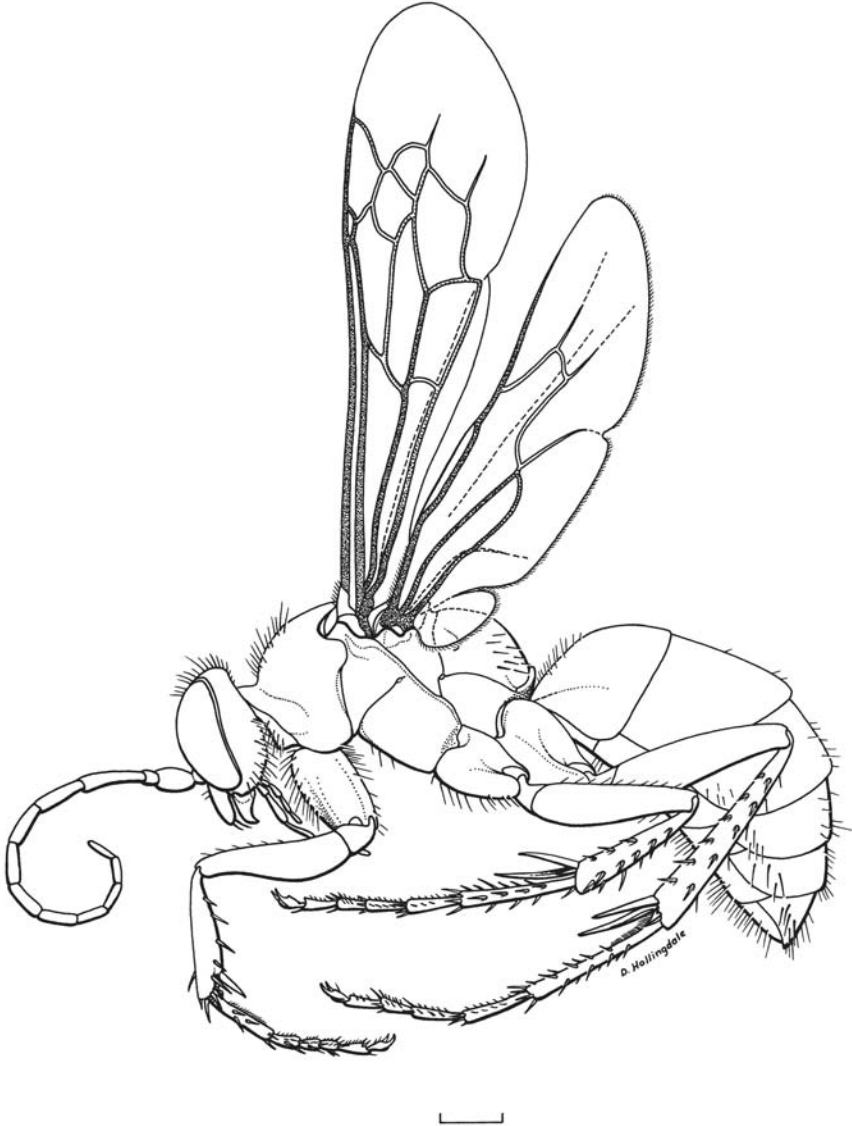


Aculeate wasps of the Yukon



FRONTISPIECE. Female of *Anoplius (Arachnoproctonus) tenebrosus* (Cresson), a spider wasp (Pompilidae) that is one of the largest and most frequently collected species of the Yukon aculeate fauna. Scale line 1 mm.

Aculeate Wasps (Hymenoptera: Aculeata) of the Yukon, Other than Formicidae

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Abstract. The aculeate wasp fauna of the Yukon (except Formicidae) contains 153 species and is estimated to be over 80% known. This study documents species of the following families: Bethyridae, Chrysididae, Dryinidae and Emblemidae in the superfamily Chrysoidea; Sierolomorphidae, Sapygidae, Vespidae and Pompilidae in the Vespoidea; and Sphecidae in the Apoidea. About one third of the fauna, 49 species, have disjunct distributions with populations occurring in the Yukon as outliers of more southern ranges. These species are suggested to have colonized the Yukon during the Hypsithermal Interval, 11 to 9 thousand years before present: their populations remain today at lower elevations on south- and southwest-facing slopes of river valleys.

The fauna is southern, composed of predominantly transcontinental species, but significant Holarctic and western elements are represented. There is no conclusive evidence, in aculeate wasps, supporting the survival of these species through the Wisconsinan glaciation in a Beringian refugium. Only one species appears to belong to this category. A number of Yukon species have disjunct distributions which may have resulted from northward faunal shifts during the Hypsithermal Interval.

Regional species richness appears to be related to the physiographic conditions of elevation and aspect. Species richness in aculeate wasps attenuates abruptly with elevation while south-facing slopes receive increased solar radiation and harbour more diverse faunas. Three ecoregions, Yukon Southern Lakes, Yukon Plateau-North and Old Crow Flats, are particularly rich in aculeate fauna. The ratio of ground-nesting to aerial-nesting species in the Yukon is very close to that of the continent, indicating that long cold winters are not a deterrent to aerial-nesting species in northern zones. The Yukon fauna shows an unusually high proportion of cleptoparasitic species but a proportion that may not be significantly different from other western areas in North America. Finally, Yukon aculeate wasps show preferences for feeding on spiders, Homoptera, Diptera and other Hymenoptera.

Résumé. *Les guêpes aculéates (Hymenoptera: Aculeata) du Yukon, à l'exception des Formicidae.* La faune connue des guêpes aculéates du Yukon (à l'exception des Formicidae) compte 153 espèces, ce qui constitue probablement 80% des espèces présentes. On trouvera ici des données sur les familles suivantes: les Bethyridae, les Chrysididae, les Dryinidae et les Emblemidae dans la superfamille des Chrysoidea, les Sierolomorphidae, les Sapygidae, les Vespidae et les Pompilidae chez les Vespoidea et les Sphecidae chez les Apoidea. Environ le tiers des espèces (49) ont des répartitions discontinues et les populations du Yukon représentent des additions à des répartitions plus australes. Ces espèces ont probablement colonisé le Yukon au cours de l'Hypsithermique, 11 000 à 9 000 ans avant notre ère; leurs populations se retrouvent aujourd'hui à des altitudes faibles, sur les pentes sud et sud-ouest des vallées.

La faune du Yukon est une faune australe, composée surtout d'espèces transcontinentales, mais comptant aussi des éléments holarctiques et occidentaux importants. Il n'existe aucune confirmation qui nous permette d'affirmer que ces espèces d'aculéates ont survécu aux glaciations du Wisconsinien dans un refuge béringien. Une seule espèce semble appartenir à cette catégorie. Plusieurs des espèces du Yukon ont des répartitions discontinues qui peuvent avoir résulté de déplacements vers le nord durant l'Hypsithermique.

La richesse en espèces à des endroits en particulier semble reliée à des conditions physiographiques, altitude et relief. Chez les aculéates, la richesse en espèces diminue abruptement en fonction inverse de l'altitude, mais les pentes qui font face au sud reçoivent des radiations solaires plus importantes et on y retrouve des faunes plus diversifiées. Trois écorégions du Yukon sont particulièrement riches en aculéates, Lacs du Sud du Yukon, Nord du Plateau du Yukon, et Plaines Old Crow. Le rapport entre le nombre d'espèces qui nichent au sol et le nombre d'espèces qui nichent au-dessus du sol au Yukon se rapproche beaucoup de celui du continent, ce qui semble indiquer que les hivers longs et froids n'empêchent pas les espèces de nicher au-dessus du sol dans les zones nordiques. La faune du Yukon compte une proportion remarquablement importante d'espèces cleptoparasites, proportion qui ne diffère peut-être pas significativement de celle qui prévaut en d'autres régions occidentales d'Amérique du Nord. Les guêpes aculéates du Yukon ont tendance à se nourrir surtout d'araignées, d'homoptères, de diptères et d'autres hyménoptères.

Introduction

The Aculeata, one of the 3 major divisions of Hymenoptera, includes stinging wasps and bees. This study deals with the Yukon species of the superfamilies Chrysidoidea, Vespoidea (except Formicidae) and Apoidea (except the bees). The classification used here follows that presented by Goulet and Huber (1993) except that the Spheciformes (Apoidea) are here treated as a single family, Sphecidae. Species of the following families were encountered: Chrysidoidea: Bethyridae, Chrysididae, Dryinidae and Embolemidae; Vespoidea: Sierolomorphidae, Sapygidae, Vespidae and Pompilidae; and Apoidea: Sphecidae. The following article provides an annotated list and summary of these groups in the Yukon fauna and discusses their faunal relationships, trophic levels, nest-site preferences and host preferences.

The Aculeata

The Aculeata or stinging wasps and bees (aculeate wasps = Aculeata minus the bees) includes an estimated 92 000 species worldwide, distributed on all continents except Antarctica. Diversity in the Aculeata is primarily tropical with attenuation of species numbers as elevation or latitude increases. Although representatives of all 3 superfamilies, Chrysidoidea, Vespoidea and Apoidea, occur in Canada, they amount to about 2% of the estimated world fauna and demonstrate the attenuation of species diversity associated with higher latitudes.

Species in the Aculeata are united by the apotypic feature of an ovipositor modified to transmit venom rather than functioning as an egg-positioning device (Gauld and Bolton 1988). They exhibit an array of behaviour and life history that is perhaps more remarkable than that encountered in any other group of Hymenoptera. Life-history strategies range from that of parasitoid to cleptoparasitic, predatory, and pollen-feeding and encompass solitary, subsocial and social behaviour. Parasitoids are insects in which the larval stage develops by feeding on or within an arthropod host; the host is almost invariably killed. In the Hymenoptera there are two primary parasitoid strategies termed idiobiont and koinobiont, the former arresting host development upon parasitism, the latter allowing host development to continue for some time after parasitism (Gauld and Bolton 1988). Predators, most aculeate wasps, are extreme examples of idiobiont ectoparasitoids where one or more prey individuals are provisioned for larval development. Cleptoparasites are insects in which the larvae develop by feeding on provisions sequestered for the development of larvae of another insect species. Pollen-feeding in the Yukon aculeate fauna is confined to the bees.

Predatory aculeate wasps nest in a number of different substrates including sand, soil, gravel, decaying wood, stems, twigs, and galls, or they construct mud or paper nests. Pre-existing cavities in any of the preceding substrates, including abandoned insect borings in wood or abandoned mud nests, may also be used as nest sites. Because detailed nest-site data are available for only a few Yukon species nest types have been amalgamated into 3 broad categories: ground nests; nests in decaying wood; and aerial nests. In northern habitats the difference between a north-facing and a south-facing slope may also be important in nest-site selection because of the greater amount of solar radiation received by south-facing slopes. Unfortunately there are not enough observations of the Yukon species to consider this factor.

Materials and Methods

Comprehensive studies on the aculeate wasp fauna of the Yukon are few. Most studies treat the Yukon fauna only incidentally, as part of Nearctic generic revisions, but 5 studies are significant. Evans (1950, 1951*a*, 1951*b*), in a revision of the North American Pompilini (Pompilidae), reported 14 Yukon species represented by 53 specimens. Steiner (1970), in a paper on the Northwest Territories and Yukon fauna, reported collection of 6 species represented by 13 specimens which he combined with Evans' records for a total Yukon pompilid fauna of 14 species and 66 specimens. Steiner (1973) also reported 7 species of sphecid wasps represented by 26 Yukon specimens. The present study presents the results of the examination of 1421 specimens representing 153 species in the Yukon.

Specimens used in this study were obtained from collections housed at 3 museums, the Crop Protection Program (formerly Biological Resources Division) of the Eastern Cereal and Oilseed Research Centre, Agriculture and Agri-Food Canada, Ottawa (CNCI); the Provincial Museum of Alberta, Edmonton (PMAE); and the Spencer Entomological Museum, University of British Columbia, Vancouver (SMDV). In some instances the specimens examined were those used by other authors in publishing Yukon records; in a few instances the Yukon distribution was obtained solely from literature records. In either instance the references are cited.

The ecozones and ecoregions of the Ecological Stratification Working Group (1996) have been used to discuss the Yukon fauna. The Yukon spans 5 ecozones containing 23 ecoregions. The ecozones in the Yukon from north to south with number of ecoregions in parentheses are: Southern Arctic (1), Taiga Cordillera (7), Taiga Plains (3), Boreal Cordillera (11), and Pacific Maritime (1).

Annotated List of the Aculeate Wasps of the Yukon

The list is arranged in 3 sections corresponding to the superfamilies Chrysoidea, Vespoidea and Apoidea. Each species is numbered for reference; an asterisk (*) following the species name indicates a new Yukon record. The number of specimens examined from localities in this study is indicated in brackets after each species. Sections under each species include general distribution by province and state or life zone (i.e., arctic, boreal, transition, austral); Yukon distribution records arranged by ecozone, ecoregion (italicized) and locality; Northwest Territories and Alaskan distribution when known, by collection locality; and biology. The information on biology includes a one-word statement on trophic level (predator, parasitoid, etc.) either actual or inferred, nesting preference either actual or inferred, and a list of host families, when known.

Superfamily Chrysoidea

The superfamily Chrysoidea is a primarily tropical group of 7 families containing an estimated 16 000 species (Finnermore and Brothers 1993). Four families (Bethyidae, Chrysididae, Dryinidae and Embolemidae) and about 150 species are represented in Canada. These families and 31 species are present in the Yukon. Members of this superfamily are parasitoids or cleptoparasites on other insects.

Family Bethyidae

The Bethyidae with an estimated 6500 species is the least known and perhaps the largest family in the Chrysoidea. Like most other families in the Chrysoidea most species are tropical. The Canadian fauna consists of 20 species distributed, for the most part, across the

south of the country. Bethyliids are parasitoids of coleopterous or lepidopterous larvae usually in cryptic situations like soil, wood, stems or leaf mines. The female stings and paralyzes the host larva before laying several eggs on it.

Subfamily Bethylinae

1. *Bethylus decipiens* (Provancher)* [4]

Northern Nearctic

Distribution: Alaska south to central California, east to New York, Maine, Nova Scotia and Newfoundland.

Yukon records: Taiga Cordillera ecozone: *Old Crow Flats*: Old Crow 67°34'N 139°41'W.

Alaska records: Chicken, 30 km S on Taylor Hwy.

Biological information: Parasitoid. Host Lepidoptera: Tortricidae (Evans 1978).

Family Chrysididae

The Chrysididae reach their greatest diversity in xeric ecosystems (Bohart and Kimsey 1982). The described world fauna (about 3000 species) is distributed among 4 subfamilies, one of which occurs in the Yukon. The 60 species found in Canada are for the most part restricted to the extreme south although this study reports 23 species from the Yukon. Canadian species exhibit a wide range of behaviour; most species are cleptoparasites on other solitary aculeate wasps and bees. Other species are parasitoids on tenthredinoid sawfly larvae and at least one species in southern Canada is a parasitoid attacking the eggs of stick insects.

Subfamily Chrysidinae

2. *Omalus (Omalus) aeneus* (Fabricius) [9]

Holarctic

Distribution: Yukon, transcontinental in North America south to New Mexico, Arizona and Georgia; Eurasia.

Yukon records: Taiga Cordillera ecozone: *Old Crow Flats*: Old Crow, Rampart House (Bohart and Kimsey 1982). Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Carcross (sand dunes); *St. Elias Mountains*: Kluane National Park: Sheep Mountain; *Yukon Plateau-North*: Mayo, McQuesten, Ross R.

Biological information: Cleptoparasite. Host Hymenoptera: Pemphredoninae.

3. *Omalus (Pseudomalus) janus* (Haldeman)* [2]

Southern Nearctic

Distribution: Yukon, transcontinental in southern Canada south to California, Arizona and North Carolina.

Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Carcross (sand dunes); *Yukon Plateau-North*: Mayo.

Biological information: Cleptoparasite. Host Hymenoptera: Pemphredoninae (Bohart and Kimsey 1982).

4. *Omalus (Pseudomalus) purpuratus* (Provancher) [3]

Nearctic

Distribution: Yukon, transcontinental south to California, Arizona and Georgia.

Yukon records: Taiga Cordillera ecozone: *Eagle Plains*: Ogilvie R. (km 200 Dempster Hwy.). Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Carcross (sand dunes); *Ruby Ranges*: Haines Jct.; *Yukon Southern Lakes*: Whitehorse (Bohart and Kimsey 1982).

