread in southern Ontario whereas *T. kolazyi* is very rare and has not been collected in more recent times. Considering these facts previous Ontario records of *T. kolazyi* under the synonym *T. backi* (i.e., Romel & Dykstra 1991b, Sugar et al. 1998) are very doubtful. Some of the material on which Skevington et al. (2001) based their species list was re-examined and did not contain any *T. kolazyi* but did include several *T. clavicrum*, which was not mentioned in their list.

***Trypoxylon* (s. str.) *sculleni* Sandhouse, 1940**

Ontario: **Leeds and Grenville**, 1♂, St. Lawrence Is. National Park, 1975/76 (CNCI, *Antropov in litt.*).

Distribution. Newly recorded for eastern Canada. Canada: AB (Finnamore 1994), BC; western U.S.: MT to AZ, CA (Krombein 1979). Possibly adventitious in the east (see Discussion).

Biology. Nests in cavities in twigs and stems. Prey are spiders (Krombein 1979).

***Trypoxylon* (*Trypargilum*) *tridentatum tridentatum* Packard, 1867**

Ontario: **Welland**, 1♂, Fonthill, 9 August 1989, M.D. Forward. **Essex**, 1♂, Harrow, 7 August 1973, R.E. Roughley.

Distribution. Newly recorded for eastern Canada. Canada: BC; transcontinental in U.S.: CT to northern FL (incl. NY, PA, OH, MI), west to WA and CA; Mexico south to Isthmus of Tehuantepec (Coville 1982).

Biology. Nests in stems, wood borings and old mud dauber nests (Krombein 1979). Prey are spiders of various families, preferably snare-building species (Coville 1982).

***Oxybelus cressonii* Robertson, 1889**

Ontario: **Kent**, 1♀, Rondeau Provincial Park, group campground, 21 July 2004, D. Cheung. **Lambton**, 1♀, Port Franks, Watson Property nr. L-Lake, 14-15 August 1996, malaise trap, J. Skevington. **Essex**, Windsor, Ojibway Prairie, 3♂♂, 30-31 July 2002, S.M. Paiero, 8♂♂ 2♀♀, 26-27 August 2002, M. Buck & S.M. Paiero, 10♂♂ 3♀♀, 12-13 September 2002, M. Buck; Windsor, Springarden Road ANSI, 43♂♂ 20♀♀*, 31 July 2002, M. Buck, 2♂♂ 5♀♀, 27 August 2002, M. Buck & S.M. Paiero.

Distribution. Newly recorded for Canada. Central and eastern U.S.: UT and TX east to VA, north to MI (Krombein 1979).

Biology. Nests in sand. Prey are Diptera of several unrelated families (Chloropidae, Stratiomyidae, Chironomidae) (Krombein 1979).

Prey record. *) One male *Thaumatomyia* sp. (Chloropidae).

***Oxybelus decorosus* (Mickel, 1916)**

Ontario: Sudbury, 2♂♂, Nairn Centre, Old Nairn Road nr. Hwy 17, 46°19'35"N, 81°37'6"W, 6 July 2002, M. Buck. **Lambton,** 1♂, Forest, 17 June 1974, J.D. Villa. **Essex,** Windsor, Ojibway Prairie, 2♂♂, 26-27 August 2002, M. Buck & S.M. Paiero, 5♂♂ 4♀♀, 12-13 September 2002, M. Buck.

Distribution. Newly recorded for Canada. U.S. east of 100th meridian: VT and MN south to FL (Krombein 1979).

Biology. Unknown. As for other members of the genus, probably ground-nesting and preying on adult Diptera.

***Oxybelus inornatus* (Robertson, 1901)**

Ontario: Peel, 1♂, Forks of the Credit, 22 June 1965, G. Knerer (ROME).

Distribution. Newly recorded for Canada. Northeastern U.S.: MI to MA, south to NC (Krombein 1979).

Biology. *Pholeomyia indecora* (Loew) (Milichiidae) has been recorded as prey (Krombein 1979).

***Oxybelus laetus laetus* Say, 1837**

Ontario: **Lambton,** Port Franks, Watson Property nr. L-Lake, 1♂, 2-4 July 1996, 1♂ 1♀, 12-15 July 1996, 1♀, 15-18 July 1996, 1♀, 18-22 July 1996, malaise trap, J. Skevington; 1♂, Pinery Provincial Park, Cedar Trail, 16-20 July 1994, oak savannah, malaise trap, J. Skevington.

Distribution. Newly recorded for Canada. U.S. east of 100th meridian: MI and MA south to TX and NC (Krombein 1979). Finnamore (1982) erroneously recorded this species from Quebec based on a misidentified female of *O. subulatus* (specimen in LEMQ, examined).

Biology. Unknown. As for other members of the genus, probably ground-nesting and preying on adult Diptera.

***Oxybelus sericeus* Robertson, 1889**

Ontario: **Rainy River,** 2♀♀, Windy Point, 4 August 1960, S.M. Clark (CNCI).

Quebec: 1♀, New Richmond, 6 August 1954, J.E.H. Martin (CNCI).

Distribution. Newly recorded for Canada (ON, QC). U.S.: MA to FL, west to SD, UT, OR and CA; Mexico: Baja California, Nayarit (Krombein 1979).

Biology. Nests in moist sand. Prey are flies of the genera *Ephydra* (Ephydridae) and *Chaetopsis* (Otitidae) (Krombein 1979).

***Oxybelus subcornutus* Cockerell, 1895**

Ontario: **Northumberland,** 1♀, Murray Township, Murray Sand Hills, 28 July 1996, F.E. Kurczewski (FEK). **Wellington,** Guelph, 1♂, 27 June 1960, 1♂, 7 July 1976, D.H. Pengelly. **Norfolk,** 3♂♂, Manestar Tract, 6 km NNW St. Williams, 42°42'17"N, 80°27'38"W, 3 August 2001, sandy field, M. Buck; 1♂, St. Williams Nursery Tract, 42°41'39"N, 80°29'7"E, 6 August 2001, A. Timpf & M. Gartshore. **Essex,** 1♂, Point Pelee, 30 July 1978, W.A. Attwater; 1♂,

2 August 1981, G. Aiudi; Windsor, Ojibway Prairie, 2♂♂, 30-31 July 2002, M. Buck & S.M. Paiero, 1♂, 27 August 2002, 2♀♀, 12-13 September 2002, M. Buck.

Distribution. Newly recorded for Canada. Eastern U.S.: East Coast to AZ, north to NY, MI; Mexico: Chihuahua (Krombein 1979).

Biology. Nests in sand. Prey are adult Syrphidae, apparently mostly males (Krombein 1979).

Entomognathus (Toncahua) lenapeorum Viereck, 1904

Ontario: Essex, Windsor, Ojibway Prairie, 42°15'51"N, 83°4'30"W, 1♂, 30 August 2001, S.M. Paiero, 1 ♀, 26 August 2002, M. Buck.

Distribution. Genus and species newly recorded for Canada. Eastern U.S.: PA (Kurczewski and Miller 1991), NJ to VA, KS (Krombein 1979).

Biology. Unknown. Prey are probably adult Chrysomelidae as for other species of the genus (Krombein 1979).

Entomognathus (Toncahua) memorialis Banks, 1921

Ontario: Brant, Brantford Railway Prairie, 43°10'N, 80°19'W, 4♀♀, 12 July 2002, S.M. Paiero, 9♂♂ 7♀♀*), 24 July 2002, M. Buck & S.M. Paiero. **Lambton,** 1♀, Port Franks, Watson Property nr. L-Lake, 31 July-6 August 1996, malaise trap, J. Skevington. **Kent,** 1♂, Bothwell, 11 July 1962, S.M. Clark (CNCI); 1♀, Wheatley, 15 August 1982, T.D. Galloway (EDUM). **Essex,** 1♀*), Windsor, Ojibway Prairie, 30-31 July 2002, S.M. Paiero.

Distribution. Newly recorded for Canada. Eastern U.S.: CT to VA, KS (Krombein 1979).

Biology. Nests in sandy-loam cliffs, sometimes in pre-existing burrows. Prey are adults of the genus *Altica* (Chrysomelidae) (Krombein 1979).

Prey records. *) One adult *Altica* sp. each.

Rhopalum (Corynopus) occidentale (Fox, 1895)

Ontario: Algoma, 1♀, Wawa, 7 August 1992, D.G. Bennett. **Hastings,** 1♀, Belleville, 4 June 1932, W.E. Steenburgh (CNCI). **Bruce,** 1♂, Fathom Five National Park, Flowerpot I., 12 July 1996, S.A. Marshall; 1♀, Cyprus Lake, 30 June 1954, D.H. Pengelly; 1♂ 1♀, Dorcas Bay, 5-13 June 1999, dunes, malaise trap, S.A. Marshall. **Wentworth,** Dundas, 1♂, 28 May 1980, 1♀, 2 June 1980, E.A. Menard. **Norfolk,** 1♀, Manestar Tract, 42°43'N, 80°27'W, 11-15 June 1992, oak savannah, malaise trap, P.J. Carson (LPC).

Distribution. Newly recorded for Ontario. Canada: QC (Finnamore 1982), BC; northern and western U.S.: ME, CT, NY, NC, MI, CO, WY, NV, CA, OR (Krombein 1979).

Biology. Probably ground-nesting (Bohart 1974). Prey unknown.

Rhopalum (Corynopus) pedicellatum Packard, 1867

Ontario: Algoma, 1♂ 1♀, Iceswater Creek watershed, 13.5 km NNE Searchmont, Whitman Dam Road mi 11.5, 20 June 1986, sandy access road, K.N. Barber. **Carleton,** Ottawa, 1♀ (pinned with raspberry stem), 24 August 1954, ex raspberry stem, O. Peck, 1♀, 15 July 1957, J.E.H. Martin (both CNCI); 1♀, locality not stated [= Ottawa area], W.H. Harrington collection (CNCI); 1♂, Stittsville, 23 June 1963, W.R.M. Mason (CNCI). **Hastings,** 1♀, Trent River Prairie [NE of Stirling], 44°13'N, 77°34'W, 23-31 August 1994, oak savannah, malaise trap, J.T. Kerr, M. deGiusti & L. Packer (LPC). **Lambton,** 1♀, Pinery Provincial Park, 1-30 June 1986, malaise trap, L. Packer (ROME); 1♀, Port Franks, Karner Blue Sanctuary, 6-12 August 1994, J.T. Kerr & L. Packer (LPC). **Kent,** 1♂, Rondeau Provincial Park, 15 June-14 July 1979, malaise trap, L. Masner (CNCI).

Quebec: 1♀, "Ste Anne de la Porcatière" [= Ste-Anne-de-la-Pocatière], 7 August 1914, F.W.L. Sladen (CNCI); 1♀, St. Anne's, 11 June 1933 (CNCI).

Distribution. Newly recorded for Canada (ON, QC). U.S.: ME, MA, CT, NY, MD, WI, MN, CO (Krombein 1979). Harrington (1902) erroneously recorded the species from Ontario (see section on misidentifications [p. 76]).

Biology. Nests in pre-existing cavities in dead wood and twigs. Prey are *Chironomus* spp. (Chironomidae) (Krombein 1979).

***Rhopalum rufigaster* Packard, 1867**

Ontario: Carleton, 1 ♀, Stittsville, 23 June 1963, W.R.M. Mason (CNCI). **Lanark**, 1 ♀, Innisville, 22 August 1963, W.R.M. Mason (CNCI); 1 ♂ 2 ♀ ♀, Lanark, 2 August 1976, M.J. Sharkey; 2 ♀ ♀, Fallbrook, 14 August 1974, J.T. Huber; 1 ♀, 7.5 km W Carleton Place, 14 October 2000, woods, yellow pans, L. Masner (CNCI). **Leeds and Grenville**, 1 ♀, Kemptville, 30 August 1983, maple forest, malaise trap, W.R.M. Mason (CNCI); 1 ♀, Lyn, 10 August 1926, F.P. Ide (CNCI); 2 ♀ ♀, St. Lawrence Is. National Park, Grenadier I. Centre, 18 July and 1 August 1975, E. Sigler (CNCI); 1 ♀, same except McDonald I., 20 August 1976, Reid (CNCI). **Hastings**, 1 ♀, Marmora, 14 June 1952, J.R. Vockeroth (CNCI); 1 ♀, Belleville, 16 July 1949, J.C. Martin (CNCI). **Bruce**, 1 ♀, Bruce Peninsula National Park, Emmett Lake, 16 August 2000, lake edge, malaise trap, S.A. Marshall. **Huron**, 1 ♂, Goderich, 22 June 1977, K.N. Barber. **York**, 1 ♀, Toronto, August 1937, no collector (USNM). **Lincoln**, 2 ♂ ♂, Vineland, 15 June 1943, "*Agrilus communis rubicola* cage", H.R. Boyce (CNCI). **Lambton**, Pinery Provincial Park, 1 ♀, 7-10 June 1986, 1 ♀, 11-14 June 1986, 1 ♀, 18-21 June 1986, malaise trap, L. Packer (LPC). **Kent**, 1 ♀, "Guild" [= Guilds], 14 July 1962, S.M. Clark (CNCI); 2 ♂ ♂ 5 ♀ ♀, Rondeau Provincial Park, 22 June, 5, 10, 14, 17 and 18 July 1962, S.M. Clark (CNCI); Rondeau Provincial Park, South Point Trail East, oak savannah, 1 ♀, 7 September 2002, M. Buck, 1 ♂, 29 May 2003, yellow pans, M. Buck & S.M. Paiero, 1 ♂ 1 ♀, 16-29 July 2003, malaise trap, S.A. Marshall. **Essex**, Point Pelee, 2 ♂ ♂ 2 ♀ ♀, 8-9 September 1954, G.S. Walley & W.R.M. Mason (CNCI); 9 ♂ ♂ 14 ♀ ♀, 30 June 1978, 17-20 and 28-31 July 1978, W.A. Attwater, D. Morris, K.N. Barber & J. Cappleman, 2 ♂ ♂ 3 ♀ ♀, June-July, 1979-1981, various collectors, 1 ♂, 18 June 1986, no collector, 1 ♀, 14-20 July 1999, malaise/pan trap, A. Tesolin; Point Pelee National Park, Visitor Centre, 1 ♀, 29 May-9 June 2000, 1 ♀, 23 June-4 July 2000, 1 ♂, 22-30 July 2000, malaise/pan trap, O. Lonsdale; Kingsville, 1 ♂, 9 June 1973, R.E. Roughley, 1 ♀, 8 July 1977, K.N. Barber; 3 ♂ ♂, Pelee I., Stone Road Alvar FON Reserve, 41°45'20"N, 82°37'54"W, 9 June 2002, M. Buck; 7 ♂ ♂ 18 ♀ ♀, Pelee I., Porchuk property, 9 June-27 September 2002 (various dates), malaise trap, B. Porchuk & S.A. Marshall; 5 ♂ ♂, Middle I., 41°41'N, 82°41'W, 11 June 2003, yellow pans, S.A. Marshall; 5 ♂ ♂ 7 ♀ ♀, East Sister I. Provincial Nature Reserve, 41°49'N, 82°51'W, 30 July 2003, yellow pans (excl. 1 ♂ 1 ♀), S.A. Marshall; Harrow, 1 ♀, 2 August 1973, R.E. Roughley, 1 ♀, 22 August 1974, J.T. Huber; 1 ♂, Windsor, 8 June 1976, J.F. Fortin.

