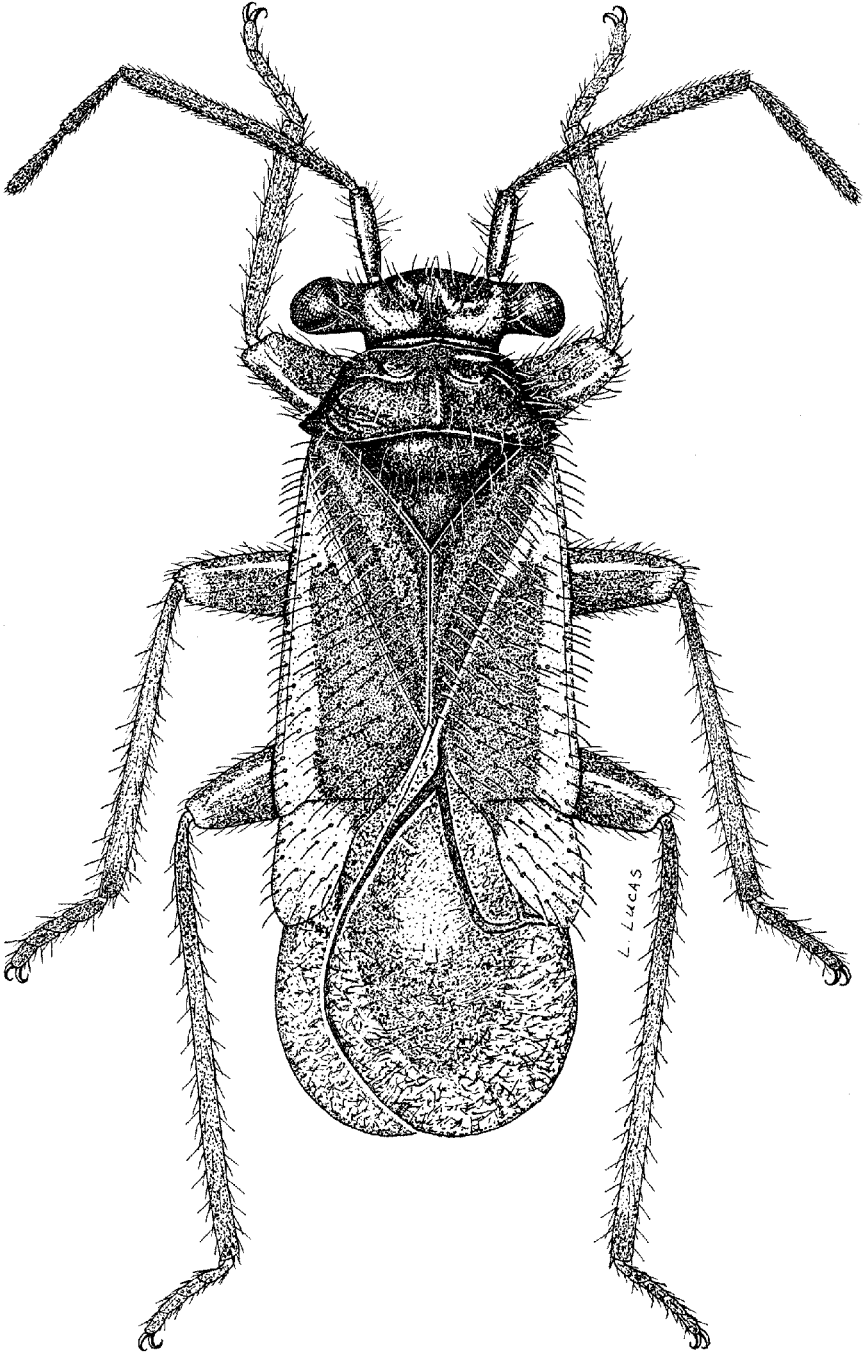


True bugs of the Yukon



FRONTISPIECE. *Labops chelifera* Slater, male, a mirid that inhabits wet tundra and is endemic to East Beringia. Length 4.25 mm.

True Bugs (Heteroptera) of the Yukon

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Abstract. So far, 216 species or subspecies of Heteroptera, belonging to 19 families, are recorded from the Yukon, about half of these reported here for the first time. This total represents 5.6% of the North American heteropteran fauna, and 17.1% of the Canadian true bug fauna. It is composed of 4 (1.8%) semiaquatic, 12 (5.6%) aquatic, and 200 (92.6%) terrestrial species.

Thirteen different faunistic elements are recognized within the true bugs in the Yukon. Species that occur in both Palaearctic and Nearctic regions are a significant component, with 61 species (28.2%) involving 5 faunistic elements: Circumboreal or near Circumboreal with 44 species (20.4%), Palaearctic-East Beringian with 7 species (3.2%), Palaearctic-Western Nearctic with 7 species (3.2%), Palaearctic-Cordilleran with 2 species (0.9%) and East-West Beringian with just one species (0.5%). The 141 exclusively Nearctic species constitute 65.3% of the fauna. Eight faunistic elements are recognized within this component: Nearctic including Beringian with 68 species (31.5%), Nearctic excluding Beringia with 22 species (10.2%), Western Nearctic including Beringian with 13 species (6.0%), Western Nearctic excluding Beringia with 11 species (5.1%), Cordilleran including Beringian with 12 species (5.6%), Cordilleran excluding Beringia with 11 species (5.1%), Subarctic with 2 species (0.9%) and East Beringian endemic with 2 species (0.9%). Five species, constituting 2.3% of the Yukon fauna, are considered to belong to a Nearctic-Neotropical element, with one species constituting a possible Asian element. Several species still lack exact identification, so their zoogeography remains to be analyzed.

The zoogeographic history of the various faunistic elements is discussed with reference to feeding habitats and the past and present vegetation of the Pacific Northwest. This paper also contains records of 28 species new to Alaska and 6 species new to Canada. Additional records of Heteroptera new to various provinces of Canada are recorded in a tabular format.

The Heteroptera show a distinct attenuation of the fauna as one proceeds northward, with 205 species in the southern Yukon, and only 5 species in the arctic coastal region. Most of the Heteroptera in the Yukon are widely distributed in the Territory, with very few localized and closely tied to a specific habitat. However, there is a group of species closely associated with the xeric *Artemisia frigida*-grass community found on south-facing slopes along the Yukon drainage system and scattered localities elsewhere.

Sixty-one Heteroptera are predators, constituting 28.2% of the Yukon bug fauna. Most phytophagous species are polyphagous and associated with herbaceous vegetation. Nevertheless, *Salix*, *Pinus* and *Picea* are the main host genera for the Heteroptera of the Yukon. Wing polymorphism and flightlessness occurs in 33 species (15.3%) of the heteropteran fauna. Ten (4.6%) of the species exhibit myrmecomorphy, and 2 species (0.9%) are aposematic.

Résumé. *Les punaises (Heteroptera) du Yukon.* À ce jour, 216 espèces ou sous-espèces d'hétéroptères appartenant à 19 familles ont été trouvées au Yukon, dont la moitié sont mentionnées ici pour la première fois. Ce nombre représente 5,6% de toute la faune des punaises de l'Amérique du Nord et 17,1% de la faune canadienne. Cette faune compte 4 (1,8%) espèces semi-aquatiques, 12 (5,6%) espèces aquatiques et 200 espèces (92,6%) terrestres.

Treize éléments faunistiques peuvent être reconnus au Yukon. Les espèces qui vivent aussi bien dans la zone néarctique que dans la zone paléarctique sont une composante importante (61 espèces, 28,2%) qui contient cinq éléments faunistiques: 44 espèces (20,4%) sont circumboréales ou presque, 7 espèces (3,2%) vivent en zone paléarctique et en Béringie orientale, 7 espèces (3,2%) vivent dans la zone paléarctique et dans l'ouest néarctique, 2 (0,9%) espèces vivent dans la zone paléarctique et dans la Cordillère et 1 espèce (0,5%) se trouve en Béringie orientale et en Béringie occidentale. Les 141 espèces strictement néarctiques constituent 65,3% de toute la faune et on y trouve huit éléments faunistiques: 68 espèces (31,5%) vivent dans la zone néarctique (y compris la Béringie), 22 espèces (10,2%) sont néarctiques mais ne vivent pas en Béringie, 13 espèces (6,0%) vivent dans l'ouest de la zone néarctique, dont la Béringie, 11 espèces (5,1%) sont dans l'ouest néarctique à l'exclusion de la Béringie, 12 espèces (5,6%) sont de la Cordillère, y compris en Béringie, 11 espèces (5,1%) sont de la Cordillère à l'exclusion de la Béringie, 2 espèces (0,9%) sont subarctiques, enfin 2 espèces (0,9%) sont endémiques en Béringie orientale. Cinq espèces, 2,3% de la faune du Yukon, forment un élément néarctique-néotropical et 1 espèce appartient possiblement à un élément asiatique. Plusieurs espèces ne sont pas encore identifiées avec exactitude et leur zoogéographie reste donc à analyser.

L'historique zoogéographique des divers éléments faunistiques est examinée à la lumière des ressources alimentaires et de l'histoire de la végétation dans le nord-ouest du continent. Vingt-huit espèces sont mentionnées pour la première fois en Alaska et 6 au Canada. Des mentions additionnelles d'hétéroptères rencontrés pour la première fois en certaines provinces canadiennes paraissent ici sous forme de tableau.

La faune des hétéroptères diminue le long d'un gradient sud-nord et il y a 205 espèces dans le sud du Yukon, mais seulement 5 dans la zone côtière arctique. La plupart des punaises du Yukon sont bien répandues dans tout le territoire et peu sont très localisées ou associées à un habitat spécifique. Il y a cependant un groupe d'espèces étroitement associées à la communauté xérique *Artemisia frigida*-herbacées qui prévaut sur les pentes sud le long du bassin hydrographique du Yukon et en d'autres endroits dispersés ailleurs au Yukon.

Soixante et une espèces de punaises sont des prédateurs constituant 28,2% de la faune du Yukon. La plupart des espèces phytophages sont polyphages et associées à la végétation herbacée. Néanmoins, *Salix*, *Pinus* et *Picea* sont les genres hôtes dominants des hétéroptères du Yukon. Le polymorphisme des ailes ou l'aptérisme prévalent chez 33 espèces (15,3%). Dix (4,6%) des espèces sont myrmécomorphes et 2 (0,9%) sont aposématiqués.

Introduction

The Heteroptera, or true bugs, are a moderately large clade of exopterygote insects, currently placed in the Suborder Prosorrhyncha within the Order Hemiptera or Rhynchota (Sorenson et al. 1995). Morphology and molecular data analyses show the Heteroptera to be a monophyletic taxon, and the sister group of the Peloridiomorpha (= Coleorrhyncha) (Schuh 1986; Wheeler et al. 1993; Sorenson et al. 1995). The latter Infraorder is a group of bugs that have a tantalizing mixture of primitive and specialized features, and have a disjunct, circumantarctic distribution (Carver et al. 1991).

The true bugs possess the unique hemipteroid sucking mouth apparatus without palps. Distally this comprises mandibular and coadapted maxillary stylets lodged in a transversely segmented labial rostrum, with the maxillary stylets enclosing alimentary and salivary canals between them (Kristensen 1991). Primitively predaceous, the extant Heteroptera retain this feeding habit in all Infraorders, except the more advanced Pentatomomorpha and Cimicomorpha, wherein the phytophagous habit has been secondarily evolved (Zrzavy 1992). These phytophagous forms feed on parenchyma, seeds and pollen (Carver et al. 1991), which are largely unexploited by the "homopteran" clades (Sorenson et al. 1995).

Most of the true bugs possess the classic heteropteran forewing divided into basally sclerotized clavus and corium, and an apical flexible membrane. However, this hemelytron is not diagnostic for the entire Heteroptera (Wheeler et al. 1993). The presence of ventral metathoracic scent glands in the adult is a diagnostic heteropteran character (Wheeler et al. 1993), but this together with several other synapomorphies may be secondarily lost (Carver et al. 1991). Immatures usually have one or more dorsal abdominal scent-gland openings, but these are usually lost at metamorphosis, and replaced by the adult metathoracic glands.

In most Heteroptera, both the adult and larval scent glands produce chemicals that have primarily a defensive irritant function (Aldrich 1988). These exocrine secretions of bugs are fairly effective against ants and other arthropod predators (Aryeetey and Kumar 1973; Remold 1962), but confer only marginal protection against bird predators (Alcock 1973; Schlee 1986). Noting that ants are a major threat to bugs, and that many of the secretions of adult and larval Heteroptera are ant or alarm pheromones, Aldrich (1988) has suggested that the entire battery of heteropteran scent-gland weapons may have evolved to mimic ant pheromones as a result of selection pressure by ants. However, in some Heteroptera species, scent-gland secretions also act as attractant sex pheromones, alarm pheromones and aggregation pheromones (Aldrich 1988).

Coincidence of aposomatic colouration with a tendency to aggregate is a norm for Heteroptera (Aldrich 1988). While such aggregations are often related to defence, there are other physiological characteristics that favour gregariousness. Thus grouped feeding

improves growth in some seed-feeding bugs, leaf-feeding lace bugs and phloem-sucking coreids (Biney 1984; Fuseini and Kumar 1975; Goodchild 1977; Ralph 1976; Tallamy and Denno 1981).

Heteroptera species occur in a wide variety of habitats. In fact, no other major group of insects so successfully utilizes such an enormous array of different habitats (Schuh and Slater 1995). Thus, they have adapted to living in marine and saline waters (Scudder 1976), to such an extent that they are one of the few insect groups to invade the open ocean successfully (Cheng and Frank 1993).

Many families of Heteroptera are most diverse in the tropics, but others are equally successful in temperate regions. Many species have a well developed tendency to disperse, especially aerially, and some are migratory. A few taxa are noteworthy for their ability to colonize remote oceanic islands, and have also successfully invaded high-alpine habitats. However, the Heteroptera have been remarkably unsuccessful in penetrating the arctic environment. Danks (1981) lists only 22 species in the low arctic, with just 3 species in Greenland and the high arctic.

Heteroptera are well known for their pronounced tendency to lose the ability to fly and often show reduction or loss of wings where flight is no longer advantageous. Although such wing reduction is often seen in species in high-alpine habitats, such adaptation is exhibited in very few of the low-arctic bugs. Apterous morphs are found in a number of semiaquatic Heteroptera. Absence of wings in these species evidently is related to permanence of the habitat, crowding or general overwintering strategy that govern life-cycle traits throughout the range, and thus is not particularly related to the northern environment.

Heteroptera are well known for striking examples of protective colouration, protective resemblance, aposematic colouration and myrmecomorphy, and examples of all of these are present in the Yukon fauna. However, as far as is known, they exhibit few of the special ecological or physiological traits found in other groups of insects that are generally considered as arctic adaptations (Danks 1981).

Stys and Kerzhner (1975) have recognized 7 Infraorders within the Heteroptera. The phylogenetic relationships of these monophyletic Infraorders have been determined (Schuh 1986; Wheeler et al. 1993), and the resulting cladogram is the basis for the order in which families are listed in the systematic presentation herein. The superfamily and family classification follows Schuh and Slater (1995). The families are those listed in Henry and Froeschner (1988), except that the Anthocoridae now is split into 3 families following the phylogenetic analysis of the cimicomorphan families by Schuh and Stys (1991).

There has been no previous synthetic account of the Heteroptera of the Yukon. One of the earliest publications containing records of these insects from the north at 65°N is Kirby (1837), but localities given are not precise. Although 8 taxa were collected by the Canadian Arctic Expedition of 1913–1918 (Van Duzee 1919), none was from the Yukon.

Most of the published records of Heteroptera from the Yukon up to 1986 are included in the Catalog of the Heteroptera, or True Bugs, of Canada and the Continental United States by Henry and Froeschner (1988). To the 76 species listed by Henry and Froeschner (1988) can be added 14 other species from the Forest Insect and Disease Survey records from 1949–1976 published by Evans et al. (1978). Additional records published more recently are contained in Environment Canada (1987), Scudder and Thomas (1987), Schuh and Schwartz (1988), Schwartz and Kelton (1990), Wheeler and Hoebeke (1990), Asquith (1991), Schwartz et al. (1991), Andersen and Spence (1992), Lattin et al. (1992), Scudder (1986, 1993, 1995), Schwartz (1989, 1994) and Larivière (1995).

It was not until 1979 that a concerted effort was made to undertake a thorough survey of the Heteroptera of the Yukon. Although Thos. R. Reilly obtained 4 specimens of *Aradus lugubris* Fall. near 60 Mile River along the 141st meridian in 1907, little collecting appears to have been done before 1940. Specimens in the Canadian National Collection show that L.M. Fisher collected at Whitehorse in 1940, and M.T. Hughes collected at the same place in 1945. During the Northern Insect Survey, entomologists with Canada Department of Agriculture visited a range of habitats along the Alaska Highway in the late 1940s (Hughes 1948; Freeman 1948, 1952), and some Heteroptera were collected. P.F. Bruggemann and W.W. Judd collected at Dawson in 1949, and C.C. Loan and J.E.H. Martin collected at Rampart House in 1951. E.F. Cashman and R.E. Leech collected on the Firth River in 1956. Whitehorse material was obtained by R. Madge in 1959, and by J.E.H. Martin and E.W. Rockburne at La Force Lake and Swim Lakes in 1960. In 1962, R.E. Leech and P. Skitsko collected along the Alaska Highway, the Klondike Highway, the Canol Road and the Dempster Highway.

W.R.M. Mason and D.M. Wood obtained Heteroptera specimens on Herschel Island in 1971, and a few specimens were also collected at Old Crow by A. Bryan in 1972, by B.E. Brown on the Porcupine River in 1973, and along the Dempster Highway in 1980 by D.M. Wood and J.D. Lafontaine. I also collected along the Alaska Highway in 1974.

In 1979 G.G.E. Scudder and G.B. Wiggins initiated a more comprehensive research program on the insect fauna of the Yukon, aided in 1981 by a three-year collaborative grant from the Natural Sciences and Engineering Research Council of Canada (NSERC). Intensive study of the Heteroptera in the Territory was undertaken each summer from 1979 to 1987 inclusive, with logistic support from the Polar Continental Shelf Project. Field parties from the University of British Columbia (UBC) covered most of the Yukon during this period. In 1979, 1980, 1981, and 1982, field groups from the Royal Ontario Museum also visited the Yukon. L.A. Kelton (Agriculture Canada) collected with Scudder in the Yukon in 1982, and visited the Territory to collect Heteroptera again in 1983.

The late J.J. Robinson did her M.Sc. research on *Geocoris* in the Yukon around Kluane Lake from 1982 to 1986, and in 1984 was assisted by J. Krebs. In 1985 J.J. Robinson and E. Krebs surveyed for Heteroptera occurring on south-facing slopes in the southern Yukon. J. Pilny (University of Waterloo) also collected at several localities in the Yukon in 1988.

For this paper, all the material collected by the entomologists mentioned above has been studied and identified as far as possible at this time. It has been combined with published records to produce a summary of what is currently known about the Heteroptera of the Yukon. Included is an annotated checklist, with a summary of the distribution of these species in Canada and Alaska. This information is then interpreted in terms of selected ecological characteristics and distributional patterns. Finally, some interpretation of the fauna is attempted in terms of historical and ecological biogeography.

Materials and Methods

This study is based on an examination of 68 724 specimens of Heteroptera, and published records. The 573 localities from which Heteroptera records were obtained are listed in Appendix 1 and illustrated in Fig. 1. Localities occur in the Southern Arctic, Taiga Cordillera and Boreal Cordillera ecozones (Ecological Stratification Working Group 1996), but none is in the Taiga Plain or Pacific Maritime ecozones.

Most of the specimens studied are in the collections of the Spencer Entomological Museum at the University of British Columbia (SMDV), or the Canadian National

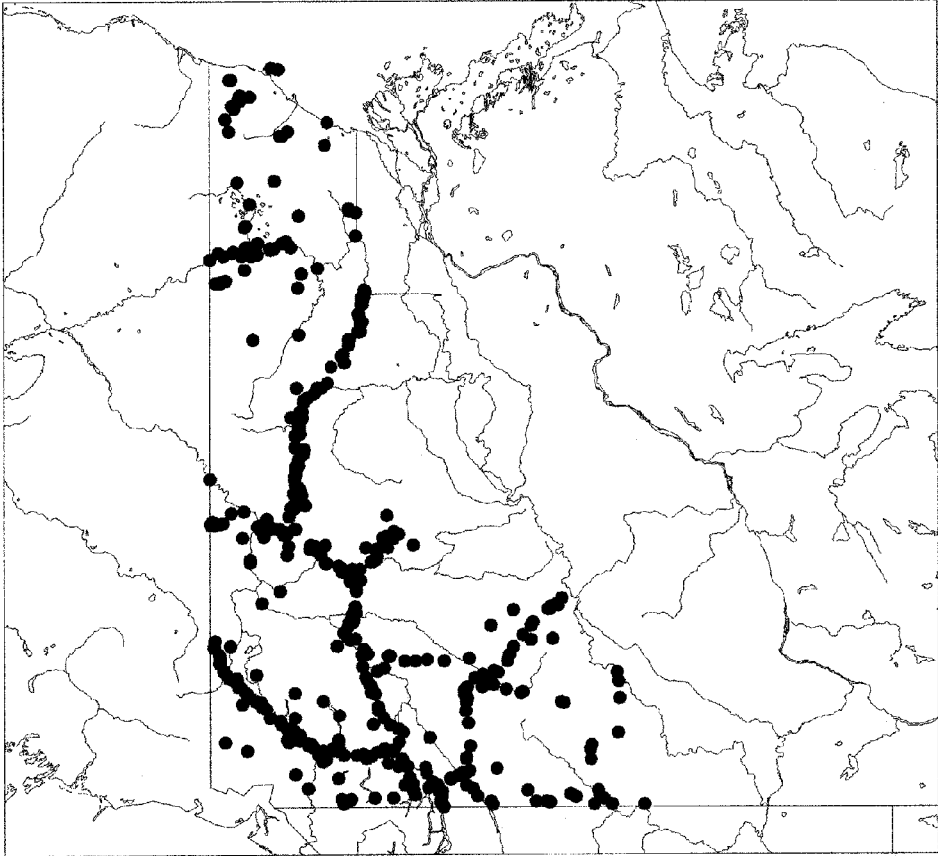


FIG. 1. Map of localities in the Yukon from which Heteroptera material is available.

Collection (CNCI). The collectors of the latter material are mentioned in the Introduction. The material at the University of British Columbia, resulting from intensive field studies in 1979–1987, was collected by the following: 1979, S.G. Cannings, and G.G.E. Scudder; 1980, B. Gill and R.J. Cannings; 1981, S.G. Cannings, C.S. Guppy and L. Vasington; 1982, S.G. Cannings, L. Vasington, R.A. Moore, G.G.E. Scudder and N.C. Scudder; 1983, R.A. Cannings, S.G. Cannings, G.G.E. Scudder, J. Scudder and N.C. Scudder; 1984, S.G. Cannings; 1985, E. Bidjemast, S.G. Cannings and S.A. Marshall (U. Guelph); 1986, S.G. Cannings and B.A. Macdonald; 1987, S.G. Cannings and S.A. Marshall. Other material studied is located in the following institutions: Department of Entomology, California Academy of Sciences (CASC); Pacific Forest Centre, Victoria, B.C. (PFRS); Department of Entomology, Royal Ontario Museum (ROME); Department of Environmental Biology, University of Guelph (DEBU); and Department of Earth Sciences, University of Waterloo (ESUW).

All records of Yukon Heteroptera were plotted on maps to determine distribution patterns within the ecozones and ecoregions of the Yukon as defined by the Ecological Stratification Working Group (1996); see also Scudder (1997). Ecozones in which the species occur are summarized. Because of the large number of localities, Yukon records in

this paper are arranged in alphabetical order. Ecoregions (italicized) are given only when there are very few records. Alaska records (documented in Appendix 2) are included only when they constitute new occurrences in the state. New records for Canadian provinces are indicated in tabular form; details will be published elsewhere. Full collection information and distribution maps for each species or subspecies are available from the Spencer Entomological Museum.

Unless otherwise stated, general distributional data were taken from Henry and Froeschner (1988). Nomenclature of Yukon plants follows Cody (1996).

The geographical patterns exhibited by Yukon Heteroptera were classified into 13 categories under Palaearctic and Nearctic, or Nearctic only, as follows:

Palaearctic and Nearctic

Circumboreal or near Circumboreal (H). Species widely distributed in both the Palaearctic and Nearctic regions, including Beringia.

East-West Beringian (E-WB). Species with an amphiberian distribution, confined to East and West Beringia only.

Palaearctic-East Beringian (P-EB). Species with a Palaearctic distribution and occurrence within the unglaciated areas of northwestern North America, or beyond only to a limited extent.

Palaearctic-Cordilleran (P-CN). Species with a Palaearctic distribution and occurrence in North America confined to the mountainous Cordilleran areas in the west, including East Beringia.

Palaearctic-Western Nearctic (P-WN). Species widely distributed in the Palaearctic region, but in the Nearctic confined to western North America, including East Beringia.

Nearctic

East Beringian (EB). Species endemic to East Beringia with distribution within the unglaciated areas of northwestern North America, or beyond only to a limited extent.

Nearctic including Beringian (N, B+). Species with a wide Nearctic distribution and with occurrence within the unglaciated areas of northwestern North America.

Nearctic excluding Beringian (N, B-). Species that are distributed widely in North America, but occur only marginally in the Yukon, being absent from the unglaciated area. The Tintina Trench is considered as the northern limit of the species in this category.

Western Nearctic including Beringian (WN, B+). Species or subspecies that are confined to western North America, usually west of the 100th meridian, and which also occur in the unglaciated areas of northwestern North America.

Western Nearctic excluding Beringia (WN, B-). Species that in North America are confined to the western part of the continent, usually west of the 100th meridian, and which also are absent from the unglaciated part of the Yukon. The Tintina Trench is considered as the northern limit of the species in this category.

Cordilleran including Beringian (CN, B+). Species that in North America are confined to the mountainous Cordilleran areas in the west, and which also occur in the unglaciated areas of northwestern North America.

Cordilleran excluding Beringia (CN, B-). Species that in North America are confined to the mountainous Cordilleran areas in the west, and which are absent from the unglaciated part of the Yukon. The Tintina Trench is considered as the northern limit of the species in this category.

Subarctic (SA). Species with a distribution generally confined to subarctic areas of the Nearctic region.

Other (O). Species that occur in the Nearctic region, as well as other zoogeographic areas, but not the Palaearctic.

Uncertain (U). Species whose identity and thus distribution pattern is uncertain.

Because the British-Richardson Mountains, Old Crow Basin, Old Crow Flats, North Ogilvie Mountains, Eagle Plains and Klondike Plateau ecoregions in the Yukon remained largely unglaciated during the Wisconsinan glaciation, species occurring in these ecoregions are considered Beringian. Species that occur in areas of Alaska that are reported as unglaciated in Wisconsinan time (Ager 1982; Heusser 1983) are also considered Beringian, although some have not so far been collected in similar unglaciated areas in the Yukon.

Annotated List of Species

Infraorder Gerromorpha

Family Gerridae

The Gerridae, commonly known as pond skaters, are active predators living by skating on the water surface in both lotic and lentic habitats. Many species have both winged and wingless forms. Gerrids have subterminal claws on the 2-segmented tarsi and are without a scutellum; the body ventrally is non-wettable because of a dense covering of short setae. Adults overwinter on land, and have a single metathoracic scent-gland opening (omphalium).

Of the 23 species of pond skaters so far reported in Canada, 3 are recorded from the Yukon. The species of *Gerris* Fabricius are keyed by Brooks and Kelton (1967), and of *Limnoporus* Stål by Andersen and Spence (1992).

Subfamily Gerrinae

1. *Gerris buenoi* Kirkaldy

Nearctic including Beringian

Distribution: Alaska to Newfoundland, and south to South Carolina, Missouri and Colorado.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Gravel L., Hyland R., Koidern, "Loon L.", Mink Cr., Ogilvie R. (Dempster Hwy. km 206), Snag Cr., Watson L. (6 km S).

Biological information: *G. buenoi* occurs in bogs, fens, marshes, temporary freshwater ponds, permanent ponds and lakes, and in lotic environments (Scudder 1987).

2. *Gerris pingreensis* Drake and Hottes

Nearctic including Beringian

Distribution: Across northern Canada to Quebec and Labrador, and also in Idaho and Montana.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Alaska Hwy. (km 1672, km 1688), Atlin Rd. (2 km N, British Columbia/Yukon border), Cadzow L., Campbell Hwy. (km 364), Christmas Cr., Dawson (83 km SE), Donjek R. (and 10 km W), Drury Cr., East Blackstone R. (Dempster Hwy. km 106 and km 119), Edith Cr., Firth R. (locality 5 and 6), Flat Cr., Gravel L., Jarvis Cr., Jenny L., Johnson's Crossing (10 km NE), Kluane Hills, Kluane L., Koidern (and 3.5 km SE), Little Fox L., Little Hyland R., Long's Cr. (1 km W and 4 km N), Magundy R., McDougall Pass, Mink Cr. (4 km W), Nahanni Range Rd. (km 128), Old Crow, Pickhandle L., Richardson Mts. (Dempster Hwy. km 415), Richthofen Cr., Ross R. (6 km S and 8 km S), Slims R. delta, Snafu Cr., Snag Cr. (Alaska Hwy. km 1949), South Macmillan Valley (Canol Rd. km 423), Stewart Crossing (25 km S), Sulphur L., Takhini (11 km W), Takhini R. (and 1 km E), Watson L. (6 km S), Whitehorse (Fish L.).

Biological information: *G. pingreensis* generally occurs in bogs, marshes, permanent freshwater ponds and lakes, and in lotic environments (Scudder 1987). In the Yukon, the species usually occurred on ponds, particularly ponds with sedges. At Little Hyland River it was collected on a *Sphagnum* pond with pH 5.3, and at McDougall Pass on a *Carex*, *Equisetum*, *Potentilla*, *Caltha* bog pond. At Edith Creek it was collected in a marsh habitat.

3. *Limnoporus rufoscutellatus* (Latreille)

Palaearctic-East Beringian

Distribution: Alaska, Yukon and the Northwest Territories (Andersen and Spence 1992); transpalaearctic.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Dawson (22.5 km E), Mayo, Old Crow, Porcupine R., Rampart House, Snag, Willow Cr.

Biological information: The species occurs in marshes and permanent freshwater ponds and lakes (Scudder 1987).

Family Veliidae

The Veliidae, commonly called smaller water striders, are small but active predators that run on the surface of the water of small ponds, fens, marshes or bogs. Usually wingless, they characteristically have the pronotum and mesonotum fused together, and the metathoracic scent-gland openings have laterally extended channels. Adults overwinter on land.

Of the 6 species of small water striders reported from Canada, only one species is known from the Yukon. It is keyed by Brooks and Kelton (1967).

Subfamily Microveliinae

4. *Microvelia buenoi* Drake

Nearctic including Beringian

Distribution: Alaska to New Brunswick and Newfoundland, and south to Florida and California.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Cadzow L., Koidern, L. Laberge ("Horse Cr."), Long's Cr. (1 km W and 4 km N), Pickhandle L. (*Carex* pond S), Snag Cr.

Biological information: *M. buenoi* occurs in swamps, bogs, fens, marshes, permanent freshwater ponds and lakes, and in lotic environments (Scudder 1987).

Infraorder Nepomorpha

Family Corixidae

The Corixidae, commonly called water boatmen, are fully aquatic predators, living mostly in ponds and at the margins of lakes. The streamlined body characteristically has a broad head with large eyes, small and hidden antennae, and a short triangular 'beak'. The front legs are scooplike (palae), the middle legs are long and slender with a single tarsal segment, and the hindlegs are flattened and oarlike, fringed with long hairs. Adults overwinter underwater, in rivers, ponds or lakes that do not freeze to the bottom.

Of the 71 species of water boatmen so far reported from Canada, 12 are recorded from the Yukon. The Yukon species can be keyed using Hungerford (1948) or Brooks and Kelton (1967).

Subfamily Corixinae

Tribe Corixini

5. *Arctocoris chanceae* Hungerford

Subarctic

Distribution: Alaska, and across northern subarctic Canada to Newfoundland.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Cadzow L., Carcross (Spirit L.), Jenny L.

Biological information: Collected in lake habitats.

6. *Arctocoris planifrons* (Kirby)

Subarctic

Distribution: Alaska, Yukon, Northwest Territories and Newfoundland.

Yukon records: Boreal Cordillera ecozone. Jenny L., Takhini (14.5 km W), Takhini R. (pond to E, Alaska Hwy. km 1522).

Biological information: Collected in alkaline ponds. Reported as a low-arctic species by Danks (1981).

7. *Arctocoris sutilis* (Uhler)

Nearctic excluding Beringia

Distribution: Alaska to New Brunswick, and south to Wyoming in the west.

Yukon records: Boreal Cordillera ecozone. Campbell Hwy. (km 364), Christmas Cr., Horse Cr., Takhini (14.5 km W), Whitehorse.

Biological information: Collected in marsh and alkaline ponds. Elsewhere reported in permanent freshwater ponds and lakes, with pH 7.7–9.7 (Scudder 1987).

8. *Callicorixa alaskensis* (Hungerford)

Nearctic including Beringian

Distribution: Alaska to Newfoundland, south to Pennsylvania in the east and Wyoming in the west.*Yukon records:* Taiga Cordillera and Boreal Cordillera ecozones. Big Cr., Cadzow L., Carcross (Spirit L.), Cracker Cr., Dawson (83 km SE), Gravel L., Hopkins L. (13 km N), Horse Cr., Jarvis Cr., Jenny L., Kluane (and 27 km SE), Koidern, Little Atlin L., Little Salmon R., Long's Cr. (4 km N), Magundy R., Mendenhall Cr., Old Crow (and 35 km WSW), Pelly Crossing (5 km S), Pickhandle L., Rampart House, Rancheria (7 km E), Richardson Mts. (Dempster Hwy. km 443), Richthofen Cr., Ross R. (6 km S and 8 km S), Slims R. delta, South Macmillan Valley, Stewart Crossing, Sulphur L., Takhanne R., Takhini (14.5 km W), Takhini Hot Springs, von Wilczek Lks., Whitehorse (Fish L.).*Biological information:* Collected in fen, marsh, pond and lake habitats. Elsewhere reported from peatlands and marshes with pH 4.5–6.8 (Scudder 1987).**9. *Callicorixa audeni* Hungerford**

Nearctic including Beringian

Distribution: Alaska to Newfoundland, and south to Michigan in the east and California in the west.*Yukon records:* Taiga Cordillera and Boreal Cordillera ecozones. Blackstone R. (Dempster Hwy. km 122), Cadzow L., Dawson (22.5 km E), Eagle R., Edith Cr., Gravel L., Horse Cr., Jake's Corner (19.3 km S), Kluane L., Koidern, Little Salmon R., Long's Cr. (1 km W), Mendenhall Cr., North Klondike R., Old Crow (6 km E), Pelly Crossing (5 km S), Rampart House, Richthofen Cr., Ross R. (6 km S), Ross R. valley, Slims R. delta, Snag Cr., Stewart Crossing, Swim Lks., Takhini (14.5 km W), Takhini Hot Springs, Takhini R., Twin Lks., von Wilczek Lks., Whitehorse.*Biological information:* *C. audeni* occurs in marshes, temporary freshwater ponds, permanent freshwater ponds and lakes, and lotic environments, with pH 6.7–10.1 (Scudder 1987).**10. *Callicorixa producta noorvikensis* Hungerford**

Palaeartic-Western Nearctic

Distribution: Alaska, Yukon, Northwest Territories and northern Manitoba; Siberia.*Yukon records:* Taiga Cordillera and Boreal Cordillera ecozones. Eagle R., Old Crow (6 km E), Rampart House, Whitehorse.*Biological information:* Collected in lake and pond habitats.**11. *Sigara decoratella* (Hungerford)**

Nearctic including Beringian

Distribution: Alaska to Newfoundland, and south to Missouri and New Mexico.*Yukon records:* Taiga Cordillera and Boreal Cordillera ecozones. Rampart House, Watson L.*Biological information:* *S. decoratella* occurs in marshes, temporary freshwater ponds, permanent freshwater ponds and lakes, saline ponds and lotic environments, with pH 5.5–9.8 (Scudder 1987).**12. *Sigara fallenoidea* (Hungerford)**

Western Nearctic including Beringian

Distribution: Alaska to Manitoba.*Yukon records:* Taiga Cordillera ecozone: *Old Crow Flats*: Cadzow L.*Biological information:* *S. fallenoidea* occurs in marshes and permanent freshwater ponds and lakes (Scudder 1987).**13. *Sigara penniensis* (Hungerford)**

Nearctic excluding Beringia

Distribution: Alaska to Newfoundland, and south to Wisconsin and South Dakota.*Yukon records:* Boreal Cordillera ecozone. Big Cr., Twin Lks., Watson L.*Biological information:* *S. penniensis* occurs in bogs, fens, marshes, temporary freshwater ponds, permanent freshwater ponds and lakes, and saline ponds, with pH 5.5–9.7 (Scudder 1987). Reported from the low arctic in eastern North America (Danks 1981).

Tribe Glaenocorisini

14. *Glaenocorisca cavifrons* (Thomson)

Circumboreal

Distribution: Alaska, Yukon, Northwest Territories and northern Quebec; northern Europe.*Yukon records:* Taiga Cordillera and Boreal Cordillera ecozones. Old Crow flats, Porcupine R. (16 km N), Whitehorse.*Biological information:* Collected in lake habitats.

Subfamily Cymatinae

15. *Cymatia americana* Hussey

Nearctic including Beringian

Distribution: Alaska to Quebec, and south to Wisconsin and Minnesota.

Yukon records: Boreal Cordillera ecozone. Canyon (14 km N), Carmacks (13 km S), Kluane R., Koidern, Long's Cr. (4 km N), Pelly Crossing (5 km S), Slims R. delta, Takhini (14.5 km W), Takhini R.
Biological information: *C. americana* occurs in marshes, permanent freshwater ponds and lakes, saline lakes and lotic environments, with pH 7.8–9.8 (Scudder 1987).

Family Notonectidae

The Notonectidae are commonly called backswimmers because of the way they swim and rest upside-down under water. They are active predators in ponds and lakes, and other aquatic habitats. They have elongate hindlegs, flattened, oarlike and fringed with long hairs for swimming. The rostrum is short, but distinctly segmented, and the forelegs are raptorial and not scooplike. Adults overwinter underwater in rivers, ponds or lakes that do not freeze to the bottom.

Of the 12 species of backswimmers reported from Canada, only one has been collected in the Yukon. This can be identified by using the key in Brooks and Kelton (1967).

Subfamily Notonectinae

Tribe Notonectini

16. *Notonecta kirbyi* **Hungerford** Western Nearctic excluding Beringia
Distribution: Yukon to Manitoba, and in the United States south to Texas, Arizona, California and Mexico (Truxel 1996).

Yukon records: Boreal Cordillera ecozone: *Liard Basin*: Watson L.

Biological information: Elsewhere *N. kirbyi* occurs in bogs, fens, marshes, temporary freshwater ponds, permanent freshwater ponds and lakes, and in saline lakes, with pH 4.2–10.6 (Scudder 1987).

Infraorder Leptopodomorpha

Family Saldidae

The Saldidae, commonly called shore bugs, are active predators, usually living on land in damp areas or near water, especially at the edge of rivers, streams, ponds and lakes. They are capable of jumping and readily take flight. Characteristically, they are oval, blackish in colour, with large eyes, 3-segmented rostrum, and with 4 or 5 closed cells in the membrane of the forewings.

Of the 37 species of shore bugs so far recorded from Canada, 17 occur in the Yukon. Some of these species are keyed by Brooks and Kelton (1967).

Subfamily Chiloxanthinae

17. *Chiloxanthus stellatus* (**Curtis**) Palaeartic-Western Nearctic

Distribution: Alaska and northern Canada to Manitoba; across northern Europe, Siberia.

Yukon records: Southern Arctic ecozone: *Yukon Coastal Plain* and Taiga Cordillera ecozone: *British-Richardson Mountains* only. Herschel Is., Shingle Pt., White Mts. ("Erebia Cr.").

Biological information: This is the only species of Heteroptera to occur in the high arctic (Danks 1981).

Subfamily Saldinae

Tribe Saldini

18. *Salda buenoi* (**McDunnough**) Nearctic excluding Beringia

Distribution: Yukon to Ontario, Newfoundland, and south to Arizona and California.

