The Delphacidae of Yukon Territory, Canada
(Homoptera: Fulgoroidea)

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Abstract

Twenty nine species of Delphacidae are recorded from the Yukon Territory, Canada, two additional ones from an adjacent region of Northwest Territories, and one species from coastal Alaska. Two new genera are described: Aschedelphax Wilson and Yakorwdelphax Wilson. Six new species are described: Aschedelphax hochae Wilson, Delphacodes anufrievi Wilson, Javesella lla Wilson, Notodelphax glacia Wilson, and Yukonodelphax kendallae Wilson. Aschedelphax coloradensis (Beamer), Javesella kilmarni (Van Duzees), Yukonodelphax pediforma (Beamer) and Y. straminosa (Beamer) are new combinations. Kusnezoviella muties Anufriev and Emeljanov is a junior synonym of K. macleani Wilson and Delphacodes hyalina Beamer is a junior synonym of Notodelphax albomicrata (Stål).

Of the 32 species included in the study, 18 have a Holarctic distribution - 10 of these are amphi-Beringian. The remaining 14 species are restricted to the Neartic, 5 of these are recorded only from the Yukon and Northwest Territories.

Introduction

Our limited knowledge of the delphacid fauna of far northern environments comes from a number of faunal and revisionary studies. Numerous papers have been published which include information on the Palaeartic fauna (catalogued by Nast 1972, 1979, 1982). Recent summary works on this fauna include those for Great Britain (Le Quesne 1960), Fennoscandia (Ossiannilsson 1978), Estonia (Vilbaste 1971), Mongolia (Dahola 1966, 1966; Emeljanov 1982) and far-eastern Russia (Anufriev and Emeljanov 1988). For the Neartic fauna most records are in scattered species descriptions (e.g., Beamer 1948, 1951), revisions (Scudder 1963, 1964) and the lists of taxa for Quebec and Alberta (Moore 1944, 1950; Strickland 1963). Scudder (1979a) noted that 81 species of delphacids are known from Canada and 40 more are undescribed or unrecorded; he did not provide a list of species.

The delphacid fauna of the far north (above 60°N) is virtually unknown. There are a few published records for the Northwest Territories (Scudder 1963) and none from the Yukon Territory. Wilson (1988) surveyed the delphacid fauna of Alaska and found 15 species in 10 genera. Ten of these Alaskan species also occurred in the Palaeartic. The recent faunal surveys of Mongolia and far-eastern Russia included several species previously thought to be limited to the Neartic (Anufriev and Averkin 1982, Anufriev and Emeljanov 1981, 1988).

The following survey of the Yukon delphacid fauna is based on specimens principally collected by K. Hijdemast, S. G. and R. J. Connings, C. S. Guppy and G. G. E. Scudder. Information provided for each species includes 1) reference to illustrations of the male genitalia and distribution maps, 2) a listing of synonyms, 3) a summary of collecting data for the specimens examined, 4) information on biology, and 5) an overview of the species' distribution. New taxa are described in detail.

Collecting localities provided in Map 1 correspond to locality numbers given under the Yukon distribution of each species. The key for identification is based principally on male specimens. Female specimens were incorporated into the key where possible; those included in the summary for each species were
specimens that had identical collecting data as associated males.

**Key to Species of Yukon Delphacidae**

1. Frons with 2 longitudinal median carinae ........ 2
1'. Frons with 1 longitudinal median carina ........ 5

2(1). Large pits present on frons, thorax, and abdomen; black with partial dorsal longitudinal pale stripe on head and thorax ........................................... 3
2'. Pins absent; light brown, posterior half of pronotum and apices of forewings cream, abdomen brown to black; male genitalia as in Figs. 1 - 3 ........ Crismorphus wilhelmi Anufriev and Averkin

3(2). Male pygofer with one median posteroventral tooth, styles elongate, extending to dorsal one-third of pygofer (Figs. 4 - 6); female mesonotum and forewings black ............................................

4(3). Male pygofer with three median posteroventral teeth or with a posteroventral concavity; styles short, not extending beyond dorsal one-half of pygofer; female mesonotum and forewings brown ......................... 8

4'. Male pygofer with three median posteroventral teeth, genitalia as in Figs. 7 - 9A ............................................. Achorotile acuta Scudder

5(1'). Head, including eyes, much narrower than thorax (in dorsal view, distance between lateral edge of eye and tegula subequal to width of eye); pronotal lateral carinae straight, extending to posterior margin of pronotum; male pygofer with lateral inflamed lobes (Figs. 13 - 16) ............................................. Megomelus firmaus Crawford

5'. Head, including eyes, nearly as wide as thorax; pronotal lateral carinae usually strongly curved laterally, not extending to posterior margin of pronotum; male pygofer without lateral inflamed lobes ............................................ 6

6(5'). Metatibial spur without marginal teeth ........ 7
6'. Metatibial spur with marginal teeth ............ 12

7(6). Distinct pale stripe bordering longitudinal median carinae on notum ............................................. 8
7'. Stripe not present; notum pale with dark markings to solid black ............................................. 10

8(7). Notal median longitudinal pale stripe slightly lighter than rest of notum; aedeagus with elongate slender apical processes (Figs. 19 - 21) ............................................. Notodelphax ischnaunica Anufriev

