University of Nebraska - Lincoln
DigitalCommons@University of Nebraska - Lincoln

Insecta Mundi

Center for Systematic Entomology, Gainesville, Florida

6-1-1992

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

Stephen W. Wilson
Central Missouri State University, swwilson@ucmo.edu

Follow this and additional works at: https://digitalcommons.unl.edu/insectamundi

 Part of the Entomology Commons

Wilson, Stephen W., "The Delphacidae of Yukon Territory, Canada (Homoptera: Fulgoroidea)" (1992). *Insecta Mundi*. 453.
https://digitalcommons.unl.edu/insectamundi/453

This Article is brought to you for free and open access by the Center for Systematic Entomology, Gainesville, Florida at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Insecta Mundi by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

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

Stephen W. Wilson
Department of Biology,
Central Missouri State University,
Warrensburg, MO 64093

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 *Yukonodelphax* Wilson. Six new species are described: *Aschedelphax hochae* Wilson, *Delphacodes anufrievi* Wilson, *D. emeljanovi* Wilson, *Javesella lla* Wilson, *Nothodelphax glacia* Wilson, and *Yukonodelphax kendallae* Wilson. *Aschedelphax coloradensis* (Beamer), *Javesella kilmani* (Van Duzee), *Yukonodelphax pediforma* (Beamer) and *Y. stramineosa* (Beamer) are new combinations. *Kusnezoviella matisi* Anufriev and Emeljanov is a junior synonym of *K. macleani* Wilson and *Delphacodes hyalina* Beamer is a junior synonym of *Nothodelphax albocarinata* (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 Nearctic, 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 Palaearctic fauna (catalogued by Nast 1972, 1979, 1982). Recent summary works on this fauna include those for Great Britain (LeQuesne 1960), Fennoscandia (Ossiannilsson 1978), Estonia (Vilbaste 1971), Mongolia (Dlabola 1965, 1966; Emeljanov 1982) and far-eastern Russia (Anufriev and Emeljanov 1988). For the Nearctic 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 1953). 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 Palaearctic. The recent faunal surveys of Mongolia and far-eastern Russia included several species previously thought to be limited to the Nearctic (Anufriev and Averkin 1982, Anufriev and Emeljanov 1981, 1988).

The following survey of the Yukon delphacid fauna is based on specimens principally collected by E. Bijdemast, S. G. and R. J. Cannings, 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'. Pits absent; light brown, posterior half of pronotum and apices of forewings cream, abdomen brown to black; male genitalia as in Figs. 1 - 3 ..... *Criomorphus 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 ..... *Achorotile acuta* Scudder

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 4

4(3). Male pygofer with three median posteroventral teeth, genitalia as in Figs. 7 - 9A ..... *Achorotile subarctica* Scudder
4'. Male pygofer with a median posteroventral concavity; genitalia as in Figs. 10 - 12 ..... *Achorotile stylata* Beamer

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 inflated lobes (Figs. 13 - 15) ..... *Megamelus flavus* 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 inflated 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) ..... *Nothodelphax tshaunica* 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 concolorous; aedeagus with basal 1/4 broadly rounded on dorsal aspect (Fig. 25) ..... *Nothodelphax albocarinata* (Stål)
9'. Forewing of brachypter extending to fifth abdominal tergite, posterior margin white; aedeagus with basal 1/4 sharply pointed on dorsal aspect (Fig. 28) ..... *Nothodelphax eburneocarinata* (Anufriev)

10(7'). Body entirely black; aedeagus as in Figs. 32 -34 ..... *Nothodelphax glacia* Wilson
10'. Body with some pale markings; aedeagus as in Figs. 38 - 40, 43 - 45 11

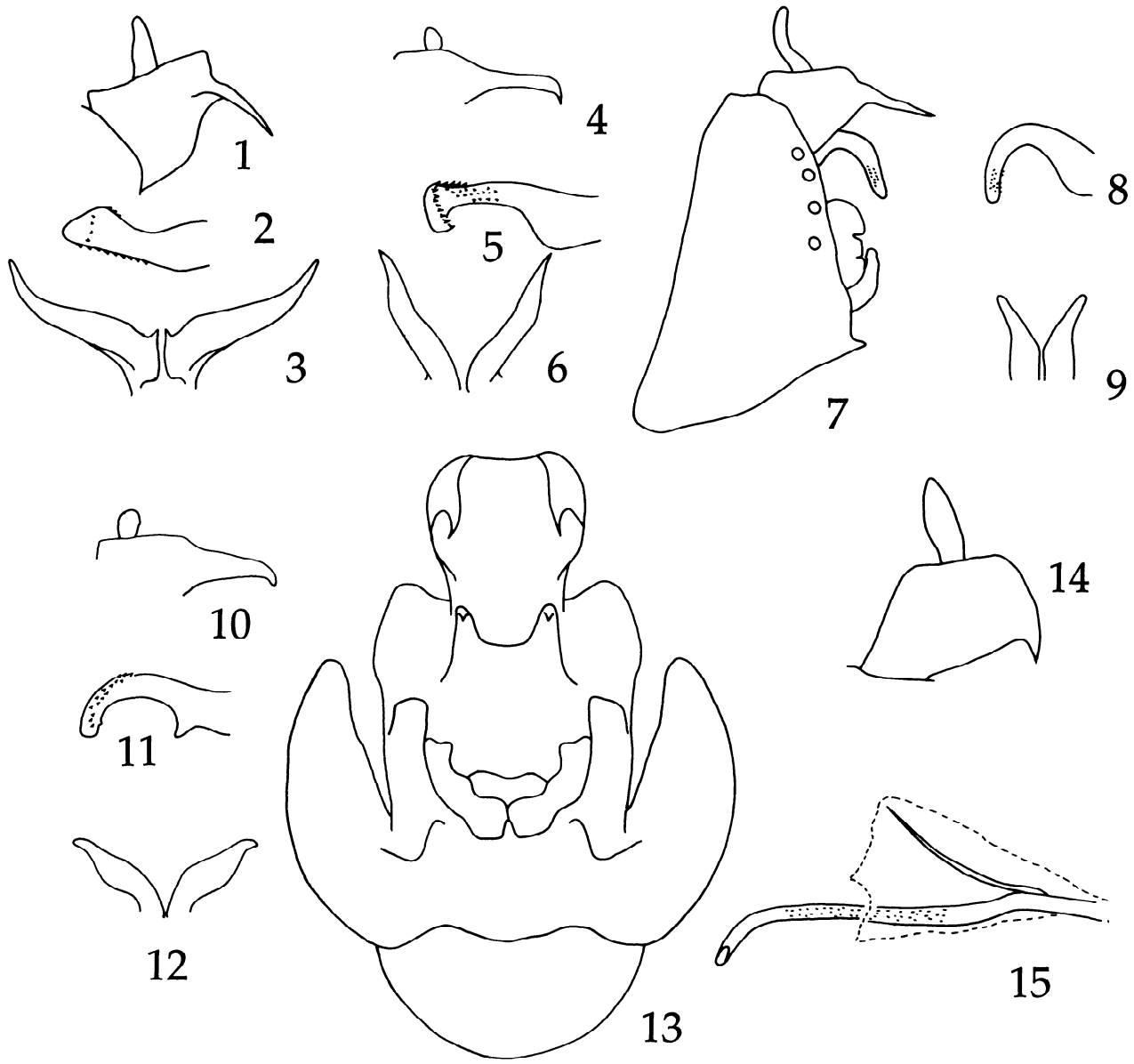
11(10'). Aedeagus with teeth extending almost one half length of aedeagus (Figs. 38 - 40) ..... *Nothodelphax umbrata* Emeljanov
11' Aedeagus with teeth not extending beyond one third length of aedeagus (Figs. 43 - 45) ..... *Nothodelphax guentheri* (Dlabola)

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 15

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. 49) ..... *Ribautodelphax albostriata* (Fieber)
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) ..... *Chilodelphax magnifrons* (Crawford)
15'. Apex of style with irregular teeth (Fig. 61) ..... *Unkanodes excisa* (Melichar)



Figures 1 - 15. 1 - 3. *Criomorphus wilhelmi.* 4 - 6. *Achorotile acuta.* 7 - 9. *A. subarctica.* 10 - 12. *A. stylata.* 13 - 15. *Megamelus flavus.* 1, 4, 10, 14 - Anal tube, lateral view. 2, 5, 8, 11, 15 - Aedeagus, lateral view. 3, 6, 9, 12 - Styles, caudal view. 7 - Male genitalia, lateral view. 13- Pygofer and anal tube, caudal view. Figure 4 - 6, 10 - 12 after Scudder (1963).