Yukon records: Boreal Cordillera ecozone: *Ruby Ranges* and *Yukon Southern Lakes* only. Haines Jct., Takhini (14.5 km W).

19. *Salda littoralis* (**Linnaeus**) Circumboreal

Distribution: Alaska, northern Canada to Newfoundland, and south to New York, Colorado and California; Iceland, through Europe and Siberia.

Yukon records: Taiga Cordillera ecozone: *British-Richardson Mountains* and *Old Crow Flats* only. Firth R., Old Crow.

Biological information: At Old Crow, the species was collected in a pitfall trap at the muddy edge of a large river.

20. ***Salda lugubris* (Say)** Nearctic including Beringian
Distribution: Yukon to Quebec and Newfoundland, south to Florida and Mexico.
Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Haines Jct., Mink Cr. (4 km W), Old Crow, Ross R., Slims R. flats, Takhini (14.5 km W), White Mts. ("Erebia Cr.").
Taxonomic notes: Dr. J. Polhemus (pers. comm.) says that the Yukon material may not actually be this species, but a new species near to *S. alta* Polhemus.
21. ***Salda obscura* (Provancher)** Nearctic including Beringian
Distribution: Alaska to Quebec and Newfoundland, south to Michigan and Colorado.
Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Haines Jct., McCabe Cr., McQuesten (and 33 km NW), Old Crow, Tombstone, von Wilczek Lks.
22. ***Salda provancheri* Kelton and Lattin** Nearctic including Beringian
Distribution: Alaska to Newfoundland, and south to Georgia and California.
Yukon records: Boreal Cordillera ecozone only. Dawson (31 km E), Moose Cr., Slims R. delta, von Wilczek Lks.
23. ***Teloleuca bifasciata* (Thomson)** Circumboreal
Distribution: Alaska to northern Ontario, and south to Wyoming and Colorado; across northern Europe and Siberia.
Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Boundary (5.4 km E), Dawson (22.5 km E), Dempster Corner, Engineer Cr. (Dempster Hwy. km 170, km 172), Gravel L., Groundhog Cr., Haines Jct., Iron Cr. (4 km E), Jackfish Cr. (15 km S), La Force L., Lake Cr., Little Atlin L., McDonald Cr., Moose Cr., Otter L., Sheep Cr., Slims R. delta, Simpson L., Spruce Cr., Takhanne L., Willow Cr.
Biological information: At both Engineer Creek and Slims River delta specimens were captured in pan traps set in sparse sedge, mud flats. At km 170 on the Dempster Highway the species was collected near a sulphur spring.
24. ***Teloleuca pellucens* (Fabricius)** Circumboreal
Distribution: Alaska to Quebec, Labrador, Newfoundland and south to New York and Colorado; through northern Europe and Siberia.
Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Boundary (5.4 km E), Dempster Corner, Engineer Cr. (Dempster Hwy. km 170), Judas Cr., Little Atlin L., "Loon L.", Moose Cr., Otter L., Simpson L., Takhanne R., Whitehorse, White Mts. ("Erebia Cr."), Willow Cr.
- Tribe Saldoidini
25. ***Calacanthia trybomi* (Sahlberg)** Palaearctic-Western Nearctic
Distribution: Alaska, Yukon, Northwest Territories and northern Manitoba; Siberia.
Yukon records: Taiga Cordillera ecozone: *British-Richardson Mountains* ecoregion only. Firth R. ("Sunday Mt."), Philip Cr., "surf bird knob", Trout L., White Mts. (limestone ridge), Wright Pass.
Biological information: At both Philip Creek and Trout Lake the species was collected on shale ridges, and in the White Mountains on a limestone ridge.
26. ***Macrosaldula monae* (Drake)** East Beringian
Distribution: Previously known only from Alaska.
Yukon records: Southern Arctic and Taiga Cordillera ecozones. Fish Cr. (locality 1), Herschel Is. (locality 2), North Fork Crossing (km 66 Peel Pt. Rd.), Sheep Cr.
27. ***Micracanthia bergrothi* Jakovlev** Circumboreal
Distribution: Yukon to Manitoba, Newfoundland, and south to Michigan, Montana and Wyoming; Siberia.
Yukon records: Boreal Cordillera ecozone. Dawson (22.5 km E, 31 km E), Dempster Corner, Haines Jct., Moose Cr., Slims R. delta, von Wilczek Lks., White R.
28. ***Micracanthia fennica* (Reuter)** Circumboreal
Distribution: Alaska, Yukon, British Columbia, Colorado, Kansas, Massachusetts, New York, Nebraska and Oregon; Europe and Siberia.
Yukon records: Boreal Cordillera ecozone. Koidern, Moose Cr., White R.

29. *Micracanthia quadrimaculata* (Champion) Western Nearctic excluding Beringia
Distribution: Yukon south to Mexico and Central America.

Yukon records: Boreal Cordillera ecozone. Christmas Cr., Stewart Crossing, Takhanne R.

30. *Saldula nigrita* Parshley Nearctic including Beringian

Distribution: Yukon to Newfoundland, south to Michigan in the east and Mexico in the west.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Gravel L., Kluane National Park (Sheep Creek Rd.), Rampart House.

31. *Saldula opacula* (Zetterstedt) Circumboreal

Distribution: Alaska to Newfoundland, and south to Florida and California.

Yukon records: Boreal Cordillera ecozone. Alaska Hwy. (km 1671), Dawson, Gravel L., L. Laberge ("Horse Cr."), Long's Cr. (1 km W), Mayo, McCabe Cr., Snag Jct., Takhini Hot Springs, Willow Cr.

32. *Saldula pallipes* (Fabricius) complex Circumboreal

Distribution: Alaska to Newfoundland, throughout all contiguous United States; Mexico and West Indies; throughout the Palaearctic region with range extending into Africa.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Alaska Hwy. (km 1671, km 1688), Big Cr., Canyon (14 km N), Carcross, Carmacks, Cornwall Cr., Dawson, Dempster Corner, Eagle R. (Dempster Hwy. km 382), Engineer Cr. (km 170, km 172), Finlayson R. ("Wolverine Cr."), Gravel L., Iron Cr. (4 km E), Judas Cr., Kluane L., Lake Cr., L. Laberge ("Horse Cr."), Lewes Cr., Little Atlin L., Little Fox L., Mayo, McDougall Pass, McQuesten (50 km W), Moose Cr., Ogilvie R. (Dempster Hwy. km 243), Old Crow, Porcupine R. at Dave Lord Cr., Ross R., Slims R. delta, Sulphur L., Tack L. (and 6 km SE), Takhanne R., Takhini (8 km W, 14.5 km W), Tombstone, White Mts. ("Natazhati Cr."), Willow Cr., von Wilczek Lks.

Taxonomic notes: The *S. pallipes* complex no doubt contains a number of species, but these have not yet been sorted out.

33. *Saldula saltatoria* (Linnaeus) Circumboreal

Distribution: Alaska to Quebec, and south to New York and California; throughout the Palaearctic region with range extending into Asia.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Alaska Hwy. (km 1688), Bluefish R., Christmas Cr., Eagle R., Engineer Cr. (Dempster Hwy. km 170), Finlayson R. ("Wolverine Cr."), Gravel L., Judas Cr., Koidern, McDonald Cr., McQuesten (50 km W), Sulphur L., von Wilczek Lks., Willow Cr.

Infraorder Cimicomorpha

Family Tingidae

The Tingidae, commonly called lace bugs, are plant feeders, often quite host specific. The common name lace bug refers to the characteristic and numerous, small, lace-like cells that typically occur in the expanded sides and lobes of the pronotum and forewings. The tarsi are 2-segmented, and the head lacks ocelli.

Of the 36 species of lace bugs so far reported in Canada, 4 are recorded from the Yukon. The genera are keyed in Slater and Baranowski (1978). The species of *Acalypta* Westwood are keyed in Drake and Lattin (1963), and of *Corythuca* Stål in Blatchley (1926).

Subfamily Tinginae

Tribe Tingini

34. *Acalypta cooleyi* Drake Asia-Western Nearctic including Beringian

Distribution: Yukon, British Columbia, Arizona, California, Montana and Oregon; Asia.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Firth R. (locality 1), Mt. Skukum, Old Crow, Tatchun Cr.

Biological information: At the Firth River and Old Crow, specimens were collected in pitfall traps set on south-facing slopes with *Artemisia* (Asteraceae), but at Mount Skukum the species was collected in a pitfall trap in spruce forest. In southern British Columbia, the species has been captured in pitfall traps set on west-facing slopes with Antelope-brush (*Purshia tridentata* (Pursh) DC (Rosaceae)).

35. *Acalypta elegans* Horvath

Circumboreal

Distribution: Alaska to Alberta, Newfoundland, and south to New Hampshire.*Yukon records:* Taiga Cordillera ecozone. Bluefish R., Dempster Hwy. (km 172), Trout L.*Biological information:* The species was collected in a pitfall trap on a riverbank at Bluefish River, and at km 172 on the Dempster Highway in a mushroom baited pan trap in a bog. At Trout Lake *A. elegans* was collected in a pitfall trap set in moss/birch tundra.**36. *Acalypta lillianis* Torre-Bueno**

Nearctic including Beringian

Distribution: Alaska to Alberta, Ontario, Quebec and Newfoundland, and south to Georgia and North Dakota.*Yukon records:* Taiga Cordillera and Boreal Cordillera ecozones. Firth R. ("Sunday Mt."), Dempster Hwy. (km 155, "Windy Pass"), Mt. Skukum.*Biological information:* At the Firth River, specimens were collected on a north-facing, moist mossy tundra, and at "Windy Pass" in a pan trap set beside a creek at treeline. However, at Mount Skukum the species was collected in spruce forest. In southern British Columbia, *A. lillianis* has been captured in pitfall traps set on west-facing slopes with Antelope-brush.**37. *Corythuca marmorata* (Uhler)**

Nearctic excluding Beringia

Distribution: Yukon to Quebec, and south to Florida and California.*Yukon records:* Boreal Cordillera ecozone. Campbell Hwy. (km 362), Ross R. (8 km S).*Biological information:* Known as the chrysanthemum lace bug, this species breeds on ragweed (*Ambrosia* spp.), *Chrysanthemum* sp. and allied Asteraceae, and is frequent on *Aster* spp. and goldenrod (*Solidago* spp.) (Blatchley 1926), especially *Solidago altissima* L. (Cappuccino and Root 1992).**Family Miridae**

The Miridae, commonly called plant bugs, are the family of Heteroptera with the most species in the Yukon. They are generally fragile, often cryptically coloured green or brown, although some are bright red or black. The head lacks ocelli, and the forewings characteristically have a cuneus, and one or 2 closed cells in the membrane. Although the majority are plant-sucking, many are obligate or facultative predators.

Of the 650 or so species of plant bugs so far reported from Canada, 112 have been identified from the Yukon. Most genera and species can be keyed by reference to Kelton (1980).

Subfamily Bryocorinae**Tribe Dicyphini****38. *Dicyphus discrepans* Knight**

Nearctic including Beringian

Distribution: Yukon to Nova Scotia, and south to Minnesota and Oregon.*Yukon records:* Boreal Cordillera ecozone. Dawson (and 5 km W), Dempster Corner, Mayo Rd. (Carmacks km 354.4), Tatchun Cr.*Biological information:* Collected on *Rosa* sp. (Rosaceae). Elsewhere collected on *Aster* spp. (Compositae) (Kelton 1980). Cassis (1986) reports *D. discrepans* from *Aster* sp. and *Horkelia* sp. (Asteraceae), *Castilleja* sp. and *Scrophularia californica* Cham. and Schlecht. (Scrophulariaceae), *Rosa* sp., *Rubus* sp. (Rosaceae), *Stachys* sp. (Labiatae).**39. *Tupiocoris confusa* (Kelton)**

Cordilleran including Beringian

Distribution: Yukon, British Columbia and Alberta, and in the western United States south to Colorado.*Yukon records:* Taiga Cordillera and Boreal Cordillera ecozones. Atlin Rd. (km 4.8), Cottonwood Cr., Dempster Corner, Engineer Cr. (Dempster Hwy. km 194), McQuesten River Rd. (km 30.5 (mi 19)), Silver City, Snafu Cr., Tatchun Cr., Watson L., Whitehorse.*Biological information:* Collected on *Rosa* sp. Elsewhere reported on *Geranium viscosissimum* F. and *M. (Geraniaceae)* (Kelton 1980), *Lonicera involucrata* (Richards) Banks and *Viburnum edule* (Michx.) Raf. (Caprifoliaceae), *Rhus glabra* L. (Anacardiaceae), *Rosa nutkana* Presl. and *Rubus* sp. (Rosaceae) (Cassis 1986). Also taken on *Delphinium* (Ranunculaceae), *Lupinus* (Fabaceae), *Ribes* (Grossulariaceae) and *Shepherdia canadensis* (L.) Nutt. (Elaeagnaceae).

Taxonomic notes: The specimens here considered as *T. confusa* have a black scutellum with the basal angles pale, and key to this species in Kelton (1980).

40. *Tupiocoris* sp. near *crudus* Van Duzee Unknown

Distribution: Unknown.

Yukon records: Dawson, Tatchun Cr.

Biological information: Collected on raspberry.

Taxonomic notes: These specimens do not key using Kelton (1980). They have the first antennal segment, pronotum and scutellum pale, with the second antennal segment black, and the sides of the head behind the eyes only distinctly brown to black.

41. *Tupiocoris rubi* (Knight) Nearctic including Beringian

Distribution: Alaska to Labrador, and south to New York in the east and Colorado in the west.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Dawson, Engineer Cr. (Dempster Hwy. km 194), Moose Cr., Tatchun Cr., Takhini Hot Springs.

Biological information: Collected on raspberry and *Rosa* sp. Elsewhere reported on *Rubus odoratus* L. (Knight 1968) and *R. strigosus* Michx. (Kelton 1980; Cassis 1986).

42. *Tupiocoris similis* (Kelton) Nearctic including Beringian

Distribution: Alaska to Newfoundland, and south to New York in the east.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Carmacks, Dawson (22.5 km E), Destruction Bay, Engineer Cr. (Dempster Hwy. km 194), Morley R., Rampart House, Takhini Hot Springs, Whitehorse.

Alaska record: Big Delta.

Biological information: Collected on *Rosa* sp. Elsewhere collected on *Mentha arvensis* L. (Labiatae) (Kelton 1980), *Geranium viscosissimum*, *Rubus idaeus* L., *Rubus* sp. and *Aster* sp. (Cassis 1986).

Taxonomic notes: Specimens here considered as *T. similis* have a black scutellum with basal angles pale, and key to this species in Kelton (1980).

Subfamily Deraeocorinae

Tribe Clivinematini

43. *Bothynotus pilosus* (Boheman) Palaearctic-East Beringian

Distribution: In North America, known only from Alaska, Yukon (Scudder 1995) and British Columbia; across Palaearctic region.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Dempster Corner, Dempster Hwy. (km 82), Old Crow.

Alaska records: Unalakleet.

Biological information: This is a ground-dwelling mirid, and at Old Crow was collected in root mats of *Polemonium pulcherrimum* Hook. (Polemoniaceae). In Europe the species has been reported from *Picea excelsior* Lk. and *Pinus sylvestris* L. (Stichel 1956), and in the moss *Hypnum cupressiforme* Hedw. (Hypnaceae) (Woodroffe 1970).

44. *Largidea shoshonea* Knight Nearctic excluding Beringia

Distribution: Yukon to New Brunswick, and in the western United States south to Montana and Wyoming.

Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Carcross.

Biological information: Collected on Lodgepole pine. Elsewhere collected on *Pinus ponderosa* Dougl. and *P. banksiana* Lamb. (Pinaceae).

Taxonomic notes: Only one female was collected by Dr. L.A. Kelton at Carcross on August 1, 1983, so identification is provisional.

Tribe Deraeocorini

45. *Deraeocoris brevis* (Uhler) Western Nearctic including Beringian

Distribution: Alaska to Manitoba, and in the western United States south to Arizona.

Yukon records: Boreal Cordillera ecozone. Alaska Hwy. (km 1611), Dawson (and 5 km W), Dawson Airport, Haynes Jct., Mayo, Rancheria, Sheep Mt., Tagish, Tenas Cr. (5 km E), Watson L.

Alaska records: Gardiner Cr.

Biological information: Collected on *Salix* sp. (Salicaceae), larch, Lodgepole pine and *Shepherdia canadensis*. This species preys on aphids, and elsewhere in Canada has been collected on *Acer negundo*

L. (Aceraceae), *Alnus* spp. (Betulaceae), *Juniperus communis* L. (Cupressaceae), *Pinus banksiana*, *P. contorta* Dougl. and *Abies balsamea* (L.) Mill. (Pinaceae) (Kelton 1980). In Colorado, *D. brevis* has been collected on *Rhus trilobata* Nutt., *Ribes cereum* Dougl. (Grossulariaceae), *Rubus* sp., *Quercus gambelii* Nutt. (Fagaceae), *Pseudotsuga menziesii* (Mirb.) Franco (Pinaceae) and *Betula fontinalis* Sarg. (Betulaceae) (Polhemus 1994). Razafimanatratra (1981) reports that this species is primarily found on sagebrush vegetation through most of the range.

46. *Deraeocoris diveni* Knight

Western Nearctic excluding Beringia

Distribution: Yukon, British Columbia and Alberta, as well as California, Oregon and Wyoming (Razafimanatratra 1981).

Yukon records: Boreal Cordillera ecozone. Alaska Hwy. (km 1445, km 1500), Carcross, Mayo Rd. (km 40), Moose Cr., Morley R., Rancheria, Squanga L., Watson L.

Biological information: Collected on *Pinus contorta*, spruce and *Salix*. According to Razafimanatratra (1981) *D. diveni* breeds on *P. contorta*.

47. *Deraeocoris kennicotti* Knight

Nearctic including Beringian

Distribution: Yukon to Nova Scotia, and south to Maine in the east.

Yukon records: Boreal Cordillera ecozone. Alaska Hwy. (km 1004, km 1513, km 1548, km 1801, km 1803, km 1804), Bonanza Cr., Carcross, Dawson (and 22.5 km E), Dawson Rd. (km 24, km 97), Destruction Bay, Mayo, Mayo Rd. (km 248, km 278, km 327, km 362), Moose Cr., Rancheria, Tagish, Watson L., Whitehorse.

Biological information: Collected on *Picea glauca* (Moench) Voss and *P. mariana* (Mill.) Britt. and *Pinus contorta*. Kelton (1980) notes that this species probably feeds on aphids associated with the host trees.

48. *Deraeocoris piceicola* Knight

Cordilleran including Beringian

Distribution: Yukon, British Columbia, Alberta, and in the western United States south to Colorado. The eastern United States records of *D. piceicola* listed by Wheeler and Hoebeke (1990) are here regarded as adventitive, because the species is not recorded from eastern Canada.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Alaska Hwy. (km 1096, km 1522, km 1734), Burwash Landing, Carcross, Dawson, Destruction Bay, Haines Jct., Kluane, Morley R., North Fork of Klondike R., Rancheria, Tagish, Watson L., Whitehorse.

Biological information: Collected on *Picea glauca*, *Pinus contorta*, *Larix laricina*, alder and willow. Elsewhere in Canada collected on aphid infested *Picea glauca* (Kelton 1980). Razafimanatratra (1981) reports the known hosts as *Picea engelmanni* Parry, *Abies procera* Rehder, *A. amabilis* (Dougl.) Forbes and *Pinus contorta*. Wheeler and Hoebeke (1990) add *Picea abies* (L.) Karsten and *P. pungens* Engelm., and Polhemus (1990) adds *Abies lasiocarpa* (Hook.) Nutt. and *Pinus aristata* Engelm.

49. *Deraeocoris punctulatus* (Fallén)

Palaeartic-East Beringian

Distribution: Alaska, Yukon and Northwest Territories; transpalaeartic.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Alaska Hwy. (km 1802, km 1862, km 1885), Burwash Landing, Canyon (14 km N), Carmacks, Champagne, Dawson, Dawson Rd. (km 56), Destruction Bay, Duke R., Donjek R., Haines Jct., Kluane L., Klondike Hwy. (km 562–566), Lapie Cr., Lapie Canyon, Long's Cr. (4 km N), Mayo Rd. (km 359, km 375), McQuesten (and 10 km E), near Minto, Ogilvie R. (Dempster Hwy. km 236), Pelly Crossing (and 2.2 km N), Ross R., Silver City, Slims R. delta, Stewart Crossing (and 6 km NW, 17 km NW), Tatchun Cr., Tenas Cr. (5 km E), Whitehorse.

Alaska records: Circle Hot Springs, Fort Yukon, Richardson Hwy. (km 507), Tok, Umiat.

Biological information: Collected on *Artemisia*, *Elaeagnus commutata* Beruh. (Elaeagnaceae), *Hedysarum mackenzeei*, *Solidago*, *Picea glauca* and *Pinus contorta*, and on *Elaeagnus* feeding on psyllids. In the Northwest Territories also collected on *Salix*. Vinokurov (1988) reports the species as a predator, living on herbaceous plants in the Palaeartic region. It is thought to damage agricultural crops, but obligate zoophagy has been demonstrated by Zavodchikova (1974).

Taxonomic notes: Specimens determined by Dr. M.D. Schwartz.

Subfamily Mirinae

Tribe Mirini

50. *Adelphocoris* sp.

Unknown

Distribution: Unknown.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Bluefish Caves, Burwash Landing, Eagle Plains (Dempster Hwy. km 371), Kluane L., Rancheria (7 km E), Ross R. (8 km S), Silver City, Stewart Crossing.

Biological information: At Bluefish Caves collected by sweeping *Hedysarum* (Fabaceae) and *Dryas* sp. (Rosaceae).

51. *Agnocoris rubicundus* (Fallén)

Circumboreal

Distribution: Alaska to Ontario, and in the United States recorded from Idaho and Colorado (Wheeler and Henry 1992); across the Palaearctic region.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Carcross, Carmacks, Carmacks Rd. (km 150), Dawson (and 10 km E, 22.5 km E), Dempster Corner, Eagle R., Johnson's Crossing, L. Laberge, Mayo, McQuesten, Moose Cr., Old Crow (and 6 km E, 10 km upstream on Porcupine R.), Rampart House, Stewart Crossing, Tagish, Takhini Hot Springs, Tatchun Cr., Tombstone, von Wilczek Lks.

Biological information: Collected on *Alnus*, *Rosa* and *Salix* sp. Elsewhere in Canada collected on *Salix candida* Fluegge and *S. interior* Rowlee (Kelton 1980), and in Europe on *Populus* and *Salix* spp. (Ehanno 1987).

Taxonomic notes: Yukon material determined as *A. rubicundus* by Dr. M.D. Schwartz. Dr. Schwartz (pers. comm.) informs me that all Yukon material of *Agnocoris* that he has examined is *A. rubicundus*. Previously Evans et al. (1978) listed material from the Yukon as *A. pulverulentus* (Uhler).

52. *Calocoris fulvomaculatus* (DeGeer)

Palaearctic-Western Nearctic

Distribution: Alaska, Yukon, Northwest Territories, British Columbia, and Manitoba, a record for Arizona being unconfirmed (Wheeler and Henry 1992); throughout the Palaearctic region with range extending into Asia Minor and northern Africa.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Cadzow L., Cornwall Cr., Dawson, Eagle Plains (Dempster Hwy. km 371), Eagle R., Evelyn Cr. (4 km S), Gravel L., La Force L., Lapie Cr., Lapie R. (km 179 South Canol Rd.), Mayo, Moose Cr., Old Crow (and 16 km WSW), Otter L., Rampart House, Richardson Mts. (Dempster Hwy. km 404 Arctic Circle), Tombstone, Wagon Cr., Willow Cr.

Biological information: At Dawson collected on *Betula glandulosa* Michx., and in a *Betula/Salix/Vaccinium/Eriophorum* bog. In Europe collected on various trees, shrubs and herbs, where it is both phytophagous and predaceous, and recorded as a pest of hops (*Humulus lupulus* L.) (Moraceae), pear (*Pyrus communis* L.) and peach (*Prunus persica* (L.) Batsch (Rosaceae) and grapes (*Vitis* sp.) (Vitaceae) (Wheeler and Henry 1992).

53. *Capsus cinctus* (Kolenati)

Palaearctic-Western Nearctic

Distribution: Alaska to Manitoba, and the western United States south to Wyoming: midwestern United States records are presumed to be adventitive (Wheeler and Henry 1992); much of Russia, Siberia.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Alaska Hwy. (km 1543), Atlin Rd. at British Columbia/Yukon border, Canyon, Carcross, Dawson (and 16 km E), Dawson Airport, Dempster Hwy. (km 140), Dempster Corner, Drury Cr., Gravel L., Haines Jct., Klondike Hwy. (km 626), Koidern, Moose Cr., North Canol Rd. (km 406), Ogilvie, Old Crow (and 6 km E), Pine L., Quiet L., Rampart House, "Sheldon Pass", Silver City, Snag, Tatchun Cr., Takhini Hot Springs, Tom Cr., Tombstone, von Wilczek Lks., White R., Whitehorse, Wolf Cr.

Biological information: Collected on grasses (*Bromus* sp., *Calamagrostis* sp.). Elsewhere in North America collected on smooth brome (*Bromus inervis* Leyss.) and tufted hairgrass (*Deschampsia caespitosa* (L.) Beauv.) and in Russia on *Agropyron repens* (L.) Beauv. and *Calamagrostis langsdorffi* (Link.) Trin. (Wheeler and Henry 1992).

54. *Dichroscytus latifrons* Knight

Nearctic including Beringian

Distribution: Alaska to Newfoundland, and south to New York in the east and Arizona in the west (Wheeler and Hoebeke 1990).

Yukon records: Boreal Cordillera ecozone. Aishihik Rd., Alaska Hwy. (km 1365, km 1445, km 1492, km 1500, km 1511, km 1658, km 1794, km 1902), Canol Rd. (km 222), Dawson, Dawson Rd., Destruction Bay, Duncan Creek Rd., Gravel L., Haines Jct., Haines Rd. (km 237), Mayo Campground, Mayo Rd. (km 66, km 262), McRae, Moose Cr., Rancheria, Silver City, 60 Mile Rd., Whitehorse.

Biological information: Collected on spruce (*Picea glauca*, *P. mariana*). Elsewhere also collected on *Abies lasiocarpa* and *Pinus monticola* Dougl. (Kelton 1972), and *Picea pungens* (Wheeler and Hoebeke 1990).

55. *Dichroscytus rostratus* Kelton Cordilleran excluding Beringia

Distribution: Yukon, British Columbia, Alberta, California, Colorado and Wyoming.

Yukon records: Boreal Cordillera ecozone: *Pelly Mountains* (18): Rancheria.

Biological information: Collected on Lodgepole pine (*Pinus contorta*). Elsewhere collected on *Pinus contorta*, *P. flexilis* James, *P. monticola* and *P. strobiformis* Engelm. (Kelton 1972; Polhemus 1994).

Taxonomic notes: Recorded as *Dichroscytus suspectus* Reuter from the Yukon by Evans et al. (1978).

56. *Lygidea annexus* (Uhler) Nearctic including Beringian

Distribution: Alaska to Alberta, and in the United States in California, Colorado and Minnesota.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Cadzow L., Carmacks Rd. (km 90), Dawson (and 22.5 km E), Dempster Corner, Gravel L., Kluane, "Loon L.", McClintock River Rd. (km 6.4), Rose L. (15 km S), Porcupine R. (at Dave Lord Cr.), Silver City, Takhini Hot Springs.

Alaska records: Big Delta, Chicken, Gobbler's Knob, McKinley National Park, Richardson Hwy. (km 240).

Biological information: Collected on *Salix glauca* and on *Epilobium* sp. (Onagraceae). In Alaska, specimens were collected on *Betula glandulosa*.

Taxonomic notes: The record of *L. salicis* Knight in Evans et al. (1978) no doubt refers to this species.

57. *Lygocoris communis* (Knight) Nearctic including Beringian

Distribution: Alaska to Newfoundland, and south to North Carolina and California.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Dawson (22.5 km E), Dempster Corner, Gravel L., Halfway Lks., L. Laberge, Mayo, Mayo Campground, Moose Cr., Old Crow R., Porcupine R. at Dave Lord Cr., Rampart House, Rancheria, Silver City, Takhini Hot Springs, Watson L., White R.

Biological information: Collected on Salicaceae (*Populus* sp., *Salix* sp.). Elsewhere also collected on *Cornus alternifolia* L. and *C. stolonifera* Michx. (Cornaceae), *Crataegus* sp. (Rosaceae), *Populus tremuloides* Michx., *Betula* sp., *Alnus* sp. (Betulaceae), *Fraxinus americanus* L. (Oleaceae), *Tilia americana* L., *T. cordata* Mill. (Tiliaceae), *Rhamnus alnifolia* L'Her. (Rhamnaceae), *Ulmus americana* L. (Ulmaceae), *Acer spicatum* Lam. (Balsaminaceae), *Robinia pseudoacacia* L. (Fabaceae), *Rosa* sp., *Juglans nigra* L. (Juglandaceae), *Epilobium augustifolium* L., *Weigelia florida* A. DC. (Caprifoliaceae), occasionally *Picea glauca* and *Larix laricina* (Du Roi) K. Koch (Pinaceae) (Kelton 1971) and *Prunus virginiana* L. (Polhemus 1994). It is a pest on apples in Quebec (Michaud et al. 1989).

58. *Lygocoris contaminatus* (Fallén) Circumboreal

Distribution: Alaska to Newfoundland, and south to Maryland in the east and Colorado in the west (Wheeler and Henry 1992); Europe and across Russia.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Boundary (1.5 km E, 19.8 km E), Cadzow L., Carmacks, Dawson, Eagle Plains (Dempster Hwy. km 371), Eagle R., Engineer Cr. (Dempster Hwy. km 194), Gravel L., Halfway Lks., Lapie R. (km 176.4 South Canol Rd.), "Loon L.", Macmillan R., McDougall Pass, Morley R., Nahanni Range Rd. (km 128), Old Crow, Porcupine R. at Dave Lord Cr., Rampart House, Richardson Mts. (Dempster Hwy. km 404 Arctic Circle), South Macmillan R., Wagon Cr., White R.

Biological information: Collected on *Betula glandulosa*. On *Alnus tenuifolia* Nutt. at Haines, Alaska. Elsewhere collected on *Alnus* spp., *Betula* spp., *Salix* spp. *Quercus* sp., *Tilia cordata* and *Epilobium augustifolium* (Kelton 1971), *Alnus tenuifolia* (Kelton 1980), *Betula nigra* L., *B. populifolia* Marsh (Wheeler and Henry 1992), *Betula fontinalis* Sarg. (Polhemus 1994) and *Corylus avellana* L. (Corylaceae) (Ehanno 1987).

59. *Lygocoris pabulinus* (Linnaeus) Circumboreal

Distribution: Alaska to Newfoundland, and south to Georgia, Louisiana and New Mexico (Wheeler and Henry 1992); across the Palaearctic region; also known from Asia.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Carmacks, Dawson (and 10 km E), Dempster Corner, Drury Cr., Eagle R., Gravel L., Mayo, Mayo Campground, Moose Cr., Old Crow (and 10 km upstream), Rampart House, Snag, Tatchun Cr., Watson L., White R.

Biological information: Collected on *Alnus tenuifolia*, *Betula glandulosa*, *Salix* sp. and *Epilobium*. Elsewhere collected on *Heracleum lanatum* Michx. (Umbelliferae), *Diapensia lapponica* L. (Diapensiaceae), *Impatiens* spp. (Balsaminaceae), *Epilobium augustifolium*, *Conium maculatum* L. (Umbelliferae), *Galax aphylla* L. (Diapensiaceae), *Actaea* sp. (Ranunculaceae), *Shepherdia canadensis* (L.) Nutt. (Elaeagnaceae), *Lupinus* sp. (Fabaceae), *Alnus* spp., *Cornus* spp., *Ribes* spp., *Rhododendron maximum* L. (Ericaceae), *Populus* sp., *Salix* sp., *Acer* spp., as well as *Abies* sp., *Pinus* spp., *Picea engelmanni* (Kelton 1971; Wheeler and Henry 1992), and *Sambucus* sp. (Caprifoliaceae) (Polhemus 1994).

60. *Lygus borealis* (Kelton)

Nearctic including Beringian

Distribution: Alaska to Quebec and Newfoundland, and south to Minnesota in the east and Colorado in the west.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Aishihik R. (Alaska Hwy.), Aishihik Rd. (km 11), Alaska Hwy. (km 1543, km 1546, km 1548, km 1611, km 1687, km 1868, km 1883, km 1885), Atlin Rd. at British Columbia/Yukon border, Bear Cr. (Dawson), Beaver Cr., Bluefish R., Boundary (7.7 km E, 19.8 km E), Braeburn Lodge (and 5 km N), Burwash Landing, Campbell Hwy. (km 362), Canyon (7 km N, 14 km N), Carcross, Carmacks (and 24 km E, 27 km E, 30 km E), Champagne, Dawson (and 22.5 km E, 37 km E, 40 km E, 5 km W, 14 km W, 46 km W), Dawson Airport, Dempster Corner, Destruction Bay, Donjek R. (and 18 km NW, 19 km NW), Driftwood R. (hills to N), Dry Cr., Duke R., Eagle Plains (hilltop), Eagle R., Enger Lks., Fox L., Grand Forks, Gravel L., Haines Jct. (and 8 km N), Halfway Lks., Hopkins L., Hunker Creek Rd. (km 1.6), Jake's Corner (and 2 km S, 30 km S), Johnson's Crossing, Klondike Hwy. (km 468, km 476), Kluane, Kluane L., Koidern, Lake Cr., Lapie R. (1 km E), L. Laberge, Little Atlin L., Little Salmon R., Long's Cr. (and 4 km N), Magundy R., Mayo, Mayo Campground, Mayo-Carmacks Rd. (km 90, km 354.5), McCabe Cr. (and 8 km S), McQuesten (10 km E, 33 km NW, 50 km W), Mink Cr. (2 km S), Minto, near Minto, Moose Cr., North Fork Crossing (Ogilvie Mts. and km 66 Peel Plt. Rd.), Ogilvie, Ogilvie R., Old Crow (and 6 km E, 10 km upstream on Porcupine R., 48 km E on Porcupine R.), Pelly Crossing, Pine Cr., Pine L., Porcupine R. ("Blue Bluffs"), Rampart House, Rancheria (7 km E), Richardson Mts. (Dempster Hwy. km 458), Rock R., Ross R. (and 21 km NE, 8 km S, 9 km S, 12 km SSW), Sakiw Cr., Sheldon L., Silver City, Snafu Cr., Snag, Starr Cr., Stewart Crossing (and 6 km NE, 16 km NW, 17 km NW, 21 km W, 24 km S), Stonebolt Cr. (12 km N), Strawberry Cr., Swim Lks., Tagish, Takhini (and 11.2 km W), Takhini Hot Springs, Takhini R., Tatchun Cr., Tatchun L., Tatchun R., Tenas Cr. (5 km E), Teslin, Twin Lks. Campground, von Wilczek Lks., Watson L., Whitehorse, Willow Cr., Wolf Cr.

Biological information: Collected on *Artemisia frigida* Willd. (Asteraceae), *Epilobium*, *Gypsophila*, *Hedysarum*, *Picea glauca*, *Polemonium*, *Populus balsamifera*, *Salix* and *Shepherdia argentea*. Elsewhere collected on *Medicago sativa* L. (Fabaceae) and other plants (Kelton 1980), including oilseed rape (*Brassica campestris* L., *B. junceus* (L.) Coss., *B. napus* L.) and mustard (*Sinapis alba* L., *S. arvensis* L.) (Cruciferae), as well as *Achillea millefolium* L., *Antennaria aprica* Greene and *Artemisia frigida* Willd. (Asteraceae), *Capsella bursa-pastoris* (L.) Medic. (Cruciferae), *Fagopyrum sagittatum* Gilib. (Polygonaceae), *Gypsophila paniculata* L. (Caryophyllaceae), *Kochia scoparia* (L.) Schrad. (Chenopodiaceae), *Lotus corniculatus* L. and *Lupinus argenteus* Pursh (Fabaceae), and *Mentha spicata* L. (Labiatae) (Schwartz and Foottit 1992).

Taxonomic notes: Specimens determined by Dr. M.D. Schwartz.

61. *Lygus columbiensis* Knight

Nearctic including Beringian

Distribution: Alaska to Quebec and Newfoundland, and south to Minnesota in the east and Colorado in the west.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Alaska Hwy. (km 1044, km 1265, km 1546, km 1611, km 1881, km 1885), Atlin Rd. at British Columbia/Yukon border, Beaver Cr., Big Cr., Black Fox Cr. (9 km W), Bluefish Caves, Bluefish Ridge (localities 1 to 7), Boundary (1.5 km E, 19.8 km E, 20 km E), Burwash Landing, Cadzow L., Carcross, Chuchi L., Cornwall Cr., Dawson (and 5 km N, 34 km N, 5 km SE, 16 km E, 22.5 km E, 5 km W), Dawson Airport, Dempster Hwy. (km 241), Dick Cr., Donjek R. (and 18 km NW, 19 km NW), Dragon L., Driftwood R. (hills to N), Dry Cr., Eagle Plains (and Dempster Hwy. km 348, km 371, and hilltop), Eagle R., Enger Lks., Engineer Cr. (Dempster Hwy. km 174, km 194), Ethel Lake Rd. (and Klondike Hwy. km 12), Finlayson R. ("Wolverine Cr."), Firth R. (locality 1), Grand Forks, Gravel L., Haines Jct. (8 km W), Halfway Lks., Highet Cr., Hopkins L., Hunker Rd. (Dawson), Iron Cr., Johnson's Crossing, Judas Cr., Keno Hill,

Klondike Hwy. (km 476, km 562–566), Kluane, Kluane L., Koidern, Lake Cr., Lapie R. (1 km E), Lapie R. (South Canol Rd. km 176.4, km 184), Lewes Cr., Little Atlin L., Little Salmon L., Little Salmon R., Lone Tree Cr., Mason Hill, Mayo, Mayo Campground, Mayo Rd. (km 354 (mi 220)), McCabe Cr., McQuesten (and 10 km E, 33 km NW, 50 km W), Mink Cr. (2 km S), Moose Cr., Morley R., Mt. Skukum, North Klondike R. (Dempster Hwy. km 42), Ogilvie, Ogilvie R. (Dempster Hwy. km 200, km 206, km 217, km 220, km 236, km 240, km 243), Old Crow (and 1 km E, 6 km E, 35 km WSW, 48 km E, 3.2 km and 10 km upstream on Porcupine R.), Orchie L., Pelly Crossing, Pine Cr., Porcupine R. (“Blue Bluffs”), Quartz Cr., Rampart House, Rancheria (and 7 km E), Richardson Mts. (Dempster Hwy. km 400, km 404, km 408, km 409, km 417, km 449), Ross R. (and 14.5 km NE, 9 km S), Sheep Creek Rd., Sheep Mt., Silver City, Silver Cr., Slims R. delta, Squanga L., Starr Cr., Stewart Crossing (and 6 km NE, 7 km NE, 9 km NE, 16 km NW), Strawberry Cr., Swim Lks., Tagish, Tatchun Cr., Tatchun L., Tatchun R., Tenas Cr. (5 km E), Tom Cr., Tuchtua R., von Wilczek Lks., Watson L., White Mts. (“Erebia Cr.”), White R., Whitehorse, Willow Cr., Wolf Cr., Wright Pass.

Biological information: Collected on *Alnus sitchensis*, *A. tenuifolia*, *Betula papyrifera*, *Epilobium*, *Lupinus*, *Picea glauca*, *P. mariana*, *Pinus contorta*, *Potentilla*, *Rosa*, *Salix*, *Shepherdia canadensis*, and yarrow (*Achillea millefolium*). Elsewhere in British Columbia collected also on *Abies lasiocarpa*, *Amelanchier*, *Picea engelmanni*, *Pseudotsuga taxifolia* and *Juniperus communis*. According to Kelton (1975), the species breeds on soapberry (*S. canadensis*), but can be collected on alder, alfalfa, bearberry, birch, cow parsnip, fireweed, goldenrod, hemlock, Jack pine, Lodgepole pine, White spruce, labrador tea, rabbit brush, raspberry, rose, shrubby cinquefoil, willows and yarrow.

Taxonomic notes: Specimens determined by Dr. M.D. Schwartz.