8'. Notal median longitudinal pale stripe much lighter than rest of notum; aedeagus with small apical teeth (e.g., Figs. 32 - 34) ...................... 9

9(8'). Forewing of brachypter extending to or beyond pygofer, posterior margin concordant; aedeagus with basal 1/4 broadly rounded on dorsal aspect (Fig. 26) .......... Notodelphax albocarinata (Stål)

9'. Forewing of brachypter to fifth abdominal tergite, posterior margin white; aedeagus with basal 1/4 sharply pointed on dorsal aspect (Fig. 28) ............................................. Notodelphax eburneocarinata (Anufriev)

10(7'). Body entirely black; aedeagus as in Figs. 32 - 34 ............................................. Notodelphax glacia Wilson

10'. Body with some pale markings; aedeagus as in Figs. 38 - 40, 43 - 45 ............................................. 11

11(10'). Aedeagus with teeth extending almost one half length of aedeagus (Figs. 38 - 40) .............. Notodelphax umbrotu Emeljanov

11'. Aedeagus with teeth not extending beyond one third length of aedeagus (Figs. 43 - 45) ........ Notodelphax guentheri (Diabola)

12(6'). Distinct pale stripe bordering longitudinal median carinae on notum ............................................. 13

12'. Pale stripe not present (yellow mesonotum may have black markings lateral to lateral carinae), body with brown or pale markings ............... 16

13(12). Male anal tube with spines crossing (Figs. 48, 52) ............................................. 14

13'. Male anal tube with spines parallel or diverging ............................................. 16

14(13). Frons black with yellow carinae; style with outer margin strongly concave in middle (Fig. 51); aedeagus with numerous small teeth on dorsal aspect on left side (Fig. 40) ............................................. Ribautodelphax albostrata (Fleischer)

14'. Frons mottled brown with yellow carinae; style with outer margin broadly convex in middle (Fig. 55); aedeagus with large spine in middle of dorsal aspect (Fig. 54) ............................................. Ribautodelphax pusilla Emeljanov

15(13). Apex of style acute (Fig. 58) .................. Chilocidalkahax magnifrons (Crawford)

15'. Apex of style with irregular teeth (Fig. 51) ........ unkanodes cerasa (Melichar)

16(12). Male pygofer, in caudal view, as long or longer than wide, not appearing to flare outwards posteriorly (e.g., Figs. 17, 63); if styles diverge then not appearing to lay along ventral margin of pygofer (e.g., Figs. 66, 81) ...................... 17

17(16). Frons pale yellow to black, carinae concolorous (at least anteriorly) ........................................ 18

17'. Frons mottled brown to black, carinae strongly contrasting yellow or white .......................... 23

18(17). Male mesonotum yellow with black markings lateral to lateral carinae .......................... 19

19(18). Male mesonotum not as above .......................... 20
19(16). Male pygofer with dorsolateral aspect strongly produced caudally (Figs. 62, 63), anal tube with spines

Aedeagus with blunt venal projection and deep indentation on dorsal aspect (Fig. 114) ..................

Aechedelphax hochae Wilson

10'. Male pygofer with dorsolateral aspect not produced caudally; anal tube without spines ........................

Aedeagus with apex broadly rounded, with numerous teeth (Fig. 119) ............................... Javesella lla Wilson

20(18'). Male pygofer with caudally directed median projection ventral to base of styles (Fig. 70) ....

Aedeagus with apex sharply angled anteroventrally, lacking numerous teeth (Fig. 119) ............................. Javesella beringiaca Emeljanov

20'. Male pygofer without median projection ....... 21

21(20'). Male head and notum black; styles each with dorsally projecting tooth near base on medial aspect (Fig. 76) ......................

Aedeagus with teeth only in apical one half (Fig. 126) ............................... Javesella kilmani (Van Duzee)

22(21'). Apex of style acute (Fig. 81) ......................

Yukonodelphax kendalake Wilson

22'. Apex of style broadly rounded (Fig. 87) ..................

Criomorphus wilhelmi Anufriev and Averkin (Figures 1 - 3, Map 2)

Distribution records for the specimens used in this study are: YUKON TERRITORY: 28, 54, 55; 10 males, 21 females, all brachypters; 1 June - 20 July. Other records are from Anufriev (1972), Anufriev and Averkin (1982), and Wilson (1988).

23(17). Styles with apices converging (Fig. 91) ...........

Kusnezoviella macleani Wilson

23'. Styles with apices diverging (Figs. 94, 98, 103) ..............

Delphacodes dentipennis Beamer

24(23'). Male mesonotum black, apex pale; male genitalia as in Figs. 92 - 94 ..........................

Delphacodes anufricii Wilson

24'. Male mesonotum brown .................. 26

25(24'). Aedeagus curved dorsally (Fig. 96) ..................

Paradelphacodes litoralis (Reuter)

25'. Aedeagus curved ventrally (Fig. 101) ................

Delphacodes emeljanovi Wilson

26(16'). Aedeagus strongly recurved (Fig. 105) ...........

Javesella pellucida (Fabricius)

26'. Aedeagus decurved or straight (e. g., Figs. 108, 111) ........................

Javesella discolor (Boheman)

27(26'). Aedeagus forked (Fig. 108) ........................