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

16'. Male pygofer, in caudal view, wider than long, ovate, appearing to flare outwards posteriorly (e. g., Figs. 116, 118); styles strongly divergent, appearing to lay along ventral margin of pygofer (e. g., Figs. 106, 115) 26

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

18'. Male mesonotum not as above 20

19(18). Male pygofer with dorsolateral aspect strongly produced caudally (Figs. 62, 63); anal tube with spines ..... *Aschedelphax hochae* Wilson
19'. Male pygofer with dorsolateral aspect not produced caudally; anal tube without spines ..... *Delphacodes campestris* (Van Duzee)

20(18'). Male pygofer with caudally directed median projection ventral to base of styles (Fig. 70) ... *Acanthodelphax analis* (Crawford)
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) ..... *Delphacodes dentipennis* Beamer
21'. Male with head and pronotum brown or black marked with yellow; styles each without dorsally projecting tooth 22

22(21'). Apex of style acute (Fig. 81) ..... *Yukonodelphax kendallae* Wilson
22'. Apex of style broadly rounded (Fig. 87) ..... *Delphacodes anufrievi* Wilson

23(17'). Styles with apices converging (Fig. 91) ..... *Kusnezoviella macleani* Wilson
23'. Styles with apices diverging (Figs. 94, 98, 103) 24

24(23'). Male mesonotum black, apex pale; male genitalia as in Figs. 92 - 94 ..... *Delphacodes dentis* Beamer
24'. Male mesonotum brown 25

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) 27

27(26'). Aedeagus forked (Fig. 108) ..... *Javesella obscurella* (Boheman)
27'. Aedeagus not forked 28

28(27'). Aedeagus much broader in basal one third than near apex (Figs. 111, 114) 29
28'. Aedeagus approximately equal in width throughout most of length (Figs. 119, 122) 30

29(28). Aedeagus with acute, toothlike ventral projection and broadly curved dorsal aspect (Fig. 111) ... *Javesella discolor* (Boheman)
29'. Aedeagus with blunt ventral projection and deep indentation on dorsal aspect (Fig. 114) ..... *Javesella simillima* (Linnavuori)

30(28'). Aedeagus with apex sharply angled anteroventrally, lacking numerous teeth (Fig. 119) ..... *Javesella lla* Wilson
30'. Aedeagus with apex broadly rounded, with numerous teeth (Figs. 122, 126) 31

31(30'). Aedeagus with teeth along most of ventral aspect and teeth in basal one half of dorsal aspect (Fig. 122) ..... *Javesella beringiaca* Emeljanov
31'. Aedeagus with teeth only in apical one half (Fig. 126) ..... *Javesella kilmani* (Van Duzee)

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

Criomorphus borealis (Sahlberg), Anufriev 1972:613, 1977:864 *nec* Sahlberg
Criomorphus wilhelmi Anufriev and Averkin 1982a:131.

Distribution records for the specimens used in this study are: YUKON TERRITORY: 28, 54, 55; 3 - 20 July; ALASKA: Gobbler's Knob, 66°45'N 150°40'W; 9 male brachypters, 1 male macropter, 6 female brachypters. Other records are from Anufriev (1972), Anufriev and Averkin (1982), and Wilson (1988).

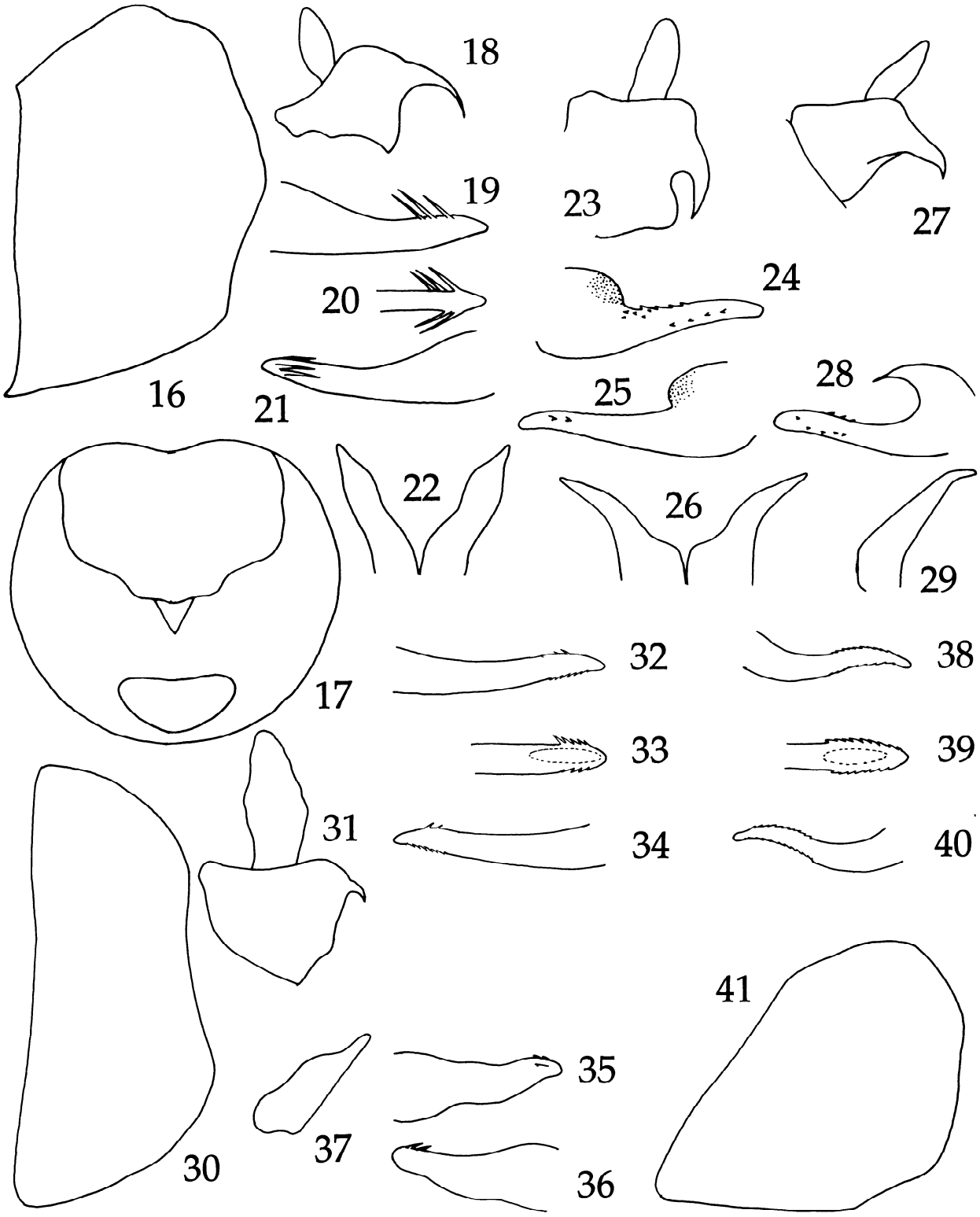
DISTRIBUTION - NEARCTIC: Canada: Yukon Territory; USA: Alaska; PALAEARCTIC: Mongolia; Russia: Amur Region, Kamchatka Region, Khabarovsk Territory, Kuril Islands, Magadan Region, Primor'ye Territory, Sakhalin Region, Yakut Autonomous Republic.

Achorotile acuta Scudder (Figures 4 - 6, Map 2)

Achrotile (sic) *acuta* Scudder 1963:167.

Distribution records for specimens used in this study are: YUKON TERRITORY: 26, 30, 48, 50, 51; 10 males, 21 females, all brachypters; 1 June - 20 July. Other records are from Scudder (1963).

DISTRIBUTION - NEARCTIC: Canada: Alberta, Quebec, Saskatchewan, Yukon Territory.



Figures 16 - 41. 16 - 22. *Nothodelphax tshaunica.* 23-26. *N. albocarinata.* 27 - 29. *N. eburneocarinata.* 30 - 37. *N. glacia.* 38 - 40. *N. umbrata.* 41. *N. guentheri.* 16, 30, 41 - Pygofer, lateral view. 17 - Pygofer, caudal view. 18, 23, 27, 21 - Anal tube, lateral view. 19, 21, 24, 25, 28, 32, 34, 35, 36, 38, 40 - Aedeagus, lateral view. 20, 33, 39 - Aedeagus, ventral view. 22, 26 - Styles, caudal view. 29, 37 - Right style, caudal view. Figures 23 - 26 after Anufriev and Emeljanov (1988).

Achorotile subarctica Scudder (Figures 7 - 9, Map 2)

Achrotile (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 pratensis* L.

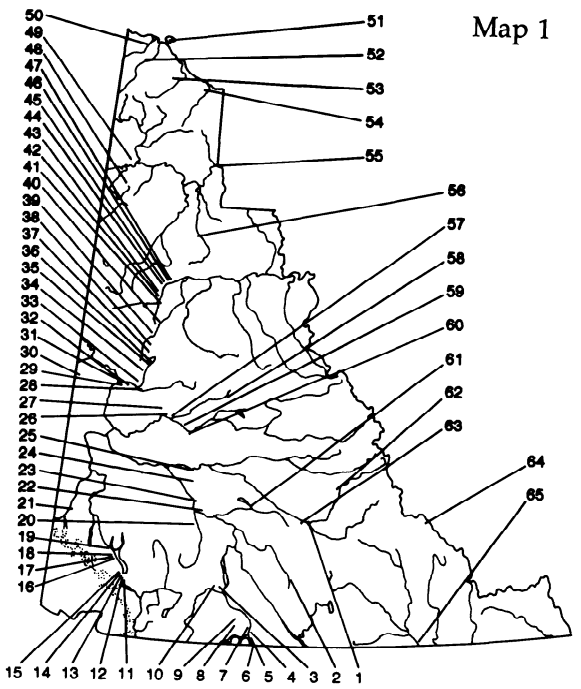
DISTRIBUTION - NEARCTIC: Canada: British Columbia, Yukon Territory; USA: Wyoming.

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

Megamelus notulus flavus Crawford 1914:609.
Megamelus flavus Crawford, Beamer 1955:31.

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.



