BEES OF THE GENUS *HYLAEUS* OF ONTARIO (HYMENOPTERA: APOIDEA: COLLETIDAE)

TATIANA G. ROMANKOVA
Entomology, Department of Natural History, Royal Ontario Museum, 100 Queen's Park, Toronto, Ontario, Canada M5S 2C6
email: tatianar@rom.on.ca

Abstract *J. ent. Soc. Ont.* 138: 137–154

Eight species of *Hylaeus* Fabricius are reported from Ontario: *H. affinis* (Smith), *H. annulatus* (Linnaeus), *H. basalis* (Smith), *H. bisinuatus* Forster, *H. mesillae* (Cockerell), *H. modestus* Say, *H. verticalis* (Cresson), and for the first time recorded for Canada, *H. nelumbonis* (Robertson). Five additional species, *H. fedorica* (Cockerell), *H. hyalinatus* Smith, *H. saniculae* (Robertson), *H. sparsus* (Cresson), and *H. rudbeckiae* (Cockerell & Casad) have also been reported in the researched area, but were not found in the collections examined. The *Hylaeus* flight period in Ontario starts in May and continues until the last warm days in autumn. Identification keys for male and female *Hylaeus* reported for Ontario are provided, in addition to information on phenology and locality records.

Published November 2007

Introduction

There has been no comprehensive study of *Hylaeus* Fabricius (Colletidae) in Ontario, but separate records of species found in the province are scattered in the literature (Fye 1965; MacKay and Knerer 1979; Mitchell 1960; Usui 1994). As a result of studying this group of bees at the largest collections of eastern Canada, knowledge about the distributional ranges of discussed species has been considerably expanded. The material examined yielded eight *Hylaeus* species from Ontario. At least five more species are likely present in the province. Three of these have been recorded in the literature from Ontario: *H. saniculae* (Robertson) (Mitchell 1960; Snelling 1970; Hurd 1979), *H. rudbeckiae* (Cockerell & Casad) (Mitchell 1960), *H. hyalinatus* Smith (Buck et al. 2005). In addition, *H. fedorica* (Cockerell) has been recorded from "Canada" (Metz 1911, as *H. grossicornis*). Finally, *H. sparsus* (Cresson) has been recorded "from southeastern Canada" (Snelling 1968). The first annotated list of Ontario *Hylaeus* is presented herein, with distribution maps compiled from studied specimens, and identification keys to the species for both males and females.

Materials and Methods

All specimens examined are deposited in the entomological collections of the Royal Ontario Museum (ROME), University of Guelph (DEBU), Canadian National Collection of Insects (CNCI), University of Manitoba (EDUM), University of California (UCRC), and North Carolina State University (NCSU). Wooden trap nests were also used by the author to obtain additional material (Krombein 1967). Species morphological characteristics, flight periods, and distribution data are based on specimens from these collections. Since I have not examined any specimens of the additional species recorded for Ontario, the characters given for them in the keys are taken from published descriptions or rely on examined specimens from other regions (Ascher 2001; Metz 1911; Mitchell 1960; Osychnyuk 1978). The distributional data are presented in the form of an annotated list and are illustrated with maps. The locality records in the annotated lists are arranged from north to south according to Ontario's primary administrative divisions, but the terms "county", "district", etc., are omitted. Distribution records from outside Ontario are given according to studied collections and literature records (Ascher 2001; Buck et al. 2005; Dathe 1994; Hurd 1979; Metz 1911; Mitchell 1960; Snelling 1966 a,b, 1968, 1970). The morphological terms used in this paper were defined and illustrated by Michener (1944, 2000). The abbreviations are as follows: F–flagellar segment, T–metasomal tergum, S–metasomal sternum. An asterisk designates a species record new for Ontario (and Canada). More than 2500 specimens were identified using Metz (1911) and Mitchell (1960). All existing determinations in the studied collections were checked.

Genus *Hylaeus* Fabricius

Ontario bees of the genus *Hylaeus* are distinguished from other members of the provincial bee fauna by the following combination of characters: small to medium size (4-9 mm); integument black, shiny, without noticeable pubescence; head, pronotum, tegulae, and legs usually with yellow markings, which are more extensive in males; scopa absent.

Like other Holarctic Colletidae, *Hylaeus* are defined by their short, truncate, bilobbed glossa, and subantennal suture meeting the antennal socket at its inner side.

The flight period extends from May until the last warm autumn days.

Many *Hylaeus* species nest in hollow dead stems, others use different pre-existing cavities (in wood, ground, etc.). Nest cells are made of cellophane-like secretion. Although females have no scopa, pollen and nectar are carried in the crop. Provisions in cells are liquid, and the egg floats on the surface of the provisions. Polylectic.

Key to *Hylaeus* species of Ontario

The brief species descriptions that follow the dashes in the couplets refer only to the most distinctive characteristics for the particular species. Some frequently encountered synonyms are given in brackets following the species name in the key. Distributional and flight period data are included in the male key. Only males generally can be identified with

confidence; the identification of females is often tentative except for a few species (Metz 1911; Mitchell 1960).

Males. Clypeus always yellow. Antennae with 13 segments. Scape modified or not.

1. Mesepisternum with lamelliform carina between anterior and lateral faces. —S8 spatulate, protrudes conspicuously from genital opening in combination with long slender gonostyli that extend far beyond apices of penis valves. T1 with white hair fringes laterally on posterior margin. Malar area as long as basal mandibular width. Body length 5-6 mm. Ontario: June–August. —Palearctic. New York ….....
.....***H. hyalinatus*** Smith
– Mesepisternum without lamelliform carina …….....**2**
2. Front coxae angulate or toothed laterally. —Genal area not shorter than eye width. Scape maculated. Paraocular yellow markings abruptly truncate at level of antennae. Body length 6 mm. —Québec, New York, Michigan to Georgia, Texas…….....***H. sparsus*** (Cresson)
– Front coxae simple …….....**3**
3. S3 with central swellings. T1 with white hair fringes laterally on posterior margin …….....**4**
– S3 without swellings. T1 with or without hair fringes on posterior margin …….**5**
4. Scape transverse, wider than long, outer half yellow. S2 with swellings. —Labrum and mandibles black. Supraclypeal area longer than half clypeal length. Antennal sockets surrounded with elevation. Genal area as wide as eye at its widest part. Pronotum and tegulae without yellow markings. T1 tessellate, with uniformly close, shallow, minute punctures. Body length 8-9 mm. Ontario: June–August. —Transcontinental (alpine in southern part of distribution) ……....***H. basalis*** (Smith)
– Scape longer than wide, curved, yellow antero-laterally. S2 without swellings. —Labrum and mandibles on inner margins yellow. Supraclypeal area not longer than half clypeal length. Paraocular yellow marking with inner angle extending beyond upper margin of antennal socket. Genal area narrower than eye width. Pronotal collar, pronotal lobes, and tegulae with yellow marks. T1 tessellate, with uniformly dense, shallow, minute punctures. Body length 4.5-6 mm. Ontario: June–September. —From British Columbia to Eastern Canada, south to Utah, Louisiana, Mississippi, Georgia ..……***H. affinis*** (Smith) (*Prosopis ziziae* Robertson)
5. Scape heart-shaped, with outer half yellow. —Paraocular yellow patches apically truncate, reaching upper edge of antennal sockets at middle. Labrum and mandibles without yellow markings. Supraclypeal area longer than half clypeal length. Genal area wider than half width of eye. F1 short, transverse; F2 longer than F1, transverse. Pronotal lobes with yellow markings, pronotal collar and tegulae without yellow markings. Mesepisternum with deep, dense punctures less than diameter apart. T1 without lateral hair fringes, tessellate, with evenly dispersed, minute, shallow punctures. Body length 5-6 mm. Ontario: May–August. —Holarctic, south to Georgia .....***H.annulatus*** (Linnaeus) (*H. ellipticus* Kirby)
– Scape parallel-sided or completely black …….....**6**

6. T1 with lateral white hair fringes on posterior margin. Scape without yellow marking ……..**7**

– T1 without hair fringes on posterior margin. Scape with or without yellow marking ……..**8**

7. Paraocular yellow markings extending along inner eye margins. Supraclypeal area shorter than half clypeal length. Frons without impunctate spaces above antennal sockets. —Scape curved. Mandibles and labrum black to completely yellow. Genal area wider than half width of eye. Pronotal lobes and usually pronotal collar marked with yellow. Scutum and mesepisternum with punctures well separated, mostly diameter or more apart. T1 with dense fine punctures. Body length 4-6 mm. Ontario: May–September. —Alaska, transcontinental to California …….***H. modestus*** Say