Javesella obscurae (Boheman)

27'. Aedeagus not forked ..................... 28

28(27'). Aedeagus much broader in basal one third than near apex (Figs. 111, 114) .................... 29

Aedeagus with acute, toothlike venal projection and broadly curved dorsal aspect (Fig. 111) .............................. Javesella discolor (Boheman)

29(28). Aedeagus with blunt ventral projection and deep indentation on dorsal aspect (Fig. 114) ............................. Javesella simililima (Linnavuori)
Achorotile subarctica Scudder
(Figures 7 - 9, Map 2)

Achorotile (sic) subarctica Scudder 1963:169.

Distribution records for specimens used in this study are: YUKON TERRITORY: 55; ALASKA: Gobbler's Knob, 66°45'N 150°40'W; 2 males, 8 females, all brachypters; 3 - 17 July; ex sedge/grass/cotton grass shrub tundra. Other records are from Anufriev and Emeljanov (1981) and Wilson (1988).

DISTRIBUTION - NEARCTIC: Canada: Alberta, British Columbia, Northwest Territories, Yukon Territory; USA: Alaska; PALAEARCTIC: Mongolia; Russia: Buryat Autonomous Region, Chita, Chukchi Autonomous District, Khabarovsk Territory, Taymyr Autonomous District, Yakut Autonomous Republic.

Achorotile stylata Beamer
(Figures 10 - 12, Map 2)

Achorotile stylata Beamer 1954:147.

Distribution records for specimens used in this study are: YUKON TERRITORY: 4, 5, 22, 64; 5 males, 6 females, all brachypters; 8 June - 31 July. Other records are from Beamer (1954) and Scudder (1963) who recorded this species from Poa proenantis L.

DISTRIBUTION - NEARCTIC: Canada: British Columbia, Yukon Territory; USA: Wyoming.

Megamelus flavus Crawford
(Figures 13 - 15, Map 2)

Megamelus notitus flavus Crawford 1914:609.

Distribution records for the specimens used in this study are: YUKON TERRITORY: 47, 56; 2 males, 4 females; all macropters; 8 - 10 August. Other records are from Wilson (1988).

DISTRIBUTION - NEARCTIC: Canada: Alberta, British Columbia, Manitoba, Northwest Territories, Quebec, Saskatchewan, Yukon Territory; USA: Alaska, Colorado, Wyoming; PALAEARCTIC: Mongolia.
Nothodelphax tshaunica Anufriev  
(Figures 16 - 22, Map 3)

Tyrphodelphax tshaunicus Anufriev 1979:297.  
Nothodelphax tshaunica (Anufriev), Anufriev and Averkin 1982:137.

The distribution record for the specimen used in this study is: YUKON TERRITORY: 55; 1 male brachypter; 20 July. Other records are from Anufriev and Emeljanov (1988).

DISTRIBUTION - NEARCTIC: Canada: Yukon Territory; PALAEARCTIC: Russia: Chukchi Autonomous District, Magadan Region.

Nothodelphax albocarinata (Stål)  
(Figures 23 - 26, Map 3)

Delphax albocarinatus Stål 1858:357.  
Liburnia albocarinata (Stål), J. Sahlberg 1871:426.  
Delphacodes albocarinata (Stål), China 1938:197.


Kirby, W. 1802. Monographia Apum Angliae; or, an attempt to divide into the natural genera and families such species of the Linnean genus Apis as have been discovered in England: with descriptions and observations. Vol. 2. J. Raw, Ipswich, 388 pp., pls. 15-18.


Distribution records for specimens used in this study are: YUKON TERRITORY: 12, 15, 16, 21; 22 male brachypters; 31 May - 20 June. Other records are from Anufriev and Emeljanov (1988).

**Nothodelphax guentheri** (Dlabola)  
(Figures 41 - 47, Map 3)

*Koswigianella (sic) güntheri* Dlabola 1966:444.  
*Nothodelphax guentheri* (Dlabola) Emeljanov 1982:90.  

The distribution record for the specimen used in this study is: YUKON TERRITORY: 52; 1 male brachypter, 29 June. Other records are from Anufriev and Emeljanov (1988).
**DISTRIBUTION - NEARCTIC:** Canada: Yukon Territory; PALAEARCTIC: Mongolia, Russia: Altay Territory, Taymyr Autonomous District.

*Ribautodelphax albostriata* (Fieber)  
(Figures 48 - 51, Map 4)

*Delphax albostriata* Fieber 1866:525.  
*Liburnia albostriata* (Fieber), Fieber 1872:5.  
*Delphaeodes albostriata* (Fieber), Muir and Giffard 1924:25.  
*Ribautodelphax albostriatus* (Fieber), Wagner 1963:176.

Distribution records for specimens used in this study are: YUKON TERRITORY: 27; 33; 39; 7 male brachypters; 26 June - 4 July. Other records are from Vibaste (1971) and Wilson (1968).

**DISTRIBUTION - NEARCTIC:** Canada: Yukon Territory; USA: Alaska; PALAEARCTIC: Austria, Belgium, Cyprus, Czechoslovakia, Denmark, Estonia, Finland, France, East Germany, West Germany, Hungary, Italy, Mongolia, Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, Tunisia, Russia, Yugoslavia.