Map 1. Yukon Territory collecting localities. **1** - Ross River, **2** - Quiet Lake, **3** - Takhini Hot Springs, **4** - Atlin Rd, 15 mi. S. Alaska Hwy, **5** - 15.5 mi. S. Jake's Corner, **6** - Hwy 7 B. C. at Yukon Border, **7** - Tagish, **8** - Carcross, 10 km N on Hwy. 2, **9** - Carcross, **10** - Takhini, 9 mi W, **11** - Alaska Hwy., km 1626, Pine L., **12** - Kluane Topham Crossing, **13** - Alaska Hwy., km 1630, Pine Cr., **14** - Slims R. Delta, **15** - Kluane N.P. Slims R. Delta, **16** - Alaska Hwy. km. 1671, **17** - Silver City and Duke R. meadows, **18** - Alaska Hwy., Mile 1098.5, Duke River, **19** - Alaska Hwy., mi 1054, Kluane L., **20** - Carmacks, 18 km S, **21** - Koidern and Alaska Hwy., km 1881, White River, **22** - Lewes Lake, **23** - Tatchun Cr., 62°17'N 136°17'W, **24** - von Wilczek L., 62°44'N 136°42'W, **25** - Pelly Crossing, **26** - McQuesten, 10 km E, **27** - McQuesten 33 km NW, **28** - Klondike R. Dempster Corner, 1km W, **29** - Dawson Airport, **30** - Boundary 7.7 km E. and 20 km E, **31** - Dawson, 10 km E, 37 km E, and Km 690, **32** - Dawson, **33** - Benson Crossing, 64°11'N 138° 33'W, **34** - N. Klondike River, Km 42, Dempster Hwy., **35** - N. Klondike River, Km 64, Dempster Highway, **36** - Tombstone Campground, Km 73, Dempster Highway, **37** - N. Fork Pass, 64°31'N 138°13'W, 3500-4500' el, **38** - Blackstone River E., km 94, Dempster Hwy, **39** - Blackstone River, km 128, Dempster Highway, **40** - Blackstone River Bridge, 3000-3500', 64°50'N 138°21'W, and Blackstone River, km 128 Dempster Hwy, **41** - Engineer Creek, km 165, Dempster Hwy, 65°06'N 138°22'W, **42** - Ogilvie River, km 200, Dempster Hwy, **43** - Km 170 Dempster Hwy, **44** - Ogilvie River, km 207, Dempster Hwy, **45** - Ogilvie River, km 221, Dempster Hwy, **46** - Mile 150, Dempster Hwy, **47** - Ogilvie River, km 243, Dempster Hwy, **48** - Bluefish Ridge, 67°08'N 140°40'W, 2300', **49** - Old Crow and 6 km E, 67°34'N 139°41'W, **50** - Fish Creek, 69°27'N 140°19'W and 69°27'N 140°23'W, **51** - Herschel Is. 69°35'N 139°00'W and 69°34'N 138°52'W, **52** - Firth River, 69°13'N 140°05'W, 69°13'N 140°03'W and 69°14'N 140°06'W, **53** - Trout L., 3 km W, 68°50'N 138°49'W, **54** - Blow River, 68°44'N 137°24'W and 68°44'N 137°26'W, **55** - McDougall Pass, 67°42'N 136°29'W, **56** - Eagle River, Dempster Hwy, **57** - McQuesten R., **58** - Keno Hill, 4000', **59** - Moose Creek, 63°31'N 137°35'W, **60** - Stewart Crossing, **61** - Campbell Hwy., km 460 Drury Cr., **62** - Dragon Lake, 21 km S on N. Canol Road, 62°23'N 131°27'W, **63** - Lapie R., 1 km E on Campbell Hwy., 61°59'N 132°85'W, **64** - Nahanni Range Rd summit, 62°01'N 128°25'W, **65** - Watson L.

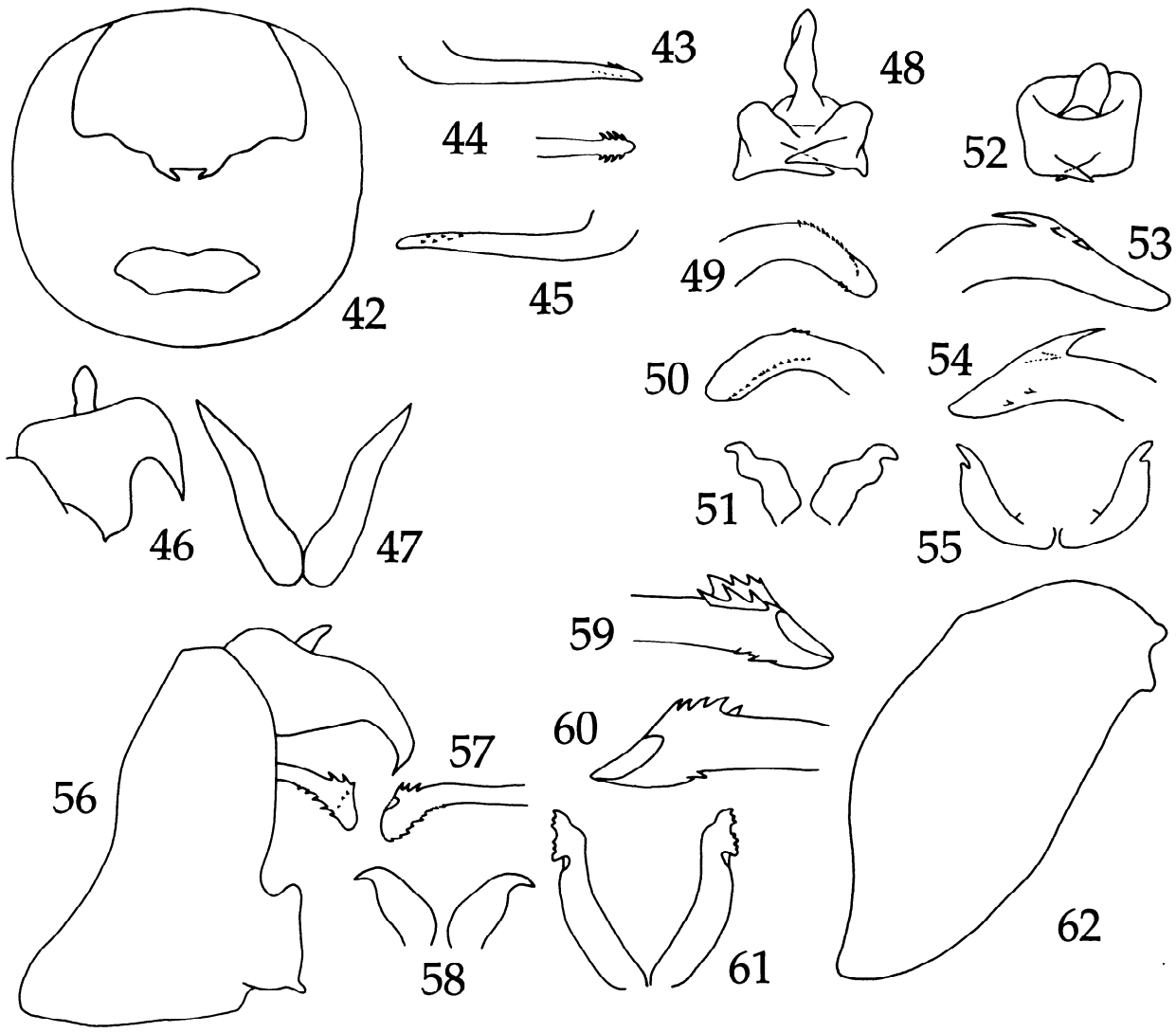


Figure 42 - 62. 42 - 47. *Nothodelphax guentheri.* 48 - 51. *Ribautodelphax albostriata.* 52 - 55. *R. pusilla.* 56 - 58. *Chilodelphax magnifrons.* 59 - 61. *Unkanodes excisa.* 62. *Aschedelphax hochae.* 42 - Pygofer, caudal view. 43, 45, 49, 50, 53, 54, 57, 59, 60 - Aedeagus, lateral view. 44 - Aedeagus, ventral view. 46 - Anal tube, lateral view. 47, 51, 55, 58, 61 - Styles, caudal view. 48, 52 - Anal tube, caudal view. 56 - Male genitalia, lateral view. 62 - Pygofer, lateral view. Figure 52 - 55 after Anufriev and Emeljanov (1988).

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.

Kaszab, Z. 1958. Die Meloiden Afghanistans (Coleoptera). Acta Zool. Acad. Sci. Hung. 3: 245-312.

Kaszab, Z. 1959. Phylogenetische Beziehungen des flügelgeäders der Meloiden (Coleoptera), nebst Beschreibung neuer Gattungen und Arten. Acta Zool. Acad. Sci. Hung. 5: 67-114.

Kaszab, Z. 1960. Die Arten und die systematische Stellung der Meloiden-Gattung *Calydus* Reitter (Coleoptera). Acta Zool. Acad. Sci. Hung. 6: 125-134.

Kaszab, Z. 1962. Uber das System der asiatischen *Lytta*-Arten, nebst Beschreibung drei neuer Arten (Coleoptera, Meloidae). Ann. Hist.-Natur. Mus. Nat. Hung., Zool. 54: 289-298.

Kaszab, Z. 1964. Ergebnisse der Mongolisch-Deutschen biologischen Expedition 1962. nr. 3. Meloidae (Coleoptera). Folia Entomol. Hung. (n.s.)17: 317-324.

Kaszab, Z. 1966a. *Meloetyphlus fuscatus horni* ssp. nov. sowie die systematische Stellung der Gattung *Meloetyphlus* Waterhouse (Coleoptera: Meloidae). Beitr. Entomol. 16: 183-188.

Kaszab, Z. 1966b. Revision der Triben Ertliini und Derideini (Coleoptera, Meloidae). Ann. Hist.-Natur. Mus. Nat. Hung., Zool. 58: 343-360.

Kaszab, Z. 1969. The system of the Meloidae (Coleoptera). Mem. Soc. Entomol. Ital. 48: 241-248.