– Paraocular yellow markings narrow apically, expand from eye margin to upper margin of antennal sockets. Supraclypeal area longer than half clypeal length. Frons above antennal sockets with large, shiny, impunctate spaces. —Scape about twice as thick as flagellum. Mandibles yellow, labrum black. Genal area equal to or narrower than width of eye. Pronotal lobes and tegulae with yellow markings. Mesepisternum with punctures more than diameter apart. T1 shiny, with sparse or dense, deep punctures. Body length 6-7 mm. Ontario: May–September. —Transcontinental ……. ……..***H. verticalis*** (Cresson)

8. Supraclypeal area shorter than half clypeal length. F1 as long as wide. —Scape and pronotal collar without yellow markings. F1 shorter than F2. Malar area flat, 3 times as wide as long. Genal area wider than half width of eye (4/5). Paraocular yellow markings narrowly round apically, terminated above antennal sockets. Pronotal lobes and tegulae with yellow markings. Scutum subrugose, with deep punctures less than diameter apart. Scutellum shiny, with well separated punctures. Mesepisternum hairy, with deep, large, confluent pits. Front tibiae outer and anterior faces, mid tibiae basal third, hind tibiae basal half, all spurs and tarsi yellow. T1 ferruginous, disk shiny, with punctures very sparse and obscure. S3 with slight central elevation. Body length 7 mm. —Ontario, Illinois, Ohio, south to Louisiana, Alabama, Florida … ……..****H. nelumbonis*** (Robertson)

– Supraclypeal area longer than half clypeal length. F1 transverse ……..**9**

9. Genal area not longer than half eye width. Mesepisternum with large, deep punctures irregularly spaced. T1 disk and sterna with deep, distinct and abundant punctures. — Paraocular yellow marking with upper extension slightly removed from eye margin. Mandibles and labrum black, or labrum with yellow spot. F1 short, transverse; F2 longer, slightly transverse; F3 elongate. Pronotal lobes, tegulae and often pronotal collar marked with yellow. Body length 4-6 mm. Ontario: June–August. —Holarctic, south to California, Georgia …..***H. bisinuatus*** Forster (*Prosopis stevensi* Crawford)

– Genal area wider than half eye width. Mesepisternum with small punctures diameter or less apart. T1 disk and sterna with sparse, shallow, minute punctures ……..**10**

10. Mesepisternum shiny, tessellate, with deep punctures a diameter or less apart. Paraocular areas elevated apically at antennal sockets. Face with depressions above paraocular areas. —Scape and pronotum without yellow markings. F1 and F2 much shorter than wide, F3 slightly transverse. Propodeum with long basal area wrinkled. Body length 3.5-4 mm. —Ontario, Nova Scotia, to Minnesota, Tennessee, Georgia … ……..***H. saniculae*** (Robertson)

– Mesepisternum shagreened, with shallow punctures. Paraocular area not elevated. Face without depressions above paraocular areas …….....**10**

11. Paraocular yellow marking narrowly tipped, ending at side of antennal socket. —Propodeal triangle mostly smooth, shagreened, with short, fine wrinkles basally. —Scape with yellow strip anteriorly. Pronotal lobes without yellow markings. Body length 4-5 mm. —Michigan, Minnesota, to Texas, North Carolina ……. …….....***H. fedorica*** (Cockerell) (*Prosopis grossicornis* Swenk & Cockerell)

– Paraocular yellow marking narrowed at antennal socket, then clavate, bent towards upper margin of antennal socket. Propodeal triangle mostly wrinkled **12**

12. Paraocular yellow marking with constriction wider than distance to inner orbit. Pronotal lobes with yellow markings. —Scape with or without yellow marking. F1 and F2 transverse, F1 little shorter than F2, F3 elongate. Pronotal collar black. Body length 4-5 mm. Ontario: May–October. —Transcontinental, to northern Mexico …….....***H. mesillae*** (Cockerell) (*Prosopis cressoni* Cockerell; *P. telepora* Lovell)

– Paraocular yellow marking strongly constricted, separated from inner orbits by much more than its minimum width at constriction. Pronotal lobes black. —Scape without yellow marking. F1 half as long as F2, or shorter. T1 with distinct, regularly spaced punctures; central impunctate space distinctive. Body length 4.5 mm. —Transcontinental .....……...***H. rudbeckiae*** (Cockerell & Casad)

Females. Clypeus black, rarely yellow apically. Antennae with 12 segments. Scape not modified. Separation of *H. modestus* and *H. affinis,* as well as *H. mesillae* and *H. rudbeckiae* is doubtful.

1. Mesepisternum with lamelliform carina between anterior and lateral faces. —Malar area not shorter than half basal mandibular width. Mesepisternum with punctures diameter or more apart. T1 with white hair fringes laterally on posterior margin. Body length 5.5-6.5 mm ……..……..……***H. hyalinatus*** Smith

– Mesepisternum without lamelliform carina between anterior and lateral faces **2**

2. T1 without hair fringes laterally on posterior margin ……..... **3**

– T1 with white hair fringes laterally on posterior margin …….....**6**

3. Supraclypeal area narrowed between antennal sockets, raised apically and joining frons at 45º angle. —Clypeus often with apical yellow patch. Genal area wider than half eye width. F1 and F3 subequal, about as long as wide; F2 shorter, transverse. Mesepisternum with small, deep punctures, diameter or less apart. T1 disk shiny, with scattered fine punctures. Body length 5-7 mm .....***H. annulatus*** (Linnaeus)

– Supraclypeal area not narrowed between antennal sockets, not swollen apically **4**

4. Pronotal collar with yellow markings. Genal area equal to or narrower than half width of eye. —F1 elongate, F2 short, transverse, F3 slightly transverse. Pronotal lobes and tegulae marked with yellow. Mesepisternum with large, deep, irregularly spaced punctures. T1 disc impunctate medially, anteriorly, and laterally with minute punctures. Body length 4-6 mm ….....***H. bisinuatus*** Forster

– Pronotal collar usually without yellow markings. Genal area wider than half width of eye. T1 disk shiny, with sparse, tiny punctures medially, dense laterally **5**

5. T1 ferruginous. Malar area flat, three times as wide as long. Mesepisternum with large, well separated to confluent pits. —Genal area as wide as eye width. F2 transverse, F1 and F3 subequal, as long as wide, little longer than F2. Scutal punctures less than a diameter apart. Scutellum shiny, with punctures about a diameter apart. Hind tibiae yellow basally, fore and mid tibiae sometimes with yellow basal spots. Body length 6-7 mm ……..……..*H. nelumbonis* (Robertson)
– T1 black. Malar area linear. Mesepisternum tessellate, with shallow punctures less than diameter apart ……..**6**
6. Pronotal lobes yellow. —Propodeum mostly wrinkled. F2 and F3 transverse, shorter than F1. Body length 4-5 mm ....*H. mesillae* (Cockerell), *H. rudbeckiae* (Cockerell & Casad)
– Pronotal lobes without yellow markings …….....**7**
7. Propodeal triangle mostly smooth, shagreened, with short fine wrinkles basally. —F1 as long as F3, slightly transverse; F2 much shorter, transverse. Body length 4.5 mm …….....*H. fedorica* (Cockerell)
– Propodeal triangle with long basal area wrinkled. —F1 as long as F3, or longer; F2 and F3 transverse. Body length 4.5 mm .....*H. saniculae* (Robertson)
8. Genal area equal to or wider than width of eye. Pronotal collar usually without yellow markings. T1 disk centrally punctured or not …….....**9**
– Genal area narrower than width of eye. Pronotal collar with yellow markings. T1 disk impunctate centrally ……..**11**
9. Genal area as wide as eye width. —F1 longer than F3, F2 short, transverse. Integument with yellow markings. Pronotal lobes and tegulae with yellow markings. Mesepisternum with small, deep punctures, more than diameter apart. T1 shiny, with punctures scattered on disc centrally, dense on sides, or punctures almost invisible. Body length 6-7 mm …….....*H. verticalis* (Cresson)
– Genal area wider than width of eye …….....**10**
10. Integument with yellow markings. Front coxae toothed or spinose on outer side. Mesepisternum shiny, with small punctures a few diameters apart. —F1 as long as F3, F1 as long as wide, F3 slightly transverse; F2 short, transverse. T1 shiny, with sparse, obscure, exceedingly minute punctures. Body length 6-7 mm. ……
…….....*H. sparsus* (Cresson)
– Integument completely black. Front coxae not spinose. Mesepisternum with deep punctures less than or equal to diameter apart. —F1 as long as F3, F2 transverse. T1 shiny, with punctures very fine and shallow. Body length 7-9 mm ……
…….....*H. basalis* (Smith)
11. Mesepisternum with punctures more than diameter apart. Body length 5-6 mm ……
…….....*H. affinis* (Smith)
– Mesepisternum with punctures equal to or less than diameter apart. Body length 6-7 mm …….....*H. modestus* Say

Annotated list of Ontario *Hylaeus*

The species are listed in alphabetical order. The abbreviations of the names of the collectors are as follows: AR–W. Attwater; AT–C. Atwood; BG–N. Bigelow; BK–M. Buck; BL–S. Beiley; BR–K. Barber; CL–S. Clark; ED–C. Edwards; GL–T. Galloway; KL–L. Kelton; KN–G. Knerer; MK–P. MacKay; MN–J. Martin; PA–S. Paiero; PG–D. Pengelly; RM–T. Romankova; SL–F. Sladen; US–M. Usui.