*Ribautodelphax pusilla* Emeljanov  
(Figures 52 - 55, Map 4)


Distribution records for specimens used in this study are: YUKON TERRITORY: 5, 6, 7, 8, 11, 13, 15, 17, 19, 20, 21, 25, 26, 32, 49, 57, 59, 60, 63; 59 male brachypters, 3 male macropters, 45 female brachypters, 5 female macropters; 29 May - 27 July. Other records are from Anufriev and Emeljanov (1988), Nast (1982) and Wilson (unpublished data).

**DISTRIBUTION - NEARCTIC:** Canada: Yukon Territory USA: Michigan; PALAEARCTIC: Mongolia, Russia: Altay Territory, Chita Region, Khabarovsk Territory, Yukon Autonomous Republic.

*Chilodelphax magnificrons* (Crawford)  
(Figures 56 - 58, Map 4)

*Megamelus magnificrons* Crawford 1914:614.  
*Euryea magnificrons* (Crawford), Muir and Giffard 1924:8.

*Chilodelphax magnificrons* (Crawford), Wilson 1968:337.

Distribution records for specimens used in this study are: YUKON TERRITORY: 5; 14 male brachypters, 12 female brachypters, 1 female macropter; 4 June - 27 July. Other records are from Wilson (1968).

**DISTRIBUTION - NEARCTIC:** Canada: British Columbia, Northwest Territory, Yukon Territory; USA: Alaska, Colorado, Montana, Wyoming.

*Unkanodes excisa* (Melichar)  
(Figures 59 - 61)

*Unkanodes (= Elymodelphax)*, Diabola 1965:86.

This species has been reported from coastal western Alaska (Wilson 1968) and may occur along the north coast of the Yukon Territory. Distribution records are from Anufriev and Emeljanov (1988) and Wilson (1968).

**DISTRIBUTION - NEARCTIC:** USA: Alaska; PALAEARCTIC: Denmark; Finland; Germany; Poland; Russia: Kuril Islands, Yakut Autonomous Republic; Sweden.
Aschedelphax Wilson, new genus

Type species: *Aschedelphax hochae* Wilson

**DESCRIPTION:** Vertex slightly longer than wide, lateral margins almost parallel; lateral, median, and oblique carinae weak, with a concavity between each oblique carina and posterior margin. Frons with lateral margins carinate, almost straight and parallel, slightly convergent posteriorly; median carina distinct, almost obsolete at
point of forking on juncture with vertex. Antennal scape length subequal to width at apex; pedicel ca. 2 X length of scape. Beak extending to mesosternum. Pronotal lateral carinae slightly postemarginally curved, extending across 3/4 of pronotum before becoming obsolete. Mesonotal lateral carinae diverging and extending to posterior margin. Metatibia with apical transverse row of 5 teeth on plantar surface; spur foliaceous, with ca. 15 small marginal teeth, apical tooth very small. Metatarsomere 1 with apical transverse row of 7 teeth (6 + 2) on plantar surface.

Pygofer obliquely subcylindrical, posterodorsal area strongly produced on each side; posterodorsal area curved inwards, bilobed; ventrocaudal margin broadly concave. Diaphragm armature subtriangular in lateral view. Anal tube with pair of elongate, slender ventrally directed acute spines. Styles claviform, Aedeagus directed caudally, straight.

This genus includes two species, *A. coloradensis* (Beamer), new combination and *A. hochae* Wilson, new species. The name genus is in honor of Dr. Manfred Asche's significant contributions to delphacid systematics.

**Aschedelphax hochae** Wilson, new species
(Figures 62 - 66, Map 5)

**HOLOTYPE:** male brachypter with label: "YT. Dawson; 10 km E; 16 vii 1983; G. G. E. Scudder" in the Canadian National Collection, Ottawa; **PARATYPES:** six male brachypters with the following data: Yukon, Dawson 37 km E, 10 km E, 1980, R. J. Cannings; Benson Cr., 64°11'N 138°33'W, 12 July 1983, G. G. E. Scudder; Mile 150, Dempster Hwy., 22 June 1980, R. J. Cannings; McQuesten, 10 km E, 28 June 1980; Dawson, km 690, Klondike Hwy., 3 July 1985, S. G. Cannings; Dawson, Hunker Rd., 6 June 1980, R. J. Cannings; in the University of British Columbia and S. W. Wilson collections.

**DESCRIPTION:** Vertex pale yellow to white. Frons light to dark brown basally, fading to pale yellow to white apically; carinae pale yellow. Clypeus light to dark brown with pale median and lateral carinae. Antennae pale yellow.

Pronotum pale yellow to white, black behind eye lateral to lateral carinae. Mesonotum pale yellow to white, black lateral to lateral carinae; tegula white. Brachypterous forewing hyaline, costal vein white. Legs yellow, spines of terminal tarsomeres black.

Abdomen brown to black, tergites with yellow on midline and lateral margins; eighth abdominal tergite margined with yellow apically; pygofer black with yellow on posterodorsal aspect; anal tube yellow, styles black; diaphragm lateral to aedeagus with white wax.

**MALE GENTALIA:** Pygofer obliquely subcylindrical; in lateral view, posterodorsal area strongly produced on each side, height ca 2X width; in caudal view, strongly produced posterodorsal area curved inwards, bilobed; ventral margin of diaphragm opening slightly concave; diaphragm armature strongly produced and subtriangular in lateral view. Anal tube subcylindrical; two elongate, parallel acute spines extending from dorsocaudal margin. Style wide at base, narrowing apically; spines concave on dorsal aspect. Aedeagus laterally compressed, short, hatchet-shaped; apex with short acute projections on dorsal- and ventroposterior angles; gonopore subapical, ventral.