Distribution. Newly recorded for Ontario. Canada: QC (Finnamore 1983); U.S. east of 100th meridian (Krombein 1979). Harrington (1902) erroneously recorded the species from Ontario (see section on misidentifications [p. 76]).

Biology. Nests in stems and old beetle borings in wood. Prey are mainly adult Chironomidae, rarely Limoniinae (Tipulidae) and Ceratopogonidae (Krombein 1979).

***Crossocerus (Ablepharipus) unicus* (Patton, 1879)**

Ontario: Parry Sound, 1 ♀, Kearney, M.C. VanDuzee (CASC). **Brant**, 1 ♀, Ohsweken, 19 June 1979, D. Morris.

Distribution. Newly recorded for Ontario. Canada: QC (Finnamore 1982), MB; U.S.: CT, NY, PA, MI, MN, IN, MT (Krombein 1979).

Biology. Unknown.

***Crabro cognatus* Fox, 1895**

Ontario: Wellington, Guelph, 1♂ 1♀, 4 August 1978, K.N. Barber, 1♂, 25 August 1978, R.O. Kreuzer, 1♂, 15 August 1970, K.A. Stewart; Elora, 1♀, 10 September 1996, soy field, A. Shekhirman, 1♀, 3 September 2001, mown meadow, H.R. Mattila. **Waterloo,** 1♀, Cambridge, 9 August 1981, C. Bolter.

Distribution. Newly recorded for eastern Canada. Canada: AB to MB; U.S.: NH to ID, GA to TX and UT (Miller 1976; Krombein 1979).

Biology. Unknown. Like other species in the genus probably ground-nesting and preying on adult Diptera.

***Crabro nigriceps* Bohart, 1976**

Ontario: Nipissing (probably), 1♂, Algonquin [Provincial Park], 10 July 1961, R.J. Pilfrey.

Distribution. Newly recorded for Ontario. Known only from holotype and one paratype: Canada, MB (The Pas) and U.S., ME (Aziscoos Lake) (Bohart 1976).

Biology. Unknown. See below previous species.

***Crabro snowii* Fox, 1896**

Ontario: Parry Sound 1♂, Powassan, 11 July 1978, S.M. Ball. **Essex,** Windsor, Ojibway Prairie, 42°15'46"N, 83°4'1"W, 1♀, 24-27 July 2001, unburnt forest, 1♀, 25 July 2003, S.M. Paiero.

Distribution. Newly recorded for eastern Canada. Western Canada: MB, SK; U.S.: NY to FL, MN to KS (Miller 1976; Krombein 1979).

Biology. Unknown. See below *C. cognatus*.

***Crabro vernalis* (Packard, 1867)**

Ontario: Kenora, 2♂♂, Ignace, 20 May 1978, J.A. Carson.

Distribution. Newly recorded for Ontario. Canada: NF, QC, MB, AB, BC, NT, YT; U.S.: AK, WY, CO, MN, IL, NJ (Bohart 1976). Krombein (1979) listed this species as "transcontinental in North America in Transitional Zone including Alaska" but there appears to be no previous record from Ontario.

Biology. Unknown. See below *C. cognatus*.

***Ectemnius decemmaculatus decemmaculatus* (Say, 1823)**

Ontario: Kent, Rondeau Provincial Park, South Point Trail East, 10♂♂ 2♀♀, 7 September 2002, 4♂♂ 5♀♀, 5-6 September 2003, M. Buck; 1♂, Rondeau Provincial Park, South Point, 42°15'N, 81°52'W, 7 September 2003, M. Buck; 4♂♂ 4♀♀, Rondeau Provincial Park, Lakeshore Road, Beach Access #11, 42°16'1"N, 81°50'39"W, 10 August 2003, dunes, M. Buck; 1♀, Rondeau Provincial Park, 16 July 2003, O. Lonsdale. **Essex,** 2♂♂, Point Pelee, 16 June and 23 August 1920, N.K. Bigelow (ROME); 1♂, Point Pelee National Park, De Laurier Trail, 11 August 1999, O. Lonsdale.

Distribution. Newly recorded for Canada. U.S. east of Rocky Mts., Mexico (Bohart and Menke 1976). Harrington (1902) erroneously recorded the species from Ontario (see section on misidentifications [p. 76]).

Biology. Unknown. Probably nesting in dead wood or plant stems and preying on adult Diptera like most members of the genus.

***Ectemnius dilectus* (Cresson, 1865)**

Ontario: Algoma, 1♂, Sault Ste. Marie, 13 July 1963, D.B. Stoltz. Essex, Windsor, Ojibway Prairie, 2♂♂, 7 August 2001, S.M. Paiero, 1♂, 18 June 2002, M. Buck, 2♂♂, 20 July 2002, S.A. Marshall, 4♂♂ 3♀♀, 26-27 August 2002, 10♂♂ 1♀, 12-13 September 2002, M. Buck & S.M. Paiero, 1♂, 26-27 August 2002, sandy savannah, yellow pans, M. Buck.

Distribution. Newly recorded for eastern Canada. Canada: AB (Strickland 1947); Transitional and Upper Austral Zones of most of the U.S. except west of the Sierra Nevada and Cascade Ranges (Krombein 1979).

Biology. Unknown. Probably ground-nesting (Krombein 1979).

***Ectemnius scaber scaber* (Lepeletier & Brullé, 1834)**

Ontario: Wellington, 1♀, Guelph, 1 July 1974, J.T. Huber. Essex, 1♂, Harrow, 6 September 1959, D.H. Pengelly; Windsor, Ojibway Prairie, 3♂♂, 18-19 June 2002, M. Buck & S.M. Paiero, 1♂ 5♀♀, 30 July 2002, 1♂, 27 August 2002, M. Buck; 1♀, Windsor, Springarden Road ANSI, 31 July 2002, S.M. Paiero.

Distribution. Newly recorded for Canada. Eastern U.S.: PA, NJ to FL, LA, TX, and OK (Krombein 1979).

Biology. Nests in pine (Krombein 1979). Prey unknown, probably Diptera.

Subfamily Bembicinae***Mellinus abdominalis* Cresson, 1882**

Ontario: Manitoulin, Manitoulin I., Carter Bay, dunes, 45°36'23"N, 82°8'27"W, 1♀, 1 August 2003, S.M. Paiero, 1♂, 1-8 August 2003, malaise trap, M. Buck & S.A. Marshall, 1♀, 6-8 August 2003, yellow pans, 1♂, 8 August 2003, 1♀*), 28 August 2003, S.A. Marshall.

Saskatchewan: 1♀, Tunstal [= Tunstall], 27 August 1957, A.R. & J.E. Brooks (CNCI); 11♂♂ 3♀♀, Pike Lake, 10 August 1939, A.R. Brooks (CNCI); 1♀, File Lake, 9-11 July 1973, malaise trap, lakeshore, L. Masner (CNCI); 1♂, Great Sand Hills, 50°42'N, 109°17'W, 16-19 June 1988, M. Polak (CNCI).

Distribution. Newly recorded for Ontario and Saskatchewan. Canada: AB (Strickland 1947); western U.S.: ID (Johnson 1985), MT, WY, NE, CO (Krombein 1979).

Biology. Probably ground-nesting like other species of the genus (Krombein 1979). Strickland (1947) records an Anthomyiidae fly as prey.

Prey record. *) S.A. Marshall (pers. comm.) observed a female chewing on a muscoid fly (documented by photograph). Adult feeding on prey is uncommon in Crabronidae and has never been observed before in *Mellinus*.

***Didineis dilata* Malloch and Rohwer, 1930**

Ontario: Wellington, 1♂, Guelph, 19 July 1977, D. Levin.

Saskatchewan: 1♂, Willow Bunch 28 July 1955, C.D. Miller (CNCI); 1♂, Saskatoon, 4 August 1960, A.R. Brooks (CNCI).

Alberta: 1♂, Lethbridge, 7 July 1956, O. Peck (CNCI).

Distribution. Genus and species newly recorded for Canada (ON, SK, AB). U.S.: WI, NE (Krombein 1979).

Biology. Unknown. Probably ground-nesting and preying on Homoptera as other species of the genus (Ferton 1912).

Note. The female of this species is unknown. It might be confused with one of the following species.

***Didineis latimana* Malloch and Rohwer, 1930**

Ontario: Thunder Bay, 1 ♀, "Port Arthur" [= Thunder Bay], 26 August 1969, K.J.G. Deacon. **Carleton**, 1 ♀, Carp, 29 August 1975, D.J. Aspinall. **Leeds and Grenville**, 1 ♀, Greenbush, 22 August 1998, pasture, flight intercept trap, R. Hainault (CNCI); 1 ♀, St. Lawrence Is. National Park, McDonald I., 20 August 1976, Reid (CNCI); 1 ♀, same except Thwartway I. [= Leek I.], 11 August 1976 (CNCI). **Hastings**, 1 ♂, Marmora, 11 August 1952, swept from top of large basswood, J.F. McAlpine (CNCI); 1 ♂, Belleville, 26 July 1933, H.R. Boyce (CNCI). **Northumberland**, 2 ♂♂ 5 ♀♀, Murray Hills, 44°7'0"N, 77°40'0"W, 1 September 2002, yellow and white pans, S.M. Paiero. **Wentworth**, 1 ♂, Ancaster, 8 August 1969, J.E.H. Martin (CNCI). **Lincoln**, 1 ♂, Vineland, 6 July 1944, H.R. Boyce (CNCI); 1 ♂, same except 21 August 1972, emergence cage, E.A.C. Hagley (CNCI). **Essex**, 2 ♂♂, Windsor, Ojibway Prairie, nr. Sprucewood Avenue, 26-27 August 2002, yellow and white pans, M. Buck & S.M. Paiero.

Quebec: 1 ♀, Aylmer, 10 September 1893, "W.H.H." [= W.H. Harrington] (CNCI); 2 ♀♀, Mont St. Hilaire, 26 July-2 August 1977, A.T. Finnamore (LEMQ).

Distribution. Newly recorded for Canada (ON, QC). Eastern United States: NH to VA, IL, IA, MO (Krombein 1979).

Biology. Unknown (see below previous species).

***Didineis texana* (Cresson, 1872)**

Ontario: Haldimand, 1 ♂, Dunnville, 16 August 1983, M. Bottos. **Norfolk**, 1 ♀, Manestar Tract, 6 km NNW St. Williams, 42°42'17"N, 80°27'38"W, 7 September 2001, sandy field, yellow pans, M. Buck & S.M. Paiero. **Essex**, 2 ♂♂, Harrow, 22 August 1974, J.T. Huber; Windsor, Ojibway Prairie, 1 ♀, 30-31 July 2002, yellow pans, S.M. Paiero & A. Staquet, 1 ♂, 12 September 2002, M. Buck.

Distribution. Newly recorded for Canada. Eastern U.S.: PA, NJ to FL, west to KS, MO, eastern AZ; northern Mexico (Krombein 1979). Harrington (1902) and Finnamore (1982) erroneously recorded this species from Quebec based on misidentified material of *D. latimana* (examined, see below that species).

Biology. Probably ground-nesting. *Cixius stigmatus* Say (Cixiidae) has been recorded as prey (Krombein 1979).