62. *Lygus elisus* Van Duzee

Western Nearctic including Beringian

Distribution: Alaska to Manitoba, and south to Kansas, California and Mexico (Lattin et al. 1992); introduced into Hawaii.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Aishihik Rd. (and km 11), Alaska Hwy. (km 1394), Atlin Rd. at British Columbia/Yukon border, Beaver Cr., Braeburn Lodge (and 5 km N), Burwash Landing, Canyon (and 7 km N, 14 km N), Carcross, Carmacks (and 18 km S, 35 km S, 24 km E, 27 km E, 30 km E), Champagne, Clear Cr., Cracker Cr., Dawson (and 22.5 km E, 5 km W), Dawson Airport, Destruction Bay (and 10 km S), Donjek R., Duke R., Eagle R. (Dempster Hwy. km 382), Ethel Lake Rd., Fox L., Glacier Cr., Gravel L., Haines Jct., Jake’s Corner, Klondike Hwy. (km 562–566), Kluane, Kluane L., Kluane National Park (base of Mt. Wallace), Lapie R. (1 km E), Lewes L., Little Atlin L., Little Salmon L., Little Salmon R., Magundy R., Marsh L., Mayo, McCabe Cr. (and 3 km S), McQuesten (and 10 km E, 40 km W), Mink Cr. (2 km S), Ogilvie R. (Dempster Hwy. km 200), Old Crow (and 6 km E, 28 km N), Pelly Crossing, Pine L., Rampart House, Rancheria (7 km E), Richtofen Cr., Rock R., Ross R. (21 km NE, 9 km S, 12 km SSW), Sheep Creek Rd., Sheep Mt., Silver City, Silver Cr., Slims R. delta, Stewart Crossing (and 17 km NW, 4.7 km E, 18 km W, 21 km W), Tagish, Takhini (11.2 km W, 14.5 km W), Takhini Hot Springs, Takhini R., Tatchun Cr., Tatchun L., Tenas Cr. (5 km E), von Wilczek Lks., Watson L., Whitehorse, Willow Cr., Wolf Cr.

Biological information: Collected on *Artemisia frigida*, *Epilobium*, *Hedysarum*, *Polemonium*, *Rosa*, *Salix*, *Shepherdia canadensis* and *Trifolium*. In British Columbia, I recently collected *L. elisus* on *Phacelia linearis* (Pursh) Holz. (Hydrophyllaceae) and *Sisymbrium loeseii* L. (Brassicaceae). In southern California found to breed on *Ambrosia acanthicarpa* Hooker and occur on *A. chamissonis* (Lessing) Greene (Asteraceae) (Goeden and Ricker 1974). Elsewhere *L. elisus* has been collected on *Medicago sativa*, *Achillea* sp. (Asteraceae), *Salix* sp., *Chenopodium album* L., *Grayia spinosa* (Hook.) Mog., *Sarcobatus vermiculatus* (Hook.) Torr. and *Eurotia lanata* (Pursh) Mog. (Chenopodiaceae), *Chaenactis* sp., *Chrysothamnus viscidiflorus* (Hook.) Nutt., and *Helianthus* sp. (Asteraceae), *Symphoricarpos* sp. (Caprifoliaceae), *Franseria dumosa* Gray, *Ambrosia* sp., *Helenium hoopesii* Gray, *Lupinus caudatus* Kell. and *Echinopsilon hyssopifolius* Moq. (Lattin et al. 1992). Schwartz and Footitt (1992) report *L. elisus* on oilseed rape and mustard, as well as *Artemisia frigida*, *Capsella bursa-pastoris*, *Medicago sativa*, *Fagophrum sagittatum*, *Gypsophila paniculata*, *Kochia scoparia*, *Lotus corniculatus*, *Lupinus argenteus*, and *Mentha spicata*.

Taxonomic notes: Specimens determined by Dr. M.D. Schwartz.

63. *Lygus n. sp. near elisus* Van Duzee

Cordilleran including Beringian

Distribution: Yukon and British Columbia.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Braeburn Lodge (5 km N), Carmacks (27 km E), Haines Jct., Kluane L., Koidern, Lapie Canyon, Lapie Cr., Long’s Cr. (4 km N), Ogilvie

R. (Dempster Hwy. km 293), Pine L., Ross R. (9 km S), Sheep Mt., Silver City, Slims R. delta, Twin Lks., "Windy Pass" (Dempster Hwy. km 159), Wolf Cr.

Biological information: Collected on *Hedysarum*.

Taxonomic notes: Specimens determined by Dr. M.D. Schwartz.

64. *Lygus humeralis* Knight

Cordilleran including Beringian

Distribution: Yukon, British Columbia, Alberta, and in western United States south to Texas.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Carmacks, Rampart House, Takhanne R., Whitehorse.

Biological information: Collected on lupine. Elsewhere collected on *Ceanothus* spp. in the spring and early summer, and on flowering Asteraceae in the summer and fall (Kelton 1975).

Taxonomic notes: Specimens determined by Dr. M.D. Schwartz.

65. *Lygus lineolaris* (Palisot)

Nearctic excluding Beringia

Distribution: Alaska to Newfoundland, and all the United States to Mexico.

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

Biological information: This species occurs on a wide variety of plants, and is a pest of alfalfa (Kelton 1980), oilseed rape and mustard (Schwartz and Footitt 1992).

Taxonomic notes: Specimens determined by Dr. M.D. Schwartz.

66. *Lygus perplexus* Stanger

Cordilleran including Beringian

Distribution: Alaska to Alberta, and in the western United States south to California.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Blackstone R. (Dempster Hwy. km 141), Cornwall Cr., Dawson, Destruction Bay, Dezadeash L., East Blackstone R. (Dempster Hwy. km 97), Gravel L., Klokut (13 km S), Kluane, Kluane L., Koidern, North Fork Crossing (km 67.5 Peel Plt. Rd.), North Fork Pass (Ogilvie Mts.), Rampart House, Richardson Mts. (Dempster Hwy. km 409), Rock R., Rose L., Ross R., Sheep Mt., "Sheldon Pass", Silver City, Takhini Hot Springs, Tombstone, "Windy Pass".

Biological information: Collected on *Lathyrus*, *Salix glauca*, and *Senecio*. Elsewhere collected on fireweed, forest anemone, *Arnica* sp. (Asteraceae), yarrow, and other herbaceous plants usually found on alpine meadows (Kelton 1975).

Taxonomic notes: Specimens determined by Dr. M.D. Schwartz.

67. *Lygus* n. sp. near *perplexus* Stanger

Cordilleran including Beringian

Distribution: Alaska, Yukon, Northwest Territories, British Columbia.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Blow R., Cornwall Cr., Dawson Airport, Eagle R. (Dempster Hwy. km 382), Gravel L., Halfway Lks., Koidern, McDougall Pass, McQuesten (50 km W), North Fork Pass, North Klondike R. (Dempster Hwy. km 64), Ogilvie R. (Elephant Rock and Dempster Hwy. km 207, km 223), Old Crow (and 6 km E, 4 km W), Rampart House, Slims R. delta, Tack L. (6 km SE), Willow Cr.

Biological information: Collected on herbaceous plants.

Taxonomic notes: Specimens determined by Dr. M.D. Schwartz.

68. *Lygus potentillae* Kelton

Nearctic including Beringian

Distribution: Alaska to Quebec and Newfoundland, and south to Minnesota in the east and Colorado in the west.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Dawson, Haines Jct., Klusha Cr., Old Crow, Richardson Mts., Ross R. (8 km S), Tarfu Cr., Tatchun Cr., Willow Cr.

Biological information: Collected on *Salix*. Elsewhere collected on *Potentilla fruticosa* L. (Rosaceae), and a small number of other herbaceous plants (Kelton 1975).

Taxonomic notes: Specimens determined by Dr. M.D. Schwartz.

69. *Lygus rubrosignatus* Knight

Nearctic including Beringian

Distribution: Yukon to Manitoba and Newfoundland, and south to New York, North Dakota and Idaho.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Boundary (1.5 km E), L. Laberge, Ogilvie (12 km N), Pelly Crossing, Ross R., Takhini (14.5 km W), Takhini Hot Springs.

Biological information: Collected on *Epilobium angustifolium*. Elsewhere found to breed on *Senecio palustris* (L.) Fern (Asteraceae) and collected in small numbers on alfalfa, bearberry, fireweed, rose, ok-eye daisy, *Artemisia* sp. and Jack pine (Kelton 1975). Schwartz and Footitt (1992) report *L. rubrosignatus* on oilseed rape, as well as *Medicago sativa* and *Mentha spicata*.

Taxonomic notes: Specimens determined by Dr. M.D. Schwartz.

70. *Lygus shulli* Knight

Nearctic including Beringian

Distribution: Alaska to New Brunswick and Newfoundland and south to the mountains of California.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Alaska Hwy. (km 1134), Beaver Cr., Blackstone R. (Dempster Hwy. km 141), Blow R., Bluefish Ridge (locality 4), Boundary (19.8 km E), Burwash Landing, Campbell Hwy. (km 362), Cornwall Cr., Cottonwood Cr., Dawson (and 22.5 km E, 5 km W), Dawson Airport, Dempster Corner, Dempster Hwy. (km 207, km 216), Dragon L., Driftwood R. (hills to N), Dry Cr., Eagle Plains (Dempster Hwy. km 346, km 371), Eagle R. (Dempster Hwy. km 382), East Blackstone R. (Dempster Hwy. km 92), Engineer Cr. (Dempster Hwy. km 188), Ethel Lake Rd., Evelyn Cr. (4 km S), Gravel L., Groundhog Cr., Haines Jct., Halfway Lks., Jarvis R. (0.4 km W), Judas Cr., Kluane, Koidern, Lake Cr., Little Atlin L., Little Salmon L., Long's Cr. (4 km N), Macmillan R., Marsh L., Mayo, McCabe Cr., McQuesten (33 km NW), Mink Cr. (2 km S), Moose Cr., Morley R., Mt. Haldane Rd. (km 30.5 (mi 19)), Nahanni Range Rd. (summit), North Canol Rd. (km 406), North Fork Crossing (km 67.5 Peel Pt. Rd.), North Fork Pass (Dempster Hwy. km 64 and Ogilvie Mts.), Ogilvie R. (Dempster Hwy. km 236), Old Crow (and 6 km E), Orchie L. (3 km N), Quiet L., Rampart House, Rancheria (and 7 km E), Richardson Mts. (Dempster Hwy. km 408, km 458), Rock R., Rose L. (15 km S), Rose R. (km 122 South Canol Rd.), Ross R. (8 km S), Sakiw Cr., Sheldon Cr., Strawberry Cr., Stewart Crossing, Swift R., Swim Lks., Takhanne R., Takhini Hot Springs, Takhini R., Tatchun R., Teslin, Tombstone, Tom Cr., Tuchtua R. (6 km S), Watson L., Whitehorse, White Mts. ("Erebia Cr."), Willow Cr., Wolf Cr., Wright Pass.

Biological information: Collected on *Epilobium*, *Potentilla* and *Salix*. This species seems to feed and breed on a great variety of plants, and elsewhere has been collected on alfalfa, aster, beard tongue, birdsfoot trefoil, birch, clover, *Ceanothus* sp., cow parsnip, *Chrysothamnus* sp., fireweed, fleabane, goldenrod, lupine, milk-vetch, mint, nettle, *Parthenium argentatum* A. Gray (Asteraceae), pearly everlasting (*Anaphalis margaritacea* (L.) B. and H. (Asteraceae)), *Penstemon* sp. (Scrophulariaceae), salmon berry, *Shepherdia* sp., sunflower, thistle, vetch, willow and yarrow (Kelton 1975).

Taxonomic notes: Specimens determined by Dr. M.D. Schwartz.

71. *Lygus* n. sp. near *striatus* Knight

Cordilleran including Beringian

Distribution: Alaska, Yukon, Northwest Territories, British Columbia, Washington and Oregon.

Yukon records: Boreal Cordillera ecozone. Carcross, Destruction Bay, Gravel L., Klondike Hwy. (km 468), Whitehorse.

Biological information: Collected on *Epilobium* and *Lupinus*.

Taxonomic notes: Specimens determined by Dr. M.D. Schwartz.

72. *Orthops scutellatus* Uhler

Nearctic excluding Beringia

Distribution: Alaska to Newfoundland, and south to West Virginia, Texas, Arizona and California.

Yukon records: Boreal Cordillera ecozone: *Yukon Southern Lakes*: Haines Jct. (30 km E).

Biological information: *O. scutellatus* occurs on the Umbelliferae and is often a pest in carrot seed production (Kelton 1980). In British Columbia it commonly occurs on *Heracleum lanatum* Michx.

73. *Phytocoris knowltoni* Knight

Cordilleran including Beringian

Distribution: Alberta, Yukon and Colorado.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Alaska Hwy. (km 1852), Blackstone R. (Dempster Hwy. km 141), Destruction Bay, Kluane L., Mayo Rd. (km 248), Minto, Whitehorse.

Biological information: Collected on spruce (*Picea glauca*). Elsewhere collected on *Picea engelmanni* and *P. glauca* (Stonedahl 1988).

74. *Pinalitus approximatus* (Stål)

Nearctic excluding Beringia

Distribution: Alaska to Newfoundland, and south to West Virginia in the east, and Wyoming in the west.

Yukon records: Boreal Cordillera ecozone: *Yukon Plateau-North*: Keno.

Biological information: Collected on *Abies lasiocarpa*. Elsewhere recorded on *Abies balsamea*, *Larix laricina* and *Picea glauca* (Kelton 1980).

Taxonomic notes: Wheeler and Henry (1992) note that this should no longer be considered as an Holarctic species.

75. *Pinalitus rostratus* Kelton

Nearctic including Beringian

Distribution: Yukon to Nova Scotia, and south to New Mexico.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Alaska Hwy. (km 1381), Beaver Cr., Canol Rd. (km 222), Carcross, Carcross Rd. (km 8), Dawson (and 22.5 km E), Destruction Bay, Eagle Plains (Dempster Hwy. km 371), Gravel L., Hunker Cr., Keno, Mayo Campground, Moose Cr., Morley R., Quartz Creek Rd. (km 1.6), Rancheria, Teslin, Watson L., Whitehorse.

Biological information: Collected on larch, Lodgepole pine, spruce and willow. Elsewhere collected on *Picea glauca* and *P. engelmanni*, *Larix laricina*, *Abies* sp., *Tsuga canadensis* (L.) Carr. and *Pseudotsuga menziesii* (Kelton 1977).

76. *Platylygus luridus* (Reuter)

Nearctic excluding Beringia

Distribution: Yukon to Nova Scotia, and south to West Virginia, New Mexico, Arizona and California.

Yukon records: Boreal Cordillera ecozone. Carcross, Carcross Rd. (km 16), Mayo Rd. (km 40), Rancheria, Squanga L., Watson L.

Biological information: Collected on Lodgepole pine. Elsewhere also collected on Jack pine (*Pinus banksiana*) (Kelton 1980), Whitebark pine (*P. albicaulis* Engelm.), Bristle-cone pine (*P. aristata*), Limber pine (*P. flexilis*), Western white pine (*P. monticola* D. Don), Ponderosa pine (*P. ponderosa* Laws), Red pine (*P. resinosa* Ait.), White pine (*P. strobus* L.) and Scots pine (*P. sylvestris* L.) (Kelton and Knight 1970; Polhemus 1994).

77. *Platylygus piceicola* Kelton

Cordilleran excluding Beringia

Distribution: Yukon, British Columbia, Alberta, and in the western United States south to Arizona.

Yukon records: Boreal Cordillera ecozone: *Ruby Ranges:* Alaska Hwy. (km 1708, km 1754), Burwash Landing, Destruction Bay, Kluane L.

Biological information: Collected on White spruce (*Picea glauca*). Elsewhere also collected on Engelmann spruce (*Picea engelmanni*) (Kelton and Knight 1970) and Bristle-cone pine (*Pinus aristata*) (Polhemus 1994).

78. *Plesiocoris rugicollis* (Fallén)

Circumboreal

Distribution: Alaska to Alberta, Manitoba, Labrador and Newfoundland; throughout Palaearctic region with range extending into northern Asia (Wheeler and Henry 1992).

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Carcross, Chilkat Pass (151 km (94 mi) from border), Dawson, Dempster Hwy. (Arctic Circle), Destruction Bay, Dislocation Bay, Drury Cr., Eagle R., Engineer Cr., Fox Cr., Haines Jct., Haines Rd. (km 177, km 198), Kluane, Lapie R. (km 184 South Canol Rd.), McDougall Pass, Morley R., Old Crow, Old Crow R., Porcupine R. at Dave Lord Cr., Quiet L., Rancheria, Silver City, Squanga L., Sulphur L., Tagish, Tom Cr., Tombstone.

Biological information: Collected on willow, *Salix glauca* L., and spruce. In Europe, *P. rugicollis* has been a pest on apple and *Ribes* spp. (currant, gooseberries) (Wheeler and Henry 1992).

79. *Polymerus tumidifrons* Knight

Cordilleran excluding Beringia

Distribution: Yukon, British Columbia, Alberta, and in the western United States south to Colorado and Utah.

Yukon records: Boreal Cordillera ecozone. Alaska Hwy. (km 1728), Duke R., Little Salmon L. (35 km E), Sheep Mt., Stewart Crossing (4.7 km E).

Biological information: Elsewhere collected on *Helianthus* spp. (Kelton 1980).

80. *Polymerus unifasciatus* (Fabricius)

Circumboreal

Distribution: Alaska to Newfoundland, and south to New York and Wyoming (Schwartz et al. 1991); across the Palaearctic region with range extending through northern Asia (Wheeler and Henry 1992).

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Carmacks, Chilkat Pass (151 km (94 mi) from border), Dawson (and 10 km E, 22.5 km E), Dempster Corner, Destruction Bay, Frog L., Gravel L., Haines Jct., Klondike Hwy. (km 690), L. Laberge, Magundy Valley, McQuesten (and 10 km E), Mink Cr., near Minto, Moose Cr., Old Crow (6 km E, 10 km upstream on Porcupine R.), Pelly Crossing, Rampart House, "Sheldon Pass", Tagish, Tatchun Cr., Whitehorse, Wolf Cr.

Biological information: Collected on *Galium boreale* L. (Rubiaceae) and *Salix*. Elsewhere in North America collected on bur oak (*Quercus macrocarpa* Michx.), *Epilobium* sp., vetch, and *Galium asprellum* Michx., while in Europe it is reported on *G. aparine* L., *G. boreale*, *G. mullungo* L., *G. palustre* L. and *G. verum* L. (Rubiaceae) (Schwartz et al. 1991; Wheeler and Henry 1992).

81. *Polymerus vulneratus* (Wolff)

Palaearctic-East Beringian

Distribution: Alaska, Yukon, Northwest Territories and northern British Columbia; Europe to far eastern Russia, China and Morocco.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Carcross, Carmacks, Dawson, Destruction Bay, Haines Jct., Macmillan R., Magundy R., Old Crow, Old Crow flats, Pelly Crossing, Rancheria, Ross R., Silver City, Slims R. delta, Starr Cr., Stewart Crossing, Tatchun, Tatchun Cr., Whitehorse.

Biological information: Collected on *Hedysarum mackenzii* Richards and *Trifolium* sp. (Fabaceae). In Alaska collected on *Betula glandulosa*. In Europe reported from *Achillea millefolium* L., *Artemisia* sp. (Asteraceae), *Heliotropium* sp. (Boraginaceae), *Alyssum montanum* L. (Brassicaceae), *Corispermum* sp., *Salsola kali* L. and sugar beet (Chenopodiaceae), *Asperula* sp. and *Galium verum* and *Salix* sp. (Salicaceae) (Schwartz et al. 1991). *P. vulneratus* occasionally attacks agricultural crops in Europe (Wheeler and Henry 1992).

82. *Salignus tahoensis* (Knight)

Nearctic including Beringian

Distribution: Alaska to Newfoundland, and south to Wyoming and California (Schwartz 1994) (Fig. 6).

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Atlin Rd. (2 km N, British Columbia/Yukon border), Beaver Cr., Blackstone R. (Dempster Hwy. km 132, km 141), Boundary (19.8 km E), Cadzow L., Carcross (and 10 km N), Dawson (and 88 km W), Dempster Hwy. (Arctic Circle, km 42, km 50, km 62, km 64, km 68, km 140, km 216), Destruction Bay, Dezadeash L., Drury Cr., Eagle Plains (Dempster Hwy. km 371), Five Finger Rapids, Fox Cr., Fuller L. (8 km W), Gravel L., Haines Jct. (5 km W), Hopkins L. (13 km N), Johnson's Crossing (16 km N, and km 4 Canol Rd.), Judas Cr., Kluane, Kluane L., Lapie Lks. (3 km N), Lapie R. (km 176.4 South Canol Rd.), Little Atlin L., L. Laberge, "Loon L.", Macmillan R., McQuesten (10 km E), Moose Cr., Morley R., North Fork Crossing (km 67.5 Peel Plt. Rd.), North Fork Pass (Ogilvie Mts.), Ogilvie R. (Dempster Hwy. km 194), Old Crow (and 10 km upstream), Otter L., Pine Cr., Porcupine R. at Dave Lord Cr., Quiet L., Rampart House, Rancheria, Rock R., Rose L. (and 15 km S), Ross R., Sheep Mt., Silver City, Slims R. delta, South Macmillan R., Snag Jct., Squanga L., Stewart Crossing (18 km W), Swim Lks., Tagish, Takhanne R., Takhini (11 km N, 14.5 km W), Takhini Hot Springs, Tatchun Cr., Teslin, Tombstone, White Mts. ("Erebia Cr."), White R., Whitehorse, Willow Cr.

Biological information: Collected on *Epilobium* sp., *Salix glauca*, and *Lupinus* sp. Elsewhere collected on *Salix bebbiana* Sarg., *S. glauca* var. *villosa* (Hook.) Anders., *S. udensis* Trautv. and Mey., *Alnus* sp., *Betula* sp., *Picea* sp., *Pinus contorta* var. *latifolia*, and *Lonicera* sp. (Schwartz 1994).

Tribe Resthenini

83. *Prepops bivittis* (Stål)

Nearctic including Beringian

Distribution: Yukon to Ontario and Newfoundland, and south to North Carolina and Colorado.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Haines Jct., Old Crow (and 10 km upstream), Stewart Crossing (6 km NE), Watson L.

Biological information: Collected on herbaceous plants. Reported on *Galium angustifolium* Nutt. (Rubiaceae) in California (Knight 1968).

84. *Prepops nigripilus* (Knight)

Nearctic including Beringian

Distribution: British Columbia, Yukon, Alberta, Quebec, New Hampshire and New York.

Yukon records: Boreal Cordillera ecozone: *Klondike Plateau:* Dawson (22.5 km E); *Yukon Southern Lakes:* Whitehorse.

Biological information: Hosts unknown.

Tribe Stenodemini

85. *Actitocoris signatus* Reuter

Palaeartic-Western Nearctic

Distribution: Yukon, Northwest Territories, northern Alberta and northern Saskatchewan; Europe, Russia and northern Mongolia (Wheeler and Henry 1992).

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Blackstone R. (Dempster Hwy. km 128), Blow R., Dawson, East Blackstone R. (Dempster Hwy. km 97), Old Crow, Richardson Mts.

Biological information: Collected on sedge. On the Blow River and on the Dempster Highway, *A. signatus* was collected in grass/sedge hummock tundra, and at Dawson in a *Betula/Salix/Vaccinium/Eriophorum* bog. On the Peel Plateau in the Northwest Territories, the species was collected by sweeping grasses and sedges.

86. *Leptopterna ferrugata* (Fallén)

Circumboreal

Distribution: Alaska to Newfoundland, and south to Kentucky and Colorado (Wheeler and Henry 1992); Europe and Russia.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Boundary (19.8 km E), Carmacks, Eagle Plains (Dempster Hwy. km 321), Firth R., Old Crow, Pine L., Sulphur L., Whitehorse.

Biological information: Collected on grasses, on sand dunes at Carmacks, and on *Calamagrostis* sp. in Alaska. Elsewhere in North America recorded to feed on slender wheat grass (*Agropyron trachycaulum* (Link) Malte ex H.F. Lewis), *A. desertorum* (Fisch. ex Link) Schult, rye (*Secale cereale* L.) and black rush (*Juncus gerardi* Loisel), and in the Palearctic region *L. ferrugata* occurs on *Bromus erectus* Huds., *Dactylis glomerata* L., *Phleum pratense* L., *Poa compressa* L. and *P. pratensis* L. (Wheeler and Henry 1992).

87. *Litomiris debilis* (Uhler)

Nearctic including Beringian

Distribution: Alaska to Quebec and Newfoundland, and south to Wisconsin and Colorado.

Yukon records: Boreal Cordillera ecozone. Aishihik Rd. (13.5 km N Alaska Hwy.), Bear Cr., Burwash Landing, Canyon (and 14 km N), Carmacks (and 24 km E, 30 km E), Dawson (and 22.5 km E), Dawson Airport, Dempster Corner, Duke R., Fox L., Grand Forks, Gravel L., Haines Jct., Kluane L., Little Salmon L., Little Salmon R., Magundy R., Mayo, Mayo, Campground, McQuesten (10 km E), McQuesten R., Minto (and near Minto), Moose Cr., Pelly Crossing (and 4 km S), Sheep Mt., Stewart Crossing (and 16 km NW, 9 km NE), Tatchun, Tatchun Cr., Tatchun R., von Wilczek Lks.

Biological information: Collected on south-facing *Artemisia* slopes, on grasses, and on *Populus* sp. Elsewhere grass hosts reported as *Agropyron cristatum* (L.) Gaertn., *A. dasystachyum* (Hook.) Vasey, *A. intermedium* (Host) Beauv., *A. tracycaulum*, *Deschampsia caespitosa* (L.) Beauv., *Festuca kingii* (S. Wats.) Cassidy, *Phleum pratense*, and *Stipa comata* Trin. and Rupr. var. *intermedia* Scribn. and Tweedy (Schwartz 1989).

88. *Mimoceps insignis* Uhler

Nearctic including Beringian

Distribution: Alaska to Quebec, and south to Wisconsin and New Mexico.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Dawson, Eagle R., Haines Jct., Koidern, Old Crow, Silver City.

Alaska records: Big Delta, Dot L., Shaw Cr. (Richardson Hwy. km 465), Tok.

Biological information: Collected on sedge (*Carex* sp.) and willow (*Salix* sp.), and in a *Betula/Salix/Vaccinium/Eriophorum* bog.

89. *Stenodema pilosipes* Kelton

Western Nearctic including Beringian

Distribution: Alaska to Manitoba, and in the western United States south to New Mexico, Arizona and California.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Aishihik Rd. (km 11), Atlin Rd. at British Columbia/Yukon border, Blackstone R. (Dempster Hwy. km 141), Blow R., Bluefish R., Boundary (7.7 km E), Braeburn Lodge (5 km N), Burwash Landing, Cadzow L., Canol Rd. (km 17.7), Canyon (7 km N), Carcross, Carmacks (24 km E, 27 km E), Champagne, Cornwall Cr., Dawson (and 16 km E, 22.5 km E, 46 km E), Dawson Airport, Dempster Corner, Dempster Hwy. (km 152 "Windy Pass"), Destruction Bay, Donjek R. (18 km NW), Dry Cr., Duke R., East Blackstone R. (Dempster Hwy. km 104, km 114), Eagle Plains (Dempster Hwy. km 382), Ethel Lake Rd., Five Finger Rapids, Glacier Cr., Gravel L., Haines Jct., Jake's Corner (and 2 km S, 25 km S), Johnson's Crossing, Kluane (Alaska Hwy. km 1693, km 1696), Koidern, Lake Cr., L. Laberge, Lewes L., Little Atlin L., Little Salmon R., Lone Tree Cr., Long's Cr., Mayo Campground, McQuesten (and 10 km E), Mink Cr., Montagne, Moose Cr., Morley R., North Fork Crossing (km 69 Peel Plt. Rd.), North Fork Pass (Ogilvie Mts.), North Klondike R. (Dempster Hwy. km 64), Ogilvie, Ogilvie R. (Dempster Hwy. km 240, km 243), Old Crow (and 9 km W, 35 km WSW), Old Crow flats, Pelly Crossing, Porcupine R. at Dave Lord Cr., Rampart House, Rancheria, Rock R., Rose L. (15 km S), Ross R. (9 km S), Silver City, Slims R. delta, Squanga L., Starr Cr., Stewart Crossing (and 24 km S), Tagish, Takhini (14.5 km W), Takhini Hot Springs, Tatchun Cr., Tombstone, von Wilczek Lks., Watson L., Whitehorse, Wolf Cr.

Alaska records: Anchorage, Big Delta, Cooper Landing, Fairbanks, Ketchikan, Naknek, Seward, Skilak L., Unalakleet.

Biological information: Collected on grasses, and on *Oxytropis campestris* (L.) DC. (Fabaceae). Elsewhere also collected on *Rubus parviflorus* Nutt. (Rosaceae).

90. *Stenodema trispinosa* Reuter

Circumboreal

Distribution: Alaska to Newfoundland, and south to Georgia and California (Wheeler and Henry 1992); throughout the Palaearctic region with range extending into Asia.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Bluefish R., Boundary (7.7 km E), Cadzow L., Canol Rd. (km 17.7), Carmacks (18 km S, 27 km S), Dawson (and 21 km E, 22.5 km E), Dawson Airport, Dempster Corner, Dragon L. (21 km S), Eagle R. (Dempster Hwy. km 372, km 382), Grand Forks, Gravel L., Halfway Lks., Iron Cr. (4 km E), Koidern, L. Laberge, Lake Cr. Campground, Little Salmon L., Mayo, McDonald Cr., McQuesten, McQuesten R., Moose Cr., North Fork Crossing (km 69 Peel Pt. Rd.), Ogilvie, Old Crow (and 6 km E), Pelly Crossing, Rampart House, Richardson Mts. (Dempster Hwy. km 458), Ross R., Snafu Cr., Tagish, Takhini (14.5 km W), Takhini Hot Springs, Tarfu Cr., Tuchitas R., von Wilczek Lks.

Biological information: Collected on grasses in wet areas. Elsewhere, in North America this species is univoltine and breeds on timothy (*Phleum pratense*) and common reed (*Phragmites australis* (Cav.) Trin. ex Steud.), while in Europe it feeds on the heads of grasses, including *Phragmites* and sedges, and may be bivoltine in the south (Wheeler and Henry 1992).

91. *Teratocoris caricis* Kirkaldy

Circumboreal

Distribution: Alaska to Quebec and Newfoundland, and south to Colorado (Wheeler and Henry 1992); Europe to Siberia.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Dempster Hwy. (Arctic Circle), East Blackstone R. (Dempster Hwy. km 97, km 102, km 104), Eagle R., Engineer Cr. (Dempster Hwy. km 154), Koidern, Magundy R., McDougall Pass, Moose Cr., Old Crow (and 4 km W, 9 km W on Black Fox Cr.), Otter L., Rampart House, Silver City, Swift R. (15 km E), Whitehorse.

Biological information: Collected on sedges (*Carex* spp.) and grass. Elsewhere occurring on *Carex* and *Juncus* (Wheeler and Henry 1992).

92. *Teratocoris paludum* Sahlberg

Circumboreal

Distribution: Alaska to New Brunswick and Newfoundland, and south to Illinois, Nebraska and California (Wheeler and Henry 1992); across the Palaearctic region with range extending into northern Asia.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Canyon (14 km N), Dawson (and 22.5 km E), Dempster Corner, Koidern, Magundy R., Moose Cr., Morley R., Old Crow (6 km E), Pelly Crossing (4 km S), Ross R., Silver City, Snag Jct., Stewart Crossing (24 km S), Takhini Hot Springs, Whitehorse.

Biological information: Collected on sedges and *Salix* sp. Elsewhere in Europe collected on *Carex vesicaria* L. and cotton-grass (*Eriophorum angustifolium* Roth) (Wheeler and Henry 1992).

93. *Teratocoris saundersi* Douglas and Scott

Circumboreal

Distribution: Alaska to Quebec, Labrador, Newfoundland, and south to Colorado in the western United States (Wheeler and Henry 1992); across the Palaearctic region with range extending into northern Asia.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Blow R., Cadzow L., Cornwall Cr., Cottonwood Cr., Dawson (22.5 km E), Dempster Corner, Drury Cr., Eagle R., Eagle Plains (Dempster Hwy. km 278, km 321, km 371), East Blackstone R. (Dempster Hwy. km 92, km 97, km 102), Engineer Cr. (Dempster Hwy. km 154), Koidern, Lapie R. (km 179 South Canol Rd.), Little Atlin L., Macmillan R., Moose Cr., North Fork Pass (Dempster Hwy. km 77), Old Crow, Otter L., Quiet L., Rampart House, Rancheria, "Sheldon Pass", Tagish, Tom Cr., Tombstone, Watson L., Whitehorse, Wolf Cr.

Biological information: Collected on grasses. Elsewhere in North America also collected on *Scirpus* spp., *Carex* spp., and *Calamagrostis* sp. (Kelton 1966), and in Europe on *Juncus maritimus* Lam. and *Phragmites australis* (Wheeler and Henry 1992).

94. *Teratocoris viridis* Douglas and Scott

Palaearctic-East Beringian

Distribution: Alaska, Yukon and Northwest Territories; across the Palaearctic region with range extending into northern Asia.

Yukon records: Southern Arctic and Taiga Cordillera ecozones. Firth R., Herschel Is., Philip Cr., Trout L. (8 km W).

Biological information: Collected on *Carex* sp. and *Lupinus* sp.

95. *Trigonotylus americanus* Carvalho

Western Nearctic excluding Beringia

Distribution: Alaska to Manitoba, and in the western United States south to Arizona and New Mexico, and east to Iowa.*Yukon records:* Boreal Cordillera ecozone. Koidern, Moose Cr., Rancheria, Silver City, Tagish, von Wilczek Lks., Whitehorse.*Alaska record:* Hope.*Biological information:* Collected on grasses.96. *Trigonotylus viridis* (Provancher)

Near Circumboreal

Distribution: Alaska to Newfoundland, and south to California and New York (Wheeler and Henry 1992); eastern Russia.*Yukon records:* Taiga Cordillera and Boreal Cordillera ecozones. Dawson (and 22.5 km E), Dempster Corner, Firth R., Gravel L., Koidern, Moose Cr., Rampart House, Snag Jct., Takhini Hot Springs, Tatchun, von Wilczek Lks., Whitehorse.*Biological information:* Collected on grasses.

Subfamily Orthotylinae

Tribe Halticini

97. *Labops burmeisteri* Stål

Circumboreal

Distribution: Alaska to Alberta, Ontario, Quebec and New Brunswick, and in Wisconsin and Colorado (Wheeler and Henry 1992); across the northern Palaearctic region.*Yukon records:* Taiga Cordillera and Boreal Cordillera ecozones. Blackstone R. (Dempster Hwy. km 128, km 138, km 141), Blow R., Dawson (and 22.5 km E, 37 km E), Dawson Airport, Dempster Corner, Dempster Hwy. (km 152 "Windy Pass", km 446), East Blackstone R. (Dempster Hwy. km 102, km 104, km 106, km 114, km 118), Firth R. (locality 2), Fish L. (locality 2), La Force L., Lapie R. (km 176.4 South Canol Rd.), Macmillan R., McQuesten, Moose Cr., Nahanni Range Rd. (summit), North Fork Crossing (km 69 Peel Plt. Rd.), North Fork Pass (Ogilvie Mts.), Otter L., Pelly Crossing, Rampart House, Richardson Mts. (Dempster Hwy. km 404 Arctic Circle), Sheldon L., "Sheldon Pass", Tombstone.*Biological information:* Collected on grasses (especially *Calamagrostis*) and sedge. In Quebec collected on *Agropyron* and *Poa* (Laroche 1984), and in Yakutia on cereals, as well as sedges such as *Carex stenophylla* Wahlenb., *Critesion jubatum* (L.) Nevski and *Leymus* sp. (Vinokurov 1979; Wheeler and Henry 1992).98. *Labops chelifera* Slater (Frontispiece)

East Beringian

Distribution: Alaska, Yukon and Northwest Territories (Fig. 5).*Yukon records:* Taiga Cordillera ecozone and *Klondike Plateau*. Boundary (1.5 km E), Dawson, Firth R. (locality 2), Fish Cr. (locality 2), McDougall Pass, Richardson Mts. (Dempster Hwy. 404 Arctic Circle), White Mts. ("Erebia Cr.).*Alaska records:* Dalton Hwy. (km 159 and Yukon R.), Gobbler's Knob.*Biological information:* At Dawson collected in a *Betula/Salix/Vaccinium/Eriophorum* bog. In McDougall Pass collected in a sedge/grass/cotton-grass meadow, and at "Erebia Cr." in the White Mts., also collected in a sedge and grass meadow.99. *Labops hesperius* (Uhler)

Nearctic including Beringian

Distribution: Yukon to Quebec, and south to Arizona in the western United States.*Yukon records:* Boreal Cordillera ecozone and *Selwyn Mountains*. Alaska Hwy. (km 1543), Canyon, Dawson Airport, Gold Cr., Haines Jct., Kluane L., McQuesten (and 10 km E), Pelly Crossing, Pine L., South Macmillan R. (km 406 South Canol Rd.), Stewart Crossing, Sulphur L., von Wilczek Lks., Whitehorse.*Biological information:* Collected on grasses. Elsewhere collected on *Agropyron cristatum*, range grasses, and *Rosa arkansana* Porter (Kelton 1980).100. *Labops tumidifrons* Knight

Western Nearctic excluding Beringia

Distribution: Yukon, British Columbia, Alberta, Saskatchewan, South Dakota and Utah.*Yukon records:* Boreal Cordillera ecozone: *Yukon Southern Lakes*: Canyon.*Biological information:* Collected on ground in *Festuca* grass habitat.

101. *Labops verae* Knight

Western Nearctic including Beringian

Distribution: Alaska to Manitoba and south in Washington state.*Yukon records:* Taiga Cordillera and Boreal Cordillera ecozones. Engineer Cr. (Dempster Hwy. km 165, km 182), Nahanni Range Rd. (km 128), Old Crow, Rose R.*Alaska records:* White Mts. (Elliott Hwy. km 45).*Biological information:* Hosts unknown.

Tribe Orthotylini

102. *Brooksetta viridicata* (Uhler)

Western Nearctic including Beringian

Distribution: Yukon, Alberta, Saskatchewan, Manitoba, and in the western United States south to California and New Mexico.*Yukon records:* Taiga Cordillera and Boreal Cordillera ecozones. Alaska Hwy. (km 1728), Atlin Rd. at British Columbia/Yukon border, Burwash Landing, Canyon, Dawson (and 5 km SE, 10 km E), Dempster Corner, Frog L., Haines Jct., Jake's Corner, Kluane, Mayo, McCabe Cr. (3 km S, 8 km S), Moose Cr., Old Crow (6 km E), Pelly Crossing, Ross R., Silver City, Stewart Crossing (6 km NW), Tagish, von Wilczek Lks., Whitehorse.*Biological information:* Collected on *Potentilla multifida* L. and *P. pennsylvanica* L. (Rosaceae). Elsewhere collected on *P. fruticosa* L. (Kelton 1980).103. *Cyrtorhinus caricis* (Fallén)

Circumboreal

Distribution: Alaska to Quebec and Newfoundland, and in Minnesota and Colorado (Wheeler and Henry 1992); Europe, Russia.*Yukon records:* Taiga Cordillera and Boreal Cordillera ecozones. Canyon (14 km N), Dawson (22.5 km E), Eagle R., Haines Jct., Kluane National Park (Sheep Creek Rd.), Koidern, L. Laberge ("Horse Cr."), Magundy R., Moose Cr., Morley R., Ross R. (6 km S), Ross R. valley (Canol Rd. km 291), Silver City, Stewart Crossing (24 km S), Tagish, Takhini Hot Springs, Tarfu Cr., Whitehorse.*Biological information:* Collected on *Carex*.104. *Dichaetocoris* sp.