1. *H. affinis* (Smith)

Kenora: Oneside Lake, 25 July 1960, ♂, CL; Jordan, 13 June–28 July 1914, 3♂, Ross (CNCI). **Rainy River:** Pinewood, 22-28 June 1960, 3♂, KL; Fort Frances, 15 June 1960, ♂, KL (CNCI). **Thunder Bay:** Fort William, 2 June 1915, ♀, SL, det. H. Viereck (CNCI). **Algoma:** Black Lake, 29August 1970, ♂, J. MacAlpine (CNCI). **Parry Sound:** North Bay, 9 June 1963, ♂, W. Gague (CNCI). **Renfrew:** Calabogie, 14 June 1978, ♂, M. Gunderman (ROME); Rackett, 6 August 1953, ♀, PG (CNCI). **Carleton:** Merivale, 7 August 1958, ♂, M. Prime (DEBU); Ottawa, 8 June 1970, ♀, N. Mills; 22 August 1958, ♂, KL; 12-20 June 1913, ♂, ♀, SL, det. Swenk (CNCI). **Russell:** Limoges, 19 July 1978, ♀, E. Fuller, R. Jaagumagi (ROME). **Leeds:** Chaffeys Locks, 10 July 1963, ♀, J. Riotte, I. Smith (ROME); St. Lawrence Isl., 31 July–14 August 1975, 3♂ (CNCI). **Frontenac:** Perth Road, 18 August 1957, ♂, J. Vockeroth (CNCI). **Hastings:** Marmora, 24 June–23 July 1952, 4♂, Ross (CNCI); Belleville, 26 June 1949, ♂, MN; 15 August 1948, ♂, MN; Trenton, 27 August 1905, ♂, Evans (CNCI). **Haliburton:** Algonquin Park, 14 August 1903, 2♀, EMW (ROME). **Muskoka:** Severn Bridge, 9 July 1965, ♀, R. Scott (ROME). **Peterborough:** Peterborough, 26 June 1975, ♀, F. Quan (ROME); Serpent Mounds P. P., 8 August 1983, ♀, ♂, GL (EDUM). **Durham:** Kendal, 19 June 1960, ♀, KN, *Rubus* (ROME). **Simcoe**: Simcoe, 19 June 1989, ♂, Walley (CNCI). **York:** Toronto, 4 June 1959, ♀, ♂, *Allium*; 14 June 1914, ♀; 7 July 1949, ♀; ♀, W. Brodie (ROME); 30 July 1953, ♂, M. Hearst (DEBU); 7-14 June 1896, ♂; 4♀, 30 July 1893, ♂; 21 June 1892, ♀; 19 July 1891, ♂; 14 August 1890, 2♂; 19 August–2 September 1888, 2♂ (CNCI); Vivian, 22 June 1961, 2♀, KN, *Brassica* (ROME). **Bruce:** Sauble Beach, 31 July 1977, ♀, W. Maddison; Tobermory, 3-5 August 1977, 2♂, 5♀, W. Maddison; 10 July 1960, ♀, KN (ROME); Hepworth, 27 June 1979, 2♂, B. Wit; Dyers Bay, 22 August 1952, ♀, PG (DEBU). **Dufferin:** Primrose, 19, 27 July 1977, ♂, AR (DEBU). **Peel:** Terra Cotta, 25 July 1999, 7♂, 5♀, RM ; HWY 25 and Burhumthorp Rd., 2001, 3♂, 4♀, from nests, TR; Forks of the Credit, 16 June–29 August 1969, 26♂, 113♀, MK; 4 June–12 August 1968, 42♂, 125♀, MK; 22-28 June1965, 5♂, 11♀, KN (ROME). **Wellington:** Guelph, 3 July 1973, ♂, PG; 13 June 1979, ♂, D. Levis; 26 June 1978, ♂, ♀, M. Lichtenberg; 16-23 June 1978, 2♂, BR; 23 August 1977, ♂, BR; 30 May 1962, ♂, KN; 7 August 1952, ♀, PG; Arkell, 6 June 1978, 2♂, S. Ball; 8 June 1978, ♂, N. Pierce; 26 May 1977, 2♂, BR; 11 June 1958, ♂, PG; 25 July 1952, ♂, PG (DEBU). **Halton:** Hilton Falls, 16 July 1999, ♀, RM; Speyside, 12 August 1999, ♂, ♀, RM (ROME); Burlington, 6 June 1984, ♂, B. Sinclair; Oakville, 5 July 1978, ♂, P. Jursevskis (DEBU). **Huron:** Goderich, 20 July 1977, 3♀, W. Maddison (ROME); Kinburn, 26 July 1957, ♂, MN (CNCI). **Wentworth:** Dundas, 25 June 1980, ♂, S. Beierl; 19 June 1978, ♂, S. Ball; Hamilton, 25 June 1979, ♀, K. Runciman; 27 June 1980, ♂, S. Beierl (DEBU). **Lincoln:** Grimsby, 19 June 1979, ♂, M. Bailey; Vineland, 26 June 1956, ♂, C.

Small (DEBU); Grassie, 31 May 1962, ♂, KL (CNCI). **Welland:** Effingham, 1 September 1954, ♂ (CNCI). **Brant:** Ohsweken, 19 June 1979, ♂, D. Morris; Brantford, Railway Prairie, 24 August 2001, ♀, PA (DEBU). **Haldimand:** Long Point, 3 June 1983, 2♂, T. Thompson (ROME, DEBU); 18 June 1962, ♂, G. Thorpe; Dunnville, 5 August 1954, ♂, C. Miller; Cayuga, 12 July 1925, ♂ (CNCI). **Middlesex:** Komoka, Feed Mill Prairie, 11 July–11 September 2001, 5♂, ♀, PA (DEBU). **Elgin:** New Glasgow, 27 June 1961, 3♂, KL (CNCI). **Norfolk:** Turkey Point, 4 July 1962, ♂, G. Thorpe; Normandale, 4 September 1954, ♂, R. Lambert (CNCI); Delhi-Simcoe Railway, 7-21 September 2001, ♂, PA, prairie (DEBU). **Kent:** Rondeau Park, 16-21 June 1977, ♂ 2♀, (ROME). **Essex:** Point Pelee, 25 July 1979, ♀; 23 June 1920, ♀, BG (ROME); 25 July 1979, ♀, AR; 8 September 1954, ♂, KL (CNCI); Kingsville, 23 May 1962, ♂, KL (CNCI); 8 July 1977, ♂, BR; Windsor, Ojibway Prairie, 5 June–21 September 2001, 2♂, 2♀, PA (DEBU); Leamington, 4-7 August 1985, 12♂, GL, 14 July–18 August 1987, 2♂, GL, (EDUM). Figure 1.
Localities other than Ontario: British Columbia, Manitoba, Saskatchewan, Québec, Colorado, Wisconsin, Michigan, New York (CNCI, ROME).

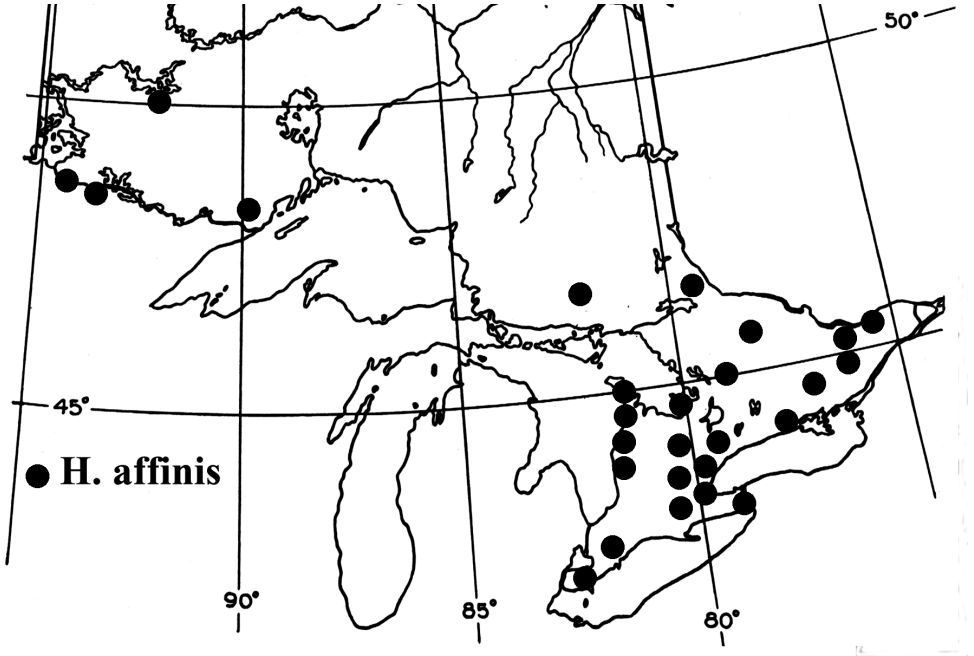

FIGURE 1. Ontario collection localities of *Hylaeus affinis*.