***Nyssus daeckei* Viereck, 1904**

Ontario: Cochrane 1 ♂ 1 ♀, Iroquois Falls, 22 June 1987, J.R. Vockeroth (CNCI). **Thunder Bay**, 1 ♂, Neys Provincial Park, 1.6 km SW of gate house, 48°46'39"N, 86°36'32"W, 8-19 July 2002, *Vaccinium*/lichen, yellow pans, M. Buck; 1 ♂ 8 ♀♀, 28 km E Nipigon, 48°58'0"N, 87°58'47"W, 8 July 2002, sandy area, M. Buck; 16 ♀♀, Sleeping Giant Provincial Park, 2.5 km S Visitor Centre, 9 July 2002, old sand pit, M. Buck; 3 ♀♀, Sleeping Giant Provincial Park, Tee Harbour, 48°19'32"N, 88°52'48"W, 12 July 2002, beach, M. Buck; 4 ♀♀, Thunder Bay, 13 km ENE Jct. Hwy 17 & 527, 48°31'37"N, 88°58'41"W, 10 July 2002, M. Buck; 1 ♀, Thunder Bay, 16 km ENE Jct. Hwy 17 & 527, 48°32'7"N, 88°56'23"W, 10 July 2002, M. Buck; 5 ♀♀, Terrace Bay, 15 July 2002, beach, M. Buck; 6 ♂♂ 1 ♀, Pukaskwa National Park, Beach Trail, 29-30 July 2003, dunes, yellow pans, S.M. Paiero. **Rainy River**, 1 ♂, 13 mi E Atikokan on Hwy 623, 4-5 July 1978, H.J. Teskey (CNCI). **Sudbury**, 3 ♀♀, 1 km W Webbwood, 20 July 2002, old sand pit, M. Buck. **Algoma**, 1 ♀, White River, 8 July 1977, D.H. Pengelly; Sault Ste. Marie, 1 ♀, 13 July 1963, D.B. Stoltz, 1 ♀, 3 July 1976, C.D. Neilsen. **Parry Sound**, 1 ♂, Powassan, 14 July 19??, G. Sevean; ♂, Killbear Provincial Park, 29 June 1979, W.A. Attwater. **Manitoulin**, Manitoulin I., Carter Bay, 45°36'23"N, 82°8'27"W, 7 ♂♂ 5 ♀♀, 23-24 June 2003, M. Buck & S.M. Paiero, 1 ♀, 10-19 July 2003, yellow pans, M. Buck, 1 ♀, 13 July 2003, M. Buck; Manitoulin I., Providence Bay,

45°39'41"N, 82°15'40"W, 1 ♀, 25 June 2003, S.M. Paiero, 1 ♂ 1 ♀, 26 June 2003, 1 ♀, 18 July 2003, dunes, M. Buck; Manitoulin I., Sand Bay, 45°48'6"N, 82°47'36"W, 3 ♀ ♀, 25 June 2003, M. Buck & S.M. Paiero, 3 ♀ ♀, 17 July 2003, M. Buck; 3 ♀ ♀, Manitoulin I., Shrigley Bay, 45°43'33"N, 82°29'5"W, 9 July 2003, M. Buck; 1 ♂ 3 ♀ ♀, Manitoulin I., Misery Bay Provincial Park, 45°47'37"N, 82°44'11"W, 12 July 2003, beach, M. Buck; 3 ♀ ♀, Manitoulin I., Union Road nr. Portage Lk., 45°46'5"N, 82°32'13"W, sandy field, 14 July 2003, M. Buck; 1 ♂ 2 ♀ ♀, Manitoulin I., Dominion Bay, 45°42'19"N, 82°24'30"W, dunes, 16 July 2003, M. Buck; 4 ♀ ♀, Manitoulin I., Square Bay, 45°42'0"N, 82°23'0"W, 19 July 2003, M. Buck; 1 ♀, Manitoulin I., Portage Bay, 45°45'0"N, 82°32'0"W, 21 July 2003, M. Buck. **Carleton**, 2 ♀ ♀, Ottawa, 15 and 22 June 1975, R.E. Roughley. **Bruce**, Dorcas Bay, 11 ♂ ♂ 7 ♀ ♀, 5-13 June 1999, dunes, malaise trap, S.A. Marshall, 1 ♀, 6 July 2000, S.M. Paiero; 1 ♀, Bruce Peninsula National Park, Singing Sands, 45°11'34"N, 81°34'58"W, 30 July 1997, wetland, malaise trap, S.A. Marshall, 2 ♂ ♂ 1 ♀, 8 July 2003, M. Buck; 1 ♀, Dyers Bay, 22 July 1956, D.H. Pengelly; 5 ♂ ♂ 2 ♀ ♀, Sauble Beach, 7 and 9 July 1981, G. Aiudi & J. Kircher; 2 ♀ ♀, Sauble Falls, 9 July 1981, C. Farivar; Inverhuron Provincial Park, 2 ♂ ♂, 15 June 2003, 4 ♂ ♂ 6 ♀ ♀ (3 ♂ ♂ 4 ♀ ♀ in yellow pans, 1 ♂ 1 ♀ in white pans), 2 July 2003, 5 ♀ ♀, 25 July 2003, dunes, M. Buck. **Bruce or Grey**, Hepworth, 1 ♀, 16 July 1974, R.E. Roughley, 2 ♀ ♀, 26 June 1975, J.T. Huber, 1 ♂, 31 May 1979, S.A. Marshall. **Grey**, 1 ♂, Durham, 17 June 1955, D.H. Pengelly; Hepworth dunes, 44°37'N, 81°9'W, 15 ♂ ♂ 14 ♀ ♀ (4 ♂ ♂ 2 ♀ ♀ in yellow pans, 1 ♀ in white pans), 5 July 2003, 1 ♀, 22 July 2003, M. Buck. **Simcoe**, 1 ♀, Midland, 23 June 1974, J.T. Huber. **Dufferin**, 3 ♀ ♀, Primrose, 17 July 1956 and 7 July 1960, D.H. Pengelly; 1 ♀, same except 8 July 1974, J.T. Huber. **Wellington**, 1 ♀, Guelph, 26 June 1956, D.H. Pengelly; 2 ♂ ♂ 3 ♀ ♀, Aberfoyle, 25 June 1956, D.H. Pengelly. **Halton**, 1 ♀, Milton, Woodland Trails Camp, 4th Line Nassagaweya, 43°22'51"N, 79°59'35"W, 16 July 2004, S.M. Paiero. **Brant**, 1 ♀, Brantford Railway Prairie, 43°10'N, 80°19'W, 12 July 2002, S.M. Paiero. **Norfolk**, Manestar Tract, 6 km NNW St. Williams, 42°42'17"N, 80°27'38"W, 1 ♂, 30 June 2000, 8 ♂ ♂ 23 ♀ ♀ (1 ♀ in white pans), 8 June 2001, 4 ♀ ♀ (2 in white pans), 15 June 2001, 6 ♀ ♀ (2 in yellow pans), 25 June 2001, 5 ♂ ♂ 10 ♀ ♀, 23 June 2002, sandy field, M. Buck, 1 ♀, 15 June 2003, S.A. Marshall. **Elgin**, 1 ♀, Port Burwell, 4 July 1974, J.T. Huber. **Lambton**, 3 ♀ ♀ (1 in malaise trap), Port Franks, Watson Property nr. L-Lake, 27 June-2 July 1996, J. Skevington.

Distribution. Newly recorded for Ontario. Canada: AB; eastern U.S.: IA, MI, NY, PA, MA, NJ (Krombein 1979). The species also occurs in NS, NB, QC, MB and SK (Buck, in prep.).

Biology. Cleptoparasitic on *Gorytes canaliculatus* and *Hoplisoides nebulosus* (Bohart and Menke 1976). Because of previous confusion between *H. nebulosus* and *H. placidus pergandei* the second host needs to be confirmed. Primary host in Ontario is undoubtedly *G. canaliculatus* (Buck, unpubl.).

Nysson gagates Bradley, 1920

Ontario: Thunder Bay, 7 ♂ ♂ 6 ♀ ♀, Little Pic River at Hwy 17, 48°48'5"N, 86°37'47"W, 15 and 17 July 2002, sand cliff, M. Buck; 5 ♀ ♀, Neys Provincial Park, railway crossing, 48°46'30"N, 86°35'3"W, 17-18 July 2002, M. Buck; 1 ♂ 3 ♀ ♀, Neys Provincial Park, 1.6 km SW of gate house, 48°46'39"N, 86°36'32"W, 8-19 July 2002, *Vaccinium*/lichen, yellow pans, M. Buck; 1 ♂ 3 ♀ ♀, 28 km E Nipigon, 48°58'0"N, 87°58'47"W, 8 July 2002, M. Buck; Sleeping Giant Provincial Park, 2.5 km S Visitor Centre, 48°20'53"N, 88°48'11"W, old sand pit, 3 ♂ ♂ 4 ♀ ♀, 9 July 2002, 4 ♀ ♀, 14 July 2002, M. Buck; 5 ♂ ♂ 3 ♀ ♀, Sleeping Giant Provincial Park, Marie Louise Campground, 9-14 July 2002, white pans, M. Buck; 3 ♀ ♀, Thunder Bay, 16 km ENE Jct. Hwy 17 & 527, 48°32'7"N, 88°56'23"W, 10 July 2002, M. Buck. **Rainy River**, 1 ♂, Rainy River, 5 July 1960, S.M. Clark (CNCI). **Carleton**, 1 ♀, "621", "1431", Provancher collection (Provancher 1887, as *N. rusticus*; Ottawa, leg. Guignard) (ULQC); 1 ♂, "Flats 11.7", 1 ♂, "Ar. 20.6", 1 ♀, "*Nysson rusticus*

Cress. Sh. 19.7.85", probably collected by Guignard (i.e. probably from the Ottawa region or nearby Quebec) (CNCI). **Prince Edward**, 1♂, Smith Bay nr. Picton, 1 July 1970, J.F. McAlpine (CNCI). **Northumberland**, 1♀, Brighton, 17 July 1956, malaise trap, no collector (CNCI). **Bruce**, 5♀♀, Inverhuron Provincial Park, front dunes, 44°17'33"N, 81°35'28"W, 10 September 2003, white and yellow pans (excl. 1♀), M. Buck & S.M. Paiero. **Dufferin**, 1♂, Primrose, 17 July 1956, D.H. Pengelly. **Wellington**, 1♀, Guelph, 14 August 1961, G.P. Brumpton. **Norfolk**, Manestar Tract, 6 km NNW St. Williams, 42°42'17"N, 80°27'38"W, 1 ♀, 24 August 2001, yellow pans, 3♂♂, 23 June 2002, sandy field, M. Buck.

Distribution. Newly recorded for Ontario. Canada: BC; U.S.: NY, MS (Krombein 1979). The species also occurs in QC, MB, SK, AB and YT (Buck, in prep.).

Biology. Unknown.

Taxonomy. See below *Nyssus trichrus* (Mickel) in the section on species erroneously recorded from Ontario (p.76).

Nyssus hesperus Bohart, 1968

Ontario: Algoma, 1♂, Hilton Beach, 24 August 1992, field, malaise trap, J.E. Swann. **Hastings**, 1♀, Trent River Prairie [NE of Stirling], top of Old Man's Hill, 44°13'N, 77°34'W, 23 August 1994, J.T. Kerr & L. Packer (LPC). **Brant**, 1♀, Brantford Railway Prairie, 43°10'N, 80°19'W, 24 July 2002, M. Buck.

Distribution. Newly recorded for Ontario. Canada: BC; western U.S.: WY, CO, ID, OR, NV, CA (Krombein 1979). The species also occurs in NB, MB, SK, BC, YT and NT (Buck, in prep.).

Biology. Unknown.

Nyssus simplicicornis Fox, 1896

Ontario: Brant, Brantford Railway Prairie, 43°10'N, 80°19'W, 1♂, 24 August 2001, yellow pans, 1♂, 12 July 2002, S.M. Paiero, 2♀♀, 24 July 2002, M. Buck & S.M. Paiero. **Essex**, 1♀, Windsor, Ojibway Prairie, 30 July 2002, on earth between roots of fallen tree, M. Buck.

Distribution. Newly recorded for Canada. U.S.: NY, PA, MI, MD, DC, VA, WV, IA, NE, MO (Krombein 1979).

Biology. Unknown.

Nyssus subtilis Fox, 1896

Ontario: Leeds and Grenville, 1♀, St. Lawrence Is. National Park, Thwartway I. [= Leek I.], 5 August 1976, Reid (CNCI). **Peterborough**, ♂, Methuen Township, Sandy Lake Road, 9 June 2001, W.J. Crins. **York**, 1♀, Toronto, 1-2 July 1978, R.S. Peigler (TAMU). **Lambton**, 1♀, Port Franks, Karner Blue Sanctuary, 18-22 July 1996, malaise trap, J. Skevington; 2♀♀, Port Franks, Watson Property nr. L-Lake, 15-22 July 1996, malaise trap, J. Skevington. **Essex**, Windsor, Ojibway Prairie, 2♀♀, 15-19 June 2001, 1♀, 19-22 June 2001, 1 ♀, 25-29 June 2001, 1♀, 29 June-3 July 2001, 1♀, 10-13 July 2001, burnt savannah, yellow pans, S.M. Paiero, 18♂♂ 4♀♀, 18-19 June 2002, M. Buck & S.M. Paiero; 1♀, 20 July 2002, S.A. Marshall.

Distribution. Newly recorded for Canada. Eastern U.S.: NY, PA, NJ, MD, DC, WV (Krombein 1979). The species also occurs in Quebec (Buck, in prep.).

Biology. Unknown.