Biological information: Cleptoparasite. Host Hymenoptera: Pemphredoninae.

5. *Omalus (Diplorrhous) downeyi* Bohart and Campos* [1]

Cordilleran Nearctic

Distribution: Western. Yukon, Oregon, California and Nevada.

Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Carcross (sand dunes).

Biological information: Cleptoparasite. Host unknown.

6. *Omalus (Diplorrhous) plicatus* (Aaron) [5]

Northern Nearctic

Distribution: Boreal, Alaska and Yukon south to California, New Mexico, Minnesota, Michigan and New York. Bohart and Kimsey (1982) reported this species from the Yukon but did not give any localities.

Yukon records: Boreal Cordillera ecozone: *St. Elias Mountains:* Kluane National Park: Christmas Bay, Sheep Mountain; *Yukon Plateau-North:* 10 km E McQuesten, Ross R.

Biological information: Cleptoparasite. Host unknown.

7. *Omalus (Diplorrhos) variatus* (Aaron)* [11] Western Nearctic

Distribution: Alaska, Yukon and Northwest Territories to California and New Mexico.

Yukon records: Boreal Cordillera ecozone: *St. Elias Mountains:* Kluane National Park: Sheep Mountain; *Ruby Ranges:* Burwash Landing; *Yukon Plateau-North:* Ross R., 8 km S Ross R. on Campbell Hwy. 61°55'N 132°28'W, Tenas Cr. 5 km E on North Canol Rd. 62°02'N 132°14'W.

Biological information: Cleptoparasite. Host Hymenoptera: Pemphredoninae (Bohart and Kimsey 1982).

8. *Elampus marginatus* (Patton) [35] Nearctic

Distribution: Transcontinental, Yukon south to Mexico.

Yukon records: Taiga Cordillera ecozone: *Mackenzie Mountains:* km 42 Dempster Hwy. Boreal Cordillera ecozone: *Klondike Plateau:* Dawson km 690 Klondike Hwy.; *Ruby Ranges:* Haines Jct., Slims R. delta; *Yukon Plateau-Central:* Carmacks, 50 km W McQuesten, near Minto 62°35'N 136°50'W, Pelly Crossing, von Wilczek Lks.; *Yukon Plateau-North:* Mayo, 10 km E McQuesten, 33 km NW McQuesten, Moose Cr. 63°31'N 137°01'W, Stewart Crossing, 6 km E Stewart Crossing; *Yukon Southern Lakes:* Canyon, Whitehorse, Wolf Cr. *Unplaced:* Alaska Hwy. km 1626, Grand Forks (Bonanza Cr.), Pine L.

Biological information: Cleptoparasite. Host unknown.

9. *Hedychridium fletcheri* Bodenstein* [5] Western Nearctic

Distribution: Western, with a few eastern records. Yukon, Saskatchewan and British Columbia east to Indiana, Alabama and Florida, and south to Mexico.

Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus:* Carcross; *St. Elias Mountains:* Kluane National Park: Sheep Creek Rd.; *Yukon Southern Lakes:* Aishihik R. 14 km N Canyon 60°59'N 137°02'W, Whitehorse, Wolf Cr.

Biological information: Cleptoparasite. Host Hymenoptera: Crabroninae (Kurczewski 1967).

10. *Hedychridium menkei* Bohart* [1] Western Nearctic

Distribution: Yukon and British Columbia south to California, Arizona and Colorado.

Yukon record: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus:* Carcross (sand dunes).

Biological information: Cleptoparasite. Host unknown.

11. *Hedychridium near politum* Bohart* [2] Western Nearctic

Distribution: *H. politum* is western, found from Yukon and British Columbia south to Utah, Colorado and California.

Yukon record: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus:* Carcross (sand dunes).

Biological information: Cleptoparasite. Host unknown.

12. *Hedychrum parvum* Aaron* [42] Northern Nearctic

Distribution: Transcontinental in northern United States, Yukon, Northwest Territories, British Columbia, Alberta and Manitoba.

Yukon records: Boreal Cordillera ecozone: *Klondike Plateau:* Dawson (midnight dome); *Yukon Plateau-Central:* 30 km E Carmacks 62°02'N 135°51'W, Tatchun Cr. 62°17'N 136°17'W; *Yukon Plateau-North:* Mayo, Mayo campground, 10 km E McQuesten, McQuesten R., Moose Cr. campground, Ross R. 9 km S on Campbell Hwy. 61°54'N 132°25'W; *Yukon Southern Lakes:* Aishihik R. 14 km N Canyon 60°59'N 137°02'W, Champagne, Whitehorse.

Biological information: Cleptoparasite. Host Hymenoptera: Philanthinae (Bohart and Kimsey 1982).

13. *Chrysis cembraicola* Krombein [3] Nearctic

Distribution: Yukon, transcontinental in Canada and United States.

Yukon records: Taiga Cordillera ecozone: *British-Richardson Mountains:* Erebia Cr. 67°58'N 136°26'W in White Mountains; *Old Crow Flats:* Old Crow; *Selwyn Mountains:* Nahanni Range Rd. km 128 61°38'N 128°20'W.

Biological information: Cleptoparasite. Host Hymenoptera: Vespidae.

14. *Chrysis coeruleans* Fabricius* [28] Nearctic
Distribution: Yukon and transcontinental. Krombein et al. (1979) reported this species widely distributed in southern Canada and the United States.
Yukon records: Taiga Cordillera ecozone: *Old Crow Flats*: Old Crow, 6 km E Old Crow 67°34'N 139°41'W. Boreal Cordillera ecozone: *Ruby Ranges*: Haines Jct., 13 km N Hopkins L. 61°23'N 137°00'W on Aishihik L. Rd., Kluane L. Alaska Hwy. km 1686; *St. Elias Mountains*: Kluane National Park: Sheep Cr., Sheep Mountain; *Yukon Southern Lakes*: Aishihik R. 14 km N canyon 60°59'N 137°02'W.
Biological information: Cleptoparasite. Host Hymenoptera: Vespidae.
15. *Chrysis dorsalis* Aaron* [2] Southern Nearctic
Distribution: Yukon, transcontinental in southern Canada and the United States.
Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Carcross (sand dunes).
Northwest Territories record: Fort Smith (Bohart and Kimsey 1982).
Biological information: Cleptoparasite. Host Hymenoptera: Mutillidae: *Photopsis orestes* (Fox) cocoon within cocoon of Megachilidae: *Anthidium collectum* Huard. Bohart and Kimsey (1982) provide further comment on this host record.
16. *Chrysis florissanticola* Rohwer [1] Western Nearctic
Distribution: Alaska, Yukon, Alberta, west of 100th meridian in United States and North Dakota.
Yukon records: Boreal Cordillera ecozone: *Yukon Southern Lakes*: Whitehorse (also Bohart and Kimsey 1982).
Biological information: Cleptoparasite. Host Hymenoptera: Megachilidae.
17. *Chrysis montana* Aaron* [2] Western Nearctic
Distribution: Yukon and United States west of Mississippi R.
Yukon record: Taiga Cordillera ecozone: *Old Crow Flats*: Old Crow.
Biological information: Cleptoparasite. Host unknown.
18. *Chrysis pattoni* Aaron* [1] Western Nearctic
Distribution: Western, Yukon, British Columbia and Saskatchewan as well as a few eastern records and the United States.
Yukon records: Boreal Cordillera ecozone: *Klondike Plateau*: Dawson (midnight dome).
Biological information: Cleptoparasite. Host Hymenoptera: Vespidae (Bohart and Kimsey 1982).
19. *Chrysis provancheri* Schulz [5] Nearctic
Distribution: Transcontinental in southern Canada, Alaska, Yukon and Northwest Territories to Maine and the Dakotas.
Yukon records: Taiga Cordillera ecozone: *Old Crow Flats*: Old Crow. Boreal Cordillera ecozone: *Ruby Ranges*: Haines Jct.; *St. Elias Mountains*: Kluane National Park: Sheep Mountain; *Yukon Plateau-North*: McQuesten (also Bohart and Kimsey 1982); *Yukon Southern Lakes*: Whitehorse.
Alaska record: Fairbanks (Bohart and Kimsey 1982).
Northwest Territories record: Norman Wells (Bohart and Kimsey 1982).
Biological information: Cleptoparasite. Host unknown.
20. *Chrysura (Olochrysis) pacifica* (Say)* [3] Nearctic
Distribution: Alaska and Yukon, transcontinental south to Mexico: Baja California.
Yukon records: Boreal Cordillera ecozone: *Yukon Plateau-North*: Mayo. *Unplaced*: Mink Cr.
Biological information: Cleptoparasite. Host Hymenoptera: Megachilidae (Bohart and Kimsey 1982).
21. *Chrysura (Olochrysis) tota* Aaron [1] Western Nearctic
Distribution: West of 100th meridian, Yukon to California.
Yukon records: Boreal Cordillera ecozone: *Yukon Plateau-North*: Orchie L. 3 km N on North Canol Rd. 62°17'N 131°48'W.
Biological information: Cleptoparasite. Host Hymenoptera: Megachilidae (Bohart and Kimsey 1982).
22. *Trichrysis (Lorochrysis) doriae* (Gribodo) [1] Nearctic
Distribution: Transcontinental, Yukon south to Panama. Bohart and Kimsey (1982) reported this species from the Yukon but did not give localities.
Yukon record: Boreal Cordillera ecozone: *Yukon Southern Lakes*: Lone Tree Cr. 60°17'N 132°58'W.
Biological information: Cleptoparasite. Host Hymenoptera: Crabroninae (Bohart and Kimsey 1982).

23. *Ceratochrysis minata* Bohart* [2] Western Nearctic
Distribution: Yukon, Alberta to California, Nevada and Arizona.
Yukon records: Boreal Cordillera ecozone: *Ruby Ranges*: Cultus Bay; *St. Elias Mountains*: Kluane National Park: Sheep Creek Rd.
Biological information: Cleptoparasite. Host unknown.
24. *Ceratochrysis trachypleura* Bohart* [1] Western Nearctic
Distribution: Yukon, British Columbia and Manitoba south to California, Arizona and Colorado.
Yukon records: Boreal Cordillera ecozone: *St. Elias Mountains*: Kluane National Park: Sheep Creek Rd., Sheep Mountain.
Biological information: Cleptoparasite. Host Hymenoptera: Sphecinae.

Family Dryinidae

The Dryinidae exhibit the greatest diversity in the tropics. This family contains more than 850 described species of which 38 are recorded from Canada. There are 6 species in the Yukon fauna; other Canadian species are distributed across southern areas of the country. The females of most species in this family have a characteristic pincer-like foretarsus used for holding prey. Some females are wingless and ant-like in appearance and behaviour and can be difficult to associate with their winged males. Species of Dryinidae are parasitoids usually on Cicadellidae (Homoptera), the larva developing in an external sac-like structure attached to the host abdomen.

Subfamily Aphelopinae

25. *Aphelopus albopictus* Ashmead [2] Nearctic
Distribution: Transcontinental, Yukon south to North Carolina and Mexico: Veracruz.
Yukon records: Taiga Cordillera ecozone: *Old Crow Flats*: Rampart House (Olmi 1984).
Biological information: Parasitoid. Host Homoptera: Cicadellidae (Olmi 1984).

Subfamily Anteoninae

26. *Lonchodryinus bakeri* Kieffer [9] Nearctic
Distribution: Transcontinental, Alaska and Yukon south to California, Mexico: Durango, Colorado, South Dakota, Michigan, North Carolina.
Yukon records: Taiga Cordillera ecozone: *Old Crow Flats*: Rampart House (Olmi 1984). Boreal Cordillera ecozone: *Liard Basin*: Watson L. (Olmi 1984); *Klondike Plateau*: Dawson (Olmi 1984); *Yukon Plateau-North*: 58 km E Dawson (Olmi 1984), Gravel L. (Olmi 1984).
Biological information: Parasitoid. Host unknown.
27. *Lonchodryinus flavus* Olmi [2] Nearctic disjunct
Distribution: Yukon, Alberta, Ontario, Quebec, eastern United States south to Georgia.
Yukon records: Boreal Cordillera ecozone: *Old Crow Flats*: Rampart House (Olmi 1984).
Biological information: Parasitoid. Host unknown.

28. *Anteon osborni* Fenton [5] Nearctic
Distribution: Transcontinental, Alaska and Yukon south to South Carolina and Mexico: Durango.
Yukon records: Taiga Cordillera ecozone: *Selwyn Mountains*: Sheldon L. 62°40'N 130°06'W (Olmi 1984). Boreal Cordillera ecozone: *Klondike Plateau*: Dawson (Olmi 1984).
Biological information: Parasitoid. Host Homoptera: Cicadellidae (Olmi 1984).

29. *Anteon xanthothorax* Bradley [1] Northern Nearctic
Distribution: Boreal. Yukon south to British Columbia, Alberta, Ontario, Quebec, New York.
Yukon record: Taiga Cordillera ecozone: *Selwyn Mountains*: Sheldon L. (Olmi 1984).
Biological information: Parasitoid. Host unknown.

Subfamily Gonatopodinae

30. *Gonatopus cyphonotus* Bradley* [3] Northern Nearctic
Distribution: Yukon, Northwest Territories, British Columbia, Alberta, Manitoba, Ontario, Florida.
Yukon records: Boreal Cordillera ecozone: *Yukon Plateau-North*: Moose Cr. 63°31'N 137°17'W.
Biological information: Parasitoid. Host unknown.

Family Embolemidae

The Embolemidae is a small family of 2 genera and 8 species found in Europe, Southeast Asia, North America and South America. One species occurs across southern Canada and in the Yukon Territory. Little is known of the biology of these wasps but one species has been reared from a subcortical fungus-feeding fulgorid (Homoptera: Achilidae). The larva, like that of the previous family, develops in an external sac on the host.

31. *Ampulicomorpha confusa* Ashmead* [2]

Nearctic

Distribution: Transcontinental. Yukon, British Columbia, Saskatchewan, California, Colorado, Missouri, Wisconsin, Maryland to Georgia.

Yukon records: Boreal Cordillera ecozone: *Yukon Plateau-North*: 40 km E Dawson on Dempster Hwy., Ross R.

Biological information: Parasitoid. Host Homoptera: Achilidae.

Superfamily Vespoidea

The Vespoidea is a moderately large, mostly tropical group of 48 000 species (Brothers and Finnamore 1993) in 10 families. All families are represented in Canada (316 species). They are represented in the Yukon by 5 families, Sierolomorphidae, Sapygidae, Formicidae, Vespidae and Pompilidae. The Formicidae are discussed by Francoeur (1997) but 47 species belonging to the other 4 families occur in the Yukon.

Family Sierolomorphidae

The Sierolomorphidae is a small family of one genus and 8 species. There are 6 New World species, 2 of which occur across Canada with one of these found in the Yukon. Nothing is known of their biology.

32. *Sierolomorpha nigrescens* Evans [0]

Western Nearctic

Distribution: Yukon, Alberta, Saskatchewan south to California, Arizona and Colorado.

Yukon records: Boreal Cordillera ecozone: *Yukon Southern Lakes*: Whitehorse (Evans 1961).

Biological information: Parasitoid. Host unknown.

Family Sapygidae

The Sapygidae is a small family much in need of revision. Six species are reported from Canada of which 2 species occur in the Yukon. Sapygids are cleptoparasitic on bees (Apoidea: Apiformes) and eumenid wasps (Vespidae).

Subfamily Sapyginae

33. *Sapyga* sp. A [3]

Unknown

Distribution: Yukon.

Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Carcross; *Liard Basin*: Simpson L. 81 km N Watson L.

Biological information: Cleptoparasite. Host unknown.

34. *Sapyga* sp. B [2]

Unknown

Distribution: Yukon.

Yukon records: Taiga Cordillera ecozone: *British-Richardson Mountains*: British Mts. 69°27'N 140°25'W; *North Ogilvie Mountains*: Dempster Hwy. kms 1–195.

Biological information: Cleptoparasite. Host unknown.

Family Vespidae

The Vespidae is a moderately large and mostly tropical family, although the Vespinae (hornets and yellowjackets) are northern. The Nearctic fauna contains 330 species with 62 species reported from Canada. This study reports 18 species from the Yukon. There are 2 subfamilies in the Yukon, Eumeninae and Vespinae; the former are predatory on

lepidopterous and sometimes coleopterous larvae, and the latter are predatory on a wide range of insects. A few species of inquilines occur in the Yukon.