Kaszab, Z. 1983. Insects of Saudi Arabia. Coleoptera: Fam. Meloidae. A synopsis of the Arabian Meloidae. Fauna Saudi Arabia 5: 144-204

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.

Kirby, W. 1818a. A century of insects, including several new genera described from his cabinet. Trans. Linn. Soc. London 12: 375-454, pls. 21-22.

Kirby, W. 1818b. *Melittophagus*. *In* W. Kirby and W. Spence, An introduction to entomology: or elements of the natural history of insects: with plates. Vol. 1. Ed 3, p. 164 (footnote). Longman, Hurst, Rees, Orme, & Brown, London.

Kirsch, T. 1866. Beiträge zur Käferfauna von Bogota. (Zweites Stuck). Berlin. Entomol. Z. 10: 173-216.

Klug, F. 1825. Entomologiae Brasilianae specimen alterum, sistens Insectorum Coleopterorum nondum descriptorum centuriam. Nova Acta Leopoldina [Verh. Kaiserl. Leopold.-Carolin. Akad. Naturf.] 12(2): 421-476, pls. 40-44.

Kolbe, H. J. 1894. Coleopteren aus Africa. Stettiner Entomol. Zeitung 55: 178-190.

Kolbe, H. J. 1897. Käfer und Netzflüger Ost-Afrikas. *In* K. Mobius, Die Thierwelt Ost-Afrikas und der Nachbargebiete. Wirbellose Thiere. *In* Deutsche-Ost-Afrika. Vol. 4, pp. 1-367, pls. 1-4. Dietrich Reimer, Berlin.

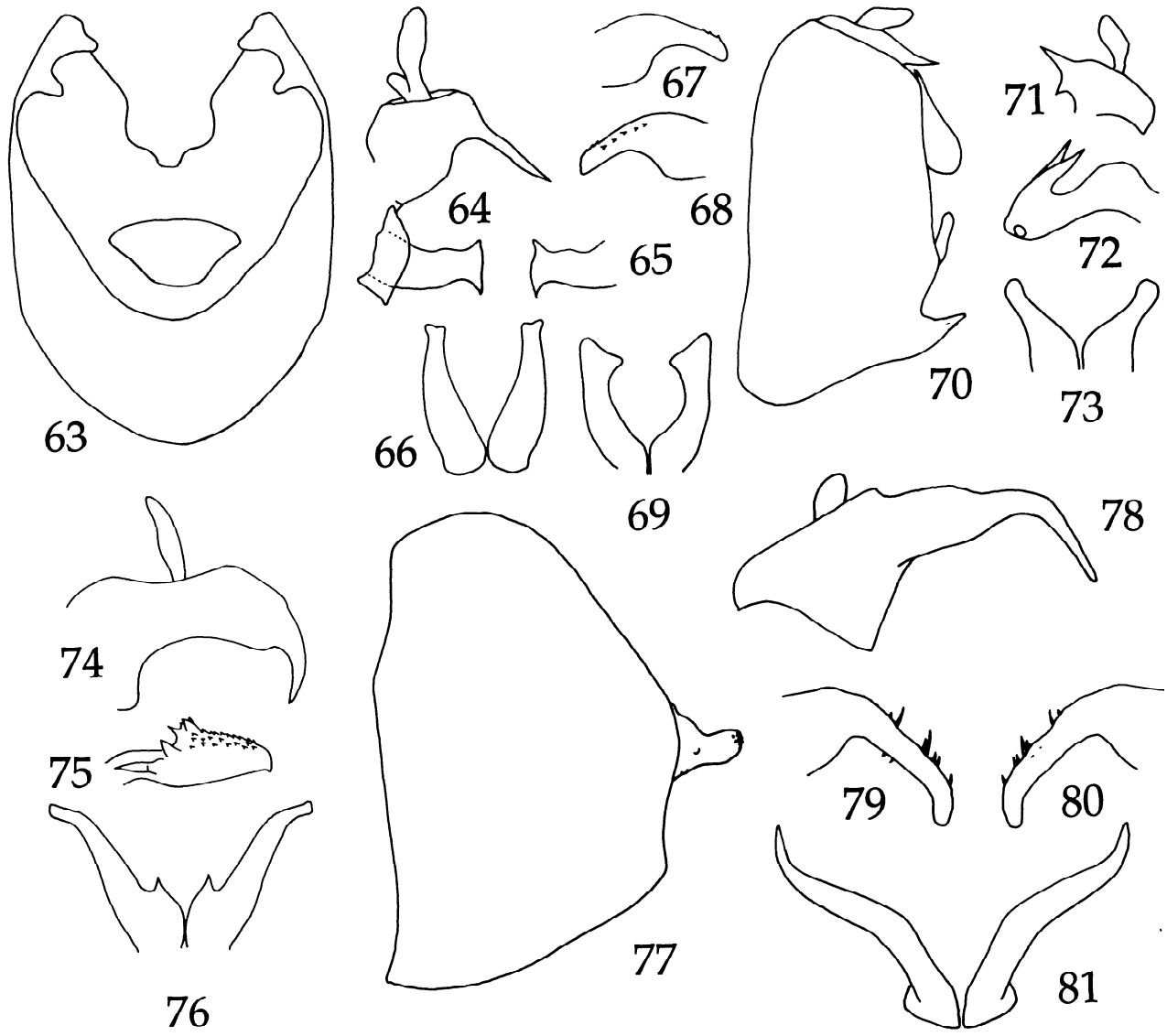
Kraatz, G. 1863. Revision der Cerocomiden-Gruppe. Berlin. Entomol. Z. 7: 109-115, pl. 4., figs. 8-10.

Kraatz, G. 1882. *In* L. von Heyden and G. Kraatz, Käfer um Samarkand, gesammelt von Haberhauer. Deut. Entomol. Z. 26: 334-335.

Kuzin, B. S. 1953. The blister beetles of Kazakhstan. [In Russian.] Tr. Respubl. Stantsyi Zaschity Rast., Kazakhstansky Filial Vashnil (Alma-Ata) 1: 72-154.

Kuzin, B. S. 1954. Contribution to the knowledge of the systematics of Coleoptera, Meloidae, Mylabrini. [In Russian.] Tr. Vses. Entomol. Obshchest. 44: 336-377.

Lacordaire, J. T. 1859. Histoire naturelle des insectes. Genera des coléoptères ou expose méthodique et critique de tous les genres proposes jusqu'ici dans cet ordre d'Insectes. Vol. 5. Librarie Encyclopédique de Roret, Paris, 750 pp.



Figures 63 - 81. 63 - 66. *Aschedelphax hochae.* 67 - 69. *Delphacodes campestris.* 70 - 73. *Acanthodelphax analis.* 74 - 76. *D. dentipennis.* 77 - 81. *Yukonodelphax kendallae.* 63 - Pygofer, caudal view. 64 - Anal tube, connective, and aedeagus, lateral view. 65, 67, 68, 72, 75, 79, 80 - Aedeagus, lateral view. 66, 69, 73, 76, 81 - Styles, caudal view. 71, 74, 78 - Anal tube, lateral view. 70, 77 - Pygofer, lateral view. (Figures 67 - 69 after Muir and Giffard (1924), 74 - 76 after Beamer (1948).

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).

DISTRIBUTION - NEARCTIC: Canada: Yukon Territory; PALAEARCTIC: Mongolia, Russia: Kamchatka Region, Magadan Region, Yakut Autonomous Republic.

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.
Delphacodes 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; 28 June - 4 July. Other records are from Vilbaste (1971) and Wilson (1988).

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)

Ribautodelphax pusilla Emeljanov 1972:220.

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, Yakut Autonomous Republic.

Chilodelphax magnifrons (Crawford) (Figures 56 - 58, Map 4)

Megamelus magnifrons Crawford 1914:614.
Eurysa magnifrons (Crawford), Muir and Giffard 1924:8.
Chilodelphax magnifrons (Crawford), Wilson 1988: 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 (1988).

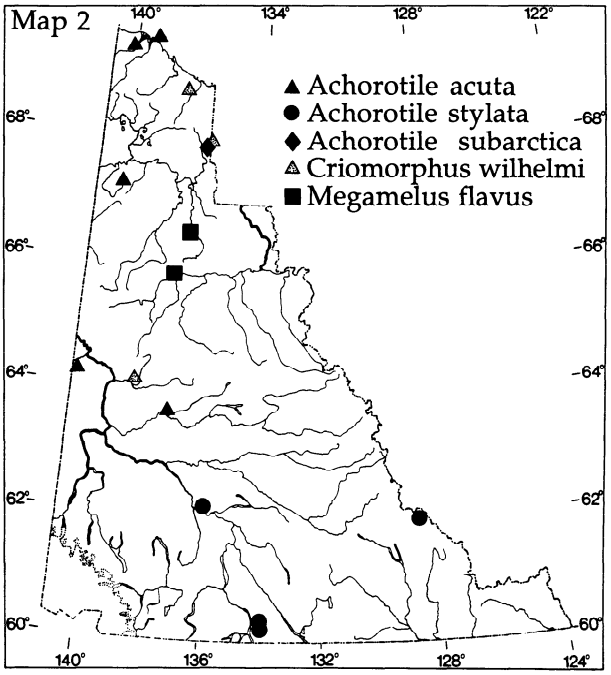
DISTRIBUTION - NEARCTIC: Canada: British Columbia, Northwest Territory, Yukon Territory; USA: Alaska, Colorado, Montana, Wyoming.