***Synnevrus aequalis* (Patton, 1879)**

Ontario: Essex, 1 ♂, Point Pelee, 22 July 1979, J.M. Heraty.

Distribution. Newly recorded for Canada. Eastern U.S.: MA south to FL, WI, IA, IL, SD, LA (Krombein 1979).

Biology. Unknown. Probably cleptoparasitic on other Sphecidae/Crabronidae.

***Synnevrus plagiatu*s (Cresson, 1882)**

Ontario: Simcoe, 4♂♂ 1 ♀, Midland, 17 July 1977, A. Konecny. **York**, Toronto, 1♂, July 1924, R.W. Hall, 1♂, 27 July 1953, M.E. Hearst (both ROME). **Wentworth**, 1♀, Ancaster, 26 July 1955, J.E.H. Martin (CNCI). **Middlesex**, 1♀, Strathroy, 28 July 1919, H.F. Hudson (CNCI). **Kent**, Rondeau Provincial Park, South Point Trail East, 1♂ 4♀♀, 9-10 August 2003, dunes and savannah, yellow and white pans, M. Buck, 3♀♀, 16 August 2003, S.M. Paiero, 6♀♀ (3♀♀ in yellow pans), 5-7 September 2003, Carolinian forest, dunes and savannah, M. Buck. **Essex**, Point Pelee, 2♀♀, 25 August 1920, N.K. Bigelow (ROME), 1♀, 20 July 1978, 1♂ 1♀, 25 July 1979, W.A. Attwater, 1♀, 25 July 1979, D. Morris, 1♂, 19 July 1978, K.N. Barber; 1♂, Point Pelee National Park, Visitor Centre, 25 July 2003, D. Cheung; Point Pelee National Park, Old Maintenance Yard, 41°56'54"N, 82°31'14"W, 1♀, 14-15 August 2003, yellow pans, M. Buck & D. Cheung, 1♀, 30 July 2003, 2♀♀, 14 August 2003, M. Buck; Point Pelee National Park, *Opuntia* field N of Visitor Centre, 1♂, 24-25 July 2003, yellow pans, D. Cheung & S.M. Paiero, 1♂ 2♀♀, 25-30 July 2003, yellow pans, S.M. Paiero & D. Cheung; 1♀, Point Pelee National Park, De Laurier House, 29-30 July 2003, yellow pans, M. Buck & D. Cheung.

Distribution. Newly recorded for Ontario. Canada: QC (Finnamore 1982); U.S. east of Rocky Mts. (Krombein 1979).

Biology. Evans (1975a) reared this cleptoparasitic species from cells of *Sphex ichneumoneus* (L.).

***Epinysson mellipes* (Cresson, 1882)**

Ontario: Leeds and Grenville, 1♂, St. Lawrence Is. National Park, Grenadier I. Centre, 18 July 1975, E. Sigler (CNCI). **Dufferin**, 1♂, Boyne Valley Provincial Park, 1 km N Primrose, 44°6'15"N, 80°8'0"W, 27 July 2002, yellow pans, M. Buck. **York**, Toronto, 1♂, 1 July 1891, 3♂♂ 1♀, 5 July 1891, no collector (labels in W.N. Brodie's handwriting and style) (CNCI). **Wellington**, Guelph, 1♂, 20 July 1974, J.T. Huber, 1♂, 14 May 1977, W.A. Attwater. **Wentworth**, 1 ♀, Ancaster, 30 July 1979, L. Templin. **Welland**, 1♀, Niagara Whirlpool, 1 July 2004, S.M. Paiero. **Brant**, Brantford Railway Prairie, 43°10'N, 80°19'W, 2♂♂ 1 ♀, 12 July 2002, yellow pans (excl. 1♂), S.M. Paiero, 5♂♂ 4♀♀, 24 July 2002, S.M. Paiero & M. Buck. **Norfolk**, 1♀, Turkey Point Tract at Regional Road 10, 42°42'2"N, 80°20'17"W, 23 August 2003, yellow pans, M. Buck. **Kent**, 1♂, Rondeau Provincial Park, South Point Trail East, 42°15'35"N, 81°50'53"W, 9-10 August 2003, savannah, white pans, M. Buck. **Essex**, 3♀♀, Windsor, Ojibway Prairie nr. Sprucewood Avenue, 26-27 August 2002, white and yellow pans, M. Buck & S.M. Paiero.

Distribution. Newly recorded for eastern Canada. Canada: BC; U.S.: NH to FL, LA, MN, IA, ND, CO, MT, CA (Krombein 1979). The species also occurs in Manitoba (Buck, in prep.).

Biology. Unknown.

***Epinysson tramosericus* (Viereck, 1904)**

[= *E. basilaris tuberculatus* auctt., nec Handlirsch, 1887]

Ontario: Nipissing, 1♀, Algonquin Provincial Park, Lake Travers Road NE km 36.5, 45°54'1"N, 77°42'45"W, 18 August 2002, M. Buck. **Victoria**, 1♀, Coboconk, 18 July 1961, G.K. Morris. **Grey**, Hepworth dunes, 44°37'N, 81°9'W, 8♂♂ 7♀♀ (6 ♂♂ in yellow pans, 1 ♀ in

white pans), 5 July 2003, 1♀, 22 July 2003, M. Buck. **Dufferin**, 1♂, Orangeville, 9 July 1954, D.H. Pengelly. **Halton**, 1♀, Milton, Woodland Trails Camp, 4th Line Nassagaweya, 43°32'51"N, 79°59'35"W, 18 August 2003, M. Buck. **Welland**, 1♀, Niagara Whirlpool, 1 July 2004, S.M. Paiero. **Brant**, 3♂♂ 2♀♀, Brantford Railway Prairie, 43°10'N, 80°19'W, 12 July 2002, yellow pans (excl. 1♂), S.M. Paiero. **Norfolk**, 2♂♂, Manestar Tract, 6 km NNW St. Williams, 23 June 2002, sandy field, M. Buck; 1♂, Normandale, 30 June 1956, C.D. Miller (CNCI); 1♀, Normandale Fish Culture Station, 42°43'7"N, 80°20'20"W, 23 August 2003, M. Buck. **Lambton**, Pinery Provincial Park, 1♂, 11-14 June 1986, malaise trap, 1♀, 18-21 June 1986, power line, malaise pans, L. Packer (LPC); Port Franks, Watson Property nr. L-Lake, 2♂♂ 1♀, 12-15 July 1996, 2♀♀, 22-28 July 1996, malaise trap, J. Skevington; 1♀, Port Franks, Karner Blue Sanctuary, 18-25 July 1996, pan traps, J. Skevington. **Kent**, 1♂, Rondeau Provincial Park, 21 June 1962, S.M. Clark (CNCI). **Essex**, Windsor, Springarden Road ANSI, 1♂ 8♀♀, 31 July 2002, M. Buck & S.M. Paiero, 2♀♀, 27 August 2002, M. Buck.

Distribution. Newly recorded for Canada. Eastern U.S.: NY, PA west to WI, ND, south to SC (Krombein 1979). The species also occurs in Manitoba (Buck, in prep.).

Biology. The host of this species has been recorded as *Hoplisoides nebulosus* (Krombein 1979). Due to previous confusion of this species with *H. placidus pergandei* the host association needs to be confirmed.

Taxonomy. This species has previously gone under the name *E. basilaris tuberculatus* (Handlirsch). Examination of the type of *tuberculatus* Handlirsch revealed that it is conspecific with *hoplisivora* Rohwer and takes priority over this name (Buck, in prep.). *E. tramosericus* has also been frequently confused with the southern Nearctic *E. opulentus* (Gerstaecker), a species erroneously recorded from Ontario (see page 76 below). The taxonomy of *Epinysson* will be dealt with in a separate review (Buck, in prep.).

Epinysson tuberculatus (Handlirsch, 1887)

[= *E. guatemalensis hoplisivora* (Rohwer, 1923)]

Ontario: **Brant**, 2♂♂, Brantford Railway Prairie, 43°10'N, 80°19'W, 12 July 2002, S.M. Paiero. **Norfolk**, Turkey Point Tract at Regional Road 10, 42°42'2"N, 80°20'17"W, 1♀, 17 August 2003, netted, 1♀, 23 August 2003, yellow pans, M. Buck. **Lambton**, 1♂, Walpole I., 12 July 1979, W.A. Attwater; 1♂, Port Franks, Watson Property near lake, 7-14 August 1996, malaise trap, J. Skevington. **Kent**, Rondeau Provincial Park, South Point Trail east, savannah, 1♀, 7 September 2002, yellow pans, 4♀♀ (1♀ in white pans), 9-10 August 2003, 1♀, 5-7 September 2003, yellow pans, M. Buck; 1♂ 1♀, Rondeau Provincial Park, Lakeshore Road, Beach Access #11, 42°16'1"N, 81°50'39"W, dunes, M. Buck. **Essex**, Point Pelee, 1♂, 18 July 1978, D. Morris, 1♂ 2♀♀, 20 July 1978, W.A. Attwater, 2♀♀, 21 July 1979, J.M. Heraty; 3♂♂, Point Pelee National Park, West Beach, 13-14 August 2003, M. Buck; 2♂♂, Point Pelee National Park, Visitor Centre, 17-18 July 2003, yellow pans, D. Cheung; Point Pelee National Park, *Opuntia* field N of Visitor Centre, 3♀♀, 11-17 July 2003, yellow pans, D. Cheung, 9♀♀, 24-30 July 2003, yellow and white pans, D. Cheung & S.M. Paiero; 3♀♀, Point Pelee National Park, De Laurier House, 29-30 July 2003, white pans, M. Buck & D. Cheung; Windsor, Ojibway Prairie, 2♂♂ 1♀, 30 July 2002, 1♀, 26 August 2002, netted, M. Buck & S.M. Paiero, 2♀♀, 26-27 August 2002, sandy savannah, yellow pans, M. Buck, 4♂♂ 2♀♀, 25 July 2003, yellow pans, S.M. Paiero.

Distribution. Newly recorded for Canada. Eastern U.S.: MD to FL (Krombein 1979).

Biology. Cleptoparasitic on *Hoplisoides costalis* (Cresson) (Krombein 1979).

Taxonomy. This distinct species was previously known under the synonym *E. guatemalensis hoplisivora* (Rohwer 1923) (Buck, in prep.; see under previous species). *Epinysson tuberculatus* (Handlirsch 1887) takes priority over both *hoplisivora* Rohwer and *guatemalensis* Rohwer 1914.

***Clitemnestra bipunctata* (Say, 1824)**

Ontario: **Nipissing**, 1 ♀, Algonquin Park, Cache Lake, 31 July 1936 (ROME). **Parry Sound**, 1 ♀, Parry Sound, 20 July 1958, D.H. Pengelly. **Carleton**, Ottawa, 1 ♂, 22 June 1989, 2 ♀♀, 21 July and 6 August 1996, damp second growth *Acer-Betula* wood, J.R. Vockeroth (CNCI). **Bruce**, 1 ♂, Dyers Bay, 30 July 1953, D.H. Pengelly. **Peel**, Forks of the Credit, gravel pit NW of Provincial Park, 43°49'24"N, 80°0'57"W, 10 ♂♂, 3 and 5 August 2002, M. Buck. **Wellington**, 1 ♀, Guelph, 6 July 2003, on outside window in city, M. Buck. **Halton**, 1 ♀, Oakville, 2 July 2002, S.M. Paiero; Milton, Derry Road & 4th Line, 43°31'31"N, 79°50'25"W, 1 ♀, 14 July 2002 1 ♀, 30 August 2002, S.M. Paiero; 1 ♀, Milton, 16 Mile Creek & 4th Line, 43°29'5"N, 79°46'27"W, 12 August 2001, river valley, S.M. Paiero; Oakville nr. Hwy 25 & Burnhamthorpe Road, 1 ♀, 14-18 August 1999, 1 ♀, 21 July 2002, 4 ♀♀*), 16 August 2002, 1 ♀, 9-10 August 2003, S.M. Paiero. **Wentworth**, 3 ♀♀, Hamilton, 23-30 August 1981, M. Sanborne (CNCI); 1 ♀, Dundas, 7-11 August 1972, D.M. Wood (CNCI); 1 ♂, Flamborough, Lawson Farm, 18-25 July 1997, alvar, B. DeJonge. **Welland**, 1 ♀, Niagara Falls, 22 June 1957, no collector (CNCI). **Lincoln**, 1 ♀, Grimsby, 6 July 1894, no collector (CNCI). **Brant**, Brantford Railway Prairie, 43°10'N, 80°19'W, 1 ♀, 12 July 2002, S.M. Paiero, 1 ♂ 22 ♀♀, 24 July 2002, M. Buck & S.M. Paiero. **Kent**, 1 ♀, Wheatley, 15 August 1982, T.D. Galloway (EDUM). **Essex**, 3 ♂♂ 1 ♀, Leamington, 17 August 1987, T.D. Galloway (EDUM); 1 ♀, Windsor, Ojibway Prairie, 12-13 September 2002, on earth between roots of fallen tree, S.M. Paiero.

Distribution. Genus and species newly recorded for Ontario. Canada: AB (Strickland 1947), QC (Finnamore 1982); U.S.: Upper and Lower Austral Zones (Krombein 1979).

Biology. Nesting in sandy or heavier soil. Prey are adult or more rarely nymphal Cicadellidae, Cercopidae, Membracidae, Cixiidae and Psyllidae (Krombein 1979).

Prey record. *) One adult *Ponana quadralabra* DeLong (Cicadellidae).