Subfamily Eumeninae

35. *Odynerus (Odynerus) dilectus* Saussure* [3] Nearctic

Distribution: Alaska and Yukon to California, Alberta, Wyoming, New Mexico, Minnesota and New York.

Yukon record: Taiga Cordillera ecozone: *Old Crow Flats:* Old Crow.

Biological information: Predator, ground nesting. Host Coleoptera: Curculionidae.

36. *Pseudepipona (Pseudepipona) herrichii aldrichi* (Fox)* [9] Western Nearctic

Distribution: Western, Alaska and Yukon to New Mexico.

Yukon records: Boreal Cordillera ecozone: *Ruby Ranges:* Cultus Bay, Kluane L.; *St. Elias Mountains:* Kluane National Park: Sheep Mountain; *Yukon Plateau-Central:* Carmacks; *Yukon Plateau-North:* Ross R. on Campbell Hwy. 61°54'N 132°25'W; *Yukon Southern Lakes:* Aishihik R. 14 km N Canyon 60°59'N 137°02'W.

Biological information: Predator, ground nesting. Host unknown.

37. *Euodynerus* sp. [2] Unknown

Distribution: Yukon.

Yukon records: Taiga Cordillera ecozone: *North Ogilvie Mountains:* Blackstone R. km 141 Dempster Hwy. 65°01'N 138°12'W. Boreal Cordillera ecozone: *Boreal Mountains and Plateaus:* Carcross.

Biological information: Predator, twig nester? Host unknown.

38. *Ancistrocerus catskill albophaleratus* (Saussure)* [52] Nearctic

Distribution: Boreal transcontinental, Alaska and Yukon south to Arizona, New Mexico and North Carolina. Bequaert (1943) reported this species from Alaska: Fox Point (54°30'N), Kukak Bay (58°N on Alaska Peninsula), Saldovia (59°N on Kenai Peninsula) and Northwest Territories: Fort Rae, Great Slave L. 62°30'N, Fort Simpson 61°30'N, Fort Wrigley 63°N, and Fort Norman 65°N.

Yukon records: Taiga Cordillera ecozone: *British-Richardson Mountains:* Firth R. 69°13'N 140°05'W; *Eagle Plains:* Dempster Hwy. km 371 66°23'N 136°43'W; *North Ogilvie Mountains:* Blackstone R. km 138 Dempster Hwy, and km 141 Dempster Hwy. 65°01'N 138°12'W, Bluefish Ridge 67°08'N 140°46'W; *Old Crow Basin:* Porcupine R. "Blue Bluffs" 67°38'N 137°41'W; *Old Crow Flats:* Frog L. 67°30'N 140°15'W, Old Crow, 6 km E Old Crow 67°34'N 137°41'W, Rampart House; *Selwyn Mountains:* La Force, Nahanni Range Rd. km 128 61°38'N 128°20'W, Sheldon L. Boreal Cordillera ecozone: *Liard Basin:* Watson L.; *Ruby Ranges:* Cultus Bay, Dezadeash L., Kluane, Silver City; *St. Elias Mountains:* Kluane National Park: Sheep Mountain; *Yukon Plateau-North:* Starr Cr. 61°41'N 131°51'W; *Yukon Southern Lakes:* Aishihik R. 14 km N Canyon 60°59'N 137°02'W, Whitehorse.

Alaska records: Dalton Hwy. km 158 66°21'N 150°28'W, Dalton Hwy. and Yukon R., Paxon 34 km N.

Biological information: Predator, twig nester. Host Lepidoptera: Gelechiidae, Oecophoridae, Pterophoridae, Pyralidae, Tortricidae.

39. *Ancistrocerus waldenii waldenii* (Viereck)* [7] Western Nearctic

Distribution: Alaska and Yukon south in mountains to New Mexico, South Dakota, Illinois and Virginia. Bequaert (1943) reported this species from the Northwest Territories: Fort Rae, Great Slave L. 62°30'N.

Yukon records: Taiga Cordillera ecozone: *North Ogilvie Mountains:* km 140 Dempster Hwy.; *Old Crow Flats:* Rampart House. Boreal Cordillera ecozone: *St. Elias Mountains:* Kluane National Park: Sheep Mountain; *Yukon Plateau-Central:* Carmacks.

Biological information: Predator, constructs mud nest. Host unknown.

40. *Symmorphus (Symmorphus)* sp. [6] Unknown

Distribution: Yukon.

Yukon records: Taiga Cordillera ecozone: *Old Crow Flats:* 6 km E Old Crow 67°34'N 139°41'W. Boreal Cordillera ecozone: *Boreal Mountains and Plateaus:* Snafu Cr. 60°08'N 133°48'W.

Biological information: Predator, twig nester. Host unknown.

41. *Eumenes (Eumenes) crucifera nearcticus* Bequaert [1] Northern Nearctic

Distribution: Transcontinental south of 63° to Oregon, Utah, Colorado, Kentucky, New Jersey.

Yukon records: Taiga Cordillera ecozone: *Old Crow Flats*: Rampart House.
Biological information: Predator, constructs mud nest. Host unknown.

42. *Eumenes (Eumenes) verticalis neoboreus* **Bequaert*** [6] Northern Nearctic
Distribution: Yukon, British Columbia, Alberta, Ontario, Quebec.

Yukon records: Taiga Cordillera ecozone: *British-Richardson Mountains*: McDougall Pass 67°42'N 136°29'W, Erebia Cr. in White Mts. 67°58'N 136°29'W. Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Snafu Cr.; *Pelly Mountains*: 7 km E Rancheria 60°04'N 130°29'W; *Ruby Ranges*: Cultus Bay, Kluane L.; *Yukon Southern Lakes*: Whitehorse.
Biological information: Predator, constructs mud nest. Host unknown.

Subfamily Vespinae

43. *Vespula (Vespula) acadica* (**Sladen**) [5] Northern Nearctic

Distribution: Transcontinental, Alaska and Yukon to Newfoundland, west of 100th meridian in United States, south to New Mexico and California. Miller (1961) reported this species from the Yukon: Rampart House, Snag, Whitehorse, and from the Northwest Territories: Fort Norman, Great Bear L., Great Slave L., Gros Cap, Yellowknife.

Yukon records: Taiga Cordillera ecozone: *Mackenzie Mountains*: North Fork Crossing, North Fork Pass. Boreal Cordillera ecozone: *Klondike Plateau*: 14 km E Dawson; *Yukon Southern Lakes*: Whitehorse.

Biological information: Predator, nest terrestrial or aerial. Host Diptera.

44. *Vespula (Vespula) austriaca* (**Panzer***) [10] Holarctic

Distribution: Transcontinental in Canada, Alaska and Yukon to Quebec and California; Eurasia. Miller (1961) reported this species from the Northwest Territories: Coppermine, Fort Norman.

Yukon records: Taiga Cordillera ecozone: *Mackenzie Mountains*: North Fork Crossing km 69; *Old Crow Flats*: Old Crow. Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Snafu Cr. 60°08'N 133°48'W; *Klondike Plateau*: 3 km E Dawson, 13 km E Dawson; *Ruby Ranges*: Kluane, Kluane L. (south end), Silver City.

Biological information: Inquiline. Host Hymenoptera: Vespidae. Prey unknown in North America but Miller (1961) reported *Vespula austriaca* from nests of *Vespula rufa* (Linnaeus) in Europe.

45. *Vespula (Vespula) consobrina* (**Saussure***) [1] Northern Nearctic

Distribution: Transcontinental in Canada and northern United States, southern localities include Georgia, New Mexico and California. Miller (1961) reported this species from the Northwest Territories: Fort Simpson, Fort Smith.

Yukon records: Taiga Cordillera ecozone: *Mackenzie Mountains*: North Fork Crossing km 67 Aklavik Rd.

Biological information: Predator, nest terrestrial or near-surface aerial. Host Diptera.

46. *Vespula (Vespula) intermedia* (**Buysson**) [1] Northern Nearctic

Distribution: Boreal, Alaska and Yukon to Newfoundland. Miller (1961) reported this species from the Yukon: Dawson, Rampart House, Selwyn.

Yukon records: Taiga Cordillera ecozone: *Old Crow Flats*: Old Crow.

Biological information: Predator, nest terrestrial? Host Diptera.

47. *Vespula (Vespula) vulgaris* (**Linnaeus**) [30] Nearctic

Distribution: Transcontinental, Alaska and Yukon south to California, Arizona, New Mexico, South Dakota, Iowa, Indiana, Illinois, Ohio, North Carolina, Mexico. Miller (1961) reported this species from the Yukon: Dezadeash L., Dry Cr., Snag, Whitehorse.

Yukon records: Taiga Cordillera ecozone: *Mackenzie Mountains*: North Fork Crossing; *North Ogilvie Mountains*: Blackstone R. km 138 Dempster Hwy. Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: 1 km N Carcross; *Klondike Plateau*: Snag; *Ruby Ranges*: Dry Cr., Duke R. near Burwash Landing, Haines Jct., Kathleen L., Kluane L. (south end), Pine Cr. near Haines Jct.; *Yukon Plateau-Central*: Carmacks; *Yukon Southern Lakes*: 10 km N Carcross Hwy. 2, 14 km N Carcross (sand dunes), Richthofen Cr. 61°08'N 135°21'W, Tagish, Whitehorse; *Yukon-Stikine Highlands*: 5 km W Takhini.

Biological information: Predator, nest terrestrial or aerial. Host Diptera.

48. *Vespula (Dolichovespula) albida* (**Sladen**) [135] Northern Nearctic

Distribution: Yukon, transcontinental, boreal. Miller (1961) reported the following Yukon localities: Burwash Landing, Dry Cr., Rampart House, Rancheria, Swift R., Watson L., Whitehorse.

Yukon records: Southern Arctic ecozone: *Yukon Coastal Plain:* Herschel Is. Taiga Cordillera ecozone: *British-Richardson Mountains:* Dempster Hwy. km 408, "Erebia Cr." 67°58'N 136°29'W (White Mts.), Firth R. 69°13'N 140°05'W, Fish Cr. Ridge 69°27'N 140°25'W, McDougall Pass 67°42'N 136°29'W, Philip Cr. 68°52'N 138°47'W, Trout L. 68°50'N 138°45'W; *Eagle Plains:* Eagle R. and Dempster Hwy., Mason Hill 67°17'N 137°40'W, Ogilvie R. km 218 Dempster Hwy.; *Mackenzie Mountains:* North Fork Crossing, North Fork Pass 64°31'N 138°13'W; *North Ogilvie Mountains:* Blackstone R. km 141 Dempster Hwy.; *Old Crow Flats:* Frog L. 67°30'N 140°15'W, Old Crow, 6 km E Old Crow 67°34'N 139°41'W, Rampart House; *Selwyn Mountains:* La Force L. 62°41'N 130°20'W, Otter L. 62°30'N 130°25'W, Sheldon L. Boreal Cordillera ecozone: *Boreal Mountains and Plateaus:* Rancheria (Swift R.); *Laird Basin:* Watson L.; *Ruby Ranges:* Burwash Landing, Dry Cr., Slims R. delta; *Pelly Mountains:* 7 km E Rancheria 60°04'N 130°39'W; *Yukon Plateau-North:* Orchie L. 3 km N on North Canol Rd., Sheldon Cr. North Canol Rd., Vangora Cr. 62°15'N 133°15'W; *Yukon Southern Lakes:* Whitehorse.

Alaska record: Gobbler's Knob 66°45'N 150°40'W.

Biological information: Predator, nest terrestrial. Host Diptera.

49. *Vespula (Dolichovespula) arctica (Rohwer)* [3] Northern Nearctic

Distribution: Transcontinental, boreal, Alaska and Yukon to Newfoundland. Miller (1961) reported this species from the Northwest Territories: Fort Norman, Fort Simpson, Fort Smith, and the Yukon: Dawson, Watson L., Whitehorse.

Yukon records: Taiga Cordillera ecozone: *Selwyn Mountains:* Nahanni Range Rd. km 128 61°38'N 128°20'W. Boreal Cordillera ecozone: *Yukon Plateau-North:* Gravel L. 63°48'N 137°53'W.

Biological information: Inquiline. Host Hymenoptera: Vespidae: *Vespula (Dolichovespula) arenaria* (Fabricius).

50. *Vespula (Dolichovespula) arenaria (Fabricius)* [56] Nearctic

Distribution: Transcontinental. Miller (1961) reported this species from the Yukon: Dawson, Dry Cr., Rampart House, Snag, and Whitehorse.

Yukon records: Taiga Cordillera ecozone: *Eagle Plains:* Eagle R. and Dempster Hwy.; *Mackenzie Mountains:* North Fork Crossing, North Fork Pass; *Old Crow Flats:* Old Crow, 6 km E Old Crow 67°34'N 139°41'W, Rampart House. Boreal Cordillera ecozone: *Boreal Mountains and Plateaus:* 1.6 km N Carcross (sand dunes); *Liard Basin:* Watson L.; *Klondike Plateau:* Snag; *Ruby Ranges:* Dry Cr., Haines Jct., Kluane, Kluane L. Alaska Hwy. km 1686, Silver City, Slims R. delta; *Yukon Plateau-Central:* 30 km E Carmacks 62°02'N 135°51'W; *Yukon Plateau-North:* 31 km E Dawson, Gravel L. 50 km E Dawson; *Yukon Southern Lakes:* Little Atlin L., Lone Tree Cr. 60°17'N 132°53'W, Whitehorse.

Biological information: Predator, nest aerial. Host Diptera.

51. *Vespula (Dolichovespula) maculata (Linnaeus)* [12] Nearctic

Distribution: Transcontinental. Miller (1961) reported this species from the Northwest Territories: Fort Norman, Fort Simpson, Fort Smith, Gros Cap, Hay R., L. Sarah, Norman Wells, Resdelta, Resolution, Rocher R., Salt R., and Yukon: Dawson 400 m, Selwyn, Watson L., and Whitehorse.

Yukon records: Boreal Cordillera ecozone: *Klondike Plateau:* Dawson; *Yukon Plateau-North:* 10 km E McQuesten, Moose Cr., Stewart Crossing; *Yukon Southern Lakes:* Tagish, Whitehorse.

Biological information: Predator, nest aerial. Host Diptera.

52. *Vespula (Dolichovespula) norvegicoides (Sladen)* [45] Northern Nearctic

Distribution: Transcontinental, boreal. Miller (1961) reported this species from the Northwest Territories: Fort Simpson, Fort Wrigley, Great Slave L., Gros Cap, Hardisty Is., Hay R., Norman Wells, Outpost, Resolution, and Yukon: Burwash Landing, Champagne, Dawson, Dezadeash, Dry Cr., Klutland Glacier 3000 m, Rampart House, Selwyn, Snag, Whitehorse.

Yukon records: Taiga Cordillera ecozone: *British-Richardson Mountains:* Firth R. 69°08'N 140°14'W, Rock R. and Dempster Hwy.; *Eagle Plains:* Eagle R. and Dempster Hwy.; *Mackenzie Mountains:* North Fork Crossing, North Fork Pass 64°31'N 138°13'W; *Selwyn Mountains:* La Force 62°41'N 132°20'W, Nahanni Range Rd. 61°38'N 128°20'W, Wagon Cr. 62°56'N 130°30'W. Boreal Cordillera ecozone: *Klondike Plateau:* Dawson Cr.; *Ruby Ranges:* Burwash Landing, Kluane L. km 1686 Alaska Hwy.; *St. Elias Mountains:* Klutland Glacier; *Yukon Plateau-North:* Elsa (Halfway Lks.), Sheldon Pass 62°44'N 131°01'W; *Yukon Southern Lakes:* Aishihik R. 14 km N Canyon 60°59'N 137°02'W, Champagne, Whitehorse.

Biological information: Predator, nest aerial in shrubs. Host Diptera.

Family Pompilidae

The 75 Canadian species of spider wasps (Pompilidae) form the second most diverse family of vespoid wasps in Canada; only the ants (Formicidae) are more diverse. Species of Pompilidae are found across Canada and as far north as the treeline and into the southern fringes of the arctic. Steiner (1970) and Evans (1950, 1951*a*, 1951*b*) reported 14 species of pompilids from the Yukon; the present study lists 32 species. As their common name suggests these wasps are predatory on spiders but a few are cleptoparasitic on other pompilids.