This species is named in recognition of Dr. Hannalore Hoch's research on planthopper systematics.

Distribution records for the specimens used in this study are: YUKON TERRITORY: 26, 29, 31, 33, 46; 7 male brachypters; 6 June - 16 July.

**DISTRIBUTION - NEARCTIC:** Canada: Yukon Territory.

**Delphacodes campestris** (Van Duzee) (Figures 67 - 69, Map 5)

**Liburnia campestris** Van Duzee 1894:191.

**Delphacodes campestris** (Van Duzee), MuirandGiffard 1924:35.
Distribution records for the specimens used in this study are: YUKON TERRITORY: 15, 19; 15 male brachypters, 8 females, 30 May - 21 July. Other records are from DuBose (1960), Giri et al. (1985) and the S.W. Wilson insect collection.


*Acanthodelphax analis* (Crawford) (Figures 70 - 73, Map 5)

*Megamelus analis* Crawford 1914:620.

*Delphacodes analis* (Crawford), Muir and Giffard 1924:24.


Distribution records for specimens used in this study are: YUKON TERRITORY: 35, 36, 37, 39; 10 male brachypters, 2 female macropters, 9 June - 12 July. Other records are from Wilson (1988).

**DISTRIBUTION - NEARCTIC:** Canada: Alberta, Yukon Territory; USA: Alaska, Illinois, Michigan, Minnesota, New York, North Carolina, Wisconsin

*Delphacodes dentipennis* Beamer (Figure 74-76, Map 6)

*Delphacodes dentipennis* Beamer 1948:103.

The distribution record for the specimen used in this study is: YUKON TERRITORY: 34; 1 male brachypter; 10 June. Other records are from Beamer (1948) and DuBose (1960).

**DISTRIBUTION - NEARCTIC:** Canada: Yukon Territory; USA: Connecticut, North Carolina, Virginia, Wisconsin.

*Yukonodelphax* Wilson, new genus

**TYPE SPECIES:** *Yukonodelphax kendallae* Wilson

**DESCRIPTION:** Vertex slightly longer than wide to subequal in length and width, lateral margins almost parallel; lateral, median, and oblique carinae weak, with a concavity between each oblique carina and posterior margin. Frons with lateral margins carinate, convex, converging posteriorly; median carina distinct, almost obsolete at point of forking; antennae with vertex. Antennal scape length subequal to width at apex; pedicel 2 - 3 X length of scape. Beak extending to metacoxae. Pronotal carinae poorly defined; lateral carinae curving posterolaterally following curvature of eye, becoming obsolete between eye and posterior margin of pronotum. Mesonotal carinae weak; lateral carinae diverging and extending to posterior margin. Metatibia with apical transverse row of 6 teeth on plantar surface; spur foliaceous; with apical tooth very small. Metatarsomere 1 with apical transverse row of 7 teeth (5 + 2) on plantar surface.

Pygofer subcylindrical, ventrocaudal margin excavated. Ornamented diaphragm armature present. Anal tube with large pair of widely separated, elongate, curved, acute spines. Styles diverging, apices blunt. Aedeagus directed caudally, bearing teeth and/or spines.

This genus includes three species: *Y. kendallae* Wilson, new species, *Y. pediforma* (Beamer), new combination, and *Y. stramineosa* (Beamer), new combination.
Delphacodes anufnevi Wilson, new species
(Figures 82 - 87)

HOLOTYPE: male brachypter with label: "Yukon, Alaska Hwy.; km 1671; 1-VI-1979 G G Scudder", in the Canadian National Collection, Ottawa.

DESCRIPTION: Body pale yellow. Light brown infusions on genae, clypeus and on legs. Frontal lateral carinae, slightly convex; median carina forking at juncture with vertex. Brachypterous forewing hyaline; short, not extending to pygofer, light brown. Metatibial spur with 10 lateral small teeth.

MALE GENITALIA: Pygofer subcylindrical; in lateral view, height ca 1.5 X width; ventral margin of diaphragm opening with large thumb-like diaphragm armature, apex of armature granular. Anal tube subcylindrical, two elongate spines extending from dorso-caudal margin posteriorly then curving ventrally near middle. Styles diverging from base, curved inwards near apex such that acute apices are nearly parallel. Aedeagus laterally compressed, recurved; broad at base, abruptly narrowing and curving ventro-posteriorly in basal 1/3; 7 slender spines scattered on dorsal aspect, a slightly oblique row of small teeth (two illustrated) on ventrolateral aspect on left side.

This species is named for my daughter, Kendall.

DISTRIBUTION: NEARCTIC: Canada: Yukon Territory.

Delphacodes campestris (L.)

HOLOTYPE: male brachypter with label: "Yukon, Alaska Hwy.; km 1671; 1-VI-1979 G G Scudder", in the Canadian National Collection, Ottawa.

DESCRIPTION: Body pale yellow. Light brown infusions on genae, clypeus and on legs. Frontal lateral carinae, slightly convex; median carina forking at juncture with vertex. Brachypterous forewing hyaline; short, not extending to pygofer, light brown. Metatibial spur with 10 lateral small teeth.