2. *H. annulatus* (Linnaeus)
Kenora: Kenora, 13 June 1960, ♂, KL; Oneside Lake, 24 June–27 July 1960, 7♂, CL; Black Sturgeon Lake, 1963, 303♂ & ♀ (CNCI); Vermilion Bay, Cedar Lake, 10 August 1959, ♀, E. Cameron (DEBU). **Rainy River:** Gold Rock, 22 July 1905, ♀, H. Newcomb,

det. Stephen (EDUM); Pinewood, 22 June 1960, 4♂, KL; Finland, 21 July 1960, ♂, KL (CNCI). **Thunder Bay:** Macdiarmid, 22 June 1921, ♀, BG (ROME); Manitouwadge, 12 June 1977, ♂, M. Eimann (DEBU). **Cochrane:** Iroquois Falls, 10 August 1961, 2♀, KN, *Solidago* (ROME); 22 June 1987, ♂, J. Vockeroth (CNCI); Porquis, 10 August 1961, ♀, KN; Abitibi, Low Bush, 30 June–19 July 1925, 2♂, 3♀, BG (ROME). **Algoma:** Wawa, 7 August 1992, ♀, D. Bennett; 13 June 1977, ♀, BR; 2 August 1976, ♀, P. Heel; Erickson, 7 August 1979, 2♀, PG; Otasawian Lake, 17 August 1963, 3♀, KN (DEBU). **Sudbury:** Sudbury, 1892, 3♀ (CNCI); Chapleau, 10 June 1992, ♂, US; 5 June 1991, 2♂, US; 1 July 1990, ♀, US (DEBU). **Timiskaming:** Haileybury, 7 May 1916, ♀, SL (CNCI). **Nipissing:** Belwood, 23 June–13 July 1965, 3♀, ED (DEBU); Temagami, 22 July 1932, ♀, A. Brown (ROME). **Parry Sound:** Sand Lake, 30 June 1926, ♂, F. Ide; Burk's Falls, 15 July 1926, ♂, F. Ide (CNCI); Killbear Park, 20 August 1978, 2♀, AR (DEBU). **Renfrew:** Petawawa, 7 June 1961, ♂, J. Vockeroth (CNCI). **Lanark:** Bells Corners, 29 June 1945, ♂, O. Peck (CNCI). **Carleton:** Ottawa, 17 July 1963, ♀, KN (ROME); 2 May–29 July 1913, 8♂, SL (CNCI); 5-16 June 1913, 4♂, ♀, SL (DEBU); 12-20 June 1913, 2♀, SL (EDUM). **Glengarry:** Algonquin Park, 14 August 1903, ♀, EMW (ROME). **Leeds:** St. Lawrence Isl., 18 July 1975, ♂, C. Curran (CNCI). **Hastings**: Marmora, 11 July 1957, ♀; 9 June 1957, ♂, K. Southern (DEBU); 12-24 July 1952, 2♂, J. Vockeroth; Trenton, 30 June 1905, ♀; 22 June 1902, ♂, Evans (CNCI). **Muskoka:** Port Sydney, 24 June–11 July 1919, 2♀, BG (ROME). **Simcoe:** Orillia, 18 June 1924, ♂ (CNCI). **Bruce:** Sauble Falls, 24 July 1977, ♂, W. Maddison (ROME); Crane River, 16 July 1977, ♀, D. Murrell; Tobermory, 30 May 1998, ♂, D. Vaccari; Sauble Beach, 8 July 1981, ♀, G. Aiudi; Dyers Bay, 24 July 1954, ♀, PG; 7 July–15 August 1953, 10♀, PG (DEBU). **York:** Toronto, 17 July–1 August 1891, 5♀ (CNCI); 23 June 1990, ♀; 7 June 1914, ♀, E. Walker; 19-28 July 1891, 2♀; 3 July 1890, ♀ (DEBU); 7 July 1949, ♂, (ROME). **Dufferin:** Primrose, 27 July 1977, ♂, AR (DEBU). **Peel:** Forks of the Credit, 4 July–18 August 1968, 28♀, MK; 2 July 1969, ♂, MK; ♀; Terra Cotta, 2001, 3♂, 15♀, RM, from nests in wood (ROME). **Wellington:** Arkell, 7 June 1960, ♂, PG; 25 July 1965, ♂, PG; Guelph, 3 June 1974, ♂, I. Kigatiira; 20 August 1979, ♂, J. Ernst; 11 August 1977, 2♀, D. Murrell; 17 August 1976, ♀, D. Levin; 2 August 1977, ♀, D. Levin; 14 June 1965, 2♀, 2♂, ED (DEBU). **Halton:** Hilton Falls, 16 July 1999, ♂, 3♀, RM; Speyside, 12 August 1999, ♂, ♀, RM (ROME); Halton, 5 August 1981, ♂, G. Aiudi (DEBU); Milton, 9 June 1978, 2♂, J. Heraty; Campbellville, 10 June 1977, 2♀, AR (DEBU). **Huron:** Brussels, 22 July 1963, ♀, J. VanLoon (DEBU); Kinburn, 26 July 1953, ♂, MN (CNCI). **Waterloo:** Oliver's Marsh [Oliver Bog], ♀ (DEBU). **Wentworth:** Borer's Falls, 1 June 1978, ♂, N. Kevin (DEBU); Freelton, 27 July 1984, ♂, M. Kasserra (DEBU). **Lincoln:** Grimsby, 17 June 1894, ♀ (CNCI). **Haldimand:** Cayuga, 6 August 1952, ♀, PG (DEBU). **Essex:** Kingsville, 9 July 1977, ♀, AT (DEBU); 23 May 1962, ♂, KL (CNCI). **Locality unknown:** SSH, 19 August 1981, ♀, G. Aiudi (DEBU); Ontario, 2 June 1906, ♀ (DEBU); 7 June 1961, ♂, J. Chillcott (CNCI). Figure 2.

Localities other than Ontario: Alaska, Yukon, North West Territories, British Columbia, Alberta, Saskatchewan, Manitoba, Québec, New Brunswick, Nova Scotia, Utah (CNCI, DEBU, ROME).

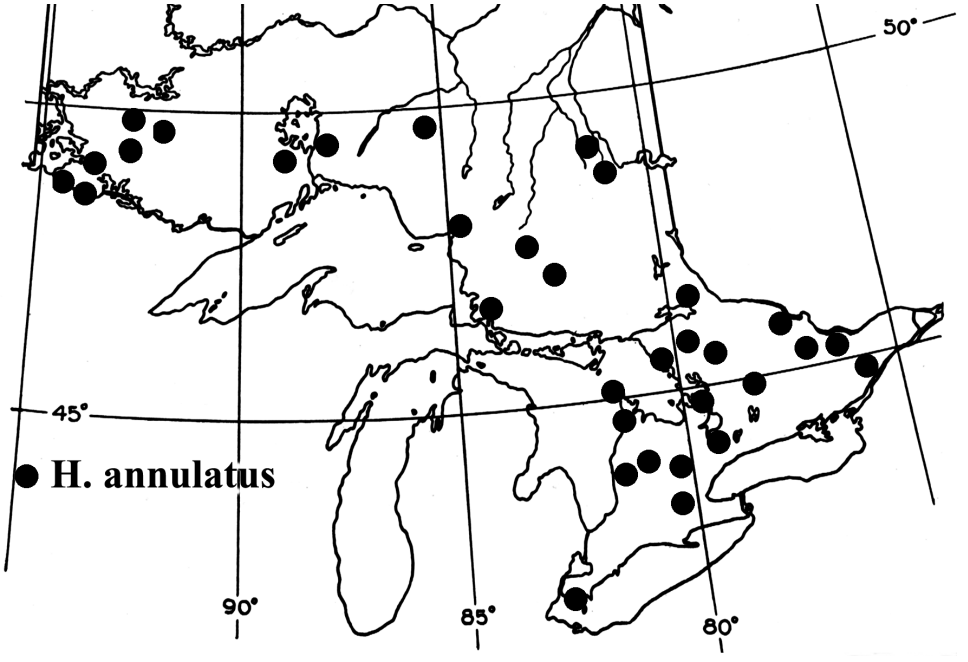

FIGURE 2. Ontario collection localities of *Hylaeus annulatus*.