Subfamily Pepsinae

53. *Priocnemis (Priocnemis) aequalis* (Banks) [20] Northern Nearctic

Distribution: Yukon, transcontinental in Canada south to Utah, Wisconsin, New York, Vermont. Townes (1957) reported this species from Watson Lake in the Yukon.

Yukon records: Taiga Cordillera ecozone: *Selwyn Mountains:* Nahanni Range Rd. km 128 61°38'N 128°20'W. Boreal Cordillera ecozone: *Liard Basin:* Simpson L. 81 km N Watson L.; *Ruby Ranges:* Slims R. delta, Slims R. flats.

Alaska records: Tanana R. 64°20'N 146°51'W.

Biological information: Predator, ground nester. Host unknown.

54. *Priocnemis (Priocnemis) notha alaskensis* Townes [15] Northern Nearctic

Distribution: Alaska, Yukon and Northwest Territories. Townes (1957) reported this species in the Yukon from Watson L. and Whitehorse.

Yukon records: Taiga Cordillera ecozone: *Old Crow Flats:* Old Crow; *Selwyn Mountains:* Nahanni Range Rd. km 128 61°38'N 128°20'W. Boreal Cordillera ecozone: *Liard Basin:* Simpson L. 81 km N Watson L.; *St. Elias Mountains:* Kluane National Park: Sheep Creek Rd.; *Yukon Plateau-North:* Ross R.; *Yukon Southern Lakes:* Whitehorse.

Biological information: Predator, ground nester. Host Araneae: Salticidae.

55. *Priocnemis (Priocnemis) notha notha* (Cresson)* [1] Northern Nearctic

Distribution: Yukon, Manitoba to Prince Edward Island.

Yukon record: Boreal Cordillera ecozone: *Yukon Plateau-North:* Ross R.

Biological information: Predator, ground nester. Host Araneae: Clubionidae, Lycosidae.

56. *Dipogon (Deuteragenia) sayi nigrior* Townes* [2] Western Nearctic

Distribution: Yukon and British Columbia to New Mexico.

Yukon records: Boreal Cordillera ecozone: *Liard Basin:* Simpson L. 81 km N Watson L.; *Pelly Mountains:* Ross R. km 118 South Canol Rd.

Biological information: Predator, wood nester. Host Araneae: Thomisidae.

Subfamily Pompilinae

57. *Evagetes crassicornis consimilis* (Banks) [17] Western Nearctic

Distribution: Yukon to California at higher elevations. Evans (1950) reported 2 specimens from Whitehorse.

Yukon records: Taiga Cordillera ecozone: *Old Crow Flats:* Old Crow. Boreal Cordillera ecozone: *Boreal Mountains and Plateaus:* 1.6 km N Carcross (sand dunes); *Klondike Plateau:* Dawson (midnight dome); *Liard Basin:* Simpson L. 81 km N Watson L.; *Ruby Ranges:* Slims R. delta; *St. Elias Mountains:* Kluane National Park: Sheep Creek Rd.

Biological information: Cleptoparasite. Host Hymenoptera: Pompilidae.

58. *Evagetes crassicornis crassicornis* (Shuckard) [37] Holarctic

Distribution: Boreal. Yukon to Nova Scotia south to Washington, North Dakota, Michigan, Pennsylvania; Eurasia. Evans (1950) reported this species from Whitehorse and Snag. Steiner (1970), in addition to Evans' localities, reported Gravel L. near McQuesten 63°47'N 137°53'W.

Yukon records: Taiga Cordillera ecozone: *Old Crow Flats:* Old Crow, Rampart House; *Selwyn Mountains:* Nahanni Range Rd. km 128 61°38'N 128°20'W; Boreal Cordillera ecozone: *Liard Basin:* Watson L.; *Klondike Plateau:* Snag; *Ruby Ranges:* Christmas Bay, Kluane L., Mendenhall R. 60°48'N 137°00'W; *Yukon Plateau-Central:* 30 km E Carmacks 62°02'N 135°51'W, 1 km E Lapie R. on

Campbell Hwy.; *Yukon Plateau-North*: Ross R.; *Yukon Southern Lakes*: Aishihik Rd. 13 km N Hopkins L. 61°23'N 137°00'W, Whitehorse.

Biological information: Cleptoparasite. Host Hymenoptera: Pompilidae.

59. *Evagetes ingenuus* (Cresson)* [5]

Southern Nearctic

Distribution: Transcontinental in southern Canada, south to California, Arizona, Colorado, Kansas, Georgia.

Yukon records: Taiga Cordillera ecozone: *Old Crow Flats*: Old Crow. Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Snafu 60°08'N 133°48'W; *Liard Basin*: Simpson L. 81 km N Watson L.; *Yukon Southern Lakes*: Whitehorse, Wolf Cr.

Biological information: Cleptoparasite. Host Hymenoptera: Pompilidae.

60. *Evagetes parvus* (Cresson) [5]

Southern Nearctic

Distribution: Transcontinental in southern Canada, Yukon south to California, Arizona, New Mexico, Texas, Missouri, Georgia and Costa Rica. Evans (1950) reported this species from Watson L.

Yukon records: Boreal Cordillera ecozone: *Liard Basin*: Simpson L. 81 km N Watson L., Watson L.; *Yukon Southern Lakes*: km 11 Aishihik Rd., Tagish.

Biological information: Cleptoparasite. Host Hymenoptera: Pompilidae.

61. *Evagetes subangulatus* (Banks) [10]

Nearctic

Distribution: Yukon to Labrador south to California, Arizona, New Mexico, Colorado, South Dakota, Minnesota, Ohio, Georgia. Evans (1950) reported this species from Whitehorse. Steiner (1970) reported this species from Stewart R. Valley 63°26'N 136°27'W, and Mayo, some kms north of town 63°38'N 135°50'W.

Yukon records: Taiga Cordillera ecozone: *North Ogilvie Mountains*: Blackstone R. km 148 Dempster Hwy 65°05'N 138°08'W; *Old Crow Flats*: 6 km E Old Crow 67°34'N 139°41'W; *Selwyn Mountains*: Nahanni Range Rd. km 128 61°38'N 128°20'W. Boreal Cordillera ecozone: *Klondike Plateau*: 14 km E Dawson; *Ruby Ranges*: Aishihik L. Rd. 13 km N of Hopkins L. 61°23'N 137°00'W; *Yukon Southern Lakes*: Whitehorse.

Biological information: Cleptoparasite. Host Hymenoptera: Pompilidae.

62. *Episyron oregon* Evans [5]

Western Nearctic

Distribution: Western Canada and United States south to California and Wyoming. Evans (1950) reported this species from Whitehorse.

Yukon records: Taiga Cordillera ecozone: *Old Crow Flats*: Old Crow. Boreal Cordillera ecozone: *Liard Basin*: Simpson L. 81 km N Watson L.; *St. Elias Mountains*: Kluane National Park: Sheep Mountain; *Yukon Plateau-North*: Ross R. 9 km S on Campbell Hwy. 61°54'N 132°25'W; *Yukon Southern Lakes*: Whitehorse.

Biological information: Predator, sand nester. Host Araneae: Araneidae.

63. *Episyron quinquenotatus quinquenotatus* (Say)* [2]

Southern Nearctic

Distribution: Transcontinental in southern Canada, Yukon and Northwest Territories south to Texas, Arkansas, Alabama, North Carolina. Steiner (1970) reported this species from 3 localities around Great Slave L. in the Northwest Territories.

Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Carcross (sand dunes), Snafu Cr.

Biological information: Predator, sand nester. Host Araneae: Araneidae. Steiner (1970) reported *Araneus cornutus* Clerck and *A. patagiatus* Clerck as prey in the Northwest Territories.

64. *Anoplius (Arachnoproctonus) cylindricus* (Cresson)* [3]

Nearctic

Distribution: Yukon and Northwest Territories south to California, Texas, Florida. Evans (1951a) reported this species from the Northwest Territories: Fort Norman.

Yukon records: Boreal Cordillera ecozone: *Yukon Southern Lakes*: Whitehorse.

Biological information: Predator, sand nester. Host Araneae: Lycosidae.

65. *Anoplius (Arachnoproctonus) insolens* (Banks)* [1]

Nearctic

Distribution: Yukon and British Columbia to Maine, south to Mexico: Veracruz, Morelos and USA: Texas, Georgia.

Yukon record: Boreal Cordillera ecozone: *Yukon Southern Lakes*: Whitehorse.

Biological information: Predator, ground nester. Host Araneae: Salticidae.

66. *Anoplius (Arachnoproctonus) relativus* (Fox)* [1] Nearctic
Distribution: Yukon, British Columbia, Alberta, Manitoba, Ontario, Vermont south to Mexico: Jalisco, Morelos.
Yukon record: Boreal Cordillera ecozone: *Yukon Plateau-North:* Ross R.
Biological information: Predator, ground nester. Host Araneae: Agelenidae, Lycosidae.
67. *Anoplius (Arachnoproctonus) tenebrosus* (Cresson) [24] Nearctic
Distribution: Yukon to Newfoundland south to California, New Mexico, South Dakota, Minnesota, Wisconsin, Pennsylvania, Virginia. Evans (1951a) reported this species from Watson L. Steiner (1970) reported this species from Tatchun L. area, near Carmacks 62°20'N 136°17'W.
Yukon records: Taiga Cordillera ecozone: *Old Crow Flats:* Old Crow, Rampart House. Boreal Cordillera ecozone: *Liard Basin:* Watson L.; *Yukon Plateau-Central:* Little Salmon R. 62°15'N 135°27'W; *Yukon Plateau-North:* Ross R.; *Yukon Southern Lakes:* Whitehorse.
Biological information: Predator, sand nester. Host Araneae: Lycosidae, Philodromidae, Thomisidae.
68. *Anoplius (Arachnoproctonus) near townesi* Evans* [1] Unknown
Distribution: Unknown, but *A. townesi* occurs from Manitoba to New Hampshire, south to Florida.
Yukon records: Boreal Cordillera ecozone: *Yukon Plateau-North:* South Canol Rd. km 181 on Gold Cr.
Biological information: Predator, ground nester. Host unknown.
69. *Anoplius (Anoplius) imbellis* Banks [31] Nearctic
Distribution: Yukon, Manitoba to Massachusetts, south to California and higher elevations to Costa Rica, New Mexico, Kansas, North Carolina. Evans (1951a) reported this species from Whitehorse and Snag.
Yukon records: Taiga Cordillera ecozone: *Eagle Plains:* Eagle R. and Dempster Hwy.; *Old Crow Flats:* Old Crow, Rampart House. Boreal Cordillera ecozone: *Klondike Plateau:* 14 km E Dawson, Snag; *Ruby Ranges:* Dry Cr., Slims R. delta; *Yukon Plateau-North:* 10 km E McQuesten; *Yukon Southern Lakes:* Whitehorse; *Yukon-Stikine Highlands:* Takhanne R. 60°07'N 136°56'W.
Biological information: Predator, ground nester. Host Araneae: Lycosidae.
70. *Anoplius (Anoplius) ithaca* (Banks) [3] Nearctic
Distribution: Yukon, Manitoba and Maine south to Georgia, Texas and California (Evans 1951a).
Yukon records: Boreal Cordillera ecozone: *Klondike Plateau:* Snag (Evans 1951a); *Ruby Ranges:* Kluane (Evans 1951a).
Biological information: Predator, ground nester. Host Araneae: Lycosidae.
71. *Anoplius (Anoplius) nigerrimus* (Scopoli) [0] Holarctic
Distribution: Boreocontinental in Canada and northern United States, Yukon to Newfoundland; Eurasia. Wasbauer and Kimsey (1985) reported this species from the Yukon although no specific locality was listed.
Yukon records: Boreal Cordillera ecozone: *Yukon Southern Lakes:* Marsh L. (Evans 1951a).
Biological information: Predator, ground nester. Host unknown in North America.
72. *Anoplius (Anoplius) tenuicornis* (Tournier) [0] Northern Nearctic
Distribution: Yukon and Northwest Territories to New Brunswick south to New Mexico, Colorado, Manitoba, Vermont. This species was reported from the Yukon by Wasbauer and Kimsey (1985) although no specific locality was given. Evans (1951a) reported this species from the Northwest Territories: Norman Wells.
Yukon records: No specific localities.
Biological information: Predator, ground nester. Host unknown.
73. *Ammosphex angularis angularis* (Banks) [3] Nearctic
Distribution: Western Canada, Yukon, British Columbia, Alberta, across northern United States to Massachusetts, south to New Jersey, Texas, California.
Yukon records: Boreal Cordillera ecozone: *St. Elias Mountains:* Kluane National Park: Sheep Mountain; *Yukon Plateau-North:* 10 km E McQuesten.
Biological information: Predator, ground nester. Host Araneae: Gnaphosidae, Salticidae, Thomisidae.

74. ***Ammosphex anomalus anomalus* (Dreisbach)*** [1] Western Nearctic
Distribution: Yukon and Alberta south to Baja California.
Yukon records: Taiga Cordillera ecozone: *Old Crow Flats:* Old Crow.
Biological information: Predator, ground nester. Host Araneae: Thomisidae.
75. ***Ammosphex dakota dakota* (Dreisbach)*** [42] Western Nearctic
Distribution: Alaska, Yukon, Montana, North Dakota south to Arizona and New Mexico.
Yukon records: Taiga Cordillera ecozone: *Old Crow Flats:* Old Crow. Boreal Cordillera ecozone: *Boreal Mountains and Plateaus:* Carcross, Carcross (sand dunes); *St. Elias Mountains:* Kluane National Park: Sheep Mountain. *Yukon Plateau-Central:* Pelly Crossing; *Yukon Plateau-North:* Ross R., 6 km NW Stewart Crossing; *Yukon Southern Lakes:* Aishihik R. 14 km N Canyon 60°59'N 137°02'W; *Unplaced:* Lapie R. at Glacier Cr.
Alaska record: Tanana R. 64°20'N 146°51'W.
Biological information: Predator, ground nester. Host Araneae: Philodromidae.
76. ***Ammosphex imbecillus imbecillus* (Banks)*** [1] Southern Nearctic
Distribution: Yukon, transcontinental in southern Canada and northern United States.
Yukon record: Taiga Cordillera ecozone: *Old Crow Flats:* Old Crow.
Biological information: Predator, ground nester. Host unknown.
77. ***Ammosphex imbecillus ojbwae* Evans*** [4] Southern Nearctic
Distribution: Yukon and Northwest Territories, transcontinental in southern Canada, northeastern United States. Evans (1951*b*) reported this species from the Northwest Territories: Reindeer Depot and Mackenzie delta.
Yukon records: Taiga Cordillera ecozone: *Old Crow Flats:* Old Crow. Boreal Cordillera ecozone: *Yukon Plateau-North:* Ross R.; *Yukon Southern Lakes:* Whitehorse.
Biological information: Predator, ground nester. Host unknown.
78. ***Ammosphex luctuosus luctuosus* (Cresson)** [20] Northern Nearctic
Distribution: Transcontinental, Yukon to Maine, in the west south to California, New Mexico. Evans (1951*b*) reported this species from the Yukon localities of Watson L. and Whitehorse. Steiner (1970) reported an additional Yukon record: Stewart R. Valley km 357 on Whitehorse to Mayo Hwy. 63°26'N 136°27'W.
Yukon records: Taiga Cordillera ecozone: *Old Crow Flats:* Old Crow, Rampart House. Boreal Cordillera ecozone: *Klondike Plateau:* Dawson (midnight dome); *Liard Basin:* Watson L.; *Ruby Ranges:* Cultus Bay, Kluane, Silver City; *Yukon Plateau-Central:* Lapie R. 1 km E on Campbell Hwy.; *Yukon Southern Lakes:* Carcross 10 km N on Hwy. 2, Whitehorse.
Biological information: Predator, ground nester. Host unknown.
79. ***Ammosphex michiganensis michiganensis* (Dreisbach)** [8] Northern Nearctic
Distribution: Transcontinental in Canada, Yukon to New Brunswick, south to Georgia, Minnesota, Colorado. Evans (1951*b*) reported this species from Snag and Watson L.
Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus:* 1 km N Carcross; *Klondike Plateau:* 14 km E Dawson, Snag; *Liard Basin:* Watson L.; *Ruby Ranges:* Slims R. delta.
Biological information: Predator, ground nester. Host Araneae: Thomisidae.
80. ***Ammosphex parvulus* (Banks)*** [1] Western Nearctic
Distribution: Yukon and Alberta south to Baja California and Zacatecas.
Yukon record: Taiga Cordillera ecozone: *Old Crow Flats:* Old Crow.
Biological information: Predator, ground nester. Host unknown.
81. ***Arachnospila arctus* (Cresson)** [11] Northern Nearctic
Distribution: Transcontinental in Canada, Yukon and British Columbia to Labrador and Nova Scotia south to District of Columbia, Iowa, Colorado, New Mexico, Arizona and Mexico: Hidalgo. Evans (1951*b*) reported this species from Watson L. and Whitehorse. Steiner (1970) supplied additional Yukon records: Marsh L., km 1408 Alaska Hwy. E of Whitehorse 60°30'N 134°18'W, Tatchun L. area near Carmacks, km 195 Whitehorse-Dawson Hwy. 62°20'N 136°17'W.
Yukon records: Taiga Cordillera ecozone: *Old Crow Flats:* Old Crow. Boreal Cordillera ecozone: *Liard Basin:* Watson L.; *Yukon Plateau-Central:* Pelly Crossing; *Yukon Plateau-North:* Ross R. 9 km S

on Campbell Hwy. 61°54'N 132°25'W; *Yukon Southern Lakes*: Jake's Corner, Whitehorse. *Unplaced*: Lapie R. km 184 South Canol Rd.