***Argogorytes nigrifrons* (Smith, 1856)**

Ontario: **Leeds and Grenville**, St. Lawrence Is. National Park, Grenadier I. Centre, 2 ♀♀, 14 July 1975, 1 ♀, 18 July 1975, 1 ♀, 23 July 1975, 1 ♀, 21 July 1975, E. Sigler (CNCI). **Hastings**, 1 ♀, Belleville, 28 July 1949, E.J. Bond. **Simcoe**, 1 ♀, Midland, 17 July 1977, A. Konecny. **Kent**, 1 ♀, Rondeau Provincial Park, 18 July 1962, S.M. Clark (CNCI).

Distribution. Newly recorded for Ontario. Canada: QC (Finnamore 1982), NS; eastern U.S.: New England states south to GA and west to WI, IA, KS, TX (Krombein 1979).

Biology. Unknown. Two Palaearctic species nest in the ground and use nymphal spittlebugs as prey (Krombein 1979).

***Lestiphorus cockerelli* (Rohwer, 1909)**

Ontario: **Thunder Bay**, 1 ♀, Lake Nipigon, Macdiarmid, 16 July 1922 N.K. Bigelow (CNCI). **Leeds and Grenville**, 1 ♀, Spencerville, 29 August 1938, G.H. Hammond (CNCI). **Hastings**, 1 ♀, Trent River Prairie [NE of Stirling], top of Old Man's Hill, 44°13'N, 77°34'W, 23 August 1994, J.T. Kerr & L. Packer (LPC). **Northumberland**, 1 ♀, Murray Hills, 44°7'N, 77°40'W, 1 September 2002, S.M. Paiero. **Bruce**, 1 ♀, Dyers Bay, 20 July 1953, D.H. Pengelly. **Wellington**, 1 ♀, Guelph, 23 August 1982, A.W. Schaafsma.

New Brunswick: 1 ♀, Bailey, 6 September 1977, S.M. Smith.

Distribution. Genus and species newly recorded for Ontario and New Brunswick. Canada: NT (Steiner 1973), QC (Finnamore 1982); U.S.: PA (Kurczewski and Miller 1991), MA, NY, MI, SD, CO (Krombein 1979).

Biology. Nesting habits unknown. Prey are adult *Acanalonia bivittata* (Say) (Issidae) (Kurzewski and Miller 1991).

***Oryttus gracilis* (Patton, 1879)**

Ontario: Essex, 1♂, Point Pelee, 12 July 1920, N.K. Bigelow (ROME).

Distribution. Genus and species newly recorded for Canada. U.S. east of 100th meridian in Upper and Lower Austral Zones (Krombein 1979).

Biology. Unknown. Other *Oryttus* species prey on Fulgoridae and Cicadellidae (Krombein 1979).

***Hoplisoides costalis* (Cresson, 1872)**

Ontario: Carleton, 1♀, Ottawa, 5 August 1989, damp second-growth *Acer-Betula* wood, J.R. Vockeroth (CNCI). **Huron,** 1♀, "Godrich" [= Goderich], 9 September (no year), D. Maize. **York,** 2♀♀, Toronto, 16 and 24 July 1981, L. Packer (LPC, DEBU). **Wellington,** 1♀, Guelph, August 1964, I. Kukovica. **Halton,** 1♀, Milton, downtown, 20 August 2002, on *Campsis* flowers, S.M. Paiero; 1♀, Milton, Derry Road & 4th Line, 43°31'31"N, 79°50'25"W, 1 August 2002, S.M. Paiero; 1♀, Oakville, nr. Hwy 25 & Burnhamthorpe Road, 43°27'14"N, 79°47'32"W, 4 August 2002, S.M. Paiero. **Wentworth,** 2♀♀, Hamilton, 24 and 28 July 1980, M. Sanborne (PMAE). **Norfolk,** 1♀, Turkey Point area, 7 July 2002, B. Arnal & H. Duggan (BAR). **Lambton,** 1♀, Port Franks, Watson Property nr. L-Lake, 25-31 July 1996, malaise trap, J. Skevington. **Kent,** 1♀*, Rondeau Provincial Park, Spicebush Trail, 42°18'9"N, 81°51'6"W, Carolinian forest, 15 August 2003, nesting in sand between roots of fallen tree, S.M. Paiero. **Essex,** Point Pelee, 1♂, 9 July 1962, S.M. Clark (CNCI), 1♂, 18 July 1978, D. Morris; 1♀, Point Pelee National Park, West Beach, 13 August 2003, M. Buck.

Distribution. Newly recorded for Canada. Eastern U.S.: NY to NE, south to MO and FL; Mexico: Tamaulipas to Yucatán (Bohart 1997).

Biology. Nests in sand. Adult Membracidae of various genera are used as prey (Krombein 1979).

Prey record. *) Two adults of *Telamona* sp. (Membracidae) were brought in consecutively by presumably the same female.

***Hoplisoides placidus pergandei* (Handlirsch, 1888)**

[= *H. placidus nebulosus* auctt., nec Packard, 1867]

Ontario: Carleton, 1♀, locality not stated [= Ottawa area], "18/7", W.H. Harrington (CNCI). **Peterborough,** 1♀, Norwood, 6 August 1983, T.D. Galloway (EDUM). **Grey,** Hepworth dunes, 44°37'N, 81°9'W, 2♂♂ 7♀♀, 5 July 2003, 1♀, 22 July 2003, M. Buck. **Simcoe,** 1♀, Baxter, Six Mile Lake, 8 July 1981, L. Packer (LPC); 1♀, Christian I., 13 July 2002, A. Cormier. **Brant,** Brantford Railway Prairie, 43°10'N, 80°19'W, 1♂ 3♀♀, 12 July 2002, S.M. Paiero, 1♀, 24 July 2002, M. Buck. **Norfolk,** 16♂♂ 17♀♀, Manestar Tract, 6 km NNW St. Williams, 42°42'17"N, 80°27'38"W, various dates, June-July, 2000-2002, M. Buck; 1♀, Normandale Fish Culture Station, 42°43'7"N, 80°20'20"W, 23 August 2003, M. Buck. **Lambton,** 1♀, Port Franks, Karner Blue Sanctuary, 15 July 1996, J. Skevington; 1♀, Pinery Provincial Park, Carolinian Trail parking lot, grassy sandy area, 26 July 2001, M. Buck; Pinery Provincial Park, power line, 1♂, 14-17 June 1986, 1♂ 1♀, 18-21 June 1986, malaise trap, L. Packer (LPC, 1♂ DEBU). **Kent,** 1♀, Rondeau Provincial Park, Harrison Trail nr. group campground, 42°17'56"N, 81°50'48"W, 14 August 2003, forest clearing, S.M. Paiero. **Essex,** Windsor, Springarden Road ANSI, 3♀♀, 31 July 2002, M. Buck, 1♀, 27 August 2002, S.M. Paiero.

Quebec: 1♀, Lanoraie, 4 August 1928, J.W. Buckle (LEMQ); 1♀, St. Anne's, 5 August 1938 (LEMQ); 1♀, 3 mi N Ste. Scholastique, 13 July 1972, C. Boyle (LEMQ).

Distribution. Newly recorded for Canada (ON, QC). Eastern U.S. (Krombein 1979, partim). The nominate subspecies occurs in Florida (Krombein 1979).

Taxonomy. This subspecies of *H. placidus* was previously confused with *H. nebulosus*, which is a good species and not a subspecies of the former. The taxonomic changes in *Hoplisoides* will be presented in a separate review of that genus (Buck, in prep.).

Biology. Nests in sand and preys on Membracidae, like the closely related *H. nebulosus*. Due to confusion with this species previous prey records (e.g., Krombein 1979) need to be re-examined.

Stizoides renicinctus (Say, 1823)

Ontario: Middlesex, 1♂, London, no date, "Ent. Soc. O."

Distribution. Newly recorded for eastern Canada. Canada: southern AB and BC; U.S.: mainly west of Mississippi River, rare in east: MN, IL, WI, MI (Midland County and Benzie County), DC, NC; Mexico: Zacatecas (Ohl 1999).

Biology. Cleptoparasitic on *Prionyx atratus* (Lepelletier) and *P. thomae* (F.) (Sphecinae) (Krombein 1979). Only the former species occurs in southwestern Ontario.

Note. As can be inferred from the old Entomological Society of Ontario label this specimen must have been collected during the second half of the 19th century (the Society was founded in 1863). It appears to be one of the oldest sphecid specimens in the Guelph collection. Due to prevailing labelling standards at the time one cannot be completely certain that the specimen actually originated from London, Ontario. London was also the former seat of the Entomological Society and labels sometimes indicated ownership rather than collecting data. Considering the known range of the species it seems perfectly possible that the specimen was collected in or around London. Given the rarity of this species in eastern north America, its specialized biology, and the absence of recent records it appears very likely that *S. renicinctus* has been extirpated in Ontario some time ago.

Bicyrtes quadrifasciatus (Say, 1824)

Ontario: Frontenac, 1♀, Perth Road, 25 August 1957, J.R. Vockeroth (CNCI). **Northumberland,** 5♂♂ 3♀♀, Brighton, 7-8 August 1956, malaise trap, no collector (CNCI). **Bruce,** Inverhuron Provincial Park, dunes, 3♂♂ (1 in yellow pans), 26 July 2003, 1♀, 22 August 2003, M. Buck, 3♀♀, 10 September 2003, M. Buck & S.M. Paiero. **Simcoe,** 1♀, Springwater Provincial Park, hydro line, 44°26'33"N, 79°45'41"W, 2 September 2002, M. Buck. **Brant,** 1♂ 2♀♀¹), Brantford Railway Prairie, 43°10'N, 80°19'W, 24 July 2002, M. Buck & S.M. Paiero. **Norfolk,** 2♀♀, Simcoe, 19 July 1977, A.A. Konecny; Delhi-Simcoe Railway, 42°51'N, 80°23'W, 1♂, 11 July 2001, 1♂, 14 July 2001, prairie remnant, S.M. Paiero; Manestar Tract, 6 km NNW St. Williams, 42°42'17"N, 80°27'38"W, 3♂♂ 2♀♀, 25 July 2000, 1♂ 2♀♀²), 3 August 2001, M. Buck, 2♀♀³), 24 August 2001, sandy field, M. Buck & S.A. Marshall; 2♀♀, Wilson Tract, 9 July 1992, J. Skevington; 1♀, same data except 18 September 1991, I.P. Smith; 1♂, Normandale Fish Culture Station, 42°43'7"N, 80°20'20"W, 23 August 2003, M. Buck; 2♂♂, Long Point, 5 August 1978, W.D. Husby. **Lambton,** 3♂♂ 2♀♀, Grand Bend, A.A. Wood & C.D. Miller (CNCI); 1♀, Pinery Provincial Park, Grand Bend, 15 August 1982, K.N. Barber; Pinery Provincial Park, 1♀, 28 June 1991, malaise trap, 1♀, 9 September 1992, J. Skevington; 1♀, Pinery Provincial Park, Day Use Area 1, 43°17'8"N, 81°48'7"W, dunes, 27 July 2001, M. Buck; 2♀♀, Pinery Provincial Park, amphitheatre, 26 July 2001, sandy area, M. Buck. **Kent,** 6♂♂ 4♀♀, Rondeau Provincial Park, 1962, S.M. Clark (CNCI); 1♀, Rondeau Provincial Park, South Point Trail, 7 September 2002, M. Buck; 1♀, Chatham, 5 August 1947, no collector; 6♂♂, Wheatley, 9 July 1977, A.A. Konecny, E.A. Innes & W.A. Attwater. **Essex,** 1♀, Kingsville, 12 August 1973, R.E. Roughley; 1♂, Windsor, 10 June 1984, M.T. Kasserra; 18♂♂ 9♀♀, Point Pelee, July-August, 1978-1998, various

collectors; 1♂ 3♀♀, Point Pelee, S.M. Clark & R. Lambert (CNCI); 1♀, Point Pelee National Park, *Opuntia* field, 28 July 2003, M. Buck; Point Pelee National Park, Old Maintenance Yard, 41°56'54"N, 82°31'14"W, 1♂ 1♀, 29 July 2003, 1♀, 14 August 2003, D. Cheung; 1♂, Point Pelee National Park, Old Henry Camp, 41°57'35"N, 82°31'32"W, 14-15 August 2003, white pans, M. Buck & D. Cheung; 1♀⁴), Pelee I., 29 August 1977, W.D. Husby; Pelee I., Fish Point, 3♀♀, 5 August 1993, R.A. Cannings & H. Nadel (BCPM), 1♀, 14 August 1993, B. Larson; Windsor, Ojibway Prairie, 1♀, 30-31 July 2002, S.M. Paiero, 1♀, 26 August 2002, M. Buck; 1♀, Windsor, Springarden Road ANSI, 31 July 2002, M. Buck.

Distribution. Apparently, this species has never been formally recorded from Canada. U.S. east of Rocky Mts. in Transitional and Austral Zones (Krombein 1979).

Biology. Nests in sand or heavier soil. Immature Pentatomidae and Coreidae are used as prey (Krombein 1979).

Prey records. ¹) and ²) One nymphal *Leptoglossus occidentalis* Heidemann (Coreidae) each. ³) One nymphal *Leptoglossus occidentalis* and one nymphal *Acrosternum* sp. (Pentatomidae). ⁴) One nymphal *Acrosternum* sp.