Unknown

Distribution: Unknown.*Yukon records:* Boreal Cordillera ecozone. Boundary (19.8 km E), Kluane (Alaska Hwy. km 1693).*Biological information:* Collected on conifers.*Taxonomic notes:* Identification of this species must await a revision of the genus *Dichaetocoris* Knight.105. *Fieberocapsus flaveolus* (Reuter)

Circumboreal

Distribution: Yukon to Ontario (Wheeler and Henry 1992); Europe, Russia.*Yukon records:* Boreal Cordillera ecozone. Gravel L., Haines Jct., Tagish, Takhini Hot Springs.*Biological information:* Collected on sedge and birch. In England, common under tussocks of *Deschampsia caespitosa* (L.) Beauv. (Wheeler and Henry 1992).106. *Labopidea bermani* Kerzhner

East-West Beringian

Distribution: Alaska, Yukon, Northwest Territories; Chukchi Autonomous Region (Wrangel Is.), Chukchi Peninsula, Kamchatka (Fig. 3).*Yukon records:* Southern Arctic and Taiga Cordillera ecozones. British Mts., Dempster Hwy. (km 465), Firth R. (locality 2), Herschel Is., Richardson Mts.*Alaska records:* Unalakleet.*Biological information:* Collected on *Saussuria angustifolia* (Willd.) DC. (Asteraceae). On the Kamchatka Peninsula *L. bermani* occurs on *Oxytropis kamtschatica* Hultén, *O. revoluta* Ledeb. and *O. vassilczenkoi* Jurtzev (Kerzhner 1988).*Taxonomic notes:* Specimens determined by Dr. M.D. Schwartz, confirmed by Dr. I.M. Kerzhner.107. *Labopidea nigrisetosa* Knight

Cordilleran excluding Beringia

Distribution: Yukon, British Columbia, Alberta, Idaho, Oregon, Washington and Wyoming.*Yukon records:* Taiga Cordillera ecozone: *Selwyn Mountains:* Nahanni Range Rd. (summit), North Canol Rd. (km 406), Otter L., Sheldon L.*Biological information:* Hosts unknown.

108. ***Lopidea dakota* Knight** Western Nearctic including Beringian
Distribution: Yukon to Manitoba, and in the western United States south to Colorado, with a disjunct population in New Brunswick (Asquith 1991).
Yukon records: Boreal Cordillera ecozone. Canyon Cr., Carmacks, Dawson (and 10 km E, 22.5 km E), Dempster Corner, Destruction Bay, Dislocation Bay, Haines Jct., Kluane L., Koidern, Magundy R., Mayo, near Minto, McQuesten R., Pelly Crossing (and 5 km S, 10 km N), Silver City, Stewart Crossing (and 9 km NE), Tatchun, Tatchun Cr., von Wilczek Lks.
Biological information: An aposematically coloured species collected on *Astragalus* sp., *Hedysarum boreale* Nutt., *H. mackenzii*, *Lathyrus* sp., *Rosa* sp. and willow. Elsewhere recorded on grass, vetch, alfalfa, clover, *Glycyrrhiza* sp. (Fabaceae), *Symphoricarpos* sp. (Caprifoliaceae), and *Solidago canadensis* L. (Asteraceae) (Asquith 1991), as well as *Caragana arborescens* Lam. (Fabaceae) (Kelton 1980).
109. ***Lopidea nigridea sericea* Knight** Western Nearctic including Beringian
Distribution: Along the eastern slopes of the Rocky Mountains from Alberta to Colorado, east across the Great Plains to southern Manitoba, with disjunct populations in Alaska-Yukon and western Wisconsin (Asquith 1991).
Yukon records: Boreal Cordillera ecozone. Carmacks, Canyon Cr., Destruction Bay, Dislocation Bay, Kluane L., Kluane National Park (base of Mt. Wallace), Silver City.
Biological information: An aposematically coloured species collected on *Hedysarum mackenzii*, *Lathyrus* sp. and *Rosa* sp. Elsewhere collected on *Lupinus argenteus* and *Psoralea* spp. (Fabaceae) (Kelton 1980) and *Astragalus* spp. (Asquith 1991).
110. ***Mecomma angustatum* (Uhler)** Nearctic including Beringian
Distribution: Alaska to Newfoundland, and south to New Hampshire and Colorado.
Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Boundary (19.8 km E), Canyon, Carcross, Dawson, Dempster Corner, Destruction Bay, Dezadeash L., Drury Cr., Eagle Plains (Dempster Hwy. km 278), Haines Jct., Little Salmon R., Mink Cr. (2 km S), near Minto, Moose Cr., Old Crow, Pelly Crossing, Pine L., Quiet L., Ross R. (17 km S), Stewart Crossing (4.7 km E), Tagish, Takhini (14.5 km W), Tatchun Cr., von Wilczek Lks., Watson L., Whitehorse, Wolf Cr.
Biological information: Collected close to the ground on grasses in damp habitats, and on *Salix*.
111. ***Mecomma gilvipes* (Stål)** Nearctic including Beringian
Distribution: Alaska to Newfoundland, and south to Florida and California.
Yukon records: Boreal Cordillera and Taiga Cordillera ecozones. Canol Rd. (km 406), Dawson, Dempster Corner, Macmillan R. (and km 401 Canol Rd.), "Sheldon Pass", Snag Jct.
Biological information: Collected on grasses and vegetation in damp habitats, and on *Betula glandulosa*.
112. ***Orthotylus albocostatus* Van Duzee** Western Nearctic excluding Beringia
Distribution: Yukon, British Columbia, Alberta, Saskatchewan, and in the western United States south to Arizona.
Yukon records: Boreal Cordillera ecozone. Canyon, Carmacks, Haines Jct., Pelly Crossing, Ross R., Whitehorse.
Biological information: Collected on grass and *Descurainia sophia* (L.) Webb (Cruciferae). In Colorado, occurring on *Descurainia* sp. and *Cardaria* sp. (Cruciferae) (Polhemus 1994).
113. ***Orthotylus alni* Knight** Nearctic including Beringian
Distribution: Yukon to Newfoundland, and south to New York and Minnesota in the eastern United States.
Yukon records: Boreal Cordillera ecozone. Alaska Hwy. (km 1828), Carcross, Dawson, Destruction Bay, Dislocation Bay, Morley R., Otter L., Rancheria, Squanga L., Tagish, Takhini Hot Springs, Whitehorse.
Biological information: Collected on *Alnus tenuifolia*, *Betula glandulosa*, *Lupinus* sp. and *Salix* sp. Elsewhere collected on *Alnus rugosa* (Du Roi) Spreng.
114. ***Orthotylus candidatus* Van Duzee** Nearctic excluding Beringia
Distribution: Yukon to Newfoundland, and south to Minnesota and Colorado.
Yukon records: Boreal Cordillera ecozone: *Yukon Plateau-North*: Ross R.

Biological information: On the prairies and in Colorado and Nevada collected on *Populus tremuloides* (Knight 1968; Kelton 1980; Polhemus 1994).

115. *Orthotylus coagulatus* (Uhler) Western Nearctic excluding Beringia
Distribution: Yukon, Alberta, Saskatchewan, Manitoba, and in the western United States south to Arizona.

Yukon records: Boreal Cordillera ecozone. Haines Jct., Whitehorse.

Biological information: In Nevada reported on *Chenopodium fremontii* Wats., *C. leptophyllum* (Moq.) Wats. and *Eriogonum deflexum* Torrey (Polygonaceae) (Knight 1968). In the prairie provinces, collected on *Chenopodium album* (Kelton 1980).

116. *Orthotylus katmai* (Knight) Nearctic including Beringian

Distribution: Alaska to Quebec.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Carcross, Dawson (and 22.5 km E), Dempster Hwy. (km 140.5), Dry Cr., Fox Cr., Haines Jct., Morley R., Tagish.

Biological information: Collected on *Alnus* sp., *Betula glandulosa*, *Epilobium* sp. and *Salix* spp.

117. *Orthotylus mistus* Knight Cordilleran including Beringian

Distribution: Alaska, Yukon, British Columbia, Alberta, and in the western United States reported from Idaho and Washington.

Yukon records: Boreal Cordillera ecozone. Dawson (and 10 km E), Destruction Bay, Dislocation Bay, Koidern, McQuesten R., Moose Cr., Tatchun Cr., Whitehorse.

Alaska record: Chicken.

Biological information: Collected on *Astragalus aboriginum* Richards, *Lathyrus* sp., and *Potentilla pennsylvanica*.

118. *Orthotylus neglectus* Knight Nearctic including Beringian

Distribution: Yukon to Nova Scotia, and south to New York and Illinois.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Cadzow L., Mayo, Porcupine R. at Dave Lord Cr.

Biological information: Collected on *Cornus stolonifera*. In the prairies collected on *Salix* sp. (Kelton 1980).

119. *Orthotylus* sp. Unknown

Distribution: Unknown.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Dawson, Dempster Hwy. (Arctic Circle), Eagle Plains, Engineer Cr., Moose Cr., Tagish, Tatchun Cr., Tombstone.

Biological information: Collected on *Salix* sp.

Taxonomic notes: To date, it has not been possible to put a name on this species.

Subfamily Phylinae

Tribe Hallodapini

120. *Orectoderus obliquus* Uhler Nearctic including Beringian

Distribution: Yukon to New Brunswick, and south to Pennsylvania, Kansas and New Mexico.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Burwash Landing, Dempster Hwy. (km 140), Duke R., Firth R., Lapie Pass, "Loon L.", Tack L. (64 km SE).

Biological information: On the prairies collected on grasses and *Rosa acicularis* Lindl. (Kelton 1980). *O. obliquus* is recorded from *Symphoricarpos* sp. (Caprifoliaceae) in Colorado (Polhemus 1994).

Tribe Leucophropterini

121. *Tythus pubescens* (Knight) Palaearctic-Western Nearctic

Distribution: Alaska to Saskatchewan, and in Colorado (Wheeler and Henry 1992); northern Europe, northern Russia, Siberia.

Yukon records: Boreal Cordillera ecozone. Gravel L., Haines Jct., Koidern, Moose Cr., Rancheria, Tagish, Takhini Hot Springs.

Biological information: Collected on *Carex* sp. and *Betula* sp. Elsewhere reported to occur with rushes, sedges and grasses in wet areas, and to be a predator of leafhopper eggs (Wheeler and Henry 1992).

122. *Tytthus pygmaeus* (Zetterstedt)

Circumboreal

Distribution: Alaska to Ontario, Newfoundland and Wyoming (Wheeler and Henry 1992); Europe, Russia.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Dawson, Gravel L., Haines Jct., Koidern, Moose Cr., Old Crow, Pelly Crossing, Pine L., Rancheria, Takhini Hot Springs.

Alaska record: Chicken.

Biological information: Collected on *Betula* and *Carex*. In Europe, reported from *Ammophila arenaria* (L.) Link (Poaceae), *Juncus effusus* L. (Juncaceae) and *Typha* sp. (Typhaceae), and a predator of delphacid eggs (Wheeler and Henry 1992).

Tribe Phylini

123. *Atractotomus rubidus* (Uhler)

Nearctic excluding Beringia

Distribution: Yukon to Quebec, and south to Florida and Texas.

Yukon records: Evans et al. (1978) as *Lepidopsallus*.

Biological information: On the prairies collected on *Salix candida* Fluegge (Kelton 1980). Stonedahl (1990) reports *A. rubidus* from *Salix babylonica* L., *S. interior* and *S. nigra* Marsh.

124. *Atractotomus* sp.

Unknown

Distribution: Unknown.

Yukon records: Boreal Cordillera ecozone: *Boreal Mountains and Plateaus*: Carcross.

Biological information: Collected on Lodgepole pine.

125. *Chlamydatus associatus* (Uhler)

Nearctic excluding Beringia

Distribution: Yukon to Quebec, and south to Mississippi, Texas and Mexico.

Yukon records: Boreal Cordillera ecozone. Jake's Corner, Stewart Crossing (16 km NW).

Biological information: On the prairies collected on a wide variety of plants, including alfalfa, cultivated sunflowers and potato (Kelton 1980). Elsewhere reported on Asteraceae (burdock (*Arctium* sp.), goldenrod (*Solidago* sp.), marsh elder (*Iva* sp.), pineapple weed (*Matricaria* sp.), ragweed (*Ambrosia* sp.), star thistle (*Centaurea* sp.), sunflower (*Helianthus* spp.), sagebrush (*Artemisia* spp.)), Chenopodiaceae (pigweeds (*Chenopodium* spp.)), Cruciferae (stinkweed (*Thlaspi* sp.)), Fabaceae (milk-vetch (*Astragalus* spp.)), alfalfa (*Medicago sativa*)), cultivated potato and carrot (Kelton 1965). In Nevada reported on *Ambrosia acanthicarpa*, *Malacothrix glabrata* Gray and *Viguiera multiflora* (Nutt.) Blake (Asteraceae) (Knight 1968), and found to breed on *Ambrosia acanthicarpa* and occur on *A. confertiflora* Decandolle and *A. psilostachya* Decandolle (Goeden and Ricker 1974).

126. *Chlamydatus* sp. near *auratus* Kelton

Unknown

Distribution: Unknown.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Boundary (5.4 km E, 7.7 km E), Carcross, Cornwall Cr., Dawson, Dempster Hwy. (Arctic Circle), Eagle Plains (Dempster Hwy. km 278), Little Salmon L., Peel Plateau (Dempster Hwy. km 505), Snag Jct.

Biological information: Collected on birch.

Taxonomic notes: Yukon specimens have the first antennal segments black, and not pale as in *C. auratus*. They also have an oval body shape, with membrane of hemelytra fully developed. They could be *C. fulvipes* Knight, but this species is reported only from Minnesota and New York, and specimens have not been seen for comparison.

127. *Chlamydatus pulicarius* (Fallén)

Palaeartic-Cordilleran

Distribution: Alaska, Yukon, British Columbia, Alberta; Europe and Russia.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Boundary (1.5 km E), Dawson (and 10 km E), East Blackstone R. (Dempster Hwy. km 97, km 118), Eagle Plains (Dempster Hwy. km 278), Halfway Lks., McDougall Pass, North Fork Pass (Dempster Hwy. km 77), Ogilvie R. (Dempster Hwy. km 194), Old Crow (and 6 km E), "Sheldon Pass".

Biological information: Collected on grasses and herbaceous plants.

Taxonomic notes: *Chlamydatus pulicarius* is listed from the Yukon, Alaska, British Columbia and Alberta, following comparison of material from these areas with authentic specimens from Europe. This is contrary to the opinion of Wheeler and Henry (1992) who exclude it from the list of Holarctic Miridae, following the comments of Kelton (1965, 1980). Kelton (1980) considered the presence of *C. pulicarius* in the Nearctic region to be doubtful, noting that while the femora of *C. pulicarius* are

yellow with large, black spots, these conditions are often encountered in teneral specimens of *C. pullus*. The specimens here considered to be *C. pulicarius* have the characteristic yellow femora with large, black spots, but are not teneral.

128. *Chlamydatus pullus* (Reuter)

Circumboreal

Distribution: Alaska to Quebec and Newfoundland, with relict populations in southern Wyoming, Colorado, and New Mexico (Wheeler and Henry 1992); through the Palaearctic region, with range extending into Asia and northern Africa.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Alaska Hwy. (km 1138, km 1543, km 1728), Aishihik R. (Alaska Hwy.), Atlin Rd. at British Columbia/Yukon border, Blackstone R. (Dempster Hwy. km 141), Bluefish Caves, Bluefish Ridge (locality 2), Bluefish R., Boundary (1.5 km E), Burwash Landing, Canyon, Carcross, Carmacks (and 24 km E), Dawson (and 10 km E), Dawson Airport, Dempster Corner, Dempster Hwy. (km 46, km 467), Destruction Bay, Dislocation Bay, Donjek R. (18 km NW), Dry Cr., Duke R., Engineer Cr. (Dempster Hwy. km 159.5), Firth R. (locality 2 and 3), Fish Cr. (locality 2), Gold Cr., Haines Jct., Kluane L., Koidern, L. Laberge, Lapie R. (km 184 South Canol Rd.), Little Atlin L., Lone Tree Cr., Long's Cr. (4 km N), Mayo, McDougall Pass, McQuesten (10 km E), Minto (and near Minto), Moose Cr., Ogilvie R. (Dempster Hwy. km 293), Old Crow, Pelly Crossing (and 5 km S), Pine Cr., Pine L., Rampart House, Richardson Mts. (Dempster Hwy. km 404 Arctic Circle and 13 km N (km 417)), Ross R. (and 8 km S, 9 km S), "Sheldon Pass", Silver City, Stewart Crossing (and 4.7 km E), Strawberry Cr., Tagish, Takhini Hot Springs, Tatchun Cr., Tom Cr., Trout L., von Wilczek Lks., Watson L., White Mts. ("Erebia Cr."), White R., Whitehorse, Wolf Cr.

Biological information: Collected on *Artemisia frigida*, *Astragalus aboriginum* Rich. ex Frankl., *Hedysarum mackenzii*, *Lathyrus* sp., *Oxytropis nigrescens* (Pall.) Fisch. and *Trifolium* sp. Kelton (1965) lists *Artemisia tridentata* Nutt., *Betula* sp., *Corylus cornuta* Marsh., *Lupinus argenteus* Pursh, *Medicago sativa*, *Potentilla fruticosa*, *Ranunculus* sp., *Rosa* sp., *Salix* sp. and *Trifolium* sp. as hosts. In the Palaearctic region recorded on *Alchemilla* sp. and *Dryas* sp. (Rosaceae), *Salix* sp. and *Taraxacum* sp. (Asteraceae) (Böcher 1971) as well as *Achillea millefolium*, *Cerastium arvense* L. (Caryophyllaceae), *Erodium* (Geraniaceae), *Polygonum* (Polygonaceae), *Potentilla* and *Trifolium* (Wheeler and Henry 1992).

129. *Chlamydatus wilkinsoni* (Douglas and Scott)

Circumboreal

Distribution: Alaska, Yukon, Northwest Territories, Quebec and Newfoundland, with disjunct population in Colorado (Wheeler and Henry 1992).

Yukon records: Southern Arctic, Taiga Cordillera, and Boreal Cordillera ecozones. Black Fox Cr., Bluefish Ridge (locality 2), Fish Cr. (locality 1), Gravel L., Herschel Is. (locality 2), Koidern, Philip Cr., Trout L.

Biological information: Collected in *Dryas* mats. In Colorado, the species occurs in alpine tundra (Polhemus 1994).

130. *Compsidolon fuscopunctatus* (Knight)

Cordilleran excluding Beringia

Distribution: Yukon, Northwest Territories and Colorado.

Yukon records: Boreal Cordillera ecozone. Sheep Mt., Takhini Hot Springs, Whitehorse.

Biological information: Collected on *Artemisia*. In Colorado, the species occurs on *A. frigida* (Polhemus 1994).

Taxonomic notes: This may be a Palaearctic species near *C. kerzhneri* Kulik.

131. *Europiella artemisiae* (Becker)

Circumboreal

Distribution: Alaska to Quebec and Newfoundland, and south to montane areas of the northwestern United States (Schuh et al. 1995); Europe, Russia.

Yukon records: Boreal Cordillera ecozone. Dempster Corner, Destruction Bay, Gravel L., Haines Jct., Koidern, Moose Cr., Morley R., Silver City, Snag Jct., Tagish, Takhini Hot Springs, Tatchun Cr., von Wilczek Lks., Whitehorse.

Alaska records: Big Delta, Chicken, Umiat, Unalakleet.

Biological information: Collected on *Artemisia*. In the Nearctic region, the usual host is *A. ludoviciana* Nutt., while in the Palaearctic the hosts include *A. vulgaris* L., the related *A. montana* Schlect. ex Ledeb. and *A. rubripes* Nakai, as well as other species (Schuh et al. 1995).

132. ***Europiella decolor* (Uhler)** Circumboreal
Distribution: Alaska to Manitoba, and south to New York and California (Schuh et al. 1995); Europe, Russia.
Yukon records: Boreal Cordillera ecozone: *Pelly Mountains*: Rancheria.
Alaska records: Big Delta, Chicken.
Biological information: In Alaska collected on *Artemisia tilesii* Ledeb. In the prairies *E. decolor* is recorded from *A. ludoviciana* (Kelton 1980), and in Colorado on *A. tridentata* (Polhemus 1994). Schuh et al. (1995) record the Nearctic hosts as *A. californica* Less., *A. campestris* L., *A. dracunculus* Pursh, *A. filifolia* Torrey, *A. ludoviciana*, *A. nova* (A. Nels.) Crong., *A. tridentata*, and *Chrysothamnus* sp., while in the Palaearctic region the hosts are *Artemisia absinthium* L., *A. maritima* (Mill.) Willd., and *A. abrotanum* L. with *A. schmidtiana* Maxim. the host in the Kurile Is.
133. ***Monosynamma bohemani* (Fallén)** Circumboreal
Distribution: Alaska to Manitoba, and south to Ohio and Colorado (Wheeler and Henry 1992).
Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Cornwall L., Dawson, Eagle R., Little Atlin L., Magundy R., Moose Cr., Old Crow, Porcupine R. at Dave Lord Cr., Rancheria, Stewart Crossing, Tatchun Cr.
Alaska records: Chicken, Fort Yukon.
Biological information: Collected on *Artemisia tilesii*, *Lathyrus* sp. and *Salix*. On the prairies and in Colorado collected on *Salix interior* (Kelton 1980; Polhemus 1994).
134. ***Phoenococoris longirostris* (Knight)** Western Nearctic excluding Beringia
Distribution: Yukon to Saskatchewan, and in the western United States south to Arizona.
Yukon records: Boreal Cordillera ecozone. Carcross, Morley R., Rancheria, Squanga L., Whitehorse.
Biological information: Collected on Lodgepole pine, lupine, *Salix* and spruce. Kelton (1980) records *Pinus contorta* as the host on the prairies.
135. ***Phoenococoris rostratus* (Knight)** Nearctic excluding Beringia
Distribution: Yukon to Nova Scotia, and south to Virginia.
Yukon records: Boreal Cordillera ecozone. Alaska Hwy. (km 1365, km 1445), Carcross, Moose Cr., Tatchun Cr.
Biological information: Collected on *Pinus contorta*. On the prairies recorded from *Pinus banksiana* and *P. contorta* (Kelton 1980).
136. ***Plagiognathus alboradialis* Knight** Nearctic excluding Beringia
Distribution: Yukon to Quebec and Newfoundland, and south to New York.
Yukon records: Boreal Cordillera ecozone. Dawson, Destruction Bay, Dislocation Bay, Gravel L., Haines Jct., Whitehorse.
Biological information: Collected on *Epilobium* and *Lathyrus*. On the prairies collected on *Salix* spp. (Kelton 1980).
Taxonomic notes: Species determined by Dr. L.A. Kelton.
137. ***Plagiognathus fuscotibialis* Knight** Cordilleran excluding Beringia
Distribution: Yukon, British Columbia and Wyoming.
Yukon records: Boreal Cordillera ecozone. Destruction Bay, Morley R., Rancheria, Silver City, Takhini Hot Springs, Whitehorse.
Biological information: Collected on *Astragalus*, *Lupinus* and *Rosa*.
Taxonomic notes: Species determined by Dr. L.A. Kelton.
138. ***Plagiognathus laricicola* Knight** Nearctic excluding Beringia
Distribution: Yukon to Quebec, and south to Minnesota.
Yukon records: Boreal Cordillera ecozone: *Liard Basin*: Watson L.
Biological information: Collected on larch (*Larix laricina*), the same host as on the prairies (Kelton 1980).
Taxonomic notes: Species determined by Dr. L.A. Kelton.
139. ***Plagiognathus obscurus* Uhler** Nearctic including Beringian
Distribution: Alaska to Newfoundland, and south to West Virginia and California.
Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Carmacks, Dawson (and 22.5 km E), Dempster Corner, Destruction Bay, Dry Cr., Fox Cr., Gravel L., Koidern, Moose Cr., Rampart

House, Rancheria, Silver City, Snag, Snag Jct., Tagish, Takhini Hot Springs, Tatchun, von Wilczek Lks., Whitehorse.

Biological information: Collected on *Astragalus*, *Hedysarum mackenzii*, *Lupinus*, *Oxytropis campestris*, raspberry, *Shepherdia canadensis*, *Salix* and *Epilobium augustifolium*. On the prairies collected on *Medicago sativa* and many other herbaceous plants (Kelton 1980).

Taxonomic notes: Species determined by Dr. L.A. Kelton.

140. ***Plagiognathus rolfsi* Knight** Cordilleran excluding Beringia

Distribution: Yukon, Colorado and Washington.

Yukon records: Boreal Cordillera ecozone: *Pelly Mountains*: Rancheria.

Biological information: Collected on Lodgepole pine. In Colorado, recorded on *Pinus aristata* (Polhemus 1994). In southern British Columbia collected on *Pseudotsuga menziesii*.

Taxonomic notes: Species determined by Dr. L.A. Kelton. Probably not correctly placed in the genus *Plagiognathus* Fieber.

141. ***Plagiognathus suffuscipennis* Knight** Nearctic excluding Beringia

Distribution: Alaska to Quebec, and south to West Virginia.

Yukon records: Boreal Cordillera ecozone. Gravel L., Morley R., Silver City, Whitehorse.

Biological information: Collected on *Picea*. On the prairies recorded from *Picea glauca* (Kelton 1980).

Taxonomic notes: Species determined by Dr. L.A. Kelton. Probably not correctly placed in the genus *Plagiognathus* Fieber.

142. ***Psallus aethiops* (Zetterstedt)** Circumboreal

Distribution: Alaska to New Brunswick and Labrador.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Destruction Bay, Dislocation Bay, Fox Cr., Richardson Mts. (Dempster Hwy. 12 km N Arctic Circle (km 416)), Tagish, Tatchun.

Biological information: Collected on *Salix* and *Lupinus*. On the prairies collected on *Salix bebbiana* and *S. discolor* Muhl. (Kelton 1980), while in Russia *P. aethiops* occurs on *S. xerophila* Floderus and *S. brachypoda* (Trautv. and Mey) Komarov (Wheeler and Henry 1992).

143. ***Psallus betuleti* (Fallén)** Circumboreal

Distribution: Alaska to Nova Scotia, and in the eastern United States south to Pennsylvania (Wheeler and Henry 1992); across the Palaearctic region.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Dawson (22.5 km E), Dempster Hwy. (km 82), Gravel L., Morley R.

Biological information: Collected on *Alnus* and *Epilobium*. In Alaska recorded on *Betula glandulosa* and *B. nana* L., in Pennsylvania on *B. populifolia* and a cutleaf cultivar of the European *B. pendula* Roth, and in Vermont on *B. papyrifera* March (Wheeler and Henry 1992). Schwartz and Kelton (1990) also note *P. betuleti* as an aphid predator on *Betula* sp. in Quebec, and on *Rhododendron albiflorum* Hook. in Nova Scotia, while Wheeler and Henry (1992) also note that this species is univoltine in Europe, develops mainly on the flowers and fruits of *Betula* spp., has been collected on *Alnus* and *Salix*, and is a facultative predator.

Taxonomic notes: Wheeler and Henry (1992) consider *P. betuleti* is naturally Holarctic in the west, and probably introduced in the east.

144. ***Psallus parshleyi* Knight** Nearctic including Beringian

Distribution: Alaska to Newfoundland, and south to Massachusetts, Illinois and Minnesota.

Yukon records: Boreal Cordillera ecozone. Dawson (22.5 km E), Dempster Hwy. (km 140.5), Gravel L.

Alaska record: Chicken.

Biological information: Collected on birch. Elsewhere reported on *Betula glandulosa* (Kelton 1980).

145. ***Psallus salicicola* Schwartz and Kelton** Nearctic including Beringian

Distribution: Alaska, Yukon, British Columbia and Quebec (Schwartz and Kelton 1990).

Yukon records: Boreal Cordillera ecozone. Dawson, Gravel L., Morley R., Squanga L., Tagish, Whitehorse.

Biological information: Collected on *Betula glandulosa*, *Alnus* and *Salix*.

146. ***Psallus* sp.** Unknown

Distribution: Unknown.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Moose Cr., Tatchun Cr., Tombstone.

Biological information: Collected on *Salix*.

Taxonomic notes: Species not yet determined.

Tribe Pilophorini

147. ***Pilophorus americanus* Poppius** Western Nearctic excluding Beringia

Distribution: Yukon to Manitoba, and in the western United States south to Arizona and New Mexico (Schuh and Schwartz 1988).

Yukon records: Boreal Cordillera ecozone. Moose Cr., Morley R., Rancheria, Squanga L.

Biological information: Collected on Lodgepole pine. Elsewhere in Canada *Pinus flexilis*, *P. ponderosa*, *P. strobus* L. and aspen. According to Schuh and Schwartz (1988) hosts are *Abies amabilis*, *Picea* sp., *Pinus albicaulis*, *P. contorta*, *P. flexilis*, *P. monophylla* Torr. and Frem., *P. monticola*, *P. ponderosa*, *P. strobiformis*, *Pseudotsuga menziesii*, *Acacia* sp., *Chrysothamnus* sp., and *Ribes* sp.

148. ***Pilophorus diffusus* Knight** Cordilleran excluding Beringia

Distribution: Yukon, British Columbia, Alberta, and in western United States south to Arizona (Schuh and Schwartz 1988).

Yukon records: Boreal Cordillera ecozone. Carcross, Morley R., Rancheria, Squanga L.

Biological information: Collected on Lodgepole pine. Hosts elsewhere include *Abies* sp., *Picea engelmanni*, *Pinus albicaulis*, *P. aristata*, *P. contorta*, *P. edulis* Engelm., *P. monticola*, *P. ponderosa*, *P. flexilis* and *Chrysothamnus* sp. (Schuh and Schwartz 1988).

149. ***Pilophorus vicarius* Poppius** Cordilleran including Beringian

Distribution: Alaska, Yukon, British Columbia, and in the western United States south to New Mexico (Schuh and Schwartz 1988).

Yukon records: Boreal Cordillera ecozone. Carcross, Dawson (and 22.5 km E), Moose Cr., Silver City, Tatchun, von Wilczek Lks., Whitehorse.

Alaska record: Tok.

Biological information: Collected on *Salix*. Hosts elsewhere include *Alnus rhombifolia* Nutt., *Artemisia* sp., large sagebrush, sage forb, *Chrysothamnus* sp., *Populus tremuloides*, *Quercus gambelli* Nutt., *Salix interior*, *Symphoricarpos oreophilus* Gray and wild currant (Schuh and Schwartz 1988).

Family Anthocoridae

The Anthocoridae, commonly called minute pirate bugs, are small insects usually found on flowers, conifers, deciduous trees or under bark. Most are predators, and characteristically have a flattened body, somewhat pointed head with ocelli, and a 3-segmented rostrum. The metathorax has distinct scent-gland openings laterally. The forewings, when present, have a cuneus, but wings are often abbreviated (brachypterous) in some genera. All abdominal terga have laterotergites, and females lack an apophysis on the anterior margin of the 7th abdominal sternum. Males have asymmetrical genitalia with the right paramere greatly reduced or absent. Reproduction involves either traumatic insemination with the left paramere modified into an organ to penetrate the body wall of the females during copulation, or sperm are injected into special copulatory tubes that facilitate ovarian fertilization.

Of the 35 species of minute pirate bugs recorded from Canada, 13 are reported from the Yukon. They can be identified by reference to Kelton (1978).

Tribe Anthocorini

150. ***Anthocoris antevolens* White** Nearctic including Beringian

Distribution: Alaska to Ontario and Newfoundland, and south to California in the western United States.

Yukon records: Yukon without localities (Evans et al. 1978; Kelton 1978).

Biological information: A very active predator, collected according to Kelton (1978) on *Alnus* spp., *Fraxinus* spp., *Tilia americana*, *Betula* spp., *Ulmus* spp., *Corylus* spp., *Lupinus* spp., *Quercus* spp., *Juglans* spp., *Salix* spp., and on *Malus* spp., *Prunus* spp., *Prunus persica*, and *Pyrus communis* in orchards.

151. *Anthocoris dimorphicus* Anderson and Kelton

Nearctic including Beringian

Distribution: Yukon to Ontario.*Yukon records:* Taiga Cordillera and Boreal Cordillera ecozones. Dawson (22.5 km E), Gravel L., Whitehorse.*Biological information:* Collected on *Salix*.**152. *Anthocoris musculus* (Say)**

Nearctic including Beringian

Distribution: Alaska to Newfoundland, and south to North Carolina and Colorado.*Yukon records:* Taiga Cordillera and Boreal Cordillera ecozones. Atlin R. (2 km N, British Columbia/Yukon border), Big Cr., Black Fox Cr. (9 km W), Blackstone R. (Dempster Hwy. km 141), Burwash Landing, Carcross, Cornwall Cr., Dawson (and 22.5 km E, 40 km E), Dempster Hwy. (km 241), Dempster Corner, Destruction Bay, Dick Cr., Dislocation Bay, Donjek R., Drury Cr., Eagle R. (Dempster Hwy. km 382), Engineer Cr. (Dempster Hwy. km 172), Gravel L., Haines Jct. (and 8 km W), Halfway Lks., Johnson's Crossing (km 4 Canol Rd.), Kluane L., L. Laberge, Little Atlin L., Lone Tree Cr., Mayo, Mink Cr., Moose Cr., Morley R., Ogilvie R. (and Dempster Hwy. km 214, km 243), Orchie L., Pelly Crossing, Porcupine R. at Dave Lord Cr., Rampart House, Richardson Mts. (km 400 and 12 km N Arctic Circle (km 416)), Richthofen Cr., Rock R., Ross R., Silver City, Snafu Cr., Snag Jct., Squanga L., Sulphur L., Swim Lks., Tagish, Takhini (11 km W), Takhini Hot Springs, Tatchun Cr., Tombstone, Watson L., White R., Whitehorse, Willow Cr.*Biological information:* Collected on *Artemisia*, *Astragalus*, Lodgepole pine, lupine, spruce, *Shepherdia canadensis*, *Salix glauca* and *S. alascensis* Schleich. ex Ser. Elsewhere collected on *Alnus* spp., *Betula* spp., *Tilia americana*, *Acer* spp., *Sorbus americana* Marsh. (Rosaceae), *Rosa* spp., *Epilobium angustifolium*, *Cardamine* spp. (Cruciferae), *Chrysanthemum leucanthemum* L., *Solidago canadensis*, *Carex* spp., *Zea mays* L., *Prunus persica*, *Pyrus communis*, and *Rubus* spp. (Kelton 1978).**153. *Anthocoris tomentosus* Péricart**

Western Nearctic including Beringian

Distribution: Alaska to Manitoba, and in the western United States south to Colorado and Nevada.*Yukon records:* Taiga Cordillera and Boreal Cordillera ecozones. Boundary (19.8 km E), Carcross (10 km N), Carmacks, Cornwall Cr., Dawson, Eagle Plains (and Dempster Hwy. km 371), Eagle R., East Blackstone R. (Dempster Hwy. km 105), Firth R., Groundhog Cr., Johnson's Crossing (16 km N), Kluane, Lapie Pass, Lone Tree Cr., Macmillan R., Morley R., Nahanni Range Rd. (summit and km 158), North Fork Pass (Ogilvie Mts. and km 68 Peel Pt. Rd.), Ogilvie R., Old Crow R. (29 km N, Old Crow), Otter L., Porcupine R. at Dave Lord Cr., Rampart House, Rancheria, Richardson Mts. (Dempster Hwy. km 408, km 409, km 458, km 461), Rock R., Rose L. (and 15 km S, South Canol Rd.), "Sheldon Pass", Silver City, Starr Cr., Takhanne R., Tombstone, Whitehorse, White Mts. ("Erebia Cr.").*Biological information:* Collected on *Salix* and spruce. Generally found on deciduous trees, shrubs, and herbaceous plants (Kelton 1978).**154. *Elatophilus pullus* Kelton and Anderson**

Cordilleran excluding Beringia

Distribution: Yukon, British Columbia and Oregon.*Yukon records:* Boreal Cordillera ecozone. Carcross and Morley R.*Biological information:* Collected on Lodgepole pine.**155. *Tetrableps canadensis* Provancher**

Nearctic including Beringian

Distribution: Alaska to Newfoundland, and south in the eastern United States to Michigan and New Hampshire.*Yukon records:* Boreal Cordillera ecozone. Alaska Hwy. (km 1096), Watson L.*Biological information:* Collected on *Larix laricina*. Elsewhere in Canada, collected on *Larix laricina*, *Abies balsamea*, *Pinus banksiana*, *Picea glauca* and *P. mariana* (Kelton 1978), and in Oregon on *Pinus contorta* (Lattin and Stanton 1992).**156. *Tetrableps feratis* (Drake and Harris)**

Cordilleran excluding Beringia

Distribution: Yukon, British Columbia and Alberta.*Yukon records:* Boreal Cordilleran ecozone. Carcross, Destruction Bay, Rancheria, Squanga L., Tagish, Whitehorse.*Biological information:* Collected on *Pinus contorta* and spruce. Kelton (1978) reports that this species preys on aphids in association with the hostplants, and records it from *Larix occidentalis* Nutt., *L. lyalli* Parl., *Picea engelmanni* Parry, *Athyrium filix-femina* (L.) (Polypodiaceae) Roth. and *Ulmus* sp.

Taxonomic notes: The Yukon material, and other specimens from northern British Columbia (Alaska Hwy. km 1233.7 and Tutshi L.), have the rostrum extending to or just beyond the hind coxae, and not to the 4th abdominal segment as reported by Kelton (1978). However, the first rostral segment reaches to the middle of the eye and the penultimate rostral segment is more than 1.00 mm long as in *T. feratis*. Although the hind tibiae have short, slanting bristles as in *T. canadensis*, the penultimate rostral segment is far longer than the 0.49–0.52 mm range given by Kelton (1978).

157. ***Tetraphleps latipennis* Van Duzee** Nearctic excluding Beringia

Distribution: Yukon to Newfoundland, and in the western United States south to Wyoming.

Yukon records: Boreal Cordillera ecozone. Destruction Bay and Whitehorse.

Biological information: Collected on spruce and on mistletoe on spruce.

158. ***Tetraphleps pilosipes* Kelton and Anderson** Nearctic including Beringian

Distribution: Alaska, Yukon, British Columbia, Manitoba, Newfoundland, and Oregon.

Yukon records: Boreal Cordillera ecozone. Carcross, Carmacks, Destruction Bay, Otter L., Rancheria, Silver City.

Biological information: Collected on *Pinus contorta* and spruce. Elsewhere in Canada, collected on *Abies lasiocarpa*, *A. procera*, *Larix laricina*, *Picea glauca*, *P. mariana*, *Pinus albicaulis* and *P. contorta* (Kelton 1978), and on *P. contorta* in Oregon (Lattin and Stanton 1992).

159. ***Tetraphleps uniformis* Parshley** Nearctic including Beringian

Distribution: Yukon to Newfoundland, and south to New Hampshire and Colorado.

Yukon records: Boreal Cordillera ecozone. Alaska Hwy. (km 1450), Dawson, Destruction Bay, Francis L., Gravel L., Little Salmon L., Mayo Rd. (km 327), Moose Cr., Swim Lks., Watson L., Whitehorse.

Biological information: Collected on *Picea glauca* and *Pinus contorta*. Elsewhere in Canada collected on *Abies balsamea*, *Picea glauca*, *P. mariana*, *Pinus contorta* and *P. sylvestris* (Kelton 1978). Recorded on *Picea engelmanni* and *Pinus contorta* in Oregon (Lattin and Stanton 1992).

Tribe Oriini

160. ***Orius diespeter* Herring** Cordilleran including Beringian

Distribution: Alberta, Yukon and British Columbia.

Yukon records: Boreal Cordillera ecozone. Carmacks (and 30 km E), Dawson, Moose Cr., Pelly Crossing, Rancheria, Stewart Crossing and Whitehorse.

Biological information: Collected on *Artemisia* and *Salix*. Elsewhere in Canada, collected on flowering heads of *Trifolium pratense* L. and *Chrysanthemum leucanthemum* (Kelton 1978).

161. ***Orius tristicolor* (White)** Nearctic, plus Neotropical

Distribution: Alaska to Newfoundland, and in the United States south to New Hampshire, Texas, Arizona and California; also Mexico to South America, and the West Indies.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Koidern, Morley R., Mayo, Whitehorse.

Biological information: Collected on *Oxytropis campestris* (L.) DC. *O. tristicolor* occurs on many herbaceous plants (Kelton 1978).

Tribe Scolopini

162. ***Scolopscelis flavicornis* Reuter** Nearctic, and Central America

Distribution: Yukon to Newfoundland, and in the United States south to Pennsylvania, Texas and California; Guatemala and Mexico.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Dempster Hwy. (km 50), McClintock River Rd. (km 9.6), McQuesten (10 km E), Swim Lks.

Biological information: Collected on *Picea glauca*. In Canada, generally found under bark of dead *Pinus banksiana*, *P. ponderosa*, *P. resinosa* Ait., *Picea glauca* and *Abies balsamea* (Kelton 1978). In Oregon, *S. flavicornis* is reported under bark of dead branches of *Pinus resinosa*, *P. contorta latifolia* and *P. contorta murrayana* (Lattin and Stanton 1992).

Tribe Xylocorini

***Xylocoris* sp. near *pilipes* Kelton**

Unknown

Distribution: Unknown.

