

DELPHACIDAE OF ALASKA (HOMOPTERA: FULGOROIDEA)

Stephen W. Wilson¹

ABSTRACT.—Fifteen species, in 10 genera, of Delphacidae are recorded from Alaska. One, *Kusnezoviella macleani*, is described as new to science. *Acanthodelphax analis* (Crawford), *Chilodelphax magnifrons* (Crawford), *Javesella arcanastyla* (Beamer), and *J. atrata* (Osborn) are new combinations. *Delphacodes saileri* Beamer is a synonym of *Javesella simillima* (Linnavuori).

Of the 15 species, 1 is recorded only from Alaska, 3 are Holarctic, 4 are Nearctic, and 7 are Palearctic and restricted to tundra habitats, with 5 of these apparently found only north of the Brooks Range.

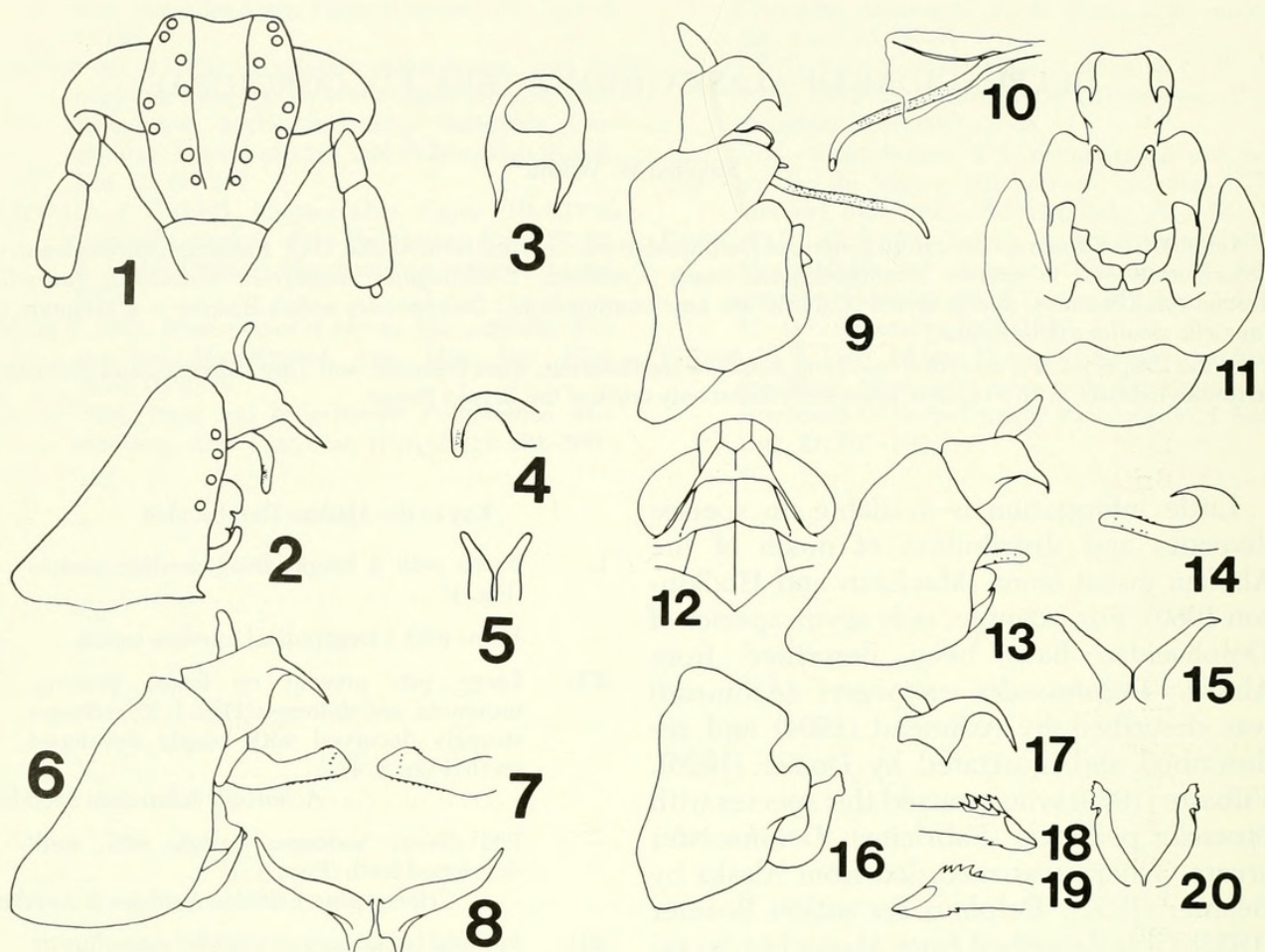
Little information is available on species diversity and distribution of much of the Alaskan insect fauna (MacLean and Hodkinson 1980). For example, only seven species of Delphacidae have been described from Alaska. *Delphacodes stejneri* (Ashmead) was described by Ashmead (1904) and re-described and illustrated by Dozier (1926). Vilbaste (1980) synonymized this species with *Javesella pellucida* (Fabricius). *Delphacodes atrata* Osborn was recorded from Alaska by Beamer (1951). *Delphacodes saileri* Beamer (1952b) was described from Alaska but, as indicated below, is a synonym of *Javesella simillima* (Linnavuori). DuBose (1960) recorded the Holarctic *D. pellucida* from Alaska. *Delphacodes uniformis* (Walker) was listed from Alaska by Metcalf (1943); however, Muir (1919) stated that this insect is not a delphacid. *Megamelus flavus* Crawford was recorded from Alaska by Beamer (1955).