MALE GENITALIA: Pygofer subcylindrical; in lateral view, height ca 1.5 X width; ventral margin of diaphragm opening thickened, V-shaped. Anal tube subcylindrical, postero-caudal aspect forming a ridge which appears as a rounded process in lateral view; two curved processes extending posteriorly from ventro-caudal margin, each process curved inward near bifurcate apex. Styles diverging, with subequal throughout length, apices broadly convex on dorsal aspect. Aedeagus subcylindrical, twisted on longitudinal axis, nearly straight, club-shaped; gonopore apical on right side; in lateral view, apex wider than base, broadly rounded, with row of 4 visible strong teeth on dorsal aspect and row of 7 visible strong teeth on ventral aspect; in right lateral view, with 1 tooth on dorsal aspect, 6 visible teeth on ventral aspect, right side granulate in apical 1/3 (not illustrated); in ventral view with 1 sub-terminal tooth and a row of 9 visible teeth on left side and a row of 13 visible teeth on right side.

This species is placed in the genus Delphacodes (s.l.) because its affinities are not clear and because of the paucity of material for study. Delphacodes (s.s.) is a well defined genus of 10 western Palaearctic
species (Asche 1985). *Delphacodes* (s. l.), as traditionally recognized by North American researchers, is an obvious paraphyletic and polyphyletic entity which includes 120 North American species (none of which belong in *Delphacodes* (s. s.)). Until such time as the North American species of *Delphacodes* (s. l.) are revised it can serve as a taxon (albeit *incertae sedis*) for placement of problematic species.

This species is named in recognition of Dr. G. A. Anufriev's contributions to the systematics of northern Holarctic delphacids.

The distribution record for the specimen used in this study is: YUKON TERRITORY: 16; 1 male brachypter; 1 June.

**DISTRIBUTION - NEARCTIC:** Canada: Yukon Territory.

*Kusnezoviella macleani* Wilson
(Figures 93 - 91, Map 6)


Distribution records for specimens used in this study are: YUKON TERRITORY: 18, 19, 31, 33, 42, 49, 58, 60; 13 male brachypters, 1 male macropter, 26 female brachypters, 1 female macropter; 30 May - 27 July. Other records are from Anufriev and Emeljanov (1988) and Wilson (1988).

**DISTRIBUTION - NEARCTIC:** Canada: Yukon Territory; USA: Alaska; PALAEOARCTIC: Russia: Khabarovsky Territory, Magadan Region.

*Delphacodes dentis* Beamer
(Figures 92 - 94)

*Delphacodes dentis* Beamer 1948:102.

The distribution record for the specimen used in this study is: NORTHWEST TERRITORY: Aklavik; 1 male brachypter; 9 July. This species was described from Texas, the only previously recorded locality (Beamer 1948). The single specimen from Aklavik is identical in genitalic features to *D. dentis* specimens from Texas but has a slightly wider frons. I tentatively include this species in this study but feel that the specimen upon which it was based may have been mislabeled.

**DISTRIBUTION - NEARCTIC:** Canada: Northwest Territory; USA: Texas.

*Paradelphacodes litoralis* (Reuter)
(Figures 95 - 98, Map 6)

*Delphacodes litoralis* (Reuter), Metcalf 1943:463.
*ParaLiturnia (Struebingianella) litoralis* (Reuter), Leesell 1964:57.
*Struebingianella litoralis* (Reuter), Nast 1972:62.

*Paradelphacodes litoralis* (Reuter), Anufriev 1980: 211.

Distribution records for specimens used in this study are: YUKON TERRITORY: 21, 49; 3 male brachypters; 31 May - 10 July. Other records are from Nast (1972) and a specimen in the Canadian National Collection, Ottawa. This species was recorded from *Heleocharis* and *Phragmites* (Ossiannilsson 1978).

**DISTRIBUTION - NEARCTIC:** Canada: Newfoundland, Yukon Territory, PALAEOARCTIC: Finland; Russia: Buryat Autonomous Republic, Yakut Autonomous Republic; Scotland.
Delphacodes emelianovi Wilson,
new species
(Figures 99 - 103)

HOLOTYPE: male brachypter with label: "YT. Carcross; 21-vii-1987; S.G. Cannings", in the Canadian National Collection, Ottawa.; PARATYPE: male brachypter with the following data: Northwest Territory, Aklavik, 25 July 1931, Bryant, Lot 300, CAS, in the University of British Columbia collection.

DESCRIPTION: Body medium brown. Frons with area between lateral carinae suffused with dark brown to black. Brachypterous forewings hyaline; short, not extending to pygofer. Metatibial spur with ca. 20 lateral teeth. Abdomen reddish brown with black transverse markings.

MALE GENITALIA: Pygofer subcylindrical; in lateral view, height ca. 2.5 X width, with strongly produced, subtriangular diaphragm armature. Anal tube subcylindrical, two short, ventrally curved acute spines extending from dorsocaudal margin. Styles diverging, each narrowing from base to about midway along longitudinal axis at which point shaft of style inflects inward, remainder of shaft subequal in width throughout length; apex obliquely angled. Aedeagus laterally compressed, recurved, broader at base narrowing toward apex; gonopore subapical, on right side; left side with 3 small teeth, right side with 4 small teeth.