Yukon records: Boreal Cordillera ecozone. Braeburn Lodge (5 km N), Carmacks (35 km S), Pelly Crossing, Stewart Crossing.

Biological information: Collected in pitfall traps.

Taxonomic notes: Similar to *X. pilipes* Kelton, described from New York, in having long outstanding setae on the legs and dorsum. However it appears not to be this species.

Family Nabidae

The Nabidae, commonly called damsel bugs, are predators, and characteristically have the tips of the front and middle tibiae with a thick pad of hairs. Most species are dull, brownish in colour, and often occur on vegetation in both short- and long-winged forms. However, *Pagasa fusca* is a fast running, black or brown, shiny, ground dwelling species that is usually short-winged and occurs in dry, hot areas amongst grass and weeds.

Of the 19 species of damsel bugs so far reported in Canada, 6 are recorded from the Yukon. The species of *Nabicula* Kirby can be identified using the key in Larivière (1995), the rest by using Harris (1928).

Subfamily Nabinae

Tribe Nabini

164. *Nabicula americolimbata* (Carayon)

Circumboreal

Distribution: Alaska to Newfoundland and Labrador, and in Maine, Minnesota, and New York; Mongolia and Russia.

Yukon records: Boreal Cordillera ecozone. Dawson (22.5 km E), Gravel L.

165. *Nabicula flavomarginata* (Scholtz)

Circumboreal

Distribution: Alaska to Alberta, and Quebec to Newfoundland and Labrador; entire European part of Russia, Caucasus, Kazakhstan, mountains of central Asia, Siberia and Primorye Territory (Vinokurov 1988).

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Beaver Cr., Blackstone R. (Dempster Hwy. km 141), Burwash Landing, Carmacks, Chilkat Pass (British Columbia/Yukon border), Cornwall Cr., Dawson (and 22.5 km E), Dawson Airport, Dempster Corner, Duke R., Gravel L., Haines Jct., Koidern, Little Atlin L., McQuesten, Moose Cr., North Fork Pass (Dempster Hwy. km 64, km 72), Old Crow, Pine L., Porcupine R. ("Blue Bluffs"), Rampart House, Rancheria (7 km E), Ross R., Snag, Stewart Crossing, Takhini Hot Springs, von Wilczek Lks., Watson L., Whitehorse, White R., Willow Cr., Wolf Cr.

Biological information: Found along the banks of lakes, marshes, as well as in meadows, overwintering as eggs (Vinokurov 1988).

166. *Nabicula nigrovittata nearctica* Kerzhner

Nearctic including Beringian

Distribution: Alaska to Newfoundland and Labrador, New York, Idaho and Colorado.

Yukon records: Boreal Cordillera ecozone. Dempster Corner, Gravel L., von Wilczek Lks.

167. *Nabis americanoferus* Carayon

Nearctic including Beringian

Distribution: Yukon to Quebec, and in the United States south to Georgia and Arizona.

Yukon records: Boreal Cordillera ecozone. Dawson (22.5 km E), Gravel L., Koidern, Takhini Hot Springs, Whitehorse.

168. *Nabis inscriptus* (Kirby)

Palaeartic-Cordilleran

Distribution: Alaska to Alberta, Idaho and Colorado; northern European part of Russia, and Siberia.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Alaska Hwy. (km 1687), Dempster Hwy. (km 130), Gravel L., Klondike Hwy. (km 460), La Force L., Rampart House, Rancheria, Sakiw Cr., Takhini Hot Springs, Whitehorse.

Biological information: Collected on *Epilobium*, *Salix* and Lodgepole pine.

Subfamily Prostemmatinae

Tribe Prostemmatini

169. *Pagasa fusca* (Stein)

Nearctic, plus Neotropical

Distribution: Yukon to Newfoundland and Labrador, in the United States south to Mississippi and Arizona, and occurring in Mexico and South America.

Yukon records: Boreal Cordillera ecozone. Burwash Landing, Carcross, Canyon, Destruction Bay, Duke R., Kluane L., Pelly Crossing, Tatchun Cr., Whitehorse.

Biological information: Ground-dwelling, usually short-winged, and occurring in hot and dry, grassy and weedy areas.

Infraorder Pentatomomorpha

Family Aradidae

The Aradidae, commonly called flat bugs, characteristically are dorso-ventrally flattened, brownish or blackish insects, with elongate oval-shaped bodies, no ocelli, 2-segmented tarsi, and body surface often rather granular. In appearance they are rather bark-like and show classic protective resemblance. They usually occur under bark of dead trees, where they feed on fungi. However, at times they are active flyers.

Of the 52 species of flat bugs so far recorded from Canada, 11 are reported from the Yukon. The species can be identified by reference to Matsuda (1977), with the key in Picchi (1977) best for species of *Aneurus* Curtis.

Subfamily Aneurinae

170. *Aneurus borealis* Picchi

Nearctic including Beringian

Distribution: Alaska to Quebec, and Maine.

Yukon records: Boreal Cordillera ecozone: *Klondike Plateau:* Kirkman Cr. (Picchi 1977).

171. *Aneurus simplex* Uhler

Nearctic excluding Beringia

Distribution: Alaska to Nova Scotia, and in the United States south to North Carolina and Colorado.

Yukon records: Boreal Cordillera ecozone: *Yukon Plateau-North:* Gravel L. (Picchi 1977).

Subfamily Aradinae

172. *Aradus abbas* Bergroth

Nearctic including Beringian

Distribution: Alaska to Newfoundland, and in the United States south to North Carolina and California.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Dawson, Dempster Corner, Old Crow, Swim Lks., Tombstone, Watson L.

Biological information: In Canada, associated with *Pinus ponderosa*, *P. sylvestris* and *Taxodium* sp. (Coniferae) (Matsuda 1977).

173. *Aradus funestus* Bergroth

Nearctic excluding Beringia

Distribution: Alaska to Quebec, and in the United States south to New York, Arizona and California.

Yukon records: Boreal Cordillera ecozone. Haines Jct., Keno, La Force L.

Biological information: Collected on *Abies lasiocarpa* and *Picea glauca*. Elsewhere associated with *Pseudotsuga taxifolia* (Lamb.) Britt. and *Abies concolor* (Gord.) Hildebrand (Matsuda 1977).

174. *Aradus intectus* Parshley

Cordilleran excluding Beringia

Distribution: British Columbia, Yukon, Colorado, Montana and Wyoming.

Yukon record: YT (Matsuda 1977).

175. *Aradus lugubris* Fallén

Circumboreal

Distribution: Alaska to Newfoundland, and in the United States south to North Carolina and Arizona; throughout the forested Palaearctic region, and in the mountains of Kazakhstan and central Asia.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Aishihik Rd. (2 km N of Alaska Hwy.), Alaska Hwy. (km 1641), Bluefish Caves, Burwash Cr., Dawson (10 km E), Dempster Corner, Dempster Hwy. (km 216), Eagle Plains (Dempster Hwy. km 371), Engineer Cr. (Dempster Hwy. km 194), Granville, Gravel L., La Force L., Moose Cr., Nahanni Range Rd. (km 128), Old Crow, Pelly Crossing, Rock R., Ross R. (17 km S), near Sixty Mile R., Stewart Crossing, Swim Lks., Tatchun Cr., Tombstone, Whitehorse.

Biological information: Collected on spruce (*Picea glauca*). Elsewhere in Canada associated with *Pinus ponderosa*, *P. sylvestris*, *Picea engelmanni*, *P. excelsa* Link and *Juniperus communis* (Matsuda 1977).

176. *Aradus quadrilineatus* Say Nearctic excluding Beringia
Distribution: Yukon to New Brunswick, and in the eastern United States south to Florida.
Yukon records: Boreal Cordillera ecozone: *Yukon Plateau-North*: Gravel L. (Matsuda 1977).
Biological information: Collected on *Epilobium*. Usually associated with *Populus*, *Ulmus*, *Quercus* and *Fagus* (Matsuda 1977).
177. *Aradus shermani* Heidemann Nearctic including Beringian
Distribution: Yukon, Saskatchewan, Ontario and Quebec; in the eastern United States south to Georgia.
Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Dawson (22.5 km E), Moose Cr., Quiet L., Rampart House.
Biological information: Host unknown.
178. *Aradus signaticornis* Sahlberg Palaeartic-East Beringian
Distribution: Alaska, Yukon; Europe and Siberia.
Yukon record: Boreal Cordillera ecozone: *Yukon Plateau-North*: Swim Lks.
Biological information: Host unknown.
179. *Aradus tuberculifer* Kirby Nearctic including Beringian
Distribution: Alaska to Quebec, and in the United States south to New York and Colorado.
Yukon record: Boreal Cordillera ecozone: *Yukon Plateau-North*: Swim Lks.
Biological information: Host unknown.
180. *Aradus uniannulatus* Parshley Nearctic including Beringian
Distribution: Yukon to Quebec, and in the United States south to Pennsylvania, Texas and California.
Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Bluefish Caves, Mayo, Otter L., Swim Lks.
Biological information: Elsewhere reported to be associated with *Pinus contorta murrayana* (Balf.) Critchfield (Matsuda 1977).

Family Piesmatidae

The Piesmatidae, sometimes called ash-gray leaf bugs, are plant feeders with 2-segmented tarsi, ocelli, and forewings with an irregular network of cells. Of the 2 species of piesmatids reported in Canada, only one occurs in the Yukon. Species are keyed by Drake and Davis (1958).

181. *Piesma cinereum* (Say) Nearctic excluding Beringia
Distribution: Yukon to Ontario, and throughout the continental United States to Mexico, West Indies and Argentina.
Yukon record: Boreal Cordillera ecozone: *Yukon-Southern Lakes*: Squanga L.
Biological information: Collected on *Salix*. According to Froeschner (1988), the primary hosts are *Amaranthus*, *Atriplex*, *Chenopodium*, and *Salsola* (Amaranthaceae).

Family Lygaeidae

The Lygaeidae, commonly called seed bugs, are mostly dull brown, robust insects with ocelli and 5 distinct veins in the membrane of the forewing. Most are seed feeders, either on the ground or on plants, but some such as the genus *Geocoris* are also predaceous.

Of the 117 species of seed bugs reported in Canada, 19 have so far been found in the Yukon. The genera involved can be keyed by reference to Slater and Baranowski (1978).

182. *Geocoris bullatus* (Say) Nearctic including Beringian
Distribution: Alaska to Newfoundland and Labrador, and in the United States south to Virginia and California.
Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Canyon, Carmacks (30 km E), Carcross, Eagle R., Dawson, Evelyn Cr. (4 km S), Haines Jct., Johnson's Crossing, Lone Tree Cr., L. Laberge, Magundy Valley, Mendenhall R., Moose Cr., Morley R., Ogilvie, Rancheria (7 km E), Richthofen Cr., Rose L. (15 km S), South Canol Rd. (km 39), Snag, Stewart Crossing, Takhanne R., Teslin, Whitehorse, Wolf Cr.

Biological information: *G. bullatus* is both predaceous and phytophagous (Readio and Sweet 1984), and shows greatest survival and fecundity on a mixed diet of insects and seeds (Tamani and Weeks 1972).

183. *Geocoris discopterus* Stål

Nearctic including Beringian

Distribution: Yukon to Saskatchewan, and in the eastern United States south to Pennsylvania.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Aishihik R. (Alaska Hwy.), Alaska Hwy. (km 1728), Atlin Rd. at British Columbia/Yukon border, Burwash Landing, Canyon, Carcross, Cracker Cr., Donjek R. (7 km S, Alaska Hwy.), Duke R., Haines Jct., Kluane L., L. Laberge, Moose Cr., Old Crow, Pelly Crossing, Sheep Mt., Silver City, Stewart Crossing (and 4.7 km E), Tatchun Cr., Whitehorse, Wolf Cr.

Biological information: Collected on south-facing *Artemisia* slopes. *G. discopterus* is a predator (Readio and Sweet 1982).

Taxonomic notes: This identification is tentative. Readio and Sweet (1982) state that all records of western specimens previously identified as *G. discopterus* refer to another species. However, the Yukon material is morphologically very similar to New Jersey specimens.

184. *Geocoris howardi* Montandon

Nearctic including Beringian

Distribution: Alaska, Yukon, British Columbia and the Northwest Territories, and in the United States south to New York and South Dakota.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Aishihik R. (Alaska Hwy.), Alaska Hwy. (km 1543, km 1728), Burwash Landing, Carmacks (24 km E), Dawson (5 km SE, 10 km E), Duke R., Haines Jct., Jake's Corner (2 km S), Kluane L., L. Laberge, Lapie Canyon, Mayo, McQuesten, Mendenhall R., near Minto, Moose Cr., Old Crow (and 1 km E, 6 km W), Pelly Crossing, Pine L., Ross R. (8 km S), Stewart Crossing, Stonebolt Cr. (12 km N), Tagish, Tatchun Cr., von Wilczek Lks.

Biological information: At Old Crow and elsewhere, the species was collected on south-facing *Artemisia* slopes. *G. howardi* is undoubtedly predaceous.

Subfamily Ischnorhynchinae

185. *Kleidocerys resedae* (Panzer)

Circumboreal

Distribution: Alaska to Newfoundland, and in the United States south to New York, South Dakota and Colorado; Europe to Siberia, Caucasus and mountains of central Asia.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Carmacks, Dezadeash L., Duncan Cr., Eagle R., Hunter Creek Rd. (km 6.4), Koidern, Mason Hill, Morley R., Tagish Rd.

Biological information: Collected on *Alnus sinuata*, *A. tenuifolia* and *Betula glandulosa*. *K. resedae* feeds on the catkins of alder and birch, but also occurs in Europe on rhododendron (Southwood and Leston 1959). Vinokurov (1988) lists hosts as Asian white birch, rarely on *Spiraea*, Korean rhododendron. Stehlik and Vavrinova (1996) report on the biology of *K. resedae* and note that it occurs mainly on *Betula pendula* Roth. and *B. pubescens* Ehrh. in Europe. However, many other hostplants are listed in Europe, and discussed by Stehlik and Vavrinova (1996). Wheeler (1976) also lists many hosts in North America, including European White Birch and a number of ericaecous shrubs.

Taxonomic notes: The Yukon specimens key to *K. resedae* in Scudder (1963), but more systematic study of this species is in order, as a number of sibling species may be involved. Stehlik and Vavrinova (1996) refer records of *K. resedae* on *Alnus* and *Rhododendron* in Europe to other *Kleidocerys* species.

Subfamily Orsillinae

186. *Nysius fuscovittatus* Barber

Cordilleran including Beringian

Distribution: Alaska, Yukon, British Columbia and Alberta.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Dempster Corner, Dempster Hwy. (km 159 "Windy Pass"), Kluane L., Koidern, Lapie Canyon, Lapie Cr., Long's Cr., Ogilvie R. (Dempster Hwy. km 293), Pine L., Silver City.

Biological information: Collected on seedheads of *Dryas drummondii*.

187. *Nysius groenlandicus* (Zetterstedt)

Circumboreal

Distribution: Alaska and across northern Canada to Newfoundland; northern Europe to Siberia, and mountains of central Asia.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Burwash Landing, Dempster Hwy. (Arctic Circle, "Windy Pass"), Eagle R., Frog L., Nahanni Range Rd. (summit), Old Crow (6 km E), Porcupine R. ("Blue Bluffs"), Starr Cr., Tatchun Cr., Teslin, Tombstone, White R., Whitehorse.

Biological information: On the Dempster Hwy. at “Windy Pass”, this species was collected on seedheads of *Dryas drummondii*. Also reported to forage and lay eggs on the seedheads of *Dryas integrifolia* Vahl. in Greenland (Böcher 1975a). Böcher (1975b) reports this arctic-alpine xerophilous and thermophilous bug as being univoltine and overwintering in the egg stage in Greenland, where it prefers well drained sites with a southern exposure. Vinokurov (1988) states that *N. groenlandicus* is polyphytophagous, and prefers well-heated slopes.

Taxonomic notes: Although the late P.D. Ashlock (in litt.) and Böcher (1976, 1978) consider that true *N. groenlandicus* does not occur in North America, the Yukon material is identical to specimens from Manitoba and Quebec identified as this species by H.G. Barber, and ones from Alaska identified as *N. groenlandicus* by R.I. Sailer. The Yukon and other materials key to *N. groenlandicus* in Barber (1947), except that North American material has the corium with erect setae as well as dense appressed pubescence.

188. *Nysius thymi* (Wolff)

Circumboreal

Distribution: Alaska to Quebec, and in the United States south to New York and Colorado; throughout the Palaearctic region.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Atlin Rd. at British Columbia/Yukon border, Benson Cr., Boundary (7.7 km E), Canyon, Carcross, Carmacks (27 km E), Dawson (10 km E), Dempster Corner, Destruction Bay, Duke R., Evelyn Cr. (4 km S), Haines Jct., Halfway Lks., Johnson’s Crossing, Kluane L., Koidern, Lapie Cr., Lapie R. (1 km E, and at Glacier Cr.), Little Atlin L., Little Salmon L., Lone Tree Cr., Long’s Cr. (4 km N), Mayo, McQuesten, Mink Cr. (2 km S), Minto, Moose Cr., Ogilvie R., Pelly Crossing, Pine L., Ross R. (and 9 km S), Sheep Mt., Silver City, Snafu Cr., Stewart Crossing (and 4.7 km E), Tagish, Takhanne R., Takhini Hot Springs, Tom Cr., von Wilczek Lks., Watson L., Whitehorse, Wolf Cr.

Biological information: At Takhini Hot Springs collected on *Artemisia*, but generally is polyphytophagous, particularly on Asteraceae (Southwood and Leston 1959). Stehlik and Vavrinnova (1996) state that this eurythermic and azonal species, as adults and larvae, feeds on plant juices and seeds of numerous hostplants. Species of Brassicaceae, Asteraceae, Caryophyllaceae, Ericaceae, Lamiaceae, Polygonaceae, Poaceae, and Rosaceae, are mentioned as hosts in the European literature.

Taxonomic notes: The Yukon material keys to *N. thymi* in Barber (1947).

Subfamily Oxycaeninae

189. *Crophius disconotus* (Say)

Nearctic including Beringian

Distribution: Yukon to New Brunswick, and south to Pennsylvania, Missouri and California.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Carmacks (24 km E, 27 km E), Dawson (22.5 km E), Destruction Bay, Duke R., Jake’s Corner, Kluane L., Little Salmon R., Old Crow (and 6 km E), Pelly Crossing, Porcupine R. (“Blue Bluffs”), Silver City.

Biological information: At Old Crow collected in root mats of *Polemonium pulcherrimum*.

190. *Crophius ramosus* Barber

Western Nearctic including Beringian

Distribution: Alaska, Yukon, British Columbia, Saskatchewan, Alberta, Idaho and Utah.

Yukon records: Boreal Cordillera ecozone. Aishihik Rd. (km 11), Destruction Bay (10 km S), Haines Jct., Kluane L., Mink Cr., Pelly Crossing, Ross R., Stewart Crossing (6 km NW), Whitehorse.

Alaska record: Montauk Bluff.

Biological information: Collected on *Juniperus communis*, and on south-facing *Artemisia* slopes.

Subfamily Rhyparochrominae

Tribe Drymini

191. *Eremocoris borealis* (Dallas)

Nearctic including Beringian

Distribution: Alaska to Newfoundland, and south to North Carolina and Montana.

Yukon record: Boreal Cordillera ecozone: *Ruby Ranges*: Sheep Mt.

Biological information: Sweet (1964b) reports this species to feed on the seeds of *Betula* spp., *Tsuga* and *Picea* in New England.

192. *Scolopostethus thomsoni* Reuter

Circumboreal

Distribution: Alaska to Newfoundland and Labrador, and south to New Jersey, New Mexico and Arizona; Europe and Russia.

Yukon record: Boreal Cordillera ecozone: *Yukon Southern Lakes*: Haines Jct. (30 km E).

Biological information: In Europe, *S. thomsoni* feeds on the seeds of *Urtica dioica* L. (Urticaceae), both on the plant and on the ground (Eyles 1963), and this is also so on Galiano Is. in British Columbia (Scudder unpublished). However, elsewhere in North America, Sweet (1964b) reports feeding on the seeds of *Carex* and *Scirpus*, as well as *Oenothera*, *Rumex*, *Mentha*, *Rudbeckia* (Asteraceae), *Tsuga* and *Betula*. Eyles (1964) found that although *S. thomsoni* will feed on the seeds of other plants, it grows faster on *U. dioica*.

Tribe Gonianotini

193. *Emblethis vicarius* Horvath

Nearctic and Neotropical

Distribution: Alaska to Quebec, and south to Florida, Arizona and California; Mexico to South America.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Aishihik R. (Alaska Hwy.), Alaska Hwy. (km 1728), Braeburn Lodge (5 km N), Burwash Landing, Carcross, Carmacks (and 35 km S, 24 km E), Cracker Cr., Dawson (10 km E), Destruction Bay (10 km S), Duke R., Firth R. (locality 1), Fox L., Haines Jct., Jake's Corner (2 km S), Johnson's Crossing, Kluane L., L. Laberge, Little Salmon L., Lone Tree Cr., Long's Cr. (4 km N), Mayo, Mendenhall R., near Minto, Moose Cr., Old Crow (1 km E), Pelly Crossing (and 2.2 km N), Ross R. (and 9 km S, 12 km SSW), Sheep Mt., Silver City, Stewart Crossing (and 4.7 km E, 6 km NW), Tatchun Cr., von Wilczek Lks., Whitehorse.

Alaska records: College, Montauk Bluff.

Biological information: Collected in pitfall traps on south-facing *Artemisia* slopes. Sweet (1964b) reports that in the laboratory, *E. vicarius* will feed on the seeds of *Andropogon scoparius* Michx., *Bromus* sp., *Chenopodium album* L., *Solidago* sp., *Stellaria media* (L.) (Caryophyllaceae), *Rumex acetosella* L., *R. obtusifolia* L. (Polygonaceae), *Lechea villosa* Ell. (Cistaceae), *Oenothera* sp. (Onagraceae) and *Hieracium* sp. (Asteraceae), but not on *Panicum* sp. and *Paspalum* sp.

194. *Trapezonotus arenarius* (Linnaeus)

Circumboreal

Distribution: Yukon to Quebec, and south to Massachusetts, Maine, New Hampshire and New York; throughout the Palaearctic region.

Yukon record: Boreal Cordillera ecozone: *Yukon Plateau-North*: Moose Cr.

Biological information: Sweet (1964b) reports that *T. arenarius* is nearly omnivorous on seeds, and in the laboratory will feed on seeds of *Festuca* sp., *Solidago* sp., *Vaccinium pennsylvanicum* Gray and *Gaylussacia* sp. (Ericaceae), as well as *Betula* spp. In Europe, Cobben (1953) records feeding on *Erodium cicutarium* L'Herit. (Geraniaceae).

Taxonomic notes: The identity of this Yukon material was confirmed by the late Dr. G. Seidenstucker.

Tribe Megalonotini

195. *Sphragisticus nebulosus* (Fallén)

Circumboreal

Distribution: Alaska to Nova Scotia, and south to Pennsylvania, New Mexico and California; Europe to Siberia, Kazakhstan and Kirgizia.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Cracker Cr., Dawson (and 5 km SE), Dempster Corner, Haines Jct., Kluane L., Mayo Rd. (km 354 (mi 220)), Rampart House, von Wilczek Lks., Whitehorse.

Alaska records: Fairbanks (Ready Bullion Cr.).

Biological information: Collected on *Rosa* sp. Sweet (1964b) reports that literature records indicate probable hosts to include *Amaranthus*, *Chenopodium album*, *Portulaca oleracea* L. (Portulacaceae) and *Eragrostis megastachya* (Koel.) (Poaceae), and recorded feeding in the laboratory on the seeds of *Oenothera* sp., *Rumex* spp., *Chenopodium album*, *Verbascum thapsus* L. (Scrophulariaceae), and a number of other unidentified seeds from the ground litter.

Tribe Myodochini

196. *Kolenetrus plenus* (Distant)

Nearctic plus Neotropical

Distribution: Yukon to Quebec, and south to New York, Arizona and Guatemala.

Yukon records: Boreal Cordillera ecozone. Braeburn Lodge (5 km N), Carmacks (35 km S), Haines Jct., Pelly Crossing, Ross R.

Biological information: Collected in pitfall traps on south-facing *Artemisia* slopes. The natural food seeds of this species are not known, but Sweet (1964b) records that it does feed readily on seeds of sunflower and *Betula populifolia* Marsh.

197. *Ligyrocoris diffusus* (Uhler)

Nearctic including Beringian

Distribution: Yukon to Newfoundland, and south to North Carolina, Arizona and California.*Yukon records:* Taiga Cordillera and Boreal Cordillera ecozones. Carmacks (35 km S), Dawson (and 10 km E), Dempster Corner, Frog L., Mayo, McQuesten (10 km E), near Minto, Moose Cr., Pelly Crossing, Stewart Crossing (4.7 km E, 6 km NW), Tatchun Cr., von Wilczek Lks.*Biological information:* Sweet (1964a) notes that *Rudbeckia serotina* Nutt. (Asteraceae) is the preferred hostplant in New England, but as well as feeding on the seeds of this plant, it has also been observed feeding on other members of the Asteraceae, namely *Tanacetum vulgare* L., *Chrysanthemum leucanthemum* and *Solidago* sp. However, in laboratory studies, Sweet (1964a) found *L. diffusus* would feed on the seeds of *Rumex acetosella* L., *Rumex* sp., *Polygonum* sp., *Potentilla recta* L., *P. canadensis* L. and *Fragaria virginiana* Duchesne (Rosaceae), *Acer rubrum* L. (Aceraceae), *Medicago* sp., *Trifolium* spp., *Monarda* sp. (Labiatae), and some other unidentifiable seeds, but noted that grass seeds and seeds of *Daucus carota* L. (Umbelliferae) did not elicit a feeding reaction.198. *Ligyrocoris sylvestris* (Linnaeus)

Circumboreal

Distribution: Alaska to Newfoundland and Labrador, and south to North Carolina and Colorado; northern and central Europe to Siberia, with range extending into North Africa.*Yukon records:* Taiga Cordillera and Boreal Cordillera ecozones. Alaska Hwy. (km 1600, km 1728, km 1883), Boundary (19.8 km E), Burwash Landing, Cadzow L., Canyon, Carcross, Dawson (and 10 km E), Dempster Corner, Destruction Bay, Duke R., Duncan Cr., Eagle R., Fago, Firth R. (locality 1), Fox L., Frog L., Haggart Creek Rd., Haines Jct., Jake's Corner (2 km S), Johnson's Crossing, Kluane L., Koidern, Lapie Cr., Lapie Canyon, Lapie Pass, Lapie R. (km 176.4 South Canol Rd.), L. Laberge, Little Salmon L., Long's Cr. (4 km N), Magundy R., Mayo, Mayo Rd. (km 180 (mi 112)), McDougall Pass, McQuesten (10 km E), near Minto, Moose Cr., Morley R., Nahanni Range Rd. (km 128), Ogilvie R. (Dempster Hwy. km 207), Old Crow (and 1 km E, 6 km E), Pine Cr., Pine L., Porcupine R. ("Blue Bluffs" and at Dave Lord Cr.), Rancheria (and 7 km E), Richardson Mts. (Dempster Hwy. km 404 Arctic Circle), Ross R. (and 9 km S), Sheep Mt., Slims R. delta, Snag Jct., Starr Cr., Stewart Crossing, Stonebolt Cr. (12 km N), Strawberry Cr., Tagish, Tatchun Cr., Teslin, Tom Cr., Watson L., Whitehorse, Wolf Cr.*Biological information:* Collected on *Alnus tenuifolia*, *Betula glandulosa* and *B. papyrifera*, in root mats of *Polemonium pulcherrimum*, on south-facing *Artemisia* slopes, and in pitfall traps along the shoreline at the Slims R. delta. Sweet (1964a) notes that in Europe *L. sylvestris* has been recorded from a number of plants, including *Ledum palustre* L. (Ericaceae) *Betula nana* and *Myrica gale* L. (Myricaceae), but it is not certain that these records represent feeding. However, he records that in the laboratory the species feeds readily on seeds of *Aster* spp., *Solidago caesia* L., *Betula populifolia*, *B. alba* L. and *Tsuga canadensis* L. (Pinaceae), but not on the grass *Festuca obtusa* Bichler.199. *Slaterobius insignis* (Uhler)

Nearctic including Beringian

Distribution: Alaska to Newfoundland and Labrador, and south to New York, Nebraska and California.*Yukon records:* Taiga Cordillera and Boreal Cordillera ecozones. Alaska Hwy. (km 1713), Atlin Rd. at British Columbia/Yukon border, Aishihik Rd. (and km 11, and 13.5 km N Alaska Hwy.), Braeburn Lodge (5 km N), Burwash Landing, Canyon (14 km N), Carmacks (and 35 km S), Carcross (and 1.6 km N), Destruction Bay (10 km S), Duke R., Fox L., Frog L., Haines Jct., Jake's Corner, Kluane L., L. Laberge, Lapie R. (1 km E and at Glacier Cr.), Little Campbell L., Little Salmon L. (35 km E), Little Salmon R., Mendenhall R., Mayo, Mink Cr. (2 km S), Old Crow, Ross R. (and 9 km S, 12 km SSW), Sheep Mt., Silver City, Snafu Cr., Stewart Crossing (4.7 km E, 16 km NW, 17 km NW), Takhini R., Tatchun Cr., Tatchun L., Whitehorse, Wolf Cr.*Alaska records:* Eagle Bluff, Tanana R.*Biological information:* Collected in pitfall traps on south-facing *Artemisia* slopes, and on sand dunes. Sweet (1964b) reported *S. insignis* to feed on the seeds of grasses *Andropogon scoparius*, *Panicum* sp. and *Paspalum* sp. in New England.

Tribe Rhyparochromini

200. *Peritrechus convivus* (Stål)

Circumboreal

Distribution: Alaska to Prince Edward Island, and south to North Dakota and California; Europe and Russia.*Yukon records:* Taiga Cordillera and Boreal Cordillera ecozones. Aishihik R. (Alaska Hwy.), Canyon, Carcross, Cracker Cr., Dawson (and 5 km SE, 22.5 km E), Eagle L., Eagle R., Gravel L., Haines Jct.,

Kluane L., L. Laberge, Mayo, McQuesten (33 km NW), Moose Cr., Pelly Crossing, Porcupine R. ("Blue Bluffs"), Richthofen Cr., von Wilczek Lks., Whitehorse.

Alaska records: Colville, Fairbanks (Ready Bullion Cr.), Hope, Lawing, Skagway, Unalakleet.

Biological information: The natural food seeds of this species are unknown.

Family Alydidae

The Alydidae, commonly called broad-headed bugs, are plant feeders with elongate, rather slender bodies, broad and prominent heads with ocelli, and bucculae that do not extend posteriorly beyond the base of the antennae. The membrane of the forewing has numerous veins, and the metathorax has a conspicuous scent-gland opening laterally. The larvae are ant mimics.

Of the 10 species of broad-headed bugs so far reported in Canada, only one has been collected in the Yukon. It can be identified from the key in Fracker (1918).

Subfamily Alydinae

201. *Alydus eurinus* (Say)

Nearctic including Beringian

Distribution: Alaska to Quebec, and south to Florida, New Mexico and Arizona.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Cornwall Cr., Klondike Hwy. (km 468), Kluane L., Lapie R. (at Glacier Cr.), Mayo, McQuesten, Mink Cr., near Minto, Ogilvie R. (Dempster Hwy. km 243), Old Crow, Ross R. (8 km S, 9 km S), Slims R. delta, Stewart Crossing, Swede Johnson Cr., Tatchun Cr., Tatchun L., Watson L., Whitehorse.

Alaska records: Muncaster Cr., Yeltakaska Cr.

Biological information: Collected in pitfall traps on south-facing *Artemisia* slopes, and in boreal forest clearings. Hosts are unknown.

Taxonomic notes: The record of *A. pluto* Uhler in Evans et al. (1978) no doubt refers to this species.

Family Coreidae

The Coreidae, which includes the squash bugs, are typically rather broad, heavy-bodied and brownish insects. The membrane of the forewing has many veins, and the metathorax has large scent-gland openings laterally. The head has ocelli, and bucculae that extend posteriorly beyond the base of the antennae. All coreids are plant feeders, and some are pests of cultivated crops.

Of the 11 species of coreid bugs reported in Canada, only one has been collected in the Yukon. The genus can be keyed using Slater and Baranowski (1978); the species is keyed by Dolling and Yonke (1976).

Subfamily Pseudophloeinae

202. *Coriomeris humilis* (Uhler)

Nearctic including Beringian

Distribution: Alaska to Quebec, and south to Connecticut, New Mexico, Arizona and California.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Alaska Hwy. (km 1728), Burwash Landing, Dawson, Firth R. (locality 1), Johnson's Crossing, Kluane L., Mayo, Mendenhall R., Pine L., Ross R. (and 8 km S), Sheep Mt., Stewart Crossing, Swede Johnson Cr., Whitehorse, Wolf Cr.

Biological information: Collected on south-facing *Artemisia* slopes, and on silt-sand cliffs. Dolling and Yonke (1976) note that the probable foodplants are all members of the Fabaceae, with captures on *Hedysarum boreale* Nutt. in Alaska, *Medicago sativa* in Alberta, *Astragalus lamberti* Spreng. in Colorado, and *A. beckwithii* T. and G. in Utah.

Family Rhopalidae

The Rhopalidae, commonly called scentless plant bugs, as the name implies either lack metathoracic scent glands or have at most, very small scent-gland orifices. They are phytophagous, and characteristically have numerous veins to the membrane of the forewing, and large raised ocelli.

Of the 14 species of scentless plant bugs so far reported from Canada, 2 have been recorded in the Yukon. These are keyed by Harris (1944) and Göllner-Scheiding (1975).

Subfamily Rhopalinae

Tribe Rhopalini

203. *Stictopleurus punctiventris* (Dallas) Nearctic including Beringian

Distribution: Alaska to Nova Scotia, and south to Pennsylvania, New Mexico and Arizona.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Alaska Hwy. (km 1543), Beaver Cr., Blackstone R. (Dempster Hwy. km 132), Boundary (19.8 km E), Burwash Landing, Cadzow L., Carmacks (and 27 km E), Carcross, Dawson, Dawson Airport, Dempster Corner, Donjek R. (19 km NW), Duke R., Duncan Cr., Eagle R., Gravel L., Haines Jct., Halfway Lks., Johnson's Crossing, Kluane L., Klondike Hwy. (km 468, km 476), Koidern, L. Laberge, Little Atlin L., Little Salmon L. (and 35 km E), Little Salmon R., Mayo, McCabe Cr. (3 km S), McDougall Pass, McQuesten (and 10 km E, 33 km NW), Mink Cr., Moose Cr., Ogilvie R. (Dempster Hwy. km 206), Old Crow, Pelly Crossing (and 4 km S), Sakiw Cr., Snafu Cr., Stewart Crossing (and 18 km N), Tatchun Cr., Tatchun L., von Wilczek Lks., Whitehorse (and 24 km N), Willow Cr., Wolf Cr.

Alaska records: Gobbler's Knob, Tok.

Biological information: Collected on south-facing *Artemisia* slopes, and on *Betula glandulosa*. The genus *Stictopleurus* is associated with Asteraceae (Schaefer and Mitchell 1983). Hoffman (1975) reports *S. punctiventris* from yarrow, smartweed and ox-eye daisy in Virginia.

204. *Stictopleurus viridicatus* (Uhler) Nearctic excluding Beringia

Distribution: Yukon to Saskatchewan, and south to Minnesota, Arizona and California.

Yukon records: Boreal Cordillera ecozone. Lapie Canyon, Lapie R. (1 km E), Moose Cr., Pelly Crossing, Stewart Crossing.

Biological information: Hosts are probably members of the Asteraceae.

Family Acanthosomatidae

The Acanthosomatidae are phytophagous stink bugs with large triangular scutellum, mesosternum with a prominent median keel, and legs with 2-segmented tarsi. Parental care is found in most species.

Of the 4 species of acanthosomatids occurring in Canada, 2 have been collected in the Yukon. These can be keyed by reference to Thomas (1991).

Subfamily Acanthosomatinae

205. *Elasmotherus interstinctus* (Linnaeus) Palaearctic-East Beringian

Distribution: Alaska, Yukon and northern British Columbia; Europe to Siberia.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Carmacks (and 18 km S), Dawson (and 10 km E), Dempster Hwy. (km 465), Eagle R. (Dempster Hwy. km 382), Mayo, McQuesten (10 km E), Stewart Crossing (and 18 km W, 21 km W), Twin Lks. Campground, Willow Cr.

Biological information: Collected on *Salix*. Known as the "birch bug" in England, this species also occurs on alder, beech and aspen (Thomas 1991).

Taxonomic notes: Although Barber (1932) synonymized *E. cruciatus* var *cooleyi* Van Duzee from Montana with *E. interstinctus*, this synonymy is incorrect (Torre-Bueno 1939; Thomas 1991). The record of *E. cruciatus* (Say) from the Yukon by Evans et al. (1978) should refer to *E. interstinctus* (specimens in the Forest Insect Survey collections in Victoria).

206. *Elasmucha lateralis* (Say) Nearctic including Beringian

Distribution: Alaska to Newfoundland, and south in the eastern United States to South Carolina.

Yukon record: Boreal Cordillera ecozone: *Klondike Plateau*: Dawson.

Biological information: The primary hosts of this species are birch and beech (Thomas 1991).

Family Pentatomidae

The Pentatomidae are the stink bugs with a large triangular scutellum, and legs with 3-segmented tarsi, but without rows of thick black spines on the tibia. The majority of stink bugs are plant feeders, but the tribe Asopini (not yet collected in the Yukon) are predators.

Of the 69 species of stink bugs known from Canada, 6 occur in the Yukon. Most of these can be keyed by reference to McPherson (1982).

Subfamily Pentatominae

Tribe Pentatomini

207. *Aelia americana* Dallas

Nearctic including Beringian

Distribution: Alaska to Ontario, and south to Alabama and Arizona (Rider 1986).

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Carmacks, Haines Jct., Old Crow (and 1 km E), Pine L., Porcupine R. ("Blue Bluffs"), Tatchun Cr., von Wilczek Lks.

Alaska records: College, Tok.

Biological information: Collected in root mats of *Polemonium pulcherrimum*, and in pitfall traps on south-facing *Artemisia* slopes. McPherson (1982) reports the species to be associated with grasses.

208. *Chlorochroa granulosa* (Uhler)

Western Nearctic including Beringian

Distribution: Yukon to Manitoba, and in the western United States south to Colorado and Nevada.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Champagne, McCabe Cr. (3 km S), Rampart House, Tatchun L.

Biological information: In Alberta collected on willow, monkshood and Lodgepole pine.

Taxonomic notes: The record of *C. uhleri* (Stål) in Evans et al. (1978) no doubt refers to this species.

209. *Codophila remota* (Horvath)

Western Nearctic excluding Beringia

Distribution: Yukon to Manitoba, and in the western United States south to New Mexico, Arizona and California.

Yukon records: Boreal Cordillera ecozone. Aishihik Rd. (km 11), Destruction Bay (and 10 km S), Stewart Crossing.

Biological information: Collected on *Hedysarum*. Elsewhere in Canada collected on alfalfa and vetch in Alberta, *Achillea millefolium* L. (Asteraceae), *Betula*, *Pseudotsuga menziesii* (Mirbel) Franco (Pinaceae) and *Verbascum thapsus* in British Columbia, *Sisymbrium altissimum* L. (Cruciferae) in Manitoba and *Juncus* in the Northwest Territories.

210. *Neottiglossa trilineata* (Kirby)

Nearctic including Beringian

Distribution: Alaska to Newfoundland, and south to Michigan, Nebraska and California.

Yukon records: Boreal Cordillera ecozone. Halfway Lks., Kluane, Koidern, McDougall Pass, McQuesten (10 km E).

Alaska record: Fairbanks.

Biological information: Collected on *Acer negundo* and *Picea glauca* in Saskatchewan.

211. *Neottiglossa undata* (Say)

Nearctic including Beringian

Distribution: Alaska to Newfoundland, and south to North Carolina and California.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Lake Cr., Mayo, Old Crow (6 km E), Pine Cr., Watson L.

Alaska record: Unalakleet.

Biological information: Collected on *Achillea*. Elsewhere in Canada collected on grasses, ironwood, Jack pine, Scots pine, oak and larch. McPherson (1982) reports this species on timothy, red clover, red top, blue-grass, mullein, grape and alfalfa.