The present paper provides a key and information on distribution for the 15 delphacid species found in the Canadian National Collection, Ottawa, and material collected by MacLean in the northern part of the state. The name used by the first describer and the first placement in the current genus are given for each species. Because the species have been described in detail elsewhere, only the new species of *Kusnezoviella* is described. Accurate identification of delphacids relies on use of characters of the male genitalia; for this reason, all species treated here are illustrated.

Key to the Alaskan Delphacidae

1. Frons with 2 longitudinal, median carinae (Fig. 1) 2
- Frons with 1 longitudinal, median carina 3
- 2(1). Large pits present on frons, pronota, mesonota, and abdomen (Figs. 1, 2); aedeagus strongly decurved with poorly developed teeth (Figs. 2, 4) *Achorotile subarctica* Scudder
- Pits absent; aedeagus straight with well-developed teeth (Figs. 6, 7) *Criomorphus wilhelmi* Anufriev & Averkin
- 3(1). Pronotal lateral carinae straight, extending to, or almost to, posterior margin of pronotum (Fig. 12); metatibial spur with or without black-tipped teeth 4
- Pronotal lateral carinae curving laterad, not extending to posterior margin of pronotum; metatibial spur with black-tipped teeth, these sometimes weak 5
- 4(3). Metatibial spur with well-developed, black-tipped teeth; pygofer with lateral, inflated lobes (Figs. 9, 11) . *Megamelus flavus* Crawford
- Metatibial spur lacking teeth; pygofer not inflated laterally (Fig. 13) *Nothodelphax eburneocarinatus* (Anufriev)
- 5(3). Broad, pale stripe usually bordering longitudinal, median carinae on vertex, pronotum, and/or mesonotum; pygofer with broad lobe laterally on caudal margin (Figs. 16, 21) 6
- Broad, pale stripe not present; pygofer without broad lobe 7
- 6(5). Styles each with irregular teeth on broad apex (Fig. 20) *Unkanodes excisa* (Melichar)
- Styles each with acute apex (Fig. 23) *Chilodelphax magnifrons* (Crawford)

¹Department of Biology, Central Missouri State University, Warrensburg, Missouri 64093.



Figs. 1–20. Figs. 1–5, *Achorotile subarctica* Scudder: 1, head, frontal view; 2, male genitalia, lateral view; 3, anal tube, dorsal view; 4, aedeagus, lateral view; 5, styles, caudal view. Figs. 6–8, *Criomorphus wilhelmi* Anufriev & Averkin: 6, male genitalia, lateral view; 7, aedeagus, lateral view; 8, styles, caudal view. Figs. 9–11, *Megamelus flavus* Crawford: 9, male genitalia, lateral view; 10, aedeagus, lateral view; 11, male genitalia, caudal view. Figs. 12–15, *Nothodelphax eburneocarinatorius* (Anufriev): 12, head and thorax, dorsal view; 13, male genitalia, lateral view; 14, aedeagus, lateral view; 15, styles, caudal view. Figs. 16–20, *Unkanodes excisa* (Melichar): 16, pygofer and style, lateral view; 17, anal tube, lateral view; 18, 19, aedeagus, lateral view; 20, styles, caudal view.

- | | | |
|---|---|---------------------------------------|
| 7(5). Anal tube with spines crossing (Fig. 27) | toothed region in basal half on ventral aspect (Fig. 47) | 13 |
| <i>Ribautodelphax albostratus</i> (Fieber) | | |
| — Anal tube with spines parallel or diverging | — Aedeagus not as above (Fig. 43) | |
| 8(7). Pygofer with caudally directed, median projection ventral to base of styles (Fig. 29) | <i>Javesella atrata</i> (Osborn) | |
| <i>Acanthodelphax analis</i> (Crawford) | 13(12). Aedeagus with large, ventral, basal projection (Figs. 50, 53) | 14 |
| — Pygofer without median projection | — Aedeagus without large, basal projection (Fig. 47) | |
| 9(8). Apices of styles converging (Fig. 34) | <i>Javesella similima</i> (Linnavuori) | |
| <i>Kusnezoviella macleani</i> , n. sp. | 14(13). Aedeagal, ventral, basal projection acute, aedeagal dorsal margin slightly curved (Fig. 50) | <i>Javesella discolor</i> (Boheman) |
| — Apices of styles diverging | — Aedeagal, ventral, basal projection rounded, aedeagal dorsal margin constricted (Fig. 53) | <i>Javesella arcanastyla</i> (Beamer) |
| 10(9). Aedeagus strongly decurved (Fig. 36) | | |
| <i>Javesella pellucida</i> (Fabricius) | | |
| — Aedeagus recurved or straight (Figs. 40, 43, 47, 50, 53) | | |
| 11(10). Aedeagus evenly forked (Fig. 40) | | |
| <i>Javesella obscurella</i> (Boheman) | | |
| — Aedeagus not forked (Figs. 43, 47, 50, 53) | | |
| 12(11). Aedeagus with projection in basal half on ventral aspect (Figs. 50, 53) or with broad, weakly | | |