Biological information: Predator, ground nester in gravelly soil. Host Araneae: Amaurobiidae, Clubionidae, Lycosidae.

82. *Arachnospila fumipennis fumipennis* (Zetterstedt) [12] Holarctic

Distribution: Boreal, Alaska and Yukon to Labrador south to New York, North Dakota, Alberta, Washington; Eurasia. Evans (1951*b*) reported this species from Yellowknife (Northwest Territories) and Whitehorse (Yukon).

Yukon records: Taiga Cordillera ecozone: *Old Crow Flats*: Rampart House. Boreal Cordillera ecozone: *Klondike Plateau*: 14 km E Dawson; *Ruby Ranges*: Slims R. delta; *Yukon Plateau-Central*: 30 km E Carmacks 62°02'N 135°51'W; *Yukon Southern Lakes*: Whitehorse.

Northwest Territories record: Richardson Mts. "Erebia Cr." 67°57'N 136°26'W.

Biological information: Predator, ground nester. Host unknown.

Subfamily Ceropalinae

83. *Ceropales maculata fraterna* Smith* [12] Southern Nearctic

Distribution: Yukon, transcontinental in southern Canada, United States south to South Carolina, Kansas, Oregon.

Yukon records: Taiga Cordillera ecozone: *Old Crow Flats*: Old Crow, Rampart House; *Selwyn Mountains*: Nahanni Range Rd. km 128 61°38'N 128°20'W. Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Snafu Cr.; *Klondike Plateau*: Snag; *Yukon Plateau-Central*: Little Salmon R. 62°15'N 135°27'W; *Yukon Plateau-North*: Ross R.; *Yukon Southern Lakes*: Aishihik R. 14 km N Canyon 60°59'N 137°02'W, Marsh L.

Biological information: Cleptoparasite. Host Hymenoptera: Pompilidae.

Superfamily Apoidea

The Apoidea is represented by about 1300 species in Canada with about 28 000 species worldwide (Finnamore and Michener 1993). The Apoidea is treated as 2 informal groups, the spheciformes or sphecid wasps (Sphecidae) and the apiformes or bees (Colletidae, Stenotritidae, Andrenidae, Oxaeidae, Halictidae, Melittidae, Ctenoplectridae, Fideliidae, Megachilidae, Anthophoridae, and Apidae). Only the spheciformes is considered here.

Family Sphecidae

The spheciformes include the family Sphecidae which contains about 8000 species in 9 subfamilies. Eight subfamilies and 283 species are found in Canada mainly in the south. Steiner (1973) reported 7 species occurring in the Yukon and 34 species occurring in the Northwest Territories (total for both Territories was 35 species). The present study lists 71 species in the Yukon in 6 subfamilies: Sphecinae, Pemphredoninae, Astatinae, Crabroninae, Nyssoninae and Philanthinae.

Subfamily Sphecinae

The subfamily Sphecinae, thread-waisted wasps and mud-daubers, is a group of medium to large wasps found around the world. The Canadian fauna includes 34 species, 4 of which are found in the Yukon. Sphecinae have a wide range of nesting behaviour; prey usually includes spiders, orthopteroids or lepidopterous larvae. Species in the Yukon prey on lepidopterous or hymenopterous larvae and nest in the ground.

84. *Podalonia luctuosa* (Smith) [30] Northern Nearctic

Distribution: Transcontinental, boreal Yukon south to northern tier of United States and south to California in the west. Murray (1940) reported this species from the Yukon but did not give more detailed locality data.

Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Carcross (sand dunes), Snafu Cr.; *Ruby Ranges*: Haines Jct., Kluane, Kluane L. Alaska Hwy. km 1686, Silver City; *St. Elias Mountains*: Kluane National Park: Sheep Creek Rd., Sheep Mountain; *Yukon Plateau-Central*: 27 km

E Carmacks; *Yukon Plateau-North*: Ross R. 9 km S on Campbell Hwy. 61°54'N 132°25'W, Stewart Crossing; *Yukon Southern Lakes*: Canyon Cr., Whitehorse, Wolf Cr.

Biological information: Predator, ground nester. Host Lepidoptera: Noctuidae.

85. *Podalonia robusta* (Cresson) [17] Nearctic

Distribution: Transcontinental, Yukon south to Costa Rica. Steiner (1973) reported this species from Pickhandle L. (61°57'N).

Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Carcross; *St. Elias Mountains*: Kluane National Park: Sheep Creek Rd., Sheep Mountain; *Yukon Plateau-North*: Mayo; *Yukon Southern Lakes*: Little Atlin L., Richthofen Cr. 61°08'N 135°21'W.

Biological information: Predator, ground nester. Host Lepidoptera: Noctuidae.

86. *Ammophila azteca azteca* Cameron [49] Nearctic

Distribution: Transcontinental, Yukon south to Mexico. Steiner (1973) reported this species from Mayo (63°38'N), Pickhandle L. (61°57'N) and Stewart R. (63°26'N).

Yukon records: Taiga Cordillera ecozone: *Eagle Plains*: Eagle R. and Dempster Hwy.; *North Ogilvie Mountains*: Bluefish Caves 67°08'N 140°48'W; *Old Crow Flats*: Frog L. 67°30'N 140°15'W, Old Crow. Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Carcross (sand dunes), Snafu Cr.; *Ruby Ranges*: Christmas Cr., Kluane, Kluane L. Alaska Hwy km 1686, Silver City; *St. Elias Mountains*: Kluane National Park: Sheep Creek Rd., Sheep Mountain; *Yukon Plateau-Central*: Tatchun L.; *Yukon Plateau-North*: Mayo, 10 km E McQuesten, Ross R. 9 km S on Campbell Hwy. 61°54'N 132°25'W, 6 km NW Stewart Crossing; *Yukon Southern Lakes*: Aishihik R. 14 km N Canyon 60°59'N 137°02'W, Fox L. 61°14'N 135°27'W, Little Atlin L., Lone Tree Cr. 60°17'N 132°58'W, Whitehorse.

Biological information: Predator, ground nester. Host Coleoptera: Curculionidae. Lepidoptera: Gelechiidae, Geometridae, Lycaenidae, Pterophoridae, Sphingidae. Hymenoptera: Tenthredinidae.

87. *Ammophila mediata* Cresson [12] Northern Nearctic

Distribution: Boreal, Canada and western United States. Steiner (1973) reported this species from Pickhandle L. (61°57'N) and Tatchun L. (62°20'N).

Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Carcross (sand dunes), Snafu Cr. 60°08'N 133°48'W; *Ruby Ranges*: Aishihik L. Rd. 13 km N Hopkins L. 61°23'N 137°00'W; *St. Elias Mountains*: Kluane National Park: Sheep Mountain; *Yukon Plateau-Central*: 27 km S Carmacks 61°52'N 136°07'W; *Yukon Southern Lakes*: Little Atlin L.

Biological information: Predator, ground nester. Host unknown.

Subfamily Pemphredoninae

The Pemphredoninae includes species that are among the smallest of the apoïd wasps; some species average 2 mm in length. About 800 species are known around the world; the Canadian fauna contains 49 species of which 22 species are found in the Yukon. These wasps are either twig-nesting or sand-nesting. Prey consists of Homoptera, primarily Cicadellidae (leafhoppers) and aphids but some genera prey on Thysanoptera (thrips) or Collembola (springtails).

88. *Mimesa gregaria* (Fox) [23] Northern Nearctic

Distribution: Boreal, transcontinental in Canada, Alaska and Yukon south to California, New Mexico, South Dakota, Wisconsin, New York. Finnamore (1983) reported this species from Champagne, Dawson, Dawson 58 km E, Gravel L., and Whitehorse.

Yukon records: Taiga Cordillera ecozone: *British-Richardson Mountains*: Rock R. and Dempster Hwy. Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Carcross (sand dunes); *Klondike Plateau*: 14 km E Dawson; *Ruby Ranges*: Koidern, Silver City; *St. Elias Mountains*: Kluane National Park: Sheep Creek Rd.; *Yukon Plateau-Central*: Tatchun L.; *Yukon Plateau-North*: 58 km E Dawson (Gravel L.); *Yukon Southern Lakes*: Champagne, Whitehorse; *Yukon-Stikine Highlands*: Takhanne R. 60°07'N 136°56'W.

Biological information: Predator, sand nester. Host unknown.

89. ***Mimesa lutaria* (Fabricius)** [14] Holarctic
Distribution: Transcontinental in Canada, Yukon and northern United States south to California, Arizona, New Mexico, South Dakota, Minnesota, Michigan, Georgia; Eurasia. Finnamore (1983) reported this species from Rampart House.
Yukon records: Taiga Cordillera ecozone: *Old Crow Flats:* Old Crow, Rampart House. Boreal Cordillera ecozone: *Boreal Mountains and Plateaus:* Carcross (sand dunes); *Liard Basin:* Tom Cr. 60°15'N 129°00'W; *Pelly Mountains:* 7 km E Rancheria 60°04'N 130°29'W; *Ruby Ranges:* Haines Jct., Lake Cr. 61°48'N 140°02'W; *Yukon Southern Lakes:* Lone Tree Cr. 60°17'N 132°58'W.
Biological information: Predator, sand nester. Host Homoptera: Cicadellidae (Kurzewski and Lane 1974).
90. ***Mimesa pauper* Packard*** [2] Northern Nearctic
Distribution: Transcontinental in Canada, Yukon and northern United States south to California, Wyoming, South Dakota, Minnesota, Wisconsin, Michigan, Virginia.
Yukon records: Boreal Cordillera ecozone: *Klondike Plateau:* White R. Alaska Hwy. km 1881; *Yukon Plateau-North:* 10 km E McQuesten.
Biological information: Predator, ground nester. Host unknown.
91. ***Mimumesa atratina* (F. Morawitz)*** [13] Holarctic
Distribution: Probably transcontinental in Canada; Eurasia.
Yukon records: Taiga Cordillera ecozone: *Old Crow Flats:* Rampart House. Boreal Cordillera ecozone: *Klondike Plateau:* Snag; *Liard Basin:* Watson L.
Biological information: Predator, decaying-wood nester. Host unknown.
92. ***Mimumesa canadensis* (Malloch)*** [2] Northern Nearctic
Distribution: Transcontinental in Canada, Alaska, Yukon, Colorado, North Dakota, Michigan, Ontario, New York.
Yukon records: Boreal Cordillera ecozone: *Klondike Plateau:* Dawson; *Yukon Southern Lakes:* Whitehorse.
Biological information: Predator, decaying-wood nester. Host unknown.
93. ***Mimumesa clypeata* (Fox)*** [7] Western Nearctic
Distribution: Alaska, Yukon and Northwest Territories south to Nevada.
Yukon records: Taiga Cordillera ecozone: *Old Crow Flats:* Rampart House. Boreal Cordillera ecozone: *Liard Basin:* Watson L.; *Ruby Ranges:* Haines Jct.; *Yukon Plateau-Central:* 30 km E Carmacks 62°02'N 135°51'W; *Yukon Southern Lakes:* Whitehorse.
Biological information: Predator, decaying-wood nester. Host unknown.
94. ***Mimumesa nigra* (Packard)*** [1] Northern Nearctic
Distribution: Transcontinental in Transition zone (Krombein et al. 1979).
Yukon records: Boreal Cordillera ecozone: *Yukon Plateau-North:* Swim Lks. 62°13'N 133°00'W.
Biological information: Predator, decaying-wood nester. Host Homoptera: Cicadellidae.
95. ***Mimumesa propinqua* (Kincaid)*** [4] Northern Nearctic
Distribution: Alaska, Yukon, Quebec.
Yukon records: Taiga Cordillera ecozone: *Old Crow Basin:* 35 km WSW Old Crow 67°30'N 140°43'W; *Old Crow Flats:* Tack L. 67°28'N 139°06'W; *Selwyn Mountains:* Nahanni Range Rd. km 128 61°38'N 128°20'W, Sheldon L. 62°40'N 131°06'W.
Biological information: Predator, decaying-wood nester. Host unknown.
96. ***Diodontus flavitarsus* Fox*** [4] Northern Nearctic
Distribution: Yukon, Nebraska, Colorado, Kansas, Pennsylvania.
Yukon records: Boreal Cordillera ecozone: *Yukon Plateau-Central:* Pelly Crossing, Tatchun L.
Biological information: Predator, ground nester. Host unknown.
97. ***Diodontus rugulosus* Fox*** [4] Western Nearctic
Distribution: Yukon, Nebraska, Colorado, Montana, Illinois.
Yukon records: Boreal Cordillera ecozone: *Klondike Plateau:* Dawson (midnight dome); *St. Elias Mountains:* Kluane National Park: Sheep Mountain; *Yukon Plateau-Central:* Pelly Crossing; *Yukon Southern Lakes:* Whitehorse (Wolf Cr.).
Biological information: Predator, ground nester. Host unknown.

98. ***Diodontus* sp. A*** [2] Unknown
Distribution: Yukon.
Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus:* Judas Cr. 60°23'N 134°08'W; *Yukon Plateau-North:* Ross R.
Biological information: Predator, ground nester. Host unknown.
99. ***Diodontus* sp. B*** [6] Unknown
Distribution: Yukon.
Yukon records: Taiga Cordillera ecozone: *Old Crow Flats:* 6 km E Old Crow 67°34'N 139°41'W. Boreal Cordillera ecozone: *St. Elias Mountains:* Kluane National Park: Sheep Mountain; *Yukon Plateau-Central:* Pelly Crossing, Tatchun L.
Biological information: Predator, ground nester. Host unknown.
100. ***Diodontus* sp. C*** [12] Unknown
Distribution: Yukon.
Yukon records: Taiga Cordillera ecozone: *Old Crow Basin:* Porcupine R. "Blue Bluffs" 67°38'N 138°38'W; *Old Crow Flats:* Old Crow. Boreal Cordillera ecozone: *Klondike Plateau:* Dawson (midnight dome); *Ruby Ranges:* Haines Jct. (Pine Cr.), Slims R. delta; *Yukon Plateau-Central:* 30 km E Carmacks 62°02'N 135°51'W, 35 km E Little Salmon L.; *Yukon Southern Lakes:* Whitehorse (Wolf Cr.).
Biological information: Predator, ground nester. Host unknown.
101. ***Diodontus* sp. D*** [2] Unknown
Distribution: Yukon.
Yukon records: Boreal Cordillera ecozone: *Klondike Plateau:* Dawson; *Yukon Plateau-Central:* Pelly Crossing.
Biological information: Predator, ground nester. Host unknown.
102. ***Pemphredon (Pemphredon) concolor* Say*** [2] Northern Nearctic
Distribution: Transcontinental in Canada and Transition zone in United States.
Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus:* 1.6 km N Carcross.
Biological information: Predator, twig nester. Host Homoptera: Aphididae.
103. ***Pemphredon (Pemphredon) confirtim* Fox*** [3] Western Nearctic
Distribution: Yukon, Washington, Oregon and California.
Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus:* Carcross (sand dunes); *Ruby Ranges:* Kluane.
Biological information: Predator, twig nester. Host unknown.
104. ***Pemphredon (Pemphredon) montanus* Dahlbom*** [8] Holarctic
Distribution: Transcontinental in Canada, and in United States; Eurasia.
Yukon records: Taiga Cordillera ecozone: *British-Richardson Mountains:* Firth R. 69°13'N 140°05'W; *Eagle Plains:* Eagle R. and Dempster Hwy.; *Old Crow Flats:* Old Crow. Boreal Cordillera ecozone: *Pelly Mountains:* Rose R.; *Ruby Ranges:* Dezadeash L. 60°26'N 137°02'W, Kluane L.; *Yukon Plateau-North:* Mayo.
Biological information: Predator, ground-wood nester. Host unknown.
105. ***Pemphredon (Pemphredon) nearctica* Kohl*** [2] Western Nearctic
Distribution: Yukon, Nevada, Colorado.
Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus:* Carcross (sand dunes); *St. Elias Mountains:* Kluane National Park: Sheep Mountain.
Biological information: Predator, nest unknown. Host unknown.
106. ***Pemphredon (Cemonus) inornatus* Say*** [7] Holarctic
Distribution: Transcontinental in United States and Canada; Eurasia.
Yukon records: Taiga Cordillera ecozone: *Old Crow Flats:* Old Crow. Boreal Cordillera ecozone: *Pelly Mountains:* Rose R. km 122 South Canol Rd. 61°16'N 132°02'W; *Ruby Ranges:* Lake Cr. 61°48'N 140°02'W; *Yukon Plateau-Central:* Lapie R. 1 km E on Campbell Hwy.
Biological information: Predator, twig nester. Host Homoptera: Aphididae.