Tribe Sciocorini

212. *Sciocoris microphthalmus* Flor

Circumboreal

Distribution: Yukon to Quebec, and south to New York and Oklahoma.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Canyon (14 km N), Champagne, Dawson, Destruction Bay (10 km S), Firth R. (locality 4), Old Crow, Rampart House, Ross R., Sheep Mt., Silver City, Tagish.

Biological information: Collected in root mats of *Polemonium pulcherrimum*, and in pitfall traps on south-facing *Artemisia* slopes. Also reported on red raspberry bushes, rank vegetation and grasses (McPherson 1982). In British Columbia, *S. microphthalmus* feeds on the seedheads of *Dryas drummondii*.

Family Scutelleridae

The Scutelleridae are dull-brownish, phytophagous shield bugs with a very large U-shaped scutellum that covers or nearly covers the abdomen. Of the 13 species of shield bugs reported from Canada, 3 species occur in the Yukon. They are keyed by Lattin (1964).

Subfamily Eurygastrinae

213. *Phimodera binotata* (Say)

Western Nearctic excluding Beringia

Distribution: Yukon to Manitoba, and in the western United States south to New Mexico and Arizona.

Yukon records: Boreal Cordillera ecozone: *Ruby Ranges:* Kluane L., Sheep Mt., Silver City.

Biological information: Collected on dry south-facing *Artemisia* slopes. Nothing is known of the habits of this species.

214. *Vanduzeeina borealis* Van Duzee

Western Nearctic including Beringian

Distribution: Yukon, British Columbia, Alberta, and in the United States south to Illinois, South Dakota and California.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Carcross, Dawson, Rampart House, Tatchun L.

Biological information: Collected in pitfall traps in sand dunes, and on south-facing *Artemisia* slopes. Nothing is known of the habits of this species.

Subfamily Pachycorinae

215. *Homaemus aeneifrons consors* (Uhler)

Western Nearctic including Beringian

Distribution: Alaska to Manitoba, and in the western United States south to Montana and Colorado.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Alaska Hwy. (km 1626), Aishihik Rd. (km 11), Benson Cr., Burwash Landing, Carmacks (and 27 km E), Dawson (and 10 km E), Dempster Corner, Fox L., Gravel L., Haines Jct. (and 1 km N), Jake's Corner, Kluane, Kluane National Park (Sheep Creek Rd.), Koidern, Lapie R. (1 km E), Long's Cr. (4 km N), Mayo, McQuesten, near Minto, Moose Cr., Ogilvie R. (Dempster Hwy. km 293), Old Crow, Pelly Crossing, Rancheria (7 km E), Richardson Mts. (Dempster Hwy. km 400), Richthofen Cr., Ross R. (8 km S), Sheep Mt., Stewart Crossing, Starr Cr., Tagish, Tom Cr., Whitehorse, White R., Wolf Cr.

Biological information: Collected on seedheads of *Dryas drummondii*. Elsewhere in Canada collected on alfalfa, aspen, cinquefoil, juniper, Lodgepole pine, *Picea glauca*, *Populus balsamifera*, rose, snowberry, White pine and willow. Lattin (1964) records *Eriogonum* and *Achillea* as hosts, with adults feeding on developing seeds.

Family Thyreocoridae

The Thyreocoridae, commonly called negro bugs, are small, black, shiny, oval-shaped and phytophagous, beetle-like bugs. Characteristically, they have a large U-shaped scutellum that covers most of the forewings and abdomen, and have tibiae with 2 rows of thick, black spines.

Of the 10 species of negro bugs known from Canada, only one species occurs in the Yukon. This is keyed by McPherson (1982).

216. *Corimelaena nigra* Dallas

Nearctic including Beringian

Distribution: Yukon to Nova Scotia and south to Michigan in the eastern United States.

Yukon records: Taiga Cordillera and Boreal Cordillera ecozones. Ethel Lake Rd., Haines Jct. (and 1 km N), Little Atlin L., Rampart House, Silver City, Strawberry Cr., Tagish, Watson L.

Biological information: At Ethel Lake Road the species was collected on *Epilobium* flowers. In British Columbia, it has been collected on *Juniperus* sp., *Pinus contorta* and *Picea engelmanni*.

Additional Taxonomic Notes

The present list of Yukon Heteroptera is incomplete. Additional taxonomic studies must be undertaken, and these will require more systematic research.

The study of the genus *Saldula* (Saldidae) is incomplete, and several species are included in the *S. pallipes* complex (species 32). Additional research is needed before accurate names

can be placed on the entities listed as *Tupiocoris* sp. near *crudus* (40), *Adelphocoris* sp. (50), *Dichaetocoris* sp. (104), *Orthotylus* sp. (119), *Atractotomus* sp. (124), *Chlamydatus* sp. near *auratus* (126), *Psallus* sp. (146), and *Xylocoris* sp. near *pilipes* (163).

The identity of the specimens of *Plagiognathus* in the current list is based upon the determinations by L.A. Kelton. Most of the material belonging to this and related genera in the subfamily Phylinae still has to be determined to species.

Additional research is underway on species belonging to the lygaeid genera *Geocoris* and *Nysius*. Table 2 includes a listing of *Geocoris discopterus* from the Yukon. This listing is based on morphological comparisons with the type and other material from New Jersey. However, Readio and Sweet (1982) state that all records of western material previously identified as *G. discopterus* refer to another species. Because good and reliable morphological criteria are difficult to find in the genus *Geocoris*, molecular studies of mitochondrial and nuclear DNA are now underway to try to clarify this problem concerning the western *G. discopterus* and other *Geocoris* species (Mulyk and Scudder 1995).

Present Composition of the Fauna

Two hundred and sixteen species or subspecies of Heteroptera, belonging to 19 families, are currently recorded from the Yukon (Table 1). Of this total 4 species (1.8%) are semi-aquatic Heteroptera (Infraorder Gerromorpha), 12 (5.6%) are aquatic Heteroptera (Infraorder Nepomorpha), while the remaining 200 (92.6%) are terrestrial (Infraorders Leptopodomorpha, Cimicomorpha, and Pentatomomorpha) (Table 9 below).

This study has added 93 species or subspecies to the list of Heteroptera from the Yukon, and 28 species new to Alaska, as shown by the records in Table 2. Six species are new to Canada: 2 of these, the mirids *Deraeocoris punctulatus* (49) and *Labopidea bermani* (106), represent new Nearctic records. *Macrosaldula monae* (26) was previously known only from Alaska.

Evans et al. (1978) have listed a number of other species from the Yukon, but some of these determinations are incorrect or doubtful. These dubious records are indicated in the text or by footnotes appended to Table 2.

TABLE 1. Comparison of the number of species of Heteroptera in North America, Canada, British Columbia, Yukon and Alaska.

Taxon	North America	Canada	British Columbia	Yukon	Alaska
Infraorder Enicocephalomorpha					
Superfamily Enicocephaloidea					
Family Enicocephalidae	10	1	0	0	0
Infraorder Dipsocoromorpha					
Superfamily Dipsocoroidea					
Family Ceratocombidae	4	1	1	0	0
Family Dipsocoridae	2	0	0	0	0
Family Schizopteridae	4	0	0	0	0
Infraorder Gerromorpha					
Superfamily Gerroidea					
Family Gerridae	46	23	9	3	3
Family Veliidae	34	6	2	1	2
Superfamily Hebroidea					
Family Hebridae	15	3	1	0	0
Superfamily Hydrometroidea					
Family Hydrometridae	9	1	1	0	0
Family Macroveliidae	2	0	0	0	0
Superfamily Mesovelioidae					

TABLE 1. (continued)

Taxon	North America	Canada	British Columbia	Yukon	Alaska
Family Mesoveliidae	3	2	1	0	0
Infraorder Nepomorpha					
Superfamily Corixoidea					
Family Corixidae	125	71	33	11	15
Superfamily Naucoroidea					
Family Naucoridae	21	1	0	0	0
Superfamily Nepoidea					
Family Belostomatidae	21	4	2	0	0
Family Nepidae	13	4	1	0	0
Superfamily Notonectoidea					
Family Notonectidae	32	12	7	1	0
Family Pleidae	5	1	0	0	0
Superfamily Gelastocoroidea					
Family Gelastocoridae	7	1	0	0	0
Family Ochteridae	6	1	0	0	0
Infraorder Leptopodomorpha					
Family Leptopodidae	1	0	0	0	0
Family Saldidae	69	37	24	17	17
Infraorder Cimicomorpha					
Superfamily Thaumastocoroidea					
Family Thaumastocoridae	1	0	0	0	0
Superfamily Tingoidea					
Family Tingidae	154	36	24	4	2
Superfamily Miroidea					
Family Microphysidae	4	2	0	0	0
Family Miridae	1930	650	284	112	69
Superfamily Cimicoidea					
Family Anthocoridae	75	35	25	14	6
Family Cimicidae	15	5	4	0	0
Family Lasiochilidae	8	1	0	0	0
Family Lyctocoridae	8	6	5	0	0
Family Nabidae	34	19	15	6	4
Family Polyctenidae	2	0	0	0	0
Superfamily Reduvioidae					
Family Phymatidae	27	1	1	0	0
Family Reduviidae	157	25	15	0	1
Infraorder Pentatomomorpha					
Superfamily Aradoidea					
Family Aradidae	123	52	31	11	12
Superfamily Piesmatoidea					
Family Piesmatidae	7	2	2	1	0
Superfamily Lygaeoidea					
Family Berytidae	12	5	3	0	0
Family Lygaeidae	318	117	64	19	16
Superfamily Pyrrhocoroidea					
Family Largidae	21	0	0	0	0
Family Pyrrhocoridae	9	0	0	0	0
Superfamily Coreoidea					
Family Alydidae	30	10	7	1	1
Family Coreidae	88	11	6	1	1
Family Rhopalidae	39	14	11	2	1
Superfamily Pentatomoidea					
Family Acanthosomatidae	4	4	3	2	2
Family Cydnidae	43	9	5	0	1
Family Pentatomidae	222	69	42	6	6
Family Scutelleridae	34	13	7	3	1
Family Tessaratomidae	1	0	0	0	0
Family Thyreocoridae	41	10	5	1	0
Total	3836	1265	640	216	158

TABLE 2. List of Yukon Heteroptera showing distribution in Canada and Alaska. Abbreviations for states, provinces and territories: AK, Alaska; YT, Yukon; NT, Northwest Territories; BC, British Columbia; AB, Alberta; SK, Saskatchewan; MB, Manitoba; ON, Ontario; PQ, Quebec; NB, New Brunswick; PE, Prince Edward Island; NS, Nova Scotia; NF, Newfoundland; LB, Labrador.

	AK	YT	NT	BC	AB	SK	MB	ON	PQ	NB	PE	NS	NF	LB
Infraorder Gerronomorpha														
Family Gerridae														
Subfamily Gerrinae														
1. <i>Gerris buenoi</i> Kirkaldy	+	+	+	+	+	+	+	+	+	+	+	+	+	+
2. <i>G. pingrensis</i> D. and H.	+	+	+	+	+	+	+	+	+					
3. <i>Limnoporus rufoscutellatus</i> (Latr.)	+	+	+											
Family Veliidae														
Subfamily Microveliinae														
4. <i>Microvelia buenoi</i> Drake	+	+	+	+	+	+	+	+	+	+			+	
Infraorder Nepomorpha														
Family Corixidae														
Subfamily Corixinae														
Tribe Corixini														
5. <i>Arctocoris chanceae</i> Hung.	+	+	+				+		+				+	+
6. <i>A. planifrons</i> (Kirby)	+	+	+				+	+	+	+			+	+
7. <i>A. sutilis</i> (Uhler)	+	+	+	+	+	+	+	+	+	+			+	+
8. <i>Callicorixa alaskensis</i> Hung.	+	+	+	+	+	+	+	+	+	+		+	+	+
9. <i>C. audeni</i> Hung.	+	+	+	+	+	+	+	+	+	+	+	+	+	+
10. <i>C. producta noorvikensis</i> Hung.	+	+	+	+	+	+	+	+	+	+	+	+	+	+
11. <i>Sigara decoratella</i> (Hung.)	+	+	+	+	+	+	+	+	+	+	+	+	+	+
12. <i>S. fallenoidea</i> (Hung.)	+	+	+	+	+	+	+	+	+	+	+	+	+	+
13. <i>S. penniensis</i> (Hung.)	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tribe Glaenocorisini														
14. <i>Glaenocoris cavifrons</i> (Th.)	+	+	+				+	+	+	+	+			
Subfamily Cymatinae														
15. <i>Cymatia americana</i> Hussey	+	+	+	+	+	+	+	+	+	+				
Family Notonectidae														
Subfamily Notonectinae														
Tribe Notonectini														
16. <i>Notonecta kirbyi</i> Hung.		+	+	+	+	+	+	+						

TABLE 2. (continued)

	AK	YT	NT	BC	AB	SK	MB	ON	PQ	NB	PE	NS	NF	LB
73. <i>Phytocoris knowltoni</i> Kgt.		+			+	+	+	+	+	+				
74. <i>Pinalitus approximatus</i> (Stål)		+	+	+	+	+	+	+	+	+	+	+	+	+
75. <i>P. rostratus</i> Kelton		+	+	+	+	+	+	+	+	+	+	+	+	
76. <i>Platygyus luridus</i> (Reuter)		+	+	+	+	+	+	+	+	+	+	+	+	
77. <i>P. piceicola</i> Kelton		+	+	+	+	+	+	+	+	+	+	+	+	+
78. <i>Plesiocoris rugicollis</i> (Fallén)		+	+	+	+	+	+	+	+	+	+	+	+	+
79. <i>Polymerus tumidifrons</i> Knight		+	+	+	+	+	+	+	+	+	+	+	+	+
80. <i>P. unifasciatus</i> (Fab.)		+	+	+	+	+	+	+	+	+	+	+	+	+
81. <i>P. vulneratus</i> (Wolff)		+	+	+	+	+	+	+	+	+	+	+	+	+
82. <i>Salignus taehoensis</i> (Knight)		+	+	+	+	+	+	+	+	+	+	+	+	+
Tribe Resthenini														
83. <i>Prepops bivittis</i> (Stål)		+		+	+	+	+	+	+	+			+	
84. <i>P. nigripilus</i> (Knight)		+		+	+	+	+	+	+	+			+	
Tribe Stenodemini														
85. <i>Actitocoris signatus</i> Reuter		+	+		+	+	+	+	+	+	+		+	
86. <i>Leptopterna ferrugata</i> (Fallén)		+	+	+	+	+	+	+	+	+	+		+	
87. <i>Litoniris debilis</i> (Uhler)		+	+	+	+	+	+	+	+	+	+		+	
88. <i>Mimocoris insignis</i> Uhler		+	+	+	+	+	+	+	+	+	+		+	
89. <i>Stenodema pilosipes</i> Kelton		+	+	+	+	+	+	+	+	+	+		+	
90. <i>S. trispinosa</i> Reuter		+	+	+	+	+	+	+	+	+	+		+	
91. <i>Teratocoris caricis</i> Kirk.		+	+	+	+	+	+	+	+	+	+		+	
92. <i>T. paludum</i> Sahlberg		+	+	+	+	+	+	+	+	+	+		+	
93. <i>T. saundersi</i> D. and S.		+	+	+	+	+	+	+	+	+	+		+	
94. <i>T. viridis</i> D. and S.		+	+	+	+	+	+	+	+	+	+		+	
95. <i>Trigonotylus americanus</i> Carv.		+	+	+	+	+	+	+	+	+	+		+	
96. <i>T. viridis</i> (Prov.)		+	+	+	+	+	+	+	+	+	+		+	
Subfamily Orthotylinae														
Tribe Halticini														
97. <i>Labops burmeisteri</i> Stål		+	+	+	+	+	+	+	+	+	+			
98. <i>L. chelifera</i> Slater		+	+	+	+	+	+	+	+	+	+			
99. <i>L. hesperius</i> Uhler		+	+	+	+	+	+	+	+	+	+			
100. <i>L. tumidifrons</i> Knight		+	+	+	+	+	+	+	+	+	+			
101. <i>L. verae</i> Knight		+	+	+	+	+	+	+	+	+	+			
Tribe Orthotylini														
102. <i>Brooksetta viridicata</i> (Uhler)		+	+	+	+	+	+	+	+	+	+			
103. <i>Cyrtorhinus caricis</i> (Fallén)		+	+	+	+	+	+	+	+	+	+			+
104. <i>Dichaetocoris</i> sp.		+	+	+	+	+	+	+	+	+	+			+

Table 2 also shows many new records from other provinces of Canada. These records are based on specimens located in the institutions listed in the Materials and Methods section, and result from studies aimed at determining the distribution patterns exhibited by the Yukon Heteroptera.

The North American Heteroptera fauna contains a total of 47 families, the Anthocoridae, Lasiochilidae and Lyctocoridae being recognized as distinct following Schuh and Stys (1991) and Schuh and Slater (1995).

The Canadian fauna as a whole consists of 38 heteropteran families, of which only 19 occur in the Yukon. This is just half of the number of families in Canada, and 12 less than occur in British Columbia. The families Ceratocombidae, Hebridae, Hydrometridae, Mesoveliidae, Belostomatidae, Nepidae, Cimicidae, Lyctocoridae, Phymatidae, Reduviidae, Berytidae and Cydnidae occur in British Columbia, but so far have not been detected in the Yukon fauna. However, Cydnidae are recorded from Alaska.

Thus, in the aquatic and semiaquatic bugs (Infraorders Gerromorpha and Nepomorpha) only 4 of 13 (30.7%) of families in Canada are represented in the Yukon. In the terrestrial bugs (Infraorders Enicocephalomorpha, Dipsocoromorpha, Leptopodomorpha, Cimicomorpha and Pentatomomorpha) 15 of 24 (62.5%) of the families in Canada occur in the Yukon.

So far 216 species or subspecies of Heteroptera have been recognized in the Yukon, representing 5.6% of the North American Heteroptera fauna. Canada as a whole has about 33% of the total continental species, and British Columbia 16.7%. The Yukon has only one third as many Heteroptera species as British Columbia. The Yukon has 58 species more than are currently recorded for Alaska (Table 1). It would seem that Alaska is not as well collected as the Yukon, so the apparent differences may not reflect the true faunistic picture.

The Miridae or plant bugs, currently a total of 112 species, constitute the most species-rich family of Yukon Heteroptera, and thus show the same dominance as elsewhere in North America (Table 1).

The saldid *Chiloxanthus stellatus* (17) is the only true bug reported in the high arctic (Danks 1981), but Danks (1981) lists this and 21 other Heteroptera from the low arctic, 15 of which occur west of the Mackenzie River. Of these, only 4 species, *Chiloxanthus stellatus* (17), *Macrosaldula monae* (26), *Teratocoris viridis* (94) and *Chlamydatius wilkinsoni* (129), plus the mirid *Labopidea bermani* (106), are recorded herein from the Southern Arctic ecozone in the Yukon. *M. monae* is an East Beringian endemic, and the other 4 are Holarctic species.

Ecological Relationships of the Fauna

The information assembled in the annotated list allows general ecological characteristics of the fauna to be examined. Habitat (including association with different vegetation types) and feeding habits are considered here, together with other features selected because of their potential relevance to dispersal or to interactions among species in the Yukon.

Habitats

Ecozone Composition and Northern Attenuation. Fig. 2 shows diagrammatically how the heteropteran fauna is reduced as one proceeds north over the North American continent. Within the Yukon, at least 205 species are reported from the Taiga Cordillera ecozone, 124 in the Taiga Cordillera ecozone, and only 5 from the Southern Arctic ecozone. The more northern ecozones and habitats are clearly not generally suitable for Heteroptera. Although very few Heteroptera species penetrate deep into arctic tundra habitats and occur in the low

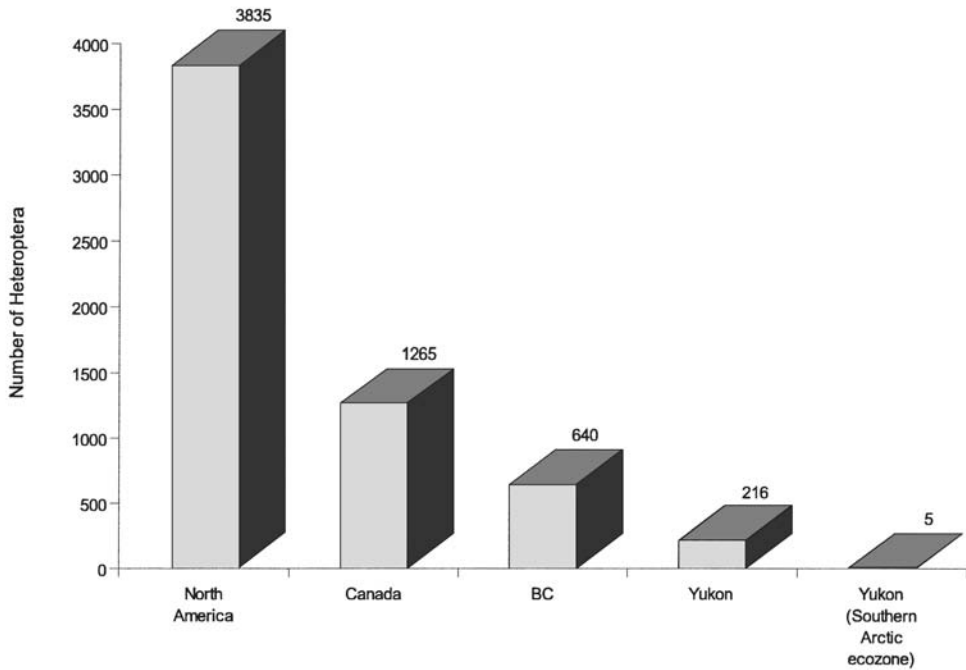


FIG. 2. Diagram showing reduction of the number of Heteroptera toward the north in North America.

arctic, others might be expected to occur in the Southern Arctic ecozone of the Yukon, and might be found by further collecting. Of the low arctic species listed by Danks (1981) 8 species, *Calacanthia trybomi* (25), *Salda littoralis* (9), *Saldula pallipes* (32), *Teratocoris saundersi* (93), *Trigonotylus viridis* (96), *Chlamydatus pullus* (128), *Anthocoris tomentosus* (153) and *Nysius groenlandicus* (187), are recorded from the Taiga Cordillera ecozone in the Yukon, so could well also occur in the Southern Arctic ecozone. The Holarctic saldid *Chiloxanthus arcticus* (Sahlberg) occurs in the low arctic of Alaska and the Northwest Territories, but has not been collected in the Yukon. Likewise, the mirid *Teratocoris borealis* Kelton occurs in the Southern Arctic ecozone of the Northwest Territories, but so far has not been captured in the Yukon. The mirid *Conostethus americanus* Knight has been collected at Tuktoyaktuk, but not yet in the Yukon.

No localities were sampled in the Taiga Plains ecozone in the Yukon, so we do not have an assessment of the diversity of true bugs in this ecozone. In the Pacific Maritime ecozone in the Yukon, represented by the Mount Logan ecoregion, there is no terrestrial vegetation or soil development. Although a number of arthropods have been collected on nunataks in this ecoregion, no Heteroptera have been obtained in the sampling to date (D. Hick, pers. comm.).

Vegetation Associations. The Heteroptera are not a northern group, and very few species are associated with dry tundra habitats. A number of the mirid species in the tribe Stenodemini (*Actitocoris signatus* (85), *Mimoceps insignis* (87), *Stenodema trispinosa* (90), *Teratocoris caricis* (91), etc.) and a few other plant bugs (*Mecomma angustatum* (110), *M. gilvipes* (111), *Tytthus pygmaeus* (122)) are typical wet tundra, bog and fen inhabitants

widely distributed in the Yukon. Unlike the Noctuidae (Lepidoptera) discussed by Lafontaine and Wood (1988), most of the terrestrial Heteroptera in the Yukon are not localized and closely tied to a specific habitat. Instead, unless they are monophagous, they are more closely associated with the structural complexity and type of vegetation.

Most of the flat bugs (Aradidae) and many of the plant bugs (Miridae) are generalist conifer inhabitants or associates, and occur wherever coniferous vegetation occurs. Seventy-six percent (22 of 29) of these coniferous heteropteran species occur only in the Boreal Cordillera ecozone, wherein coniferous forests dominate the landscape.

The *Salix*-, *Betula*-, *Alnus*- and *Populus*-feeding Heteroptera occur wherever these trees and shrubs occur, with 78% (18 of 25) of these insect species occurring in both the Taiga Cordillera and the Boreal Cordillera ecozones. Similarly, in the grass/sedge-feeding mirids, 71% of species (17 of 24) occur in both ecozones. However, in the generalist herbaceous plant feeding mirids, only 59% of species (23 of 59) occur in both the Taiga Cordillera and the Boreal Cordillera ecozones.

Members of the lace bug genus *Acalypta* Westwood that feed and breed in mosses (Drake and Lattin 1963), usually in rather dry habitats, are widely distributed both in the Yukon and elsewhere. Records are rather sparse because usually these insects are captured only by pitfall trapping or by moss-extraction techniques. Within the seed bugs (Lygaeidae), which are usually generalist seed feeders and tend to occur wherever these food sources are available or accumulate, 74% of species (14 of 19) occur in both the Taiga Cordillera and Boreal Cordillera ecozones. These seed bugs usually occur in open, dry and disturbed habitats, such as along roadways, where weeds dominate.

The only specific terrestrial habitat in the Yukon that seems to have a characteristic and distinctive unique vegetation and heteropteran fauna is the warm, south-facing slopes along the Yukon River drainage system and other isolated areas in the Territory. The xeric *Artemisia frigida*-grass community that characterizes these slopes (Douglas 1974; Hoefs et al. 1976; Kassler 1979; Stanek 1980) contains a number of rare plant species (Batten et al. 1979), and Pleistocene refugial endemics (Anderson 1984). Among the Heteroptera, *Compsidolon fuscopunctatus* (130), *Europiella artemisiae* (131), *E. decolor* (132), *Geocoris discopterus* (183), *Crophius ramosus* (190), *Aelia americana* (207), *Sciocoris microphthalmus* (212) and *Phimodera binotata* (213) are some of the species especially associated with this habitat and vegetation type.

Feeding Habits

Predators. The aquatic and semiaquatic bugs, which are all predaceous, constitute 7.4% of the Yukon heteropteran fauna (Table 3), slightly less than in the fauna of British Columbia (8.9%) or Canada as a whole (10%). However, terrestrial predatory Heteroptera (including Saldidae) constitute 20.8% of the Yukon bug fauna, compared with 13.8% in British Columbia, and 10.5% for Canada as a whole.

All of the semi-aquatic bugs occur in both the Taiga Cordillera and Boreal Cordillera ecozones, but only half of the aquatic bugs and 42% of the 45 terrestrial predaceous bugs have such a wide distribution. The more restricted distribution of some species in the latter two groups of predators is unlikely to be associated with lack of potential food, as most predaceous bugs are generalist predators. In these insects, restricted distributions most likely stem from either historical biogeographic or other ecological biogeographic factors.

Herbivores. Herbivores dominate the Yukon heteropteran fauna, the 155 species constituting 71.8% of the total (Table 3). The 12 main genera of hostplants for these species are listed in Table 4. The three hosts fed upon by the largest numbers of species of Yukon Heteroptera

TABLE 3. Summary of feeding guild composition of the Heteroptera in the Yukon.

Feeding guild	Number of species	Subtotal	Percent of total species
Predatory		61	28.2
Semiaquatic	4		
Aquatic	12		
Terrestrial	45		
Phytophagous-terrestrial		155	71.8
Conifers	28		
<i>Salix/Betula/Alnus</i>	24		
Herbaceous plants	80		
Grass/Sedge	23		
Total		216	100

are *Salix*, *Pinus* and *Picea*. It is not certain that all records of hosts represent plants that support breeding populations, but it is assumed that plant records for these insects at least represent food hosts.

Most phytophagous Heteroptera are associated with herbaceous plants (Table 3). Most Yukon mirids (40.2%) also are associated with herbaceous plants and shrubs, with the next largest group (23.2%) associated with grasses and sedges. In the Yukon 18.7% of mirid species are associated with coniferous trees, and 17.9% are primarily associated with deciduous trees and shrubs, mostly *Alnus* spp., *Betula* spp. and *Salix* spp. In comparison, the plant bug fauna of the prairies (Kelton 1980), is relatively more associated with herbaceous vegetation (45.6%) and deciduous trees (25.4%) and grasses and sedges (13.6%). These differences in faunistic composition of the phytophagous heteropterans seem to reflect the vegetation difference in the 2 areas, with deciduous tree and herbaceous plant diversity in the Yukon being much less than on the prairies, and with coniferous and grass/sedge habitats dominant in the Yukon.

Polyphagy versus Monophagy. Among the phytophagous Heteroptera in the Yukon, polyphagous species far outnumber monophagous species (Table 5). This dominance of polyphagy may explain why most such species are quite widely distributed in the Territory.

Although many heteropteran species have been collected on only one plant species in the Yukon, this does not necessarily indicate that they are really monophagous. Only when data from elsewhere suggest that only one host plant species is involved can monophagy be

TABLE 4. The 12 genera of host plants fed upon by the largest numbers of species of Heteroptera in the Yukon.

Hostplant genus	Number of Yukon species recorded from that hostplant genus
<i>Salix</i>	33
<i>Pinus</i>	19
<i>Picea</i>	18
<i>Betula</i>	16
<i>Epilobium</i>	15
<i>Rosa</i>	12
<i>Hedysarum</i>	11
<i>Lupinus</i>	11
<i>Alnus</i>	10
<i>Artemisia</i>	10
<i>Carex</i>	10
<i>Lathyrus</i>	7

TABLE 5. Summary of number of monophagous and polyphagous species in the phytophagous families of Heteroptera in the Yukon.

Family	Number of species	
	Monophagous	Polyphagous
Tingidae	0	4
Miridae	11	94
Aradidae	0	11
Piesmatidae	0	1
Lygaeidae	1	17
Alydidae	0	1
Coreidae	0	1
Rhopalidae	0	2
Acanthosomatidae	0	2
Pentatomidae	0	6
Scutelleridae	0	3
Thyreocoridae	0	1

reasonably assumed. Hence the following are considered as monophagous: *Orthotylus candidatus* (114) on *Populus tremuloides*, *Compsidolon fuscopunctatus* (130) on *Artemisia frigida*, *Plagiognathus laricicola* (138) on *Larix laricina*, *Plagiognathus suffuscipennis* (141) on *Picea glauca*, and *Nysius fuscovittatus* (186) on *Dryas drummondii*.

Largidea shoshonea (44), *Dichroscytus rostratus* (55), *Platylygus luridus* (76), *Phoenococoris rostratus* (135) and *Plagiognathus rolfsi* (140) which occur on *Pinus contorta* are also considered as monophagous in the Yukon because the other plants so far recorded as their hosts do not occur in the flora of the Territory (Cody 1996). In addition, *Platylygus piceicola* (77) on *Picea glauca* and *Labopidea bermani* (106) on *Saussuria angustifolia* are considered monophagous in the Yukon for the same reasons.

Unfortunately, it is not possible to compare the 7.8% monophagy in the phytophagous Heteroptera of the Yukon with percentage monophagy elsewhere. Comparable data have not been summarized in a suitable format. However, many monophagous species are known elsewhere.

Other Selected Features

Wing Polymorphism and Flightlessness. Nowhere in the insect world is wing polymorphism and flightlessness more evident than in the Heteroptera (Schuh and Slater 1995). Loss of flight capability means, in general, a loss of ability to disperse or migrate distances greater than a few hundred metres (Roff 1990).

There are many reasons why heteropterans have lost the ability to fly, but in general, flightlessness is favoured by habitat persistence (Roff 1990). Roff (1990) also supports the hypothesis that successional habitats persist longer at higher elevations and latitudes, and predicts that frequency of flightless species will increase with habitats of greater persistence.

Lindskog (1974) reported an intraspecific increase in the incidence of flightlessness with increasing latitude in the saldida *Saldula saltatoria*, and Sweet (1964a) noted a parallel interspecific increase in the rhyarochromine Lygaeidae. Roff's (1990) own statistical analysis showed a similar intraspecific increase in the Gerridae.

Table 6 summarizes the occurrence of wing polymorphism and flightlessness in the Heteroptera of the Yukon. The 33 species listed represent 15.3% of the total heteropteran fauna. Thus 84.7% of the heteropteran fauna of the Yukon at 60°–70°N is winged, compared to 76.2% for the British Isles at 50°–60°N (Roff 1990). These data do not support the hypothesis of an increase in flightlessness with increasing latitude in the Heteroptera.

TABLE 6. Occurrence of wing polymorphism and flightlessness in Yukon Heteroptera.

Species (Species number)	Flight muscle polymorphism	Male and female aptery	Female microptery	Male and female brachyptery	Female brachyptery
Semiaquatic					
<i>Gerris pingreensis</i> Drake and Hottes (2)		+			
<i>Microvelia buenoi</i> Drake (4)		+			
Aquatic					
<i>Cymatia americana</i> Hussey (15)	+				
Terrestrial					
<i>Dicyphus discrepans</i> Knight (38)				+	
<i>Bothynotus pilosus</i> (Boheman) (43)					+
<i>Actitocoris signatus</i> Reuter (85)					+
<i>Leptopterna ferrugata</i> (Fallén) (86)					+
<i>Mimoceps insignis</i> Uhler (87)					+
<i>Teratocoris caricis</i> Kirkaldy (91)					+
<i>T. paludum</i> Sahlberg (92)					+
<i>T. saundersi</i> Douglas and Scott (93)					+
<i>T. viridis</i> Douglas and Scott (94)					+
<i>Labops chelifera</i> Slater (98)					+
<i>L. tumidifrons</i> Knight (100)					+
<i>L. verae</i> Knight (101)					+
<i>Fieberocapsus flaveolus</i> (Reuter) (105)					+
<i>Labopidea bermani</i> Kerzhner (106)					+
<i>L. nigrisetosa</i> Knight (107)					+
<i>Mecomma angustatum</i> (Uhler) (110)					+
<i>M. gilvipes</i> (Stål) (111)					+
<i>Orectoderus obliquus</i> Uhler (120)			+		
<i>Tytthus pubescens</i> (Knight) (121)					+
<i>Chlamydatus wilkinsoni</i> (Douglas and Scott) (129)				+	
<i>Anthocoris dimorphicus</i> Anderson and Kelton (151)				+	
<i>Xylocoris</i> sp. near <i>pilipes</i> Kelton (163)				+	
<i>Nabicula flavomarginata</i> (Scholtz) (165)				+	
<i>N. nigrovittata nearctica</i> Kerzhner (166)				+	
<i>Nabis inscriptus</i> (Kirby) (168)				+	
<i>Pagasa fusca</i> (Stein) (169)				+	
<i>Geocoris discopterus</i> Stål (183)				+	
<i>G. howardi</i> Montandon (184)				+	
<i>Kolenetrus plenus</i> (Distant) (196)				+	
<i>Slaterobius insignis</i> (Uhler) (199)				+	

In the semiaquatic bugs, two species, *Gerris pingreensis* (2) and *Microvelia buenoi* (4), exhibit wing polymorphism in both sexes in the Yukon, just as they do elsewhere. *Gerris buenoi* (1) is not included in Table 6, because all *G. buenoi* collected to date in the Yukon were macropterous, although this species is seasonally polymorphic elsewhere (Scudder 1987; Fairbairn and Desranleau 1987; Fairbairn and Butler 1990).

Flight muscle histolysis in macropterous morphs, associated with reproduction in the spring and early summer, has been reported in *G. buenoi* (Fairbairn and Desranleau 1987), but this was not examined in Yukon specimens. Flight muscle histolysis is rare in *Lim-*

noporus dissortis Drake and Harris (Fairbairn and Desranleau 1987), and is probably also rare in *L. rufoscutellatus* (3).

In *G. pingreensis* (2) 11.6% of specimens collected (31 of 267) were macropterous morphs, occurring throughout the Yukon in June, July and August, usually in populations dominated by apterous morphs. *G. pingreensis* is a bivoltine species in British Columbia (Spence and Scudder 1980; Scudder 1987), and like other bivoltine species of *Gerris*, shows wing polymorphism in the summer (non-diapausing) generation that arises from overwintering adults (Fairbairn and Desranleau 1987; Fairbairn and Butler 1990).

The advantage of the flying morph in securing the dispersal of the species is clear, and in the apterous morph it seems that the time to commencement of reproduction may be shortened (Andersen 1982), but other factors such as habitat stability and population densities influence wing polymorphism in *Gerris*. The frequency of macroptery does not appear to be influenced by temperature in either *G. buenoi* or *G. pingreensis* (Spence and Andersen 1994). The fact that all *G. buenoi* in the Yukon are macropterous is likely the result of local strategies for survival, but these have not been investigated in detail.

In the genus *Microvelia*, it has been shown that short-winged morphs are more fecund than long-winged females (Muraji and Nakasuji 1988). In Yukon collections of *M. buenoi* (4) only 1.5% of individuals (1 of 67) were macropterous. In British Columbia populations of this species, about the same percentage of macropterous individuals is found. *M. buenoi* occurs at the edges of ponds, and along the more stagnant areas of streams, and aerial dispersal does not seem to be a major strategy in this species. However, the incidence of the alate morph increases proportionally in *Microvelia* species as the distribution approaches the tropics, and this increase is considered to be related to the more temporary water sources usually associated with these areas (Smith 1980).

Four ground-dwelling lygaeids, *Geocoris discopterus* (183), *G. howardi* (184), *Kolenetrus plenus* (196) and *Slaterobius insignis* (199), are wing polymorphic, with brachypterous morphs predominant in both males and females. In *S. insignis*, 0.3% of Yukon specimens (1 of 335) were macropterous, about the same frequency as in British Columbia. *G. discopterus* and *G. howardi* were almost always brachypterous in the Yukon, but Readio and Sweet (1982) reported 92% brachyptery in the former and 72% brachyptery in the latter in eastern North America.

Slater (1977) has noted that flightlessness in the Lygaeidae is believed to be related primarily to habitat stability, and is restricted to ground-litter living (geophile), and grass or sedge leaf-sheath living (laminophile) species. Most of the geophiles feed exclusively or almost exclusively upon mature, fallen seeds, and probably never leave the ground except to fly to new food sources (Slater 1977). The seed-feeding lygaeid *Scolopostethus thomsoni* (192), which is wing polymorphic in both the Palaearctic and Nearctic regions, is not included in Table 6, because the single specimen collected in the Yukon was macropterous.

The majority of species listed in Table 6 show flightlessness only in the female. Many of these species are ground-dwelling forms, and in some of them the flightlessness is associated with myrmecomorphy (see below). Roff (1990) has noted that because females invest more energy in eggs than males do in sperm, it is perhaps not surprising to find that flightlessness is most frequently found in the female sex, males retaining flight to locate mates.

Roff (1990) also points out that several workers have suggested that because flight can be directly inhibited by cold temperatures, energy invested in wings and flight muscles may be wasted in cold regions, such as high latitudes and elevations, and hence selection will favour the evolution of flightlessness in these areas. Roff (1990) considers this hypothesis

unlikely, because in many species only the female is flightless, and flightlessness occurs across regions in which either low temperatures do not occur, or the species matures at a time when individuals would not experience temperatures that might inhibit flight. Certainly, most of the species with flightless females in the Yukon also show this polymorphism elsewhere, throughout their range in the south.

Flight-muscle polymorphism is reported in Corixidae and is associated with habitat stability and environmental productivity (Young 1965; Scudder 1987). Such flight-muscle polymorphism is not recorded in univoltine species, or in species adapted to living in temporary habitats (Scudder 1987). Ten of the 11 species of Corixidae found in the Yukon have no flight muscle polymorphism, but *Cymatia americana* (15) has both flying and non-flying morphs. *Cymatia americana* occurs in marshes, permanent freshwater ponds and lakes, moderately saline lakes and lotic environments (Lancaster and Scudder 1987; Scudder 1987). It appears to be confined to the more southern Boreal Cordillera ecozone. *Cymatia americana* does not inhabit temporary freshwater ponds, and so may not have adapted to living in some of the more northern habitats. Several of the other corixids that occur in the Taiga Cordillera ecozone are inhabitants of temporary lentic waters.

Myrmecomorphy. Many species of Heteroptera resemble ants through convergence in morphological, behavioural, chemical or textural characters (McIver and Stonedahl 1993). The adaptive significance of this convergence is usually explained in terms of aggressive mimicry or Batesian mimicry, but for the most part this explanation is supported by only circumstantial evidence. However, research on several species of sympatric predators and the plant bug *Coquillettia insignis* Uhler has produced convincing evidence for the effectiveness of myrmecomorphy as an antipredator defense (McIver 1987).