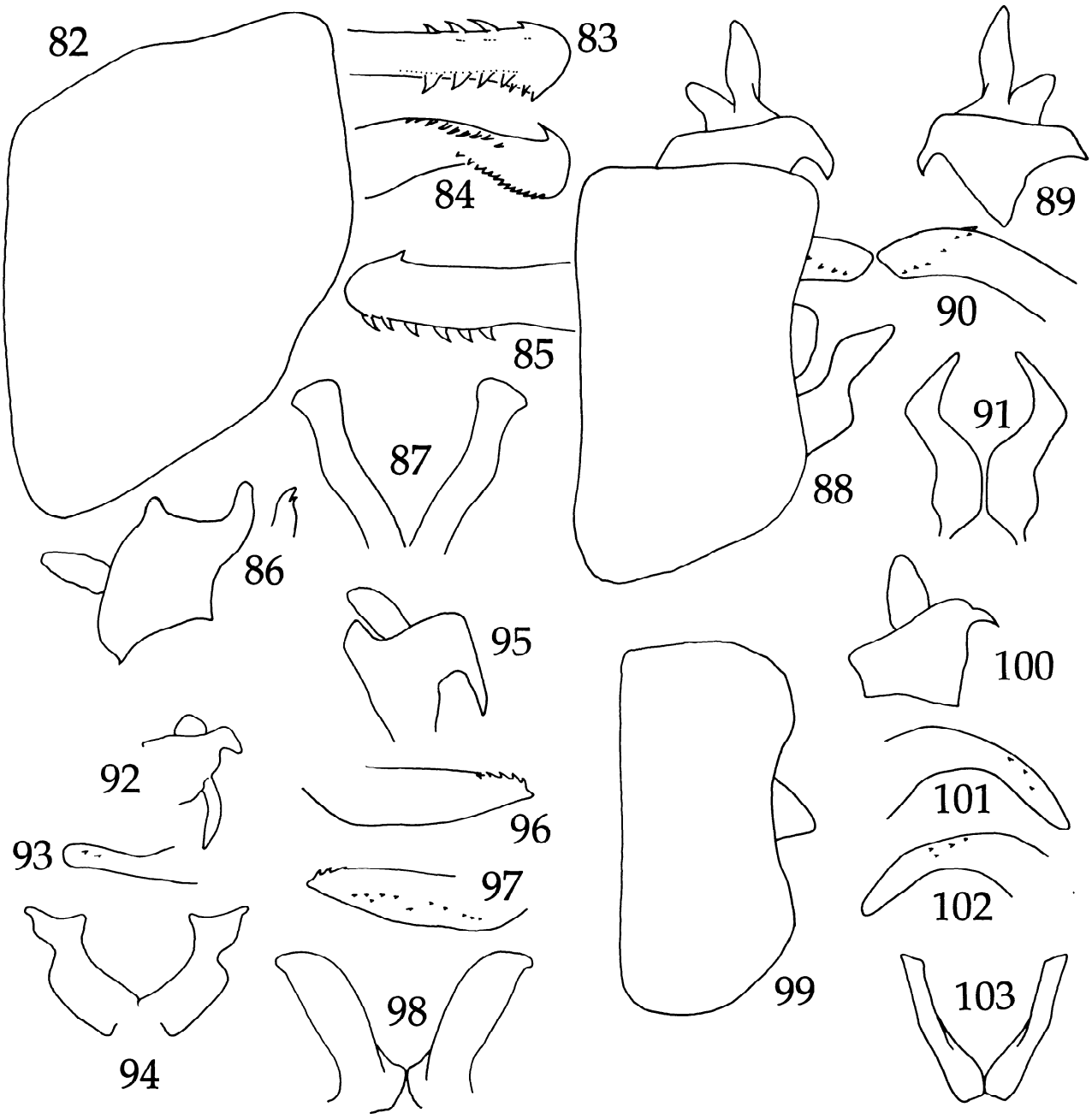
Unkanodes excisa (Melichar) (Figures 59 - 61)

Liburnia excisa Melichar 1898:67
Elymodelphax excisa (Melichar); Wagner 1963:167.
Unkanodes (= *Elymodelphax*), Dlabola 1965:86.

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

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





Figures 82 - 103. 82 - 87. *Delphacodes anufrievi.* 88 - 91. *Kusnezoviella macleani.* 92 - 94. *D. dentis.* 95 - 98. *Paradelphacodes litoralis.* 99 - 103. *D. emeljanovi.* 82, 99 - Pygofer, lateral view. 83, 85, 90, 93, 96, 97, 101, 102 - Aedeagus, lateral view. 84 - Aedeagus, ventral view. 86 - Anal tube and inner view of process, lateral view. 87, 91, 94, 98, 103 - Styles, caudal view. 89, 92, 95, 100 - Anal tube, lateral view. 88 - Male genitalia, lateral view. Figures 92 - 94 after Beamer (1948), 95 - 98 after Anufriev and Emeljanov (1988).

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 mesotrochanters. Pronotal lateral carinae slightly posterolaterally 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 (5 + 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 ventrocaudally-directed acute spines. Styles diverging. Aedeagus directed caudally, straight.

This genus includes two species, *A. coloradensis* (Beamer), **new combination** and *A. hochae* Wilson, **new species**. The genus name 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, apices 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 GENITALIA: 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; apices concave on dorsal aspect. Aedeagus laterally compressed, short, hatchet-shaped; apex with short acute projections on dorso- and ventroposterior angles; gonopore subapical, ventral.

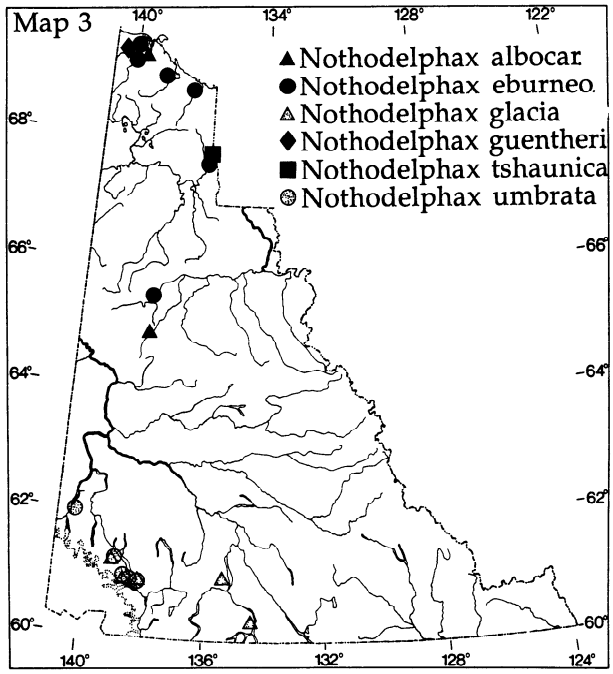
This species is named in recognition of Dr. Hannalore Hoch's research on planthopper systematics.

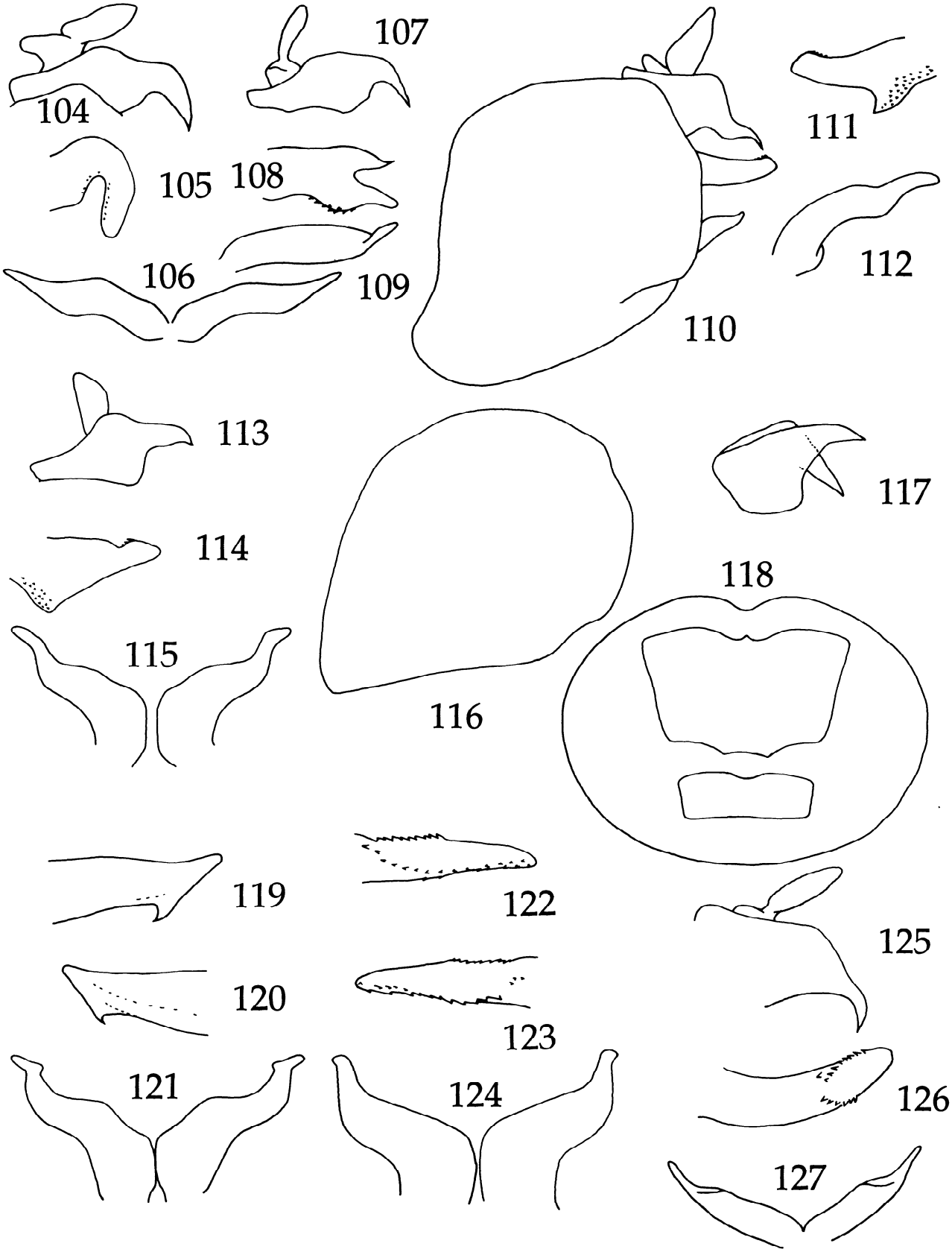
Distribution records for the specimens used in this study are: YUKON TERRITORY: 26, 29, 31, 32, 33, 46; 7 male brachypters; 6 June - 16 July.