107. *Passaloecus cuspidatus* Smith [13] Nearctic
Distribution: Transcontinental in Canada and United States. Vincent (1978) reported this species from 2 unspecified Yukon localities.
Yukon records: Taiga Cordillera ecozone: *Eagle Plains*: Eagle R. and Dempster Hwy.; *Old Crow Flats*: Old Crow, Rampart House; *Selwyn Mountains*: La Force 62°41'N 132°20'W. Boreal Cordillera ecozone: *Klondike Plateau*: Dawson; *Liard Basin*: Watson L.; *Ruby Ranges*: Silver City; *Yukon Southern Lakes*: Aishihik R. 14 km N Canyon 60°59'N 137°02'W, Whitehorse.
Biological information: Predator, twig nester. Host Homoptera: Aphididae (Vincent 1978).

108. *Passaloecus monilicornis* Dahlbom* [7] Holarctic
Distribution: Transcontinental in Canada, Alaska and Yukon to California, Arizona, New Mexico; Eurasia.
Yukon records: Taiga Cordillera ecozone: *British-Richardson Mountains*: White Mts. 67°58'N 136°29'W; *Old Crow Flats*: Old Crow. Boreal Cordillera ecozone: *Ruby Ranges*: Kluane; *Yukon Southern Lakes*: Aishihik Rd. 60°55'N 137°03'W, 14 km W Takhini.
Biological information: Predator, twig nester. Host Homoptera: Aphididae (Vincent 1978).

109. *Stigmus americanus* Packard* [1] Eastern Nearctic
Distribution: Transcontinental in Canada, east of 100th meridian in United States.
Yukon record: Boreal Cordillera ecozone: *Klondike Plateau*: Dawson (midnight dome).
Biological information: Predator, twig nester. Host Homoptera: Aphididae.

Subfamily Astatinae

The Astatinae is a small subfamily of 151 species. There are 3 genera and 13 species in Canada, 6 of which together with one additional undescribed species are reported from the Yukon. Members of this subfamily are ground nesters; cells are provisioned with Hemiptera.

110. *Diploplectron fossor* Rohwer* [4] Western Nearctic
Distribution: Yukon, British Columbia, Wyoming, Colorado, Utah, Nevada, California.
Yukon records: Boreal Cordillera ecozone: *Ruby Ranges*: Haines Jct. (Pine Cr.); *Yukon Southern Lakes*: Tagish, Whitehorse (Miles Canyon).
Biological information: Predator, ground nester. Host Heteroptera: Miridae.

111. *Diploplectron peglowi* Krombein* [4] Northern Nearctic
Distribution: Yukon, Northwest Territories, western United States, California, Wyoming, Colorado, Nevada, Utah, Idaho, New York.
Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Carcross (sand dunes); *St. Elias Mountains*: Kluane National Park: Sheep Mountain.
Biological information: Predator, ground nester. Host Heteroptera: Lygaeidae, Rhopalidae.

112. *Diploplectron* sp. [2] Unknown
Distribution: Yukon.
Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Carcross (sand dunes).
Biological information: Predator, ground nester. Host unknown.

113. *Astata nubecula* Cresson* [36] Nearctic
Distribution: Yukon and Northwest Territories south to California and Virginia.
Yukon records: Taiga Cordillera ecozone: *Old Crow Flats*: Frog L. 67°30'N 140°15'W, Old Crow, Rampart House. Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Carcross; *Liard Basin*: Watson L.; *Yukon Plateau-Central*: Pelly Crossing; *Yukon Plateau-North*: 10 km E McQuesten.
Alaska record: Montauk Bluff, 64 km. W of Eagle.
Biological information: Predator, ground nester. Host Heteroptera: Pentatomidae.

114. *Dryudella montana* (Cresson)* [1] Western Nearctic
Distribution: Yukon, Washington south to California, Wyoming, Colorado.
Yukon record: Boreal Cordillera ecozone: *Yukon Southern Lakes*: Whitehorse.
Biological information: Predator, ground nester. Host Heteroptera: Alydidae, Pentatomidae, Reduviidae, Rhopalidae, Scutelleridae, Thyreocoridae.

115. *Dryudella pinguis* (Dahlbom)* [5] Holarctic
Distribution: Western in North America, Alaska, Yukon, Northwest Territories; Eurasia.
Yukon records: Taiga Cordillera ecozone: *British-Richardson Mountains*: Firth R. 69°13'N 140°03'W.
 Boreal Cordillera ecozone: *Yukon Plateau-Central*: Pelly Crossing; *Yukon Southern Lakes*: Whitehorse (Wolf Cr.).
Biological information: Predator, ground nester. Host Heteroptera: Lygaeidae.

116. *Dryudella rhimpa* Parker* [3] Western Nearctic
Distribution: Yukon, British Columbia south to Mexico: Queretaro.
Yukon records: Boreal Cordillera ecozone: *Ruby Ranges*: Christmas Bay, Kluane; *St. Elias Mountains*: Kluane National Park: Sheep Creek Rd.; *Yukon Plateau-Central*: Pelly Crossing.
Biological information: Predator, ground nester. Host Heteroptera: Lygaeidae, Pentatomidae, Rhopalidae.

Subfamily Crabroninae

With nearly 3300 species the Crabroninae is the largest subfamily in the Sphecidae. The Canadian fauna contains 98 species, 31 of which occur in the Yukon. Nesting behaviour varies: the Larrini construct ground nests consisting of a series of underground cells connected by a tunnel system; the Trypoxylini nest in pre-existing cavities or stems; whereas Crabronini tend toward twig nests (a linear series of cells constructed in a twig) although ground nesters also occur. Prey choice varies. In general larrines prey on Orthoptera and Hemiptera, Trypoxylini use spiders, and crabronines tend to use Diptera.

117. *Tachysphex aethiops* (Cresson)* [3] Northern Nearctic
Distribution: Transcontinental in Canada, west of 100th meridian in United States south to New Mexico, Arizona and Mexico: Baja California. Pulawski (1988) reported this species from the Northwest Territories: Fort Providence, Fort Simpson, Fort Smith, Hay R., Rae, Yellowknife.
Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Carcross (sand dunes); *Ruby Ranges*: Kluane.
Biological information: Predator, ground nester. Host Orthoptera: Acrididae (Pulawski 1988).

118. *Tachysphex alpestris* Rohwer* [3] Western Nearctic
Distribution: Alaska and Yukon south to Costa Rica. In Canada east to Manitoba. Pulawski (1988) reported this species from Alaska: Alaska Hwy. km 1994, 63°N 142°W and Northwest Territories: Rae, Yellowknife.
Yukon records: Boreal Cordillera ecozone: *Yukon Plateau-Central*: 30 km E Carmacks 62°02'N 135°51'W; *Yukon Southern Lakes*: Whitehorse (Wolf Cr.).
Biological information: Predator, ground nester. Host Orthoptera: Acrididae (Pulawski 1988).

119. *Tachysphex pompiliiformis* (Panzer) [22] Holarctic
Distribution: In North America from Yukon to California, Arizona, New Mexico; transcontinental in southern Canada and northern United States; Eurasia. Pulawski (1988) reported this species from the Yukon: Minto Landing Territorial Campground (Klondike Loop J-148), Watson L., and Whitehorse.
Yukon records: Taiga Cordillera ecozone: *British-Richardson Mountains*: Firth R. 69°13'N 140°03'W; *Old Crow Flats*: 48 km E Old Crow. Boreal Cordillera ecozone: *St. Elias Mountains*: Kluane National Park: Sheep Mountain; *Yukon Plateau-Central*: Tatchun L.; *Yukon Southern Lakes*: Whitehorse (Miles Canyon).
Biological information: Predator, ground nester. Host Orthoptera: Acrididae (Pulawski 1988).

120. *Tachysphex semirufus* (Cresson) [0] Western Nearctic
Distribution: Yukon to California, Arizona, Colorado and also Great Lakes area and New Jersey. Pulawski (1988) reported Whitehorse as the single Yukon locality for this species.
Yukon records: No specimens examined.
Biological information: Predator, ground nester. Host Orthoptera: Acrididae, Tettigoniidae (Pulawski 1988).

121. *Trypoxylon aldrichi* Sandhouse* [2] Western Nearctic
Distribution: Yukon, British Columbia, Alberta south to Wyoming and northern California.

Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus:* Carcross (sand dunes); *Yukon Southern Lakes:* Evelyn Cr. 4 km S 60°45'N 133°05'W.

Biological information: Predator, twig nester. Host unknown.

122. *Trypoxylon frigidum frigidum* Smith* [4] Northern Nearctic

Distribution: Yukon and Hudson Bay south to North Carolina, Washington and New Mexico.

Yukon records: Taiga Cordillera ecozone: *Mackenzie Mountains:* km 82 Dempster Hwy.; *Old Crow Flats:* Rampart House. Boreal Cordillera ecozone: *Ruby Ranges:* Kluane, Slims R. delta.

Biological information: Predator, twig nester. Host Araneae: Araneidae, Erigonidae, Linyphiidae, Micryphantidae, Tetragnathidae, Theridiidae.

123. *Oxybelus uniglumis* (Linnaeus)* [12] Holarctic

Distribution: Transcontinental in North America south to Mexico: Puebla; Eurasia. Steiner (1973) reported this species from the Northwest Territories: Birch L. (62°N), Buffalo R. (60°28'N), Fort Providence N. (61°17'N), Frank Channel (62°43'N).

Yukon records: Taiga Cordillera ecozone: *Old Crow Flats:* Old Crow. Boreal Cordillera ecozone: *Boreal Mountains and Plateaus:* Snafu Cr.; *Yukon Plateau-North:* 93 km E Dawson (Gravel L.), Ross R. 61°56'N 132°30'W; *Yukon Southern Lakes:* Aishihik R. 14 km N Canyon 60°59'N 137°02'W, Fox L. 61°14'N 135°27'W, Whitehorse.

Biological information: Predator, sand nester. Host Diptera: Anthomyiidae, Bombyliidae, Calliphoridae, Dolichopodidae, Lauxaniidae, Muscidae, Platystomatidae, Rhagionidae, Sarcophagidae, Stratiomyidae, Syrphidae, Tachinidae.

124. *Rhopalum (Corynopus) coarctatum* (Scopoli)* [3] Holarctic

Distribution: Canada and in United States east of Rocky Mountains in Transition and Upper Austral zones; Eurasia.

Yukon records: Taiga Cordillera ecozone: *Old Crow Flats:* 6 km E Old Crow 67°34'N 139°41'W. Boreal Cordillera ecozone: *Laird Basin:* Watson L.; *Yukon Plateau-North:* 93 km E Dawson (Gravel L.).

Biological information: Predator, twig nester. Host Diptera: Ceratopogonidae, Chironomidae.

125. *Crossocerus (Crossocerus) lentus* (Fox) [2] Nearctic

Distribution: Transcontinental in Canada. Alaska, Yukon, British Columbia to Quebec, in United States east of mountains south to New Mexico and Florida.

Yukon records: Boreal Cordillera ecozone: *Yukon Plateau-Central:* 30 km E Carmacks 62°02'N 135°51'W; *Yukon Plateau-North:* 22 km E Dawson.

Biological information: Predator, ground nester. Host Diptera: Agromyzidae, Ceratopogonidae, Chironomidae, Chloropidae, Empididae, Simuliidae.

126. *Crossocerus (Crossocerus) maculiclypeus* (Fox) [5] Nearctic

Distribution: Transcontinental, Yukon south to California, New Mexico, Kansas, Pennsylvania.

Yukon records: Taiga Cordillera ecozone: *Old Crow Flats:* Rampart House. Boreal Cordillera ecozone: *Klondike Plateau:* Dawson; *Liard Basin:* Watson L.; *Yukon Southern Lakes:* Whitehorse.

Biological information: Predator, sand nester. Host Diptera: Agromyzidae, Ceratopogonidae, Chamaemyiidae, Chironomidae, Chloropidae, Dolichopodidae, Empididae, Psilidae, Sciaridae, Tephritidae, Tipulidae.

127. *Crossocerus (Crossocerus) minimus* (Packard)* [8] Eastern Nearctic

Distribution: Yukon and Northwest Territories to New Brunswick, south to North Carolina, South Dakota and Texas.

Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus:* Carcross sand dunes; *Yukon Plateau-Central:* Lapie R. at Glacier Cr., Pelly Crossing, Tatchun L.; *Yukon Plateau-North:* 6 km N Stewart Crossing; *Yukon Southern Lakes:* Aishihik R. 14 km N Canyon 60°59'N 137°02'W, Whitehorse.

Biological information: Predator, ground nester. Host unknown.

128. *Crossocerus (Crossocerus) planipes* (Fox) [3] Nearctic

Distribution: Transcontinental in Canada, south to California in the west and Georgia in the east.

Yukon records: Taiga Cordillera ecozone: *Eagle Plains:* Eagle R. and Dempster Hwy.; *North Ogilvie Mountains:* Blackstone R. km 141 Dempster Hwy. 60°01'N 138°12'W. Boreal Cordillera ecozone: *Yukon Southern Lakes:* Whitehorse.

Biological information: Predator, ground nester. Host Diptera: Chironomidae, Chloropidae, Dolichopodidae, Empididae, Lauxaniidae, Psilidae.

129. *Crossocerus (Hoplocrabro) angelicus (Kincaid)** [1] Western Nearctic
Distribution: Yukon, British Columbia, Alberta, south to Wyoming, Nebraska, California.
Yukon records: Boreal Cordillera ecozone: *Yukon Plateau-North*: 10 km E McQuesten.
Biological information: Predator, ground nester. Host unknown.

130. *Crossocerus (Blepharipus) barbipes (Dahlbom)* [1] Holarctic
Distribution: Transcontinental, Alaska and Yukon to Quebec south to North Carolina, Tennessee, South Dakota and mountains of New Mexico, California; Eurasia. Pate (1944) reported this species as *Crossocerus (Blepharipus) pammelas* Pate from Alaska: Seldovia, Kenai Peninsula.
Yukon records: Taiga Cordillera ecozone: *British-Richardson Mountains*: Fish Cr. 69°27'N 140°19'W.
Biological information: Predator, twig nester. Host unknown.

131. *Crossocerus (Blepharipus) cinctipes (Provancher)* [3] Northern Nearctic
Distribution: Boreal, transcontinental, Yukon south to Maryland, Michigan, Minnesota and in mountains to New Mexico, California.
Yukon records: Taiga Cordillera ecozone: *Old Crow Flats*: Rampart House. Boreal Cordillera ecozone: *Liard Basin*: Tom Cr. 60°15'N 129°00'W.
Biological information: Predator, twig nester? Host unknown.

132. *Crossocerus (Blepharipus) nigricornis (Provancher)* [0] Nearctic
Distribution: Boreal, transcontinental, Yukon south to North Carolina, Tennessee, Nebraska and mountains in New Mexico, California. Krombein et al. (1979) reported this species from the Yukon but did not list specific localities.
Yukon records: No specimens examined.
Biological information: Predator, twig nester. Host Diptera: Anthomyiidae, Ceratopogonidae, Chironomidae, Chloropidae, Dolichopodidae, Empididae, Muscidae, Mycetophilidae, Phoridae, Tipulidae.