3. *H. basalis* (Smith)
Kenora: Oneside Lake, 19 July 1960, ♀, CL (CNCI); Martin, 20 July 1984, ♂, 2♀, ROM field party (ROME); 20 June 1984, ♂, 2♀, R. Jaagumagi (DEBU). **Thunder Bay:** Nipigon, 25 June 1895, ♂, J. Fletcher; Black Sturgeon Lake, 30 June 1962, 4♂, 2♀, (CNCI). **Cochrane:** Abitibi Lake, Low Bush, 20 June–17 July 1925, 7♂, 7♀, BG (ROME); Mattagami River, Smoky Falls, 22 June 1936, ♂, G. Walley (CNCI). **Algoma:** Sault Ste. Marie, 7 July 1963, ♀, D. Stotz (DEBU). **Sudbury:** Sudbury, 1892, ♂; 10 August 1887, ♂ (CNCI); Chapleau, Racine Lake, 11 June 1992, 4♀, US; 4 June 1991, ♀, US; 5 June–3 August 1990, 3♂, 11♀, US, on Early Goldenrod (DEBU). **Timiskaming:** Haileybury, 7 July 1916, ♀, SL (CNCI). **Carleton:** Ottawa, 5 June–1 July 1913, ♂, 4♀, SL.; 1 July 1885, ♀; ♀ (DEBU); 14 June 1917, ♀, SL; 13 June–22 July 1913, 4♂, 4♀, SL (CNCI). **Hastings:** 25 July 1902, ♀, Evans (CNCI). **Haliburton:** Dorset, 20 August 1961, 3♀, KN (ROME). **Muskoka:** Macdiarmid, 12-19 June 1921, 6♂, 8♀, BG (ROME). **York:** Toronto, 20 July 1893, ♀; 19-26 July 1891, 4♀; 4 June 1883, ♂ (CNCI). **Bruce:** Dyers Bay, 25 July 1954, 2♂, 3♀, PG (DEBU). Figure 3.
Localities other than Ontario: Yukon, North West Territories, British Columbia, Alberta, Saskatchewan, Manitoba, Québec, New Brunswick, Nova Scotia, Wisconsin (CNCI, DEBU).

4. *H. bisinuatus* Forster
Algoma: Sault Ste. Marie, 13 July 1963, ♀, D. Stoltz (DEBU). **Grenville:** Prescott, 29 May 1977, ♀, BR (DEBU). **Haliburton:** Dorset, 16 August 1961, 2♀, KN, *Solidago* (DEBU).

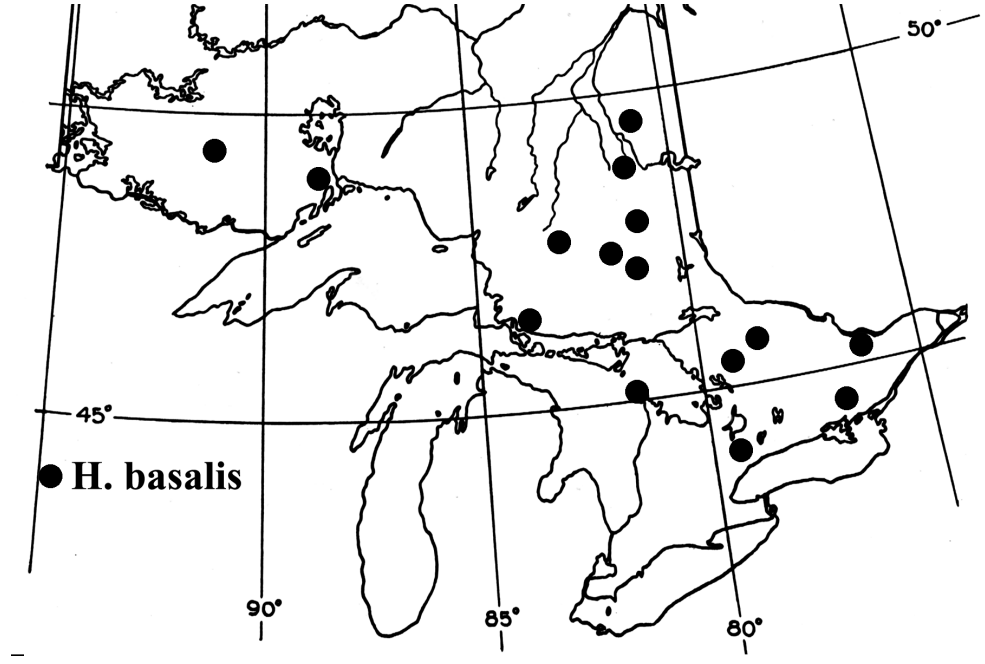

FIGURE 3. Ontario collection localities of *Hylaeus basalis*.

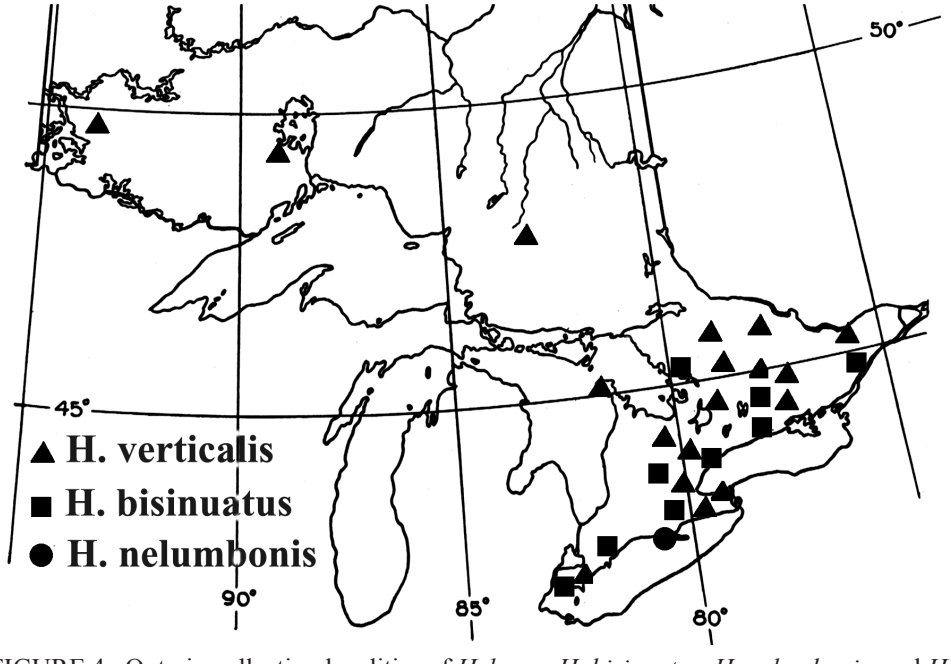

FIGURE 4. Ontario collection localities of *Hylaeus*: *H. bisinuatus*, *H. nelumbonis*, and *H. verticalis*.

Victoria: Norland, 18 July 1961, ♀, PG (DEBU). **Durham:** Kendal, 12 July 1961, ♂, KN (ROME). **Simcoe:** Midland, 9 June 1974, ♂, J. Huber (DEBU). **Bruce:** Dyers Bay, 19 July–17 August 1953, 2♀, PG; 10-28 July 1952, 2♀, PG (DEBU). **York:** Toronto, 11 July 1999, ♂, RM (DEBU). **Peel:** HWY 25 and Burnhamthorpe Road, 2001, 3♂, 4♀, RM, from nests in wood (ROME). **Wellington:** Arkell, 24 June 1952, ♀, PG; Guelph, 14 June 1954, ♀, R. Crawford; 7 August 1994, ♂, A. Rios; 12 July 1978, ♂, D. Morris; 9 June 1976, ♂, C. Miller; 29 June 1965, ♂, ED; 9 July 1961, ♂, S. Canetti (DEBU). **Haldimand:** Cayuga, 25 August 1952, ♂, PG (CNCI). **Lambton:** Sarnia, Clear Water Nature Trail, 12 September 2001, ♀, PA (DEBU). **Kent:** Fargo, 3 July 1959, ♀, ♂, PG (DEBU). **Essex:** Leamington, 18-19 August 1983, 4♂, 2♀, GL; 7 August 1985, ♂, ♀, GL; 17 August 1987, ♀, GL (EDUM). Figure 4.
Localities other than Ontario: British Columbia, Alberta, Manitoba, California (CNCI, DEBU, ROME).

5. *H. fedorica* (Cockrell)
UNITED STATES, North Carolina: Raleigh, 24 April 1954, 2♂, T. B. Mitchell, on *Pyracantha* (NCSU); 25 June 1950, ♀, on *Daucus carrota* (NCSU). **Texas**: Dallas, 17 March 1907, ♂, R. A. Cushman Coll. [*Prosopis grossicornis* Swenk & Cockerell] (UCRC).

6. *H. hyalinatus* Smith
Halton: Oakville, 16 Mile Creek nr Hwy 407, 21 August 2004, ♂, ♀, 25 June 2005, ♂, M. Buck (DEBU). **Essex:** W of Harrow, 28 June 1993, ♂, J. Doherty.