DISTRIBUTION - NEARCTIC: Canada: Yukon Territory.

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

Liburnia campestris Van Duzee 1894:191.
Delphacodes campestris (Van Duzee), Muir and Giffard 1924:35.





Figures 104 - 127. 104 - 106. *Javesella pellucida.* 107 - 109. *J. obscurella.* 110 - 112. *J. discolor.* 113 - 115. *J. simillima.* 116 - 121. *J. lla.* 122 - 124. *J. beringiaca.* 125 - 127. *J. kilmani.* 104, 107, 113, 117, 125 - Anal tube, lateral view. 105, 108, 111, 114, 119, 120, 122, 123, 126 - Aedeagus, lateral view. 106, 115, 121, 124, 127 - Styles, caudal view. 109, 112 - Right style, caudal view. 110 - Male genitalia, lateral view. 116 - Pygofer, lateral view. 118 - Pygofer, caudal view. Figures 122 - 124 after Anufriev and Emeljanov (1988), 125 - 127 after DuBose (1960).

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.

DISTRIBUTION - NEARCTIC: Canada: Alberta, Yukon Territory; USA: Connecticut, Illinois, Iowa, Kentucky, Michigan, Missouri, Minnesota, Mississippi, Nebraska, Nevada, New Hampshire, New York, North Carolina, North Dakota, Oklahoma, Pennsylvania, South Dakota, Tennessee, Virginia.

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

Megamelus analis Crawford 1914:620.
Delphacodes analis (Crawford), Muir and Giffard 1924:24.
Acanthodelphax analis (Crawford), Wilson 1988:338.

Distribution records for specimens used in this study are: YUKON TERRITORY: 35, 36, 37, 39; 10 male brachypters, 7 female 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.

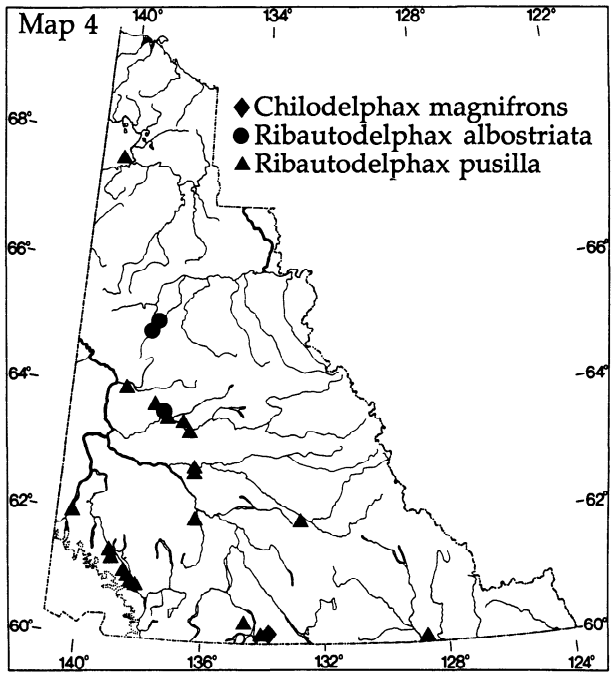
Yukonodelphax Wilson, new genus

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 on juncture 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 5 teeth on plantar surface; spur foliaceous, with 10 - 20 small marginal teeth, 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 to subacute. 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**.



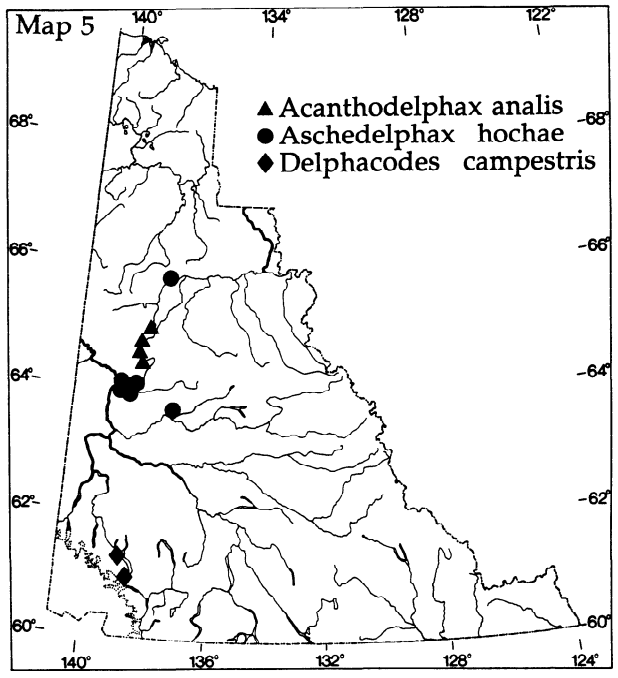
Yukonodelphax kendallae Wilson, new species (Figures 77 - 81, Map 6)

HOLOTYPE: male brachypter with label: "Yukon, Kluane N. P.; Slims R. flats; 2-VI-1979; G. G. E. Scudder", in the Canadian National Collection, Ottawa; PARATYPES: five male brachypters, with the following data: Yukon, Slims R. Delta, 21 June 1982, R. D. Wilkie & S. G. Cannings (1 male); Alaska Hwy. mi. 1054 Kluane L., 30 May 1979, G. G. E. Scudder (3 males); Kluane N. P., Slims R. flats; 2 June 1979; G. G. E. Scudder (1 male); in the University of British Columbia and S. W. Wilson collections.

DESCRIPTION: Vertex pale yellow. Frons brown mottled with yellow basally, becoming pale yellow apically; carinae pale yellow. Clypeus brown with pale median and lateral carinae.

Pronotum pale yellow, brown behind eye lateral to lateral carinae. Mesonotum brown to dull black, posterior margin yellow. Brachypterous forewing hyaline, costal vein pale yellow. Coxae brown to black, margined with yellow, remainder of legs yellow, tarsomeres brown to black apically. Abdomen brown to black, pygofer margined with yellow apically.

Abdomen blackish, marked with pale beige.



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 dorsocaudal margin posteriorly then curving ventrally near middle. Styles diverging from base, curved inwards near apices such that acute apices are nearly parallel. Aedeagus laterally compressed, recurved; broad at base, abruptly narrowing and curving ventroposteriorly in basal 1/3; 7 slender spines scattered on dorsal aspect, a slightly oblique row of 6 small teeth (two illustrated) on ventrolateral aspect on left side.

This species is named for my daughter, Kendall.

Distribution records for the specimens used in this study are: YUKON TERRITORY: 14, 15, 19; 6 male brachypters; 30 May - 12 June.

DISTRIBUTION - NEARCTIC: Canada: Yukon Territory.

Delphacodes anufrievi Wilson, new species (Figures 82 - 87)

HOLOTYPE: male brachypter with label: "Yukon, Alaska Hwy.; km 1671; 1-VI-1979 G. 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 subquadrate in lateral view, height ca 1.5X width; ventral margin of diaphragm opening thickened, V-shaped. Anal tube subcylindrical, posterodorsal aspect forming a ridge which appears as a rounded process in lateral view; two curved processes extending posteriorly from ventrocaudal margin, each process curved inward near bifurcate apex. Styles diverging, width 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 left 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 subterminal 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 belongs 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 88 - 91, Map 6)

Kusnezoviella macleani Wilson 1988:339.
Kusnezoviella matisi Anufriev and Emeljanov 1988:406, New Synonymy.

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; PALAEARCTIC: Russia: Khabarovsk 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.

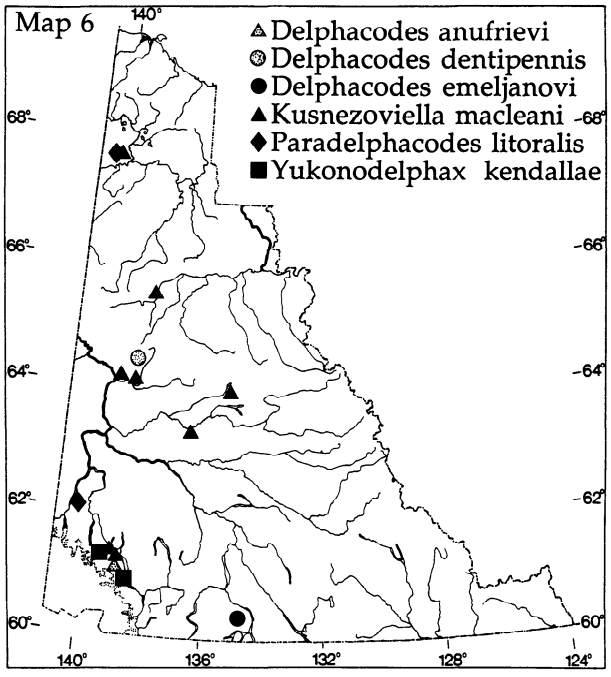
DISTRIBUTION - NEARCTIC: Canada: Northwest Territory; USA: Texas.