This species is placed in the genus Delphacodes (s. l.) for the reasons given under the discussion of D. arnifrievi.

This species is named for Dr. A.F. Emelianov who has contributed much to the study of Palaeartic Hemiptera.

Distribution records for the specimens used in this study are: NORTHWEST TERRITORY: Aklavik; 1 male brachypter; 25 July. YUKON TERRITORY: 9; 1 male brachypter; 21 July.

DISTRIBUTION - NEARCTIC: Canada: Northwest Territory, Yukon Territory.

Javesella pellucida (Fabricius)
(Figures 104 - 106, Map 7)

Fulgora pellucida Fabricius 1794:7.
Delphacodes pellucida (Fabricius), Muir and Giffard 1924:20.
Javesella pellucida (Fabricius), Fennah 1963:15.

Distribution records for specimens used in this study are: ALASKA: Skagway; Paxson, 21 mi N of Mosquito Lake, 59°27'N 136°02'W. NORTHWEST TERRITORY: Aklavik. YUKON TERRITORY: 1, 3, 12, 21, 38, 40, 41, 42, 43, 44, 45, 46, 49, 56, 66 male brachypters; 15 May - 2 August. Other records are from Vilbaste (1971) and Wilson (1988). J. pellucida is a vector of viral pathogens of several cereals (Wilson and O'Brien 1987); studies of the biology of this planthopper were summarized by Mochida and Kisimoto (1971).

DISTRIBUTION - NEARCTIC: Canada: Alberta, Northwest Territory, Yukon Territory; USA: Alaska, Connecticut, Illinois, Maine, Massachusetts, New Hampshire, North Carolina, North Dakota, Oregon; PALAEARCTIC: Algeria, Austria, Belgium, Czechoslovakia, Denmark, Estonia, Finland, France, East Germany, West Germany, Great Britain, Hungary, Iceland, Ireland, Italy, Japan, Libya, Mongolia, Morocco, Netherlands, Norway, Poland, Romania, Russia, Spain, Sweden, Switzerland, Turkey, Yugoslavia.

Javesella obscurella (Bohemian)
(Figures 107 - 109, Map 8)

Delphax obscurella Bohemian 1847:53.
Javesella obscurella (Bohemian), LeQuesne 1964:57.

Distribution records for specimens used in this study are: NORTHWEST TERRITORY: Tukttoyaktuk. YUKON TERRITORY: 51; 3 male brachypters; 11 - 22 July. Other distribution records are from Vilbaste (1971) and Wilson (1988). This species is a vector of viral pathogens of cereals (Wilson and O'Brien 1987).
the biology of it on cereal crops was summarized by Ossiannilsson (1978).

**DISTRIBUTION - NEARCTIC:** Canada: Northwest Territory, Yukon Territory; USA: Alaska; Palaearctic: Austria, Belgium, Bulgaria, Czechoslovakia, Denmark, Estonia, Finland, France, East Germany, West Germany, Great Britain, Hungary, Ireland, Italy, Mongolia, Netherlands, Norway, Poland, Portugal, Romania, Russia, Sweden, Switzerland, Turkey, Yugoslavia.

*Javesella discolor* (Boheman)  
(Figures 110 - 112, Map 8)

Delphax discolor* Boheman 1847:61.  
*Javesella discolor* (Bohemen), LeQuesne 1964:57.

Distribution records for specimens used in this study are: NORTHWEST TERRITORY: Aklavik. YUKON TERRITORY: 21, 36, 37, 40, 41, 52, 53. ALASKA: Paxson, 21 mi; 16 male brachypters, 2 male macropters; 9 June - 22 July. Other records are from Vilbaste (1971) and Wilson (1988). This species has been reported to be a vector of viral pathogens of cereals (Wilson and O'Brien 1987); host plants were summarized by Ossiannilsson (1978).

**DISTRIBUTION - NEARCTIC:** Canada: Northwest Territory, Yukon Territory; USA: Alaska; Palaearctic: Austria, Belgium, Bulgaria, Czechoslovakia, Denmark, Estonia, Finland, France, East Germany, West Germany, Great Britain, Hungary, Ireland, Italy, Mongolia, Netherlands, Norway, Poland, Portugal, Romania, Russia, Sweden, Switzerland.

*Javesella simillima* (Unnavaori)  
(Figures 113 - 115, Map 9)

Cullicypena simillima* Unnavaori 1948:45.  
*Javesella simillima* (Unnavaori), see Wilson 1988:341.

Distribution records for the specimens used in this study are: YUKON TERRITORY: 30, 38, 50, 52, 54; 16 males, 9 females, all brachypters; 24 June - 14 July. Other records are from Anufriev and Emeljanov (1988) and Wilson (1988). This species was reported from *Eriophorum* and *Carex* (Ossiannilsson 1978).

**Javesella lla Wilson, new species**  
(Figure 116-121, Map 9)

**Holotype:** male macropter with label: "YUKON, KOIDERN: 22-VII-1979; G. G. E. Scudder", in the Canadian National Collection, Ottawa.; PARATYPE: male macropter with the same data, in the University of British Columbia collection.