Nomenclature. Contrary to prevalent previous usage (e.g., Krombein 1979, Bohart 1996) the gender of *Bicyrtes* is masculine (Pulawski 2004).

Stictia carolina (Fabricius, 1793)

Ontario: Essex, 1♂, Point Pelee National Park, Old Maintenance Yard, 41°56'54"N, 82°31'14"W, 14 August 2003, M. Buck.

Distribution. Newly recorded for Canada. Eastern U.S.: NJ to FL, west to IL, KS, NM (Krombein 1979).

Biology. Nests in sand, occasionally in large aggregations. Prey are large flies of various families (predominantly Tabanidae, also Stratiomyidae, Syrphidae, Muscidae, Sarcophagidae, Calliphoridae, Tachinidae), exceptionally other insects (Cicadidae, Hesperidae) (Krombein 1979). The species is also called "horse guard" because it often hunts its prey around livestock.

Note. It is remarkable that this very large and conspicuous wasp has not been found during previous insect surveys of Point Pelee (conducted in 1920 (N.K. Bigelow), in 1978/9 and 1999/2000 (University of Guelph)). This could indicate that the species recently expanded its range or that the collected male was merely a straggler. The site where the specimen was found is not a suitable breeding habitat but possible breeding sites might exist nearby along the Lake Erie shore.

Stictiella emarginata (Cresson, 1865)

Ontario: Simcoe, C.F.B. Borden, 1♀, 26 July 1996, 1♀, 13 July 1997, F.E. Kurczewski (FEK). **Dufferin,** Primrose, 1♀, 30 June 1955, 1♀, 22 July 1955, 1♀, 17 July 1956, D.H. Pengelly. **York,** 1♂, Toronto, August 1918, no collector (CNCI).

Saskatchewan: 1♂, Nipawin, 14 July 1968, T.C. Taylor; 1♀, Meadow Lake, 20 June 1977, W.T. Nash; 1♀, Melville, 3 July 1979, D.H. Pengelly; 1♂, Prince Albert, 22 July 1916, F.W.L. Sladen (CNCI).

Distribution. Newly recorded for Ontario and Saskatchewan. Canada: AB; U.S.: NY south to northern FL (along the Appalachian Mts.), MI, MN, IA, and from KS and TX west to WA and CA (Bohart and Gillaspay 1985; O'Brien 1989a). The species is rare in the eastern part of its range.

Biology. Preys upon adult Lepidoptera of the genera *Apamea*, *Calophasia*, *Chytonix*, *Euxoa*, *Lacinipolia*, *Nedra* (Noctuidae) and *Polites* (Hesperiidae) (Kurczewski, *in litt.*).

Subfamily Philanthinae

Philanthus lepidus Cresson, 1865

Ontario: **Manitoulin**, 1♂, Manitoulin I., Carter Bay, 45°36'23"N, 82°8'27"W, 28 August 2003, dunes, S.A. Marshall. **Leeds and Grenville**, 1 specimen (digital picture of live specimen), Charleston Lake, 2002/3, H. Goulet (picture in collection of H. Goulet). **Hastings**, Marmora, 1♂, 29 July 1952, 1♀, 6 August 1952, C. Boyle (CNCI); Chatterton, 1♂, 14 August 1948, 2♂♂, 25 August 1949, J.C. Martin (CNCI); 1♀, Belleville, 3 August 1946, no collector (CNCI). **Peterborough**, 1♂, Norwood, 16 August 1984, T.D. Galloway (EDUM). **Northumberland**, 1♀, Brighton, 14 September 1954, J.C. Martin (CNCI); 1♀, Alderville First Nations Prairie and Savannah, 1 September 2001, S.M. Paiero. **Bruce**, Inverhuron Provincial Park, 1♂, 22 August 2003, 2♂♂, 10 September 2003, dunes, M. Buck. **Dufferin**, 1♂, Mansfield Outdoor Centre, 19-20 September 1992, J. Skevington & A. Goering; 2♂♂ 3♀♀¹⁾, Mono Cliffs Provincial Park, 31 August 2002, M. Buck. **Wellington**, 1♀, Guelph, 13 September 1992, R.W. Burgess. **Wentworth**, 2♀♀, Hamilton, 23-30 August 1981, M. Sanborne (CNCI). **Norfolk**, 1♂, Turkey Point Provincial Park, 11 August 1984, L. Packer (LPC); 1♂, St. Williams, 6 August 1986, L. Packer (LPC); 3♂♂ 1♀, Normandale Fish Culture Station, 42°43'7"N, 80°20'20"W, 23 August 2003, M. Buck; 1♂, St. Williams Forestry Station, 5 September 1987, J.T. Troubridge; 2♀♀, Manestar Tract, 42°43'N, 80°27'W, 20-26 August 1993, oak savannah, malaise trap, J.T. Kerr, M. deGiusti & L. Packer (LPC, DEBU). **Middlesex**, 1♀, Komoka Feed Mill Prairie, 42°58'N, 81°25'W, 11 September 2001, S.M. Paiero. **Lambton**, 1♂, Port Franks, Watson Property nr. L-Lake, 26 August 1996, J. Skevington. **Kent**, 2♂♂ 2♀♀, Rondeau Provincial Park, South Point Trail, 7 September 2002, M. Buck. **Essex**, 6♂♂ 1♀, Point Pelee, 8-9 September 1954, W.R.M. Mason, R. Lambert & G.S. Walley (CNCI); 1♂, Point Pelee, West Beach, 23 August 2000, O. Lonsdale; Leamington, 1♀, 16 August 1982, 1♂, 25 August 1984, 8♂♂, 18 August 1987, T.D. Galloway (EDUM); 1♂, Harrow, 1 September 1971, T.D. Galloway (EDUM); Windsor, Ojibway Prairie, 1♀, 7 August 2001, Y. Cui, 1♂, 13 August 2002, S.A. Marshall, 5♂♂ 19♀♀²⁾ (partly in yellow pans), 26-27 August 2002, M. Buck, 1♀³⁾, 12 September 2002, M. Buck; 3♂♂ 2♀♀, Windsor, Springarden Road ANSI, 27 August 2002, M. Buck & S.M. Paiero.

Distribution. Apparently, there are no previous published records of this species from Ontario. Canada: QC (Finnamore 1982), MB; eastern U.S. west to CO and TX (Bohart and Grissell 1975).

Biology. Nests in large aggregations in sand banks. Prey are various bees of the family Halictidae and *Pseudopanurgus* (Andrenidae) (Krombein 1979).

Prey records. ¹⁾ One female *Lasioglossum* sp. (Halictidae). ²⁾ Four males and two females of *Lasioglossum* spp., one male *Augochlorella striata* (Provancher) (Halictidae). ³⁾ One female *Lasioglossum* sp.

Cerceris astarte Banks, 1913

Ontario: **Hastings**, Marmora, 1♂ 1♀, 25 July 1952, J.R. Vockeroth, 2♂♂, 29 July 1952, E.H.N. Smith (CNCI); Chatterton, 1♂, 29 July 1951, 1♀, 11 August 1951, J.C. Martin (CNCI); 1♂, Stirling, 22 August 1963, A.F. Johnson. **Norfolk**, 3♂♂, Turkey Point Provincial Park, east boundary, 42°42'37"N, 80°19'47"W, 17 August 2003, M. Buck; 2♂♂, Turkey Point Tract at Regional Road 10, 42°42'2"N, 80°20'17"W, 17 August 2003, M. Buck; 1♂, Turkey Point, Front Road 0.8 km E Regional Road 10, 42°41'43"N, 80°20'42"W, 23 August 2003, M. Buck. **Essex**, 1♀, Windsor, Ojibway Prairie, 12 September 2002, M. Buck.

Distribution. Newly recorded for Ontario. Eastern U.S.: NH, NY, MI and WI south to NC and TX (Scullen 1965). Ferguson (1983) recorded the species from “se. Canada”, probably referring to the above-mentioned CNCI material examined by him.

Biology. Unknown.

***Cerceris compacta* Cresson, 1865**

Ontario: Kent, 1♂, Chatham, 6 August 1934, H.G. James (CNCI).

Distribution. Newly recorded for Canada. Eastern and southwestern U.S.: NH and SD (incl. NY, PA, OH, MI, WI, MN) south to FL and TX, NM to CA, UT (Scullen 1965); Mexico to Costa Rica (Ferguson 1983).

Biology. Has been reported to use adult *Colaspis brunnea* (F.) (Chrysomelidae) as prey (Krombein 1979).

***Cerceris crucis* Viereck & Cockerell, 1904**

(= *C. rufinoda* auctt., nec Cresson, 1865)

Ontario: Hastings, 2♂♂, Chatterton, 23 and 29 July 1951, J.C. Martin (CNCI). **Essex,** Leamington, 3♀♀, 19 August 1983, 1♂, 7 August 1985, T.D. Galloway (EDUM); 2♀♀, Windsor, Springarden Road ANSI, 27 August 2002, M. Buck & S.M. Paiero.

Distribution. Newly recorded for Ontario. Canada: BC (Krombein 1979, as *C. rufinoda* Cresson), AB; U.S.: NJ, OH, IL, VA, NC, ND to TX, west to OR and CA, AK (Scullen 1965); Mexico: Durango, San Luis Potosí (Krombein 1979). Ferguson (1983) recorded this species from “s. Canada”, probably referring to the above-mentioned CNCI material examined by him.

Biology. Weevils of the genera *Miccotrogus* and *Smicronyx* (Curculionidae) are used as prey (Krombein 1979).

***Cerceris echo* Mickel, 1916**

Ontario: Middlesex, 2♂♂, Komoka Feed Mill Prairie, 42°58'N, 81°25'W, 11 July 2001, S.M. Paiero. **Lambton,** 1♀, Port Franks, Karner Blue Sanctuary, 25 July 1996, J. Skevington. **Essex,** 1♂, Windsor prairie, “Spring Garden Road” [= Springarden Road], 3 July 1985, D.M. Wood (CNCI); 5♂♂ 21♀♀, Windsor, Springarden Road ANSI, 31 July 2002, M. Buck.

British Columbia: 1♀, Osoyoos, 1200 ft, 15 July 1953, J.R. McGillis (CNCI).

Distribution. Newly recorded for Ontario and British Columbia. Canada: AB; transcontinental in U.S.: from ME to FL, west to ID and CA; northern Mexico (Scullen 1965; Krombein 1979).

Biology. Nests in sand. Prey are *Olibrus neglectus* Casey and *Phalacrus* (Phalacridae) (Krombein 1979).

Species recognition. The male of this species was never described and is very similar to *C. finitima*. In Ontario, males of *echo* differ consistently from those of *finitima* by the following combination of characters: tegula moderately convex (convexity subequal to greatest diameter of flagellomere III; in *finitima* convexity subequal to 1.5x greatest diameter of flagellomere III), yellow band of tergite 2 anteriorly convex or straight (anteriorly emarginate in *finitima*), and erect setae of sternites 3-6 short (shorter than mid ocellus diameter; in *finitima* longer than mid ocellus diameter). Apparently, in more southern material of both species these diagnostic characters do not always apply.

***Cerceris finitima* Cresson, 1865**

Ontario: **Essex**, Windsor, Ojibway Prairie, 1♂, 7 August 2001, S.M. Paiero, 2♀♀, 13 September 2002, M. Buck & S.M. Paiero.

Distribution. Newly recorded for eastern Canada. Canada: SK; transcontinental in U.S.: NY to FL, west to WY and CA; northern Mexico (Scullen 1965; Krombein 1979). Finnamore (1982) erroneously recorded this species from Quebec based on a *C. arelate* male that was misidentified by H.A. Scullen (specimen in CNCI, examined). Scullen (1965) did not include this record in his revision of the genus.

Biology. *Chaetocnema pulicaria* Melsheimer (Chrysomelidae) has been recorded as prey (Krombein 1979).

Species recognition. See above under *C. echo*.

***Cerceris fumipennis* Say, 1837**

Ontario: **Leeds and Grenville**, 1 specimen (digital picture of live specimen), S of Newboro, early September 2002, H. Goulet (picture in collection of H. Goulet). **York**, 1♂ 1♀, Toronto, Lambton Mills, 16 July 1972, "N.J.T." & W.M.M. Edmonds (ROME). **Waterloo**, 1♀, Erbsville, Wideman Road, 17 July 2003, B. Arnal & H. Duggan (BAR). **Halton**, 7♀♀*, Milton, Woodland Trails Camp, 4th Line Nassagaweya, 43°32'51"N, 79°59'35"W, 18 August 2003, M. Buck & S.M. Paiero. **Norfolk**, Manestar Tract, 42°43'N, 80°27'W, 2♂♂, 18-30 July 1992, oak savannah, malaise trap P.J. Carson (LPC, DEBU); 1♂, same except 20-26 August 1993, J.T. Kerr, M. deGiusti & L. Packer (LPC); 4♀♀, Turkey Point Tract at Regional Road 10, 42°42'2"N, 80°20'17"W, 17 August 2003, M. Buck; 3♂♂ 1♀, Normandale Fish Culture Station, 42°43'7"N, 80°20'20"W, 23 August 2003, M. Buck. **Lambton**, 2♂♂, Pinery Provincial Park, powerline, 25-28 June 1986, malaise trap, L. Packer (LPC, DEBU). **Kent**, 1♂, Rondeau Provincial Park, Marsh Trail, nr. parking lot, 42°18'51"N, 81°51'5"W, 16 July 2003, O. Lonsdale. **Essex**, Point Pelee National Park, Old Maintenance Yard, 41°56'54"N, 82°31'14"W, 2♀♀, 30 July 2003, 1♂, 14 August 2003, M. Buck; 1♂, Point Pelee National Park, The Tip parking lot, 41°55'3"N, 82°30'37"W, 13 August 2003, M. Buck; 1♂, Kingsville, 12 August 1954, F.R. Netmore (CNCI); Windsor, Ojibway Prairie, 1♂, 30-31 July 2002, S.M. Paiero, 1♀, 26 August 2002, M. Buck; 1♂, Windsor, Springarden Road ANSI, 31 July 2002, M. Buck.