7. *H. mesillae* (Cockerell)
Kenora: Oneside Lake, 25 June–26 August 1960, 3♂, CL (CNCI). **Rainy River:** Rainy River, 5 June–3 August 1960, 7♂, CL; Finland, 11-21 June 1960, 2♂, CL (CNCI). **Thunder Bay:** Schreiber, 16 August 1962, ♀, KN, *Solidago* (DEBU). **Sudbury:** Chapleau, Racine Lake, 6 July 1990, ♂, US, raspberry (DEBU). **Renfrew:** Petawawa, 7 June 1961, ♂, J. Vockeroth (CNCI). **Carleton:** Ottawa, 31 May 1914, ♀, SL; 5 May 1913, ♀, SL; 24 June 1913, ♀, SL (DEBU); 4 June–8 October 1913, 5♂, 6♀, SL; 15 August 1912, ♀; 2 September 1888, ♀; 4 June–7 July 1970, 2♀, N. Mills; 26 July 1955, ♂, P. Taschereau; Constance Bay, 30 June 1959, 2♂, CL; Mer Bleue, 23 June 1952, 3♂, Chevell (CNCI). **Leeds**: Morton, 2 August 1961, ♀, KN, *Apocynum* (DEBU); St. Lawrence N. P., 20 August 1975, 3♂, Sigler (CNCI). **Hastings**: Marmora, 26 May 1952, ♂, R. Lambert (CNCI). **Haliburton**: Dorset, 16 August 1961, ♂, KN (ROME). **Muskoka**: Barrie, 16 July 1961, ♀, KN, *Rhus* (ROME). **Peterborough**: 5 July 1977, ♂, ♀, GL; Serpent Mounds P. P., 8 August 1983, ♂, GL (EDUM). **Victoria**: Coboconk, 14 August 1961, ♀, KN, *Rhus*; Norland, 18 July 1961, ♀, KN, *Solidago* (DEBU). **Northumberland**: Brighton, 13 July 1956, ♂ (CNCI). **Simcoe**: Barrie, 16 July 1961, ♀, KN (ROME). **York**: Toronto, 31 May 1914, ♂; 30 June 1913, ♀, SL; 17 June 1896, ♂; 16-30 July 1893, 2♀; 19 June–2 September 1891, 4♂, 4♀; 13 July 1890, ♀; 9 September 1888, ♂ (CNCI); 1 July 1999, ♂, RM (ROME); 2 August 1991, ♂; 20 June 1892, 2♂; 14 June 1891, ♂; Keswick, 18 June 1976, ♂ (DEBU). **Bruce**: Dyers Bay, 14 August 1952, 2♂, ♀, PG; 7 July 1953, 2♀, PG (DEBU); Kincardine, 28 May 1962, 3♂, KL (CNCI). **Peel**: Forks of the Credit, 14 June–3 September 1968, 1969, 18♂, 44♀, MK, *Melilotus*, *Rhus*, *Prunus* (ROME). **Wellington**: Guelph, 4 August 1979, ♂, D. Murrell; 20

July 1974, ♀, J. Huber; 12 July 1965, ♀, ED; 9 July 1961, ♂, S. Caultti; 26 June 1956, 3♀, PG; Arkell, 28 July 1952, ♂, PG; 23 June 1959, ♀, PG (DEBU). **Halton**: Georgetown, 30 August 1893, ♂ (CNCI). **Huron**: Kinburn, 26 July 1957, ♂, MN (CNCI). **Wentworth**: Spencer Creek, 7 September 2003, ♀, RM (ROME). **Lincoln**: Vineland, 7 June 1928, 2♂ (CNCI); Jordan, 24 August 1961, ♂, G. Brumpton (DEBU). **Waterloo**: Oliver's Marsh [Oliver Bog], 21 August 1987, 2♀, D. Blades (DEBU). **Welland**: Wainfleet Bog, 14 September 1987, ♀, Stirleeng (DEBU). **Brant**: Ohsweken, 19 June 1979, ♂, D. Morris (DEBU). **Haldimand-Norfolk**: Cayuga, 26 June 1911, ♂, PG; Delhi-Simcoe Railway, 27 July 2001, ♀, PA (DEBU). **Kent**: Rondeau P. P., 16 June 1977, ♀, field party (ROME). **Essex**: Kingsville, 17 July 1955, 2♂, KL; Point Pelee, 4 June 1951, ♂; 21 June 1927, ♂, F. Ide (CNCI); Harrow, 6 September 1959, ♀, PG; 22 August 1972, ♀, J. Huber; River Canard, 10 July 1977, ♀, AR; Ojibway, 17 June 1980, ♂, D. Krailo (DEBU); Leamington, 18 August 1983, ♂, GL; 4-7 August 1985, 5♀, 13 ♂, GL; 18 August 1987, 5♂, GL (EDUM). **Locality unknown**: Crinif Bog, 8 May 1987, 2♂, D. Blades; Figure 5.
Localities other than Ontario: North West Territories, British Columbia, Alberta, Saskatchewan, Manitoba, Québec, Wisconsin (CNCI, DEBU).

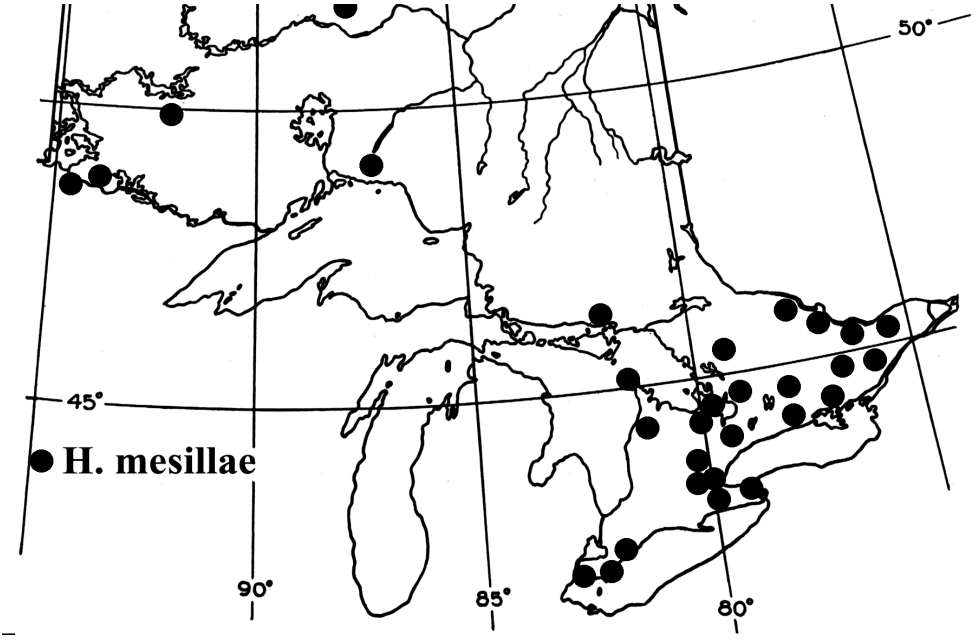

FIGURE 5. Ontario collection localities of *Hylaeus mesillae*.

8. *H. modestus* Say
Kenora: Oneside Lake, 9 July 1960, ♂ (CNCI); Martin, 20 August 1888, ♀; 20 June 1984, ♀ (ROME). **Rainy River**: Minahico, 27 July 1962, ♂, KL (CNCI). **Thunder Bay**: Healy