133. *Crabro advena Smith* [1] Eastern Nearctic
Distribution: Yukon, transcontinental in southern Canada, east of 100th meridian in United States.
Yukon record: Taiga Cordillera ecozone: *Old Crow Flats*: Old Crow 6 km E 67°34'N 139°41'W (Finnamore 1988).
Biological information: Predator, ground nester. Host Diptera: Anthomyiidae, Calliphoridae, Muscidae, Otitidae, Rhagionidae, Sarcophagidae, Syrphidae, Tabanidae, Tachinidae.

134. *Crabro canningsi Finnamore* [2] East Beringian
Distribution: Northern Yukon.
Yukon records: Taiga Cordillera ecozone: *British-Richardson Mountains*: Firth R. 69°13'N 140°03'W (Finnamore 1988), Fish Cr. 69°27'N 140°19'W (Finnamore 1988).
Biological information: Predator, ground nester. Host unknown.

135. *Crabro hispidus Fox* [1] Western Nearctic
Distribution: Yukon, Alberta, British Columbia to California.
Yukon record: Taiga Cordillera ecozone: *Selwyn Mountains*: Nahanni Range Rd. km 128 61°35'N 128°20'W (Finnamore 1988).
Biological information: Predator, ground nester. Host unknown.

136. *Crabro largior Fox* [2] Western Nearctic
Distribution: Yukon to California, Alberta, and South Dakota.
Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Carcross (Finnamore 1988); *Yukon Southern Lakes*: Marsh L. (Finnamore 1988).
Biological information: Predator, ground nester. Host unknown.

137. *Crabro latipes Fox* [32] Nearctic
Distribution: Transcontinental in Canada and United States. Steiner (1973) reported this species from Mayo and Finnamore (1988) reported the following Yukon records.
Yukon records: Taiga Cordillera ecozone: *Selwyn Mountains*: Nahanni Range Rd. km 128 61°35'N 128°20'W. Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Carcross; *Klondike Plateau*: Dawson; *Liard Basin*: Watson L.; *St. Elias Mountains*: Kluane National Park: Sheep Creek Rd.; *Yukon*

Southern Lakes: Evelyn Cr. 4 km S 60°45'N 133°05'W, Lone Tree Cr. 60°17'N 132°58'W, Marsh L., Whitehorse (Wolf Cr.); *Yukon-Stikine Highlands*: Takhanne R. 60°07'N 136°56'W.

Biological information: Predator, ground nester. Host Diptera: Anthomyiidae, Calliphoridae, Dolichopodidae, Muscidae, Rhagionidae, Syrphidae, Tachinidae.

138. *Crabro pallidus* Fox [4] Western Nearctic

Distribution: Yukon, British Columbia to California, Saskatchewan, Idaho, Utah, Wyoming. Finnamore (1988) reported the following Yukon localities.

Yukon records: Taiga Cordillera ecozone: *Selwyn Mountains*: Nahanni Range Rd. km 128 61°35'N 128°20'W. Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Carcross; *Yukon Plateau-Central*: Carmacks, 30 km E 62°02'N 135°51'W.

Biological information: Predator, ground nester. Host unknown.

139. *Crabro pleuralis* Fox [2] Western Nearctic

Distribution: Yukon to California, Alberta, Utah, Colorado, Nebraska.

Yukon records: Boreal Cordillera ecozone: *Ruby Ranges*: Kluane, Sheep Creek Rd. (Finnamore 1988); *Yukon Southern Lakes*: Aishihik R. 14 km N of Canyon 60°59'N 137°02'W (Finnamore 1988).

Biological information: Predator, ground nester. Host unknown.

140. *Crabro velitaris* R. Bohart [2] Western Nearctic

Distribution: Yukon, Alberta and Saskatchewan to Colorado, Nevada and California.

Yukon records: Taiga Cordillera ecozone: *Eagle Plains*: Eagle R. and Dempster Hwy. (Finnamore 1988).

Biological information: Predator, ground nester. Host unknown.

141. *Crabro vernalis* (Packard) [2] Northern Nearctic

Distribution: Transcontinental, Alaska and Yukon to Newfoundland, south to Colorado, Minnesota, New Jersey. Bohart (1976) reported this species from Watson L., and Whitehorse.

Yukon records: Boreal Cordillera ecozone: *Yukon Southern Lakes*: 10 km N Carcross on Hwy. 2 (Finnamore 1988).

Biological information: Predator, ground nester. Host unknown.

142. *Ectemnius (Clytochrysus) lapidarius* (Panzer) [12] Holarctic

Distribution: Transcontinental in Canada and United States in Transition and Upper Austral zones; Eurasia. Steiner (1973) reported this species from Mayo.

Yukon records: Taiga Cordillera ecozone: *Old Crow Flats*: Rampart House. Boreal Cordillera ecozone: *Klondike Plateau*: Snag; *Ruby Ranges*: Slims R. delta; *Yukon Plateau-North*: Sheldon; *Yukon Southern Lakes*: Whitehorse.

Biological information: Predator, decaying-wood nester. Host Diptera: Syrphidae.

143. *Ectemnius (Clytochrysus) ruficornis ruficornis* Zetterstedt [8] Holarctic

Distribution: Transcontinental in Canada and United States in Transition zone; Eurasia. Steiner (1973) reported this species as *Ectemnius nigrifrons* (Cresson) from Mayo (63°38'N), Stewart R. (63°26'N) and Tatchun L. (62°20'N).

Yukon records: Taiga Cordillera ecozone: *Old Crow Flats*: 6 km E Old Crow 67°34'N 139°41'W. Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Carcross; *Klondike Plateau*: Dawson; *Ruby Ranges*: Dry Cr.; *St. Elias Mountains*: Kluane National Park: Sheep Mountain; *Yukon Southern Lakes*: Fox L. 61°14'N 135°27'W, Whitehorse.

Biological information: Predator, decaying-wood nester. Host Diptera: Syrphidae.

144. *Ectemnius (Hypocrabro) continuus continuus* (Fabricius)* [3] Holarctic

Distribution: Transcontinental in Canada and United States in Transition and Upper Austral zones; Eurasia.

Yukon records: Boreal Cordillera ecozone: *Yukon Plateau-North*: Orchie L. 3 km N on North Canol Rd. 62°11'N 131°48'W, Sheldon.

Biological information: Predator, decaying-wood nester. Host Diptera: Calliphoridae, Sarcophagidae, Tachinidae.

145. *Ectemnius (Ectemnius) borealis (Zetterstedt)* [5] Holarctic
Distribution: Transcontinental in Canada, mountains in western United States; Eurasia. Bohart and Kimsey (1979) reported this species from the Yukon but did not list specific localities.
Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus:* Rancheria (Swift R.);
Yukon Plateau-North: Sheldon 62°40'N 131°06'W.
Biological information: Predator, decaying-wood nester. Host unknown.

146. *Ectemnius (Ectemnius) dives (Lepelletier and Brulle)** [2] Holarctic
Distribution: Transcontinental in Canadian and Transition zones of Canada and United States; Eurasia. Steiner (1973) reported this species from the Northwest Territories: Fort Providence N (61°17'N).
Yukon records: Boreal Cordillera ecozone: *Yukon Plateau-North:* Sheldon, 58 km E Dawson (Gravel L.).
Biological information: Predator, decaying-wood nester. Host Diptera: Syrphidae, Tachinidae.

Subfamily Nyssoninae

The Nyssoninae with about 1500 species is the second largest subfamily in the Sphecidae. There are 41 species found for the most part across southern Canada; but only 6 species are recorded from the Yukon and all of these are recorded only from the southern Yukon. The Yukon species prey on Homoptera but 2 species are cleptoparasitic on other Nyssoninae. All species are ground-nesters.

147. *Alysson guignardi Provancher** [1] Nearctic
Distribution: Transcontinental, Yukon, California, New Mexico to Quebec, south to North Carolina.
Yukon records: Boreal Cordillera ecozone: *Yukon Southern Lakes:* Marsh L.
Biological information: Predator, ground nester. Host unknown.

148. *Alysson triangulifer triangulifer Provancher** [7] Nearctic
Distribution: Transcontinental, Alaska and Yukon to Quebec, south to Maryland, Kentucky, Colorado.
Yukon records: Taiga Cordillera ecozone: *Old Crow Flats:* Rampart House. Boreal Cordillera ecozone: *Liard Basin:* Watson L.; *Yukon Plateau-North:* Ross R. km 122 on South Canol Rd. 61°16'N 133°02'W; *Yukon Southern Lakes:* Little Atlin L., Whitehorse.
Biological information: Predator, ground nester. Host unknown.

149. *Nysson sp.** [2] Unknown
Distribution: Yukon.
Yukon records: Boreal Cordillera ecozone: *Yukon Plateau-Central:* 27 km S Carmacks 61°52'N 136°07'W.
Alaska record: Tanana R. 64°20'N 146°51'W.
Biological information: Cleptoparasite. Host unknown.

150. *Epinysson sp.** [1] Unknown
Distribution: Yukon.
Yukon record: Boreal Cordillera ecozone: *Klondike Plateau:* 14 km W Dawson.
Biological information: Cleptoparasite. Host unknown.

151. *Gorytes sp. A* [9] Unknown
Distribution: Yukon.
Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus:* Carcross (sand dunes); *Ruby Ranges:* Silver City; *Yukon Southern Lakes:* Whitehorse (Wolf Cr.).
Biological information: Predator, ground nester. Host unknown.

152. *Gorytes sp. B* [2] Unknown
Distribution: Yukon.
Yukon records: Boreal Cordillera ecozone: *Ruby Ranges:* Silver City; *Yukon Southern Lakes:* Whitehorse.
Biological information: Predator, ground nester. Host unknown.

Subfamily Philanthinae

The Philanthinae contains about 1100 species including the genus *Cerceris* with more than 850 species. The Canadian fauna is southern with 45 species, only one of which is found

in the Yukon. These wasps nest in the ground and prey usually consists of other aculeate Hymenoptera or Coleoptera.

153. *Cerceris nigrescens* Smith [66]

Nearctic

Distribution: Transcontinental, Yukon south to California, Texas, North Carolina. Steiner (1973) reported this species from a number of localities in the Northwest Territories and a single Yukon locality: Stewart R. (63°26'N).

Yukon records: Taiga Cordillera ecozone: *Old Crow Flats:* Rampart House. Boreal Cordillera ecozone: *Klondike Plateau:* 14 km E Dawson, Snag; *Liard Basin:* Watson L.; *Ruby Ranges:* Haines Jct. km 1640 Alaska Hwy, Kluane; *St. Elias Mountains:* Kluane National Park: Sheep Mountain; *Yukon Plateau-Central:* Tatchun Cr. 62°17'N 136°17'W, von Wilczek L. 62°44'N 136°42'W; *Yukon Plateau-North:* 58 km E Dawson (Gravel L.), 10 km E McQuesten, Starr Cr. 61°46'N 131°51'W, Stewart Crossing; *Yukon Southern Lakes:* Aishihik R. 14 km N Canyon 60°59'N 137°02'W, Whitehorse.

Alaska record: Yukon R., Dalton Hwy.

Biological information: Predator, ground nester. Host Coleoptera: Curculionidae.

Other Species Expected to Occur in the Yukon

The following 34 additional species recorded from the adjacent territories might be expected to occur in the Yukon.

Family Bethyridae

154. *Bethylus amoenus* Fouts. Evans (1978) reported this species from the Northwest Territories: Norman Wells.

Family Chrysididae

155. *Omalus (Diplorrhous) speculum* (Say). Bohart and Kimsey (1982) reported this species from Alaska: Fairbanks and Northwest Territories: Norman Wells.

Family Dryinidae

156. *Aphelopus varicornis* Brues. Olmi (1984) reported this species from Alaska: km 462 Richardson Hwy. Shaw Cr.; km 224 Steese and from Northwest Territories: Norman Wells.

157. *Pseudogonatopus canadensis* Olmi. Olmi (1984) reported this species from Northwest Territories: Norman Wells.

158. *Tetrodontochelys plesius* (Fenton). Olmi (1984) reported this species from Northwest Territories: Reindeer Depot.

Family Pompilidae

159. *Evagetes hyacinthinus* (Cresson). Steiner (1970) reported this species from Northwest Territories: Hart Cr., road to Fort Providence 60°50'N 116°35'W.

160. *Evagetes padrinus padrinus* (Viereck). Krombein et al. (1979) reported this species from the Northwest Territories.

161. *Episyron biguttatus biguttatus* (Fabricius). Evans (1950) reported this subspecies from the Northwest Territories: Fort Norman.

162. *Anoplius (Pompilinus) cylindricus* (Cresson). Evans (1951a) reported this species from the Northwest Territories: Fort Norman.

163. *Anoplius (Pompilinus) marginatus* (Say). Evans (1951a) reported this species from the Northwest Territories: Fort Norman.

164. *Ammosphex occidentalis* Dreisbach. Steiner (1970) reported this species from the Northwest Territories: Yellowknife.

165. *Anoplochares apicatus* Provancher. Steiner (1970) reported this species from the Northwest Territories: Fort Providence.

166. *Arachnospila scelestus* Cresson. Steiner (1970) reported this species from the Northwest Territories: Hart Cr., road to Fort Providence 60°50'N 116°35'W and the shore of Prelude L. near Yellowknife 62°32'N 113°48'W.

Family Sphecidae

167. *Palmodes carbo* Bohart and Menke. Bohart and Menke (1961) reported this species as *Palmodes morio* (Kohl) from the Northwest Territories.
168. *Ammophila strenua* Cresson. Steiner (1973) reported this species from the Northwest Territories: Fort Providence.
169. *Pemphredon (Cemonus) bipartior* Fox. Steiner (1973) reported this species from the Northwest Territories: Prelude L.
170. *Passaloecus borealis* Dahlbom. Vincent (1978) reported this species from the Northwest Territories.
171. *Astata leuthstromi* Ashmead. Parker (1962) reported this species from Alaska.
172. *Dryudella picta* (Kohl). Steiner (1973) reported this species from the Northwest Territories: Fort Providence and Prelude L.
173. *Plenoculus davisi davisi* Fox. Krombein et al. (1979) reported this species from Alaska.
174. *Miscophus (Miscophus) americanus* Fox. Steiner (1973) reported this species from the Northwest Territories: Fort Providence and Prelude L.
175. *Crossocerus (Crossocerus) wesmaeli* Van der Linden. Krombein et al. (1979) reported this species from the Northwest Territories.
176. *Crabro argusinus* Bohart. Bohart (1976) reported this species from the Northwest Territories: Fort Smith.
177. *Crabro monticola* (Packard). Krombein et al. (1979) reported this species from Alaska.
178. *Ectemnius (Hypocrabro) arcuatus* (Say). Steiner (1973) reported this species from the Northwest Territories: Fort Providence.
179. *Ectemnius (Hypocrabro) trifasciatus* (Say). Steiner (1973) reported this species from the Northwest Territories: Wood Buffalo, Fort Providence and Frank Channel.
180. *Ectemnius (Ectemnius) corrugatus* (Packard). Krombein et al. (1979) reported this species from Alaska.
181. *Lestica (Solenius) producticollis* (Packard). Steiner (1973) reported this species from the Northwest Territories: Fort Providence.
182. *Nysson lateralis* Packard. Steiner (1973) reported this species from the Northwest Territories: Heart L., Fort Providence, Birch L., Yellowknife, Prelude L. and Frank Channel.
183. *Nysson subtilis* Fox. Steiner (1973) reported this species from the Northwest Territories: Fort Providence and Birch L.
184. *Gorytes albosignatus* Fox. Steiner (1973) reported this species from the Northwest Territories: Fort Providence.
185. *Lestiphorus cockerelli* (Rohwer). Steiner (1973) reported this species from the Northwest Territories: Fort Providence.
186. *Hoplisoides costalis costalis* (Cresson). Krombein et al. (1979) reported this species from Alaska.
187. *Philanthus pulcher* Dalla Torre. Bohart and Grissell (1975) reported this species from the Northwest Territories: Fort Smith.