Distribution. Newly recorded for Ontario. Canada: BC; mostly eastern U.S.: NH to FL (incl. NY, PA, OH, MI, MN), west to WY, CO and NM Scullen (1965). Ferguson (1983) recorded this species from "se. Canada", probably referring to the above-listed CNCI specimen examined by him.

Biology. Nests in hard-packed sand. Prey are adult beetles of various genera of Buprestidae (Krombein 1979).

Prey records. *) Five *Dicerca lurida* (Fabricius), two *D. caudata* LeConte, one *D. divaricata* (Say), three *Descarpentriesina cyanipes* (Say), one *Chrysobothris sexsignata* (Say), two *Actenodes acornis* (Say), one *Agrilus masculinus* Horn, one *A. bilineatus bilineatus* (Weber) (all Buprestidae). Some of the prey items were taken without collecting the *Cerceris* females. Several wasps were observed nesting in a small area of bare, hard-packed soil.

***Cerceris halone* Banks, 1912**

Ontario: **Renfrew**, 1♀, Calabogie, 13 July 1969, J. Robillard (CNCI). **Peterborough**, 1♀, Millbrook Ganaraska Forest, 10 July 1998, S.A. Marshall. **Northumberland**, 1♀, Murray Hills, 44°7'N, 77°40'W, 1 September 2002, S.M. Paiero. **Norfolk**, 3♀♀, Normandale, 4 September 1954, R. Lambert (CNCI); 2♀♀, S limit of Manestar Tract at Hwy 24, 1 km W Jct. Regional Road 16, 42°41'36"N, 80°27'8"W, 29 August 2001, on *Solidago* flowers, M. Buck; 1♂ 1♀, Turkey

Point Tract at Regional Road 10, 42°42'2"N, 80°20'17"W, 17 August 2003, M. Buck; 5♂♂ 2♀♀, Normandale Fish Culture Station, 42°43'7"N, 80°20'20"W, 23 August 2003, M. Buck. **Essex**, Windsor, Ojibway Prairie, 2♂♂ 3♀♀, 26-27 August 2002, 1♀, 12 September 2002, M. Buck; 1♂, Windsor, Springarden Road ANSI, 27 August 2002, S.M. Paiero.

Distribution. Newly recorded for Ontario. Canada: MB; eastern U.S.: NH to NC, west to ND (Scullen 1965; Ferguson 1983). Ferguson (1983) recorded this species from "se. Canada" probably referring to the above-mentioned CNCI females examined by him.

Biology. Prey are various species of *Curculio* (Curculionidae) (Krombein 1979).

Cerceris insolita Cresson, 1865

Ontario: Essex, Windsor, Ojibway Prairie, 1♀, 30-31 July 2002, S.M. Paiero, 1♀, 27 August 2002, M. Buck, 1♀, 12-13 September 2002, yellow pans, M. Buck.

Distribution. Newly recorded for Canada. U.S.: NJ and SD south to FL and AZ; Mexico: Chihuahua, Jalisco (Krombein 1979).

Biology. Nests in flat, coarse-grained sand. Prey are adult *Rhabdopterus praetextus* (Say) (Chrysomelidae) (Krombein 1979).

Cerceris kennicottii Cresson, 1865

Ontario: Kent, 1♀, Chatham, 26 July 1954, "host plant red clover", K.G. Davey. **Essex**, 1♀, Leamington, 11 September 1955, D.A. West; 1♀, Point Pelee, 11 September 1961, L.A. Kelton (CNCI); 1♀, NE of Harrow, 3 September 1993, B. Larson; 1♀, Windsor, Ojibway Prairie, 12 September 2002, M. Buck.

Distribution. Newly recorded for Ontario. U.S.: MD to FL and west to SD, CO and CA (Krombein 1979); south to southern Mexico (Ferguson 1983). Scullen (1965) recorded the species from "southern Canada" without naming a province. Ferguson (1983) recorded it from "southeastern Canada" probably based on the above CNCI female, which he had examined.

Biology. Unknown.

Cerceris nitidoides Ferguson, 1983

(= *C. nitida* Banks, 1913; preocc.)

Ontario: Carleton, 1♀, Merivale, 25 August 1930, J.J. de Gryse (CNCI).

Distribution. Newly recorded for Ontario. Canada: QC; eastern U.S.: MI, IL, OH, NY, NC, TN, TX (Scullen 1965, as *C. nitida* Banks).

Biology. Unknown.

Cerceris occipitomaculata Packard, 1866

Ontario: Nipissing (probably): 1♂, Algonquin [Provincial Park], 2 August 1961, R.J. Pilfrey.

Distribution. Newly recorded for Ontario. Central U.S.: MN and SD to TX and AZ; northern Mexico (Krombein 1979). Ferguson (1983) recorded the species from "southeastern Canada" without naming a province.

Biology. Unknown.

***Cerceris prominens* Banks, 1912**

Ontario: Carleton, 3♂♂ 2♀♀, "W.H.H. Ottawa" [= W.H. Harrington, 1852-1918], without date; 1♀, "29.7", "♀", labelling consistent with Harrington collection (CNCI).

Distribution. Newly recorded for Ontario. Canada: MB; eastern U.S.: ME to AL, west to MI, KS and LA (Scullen 1965).

Biology. Unknown.

Doubtful record***Eucerceris flavocincta* Cresson, 1865**

Ontario: Carleton, 2♂♂, Ottawa, "Division of Entomology, Ottawa, Canada", one specimen with handwritten label "Hanham" [?]. **Locality unknown:** 1♀, no data, labelled with a "♀"-label of the same kind used by Harrington (i.e. possibly from Ottawa region?).

Note. The specimens are very old (from the late 19th or early 20th century) and there remains some doubt whether the label data refers to the collecting locality or the collection where they are housed.

Distribution. A new record for eastern Canada if locality data is correct. Canada: BC to MB; western U.S.: WA to CA, east to MT, SD, WY, CO, NM (Scullen 1968).

Biology. Nests in hard stony soil and preys on weevils of the genera *Dyslobus*, *Panscopus* and *Peritaxia* (Curculionidae) (Krombein 1979).

Notes on the status of some rare species

***Prionyx canadensis* (Provancher, 1887).** – Bohart and Menke (1963) recorded this species from southwestern Ontario. Specimen depositories and collecting localities were not mentioned but map plots point to the London area and Point Pelee. No specimens were found in the collections examined.

***Astata bakeri* Parker, 1962.** – Parker (1962) recorded this species from Prince Edward, Ontario. The depository of the specimen(s) is not mentioned and no material was found during this study.

***Tachysphex pechumani* Krombein, 1938.** – This species has attracted great interest because of its unusual ecology and its restricted, disjunct distribution (Kurczewski 1998a, 2000a, b). At present it is known only from the Lower Peninsula of Michigan, one locality each in northwestern Indiana and northwestern Ohio, the New Jersey Pineland National Reserve and three Ontario counties (Lambton, Norfolk, Simcoe) (Kurczewski 2000b). Five new localities were discovered in 2003 and 2004, representing new county records and the northernmost and easternmost extreme of its range in Ontario:

Grey, 1♂, Hepworth dunes, 44°37'N, 81°9'W, 5 July 2003, white pans, M. Buck. **York,** 1♀, King Township, Joker's Hill, Koffler Scientific Reserve, 44°3'N, 79°29'W, 19 July 2003, sand pit, W. Godsoe. **Wellington,** 1♂ 2♀♀, Guelph, Wellington Street & Fife Rd., 7 August 2004, empty lot, on gravel/sand, M. Buck. **Waterloo,** 2♀♀, Erbsville, 10-11 July 2004, old field, yellow pans, J. Klymko. **Halton,** 1♀, Milton, Woodland Trails Camp, 4th Line Nassagaweya, 43°32'51"N, 79°59'35"W, 23 July 2004, S.M. Paiero.

Species erroneously recorded from Ontario

***Isodontia philadelphica* (Lepeletier, 1845).** – Reported by Harrington (1902) and Walker (1913). Harrington's specimen is *I. mexicana*. Three males and three females from Brodie's collection at the CNCI (without identification label) are also this species and are probably the specimens Walker referred to.

***Podalonia atriceps* (Smith, 1856).** – Reported by Harrington (1902, as *Psammophila communis* (Cresson)) and Walker (1913, as *Sphex communis* (Cresson)). In both cases they were misidentifications of *P. luctuosa* (Smith) and *P. robusta* (Cresson).

***Ammophila conditor* Smith, 1856.** – Reported by Harrington (1902) and Walker (1913, as *Sphex conditor* (Smith)). Misidentification of *A. urnaria* Dahlbom.

***Ammophila pubescens* Curtis, 1836.** – Recorded by Brown (1934) as *Sphex arvensis* (Dahlbom, 1843). This name, which pertains to a Palaearctic species, has been consistently misapplied to Nearctic species in the past. Brown's specimens were misidentified *Ammophila azteca* Cameron.

***Diodontus americanus* Packard, 1867.** – Harrington (1902) recorded one female (labelled "J.F. Otta[wa]", label cut off) from the Ottawa area. Misidentification of *D. bidentatus* Rohwer. *Diodontus americanus* is only known from the holotype (Eighme 1989).

***Tachysphex montanus* (Cresson, 1865).** – Harrington (1902, as *T. compactus* Fox, 1894) recorded one female (labelled "4/8") from the Ottawa area. Misidentification of *T. pompiliformis* (Panzer).

***Tachysphex laevifrons* (Patton, 1880).** – Harrington (1902) tentatively referred one female (labelled "12/7") to this species. Misidentification of *T. acutus* (Patton).

***Crabro dietrichi* Bohart, 1976.** – Bohart (1976) recorded this species from Ontario based on misinterpreted locality data from the type series. He quoted the type locality as "Prince Edward Island National Park, Ontario, Canada". The only Prince Edward Island in Ontario is a rather obscure locality (located in Clam Lake near Kearney, Parry Sound Distr.) and not part of any National or Provincial Park. However, two female paratypes in the CNCI (not mentioned by Bohart) are from Prince Edward Island National Park in the Province of P.E.I.. It is likely that *C. dietrichi* will be found in Ontario in future because it is also known from Manitoba and Saskatchewan (Bohart 1976).

***Ectemnius paucimaculatus* (Packard, 1866).** – Harrington (1902, as *Xestocrabro paucimaculatus* Say) recorded one female from the Ottawa area. Misidentification of *E. stirpicola* (Packard).

***Nyssus rusticus* Cresson, 1882.** – Provancher (1887) recorded one female of this western species from Ottawa (specimen in ULQC). Misidentification of *N. gagates* Bradley.

***Nysson trichrus* (Mickel, 1916).** – Recorded from Ontario as *Nysson nigripes* Provancher, 1887 (a preoccupied name) by Harrington (1902). This name was later incorrectly synonymized with *N. trichrus* (Mickel) (Bohart and Menke 1976). It is in fact a synonym of *N. gagates* Bradley (Buck, in prep.). All previous Canadian records of *N. trichrus* (e.g., Finnamore 1982) are referable to *N. gagates*.

***Epinysson opulentus* (Gerstaecker).** – This species has frequently been confused with *Epinysson tramosericus* (Viereck) (see note under this species in the section on species newly recorded from Ontario) and many literature records actually refer to the latter. Krombein's (1979) catalogue listing of *E. opulentus* from the Upper Austral zone in Canada is apparently based on misidentified material as no specimens were found in collections. *Epinysson opulentus* seems to be restricted to the southern U.S. (Buck, in prep.).

***Bembix fasciata* Fabricius, 1804.** – This name is a questionable synonym of *B. texana* Cresson, 1872, a species from the southern United States (Krombein 1979). Walker (1913) recorded this species from Toronto. Two males from Brodie's collection at the CNCI (without identification label) are *B. americana spinolae* Lepeletier and are probably the specimens Walker referred to.

***Philanthus pulcher* Dalla Torre, 1897.** – D.B. McCorquodale reported this species from the Port Franks area, Lambton County (Skevington et al. 2001). A series of 18♂♂ and 16♀♀ in the Guelph collection bearing his determination label was re-examined and consists of *Ph. politus* Say and 1♂ of *Ph. lepidus* Cresson.

***Aphilanthops subfrigidus* Dunning, 1898.** – D.B. McCorquodale recorded this species from Port Franks, Lambton County (Skevington et al. 2001). One male (labelled "A. subfrigidus?" in D.B.M.'s handwriting) was found in the Guelph collection. It belongs to *A. frigidus* Smith.