Falls, 7 July 1987, 2♀, GL (EDUM). **Algoma**: Wawa, 7 August 1992, ♀, D. Bennett; Algoma, 7 August 1977, ♀, Crins (DEBU). **Nipissing**: Opeongo Lake, 25 July 1981, ♀, Brown; Keswil, 5 June 1975, ♂, T. Sawingal (DEBU). **Parry Sound**: Killbear Park, 30 June 1979, ♂, AR; 17-20 August 1978, 2♀, AR; Powassan, 12 July 1978, 2♀, S. Ball; 11 July 1978, ♂, J. Cappleman (DEBU); Port Elwin, 8 June 1955, ♂ (CNCI). **Renfrew:** Hills, 14 July 1978, ♀, M. Lichtenberg (DEBU). **Carleton**: Merivale, 30 July 1958, ♀, M. Prime; Ottawa, 8 September 1913, ♀, SL; 12 June 1914, ♀, SL (DEBU); 22 July 1913, SL (EDUM); 22 July 1955 , ♂, P. Taschereau; 16♂, 29♀; Constance Bay (CNCI); 4 mi E Carp, 10 July 1950, 3♀, W. P. Stephen, *Lonicera* (EDUM). **Glengarry**: Alexandria, 13 July 1978, ♂, E. Fuller (ROME). **Grenville**: Prescott, 29 May–30 July 1977, 2♂, ♀, BR (DEBU). **Leeds**: Morton, 2 August 1961, ♂, KN, *Apocynum* (ROME). **Hastings**: Madoc, 23 July 1947, ♂; Marmora, 5 June 1952, ♂, CL; Trenton, 17 August 2000, 2♂; Belleville, 15 June 1962, ♂, KL; Bancroft, 18 June 1962, ♂, KL (CNCI). **Haliburton**: Haliburton, 11 September 1957, ♀, P. Muller; Dorset, 20 July–16 August 1961, 3♀, KN, *Solidago, Trifolium, Melilotus*; (DEBU). **Muskoka**: Port Sydney, 13 July–1 August 1919, 2♀, BG (ROME). **Peterborough**: Lakefield, August 1983, ♀, GL (EDUM). **Victoria**: Norland, 18 July 1961, 2♀, KN (ROME). **Northumberland**: Crowe Bridge, 18 July 1979, ♀, AR; 17 July 1979, ♀, BL; 18 July 1977, ♀, BL; Healey Falls, 18 July 1979, ♀, B. Wit (DEBU). **Simcoe**: Orillia, 25 July 1924, ♂, H. Viereck, (CNCI); Midland, 26 June 1970, ♀, J. Huber (DEBU). **York**: Oakwood, 18 July 1961, ♀, KN, *Melilotus*; Toronto, 1 July–18 August 1999, 2♂, 3♀, RM, *Vicia*; 27 June 1965, 2♀, KN (ROME); 16♂, 25♀ (CNCI); Leaside, 4 August 1961, 2♀, G. Brumpton (DEBU); ♀, KN, *Trifolium*; Hope, 15 June 1929, ♂, M. Dennis (ROME). **Bruce**: Tobermory, 6 August 1977, 2♀, D. Maddison; Bruce Peninsula, 10 July 1960, 2♀, KN, *Rhus* (ROME); 8 June 2000, ♀, C. Onodera; Sauble Beach, 9 July 1981, 8♀, G. Aiudi, Kircher (DEBU); Hepworth. **Grey**: Owen Sound, 4 July 1979, ♂, B. Wit; 21 August 1976, ♀, P. Heels (DEBU). **Peel**: Forks of the Credit, 2 July–21 August 1969, ♂, 233♀, MK; 14 June–23 July 1968, 35♂, 4♀, MK, *Melilotus;* 28 June 1965, 3♂, 11♀, KN (ROME); 26 June 1973, ♂, PG (DEBU); Terra Cotta, 25 July 1999, 6♂, 7♀, RM (ROME). **Wellington**: Ariss, 27 May 1962, ♂, KL; Niagara Falls, 8 June 1962, ♂, KL (CNCI); Belwood, 5-30 July 1972, ♂, ♀, PG; 5-16 July 1973, ♂, 5♀, PG; 19 June 1982, 2♂, PG; Arkell, 14 June 1973, ♂, PG; 26 May 1977, ♂, BR (DEBU); Guelph, 31 May 1962, ♂, 2♀, *Cornus*, *Helianthus* (ROME); 18 August 1964, ♀, B. Wyatt; 16 June–September 1994, 3♀, Brewen; 8 June 1991, ♀, M. Castillo; 22 July 1979, 2♀, J. Corrigan; 30 August 1978, ♀, Kreuzer; 5 July 1977, 2♀, AR; 23 July–23 August 1977, 2♂, BR; 12 July 1974, ♂, J. Huber; 27 June 1974, ♂, Kigatiira; 22 July 1974, 3♀, Eden; 19 August 1973, ♂, Smith; 4 July 1956, ♀, PG; Rockwood, 12 June 1981, ♂, Kircher (DEBU). **Halton**: Speyside, 12 September 1999, 4♂, 4♀, PM; Hilton Falls, 16 July 1999, 2♀, RM (ROME); Oakville, 31 July 1976, ♀, AR; Milton, 9 June–6 July 1978, 3♀, Heraty; 27 June 1979, 3♂, J. Huber; Halton, 6 July 1978, ♂, ♀, J. Cappleman; Campbellville, 10 June 1977, ♂, BR (DEBU). **Huron**: Maitland, 20 July 1977, 5♀ (ROME). **Perth**: Listowel, 27 May 1965, ♂, KL (CNCI). **Waterloo**: Hespeler, 18 June 1962, ♂, KL (CNCI). **Wentworth**: Ancaster, 24 June 1955, ♂, O. Peck (CNCI); Stoney Creek, 12 July 1980, ♀, R. Thomson; Dundas, 11 June 1980, 5♂, C. Bolter; Spencer Gorge, 18 August 1993, ♀; Hamilton, 3 July 1979, ♂, S. Beierl; 27 June 1980, ♂, S. Beierl (DEBU). **Lincoln**: Jordan, ♂; Vineland, 7 June 1979, ♂, BL; 14 June 1977, 2♀, BR; Grimsby, 19 June 1979, ♀, BL; 21 June 1978, ♂,

M. Lichtenberg; 19 June 1978, ♀, BL; 14 June 1977, ♀, AT (DEBU). **Welland**: Thorold, 1 July 1984, 3♀, Gilberg (DEBU). **Brant**: Brantford, 24 August 2001, ♂ PA (DEBU). **Haldimand**: Dunnville, 3 August 1962, ♂, KL; Peacock Point, 3 September 1954, ♂, C. Miller; Dunn Twp, 9 August 1990, ♀ (CNCI). **Middlesex**: Komoka, Feed Mill Prairie, 27 July–13 August 2001, ♂, PA (DEBU). **Elgin**: St. Thomas, 19 July 1955, ♂ (CNCI); Orwell, 14 June 1978, ♂, M. Lichtenberg (DEBU). **Norfolk**: St. Williams, 27 May–3 June 2000, 7♂, BK; 7 September 2001, ♀, BK; Delhi-Simcoe Railway, 27 July 2001, ♂, PA (DEBU). **Kent**: Rondeau Park, 21 June 1977, 2♂, 2♀, D. Maddison (ROME); 10 July 1960, ♂, CL; Chatham, 23 August 1913, ♂, SL; Bothwell, 4 July 1962, ♂, CL (CNCI). **Essex**: Point Pelee, 31 July 1960, 2♂, ♀, KN; 30 June 1920, ♂, BG (ROME); 1 June 1982, ♂, C. Hare; 13 June 1979, ♂, D. Morris; Windsor, Ojibway Prairie, 5 June–3 July 2001, 3♀, PA (DEBU); Kingsville, 23 May 1962, ♂, KL (CNCI); 8 July 1977, ♀, Innes; 8 June–8 July 1977, 2♂, 4♀, BR; 8 July 1977, 5♀, AR (DEBU); Leamington, 19 August 1983, 11♂, 11♀, GL; 4-7 August 1985, 10♂, 10♀, GL; Weatley, 15 August 1982, ♂, ♀, GL; 19 August 1987, 2♀, GL (EDUM). **Ontario**: Port Perry, 1 August 1934, ♀, F. Urguhart (ROME). **Locality unknown**: Lake Superior, 29 June 1961, ♀, KN, *Rubus* (ROME). Figure 6.
Localities other than Ontario: Alaska, North West Territories, British Colombia, Saskatchewan, Manitoba, Québec, New Brunswick, Nova Scotia (CNCI, DEBU, ROME).

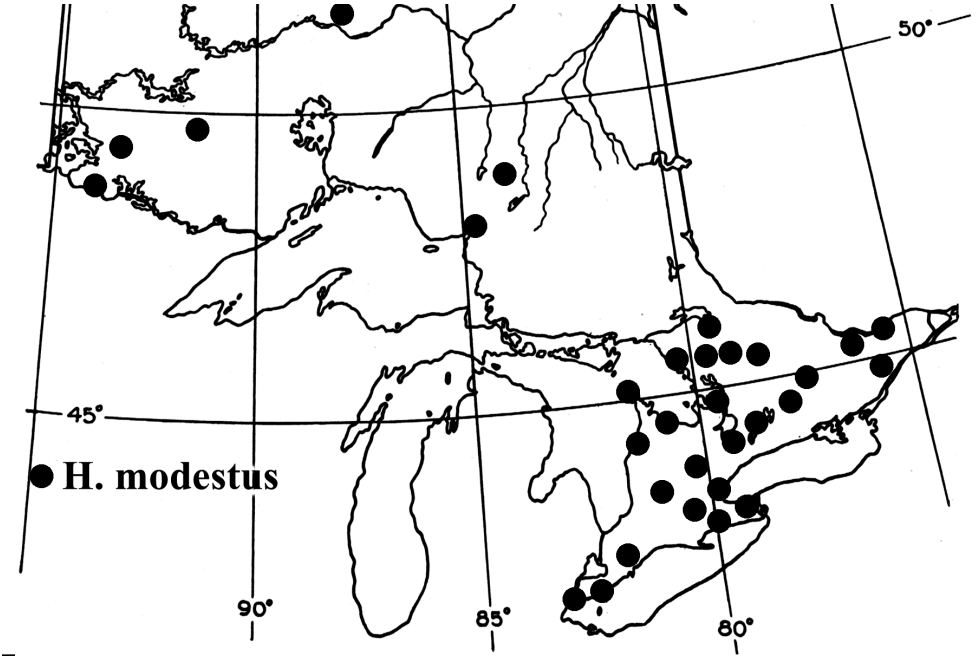

FIGURE 6. Ontario collection localities of *Hylaeus modestus*.