McIver and Stonedahl (1993) point out that myrmecomorphic arthropods are found in all major regions of the world except Antarctica and the extreme northern Holarctic region, and that the total number of myrmecomorphic species increases towards the tropics. In the Yukon, 10 species of Heteroptera can be listed as myrmecomorphic (Table 7).

In the plant bugs *Mimoceps insignis* (87), *Mecomma angustatum* (110), *M. gilvipes* (111), and *Orectoderus obliquus* (120) myrmecomorphy is confined to immatures and the brachypterous females. However, in the mirids *Pilophorus americanus* (147), *P. diffusus* (148) and *P. vicarius* (149), the nabid *Pagasa fusca* (169), the lygaeid *Slaterobius insignis* (199) and the alydid *Alydus eurinus* (201), the immatures in particular, and both adult males

TABLE 7. Occurrence of myrmecomorphy in Yukon Heteroptera.

Species (Species number)	Macropterous	Male and female brachypterous	Female brachypterous	Female micropterous
Predaceous				
<i>Pilophorus americanus</i> Popp. (147)	+			
<i>P. diffusus</i> Knight (148)	+			
<i>P. vicarius</i> Popp. (149)	+			
<i>Pagasa fusca</i> (Stein) (169)		+		
Phytophagous				
<i>Mimoceps insignis</i> Uhler (87)			+	
<i>Mecomma angustatum</i> (Uhler) (110)			+	
<i>M. gilvipes</i> (Stål) (111)			+	
<i>Orectoderus obliquus</i> Uhler (120)				+
<i>Slaterobius insignis</i> (Uhler) (199)			+	
<i>Alydus eurinus</i> (Say) (201)	+			

and females to a lesser extent, are ant-like. Nevertheless, the resemblance in these species involves not only morphology, but also behavioural resemblance and pattern mimicry, namely the illusion of an ant-like form produced or enhanced by colour patterns (McIver and Stonedahl 1993).

In the mirid genus *Pilophorus*, wherein there is little sexual dimorphism (Schuh and Schwartz 1988), the myrmecomorphy is an aggressive mimicry. In this predaceous genus, there is a close correlation between the distribution of various species and aphids, including those tended by visually orientating ants, such as species of the *Formica rufa* L.-group (Brindley 1935; Fulton 1918; McIver and Stonedahl 1993). It is widely believed that myrmecomorphy in *Pilophorus* serves as a temporary illusion, allowing the plant bugs to approach and seize their aphid prey (McIver and Stonedahl 1993).

McIver and Stonedahl (1993) consider that the great diversity of ant-like taxa within the Miridae reflects a long shared history with ants, particularly species that forage on plants. Most plant bugs are diurnal, conspicuous, soft-bodied, and palatable, making them easy prey for a variety of visually orientating predators that search plant surfaces. These characteristics would favour the evolution of body shapes corresponding to more hard-bodied and distasteful models (McIver and Stonedahl 1993).

Aposematism. Almost all species in the plant bug genus *Lopidea* display patterns of contrasting red-black or yellow-black colouration, which suggest that these insects are aposematic (Asquith 1991). The two species in the Yukon, *Lopidea dakota* (108) and *L. nigridea sericea* (109), are typical in showing such warning colouration in both immatures and adults.

McIver and Lattin (1990) and McIver and Tempelis (1993) have shown experimentally that *Lopidea nigridea* is distasteful to some visually orientating arthropod predators, and note that this species is more highly aggregated than other syntopic mirid species. McClain (1984) has demonstrated that *L. instabilis* (Reuter) is distasteful to *Anolis* lizards, and contains alkaloids similar to those in its host plants. It thus is likely that both *L. dakota* and *L. nigridea sericea* are protected from predation, but the potential predators in the Yukon have not been determined.

Overview. The ecological information shows that relatively few species of Heteroptera in the Yukon are associated with the northernmost habitats such as tundra, but a characteristic faunal component is associated with warm south-facing slopes. Predators are relatively well represented in the fauna. Most herbivores are polyphagous and are associated with a variety of herbaceous plants, with grasses and sedges, or with dominant northern conifers and shrubs, and hence reflect the regional dominance of certain kinds of vegetation. Species showing winglessness or flight polymorphism are present in the Yukon, as in the same groups elsewhere, but most of the species are fully winged and well able to disperse and there is no evidence that winglessness has been favoured in Yukon Heteroptera. Several species show resemblance to ants (and two species have aposematic colouration), but from current information these traits have a similar frequency in faunas elsewhere.

Geographical Patterns of the Extant Fauna

Table 8 lists the species or subspecies assigned to each of the 14 patterns of geographical distribution (see Materials and Methods) represented within the Yukon Heteroptera. Table 9 lists the numbers and relative proportions of taxa assigned to each pattern. Sample species distributions are illustrated for selected patterns (Figs. 3–6).

TABLE 8. (continued)

	Palearctic and Nearctic						Nearctic								
	H	E-WB	P-EB	P-CN	P-WN	EB	N, B+	N, B-	WN, B+	WN, B-	CN, B+	CN, B-	SA	O	U
134. <i>Phoenicocoris longirostris</i> (Knight)										+					
135. <i>P. rostratus</i> (Knight)								+							
136. <i>Plagiognathus alboradialis</i> Knight								+							
137. <i>P. juscotibialis</i> Knight								+							
138. <i>P. laricola</i> Knight								+							
139. <i>P. obscurus</i> Uhler							+								
140. <i>P. rolfsi</i> Knight															
141. <i>P. suffuscipennis</i> Knight								+							
142. <i>Psallus aethiops</i> (Zett.)	+														
143. <i>P. betuleti</i> (Fallén)	+														
144. <i>P. parshleyi</i> Knight							+								
145. <i>P. salicicola</i> Sch. and Kelt.							+								
146. <i>Psallus</i> sp.															+
Tribe Pilophorini															
147. <i>Pilophorus americanus</i> Popp.										+					
148. <i>P. diffusus</i> Knight															
149. <i>P. vicarius</i> Popp.											+				
Family Anthocoridae															
Subfamily Anthocorinae															
Tribe Anthocorini															
150. <i>Anthocoris antevolens</i> White							+								
151. <i>A. dimorphicus</i> Ander. and Kelton							+								
152. <i>A. musculus</i> (Say)							+								
153. <i>A. tomentosus</i> Péricart										+					
154. <i>Elatophilus pullus</i> Kelton and And.							+								
155. <i>Tetraphleps canadensis</i> Prov.															
156. <i>T. jeratti</i> (Drake and Harris)															
157. <i>T. latipennis</i> Van Duzee															
158. <i>T. pilosipes</i> Kelton and Ander.							+								
159. <i>T. uniformis</i> Patschley							+								
Tribe Oriini															
160. <i>Orius diespeter</i> Herring															
161. <i>O. tristicolor</i> (White)											+				+

Family Rhopalidae				
Subfamily Rhopalinae				
Tribe Rhopalini				
203. <i>Stictopleurus punctiventris</i> (Dallas)	+			+
204. <i>S. viridicatus</i> (Uhler)				
Family Acanthosomatidae				
Subfamily Acanthosomatinae				
205. <i>Elasmosethus interstinctus</i> (L.)		+		
206. <i>Elasmucha lateralis</i> (Say)	+			
Family Pentatomidae				
Subfamily Pentatominae				
Tribe Pentatomini				
207. <i>Aelia americana</i> Dallas	+			
208. <i>Chlorochroa granulosa</i> (Uhler)			+	
209. <i>Codophila remota</i> (Horvath)	+			+
210. <i>Neottiglossa trilineata</i> (Kirby)	+			
211. <i>N. undata</i> (Say)	+			
Tribe Sciocorini				
212. <i>Sciocoris microphthalmus</i> Flor			+	
Family Scutelleridae				
Subfamily Eurygastrinae				
213. <i>Plimodera bimotata</i> (Say)				+
214. <i>Vanduzeeina borealis</i> V.D.			+	
Subfamily Pachycorinae				
215. <i>Homaemus aeneifrons consors</i> (Uhler)			+	
Family Thyreocoridae				
216. <i>Cormelaena nigra</i> Dallas	+			

TABLE 9. Broad habitat associations of the biogeographic elements in the Yukon Heteroptera. Abbreviations as in Table 8 and text.

Habitat	Biogeographic element													Total		
	Palaeartic and Nearctic						Nearctic									
	H	E-WB	P-EB	P-CN	P-WN	EB	N, B+	N, B-	WN, B+	WN, B-	CN, B+	CN, B-	SA		O	U
Semiaquatic species	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	4
Aquatic species	1	0	0	0	1	0	4	2	1	1	0	0	2	0	0	12
Terrestrial species	43	1	6	2	6	2	61	20	12	10	12	11	0	6	8	200
Total	44	1	7	2	7	2	68	22	13	11	12	11	2	6	8	216
Percentage	20.4	0.5	3.2	0.9	3.2	0.9	31.5	10.2	6.0	5.1	5.6	5.1	0.9	2.8	3.7	100

TABLE 10. Feeding guilds of the biogeographic elements in the Yukon Heteroptera. Abbreviations as in Table 8 and text.

Feeding guild	Biogeographic element													Total		
	Palaeartic and Nearctic						Nearctic									
	H	E-WB	P-EB	P-CN	P-WN	EB	N, B+	N, B-	WN, B+	WN, B-	CN, B+	CN, B-	SA		O	U
Predatory	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	4
Semiaquatic	1	0	0	0	1	0	4	2	1	1	0	0	2	0	0	12
Aquatic	11	0	1	1	3	1	13 ¹	2	2	2	3	2	0	3	1	45
Terrestrial																
Phytophagous	1	0	1	0	0	0	7	9	0	2	1	5	0	0	2	28
Conifers																
<i>Salix/Betula/Alnus/</i>																
<i>Populus</i>	8	0	1	0	0	0	9	3	0	0	0	0	0	0	3	24
Herbaceous vegetation	14	1	2	1	1 ²	0	26	6	8	4	8	4	0	3	2	80
Grass/Sedges	9	0	1	0	2	1	6	0	2	2	0	0	0	0	0	23
Total	44	1	7	2	7	2	68	22	13	11	12	11	2	6	8	216

¹ *Geocoris bullatus* is here listed as predaceous.

² *Calocoris fulvomaculatus* is here listed on general herbaceous vegetation, although it also occurs on *Salix*, and is both phytophagous and predaceous.

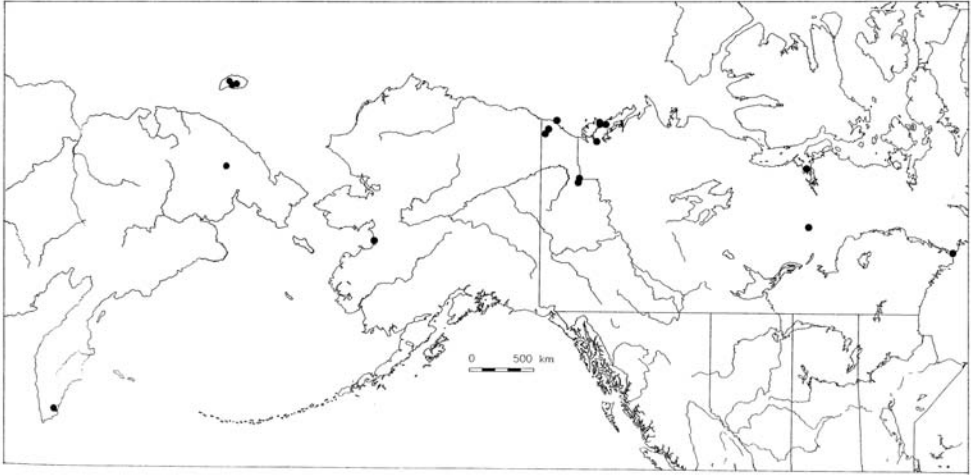


FIG. 3. Distribution of the East-West Beringian mirid *Labopidea bermani* Kerzhner (106).

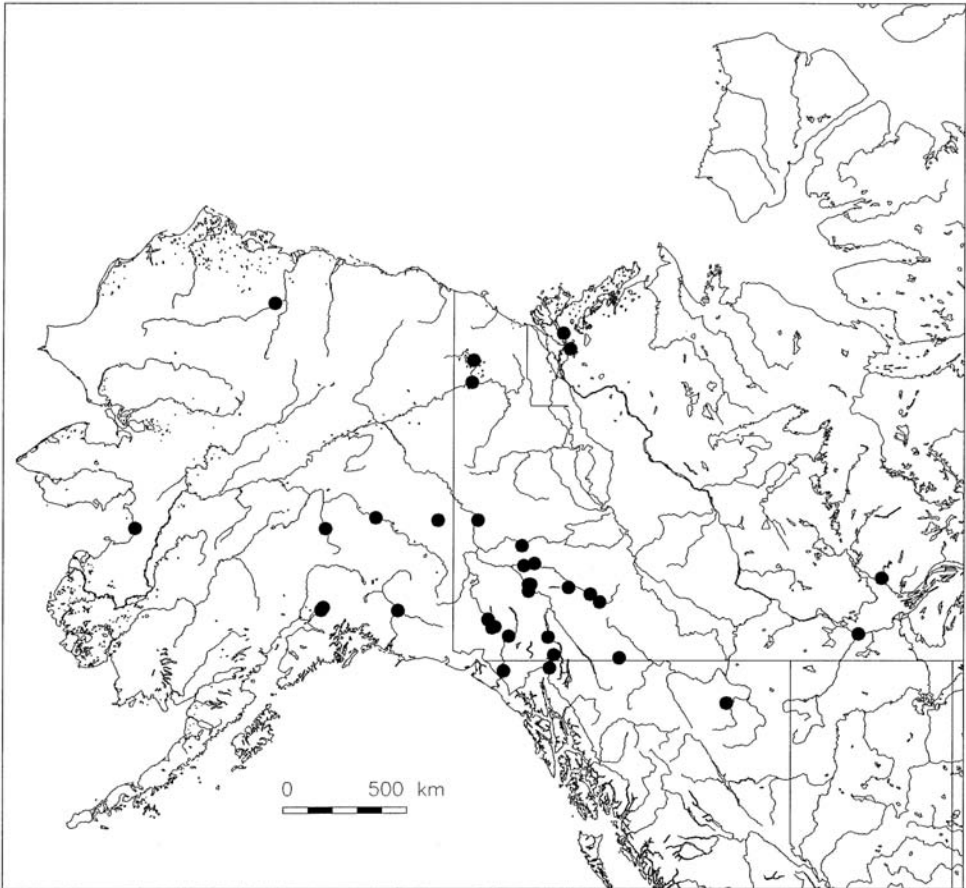


FIG. 4. Distribution of the Palaearctic-East Beringian mirid *Polymerus vulneratus* (Panzer) (81) in the Nearctic region, showing limited extent of spread into the New World.

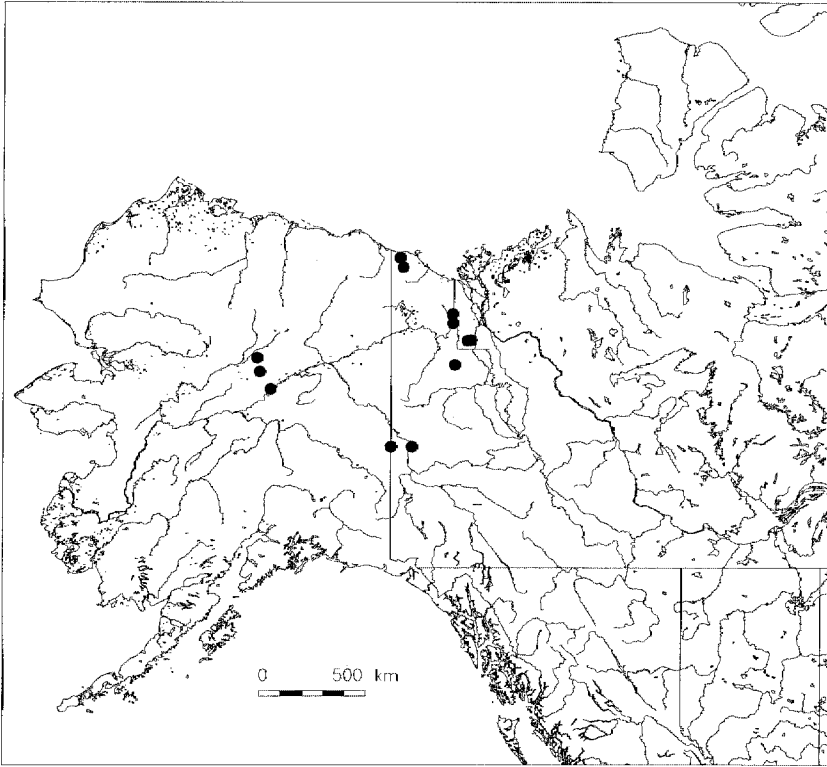


FIG. 5. Distribution of the East Beringian endemic mirid *Labops chelififer* Slater (98).

Palaeartic and Nearctic. Sixty-one species (28.2%) are classed as occurring in both the Palaeartic and Nearctic regions.

Circumboreal or near Circumboreal (H). Forty-four species, representing 20.4% of the Yukon heteropteran fauna, are placed into this category. One aquatic species, the corixid *Glaenocorisa cavifrons* (14), has a circumpolar distribution, confined to the arctic and subarctic areas. The other 43 species are terrestrial.

East-West Beringian (E-WB) (Fig. 3). Only one terrestrial species in the Yukon, the mirid *Labopidea bermani* (106), has this distribution.

Palaeartic-East Beringian (P-EB). Seven species have this distribution with limited spread into the New World (Fig. 4). The distribution of the gerrid *Limnporus rufoscutellatus* (3) has been documented by Andersen and Spence (1992). The occurrence of the ground-dwelling mirid *Bothynotus pilosus* (43) in the Nearctic has been reported by Scudder (1995), and the occurrence and distribution of *Polymerus vulneratus* (81) documented by Schwartz et al. (1991). *Elasmostethus interstinctus* (205) occurs on *Alnus* and was first reported in North America from Alaska by Barber (1932).

Palaeartic-Cordilleran (P-CN). Two terrestrial species, the mirid *Chlamydatius pulicarius* (127) and the nabid *Nabis inscriptus* (168), are considered to fall into this category.

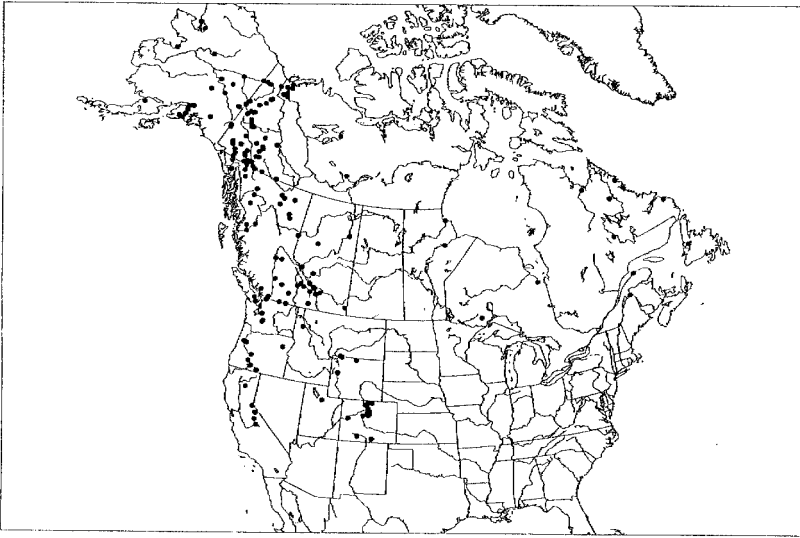


FIG. 6. Distribution of the Nearctic including Beringian mirid *Salignus tahoensis* Knight (82) (from Schwartz 1994).

Palaeartic-Western Nearctic (P-WN). One aquatic species, the corixid *Callicorixa producta noorvikensis* (10), and 6 terrestrial species, constituting 3.3% of the Yukon heteropteran fauna occur in the Palaeartic region and in the Nearctic are confined to Western North America.

Nearctic. One hundred and forty-one species (65.3%) are classed as Nearctic.

East Beringian (EB) (Fig. 5). Only 2 terrestrial species are endemic to East Beringia, namely the saldid *Macrosaldula monae* (26) and the mirid *Labops chelifera* (98). The latter was collected in tundra habitats on *Carex*.

Nearctic including Beringian (N, B+) (Fig. 6). Sixty-eight species representing 31.5% of the Yukon heteropteran fauna are placed in this category. All of these are Nearctic species that occur in the unglaciated parts of the Yukon and/or Alaska. Semiaquatic, aquatic and terrestrial species are represented in this group.

Nearctic excluding Beringia (N, B-). Twenty-two species, constituting 10.2% of the heteropteran fauna, are placed into this category. None of the species listed in this category have so far been collected in the unglaciated areas of northwestern North America. Semiaquatic, aquatic and terrestrial species are included.

Western Nearctic including Beringian (WN, B+). Thirteen species or subspecies of Heteroptera, representing 6.0% of the fauna, are placed into this category. No semiaquatic species occur in this group.

Western Nearctic excluding Beringia (WN, B-). Eleven species, constituting 5.1% of the Yukon heteropteran fauna, are placed into this category. All are terrestrial except for *Notonecta kirbyi* (16), the single notonectid in the Yukon.

Cordilleran including Beringian (CN, B+). Twelve terrestrial species, constituting 5.6% of the heteropteran fauna, are Cordilleran species that occur in unglaciated parts of the Yukon.

Cordilleran excluding Beringia (CN, B-). Eleven terrestrial species, constituting 5.1% of the heteropteran fauna, are Cordilleran species which so far have not been collected in the parts of the Yukon that were unglaciated.

Subarctic (SA). Two aquatic species, the corixids *Arctocoris chanceae* (5) and *A. planifrons* (6), are confined to the subarctic areas of the New World.

Species with other distributions (O). Six terrestrial species, constituting 2.8% of the Yukon heteropteran fauna, are Nearctic species with recorded occurrence also in other zoogeographic regions, chiefly southward in the Neotropical region. One species, the tingid *Acalypta cooleyi* (34), also occurs in Asia.

Species that occur naturally in both Palaearctic and Nearctic regions constitute 1.9% (37 of 1930 species) of the mirid fauna of North America as a whole (Wheeler and Henry 1992), 8.6% (27 of 314 species) of the mirid fauna of the prairies (Kelton 1980), but 29.5% (33 of 112 species) in the Yukon Miridae. None of the mirids in the Yukon are among the introduced or adventive species considered by Wheeler and Henry (1992).

In the whole of the Heteroptera of the Yukon, 28.6% (61 of 213 species) occur in both Palaearctic and Nearctic regions. Such a high frequency is typical of arctic and cool temperate regions in North America (Ross 1953; Scudder 1979). Sailer (1978) suggested that 80% of the Alaskan Hemiptera are of Old World origin, but I find only 38.6% (61 of 158) of the recorded Alaskan Heteroptera species can be considered as occurring in both the Old and New Worlds.

As noted by Wheeler and Henry (1992) in their consideration of the naturally Holarctic mirids, the Holarctic Heteroptera are transarctic or transboreal while other species show an incomplete Holarctic distribution. In this paper, I identify 5 Palaearctic plus Nearctic zoogeographic elements, namely Circumboreal or near Circumboreal (H), East-West Beringian (E-WB), Palaearctic-East Beringian (P-EB), Palaearctic-Cordilleran (P-CN) and Palaearctic-Western Nearctic (P-WN). The Circumboreal or near Circumboreal element is distributed across Canada east of Manitoba. The other 4 elements show incomplete Circumboreal distributions, in North America not extending east of the 100th meridian. This distinction has been made because it seems likely that these elements each have had a different biogeographic history.

The Circumboreal or near Circumboreal element of 44 species is the largest component among these species. Predators, *Salix/Betula* feeders, herbaceous vegetation feeders and grass/sedge feeders are about equally abundant. The latter are mostly wet-tundra inhabitants. Compared with all the other zoogeographic elements, the Circumboreal or near Circumboreal element has the largest relative representation of the Salicaceae/Betulaceae-feeding guild, namely 8 of 44 species (18.2%). There is only one conifer feeder, *Aradus lugubris* (175).

As suggested by Wheeler and Henry (1992), the Circumboreal or near Circumboreal element, with its extensive Canadian distribution, argues for long-standing New World populations from a circumpolar or circumboreal Tertiary fauna, that must have been subject to Pleistocene migration and post-Pleistocene dispersal. Species in this component of the fauna could well have survived the glacial periods in both Beringian and southern refugia.

That some of these Circumboreal or near Circumboreal species were pre-Pleistocene components of the fauna and survived at least in refugia south of the ice sheets is suggested by the relict populations of several of the mirid species in the western United States (Wheeler and Henry 1992). Polhemus and Polhemus (1988), observing the isolated and disjunct populations of *Labops burmeisteri* (97) in Colorado, suggested that this cold-adapted mirid

had a more southerly distribution during the Pleistocene glaciations, and has now retreated to the refugia of mountain peaks in the south. Likewise, Wheeler and Henry (1992) point out the occurrence of relict populations of *Chlamydatus pullus* (128) in Wyoming, Colorado and New Mexico. Polhemus and Polhemus (1988) also regarded the occurrence of *C. wilkinsoni* (129) among vegetation of alpine tundra above timberline in the mountains of Colorado as evidence that high peaks in the Rocky Mountains have served as refugia for such species that were more widely distributed before at least the last stages of the Pleistocene glaciations.

The same situation applies to 2 of the 7 species that make up the Palaearctic-Western Nearctic element of the Yukon Heteroptera fauna. The possible relict populations of the grass/sedge-inhabiting *Tytthus pubescens* (121) in Colorado (Wheeler and Henry 1992) suggests a pre-Pleistocene component, with survival in both Beringian and southern refugia. Another grass-feeding mirid, *Capsus cinctus* (53) may likewise have survived in these same refugia.

However, the other 5 species in the Palaearctic-Western Nearctic element are confined to western Canada, and evidently do not now occur in the United States south of 49°N. It thus seems likely that these species survived the Pleistocene only in the northern Beringian and adjacent refugia, and since retreat of the ice sheets have only dispersed eastward, but have not spread beyond Hudson Bay. These 5 species are either predators (*Chiloxanthus stellatus* (17), *Calacanthia trybomi* (25), *Callicorixa producta noorvikensis* (10)), or are associated with grasses and sedges (*Actitocoris signatus* (85)). *Calocoris fulvomaculatus* (52) has been collected on a wide variety of trees, shrubs and herbs, where it is both phytophagous and predaceous (Wheeler and Henry 1992).

Unfortunately, fossil remains of Heteroptera are not as common as fossil Coleoptera (Matthews and Telka 1997), and so there is not abundant support for many of the zoogeographic hypotheses that can be developed for Yukon Heteroptera. However, in support of the thesis that at least *Chiloxanthus stellatus* (17) occurred in North America before the Pleistocene and survived in the Beringian refugium through glacial times, Matthews and Telka (1997) record fossil *Chiloxanthus* sp. from the Bluefish exposure dated about 20 000 yr B.P., and fossils of *C. stellatus* from Alaska in the Cape Deceit Formation dated at about 1 ma B.P.

In the Palaearctic-Cordilleran element, *Chlamydatus pulicarius* (127) may likewise have survived only in Beringia, but *Nabis inscriptus* (168) may have survived in northern Beringian as well as in southern refugia, because it now occurs in both Idaho and Colorado.

One Palaearctic-Cordilleran species, the tingid *Derephysia foliacea* (Fallén), although not detected in the extant Yukon fauna, is known from late Wisconsinan deposits in the Bluefish Basin near Old Crow (Matthews and Telka 1997). Currently, it is recorded only from Oregon in the New World (Lattin 1987), so may have survived the Pleistocene in a southern refugium.

Seven species are interpreted as having Palaearctic-East Beringian ranges, and in North America do not extend far beyond the limits of unglaciated eastern Beringia (Fig. 4). Because they do not occur either in eastern Canada or south of central British Columbia, it is suggested that they have not had long-standing pre-Pleistocene populations in the New World. Instead, their present range suggests a later dispersal to the New World with survival in a Beringian refugium in the late Wisconsinan, or even post-Pleistocene dispersal across Beringia. One species in this category, *Limnoporus rufoscutellatus* (3), is semiaquatic and a predator, and the other 6 are terrestrial. Andersen and Spence (1992) believe that the occurrence of *L. rufoscutellatus* in Alaska and northwestern Canada may be the result of post-Pleistocene migration across Beringia. *Bothynotus pilosus* (43) is a ground-dwelling mirid, usually

associated with moss, and collected in root mats of *Polemonium pulcherrimum* in the Yukon (Scudder 1995). The mirid *Teratocoris viridis* (94) is usually found associated with *Carex* spp., while *Polymerus vulneratus* (81) has been collected on a wide range of herbaceous plants, and on *Hedysarum mackenzii*, *Trifolium* and *Betula glandulosa* in the New World (Schwartz et al. 1991). *Deraeocoris punctulatus* (49) is a predator (Vinokurov 1988; Zavodchikova 1974) that occurs on a wide range of herbaceous plants, shrubs and trees, including conifers. The specific conifer hosts of the flat bug *Aradus signaticornis* (178) in the New World are not known, but the acanthosomatid *Elasmostethus interstinctus* (205) is usually associated with *Salix*, alder and aspen (Thomas 1991). Because the vegetation in a late Wisconsinan Beringian refugium was probably a mosaic of tundra types (Baranosky et al. 1987), with upland xeric tundra, dominated by sedges, *Artemisia* and grasses on terraces (Schweger 1982), appropriate habitats for all species of the Palaearctic-East Beringian element were present throughout the late Pleistocene.

The only East-West Beringian species so far detected in the Yukon Heteroptera fauna is the mirid *Labopidea bermani* (106). In the Yukon, this species was collected on *Saussuria angustifolia*, a member of the Asteraceae first described from eastern Siberia and known to have an amphiberingian distribution, and occurring widely in dry places on tundra and in the mountains (Hultén 1968). It is suggested that *L. bermani* had a late dispersal to the New World during Pleistocene time. It is now one of the few dry-tundra Heteroptera.

The 23 species classed as Nearctic excluding Beringia, now occurring in the Yukon south of the Tintina Trench, inhabit areas that were glaciated in the late Pleistocene and now are dominated by coniferous forest. In this element 50% (9 of 18 species) of the phytophagous terrestrial forms (Table 10) are confined to conifers, most usually on White spruce (*Picea glauca*), Jack pine (*Pinus banksiana*) or Larch (*Larix laricina*), although some, such as the mirids *Largidia shoshonea* (44), *Platylygus luridus* (76) and *Phoenicocoris rostratus* (135), have been collected on Lodgepole pine (*Pinus contorta*) in the Yukon.

White spruce, Jack pine and Larch invaded the Yukon from southern refugia (Delcourt and Delcourt 1987). White spruce first appeared in the Tuktoyaktuk Peninsula around 10 000 yr B.P. (Ritchie et al. 1983) and in the central Yukon as early as 9500 yr B.P. (Cwynar and Spear 1995). In the Mackenzie Delta region, the range limit of *Picea glauca* was approximately 25 km north of its modern location just prior to 6000 yr B.P., this northern range limit retreating to its present position between 6000 and 3500 yr B.P., at a time when *Pinus banksiana* advanced to its present northern range limit (MacDonald 1995) apparently aided by forest fires, which were more prevalent ca. 6000 yr B.P. than they are today (Vance et al. 1995). Black spruce (*Picea mariana*) became the dominant tree in the central Yukon between 6500 and 6000 yr B.P., coincidentally with cooling and an increase in Mountain or Green alder (*Alnus crispa* (Act.) Pursh) (Cwynar and Spear 1995).

It thus seems that the Heteroptera on White spruce and other boreal-forest conifers, together with the rest of the Nearctic-excluding-Beringia elements, like many other insects with such a distribution pattern (Noonan 1990), are of southern refugial origin. They have undergone extensive post-Pleistocene dispersal northward, but have not yet invaded the areas that were unglaciated within the Yukon.

A comparable southern refugial origin is suggested for at least some of the 12 species classed as Western Nearctic excluding Beringia and the 11 species classed as Cordilleran excluding Beringia. However, these most likely survived the glacial periods in western or Cordilleran refugia. Almost all of the coniferous species in these 2 elements are associated with Lodgepole pine (*Pinus contorta*). Thus *Deraeocoris diveni* (46), *Phoenicocoris longirostris* (134) and *Pilophorus americanus* (147) (Western Nearctic excluding Beringia), and

Dichroscytus rostratus (55), *Plagiognathus rolfsi* (140) and *Pilophorus diffusus* (148) (Cordilleran excluding Beringia) were collected on *Pinus contorta* in the Yukon. *P. contorta* certainly survived the Pleistocene in southern refugia, and moved north in post-Pleistocene times, entering the Yukon about 5500 yr B.P. (MacDonald and Cwynar 1991; Cwynar and Spear 1995). However, there is genetic evidence that suggests that *P. contorta* also survived in the unglaciated parts of the Yukon (Wheeler and Guries 1982). Such northern refugial populations of *P. contorta* may have allowed some bugs associated with this conifer to have survived also as Beringian disjuncts.

Lopidea nigridea sericea (109) (Western Nearctic excluding Beringia) occurs along the eastern slopes of the Rocky Mountains from Alberta to Colorado, east across the Great Plains to southern Manitoba, with disjunct populations in Alaska-Yukon and western Wisconsin (Asquith 1991). The occurrence of disjuncts in Alaska-Yukon is consistent with a separate Beringian-refugium origin for these populations.

Most of the 67 species classed as Nearctic including Beringian, 12 species classed as Western Nearctic including Beringian and 11 species classed as Cordilleran including Beringian have continuous distributions and seem to have extended their range well into the glaciated and unglaciated Yukon over the past 10 000 years. The coniferous-forest species in these elements, such as *Deraeocoris kennicotti* (47), *Dichroscytus latifrons* (54) and *Pinalitus rostratus* (75) (Nearctic including Beringian), which are usually associated with White spruce, Black spruce and Larch, are evidently of southern refugial origin. Members of the other feeding guilds may also have a southern origin, but without fossils, vegetational history or other data, this cannot be proven.

Salix-feeders occur in the Nearctic-excluding-Beringia and Nearctic-including-Beringian elements, but are absent from the other zoogeographic elements in the Nearctic category (Table 10). The reasons for these differences are not clear.

Nysius fuscovittatus (186) (Cordilleran including Beringian) seems to be exclusively associated with *Dryas drummondii* (Scudder 1986). The latter is a characteristic plant of dry gravelly floodplains, scree slopes and disturbed roadside gravels (Cody 1996), and in the mountains occurs to at least 1100 m (Hultén 1968). Although *D. drummondii* occurs in Alaska and the Rocky Mountains south to northeastern Washington, in the Willowa Mountains of Oregon, Montana and east to the Great Lakes region and the St. Lawrence River (Hitchcock and Cronquist 1973), *Nysius fuscovittatus* has a unicentric distribution confined to Alaska, Yukon, British Columbia and Alberta. Thus this lygaeid may well have survived the late Wisconsinan in unglaciated Beringia and spread south since then.

Xeric grassland communities in the Yukon have a characteristic Heteroptera fauna, dominated by Nearctic-including-Beringian elements. This community, termed "Southern steppe" by Lafontaine and Wood (1988), is dominated by grasses and *Artemisia frigida*, the latter an amphiberingian plant that occurs on dry, steep open slopes and sandy river terraces (Hultén 1968; Cody 1996), but does not occur in the dry tundra (Lafontaine and Wood 1988). This steppe community occurs on south-facing slopes and hillsides in the southern Yukon and adjacent Alaska, and in scattered localities in the northern Yukon (Scudder 1993), as well as in northeastern Russia (Yurtsev 1982). It may represent remnants of an earlier arctic steppe (Kassler 1979) that occurred in a tundra-steppe mosaic over much of central and eastern Beringia in the late Pleistocene (Guthrie 1985, 1990). Although Lafontaine and Wood (1988) suggest that the xeric-steppe-inhabiting noctuid moths have invaded Beringia rather recently from the south, some of the seed-feeding lygaeid Heteroptera instead may have survived the late Pleistocene in a northern Beringian refugium as well as in refugia to the south. Such a scenario is suggested by the fact that species such as *Crophius ramosus*

(190), *Emblethis vicarius* (193), *Kolenetrus plenus* (196) and *Slaterobius insignis* (199) have what appear to be bicentric, tricentric or quadricentric ranges (Scudder 1993). Lattin (1964) also suggests a dual northern-Beringian and southern-refugial origin for the xeric-steppe scutellerid *Vanduzeeina borealis* (214) (Western Nearctic including Beringian). However, none of these Heteroptera survived the late Pleistocene only in Beringia, a scenario demonstrated for some weevils that now occur in these xeric steppe sites in the Yukon (Anderson 1984; Kissinger 1973; Matthews 1977).

Intraspecific molecular studies of the lygaeid *Geocoris bullatus* (182) (Nearctic including Beringian), using a ca. 500 pb fragment from the 3' end of the large (16S) subunit ribosomal RNA mitochondrial gene, shows that Yukon populations differ from the more southern populations in north-central through southern British Columbia, Alberta and Saskatchewan by 3 nucleotide substitutions (D. Mulyk, pers. comm.). This difference shows that the Yukon populations of this species are genetically distinct from the more southern populations. Similar phylogenetically distinct Beringian populations in the widely distributed Nearctic Lake Whitefish (*Coregonus clupeaformis* (Mitchell)) (Salmonidae) have been documented by Bernatchez and Dodson (1991).

Assuming the rate of the gene sequence divergence was 0.01 to 0.15% per million years, it is estimated that the time of divergence of these Yukon and southern populations of *G. bullatus* was 1.6 to 3.3 million years ago. Thus although *G. bullatus* appears to have a continuous distribution in the Nearctic region, and it might be assumed dispersed from a southern refugium in the post-Pleistocene, in actual fact it is composed of 2 distinct genetic components that must have been derived from different refugia. The Yukon populations are evidently of Beringian refugial origin, and have not dispersed far in post-Pleistocene time. In contrast, the southern populations derived from a southern refugium have dispersed extensively and moved into much of the northern area that was glaciated. Whether these 2 genetic stocks are actually contiguous in the north still has to be determined.

Emblethis vicarius (193) and *Kolenetrus plenus* (196), together with 3 predators (*Orius tricolor* (161), *Pagasa fusca* (169), *Scoloposcelis flavicornis* (162)) which have ranges that extend into Central and/or South America today, constitute a Nearctic-Neotropical element in the Yukon Heteroptera fauna. *Kolenetrus plenus* in particular appears to be a Neotropical element that is confined to montane areas farther south (Scudder 1993). A possible Asian element is also present in the form of the tingid *Acalypta cooleyi* (34) which has an Asia-Western Nearctic including Beringian distribution, and occurs on xeric grassland steppe in the Yukon, and in similar sites in southern British Columbia.

Two aquatic predators, the corixids *Arctocoris chanceae* (5) and *A. planifrons* (6), constitute a distinct endemic subarctic element in the Heteroptera fauna of the Yukon. Tundra habitat with arctic and subarctic species was present in eastern North America in early and late Wisconsinan times (ca 70 000–25 000 yr B.P.) (Morgan and Morgan 1980), and south of the ice sheets in the late Wisconsinan (ca 17 000 yr B.P.) (Jacobson et al. 1987; Schwert and Ashworth 1988). However, rapid climatic warming eliminated the tundra habitat and decimated the arctic-alpine fauna south of the ice sheets between 16 700 and 15 300 yr B.P. (Schwert and Ashworth 1988). Thus extant arctic and many subarctic species are assumed to have survived in northern refugia, if not in Beringia. Finally, only 2 Heteroptera species, the predatory saldid *Macrosaldula monae* (26) and the wet-tundra-inhabiting mirid *Labops chelifer* (98), are endemic to East Beringia. The female of the latter species is brachypterous. East Beringian endemic species constitute just 0.9% of the Heteroptera fauna of the Yukon. Thus East Beringian endemism is not a major feature in this insect taxon. It should also be noted that there are no introduced species in the heteropteran fauna of the Yukon.

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Appendix 1. Yukon Localities.