Misidentifications and errors in previous papers

The following species of spheciform wasps were misidentified from Ontario in previous papers (besides the ones already mentioned in the previous section):

Harrington (1902), specimens deposited in CNCI:

***Mimemesa propinqua* (Kincaid)** [as *Mimesa borealis* Smith]. – misidentified *Mimesa pauper* Packard (2♀♀).

***Rhopalum pedicellatum* Packard.** – misidentified *Rh. coarctatum* Scopoli (4♂♂ 4♀♀).

***Rhopalum rufigaster* Packard.** – misidentified *Rh. pedicellatum* Packard (1♀).

***Crossocerus minimus* (Packard).** – misidentified *C. lentus* (Fox) (4♂♂ 1♀).

***Ectemnius atriceps* (Cresson)** [as *E. corrugatus* (Packard)]. – misidentified *E. borealis* (Zetterstedt) (3♂♂ 1♀).

***Ectemnius decemmaculatus* (Say)** [as *Pseudocrabro chrysarginus* (Lepeletier)]. – misidentified *E. arcuatus* (Say) (6♂♂).

***Gorytes canaliculatus* Packard** [as *Hoplisis*]. – misidentified *G. atricornis* Packard (4♂♂ 3♀♀).

***Cerceris clypeata* Dahlbom.** – misidentified *C. prominens* Banks (1♀).

Walker (1913). Most of Walker's data is based on William Brodie's regional collection from the Toronto area, one of the most important historical collections of Ontario sphecids. Most of the material is deposited at the ROME but the CNCI has specimens with identical label style and

handwriting (but lacking labels "Wm. Brodie Collection" present on most specimens at the ROME). It appears that Brodie's collection was split taxonomically between the two museums. For instance, all Crabronini are housed at the ROME but the CNCI apparently received all the Nyssonini and Bembicini.

***Mimumesa nigra* (Packard)** [as *Psen*]. – misidentified *Pemphredon inornata* Say (1♂) and *Lyroda subita* (Say) (1♂).

***Passaloeus cuspidatus* Smith** [as *P. mandibularis* (Cresson)]. – misidentified *P. annulatus* (Say) (1♀).

***Trypoxylon clavatum* Say.** – misidentified *T. frigidum* Smith (3♂♂ 1♀).

***Crabro advena* Smith** [as *C. pegasus* (Packard)]. – misidentified *C. argusinus* Bohart (1♂).

***Cerceris clypeata* Dahlbom.** – The only specimen (a male) that was found in the ROME collection is labelled "Penn." [= Pennsylvania]. It is possible that the species was erroneously reported from Toronto.

Brown (1934), specimens deposited in ROME:

***Podalonia violaceipennis* (Lepeletier).** – misidentified *P. robusta* (Cresson) (1♀).

***Ectemnius atriceps* (Cresson)** [as *Solenius corrugatus* (Packard)]. – misidentified *E. borealis* (Zetterstedt) (2♂♂).

***Ceropales bipunctata* Say** [as *Euspongia bipunctata*] (Pompilidae). – misidentified *Alysson conicus* Provancher (1♀).

Blades & Marshall (1994), specimens deposited in DEBU:

***Mimumesa leucopus* (Say).** – misidentified *M. propinqua* (Kincaid) (1♂ 2♀♀).

***Trypoxylon figulus* (L.).** – misidentified *T. attenuatum* Smith (1♀). In Ontario *T. figulus* appears to be restricted to the eastern part of the province. Records from other parts of Ontario (i.e., Sugar et al. 1998) are doubtful.

***Trypoxylon pennsylvanicum* Saussure.** – Among 28 recorded specimens all but one were misidentified *T. attenuatum* Smith.

***Ectemnius ruficornis* (Zetterstedt).** – misidentified *E. arcuatus* (Say) (2♀♀).

Discussion

The present study records 2 species in 2 genera of Ampulicidae, 28 species in 11 genera of Sphecidae, and 248 species in 57 genera of Crabronidae from Ontario. Within the Crabronidae the highest diversity is found in the subfamily Crabroninae (117 species, incl. Larrinae), followed by the Pemphredoninae (55 species), Bembicinae (40 species), Philanthinae (29 species) and Astatinae (7 species). The genera *Podium*, *Ammoplanus*, *Pison*, *Entomognathus*, *Oryttus* and *Stictia* are new records for Canada; the genera *Pseneo*, *Diploplectron*, *Didineis*, *Clitemnestra*, and *Lestiphorus* are recorded for first time from Ontario. One hundred and fourteen species (41.0%) of the total of 278 species are recorded for the first time from Ontario, 53 of which (19.1%) are also newly recorded for Canada, including one new record for the Nearctic Region. Seventy species (25.3%) are not known from any other Canadian province or territory besides Ontario. Eight species (2.9%) are introductions from other biogeographic regions (see the following section).

New species records are also provided for the following Canadian provinces and territories: Labrador (1 species), New Brunswick (4 species), Quebec (8 species), Saskatchewan (5 species), Alberta (5 species), British Columbia (5 species), Yukon Territory (1 species) and Northwest Territories (1 species).

Distribution of Ontario Sphecids

The distribution of Ontario sphecids is shown in Table I. About 9% of the species have a Holarctic distribution (excl. introduced species) and are transcontinental in North America, another 35% are transcontinental but restricted to the New World. Approximately 40% occur only east of the Rocky Mountains in North America; ca. 12% range further westward into the mountain ranges of western North America but without reaching British Columbia or the Pacific states of the U.S.. In the following some interesting distribution patterns are discussed:

Species with mainly western distribution and western disjuncts. Several mainly western species reach the eastern limit of their known range in eastern Canada. Most of these species follow a distribution pattern that covers the western part of the U.S. and a large part of Canada, sometimes including adjacent areas of the northeastern U.S.. In a few species the eastern populations appear to be far removed from the closest known western population, creating the appearance of a broadly disjunct range. Undoubtedly, in many cases these gaps are merely sampling artefacts. However, there appear to be a few examples of species with genuinely disjunct ranges. Different types of distribution patterns in western species are compared below.

Primarily western with scattered populations in east: *Philanthus albopilosus*. This species is widespread in the western U.S (Rocky Mtn. States east to Texas; Krombein 1979). In the eastern Nearctic the species is rare with very localized populations as far east as Michigan (rare on Lower Peninsula; Dreisbach 1945), Ohio (Krombein 1979), New York (Evans 1975b; Kurczewski 1998c) and Ontario (Essex County, Norfolk County, formerly Grey County). In Ontario *Ph. albopilosus* deserves attention for its isolated occurrence and the vulnerability of its populations: the species inhabits areas with broad expanses of bare, fine-grained sand. Former localities in Essex County (Leamington) and Grey County (Hepworth Dunes) have changed drastically since the species was last collected there and no specimens could be found at the latter in 2003.

Apparent disjuncts: *Prionyx canadensis*, *Diploplectron peglowi*, *Tachysphex aethiops*, *T. alpestris*, *T. semirufus*, *Mellinus abdominalis*, *Nysson hesperus*, *Stizoides renicinctus*, *Stictiella emarginata*. Based on previously published distributional data the eastern populations of these species appear to be more or less isolated from the main, western part of their range. The most pronounced apparent 'disjuncts' are *Diploplectron peglowi* and *Nysson hesperus*, which show gaps of more than a thousand of kilometres between the Ontario populations and the closest known western populations (*N. hesperus*: Wyoming; *D. peglowi*: Yukon and Northwest Territories). However, a recent study of their distribution reveals the gaps to be sampling artefacts: *Nysson hesperus* was newly discovered in collections taken in Manitoba and Saskatchewan (Buck, in prep.), linking eastern and western populations, and *Diploplectron peglowi* was found in Saskatchewan about half-way between the known eastern and western Canadian populations. For other species of this group a continuous distribution has not yet been demonstrated but appears very likely.

Genuine disjuncts: *Ammoplanus lenape*, *Solierella levis*, *Trypoxylon bidentatum*, *T. sculleni*. These species appear to have a truly disjunct distribution with widely separated eastern and western populations. In the case of the two *Trypoxylon* species this is probably due to accidental introduction to the eastern Nearctic. Because of their wood-nesting habits species of this genus are prone to be accidentally shipped to new locations. In fact, most of the crabronid species introduced from the Palaearctic region belong to this genus (see below). Both *T. bidentatum* and *T. sculleni* are known from a single specimen only in the eastern Nearctic and have apparently remained very localized or were unable to establish permanent populations. The disjunct range of the other two species appears to be natural. *Ammoplanus lenape* has been divided into an eastern and a western subspecies, both of which are known from two localities only. Further research is necessary to elucidate the

biogeography of this diminutive, cryptic species. Eastern and western populations of *Solierella levis* show only very slight morphological differences, which nonetheless appear to be consistent. The eastern populations of this species were only discovered during this study and the distribution in the eastern Nearctic deserves further investigation.

Northern species. Most spheciform wasps are warmth-loving and there are few genuinely northern species. Unfortunately, the sphecid fauna of the Hudsonian and northern Canadian life zone in Ontario is still practically unstudied because of the inaccessibility of the region. Only four northern species were found in Ontario so far: *Mimumesa clypeata*, *M. atratina*, an undescribed species of *Mimumesa* (sp. A), and *Passaloecus borealis*. The three described species appear to be transcontinental in boreal North America (Finnamore 1997; Buck, in prep.). *Mimumesa clypeata* and *Passaloecus borealis* have also been recorded from mountain ranges of the western U.S. as far south as New Mexico and California. All four species are probably near the southern limit of their range at the newly recorded localities in northern Ontario.

Introduced species. Eight Ontario sphecids species have been accidentally introduced to North America, including five species recorded here for the first time from the province (*Pemphredon morio*, *Passaloecus gracilis*, *Trypoxylon attenuatum*, *T. kolazyi*, *Pison koreense*). An additional three species (*Pemphredon rugifer*, *Rhopalum coarctatum*, *Ectemnius cephalotes*) show an eastern Nearctic/Palaearctic distribution and were probably also introduced to the Nearctic. Six species originated from the western Palaearctic region; only one species, *Pison agile*, was introduced from the eastern Palaearctic or Oriental region (area of origin unknown for the trans-Palaearctic species *Pemphredon morio*, *P. rugifer*, *Trypoxylon figulus*, and *Rhopalum coarctatum*). The oldest introductions are apparently *Pemphredon rugifer*, *Trypoxylon figulus*, *Rhopalum coarctatum* and *Ectemnius cephalotes*, which have been known from North America for well over a century. The most recent introduction appears to be *Pemphredon morio*, which is recorded here for the first time from the Nearctic Region. All introduced species have remained restricted to eastern North America, with *Passaloecus gracilis* and *Rhopalum coarctatum* ranging farthest to the west. Some species occupy a fairly small range like *Trypoxylon figulus*, which apparently has not spread beyond the New England States, Quebec and eastern Ontario (Pulawski (1984); southern Ontario records are probably misidentifications of *T. frigidum*). Furthermore, there are distinct differences of abundance between introduced species: *Trypoxylon kolazyi*, for instance, remains a very rare species and is not known from recent material (see discussion under this species) while other species in the same genus (*T. clavicerum*, *T. attenuatum*) have become well established. At many localities in southern Ontario *Trypoxylon attenuatum* has become the most common species of the genus.

Most of the introduced species of sphecids nest in borings in wood, hollow stems and similar situations. The only exception is *Oxybelus bipunctatus*, which nests in sandy soil. This species is thought to have arrived in North America with ship ballast or molding sand (Kurczewski 1998b).

Zonality of the provincial fauna. Table II gives an overview of the Ontario distribution of the newly recorded species by county/region/district. Many counties/regions are still poorly studied but comparison of the better studied areas show some general trends: As could be expected the highest number of new records was found in counties of southwestern Ontario. This part of the province forms the northernmost expanse of the Carolinian life zone, which harbours many insect species not known from elsewhere in Canada. About 35 of Ontario's species (12.6%) are restricted to the Carolinian part of the province. The highest number of Carolinian species (26) was found in Essex County, which also had the highest total number of new Ontario records (63). The counties with the second and third highest number of new records (Norfolk: 38; Kent: 33) are also located

within the Carolinian life zone. Other counties within this life zone are still poorly studied and their species numbers are not representative. The highest numbers of newly recorded species from counties in the Transition life zone were 30 (Wellington) and 24 (Carleton). Wellington County borders the Carolinian life zone and some species with mainly Carolinian distribution (e.g., *Ammophila pictipennis*, *Trypoxylon politum*) reach the northern limit of their range here. Expectedly, species diversity continues to drop further northward: the best-studied district of the Canadian life zone (Thunder Bay District) reached a total of merely 15 new provincial records. Almost no data is available for sphecids from the Hudsonian life zone in Ontario.

Conclusions and Outlook

It is hoped that this checklist will stimulate further research on the spheciform wasps of Ontario. Vast areas of the province are still very poorly studied, including the Niagara Peninsula, parts of eastern Ontario and most of the Canadian and the Hudsonian life zones. Even for the better-known areas further surprising findings can be expected in future. The results presented in this paper reveal a far higher diversity of spheciform wasps in Ontario than was initially expected. Many of the rarer species are restricted to the southern part of the province and among them some are restricted to habitat types (e.g., oak savannah, relict prairie, dunes) that are scarce and vulnerable. Other species have not been collected in Ontario in recent times (e.g., *Prionyx canadensis*, *Astata bakeri*, *Oxybelus inornatus*, *Synnevrus aurinotus*, *Stizoides renicinctus*, *Oryttus gracilis*, *Cerceris compacta*, *C. nitidoides*, *C. prominens*, *Eucerceris zonata*) and their current status in the province is uncertain. Among these *Stizoides renicinctus* and *Cerceris prominens* have not been collected for a century or more. The habitat requirements and biology of some of the possibly endangered species still remains largely unknown and further research is necessary in order to develop effective conservation plans.

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