**Description:** Vertex dark brown spot, frons and clypeus black; all with light yellow carinae. Antennal & Gape and base of pedicel dark brown, rest of pedicel yellow. Pronotum pale yellow, area lateral to lateral carinae black. Mesonotum black; tegulae yellow; forewings milky hyaline, oostal vein dark brown. Legs yellow, suffused with brown to black.

**Male genitalia:** Pygofer subcylindrical; in lateral view, globous in shape, height ca 0.9 X width; in caudal view, width ca 1.5 X height, lateral aspects appear to flare outwards; ventral margin of diaphragm opening almost straight to convex in middle, diaphragm armature lacking but region under diaphragm opening slightly produced along midline. Anal tube subcylindrical, two acute slightly curved spines extending from dorso-caudal margin and meeting along inner margins (in holotype, not paratype...
Fig. 117. Styles strongly diverging; each style widest at base, narrowing distally; outer and inner margins sinuous, constricted just before foot-shaped apex. Aedeagus laterally compressed, almost straight; gonopore apical on ventral aspect; apex sharply angled anteromedially, apex subacute dorsally, acute and tooth-like ventrally.

Distribution records for specimens used in this study are: YUKON TERRITORY: 21; 2 male brachypters; 22 July; NEW HAMPSHIRE: Coos Co., Moodie Falls Cpgd., NW Second Connecticut L; 23 July; 2 male macropters; Mt. Washington, Auto Rd., 2700 ft.; 1 July; 1 male macropter.

**Javesella beringiaca** Emeljanov, Anufriev and Emeljanov 1988:421

The distribution record for the specimen used in this study is: YUKON TERRITORY: 36; 1 male brachypter. 11 June. Other records are from Anufriev and Emeljanov (1988). Anufriev and Emeljanov (1988) list this species as *Javesella beringiaca* Emeljanov; no reference is made to it in either Nast (1972, 1979, 1982) or Zoological Record from 1972 to 1988.

**DISTRIBUTION** - NEARCTIC: Canada: Yukon Territory; PALAARCTIC: Kamchatka Region, Magadan Region, Sakhalin Region.

**Javesella kilmani** (Van Duzee) new combination

(Figures 125 - 127, Map 8)


*Delphacodes kilmani* (Van Duzee), Muir and Giffard 1924:35.

Distribution records for specimens used in this study are: YUKONTERRITORY: 2, 19, 23, 29, 61, 62; 9 males, 3 females, all brachypters; 3 June - 19 July. Other records are from DuBose (1960).

**DISTRIBUTION** - NEARCTIC: Canada: Alberta, Quebec, Manitoba, Yukon Territory; USA: Michigan, New Hampshire, North Carolina, New York, Ohio.

Comments on Diversity and Distribution

The Yukon delphacid diversity of 32 species is roughly comparable to that of other far northern areas which have been surveyed. Thirty-six delphacid species have been recorded from Norway, 70 from Sweden, 61 from Finland (Oesten Nilsson 1978) and 64 from Estonia (Vilbaste 1971). These countries each have habitats affected by marine climates and only Finland has no substantial area south of 60° N. The areas of northeastern Russia for which delphacids have been catalogued include Magadan Region with 27 species, Kamchatka Region with 19, Khabarovsk Territory with 30, and Yakut Autonomous Republic with 37 (Anufriev and Emeljanov 1988). Fifteen species were recorded from Alaska (Wilson 1988); however, in light of the results of this study, it is likely that this is an underrepresentation due to lack of extensive collecting especially in southeastern Alaska.

The Yukon delphacid fauna includes species with Holarctic, amphibi-Dearingian, and Nearctic distributions (see Scudder (1979b) for discussion of the categories of Canadian faunistic elements). Seventeen of the 32 Yukon delphacid species are Holarctic. Four of these species (*J. discolor*, *J. obscurula*, *J. pellucida*, *N. albocarinata*) are widely distributed in the Palaearctic and are also found in the northwestern Nearctic.
Three species (J. similima, P. litorolis, R. albostriata) are circumpolar, restricted to a far northern distribution within both the Palaearctic and Nearctic. Ten species (A. subarctica, C. wilhelmi, J. beringiaca, K. maclani, M. flavus, N. cburnocaricata, N. guentheri, N. tschaunica, N. umbra, R. pusilla) have an amphi-Beringian distribution occurring in the northeastern Palaearctic and the western Nearctic. The remaining species have been recorded only from the Nearctic. Four species (A. analis, A. acuta, J. kilmani, J. lla) are boreal and two others (A. stylata, C. magnifrons) are Cordilleran in distribution. One species (D. campestris) is found throughout most of the eastern Nearctic. Another species (D. dentipes) has been reported previously from the eastern Nearctic; its presence in the Yukon may represent a disjunction. Five species (A. hochae, D. anufriev, D. emeljanovi, N. glacia, Y. kendallae), all of them new described, have been recorded only from the Yukon or Northwest Territories. The record of D. dentipes from Northwest Territories is probably accidental as it has been recorded previously only from Texas (Beamer 1948).

Twelve of the 15 Alaskan delphacids (Wilson 1988) are also recorded from the Yukon Territory. Of those not recorded from the Yukon, two species, J. arcana stylia (Beamer) and J. atrata (Osborn), appear to extend only as far north as southeastern Alaska and another, Unkenodes erisia (Melichar), is broadly distributed in the Palaearctic, was found in western Alaska and might occur in the northern Yukon Territory.

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Literature Cited