Aishihik, 61°36'N 137°31'W; Aishihik R., Alaska Hwy., 60°51'N 137°31'W; Aishihik Rd., 60°55'N 137°03'W; Aishihik Rd., 2 km N, Alaska Hwy., 60°51'N 137°02'W; Aishihik Rd., 11 km, 60°57'N 137°02'W; Aishihik Rd., 13.5 km N, Alaska Hwy., 61°01'N 137°02'W; Alaska Hwy. km 1044 (mi 649), 60°02'N 129°08'W; Alaska Hwy. km 1096 (mi 681), 60°12'N 129°52'W; Alaska Hwy. km 1134 (mi 707), 60°04'N 130°31'W; Alaska Hwy. km 1138, 60°04'N 130°29'W; Alaska Hwy. km 1265 (mi 786), 60°02'N 132°17'W; Alaska Hwy. km 1365 (mi 848), 60°25'N 133°34'W; Alaska Hwy. km 1381 (mi 858), 60°14'N 133°50'W; Alaska Hwy. km 1394, 60°20'N 134°01'W; Alaska Hwy. km 1445 (mi 898), 60°37'N 134°59'W; Alaska Hwy. km 1450 (mi 901), 60°21'N 134°57'W; Alaska Hwy. km 1492 (mi 927), 60°40'N 135°30'W; Alaska Hwy. km 1500 (mi 932), 60°50'N 135°27'W; Alaska Hwy. km 1511 (mi 939), 60°50'N 135°39'W; Alaska Hwy. km 1522 (mi 946), 60°46'N 136°02'W; Alaska Hwy. km 1543 (mi 959), 60°44'N 136°10'W; Alaska Hwy. km 1546 (mi 961), 60°50'N 136°58'W; Alaska Hwy. km 1548 (mi 962), 60°51'N 136°59'W; Alaska Hwy. km 1600 (mi 994), 60°51'N 137°12'W; Alaska Hwy. km 1611 (mi 1001), 60°53'N 137°13'W; Alaska Hwy. km 1626, 60°47'N 137°26'W; Alaska Hwy. km 1658 (mi 1030), 60°54'N 137°49'W; Alaska Hwy. km 1671, 60°58'N 137°59'W; Alaska Hwy. km 1672, 60°58'N 137°59'W; Alaska Hwy. km 1687 (mi 1048), 61°00'N 138°10'W; Alaska Hwy. km 1688, 61°01'N 138°19'W; Alaska Hwy. km 1708 (mi 1061), 61°05'N 138°31'W; Alaska Hwy. km 1713, 61°02'N 138°30'W; Alaska Hwy. km 1728, 61°09'N 138°35'W; Alaska Hwy. km 1754 (mi 1090), 61°18'N 138°50'W; Alaska Hwy. km 1794 (mi 1115), 61°31'N 139°23'W; Alaska Hwy. km 1801 (mi 1119), 61°34'N 139°24'W; Alaska Hwy. km 1802 (mi 1120), 61°34'N 139°25'W; Alaska Hwy. km 1804 (mi 1121), 61°34'N 139°28'W; Alaska Hwy. km 1828 (mi 1136), 61°37'N 139°37'W; Alaska Hwy. km 1852 (mi 1151), 61°48'N 140°07'W; Alaska Hwy. km 1862, 61°56'N 140°10'W; Alaska Hwy. km 1863, 61°34'N 139°27'W; Alaska Hwy. km 1868, 61°35'N 139°31'W; Alaska Hwy. km 1881, 61°59'N 139°34'W; Alaska Hwy. km 1883 (mi 1170), 60°03'N 140°35'W; Alaska Hwy. km 1885 (mi 1171), 62°02'N 140°35'W; Alaska Hwy. km 1902 (mi 1182), 62°09'N 140°42'W; Alaska Hwy. km 1949, pond N of Snag Cr., 62°28'N 140°51'W; Atlin Rd., at BC/YT border, 60°00'N 133°47'W; Atlin Rd., Hwy. 7, 2 km N BC/YT border, 60°01'N 133°48'W; Atlin Rd. km 4.8 (mi 3), 60°02'N 133°48'W; Bear Cr., Alaska Hwy., 60°48'N 137°40'W; Bear Cr., Dawson, 64°02'N 139°15'W; Beaver Cr., 62°23'N 140°53'W; Benson Cr., 64°11'N 138°33'W; Big Cr., 60°09'N 129°42'W; Black Fox Cr., 68°20'N 138°59'W; Black Fox Cr., 9 km W, 68°04'N 139°45'W; Blackstone R., Dempster Hwy. km 122, 64°52'N 138°16'W; Blackstone R., Dempster Hwy. km 128, 64°55'N 138°17'W; Blackstone R., Dempster Hwy. km 132, 64°57'N 138°15'W; Blackstone R., Dempster Hwy. km 138, 65°00'N 138°11'W; Blackstone R., Dempster Hwy. km 1410, 65°01'N 138°06'W; Blow R., 68°44'N 137°26'W; Bluefish Caves, 67°08'N 140°48'W; Bluefish R., 67°08'N 140°49'W; Bluefish Ridge (1), 701 m (2300 ft), 67°08'N 140°40'W; Bluefish Ridge (2), 732 m (2400 ft), 67°08'N 140°46'W; Bluefish Ridge (3), 607 m (2000 ft), 67°08'N 140°48'W; Bluefish Ridge (4), 67°08'N 140°49'W; Bluefish Ridge (5), 793 m (2600 ft), 67°09'N 140°37'W; Bluefish Ridge (6), 732 m (2400 ft), 67°09'N 140°38'W; Bluefish Ridge (7), 793 m (2600 ft), 67°10'N 140°30'W; Bonanza Cr., 64°03'N 139°25'W; Boundary, 1.5 km E, 64°04'N 140°57'W; Boundary, 5.4 km E, 64°04'N 140°53'W; Boundary, 7.7 km E, 64°05'N 140°50'W; Boundary, 19.8 km E, 64°06'N 140°36'W; Boundary, 20 km E, 64°07'N 140°54'W; Boundary, Hwy. 9 at AK/BC border, 64°41'N 140°59'W; Braeburn Lodge, 61°27'N 135°48'W; Braeburn Lodge, 5 km N, 61°31'N 135°49'W; British Mts., 69°01'N 140°30'W; Burwash Landing, Duke R., 61°21'N 139°09'W; Cadzow L., 67°33'N 139°00'W; Campbell Hwy. km 362, 61°54'N 132°27'W; Campbell Hwy. km 362, 61°54'N 132°27'W; Canol Rd. km 7.7 (mi 11), 60°31'N 133°05'W; Canol Rd. km 222 (mi 138), 61°55'N 132°31'W; Canol Rd. km 406, 62°55'N 130°33'W; Canyon, 60°51'N 137°31'W; Canyon, 7 km N, 60°55'N 137°02'W; Canyon, 14 km N, 60°59'N 137°02'W; Carcross, 60°11'N 134°41'W; Carcross, 1.6 km N, 60°11'N 134°41'W; Carcross, 10 km N on Hwy 2, 60°15'N 134°45'W; Carcross, Spirit L., 60°15'N 134°44'W; Carcross Rd. km 8 (mi 5), 60°33'N 134°53'W; Carcross Rd. km 16 (mi 10), 60°27'N 134°51'W; Carmacks, 62°06'N 136°18'W; Carmacks, 13 km S, 61°55'N 136°10'W; Carmacks, 18 km S, 61°57'N 136°12'W; Carmacks, 24 km E, Campbell Hwy. km 578, 60°07'N 136°39'W; Carmacks, 27 km E, 60°06'N 136°41'W; Carmacks, 30 km E, 62°02'N 135°51'W; Carmacks, 35 km S, 61°50'N 136°04'W; Carmacks Rd. km 90 (mi 56), 61°25'N 135°45'W; Carmacks Rd. km 150 (mi 93), 62°02'N 136°17'W; Champagne, 60°47'N 136°28'W; Chilkat Pass, 151 km (94 mi) from border, 60°03'N 136°52'W; Christmas Cr., 61°00'N 138°14'W; Chuchi L. (2.7 km (1.7 mi) E of east end of lake), 55°11'N 124°16'W; Clear Cr., Klondike Hwy. km 598, 63°48'N 137°26'W; Cornwall Cr., Dempster Hwy. km 439, 66°55'N 136°18'W; Cottonwood Cr., 60°55'N 132°58'W; Cracker Cr., Alaska Hwy. km 1589 (mi 987.4), 60°47'N 136°52'W; Dawson, 64°04'N 139°26'W; Dawson, 5 km N, 64°04'N 139°20'W; Dawson, 5 km W, 64°01'N 139°26'W; Dawson, 5 km SE, 64°01'N 138°24'W; Dawson, 10 km E, 64°03'N 139°31'W; Dawson, 14 km W, 64°15'N 139°56'W; Dawson, 16 km (10 mi) E, 64°02'N 139°14'W; Dawson, 21 km E (13 mi E), 64°01'N 139°07'W; Dawson, 22.5 km E (14 mi E), 64°02'N 139°06'W; Dawson, 31 km E, 64°01'N 138°50'W; Dawson, 34 km N, 64°09'N 139°14'W; Dawson, 37 km E, 63°56'N 138°43'W; Dawson, 40 km E, 64°01'N 138°55'W; Dawson, 46 km W, 64°14'N 140°20'W; Dawson, 83 km SE, 63°45'N 137°55'W; Dawson, 88 km W, 64°05'N 140°58'W; Dawson, Bear Cr., 64°01'N 139°08'W; Dawson, Hunter Cr., 63°47'N 138°34'W; Dawson, Midnight dome, 64°04'N 139°26'W; Dawson Airport, 64°01'N 138°21'W; Dawson Rd. km 56 (mi 35), 61°15'N 135°58'W; Dempster Corner, 1 km W of Jct. Dempster/Klondike Hwys., 63°59'N 138°43'W; Dempster Hwy. km 42, 64°18'N 138°30'W; Dempster Hwy. km 46, 64°20'N 138°25'W; Dempster Hwy. km 50, 64°20'N 138°21'W; Dempster Hwy. km 64, North Klondike R., 64°27'N 138°11'W; Dempster Hwy. km 82 (mi 51), 64°28'N 138°10'W; Dempster Hwy. km 130, 64°57'N 138°15'W; Dempster Hwy. km 140 (mi 87), 65°02'N 138°08'W; Dempster Hwy. km 140.5, 65°02'N 138°08'W; Dempster Hwy. km 141, 65°01'N 138°06'W;

Dempster Hwy. km 170, 65°14'N 138°20'W; Dempster Hwy. km 172, 65°15'N 138°22'W; Dempster Hwy. km 207, 65°25'N 138°15'W; Dempster Hwy. km 216, 65°28'N 138°13'W; Dempster Hwy. km 241 (mi 150), 66°10'N 136°50'W; Dempster Hwy. km 416, 12 km N of Arctic Circle, 66°40'N 136°20'W; Dempster Hwy. km 417, 13 km N of Arctic Circle, 66°41'N 136°20'W; Dempster Hwy. km 434, 66°53'N 136°19'W; Dempster Hwy. km 446, 66°55'N 136°17'W; Dempster Hwy. km 465, 67°02'N 136°12'W; Dempster Hwy. km 467, 67°01'N 136°13'W; Destruction Bay, 61°15'N 138°48'W; Destruction Bay, 10 km S, 61°12'N 138°39'W; Dezadeash L., 60°26'N 137°02'W; Dick Cr., Campbell Hwy., 61°34'N 130°04'W; Dislocation Bay (between Koidern and Destruction Bay), latitude and longitude unknown; Donjek R., 7 km W. on Alaska Hwy., 61°42'N 139°50'W; Donjek R., 7 km S. Alaska Hwy., 61°36'N 139°35'W; Donjek R., 19 km NW on Alaska Hwy., 61°39'N 139°45'W; Donjek R., Alaska Hwy., 60°51'N 139°50'W; Donjek R., Alaska Hwy. 18 km NW, 61°44'N 139°54'W; Donjek R., Alaska Hwy. 30.5 km (19 mi) NW, 61°44'N 139°54'W; Dragon L., 62°38'N 131°20'W; Dragon L., 21 km S, North Canol Rd., 62°23'N 131°37'W; Driftwood R., 67°34'N 138°30'W; Driftwood R., hills to N, 67°56'N 138°15'W; Drury Cr., Campbell Hwy. km 460, 62°12'N 134°18'W; Dry Cr., 62°10'N 140°41'W; Duke R., Alaska Hwy. km 1768, 61°21'N 139°09'W; Duncan Cr., 63°46'N 135°31'W; Duncan Creek Rd., 63°53'N 135°21'W; East Blackstone R., Dempster Hwy. km 92, 64°37'N 138°22'W; East Blackstone R., Dempster Hwy. km 97, 64°40'N 138°23'W; East Blackstone R., Dempster Hwy. km 102, 64°43'N 138°23'W; East Blackstone R., Dempster Hwy. km 104, 64°43'N 138°22'W; East Blackstone R., Dempster Hwy. km 105, 64°44'N 138°21'W; East Blackstone R., Dempster Hwy. km 106, 64°45'N 138°21'W; East Blackstone R., Dempster Hwy. km 108, 64°51'N 138°20'W; East Blackstone R., Dempster Hwy. km 114, 64°48'N 138°20'W; East Blackstone R., Dempster Hwy. km 118, Chapman L., 64°51'N 138°20'W; East Blackstone R., Dempster Hwy. km 119, 65°51'N 138°19'W; Eagle L., Dempster Hwy., 64°12'N 135°32'W; Eagle Plains, 65°47'N 137°47'W; Eagle Plains, Dempster Hwy. km 278, 65°51'N 137°34'W; Eagle Plains, Dempster Hwy. km 321, 66°07'N 137°15'W; Eagle Plains, Dempster Hwy. km 346, 66°15'N 136°56'W; Eagle Plains, Dempster Hwy. km 348, 66°16'N 136°53'W; Eagle Plains, Dempster Hwy. km 371, 66°23'N 136°43'W; Eagle Plains, hilltop, 914–975 m (3000–3200 ft), 65°51'N 137°41'W; Eagle R., Dempster Hwy. km 372, 66°27'N 136°41'W; Eagle R., Dempster Hwy. km 382, 66°27'N 136°43'W; Edith Cr., marsh, Alaska Hwy., 63°48'N 134°44'W; Enger Lks., 62°16'N 140°42'W; Engineer Cr., 65°21'N 138°15'W; Engineer Cr., Dempster Hwy. km 154, 65°04'N 138°15'W; Engineer Cr., Dempster Hwy. km 159.5, 65°05'N 138°20'W; Engineer Cr., Dempster Hwy. km 165, 65°06'N 138°22'W; Engineer Cr., Dempster Hwy. km 170, sulphur springs, 65°14'N 138°20'W; Engineer Cr., Dempster Hwy. km 172, 65°15'N 138°22'W; Engineer Cr., Dempster Hwy. km 174, 65°16'N 138°14'W; Engineer Cr., Dempster Hwy. km 182, 65°16'N 138°16'W; Engineer Cr., Dempster Hwy. km 188, 65°17'N 138°14'W; Engineer Cr., Dempster Hwy. km 194, 65°21'N 138°15'W; Ethel Lake Rd., 63°17'N 136°27'W; Ethel Lake Rd., Klondike Hwy., 63°19'N 136°21'W; Ethel Lake Rd., Klondike Hwy. km 17, 63°19'N 136°21'W; Evelyn Cr., 4 km S, 60°45'N 133°05'W; Finlayson R., “Wolverine Cr.,” 61°35'N 130°09'W; Firth R., British Mts., 69°16'N 139°45'W; Firth R., (locality 1), 69°13'N 140°03'W; Firth R., (locality 2), 69°13'N 140°05'W; Firth R., (locality 3), 69°14'N 140°06'W; Firth R., (locality 4), 69°13'N 140°06'W; Firth R., (locality 5), 68°53'N 140°24'W; Firth R., (locality 6), 69°08'N 140°14'W; Firth R., Sunday Mt., 69°17'N 140°02'W; Fish Cr., (locality 1), 69°27'N 140°23'W; Fish Cr., (locality 2), 69°27'N 140°19'W; Five Finger Rapids, ca. 32 km N, Carmacks, 62°16'N 136°19'W; Flat Cr., 63°57'N 138°37'W; Fox L., 61°14'N 135°27'W; Frog L., 67°30'N 140°17'W; Glacier Cr., Lapie R., 61°48'N 132°36'W; Gold Cr., Canol Rd. km 181, 61°46'N 133°08'W; Grand Forks, Bonanza Cr., 63°55'N 139°20'W; Granville, 63°40'N 138°37'W; Gravel L., 63°48'N 137°53'W; Groundhog Cr., Lapie Pass, 61°38'N 133°04'W; Haggart Creek Rd. mi 2, 63°54'N 136°01'W; Haines Jct., 60°45'N 137°35'W; Haines Jct., 1 km N, 60°45'N 137°31'W; Haines Jct., 8 km N, 60°46'N 137°27'W; Haines Jct., 8 km W, 60°46'N 137°35'W; Haines Jct., 30 km E, 60°41'N 137°32'W; Haines Rd. km 177 (mi 110), 60°17'N 136°59'W; Haines Rd. km 198 (mi 123), 60°24'N 137°04'W; Haines Rd. km 237 (mi 147), 60°43'N 137°25'W; Halfway Lks., Elsa, 63°54'N 135°28'W; Herschel Is., (locality 1), 69°35'N 139°05'W; Herschel Is., (locality 2), 69°34'N 138°52'W; Hopkins L., Aishihik Lake Rd., 13 km N, 61°23'N 137°00'W; Horse Cr., 14 km N of Takhini Hot Springs Rd., 60°52'N 135°38'W; Hunker Creek Rd. km 1.6 (mi 1), 64°05'N 133°20'W; Hunker Rd., Dawson, (precise location not determined); Hunter Cr., 63°47'N 138°34'W; Hunter Creek Rd. km 6.4 (mi 4), 64°00'N 139°04'W; Hyland R., 61°38'N 128°20'W; Iron Cr., 4 km E, 63°10'N 138°50'W; Jackfish Cr., 15 km S, 62°29'N 131°05'W; Jake's Corner, 60°20'N 133°58'W; Jake's Corner, 2 km S, 60°19'N 134°00'W; Jake's Corner, 19.3 km (12 mi) S, 60°20'N 133°05'W; Jake's Corner, 25 km (15.5 mi) S, 60°04'N 133°53'W; Jarvis Cr., backwater, Alaska Hwy. km 1664, 60°57'N 137°53'W; Jarvis Cr., pond N of Alaska Hwy. km 1665, 60°57'N 137°53'W; Jarvis R., 0.4 km (0.25 mi) W, Alaska Hwy. km 1666, 60°56'N 137°53'W; Jenny L., Kluane, 60°30'N 138°22'W; Johnson's Crossing, 60°29'N 133°20'W; Johnson's Crossing, Canol Rd. km 4, 60°30'N 133°15'W; Johnson's Crossing, 10 km NE, 60°31'N 133°13'W; Johnson's Crossing, 16 km (10 mi) N, 60°33'N 133°00'W; Judas Cr., 60°23'N 134°08'W; Keno, 63°59'N 135°19'W; Keno Hill, 63°57'N 135°11'W; Kirkman Cr., 63°00'N 139°23'W; Klokut, 13 km (8 mi) S, 66°27'N 139°39'W; Klondike Hwy. km 460, 62°46'N 136°35'W; Klondike Hwy. km 468, 62°51'N 136°35'W; Klondike Hwy. km 476, 62°57'N 136°31'W; Klondike Hwy. km 562–566, 63°31'N 137°01'W; Klondike Hwy. km 621, Willow Cr., 62°50'N 136°36'W; Klondike Hwy. km 626, 63°47'N 137°46'W; Klondike R., Dempster Hwy. km 42, 64°17'N 138°25'W; Klondike R., Dempster Hwy. km 64, 64°27'N 138°11'W; Klondike R., Dempster Hwy. km 68, 64°29'N 138°25'W; Kluane, 61°21'N 138°23'W; Kluane, 27 km SE, 60°58'N 137°58'W; Kluane, pond opposite Sulphur L., 27 km SE, 60°57'N 137°58'W; Kluane, Sheep Cr., 60°59'N 138°34'W; Kluane Hills, 61°05'N 138°14'W; Kluane L., Alaska Hwy. km 1728 (mi 1074), 61°10'N 138°35'W; Kluane L., Cultus Bay, 61°09'N 138°25'W; Kluane National Park, base of Mt. Wallace, 61°01'N 138°32'W; Kluane National Park, Sheep Creek Rd., 61°01'N 138°37'W; Kluane R., Alaska Hwy. km 1805, 61°36'N 139°32'W; Klusha Cr.,

61°44'N 136°02'W; Koidern, 61°59'N 140°29'W; Koidern, 3.5 km SE, 61°56'N 140°25'W; L. Laberge, 61°11'N 135°12'W; L. Laberge, "Horse Cr.", 60°59'N 135°11'W; LaForce L., 62°41'N 132°20'W; Lake Cr., 61°48'N 140°02'W; Lake Cr., Campground, Alaska Hwy. km 1835, 61°50'N 140°07'W; Lapie Canyon, 61°55'N 132°37'W; Lapie Cr., South Canol Rd. km 218, 61°55'N 132°30'W; Lapie Pass, South Canol Rd. km 174, 61°42'N 133°07'W; Lapie R., at Glacier Cr., 61°48'N 132°36'W; Lapie R., 1 km E on Campbell Hwy., 61°59'N 132°35'W; Lapie R., South Canol Rd. km 176.4, 61°42'N 133°08'W; Lapie R., South Canol Rd. km 179, 61°47'N 133°05'W; Lapie R., South Canol Rd. km 184, 61°48'N 133°04'W; Lewes Cr., 60°21'N 134°46'W; Lewes L., 60°23'N 134°50'W; Little Atlin L., 60°15'N 133°57'W; Little Fox Lks., 61°21'N 135°39'W; Little Hyland R., 61°38'N 128°20'W; Little Salmon L., 62°11'N 134°40'W; Little Salmon L., 35 km E, 62°05'N 135°38'W; Little Salmon R., 62°15'N 135°27'W; Little Salmon R., Campbell Hwy. km 447, 62°11'N 135°00'W; Lone Tree Cr., 60°17'N 132°53'W; Long's Cr., 61°54'N 140°14'W; Long's Cr., 1 km W, Alaska Hwy. km 1860, 61°52'N 140°11'W; Long's Cr., 4 km N, Alaska Hwy. km 1863, 61°53'N 140°11'W; "Loon L.", 60°02'N 127°35'W; Macmillan R., 62°57'N 130°28'W; Macmillan R., Canol Rd. km 401, 62°55'N 130°29'W; Magundy R., Campbell Hwy. km 448, 62°11'N 133°46'W; Magundy Valley, Campbell Hwy. km 450, 62°11'N 133°46'W; Marsh L., 60°31'N 134°20'W; Mason Hill, 67°19'N 137°40'W; Mayo, 63°36'N 135°53'W; Mayo Campground, 63°36'N 135°53'W; Mayo Rd. km 14, 63°28'N 136°22'W; Mayo Rd. km 40 (mi 25), 63°35'N 136°00'W; Mayo Rd. km 66 (mi 41), 63°57'N 135°11'W; Mayo Rd. km 180 (mi 112), 62°16'N 136°20'W; Mayo Rd. km 248 (mi 154), 63°39'N 135°52'W; Mayo Rd. km 354 (mi 220), 63°26'N 136°31'W; Mayo Rd. km 359 (mi 223), 63°36'N 135°53'W; Mayo Rd., Carmacks, km 90 (mi 56), 63°55'N 135°35'W; Mayo Rd., Carmacks km 262 (mi 163), 63°45'N 135°51'W; Mayo Rd., Carmacks km 278 (mi 173), 63°54'N 135°40'W; Mayo Rd., Carmacks km 327 (mi 203), 63°47'N 135°41'W; Mayo Rd., Carmacks, km 354.4 (mi 220.3), 63°53'N 135°21'W; McCabe Cr., 3 km S, 62°30'N 136°31'W; McCabe Cr., 8 km S, 62°29'N 136°40'W; McCabe Cr., Klondike Hwy., 62°32'N 136°46'W; McClintock River Rd. km 6.4 (mi 4), 60°26'N 134°27'W; McClintock River Rd. km 9.6 (mi 6), 60°36'N 134°22'W; McDonald Cr., Watson L., 60°11'N 128°58'W; McDougall Pass, 67°42'N 136°29'W; McQuesten, 63°33'N 137°24'W; McQuesten, 10 km E, 63°40'N 137°36'W; McQuesten, 33 km NW, 63°44'N 137°45'W; McQuesten, 50 km W, 63°18'N 136°40'W; McQuesten R., 63°33'N 137°26'W; McQuesten River Rd. km 30.5 (mi 19), 63°53'N 142°07'W; McRae Cr., 63°46'N 136°11'W; Mendenhall Cr., Alaska Hwy., 60°47'N 136°18'W; Mendenhall R., 60°48'N 136°17'W; Mink Cr., 2 km S, Campbell Hwy. km 286, 61°44'N 131°20'W; Mink Cr., 4 km N, 61°43'N 138°23'W; Mink Cr., 4 km W, 61°43'N 131°23'W; Minto, 62°35'N 136°52'W; Minto, near, 62°35'N 136°50'W; Montagne, 61°47'N 136°01'W; Moose Cr., 63°31'N 137°01'W; Morley R., 60°35'N 132°09'W; Mt. Haldane Rd. km 30.5 (mi 19), 63°53'N 142°07'W; Mt. Skukum, 60°20'N 135°00'W; North Canol Rd. km 406, 62°55'N 130°33'W; Nahanni Range Rd. km 128, 61°38'N 128°20'W; Nahanni Range Rd. km 158, 61°53'N 128°22'W; Nahanni Range Rd., summit, 62°01'N 128°25'W; North Fork Crossing, km 66 (mi 41) Peel Plt. Rd., 64°27'N 138°17'W; North Fork Crossing, km 67.5 (mi 42) Peel Plt. Rd., 64°28'N 138°15'W; North Fork Crossing, km 69 (mi 43) Peel Plt. Rd., 64°29'N 138°15'W; North Fork Pass, 64°31'N 138°13'W; North Fork Pass, Dempster Hwy. km 64, 64°27'N 138°14'W; North Fork Pass, Dempster Hwy. km 73, 64°28'N 138°11'W; North Fork Pass, Dempster Hwy. km 77, 64°33'N 138°14'W; North Fork Pass, Ogilvie Mts., 64°34'N 138°15'W; North Klondike R., Dempster Hwy. km 42, 64°18'N 138°30'W; North Klondike R., Dempster Hwy. km 59, 64°20'N 138°04'W; North Klondike R., Dempster Hwy. km 64, 64°27'N 138°11'W; Ogilvie, 63°34'N 139°45'W; Ogilvie, 12 km N, 63°36'N 139°45'W; Ogilvie R., 65°21'N 138°17'W; Ogilvie R., Dempster Hwy. km 194, 65°21'N 138°15'W; Ogilvie R., Dempster Hwy. km 200, 65°26'N 138°14'W; Ogilvie R., Dempster Hwy. km 206, 65°25'N 138°14'W; Ogilvie R., Dempster Hwy. km 207, 65°26'N 138°14'W; Ogilvie R., Dempster Hwy. km 214, 65°28'N 138°09'W; Ogilvie R., Dempster Hwy. km 217, 65°29'N 138°30'W; Ogilvie R., Dempster Hwy. km 220, 66°31'N 138°15'W; Ogilvie R., Dempster Hwy. km 223, 65°33'N 138°13'W; Ogilvie R., Dempster Hwy. km 236, 65°40'N 138°06'W; Ogilvie R., Dempster Hwy. km 240, 65°42'N 138°06'W; Ogilvie R., Dempster Hwy. km 243, 65°44'N 137°59'W; Ogilvie R., Dempster Hwy. km 293, 65°55'N 137°22'W; Ogilvie R., Elephant Rock, 65°33'N 138°09'W; Old Crow, 67°34'N 139°50'W; Old Crow, 1 km E, 67°34'N 139°52'W; Old Crow, 3.2 km (2 mi) upstream on Porcupine R., 67°34'N 139°46'W; Old Crow, 4 km W on Porcupine R., 67°28'N 139°59'W; Old Crow, 6 km E, 67°34'N 139°41'W; Old Crow, 10 km (mi 6) upstream on Porcupine R., 67°34'N 139°46'W; Old Crow, 16 km WSW on Porcupine R., 67°31'N 140°15'W; Old Crow, 18 km N, 67°18'N 139°54'W; Old Crow, 28 km N, 67°49'N 139°52'W; Old Crow, 35 km WSW, 67°30'N 140°43'W; Old Crow, 48 km (30 mi) E on Porcupine R., 67°37'N 138°45'W; Old Crow Flats, 68°19'N 140°08'W; Old Crow Flats, lake 16 km (10 mi) N of Porcupine R., 67°37'N 139°30'W; Old Crow R., 29 km N, Old Crow, 67°48'N 139°54'W; Orchie L., 3 km N, North Canol Rd., 62°11'N 131°48'W; Otter L., 62°30'N 130°25'W; Peel Plateau, Dempster Hwy. km 505, 67°15'N 138°10'W; Pelly Crossing, 2.2 km N, 62°46'N 136°33'W; Pelly Crossing, 4 km S, 62°45'N 136°35'W; Pelly Crossing, 5 km S, 62°44'N 136°35'W; Pelly Crossing, Klondike Hwy. km 466, 62°49'N 136°34'W; Pelly Crossing, 10 km N, Klondike Hwy. km 476, 62°52'N 136°30'W; Pelly Crossing Upper, 62°49'N 136°35'W; Philip Cr., 68°53'N 138°35'W; Pickhandle L., 61°55'N 140°19'W; Pine Cr., Haines Jct., 60°45'N 137°32'W; Pine L., Alaska Hwy. km 1626, 60°47'N 137°26'W; Porcupine R., 67°28'N 140°34'W; Porcupine R., "Blue Bluffs", 67°38'N 138°38'W; Porcupine R., at Dave Lord Cr., 67°33'N 139°08'W; Porcupine R., at Dave Lord Cr., 67°32'N 139°07'W; Quartz Cr. (Sulfur Creek Rd.), 63°45'N 139°07'W; Quartz Creek Rd. km 1.6 (mi 1), 63°47'N 139°05'W; Quiet L., South Canol Rd., 61°08'N 135°03'W; Rampart House, 67°25'N 140°59'W; Rancharia, 60°05'N 130°36'W; Rancharia, 7 km E, 60°04'N 130°29'W; Richardson Mts., 13 km N Arctic Circle, 66°40'N 136°18'W; Richardson Mts., Dempster Hwy. km 400, 66°33'N 136°25'W; Richardson Mts., Dempster Hwy. km 404 Arctic Circle, 66°33'N 136°20'W; Richardson Mts., Dempster Hwy. km 408, 66°44'N 136°23'W; Richardson Mts., Dempster Hwy. km 409, 66°37'N 136°20'W; Richardson Mts.,

Dempster Hwy. km 415, 66°39'N 136°20'W; Richardson Mts., Dempster Hwy. km 416, 12 km N of Arctic Circle, 66°40'N 136°20'W; Richardson Mts., Dempster Hwy. km 443, 66°58'N 136°18'W; Richardson Mts., Dempster Hwy. km 443, west slope, 66°53'N 136°18'W; Richardson Mts., Dempster Hwy. km 449, 66°46'N 136°24'W; Richardson Mts., Dempster Hwy. km 458, 66°58'N 136°14'W; Richthofen Cr., 60°08'N 135°21'W; Rock R., Dempster Hwy. km 440, 66°55'N 136°18'W; Rose L., 61°35'N 133°05'W; Rose L., 15 km S, South Canol Rd., 61°27'N 133°06'W; Rose R., km 122, South Canol Rd., 61°16'N 133°02'W; Ross R., 61°56'N 132°50'W; Ross R., 6 km S, North Canol Rd., 61°56'N 132°29'W; Ross R., 8 km S, North Canol Rd., 61°55'N 132°28'W; Ross R., 9 km S, 61°54'N 132°25'W; Ross R., 12 km SSW, 61°50'N 132°31'W; Ross R., 14.5 km (9 mi) NE, 62°01'N 132°08'W; Ross R., 17 km S, 61°50'N 132°15'W; Ross R., 21 km (13 mi) NE, 62°01'N 132°06'W; Ross R. valley, Canol Rd. km 291, 62°16'N 131°45'W; South Canol Rd. km 39, 60°44'N 133°05'W; South Canol Rd., Lapie Pass, km 174, 61°41'N 133°07'W; South Canol Rd., Lapie Cr., km 218, 61°54'N 132°36'W; Sakiw Cr., Alaska Hwy. km 1787, 61°29'N 139°16'W; Sheep Cr., 69°10'N 140°18'W; Sheep Creek Rd., Alaska Hwy. km 1706, 60°59'N 138°34'W; Sheep Mt., Kluane National Park, 60°59'N 140°32'W; Sheldon Cr., 61°03'N 134°13'W; Sheldon L., 62°54'N 131°37'W; Sheldon L., 62°41'N 131°05'W; "Sheldon Pass", 62°44'N 131°01'W; Shingle Pt., 68°59'N 137°22'W; Silver City, 61°02'N 138°23'W; Silver Cr., 61°01'N 138°24'W; Simpson L., 60°43'N 129°14'W; Sixty Mile R., near Sixty Mile R. along 141° W, 63°54'N 139°59'W; Sixtymile Rd., 64°05'N 140°42'W; Slims R. delta, 60°59'N 138°34'W; Slims R. delta, Kluane, 61°00'N 138°32'W; Snafu Cr., 60°08'N 133°52'W; Snag, 62°24'N 140°22'W; Snag Cr., pond N of Alaska Hwy. km 1949, 62°28'N 140°51'W; Snag Jct., 62°14'N 140°41'W; South Macmillan R., Canol Rd. km 406, 62°58'N 130°15'W; South Macmillan R., Canol Rd. km 410, 63°00'N 130°15'W; South Macmillan Valley, Canol Rd. km 423, 63°04'N 130°08'W; Spruce Cr., 61°07'N 128°23'W; Squanga L., Alaska Hwy. km 1364, 60°26'N 133°35'W; Starr Cr., 61°46'N 131°51'W; Stewart Crossing, 63°22'N 136°40'W; Stewart Crossing, 16 km NW, 63°26'N 136°55'W; Stewart Crossing, 17 km NW, 63°27'N 136°56'W; Stewart Crossing, 18 km N, 63°28'N 136°54'W; Stewart Crossing, 18 km W, 63°28'N 136°57'W; Stewart Crossing, 21 km W, 63°29'N 136°56'W; Stewart Crossing, 24 km S, 63°10'N 136°29'W; Stewart Crossing, 25 km S, 63°11'N 136°29'W; Stewart Crossing, 4.5 km E, 63°28'N 136°36'W; Stewart Crossing, 4.7 km E, 63°28'N 136°36'W; Stewart Crossing, 4.7 km E on Keno Rd., 63°34'N 136°01'W; Stewart Crossing, 6 km NE, 63°24'N 136°41'W; Stewart Crossing, 6 km NW, 63°24'N 136°41'W; Stewart Crossing, 7 km NE, 63°19'N 136°40'W; Stewart Crossing, 9 km NE, 63°25'N 136°39'W; Stonebolt Cr., 12 km N, Klondike Hwy. km 655, 63°56'N 138°27'W; Strawberry Cr., 60°05'N 132°20'W; Sulphur L., Alaska Hwy. km 1672, 60°56'N 137°59'W; "Surf bird knob", hilltop, 68°01'N 136°42'W; Swede Johnson Cr., Alaska Hwy. km 1800, 61°35'N 139°25'W; Swift R., 60°15'N 131°11'W; Swift R., 15 km E, 60°05'N 130°55'W; Swim Lks., 62°13'N 133°00'W; Tack L., 67°29'N 139°31'W; Tack L., 6 km SE, 67°28'N 139°41'W; Tack L., 64 km SE, 67°05'N 138°17'W; Tagish, 60°18'N 134°16'W; Tagish Rd. km 2.1 (mi 1.3) Carcason-Tagish Rd., 60°19'N 134°01'W; Takhanne L., Haines Rd., 60°08'N 135°55'W; Takhanne R., 60°07'N 136°56'W; Takhini, 60°44'N 135°05'W; Takhini, 8 km W, 60°50'N 135°51'W; Takhini, 11.2 km (7 mi) N, 60°53'N 135°38'W; Takhini, 11.2 km (7 mi) W, 60°50'N 135°40'W; Takhini, 14.5 km (9 mi) W, 60°50'N 135°43'W; Takhini Hot Springs, 60°52'N 135°21'W; Takhini R., 60°50'N 135°46'W; Takhini R., 1 km E, 60°50'N 135°45'W; Takhini R., bridge, pond to E, Alaska Hwy. km 1522, 60°46'N 136°02'W; Tarfu Cr., Atlin Rd., 60°06'N 133°53'W; Tatchun, 62°15'N 135°30'W; Tatchun Cr., 62°17'N 136°17'W; Tatchun L., 62°17'N 136°08'W; Tatchun R., Klondike Hwy., 62°21'N 136°15'W; Tenas Cr., 5 km E on North Canol Rd., 62°02'N 132°14'W; Teslin, 60°10'N 132°45'W; Tom Cr., 60°15'N 129°00'W; Tombstone Campground, Dempster Hwy. km 72, 64°31'N 138°13'W; Tombstone Mt. Upper, North Fork Pass, Dempster Hwy., 64°30'N 138°15'W; Trout L., 68°50'N 138°45'W; Trout L., 8 km W, 68°50'N 138°49'W; Tuchtua R., 60°56'N 129°12'W; Tuchtua R., 6 km S on Campbell Hwy., 60°52'N 129°15'W; Twin Lks., 61°42'N 135°54'W; Twin Lks. Campground, 61°42'N 135°54'W; von Wilczek Lks., 62°44'N 136°42'W; von Wilczek Lks., 62°40'N 136°45'W; Wagon Cr., 62°56'N 130°30'W; Watson L., 60°07'N 128°49'W; Watson L., 6 km S, 60°02'N 128°34'W; White Mts., "Erebia Cr.", 67°58'N 136°29'W; White Mts., limestone ridge, 68°01'N 136°42'W; White Mts., "Natazhali Cr.", 67°59'N 136°40'W; White R., Alaska Hwy. km 1881, 61°59'N 139°34'W; Whitehorse, 60°43'N 135°04'W; Whitehorse, Fish L., 60°37'N 135°12'W; Willow Cr., Klondike Hwy. km 621, 62°50'N 136°36'W; "Windy Pass", Dempster Hwy. km 152, 65°04'N 138°05'W; "Windy Pass", Dempster Hwy. km 155, 65°04'N 138°10'W; "Windy Pass", Dempster Hwy. km 159, 65°05'N 138°20'W; Wolf Cr., Whitehorse, 60°37'N 134°55'W; Wright Pass, Dempster Hwy., 67°03'N 136°13'W.

Appendix 2. Alaska Localities.

Anchorage, 61°10'N 150°00'W; Big Delta, 64°10'N 145°55'W; Chicken, 64°04'N 142°00'W; Circle Hot Springs, 65°30'N 144°37'W; College, 64°54'N 147°55'W; Colville, 69°02'N 154°09'W; Cooper Landing, 69°29'N 149°53'W; Dalton Hwy., at Yukon R., 65°55'N 149°45'W; Dalton Hwy. km 159 (mi 99), 66°03'N 150°13'W; Dot L., 63°39'N 144°10'W; Eagle Bluff, on Yukon R., 64°47'N 141°13'W; Fairbanks, 64°50'N 150°15'W; Fairbanks, Ready Bullion Cr., 64°50'N 147°50'W; Fort Yukon, 66°35'N 145°20'W; Gardiner Cr., 62°49'N 141°31'W; Gobbler's Knob, 66°45'N 150°46'W; Hope, 60°55'N 149°45'W; Ketchikan, 55°25'N 131°40'W; Lawing, 60°23'N 149°20'W; McKinley National Park, 63°43'N 148°55'W; Montauk Bluff, 40 mi W of Eagle on Yukon R., 65°07'N 141°28'W; Muncaster Cr., 59°25'N 136°03'W; Naknek, 58°45'N 157°00'W; Richardson Hwy. km 240 (mi 149), 62°32'N 144°31'W; Richardson Hwy. km 507 (mi 315), 64°20'N 146°50'W; Seward, 60°05'N 149°34'W; Shaw Cr., Richardson Hwy. km 465, 64°15'N 146°10'W; Skagway, 59°23'N 135°20'W; Skilak L., 60°25'N 150°20'W; Tanana R., 64°20'N 146°51'W; Tok, 63°20'N 142°59'W; Umiat, 69°25'N 152°20'W; Unalakleet, 63°52'N 160°50'W; White Mts., Elliott Hwy. km 45, 65°12'N 148°10'W; Yeltakaska Cr., 59°26'N 136°08'W.