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

Liburnia litoralis Reuter 1880:198.
Delphacodes litoralis (Reuter), Metcalf 1943:463.
Paraliburnia (*Struebingianella*) *litoralis* (Reuter), LeQuesne 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; PALAEARCTIC: Finland; Russia: Buryat Autonomous Republic, Yakut Autonomous Republic; Scotland.



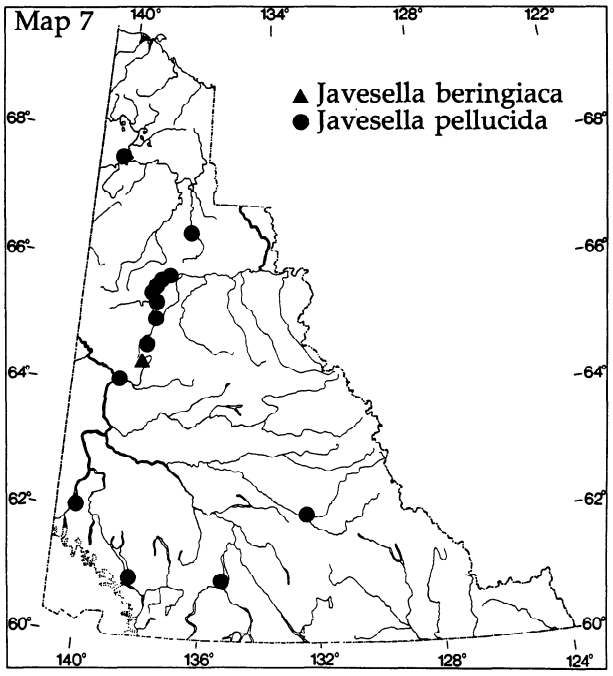
Delphacodes emeljanovi Wilson, new species (Figures 99 - 103)

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. anufrievi*.



This species is named for Dr. A. F. Emeljanov who has contributed much to the study of Palaearctic Homoptera.

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; 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; 20 male brachypters, 17 male macropters; 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 (Boheman) (Figures 107 - 109, Map 8)

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

Distribution records for specimens used in this study are: NORTHWEST TERRITORY: Tuktoyaktuk. 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 (Boheman), LeQuesne 1964:57.

Distribution records for specimens used in this study are: NORTHWEST TERRITORY: Aklavik. YUKON TERRITORY: 21, 35, 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: Algeria, Austria, Belgium, Czechoslovakia, Denmark, Estonia, Finland, France, East Germany, West Germany, Great Britain, Ireland, Italy, Mongolia, Netherlands, Norway, Poland, Romania, Russia, Sweden, Switzerland.

Javesella simillima (Linnavuori) (Figures 113 - 115, Map 9)

Calligypona simillima Linnavuori 1948:45.
Delphacodes saileri Beamer, Wilson 1988:341.
Javesella simillima (Linnavuori), 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).

DISTRIBUTION - NEARCTIC: Canada: Yukon Territory; USA: Alaska; PALAEARCTIC: Estonia, Finland; Russia: Khabarovsk Territory, Magadan Region, Taymyr Autonomous District.

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 scape 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, costal vein dark brown. Legs yellow, suffused with brown to black.

MALE GENITALIA: Pygofer subcylindrical; in lateral view, globose 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 dorsocaudal margin and meeting along inner margins (in holotype, not paratype -

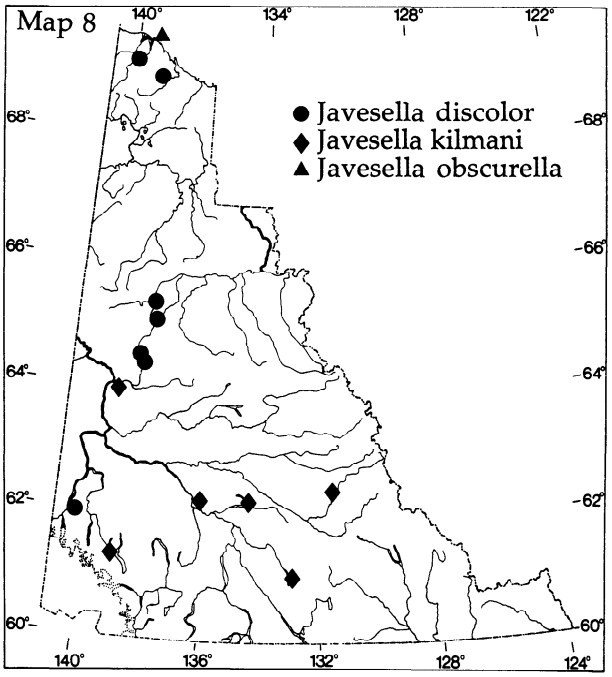


Fig. 117). Styles strongly diverging; each style widest at base, narrowing distally; outer and inner margins sinuous, constricted just before foot-shaped apex. Aedeagus laterally compressed, almost straight; gonopore apical on ventral aspect; apex sharply angled anteroventrally, apex subacute dorsally, acute and tooth-like ventrally.

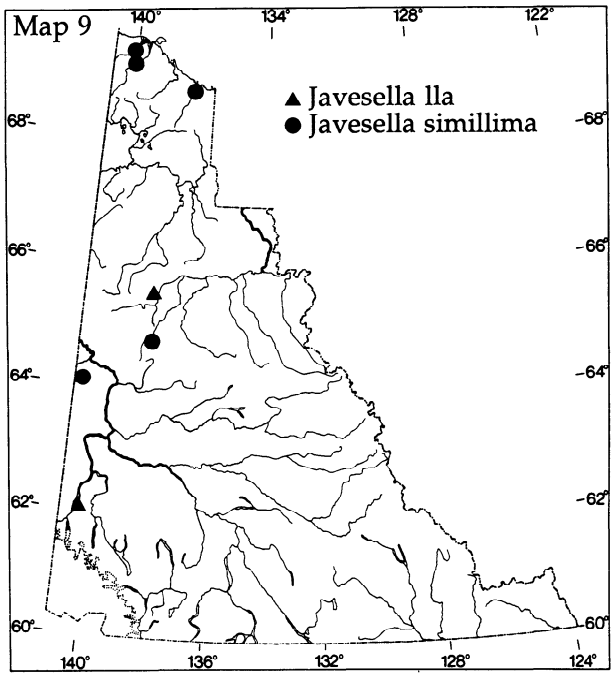
Distribution records for specimens used in this study are: YUKON TERRITORY: 21; 2 male brachypters; 22 July; NEW HAMPSHIRE: Coos Co., Moodse Falls Cpgd., NW Second Connecticut L.; 23 July; 2 male macropters; Mt. Washington, Auto Rd., 2700 ft.; 1 July; 1 male macropter.

DISTRIBUTION - NEARCTIC: Canada: Yukon Territory; USA: New Hampshire.

Javesella beringiaca Emeljanov (Figures 122 - 124, Map 7)

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; PALAEARCTIC: Kamchatka Region, Magadan Region, Sakhalin Region.

Javesella kilmani (Van Duzee) new combination (Figures 125 - 127, Map 8)

Liburnia kilmani Van Duzee 1894:191.
Delphacodes kilmani (Van Duzee), Muir and Giffard 1924:35.

Distribution records for specimens used in this study are: YUKON TERRITORY: 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 (Ossiannilsson 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, amphi-Beringian, 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. obscurella, J. pellucida, N. albocarinata*) are widely distributed in the Palaearctic and are also found in the northwestern Nearctic.

Three species (*J. simillima, P. litoralis, 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. macleani, M. flavus, N. eburneocarinata, N. guentheri, N. tshaunica, N. umbrata, 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. dentipennis*) has been reported previously from the eastern Nearctic; its presence in the Yukon may represent a disjunction. Five species (*A. hochae, D. anufrievi, D. emeljanovi, N. glacia, Y. kendallae*), all of them newly described, have been recorded only from the Yukon or Northwest Territories. The record of *D. dentis* 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. arcanastyla* (Beamer) and *J. atrata* (Osborn), appear to extend only as far north as southeastern Alaska and another, *Unkanodes excisa* (Melichar), is broadly distributed in the Palaearctic, was found in western Alaska and might occur in the northern Yukon Territory.

Acknowledgments

I thank Dr. G. G. E. Scudder, Department of Entomology, University of British Columbia, for loaning specimens and Dr. K. G. A. Hamilton, Biosystematics Research Centre, Agriculture Canada, Ottawa, for offering helpful suggestions. I appreciate the exhaustive manuscript reviews by Drs. W. W. Wirth, Center for Systematic Entomology, Gainesville, Florida, and F. W. Mead, Florida Department ofd Agriculture, Gainesville.

Literature Cited

Anufriev, G. A. 1972. New and little known leafhoppers from the family Delphacidae (Homoptera) from the Maritime District. Zool. Zh. 51:612-615.

Anufriev, G. A. 1977. Delphacids (Homoptera, Auchenorrhyncha) of the Kurile Islands Fauna. Zool. Zh. 61:855-869.

Anufriev, G. A. 1979. Notes on the genus *Tyrphodelphax* Vilbaste, 1968 with descriptions of two new Asiatic species (Homoptera, Delphacidae). Reichenbachia 17:295-301.