Diversity and Biology of the Yukon Aculeata

General Nature of the Yukon Fauna. A summary of the aculeate wasp species (excluding Formicidae) occurring in the Yukon Territory is provided in Table 1. The 153 species in the Yukon fauna represent 24% of the aculeate wasps (not including Formicidae) known from Canada (646 species, Danks 1979). The inadequate state of knowledge concerning this area of Canada is underscored by the fact that 50% of the aculeate species reported from the Yukon in this study are new records for the Territory. A further 34 species can be expected to occur in the Yukon based on their occurrence in adjacent regions. Therefore, I estimate that about 80% of the species richness in the aculeate wasps of the Yukon has been documented in this paper.

The aculeate wasp fauna of the Yukon is overwhelmingly southern, with only one species, *Vespula albida* (species 48), reaching the north coast, but many species reaching south to the austral life zone in the United States. Species found in the Yukon illustrate

TABLE 1. Summary of the aculeate wasp fauna of the Yukon.

| Family/Superfamily | Number of species |
|----------------------|-------------------|
| Bethylidae | 1 |
| Chrysididae | 23 |
| Dryinidae | 6 |
| Embolemidae | 1 |
| Chryidoidea | 31 |
| Sierolomorphidae | 1 |
| Sapygidae | 2 |
| Vespidae | 18 |
| Pompilidae | 31 |
| Vespoidea | 52 |
| Sphecidae: Sphecinae | 4 |
| Pemphredoninae | 22 |
| Astatinae | 7 |
| Crabroninae | 30 |
| Nyssoninae | 6 |
| Philanthinae | 1 |
| Apoidea | 70 |
| Total | 153 |

3 broad distributional patterns: Holarctic; transcontinental; and western. These patterns are summarized in Table 2, which is based on 135 Yukon species of known distribution; 14 unidentified species were excluded from the calculations. Species with transcontinental distributions comprise more than half (57%) of the fauna. A further 15% are Holarctic or have restricted Palaearctic distributions with, almost always, transcontinental Nearctic distributions. Therefore more than 70% of the Yukon aculeate wasp fauna is composed of widely distributed species.

The second largest faunal component consists of species with western Nearctic distributions (26%). Generally defined, the western component is distributed west of the 100th meridian and usually from Alaska to California and Texas where the species occur at higher elevations. Two species, *Sapyga* sp. B (34) and *Crabro canningsi* (134), have known distributions only north of the arctic circle (66°N). At least one of these species was present in the Beringian refugium during the Wisconsinan. *Crabro canningsi* is found in the British-Richardson Mountains ecoregion (69°27'N) from a locality between the British Mountains and the Yukon Coastal Plain ecoregion, which extends along the north coast

TABLE 2. Geographic distribution patterns of Yukon aculeate wasps. Four species have been excluded from the table, one of East Beringian distribution and 3 of Eastern Nearctic distribution. The "Unknown" column refers to those species which could not be identified. Species with Holarctic distributions are not included in the column of transcontinental species.

| Superfamily | Holarctic | Transcontinental | Western | Unknown |
|--------------|-----------|------------------|-----------|-----------|
| Chryridoidea | 1 | 19 | 11 | 0 |
| Vespoidea | 4 | 34 | 9 | 5 |
| Apoidea | 15 | 26 | 16 | 9 |
| Total | 20 | 79 | 36 | 14 |

adjacent to the Beaufort Sea. These regions are probably the least known faunistically; at least *C. canningsi* exhibits strong Palaearctic affiliations—the most closely related species are in Eurasia (Finnamore 1988).

Disjunct distributions occur in 49 species (32%) of the Yukon aculeate wasp fauna. Most disjunctions are found in western species occurring from the southwestern United States to southwestern Canada with outlying populations in the Yukon. A few transcontinental species also have disjunct distributions for they are found across southern Canada as well as in the Yukon. Unfortunately the fauna of Canada is inadequately collected and it is not possible to separate real disjunctions from collecting anomalies. Collecting in central and northern British Columbia and Alberta will likely clarify many of these apparent disjunctions.

Patterns of Species Richness. The species richness of aculeate wasps in the Yukon decreases with increasing latitude. The Boreal Cordillera, the southernmost ecozone, contains records of 136 species, the Taiga Cordillera ecozone contains records of 80 species, while the Southern Arctic ecozone (northernmost) has a record for only one species. Species richness of aculeate wasps in the Yukon appears to be concentrated in 3 ecoregions, the Yukon Southern Lakes ecoregion (68 species), the Yukon Plateau-North ecoregion (52 species) and the Old Crow Flats ecoregion (57 species). This last ecoregion is located north of the Arctic Circle in the Taiga Cordillera ecozone. Oswald and Senyk (1977) found the Liard River ecoregion in the southeastern Yukon, approximately equal to the Laird Basin ecoregion of the Ecological Stratification Working Group (1996), to be richest in flora.

The Old Crow Flats is an unglaciated ecoregion at 68°N in the Taiga Cordillera ecozone. The Ecological Stratification Working Group (1996) characterized the ecoregion as an area of wetlands and oriented lakes that occupy a glaciolacustrine plain about 300 m above sea level. The mean annual temperature is about -10°C with a summer mean of 7.5°C and a winter mean of -27°C. Mean annual precipitation ranges between 200 and 250 mm.

The Yukon Plateau-North ecoregion is between 62°N and 64°N in the Boreal Cordillera ecozone. The Ecological Stratification Working Group (1996) characterized the ecoregion as an area of rolling uplands, small mountain groups and nearly level tablelands dissected by deep, broad, U-shaped valleys. The Tintina Trench traverses the valley from southeast to northwest. The mean annual temperature is about -4°C with a summer mean of 10.5°C and a winter mean of -20°C. The mean annual precipitation ranges from 300 mm in major valleys to 600 mm in the mountains.

The Yukon Southern Lakes ecoregion is between approximately 60°N and 61°N in the Boreal Cordillera ecozone. The Ecological Stratification Working Group (1996) characterized the ecoregion as cold and semiarid, mostly between 600 and 1500 m above sea level, including several plateaus, and in the rain shadow of the St. Elias Mountains. The mean annual temperature is about -2.5°C with a summer mean of 10°C and a winter mean of -16.5°C. The mean annual precipitation ranges between 225 and 300 mm in the major valleys.

It is evident from the conditions and climates in these ecoregions that latitude, past glaciation, precipitation, temperature (either winter or summer) and permafrost are not factors limiting the presence of many of the species of aculeate Hymenoptera found in the Yukon. For permafrost, for example, Oswald and Senyk (1977) note that within the discontinuous-permafrost zone, permafrost may be prevalent on north-facing slopes but almost absent from south-facing slopes. In the continuous-permafrost zone the active layer is thicker on south-facing slopes than on north-facing slopes. In both permafrost zones habitat is available for ground-nesting aculeate wasps or for growth of the appropriate flora supporting twig-nesting species.

Two physiographic factors in the Yukon, elevation and aspect, contribute to regional richness of aculeate wasp faunas. The highest elevation occurs in the Saint Elias Mountains (Mt. Logan, 6050 m) of the southwestern Yukon and from there decreases through valleys, plateaus and several other mountain ranges to the Yukon Coastal Plain on the Beaufort Sea. Because the elevation generally decreases as latitude increases, the limit of tree growth (treeline) extends almost to the Beaufort Sea. Although more detailed habitat data on specimens collected is necessary to document factors controlling wasp occurrence, it appears that the treeline represents a nearly absolute limit, both in elevation and latitude, to the distribution of aculeate wasps. The Yukon Coastal Plain (Southern Arctic ecozone) is a tundra region lying north of the treeline and has only one species of aculeate wasp, *Vespula (Dolichovespula) albida* (48). Even so, *V. albida* probably is associated with scattered trees in lowland sheltered river valleys rather than with tundra as such. Regional treeline elevation appears to correlate with diversity of aculeate wasps. Treeline occurs between 1200 m and 1500 m in the southern Yukon, and at 450 m in the Old Crow Flats ecoregion, the second richest ecoregion.

The second factor responsible for the local species richness of aculeate wasps in the Yukon is aspect. Aspect refers to the direction a river valley or mountain slope is oriented. The mountain ranges of the Yukon tend to be oriented in a northwest-southeast direction; consequently many mountains and rivers have a slope or valley with a southwest face. The implications concerning permafrost have been noted above. South-facing slopes, because of increased solar radiation, tend to be dry, allowing for the development of grasslands. They would also tend to thaw earlier in the spring and freeze later in the fall. These slopes likely provide preferential nesting sites for aculeate Hymenoptera. The 3 richest ecoregions of the Yukon, Yukon Southern Lakes, Yukon Plateau-North and Old Crow Flats, contain major river systems with south- or southwest-facing slopes.

While it is clear that the Yukon contains habitats that support a relatively rich aculeate wasp fauna, the means by which that fauna colonized the Yukon following the melting of the glaciers remains clouded. The existence of a large glacial refugium covering most of Alaska and parts of the Yukon is well documented (Matthews et al. 1989). Species demonstrating Holarctic and transcontinental boreal Nearctic distributions colonized the northern regions either from a northern refugium or by following the boreal forest northward with the retreat of the glaciers. The 20 Holarctic species (15% of the Yukon aculeate wasp fauna) are the most likely candidates to have survived the ice ages in a northern refugium from which they then followed the glacial retreat to their present distributions. Most of the 79 species with transcontinental distributions (56% of the Yukon aculeate wasp fauna) probably followed the boreal forest northward.

One of the most interesting aspects of the Yukon aculeate wasp fauna is the existence of 49 species which have apparently disjunct distributions, their Yukon populations separated from more southerly, mostly western populations. The climate pattern following deglaciation in northern Canada was one of rapid warming followed by a warmer-than-present period with subsequent cooling, until present levels were reached about 4 ka B.P. The warm period, known as the Hypsithermal Interval, occurred from about 11 to 9 ka B.P. in the northern Yukon (Anderson et al. 1989). Species exhibiting disjunctions today may have been able to extend their range northward during the Hypsithermal and now exist as populations in isolated pockets, particularly on south-facing slopes at lower elevations. The fauna of the Porcupine Plains Region may have resulted largely from faunal shifts during the Hypsithermal.

TABLE 3. Nest-site preference in vespoidea and sphecidae wasps of the Yukon. Only predatory species are included; parasitoids and cleptoparasites do not select nest sites and are not represented in this table.

| Superfamily/family | Number of species in | | |
|--------------------|----------------------|---------------|----------------------|
| | Ground nests | Decaying wood | Aerial or Twig nests |
| Vespoidea | 28 | 1 | 9 |
| Apoidea: Sphecidae | 45 | 11 | 12 |
| Total | 73 (69%) | 12 (11%) | 21 (20%) |

Biological Features. A summary of nest-site preferences of vespoidea and sphecidae wasps is presented in Table 3. It includes only predatory species; parasitoids and cleptoparasites do not select nest sites but attack hosts *in situ*. For most species nesting information was not available but could be inferred from observations on other closely related species in North America. Aculeate species of the same genus, subfamily or family typically exhibit similar nesting behaviour. Ground-nesting species dominate the Yukon fauna but it is premature to speculate on the reasons for such dominance without comparative data for other regions. Data pooled on a continental basis indicate that the ratio of ground-nesting to aerial-nesting species is 3:1, whereas in the Yukon species the ratio is 3.5:1 (the continental figure is based on 1567 species (extracted from Krombein et al. 1979), the Yukon figure on 106 species). The Yukon fauna shows only a slight increase in proportion of ground-nesting species compared to the continental fauna. These figures indicate that a long, relatively cold winter probably does not affect the ability of aerial-nesting species to occupy northern habitats. Both nesting strategies occur north of the arctic circle (66°N) in the Yukon. No data are available on the selection of overwintering sites, if other than the nest, for Yukon aculeate wasps.

Aculeate wasp species represent 4 trophic groups based on the larval feeding behaviour: herbivore (a few vespid pollen feeders), parasitoid, cleptoparasite and predator. No aculeate wasps feed on pollen in the Yukon. Table 4 summarizes trophic relationships of the Yukon fauna. As for nest-site selection, information in the Table depends, for nearly all Yukon species, on reasonable inferences. The only comparative data available are those extracted from Krombein et al. (1979) for North America, north of Mexico. They show several large differences between aculeate wasps of the Yukon and those of the continent. For instance, 36% of Nearctic aculeate wasps are parasitoids whereas only 6% of Yukon species are. This difference can be attributed to the absence, in the Yukon, of Bethylinidae (201 species in North America, 1 in Yukon), Tiphidae (236 species in North America), and Mutillidae (467 species in North America). Cleptoparasites on a continental scale comprise 8% of the fauna but in the Yukon represent 23% of the fauna. It is difficult to speculate on reasons why the cleptoparasitic strategy should be successful in the Yukon but Bohart and Kimsey (1982) may have provided an explanation. In an analysis of the biogeography of 5 of the larger genera of Chrysididae (*Chrysis*, *Hedychridium*, *Ceratochrysis*, *Argochrysis*, and *Chrysura*), 4 of which occur in the Yukon, Bohart and Kimsey (1982) found that 71% of the species occurred west of the 100th meridian, 22% on both sides of it, and 7% east of it. The cleptoparasite diversity in the Yukon fauna may reflect the higher diversity or preponderance of cleptoparasites west of the 100th meridian.

Aculeate wasps prey on a wide range of insects and spiders. Table 5 summarizes host preference for the Yukon fauna. It demonstrates the broad range of hosts used by the Sphecidae and the relatively narrow host ranges of other families. The Chrysididae, the dominant family in the Yukon Chrysididae, use other Hymenoptera as a host group. Pompilidae (Vespoidea) tend to use spiders; but other Vespoidea have a wide range of hosts.

TABLE 4. Trophic relationships of aculeate wasps occurring in the Yukon.

| Superfamily | Number of species | | |
|--|-------------------|-----------------|-----------|
| | Parasitoids | Cleptoparasites | Predators |
| Chrysoidea | 8 | 23 | — |
| Vespoidea | 1 | 10 | 41 |
| Apoidea | — | 2 | 68 |
| Yukon Total (Percentage) | 9 (6%) | 35 (23%) | 109 (71%) |
| Percentage of trophic level in North American fauna | (36%) | (8%) | (56%) |

TABLE 5. Number of species of each family of aculeate wasps occurring in the Yukon using various orders of arthropod hosts. Abbreviations: Ara., Araneae; Col., Coleoptera; Dip., Diptera; Hemi., Hemimetabolous; Het., Heteroptera; Holo., Holometabolous; Hom., Homoptera; Hym., Hymenoptera; Lep., Lepidoptera; Ort., Orthoptera. The Araneae are included with the hemimetabolous insects because of the similarity of immatures to the adults.

| Family/Superfamily | Host group | | | | | | | | | |
|--------------------|------------|------|------|------|-----------|------|------|------|------|-----------|
| | Ara. | Ort. | Hom. | Het. | Hemi. | Col. | Lep. | Dip. | Hym. | Holo. |
| Bethylidae | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 0 | |
| Chrysididae | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 23 | |
| Dryinidae | 0 | 0 | 7 | 0 | | 0 | 0 | 0 | 0 | |
| Chrysoidea | | | | | 7 | | | | | 24 |
| Sapygidae | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 2 | |
| Vespidae | 0 | 0 | 0 | 0 | | 1 | 7 | 8 | 2 | |
| Pompilidae | 25 | 0 | 0 | 0 | | 0 | 0 | 0 | 6 | |
| Vespoidea | | | | | 25 | | | | | 26 |
| Sphecidae | 2 | 4 | 26 | 7 | | 2 | 4 | 23 | 2 | |
| Apoidea | | | | | 39 | | | | | 31 |

The Sphecidae tend to use Homoptera or Diptera in the Yukon. Four major host groups are Araneae, Diptera, Homoptera, and Hymenoptera. Hemimetabolous and holometabolous groups are utilized in about equal proportions. These patterns are generally consistent with patterns seen in these groups of aculeate wasps elsewhere. Therefore, more specific data on habitats and hosts, as well as wider collecting, will be required before it is possible to assess whether certain biological patterns are characteristic of the aculeate wasps in the Yukon.

Acknowledgements

I thank S.G. Cannings and G.G.E. Scudder, Spencer Entomological Museum, University of British Columbia, Vancouver, for loan of specimens and provision of study space. I thank G.A.P. Gibson and L. Masner, Biosystematics Research Centre, Ottawa, for loan of specimens and provision of museum study space; and R.S. Anderson, H.V. Danks, J.A. Downes and D.J. Larson for their many helpful comments on the manuscript.

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