9. **H. nelumbonis* Robertson
Norfolk: Long Point, 199?, 7♀, ♂ (Dr. L. Packer's Collection). Figure 4.
Localities other than Ontario: **UNITED STATES, Ohio:** Put-in-Bay, S. Bass Isl., 11 July

1920, ♀, ♂, C. H. Kennedy Coll. (UCRC); North Carolina: Wenona, 27 May 1925, ♀, T. B. Mitchell (NCSU). **Louisiana:** opp Orange, Sabine R. Ferry, 20 June 1917, ♂ (NCSU); New Orleans, 13 March 1955, ♀, ♂, R. R. Dreisbach [Homotype: *Prosopis nelumbonis* Robertson].

10. *H. rudbeckiae* (Cockerell & Casad)
UNITED STATES, California: Riverside, 2 September 1935, ♀, Timberlake Coll. (UCRC)

11. *H. saniculae* (Robertson)
UNITED STATES, Tennessee: Gatlinburg, Sm. Mt. N. P., 25 June 1947, ♂, T. B. Mitchell [Homotype: *Prosopis saniculae* Robertson] (NCSU). **Michigan:** Mecosta Co., 25 July 1951, ♀, R. R. Dreisbach (NCSU); Alcona Co., 27 July 1946, ♀, R. R. Dreisbach (NCSU).

12. *H. sparsus* (Cresson)
UNITED STATES, North Carolina: Mt. Pisgah, 23 June 1934, 2♀, T. B. Mitchell (Homotype: *Prosopis thaspii* Robertson; Homotype: *Prosopis sparsa* Cresson] (NCSU).

13. *H. verticalis* (Cresson)
Kenora: Black Sturgeon Lake, 4-8 July 1962, ♂ and 81♀; Oneside Lake, 2 June 1960, ♂, CL (CNCI). **Sudbury**: Chapleau, Racine Lake, ♂, US (DEBU). **Carleton**: Ottawa, 3 June 1986, ♂, H. Goulet; 11-20 June 1913, 9♂, SL (CNCI); 18-20 June 1913, ♂, ♀, SL; 7 June 1914, ♀, SL (EDUM). **Hastings**: Trenton, 31 May 1896, ♂, Evans (DEBU). **Haliburton**: Minden, 11 September 1957, ♀, McMullen; Algonquin Park, 22 August 1993, ♀, C. Jons (DEBU). **Northumberland:** Hastings, 1895, ♂, Evans; Alderville, First Nations Prairie, 1 September 2001, ♀, PA (DEBU). **Prince Edward:** Picton, Smith Bay [Smith's Bay], 1 July 1970, ♂, J. MacAlpine (CNCI). **Bruce**: Dyers Bay, 19 July–19 August 1953, 5♀, PG (DEBU); Bruce Peninsula, 10 July 1960, ♀ (ROME). **Peel**: Caledon East, 28 June 1980, ♂, C. Beierl (DEBU). **Wellington**: Bellwood, 13 July 1965, ♀, ED; Arkell, 2 June 1952, ♂, PG; Guelph, 10 August 1951, ♀, PG (DEBU). **Halton:** Halton Lake, 2001, RM (ROME), from nests in wood, 3♂. **Lincoln:** Jordan, 21 June 1919, ♂, C. Cunra (CNCI). **Essex**: Leamington, 4 August 1985, ♀, GL (EDUM); Windsor, Ojibway Prairie, 31 July–3 August 2001, ♂, PA (DEBU). **Locality unknown:** Ontario, 26 June 1886, ♂ (DEBU). Figure 6.
Localities other than Ontario: British Columbia, Alberta, Saskatchewan, Manitoba, Québec, New Foundland (CNCI).

Acknowledgments

I am thankful to D. Currie, C. Darling, and B. Hubley (Royal Ontario Museum), S. Marshall and M. Buck (University of Guelph), J. Huber (Canadian National Collection), and L. Packer (York University), who made the collections under their care available to me and who were very supportive during my work on this paper. My thanks are also extended to R. Roughley (University of Manitoba), D. Yanega (University of California, Riverside), and R. Blinn (North Carolina State University) for providing specimens from collections

at their respective institutions. Special gratitude goes to J. Huber, H. Frania, M. Buck, and anonymous peer reviewers for their thorough reading of the manuscript and valuable comments, and to L. Packer and J. Grixti (York University) who kindly agreed to test the keys and also provided important comments. I am very thankful to M. Buck for allowing me use his yet unpublished locality information on *H. hyalinatus*. I am thankful to the members of the Board of Directors for providing me with assistance for this publication. My deep appreciatation goes to my husband, Alexander, for his enthusiasm in exploring Ontario bees.

References

Ascher, J. S. 2001. *Hylaeus hyalinatus Smith,* a European bee new to North America, with notes on other adventive bees (Hymenoptera: Apoidea). Proceedings of the Entomological Society of Washington 103(1): 184–190.

Buck, M., S. Paiero, and S. Marshall. 2005. New records of native and introduced Aculeate Hymenoptera from Ontario, with keys to Eastern Canadian species of *Cerceris* (Crabronidae) and eastern Nearctic species of *Chelostoma* (Megachilidae). Journal of the Entomological Society of Ontario 136: 37–52.

Dathe, H. H. 1994. Studien zur Systematik und Taxonomie der Gattung *Hylaeus* F. (Apidae, Colletidae). 1. *Hylaeus annulatus* (L.) eine holarktische, *Hylaeus aborigensis* sp. n. eine neue sibirische Art. Beitrage zur Entomologie 44: 441–445.

Fye, R. E. 1965. Biology of Apoidea taken in trap nests in Northwestern Ontario (Hymenoptera). Canadian Entomologist (97): 863–877.

Hurd, P. D. 1979. Superfamily Apoidea, pp. 1741–2209 *In* Catalog of Hymenoptera in America North of Mexico. Vol. 2. K. V. Krombein, P. D. Hurd, Jr., D. R. Smith, and B. D. Burks (eds.), Washington: Smithsonian Institution Press.

Krombein, K. V. 1967. Trap-nesting wasps and bees: Life histories, nests and associates. Washington: Smithsonian Press. 570 pp.

MacKay, P. A., Knerer, G. 1979. Seasonal occurrence and abundance in a community of wild bees from an old field habitat in Southern Ontario. Canadian Entomologist 111(3): 367–376.

Metz, C. W. 1911. A revision of the genus *Prosopis* in North America. Transactions of the American Entomological Society 37: 85–156.

Michener, C. D. 1944. Comparative external morphology, phylogeny, and a classification of the bees (Hymenoptera). Bulletin of the American Museum of Natural History 82: 151–326.

Michener, C. D. 2000. The Bees of the World. Baltimore & London: Johns Hopkins University Press. 913 pp.

Mitchell, T. B. 1960. Bees of the eastern United States, 1. North Carolina Agricultural Experiment Station Technical Bulletin No.141: 1–538.

Osychnyuk, A. Z., D. V. Panfilov, and A. A. Ponomareva. 1978. Apoidea, pp. 279–519 *In* Species of Insects of the European Region of the USSR. Vol. 3, Hymenoptera. V. I. Tobias (ed.), Leningrad: Zoological Institute, Academy of Sciences of the USSR. [In Russian].

Romankova, T. 2003. Bees of the genus *Colletes* of Ontario (Hymenoptera, Apoidea, Colletidae). Journal of the Entomological Society of Ontario 134: 91–106.

Snelling, R. R. 1966a. Studies on North American bees of the genus *Hylaeus*, 1. Distribution of the western species of the subgenus *Prosopis* with description of new forms. Contribution in Science, Los Angeles County Museum of Natural History No. 98: 1–18.

Snelling, R. R. 1966b. Studies on North American bees of the genus *Hylaeus*, 2. Description of a new subgenus and species. Proceeding of the Biological Society of Washington 79: 139–144.

Snelling, R. R.1968. Studies on North American bees of the genus *Hylaeus,* 4. The subgenera *Cephalylaeus, Metziella* and *Hylaeana* (Hymenoptera: Colletidae). Contribution in Science, Los Angeles County Museum of Natural History 144: 1–6.

Snelling R. R. 1970. Studies on North American bees of the genus *Hylaeus*, 5. The subgenera *Hylaeus* s. str. and *Paraprosopis*. Contribution in Science, Los Angeles County Museum of Natural History 180: 1–59.

Usui, M. 1994. The pollination and fruit production of plants in the boreal forest of Northern Ontario with special reference to blueberries and native bees. M. Sc. Thesis, University of Guelph, Guelph, ON. 278 pp.