Anufriev, G. A. 1980. A new species and new genera of leafhoppers of the family Delphacidae (Homoptera, Auchenorrhyna) from Palaearctic. Zool. Zh. 59:208-216.

Anufriev, G. A. & A. M. Averkin. 1982. Cicadinea of the family Delphacidae (Homoptera, Auchenorrhyncha) from the Sokhondo Reserve (Transbaicalia). Ins. Mongolia 8:123- 139.

Anufriev, G. A. & A. F. Emeljanov. 1981. The genus *Achorotile* Fieb. (Homoptera, Delphacidae) and its systematics in the Palearctic Region. Entomol. Rev. 59:87-97.

Anufriev, G. A. & A. F. Emeljanov. 1988. Cicadinea (Auchenorrhyncha) - Leafhoppers, pp. 12-495. In: Lera, P. A., ed. [Identification guide to the insects of the far eastern USSR. Vol. 2. Homoptera and Hemiptera.]

Asche, M. 1985. Zur Phylogenie der Delphacidae Leach, 1815 (Homoptera Cicadina Fulgoromorpha). Marburger Entomol. Publ. 2(1):1-910.

Beamer, R. H. 1946. Some new species of *Delphacodes* (Homoptera, Fulgoridae, Delphacinae). J. Kansas Entomol. Soc. 19:139-141..

Beamer, R. H. 1948. Some new species of *Delphacodes* (Homoptera, Fulgoridae, Delphacinae) Part IV. J. Kansas Entomol. Soc. 21:96-110.

Beamer, R. H. 1951. Some species of *Delphacodes*, new and old (Homoptera- Fulgoridae- Delphacinae). J. Kansas Entomol. Soc. 24:11-15.

Beamer, R. H. 1954. A revision of the genus *Achorotile* in America north of Mexico (Homoptera: Fulgoridae, Delphacinae). J. Kansas Entomol. Soc. 27:143-147.

Beamer, R. H. 1955. A revision of the genus *Megamelus* in America north of Mexico (Homoptera, Fulgoridae, Delphacinae). J. Kansas Entomol. Soc. 28:29-46.

Boheman, C. H. 1847. Nya Svenska Homoptera. Handl. Svenska Vet. Akad. 1847:23-67.

China, W. E. 1938. Corrections and additions to James Edwards' catalogue of British Hemiptera-Homoptera, Perth, 1908 (excluding Psyllidae). Entomol. Mon. Mag. 74:191-197.

Crawford, D. L. 1914. A contribution toward a monograph of the homopterous insects of the family Delphacidae of North and South America. Proc. U. S. Nat. Mus. 46:557-640.

Dlabola, J. 1965. Ergebnisse der zoologischen Forschungen von Dr. Z. Kaszab in der Mongolei. 54. Homoptera-Auchenorrhyncha. Acta Faun. Entomol. Mus. Nat. Pragae, Praha 11 (100):79-136.

Dlabola, J. 1966. Ergebnisse der mongolish-deutschen Expeditionen 1962 und 1964. Nr. 16: Homoptera, Auchenorrhyncha. Acta Entomol. Bohemosl., Praha 63:440-452.

DuBose, W. P. 1960. The genus *Delphacodes* Fieber in North Carolina (Homoptera: Delphacidae). J. Elisha Mitchell Sci. Soc. 76:36-63.

Emeljanov, A. F. 1972. New leaf-hoppers from the Mongolian People's Republic (Homoptera, Auchenorrhyncha). Ins. Mongolia 1:199-260.

Emeljanov, A. F. 1982. Fulgoroidea (Homoptera) collected in the Mongolian People's Republic by the entomofaunistical group of the Soviet-Mongolian complex biological expedition in 1970-1975. Ins. Mongolia 8:69-122.

Fabricius, J. C. 1794. Ryngota. Entomologia systematica emendata et aucta. Secundum classes, ordines, genera, species adjectis synoimis, locis, observationibus, descriptionibus 4:1-472.

Fennah, R. G. 1963. New genera of Delphacidae (Homoptera: Fulgoroidea). Proc. Royal Entomol Soc., London (B) 32:15-16.

Fieber, F. X. 1866. Grundzuge zur generischen Theilung der Delphacini. Verh. Zool. Bot. Ges. Wien 16:517-534.

Fieber, F. X. 1872. Katalog der europaischen Cicadinin, nach Originalien mit Benetzung der neuesten Literatur. 1872: 1-19.

Giri, H. K., P. H. Freytag & K. V. Yeargan. 1985. Field studies of delphacid planthopper populations (Homoptera: Delphacidae), with notes on their dryinid parasites (Hymenoptera: Dryinidae). J. Kansas Entomol. Soc. 58:69-74.

LeQuesne, W. J. 1960. Hemiptera Fulgoromorpha. Handbks. Ident. Brit. Ins. 2(3):1-68.

LeQuesne, W. J. 1964. Some taxonomic observations on the British Delphacidae (Hemiptera). Proc. Royal Entomol. Soc., London (B) 33:56-58.

Linnavuori, R. 1948. Neue oder bemerkensverte Zikadenfunde aus Finnland, nebst einer Beschreibung einer neuen art. Ann. Entomol. Fenn. 14:45-47.

Metcalf, Z. P. 1943. General catalogue of the Hemiptera. Fasc. IV Fulgoroidea, Part 3 Araeopidae (Delphacidae). Smith Coll., Northhampton, Massachussetts, 552 pp.

Melichar, L. 1898. Eine neue Homopteren-Art aus Schleswig-Holstein. Wien. Entomol. Z. 17:67- 69.

Mochida, O. & R. Kisimoto. 1971. A review of the studies on *Javesella pellucida* (F.) (Hom., Delphacidae) and associated subjects. Rev. Plant Prot. Res. 4:1-57.

Moore, G. A. 1944. A list of Hemiptera taken at Hudson Heights, Quebec. Can. Entomol. 76:40-44.

Moore, G. A. 1950. Check-list of Hemiptera of the Province of Quebec. Contr. Inst. Biol. Univ. Montreal 26. 49 pp.

Muir, F. & W. M. Giffard. 1924. Studies in North American Delphacidae (Homoptera). Bull. Exp. Stn. Hawaiian Sugar Pl. Assoc., Entomol. Ser. Bull. 15:1-53.

Nast, J. 1972. Palaearctic Auchenorrhyncha (Homoptera). An annotated check list. Polish Acad. Sci., Polish Sci. Publ., Warsaw, 550 pp.

Nast, J. 1979. Palaearctic Auchenorrhyncha (Homoptera). Part 2. Bibliography; addenda and corrigenda. Ann. Zool., Warsaw 34(18):481-499.

Nast, J. 1982. Palaearctic Auchenorrhyncha (Homoptera). Part 3. New taxa and replacement names introduced till 1980. Ann. Zool., Warsaw 36(17):290-362.

Ossiannilsson, F. 1946. Halvvingar. Hemiptera. Stritar Homoptera Auchenorrhyncha. Svensk Insektfauna 7:151-270.

Ossiannilsson, F. 1978. The Auchenorrhyncha (Homoptera) of Fennoscandia and Denmark. Part 1: Introduction, infraorder Fulgoromorpha. Fauna Entomol Scand. 7:5-222.

Reuter, O. M. 1880. Nya bidrag till Åbo och Ålands skärgårds Hemipter-fauna. Meddn. Soc. Fauna Flora Fenn. 5:160-236.

Sahlberg, J. 1871. Ofversigt af Finlands och den Skandinaviska h_lfons Cicadariae. I. Not. Fenn. (n. s.) 9(12):1-506.

Scudder, G. G. E. 1963. Studies on the Canadian and Alaskan Fulgoromorpha (Hemiptera). I. The genera *Achrotile* Fieber and *Laccocera* Van Duzee (Delphacidae). Can. Entomol. 95:167- 177.

Scudder, G. G. E. 1964. Studies on the Canadian and Alaskan Fulgoromorpha (Hemiptera). II. The genus *Megamelus* Fieber (Delphacidae). Can. Entomol. 96:813-820.

Scudder, G. G. E. 1979a. Hemiptera, pp. 329-348. In: Danks, H. V. ed. Canada and its insect fauna. Mem. Entomol. Soc. Canada No. 108.

Scudder, G. G. E. 1979b. Present patterns in the fauna and flora of Canada, pp. 83-179. In: Danks, H. V. ed. Canada and its insect fauna. Mem. Entomol. Soc. Canada No. 108.

Stål, C. 1858. Nya svenska Hemiptera. Ofv. Svenska Vet. Akad. Förh. 15:355-358.

Strickland, E. H. 1953. An annotated list of the Hemiptera (S. L.) of Alberta. Can. Entomol. 85:193-214.

Van Duzee, E. P. 1894. A list of the Hemiptera of Buffalo and vicinity. Bull. Buffalo Soc. Nat. Sci. 5:167-204.

Vilbaste, J. 1968. On the Cicaden fauna of the Primor'ye Territory. Tallinn. 179 pp.

Vilbaste, J. 1971. Eesti Tirdid. Homoptera: Cicadinea. 1. Tallinn. 284 pp.

Wagner, W. 1963. Dynamische Taxionomie, angewandt auf die Delphaciden Mitteleuropas. Mitt. Hamburg Zool. Mus. Inst. 60:111-180.

Wilson, S. W. 1988. Delphacidae of Alaska (Homoptera: Fulgoroidea). Great Basin Nat. Mem. 12:335-343.

Wilson, S. W. & L. B. O'Brien. 1987. A survey of planthopper pests of economically important plants (Homoptera: Fulgoroidea). Proc. 2nd Int. Workshop on Leafhoppers and Planthoppers of Econ. Impt. pp. 343-360.