Achorotile subarctica Scudder

Figs. 1–5

Achorotile [sic] *subarctica* Scudder, 1963:169

Distribution records for specimens used in this study are: ALASKA: Brooks Range, Spruce

Tree Mine, 68°03'N, 149°W, 800 m, 4 July 1982, Seppo Keponen, ex. *B. glandulosa* (= *Betula glandulosa* Michx.) (1 male); White Mts., Eagle Summit, 900 m, 65°30'N, 145°25'W, 13 July 1982, Seppo Keponen, ex. *B. glandulosa* (1 male); Mt. Fairplay, Taylor Highway, 3,600 ft, 10 July 1962, P. J. Skitsko (1 male, 4 females); Happy Val., 15 June 1982, S. F. MacLean, tussock tundra (1 male, 2 females, 2 nymphs). Other records are from Anufriev and Averkin (1982a, 1982b), Anufriev and Emeljanov (1981), and Scudder (1963).

DISTRIBUTION.—NEARCTIC: Canada: Alberta, British Columbia, Northwest Territories; USA: Alaska. PALEARCTIC: Mongolia, USSR.

Criomorphus wilhelmi Anufriev & Averkin
Figs. 6–8

Criomorphus borealis (Sahlberg), Anufriev 1972:613, 1977:864 nec Sahlberg

Criomorphus wilhelmi Anufriev and Averkin, 1982a:131; new name for *C. borealis* Anufriev nec Sahlberg

Distribution record for the specimen used in this study is: ALASKA: Unalakleet, 21 June 1961, R. Madge (1 male). Other records are from Anufriev (1972, 1977) and Anufriev and Averkin (1982a).

DISTRIBUTION.—NEARCTIC: Alaska. PALEARCTIC: Mongolia, USSR.

Megamelus flavus Crawford
Figs. 9–11

Megamelus notulus flavus Crawford, 1914:609

Megamelus flavus Crawford: Beamer 1955:31

Specimens from Alaska were not available for this study; illustrations were made from a specimen with the following collecting data: WYOMING: Bighorn Nat'l. Park, Meadowlark Lake, 23 August 1954, M. W. Sanderson (1 male). Beamer (1955) recorded this species from Alaska but gave no further data. Other records are from Anufriev and Averkin (1982a), Beamer (1955), and Scudder (1964).

DISTRIBUTION.—NEARCTIC: Canada: Alberta, British Columbia, Manitoba, Northwest Territories, Quebec, Saskatchewan; USA: Alaska, Colorado, Wyoming. PALEARCTIC: Mongolia.

Nothodelphax eburneocarinatus (Anufriev)
Figs. 12–15

Tyrphodelphax eburneocarinatus Anufriev, 1979:295

Nothodelphax eburneocarinatus (Anufriev): Emeljanov 1982:90

Nothodelphax eburneocarinatus (Anufriev): Anufriev and Averkin 1982a:137

Distribution records for specimens used in this study are: ALASKA: Alder Woodland, Arctic Circle, 66°33'N, 150°45'W, 17 June 1982, S. F. MacLean (7 males, 18 females); Brooks Range, Happy Valley, 69°05'N, 149°W, 320 m, 6 July 1982, Seppo Keponen, ex. *B. glandulosa* (1 male); Mt. Fairplay, Taylor Hwy., 3,600 ft, 10 July 1962, R. J. Skitsko (12 males, 54 females); Old Man Camp, 17 June 1982, S. F. MacLean (5 males, 21 females). Anufriev (1979) records it from sedge tussock bogs.

DISTRIBUTION.—NEARCTIC: USA: Alaska. PALEARCTIC: USSR.

Unkanodes excisa (Melichar)
Figs. 16–20

Liburnia excisa Melichar, 1898:67

Elymodelphax excisa (Melichar): Wagner 1963:167

Unkanodes (= *Elymodelphax*), Dlabola 1965:86

Distribution records for specimens used in this study are: ALASKA: Cape Thompson, 6 August 1979, S. F. MacLean (7 males, 8 females, 2 nymphs). Other records are from Nast (1972). This species was reported from *Elymus arenarius* L. in coastal habitats by Ossiannilsson (1978).

DISTRIBUTION.—NEARCTIC: USA: Alaska. PALEARCTIC: Denmark, Finland, East Germany, West Germany, Poland, Sweden, USSR.

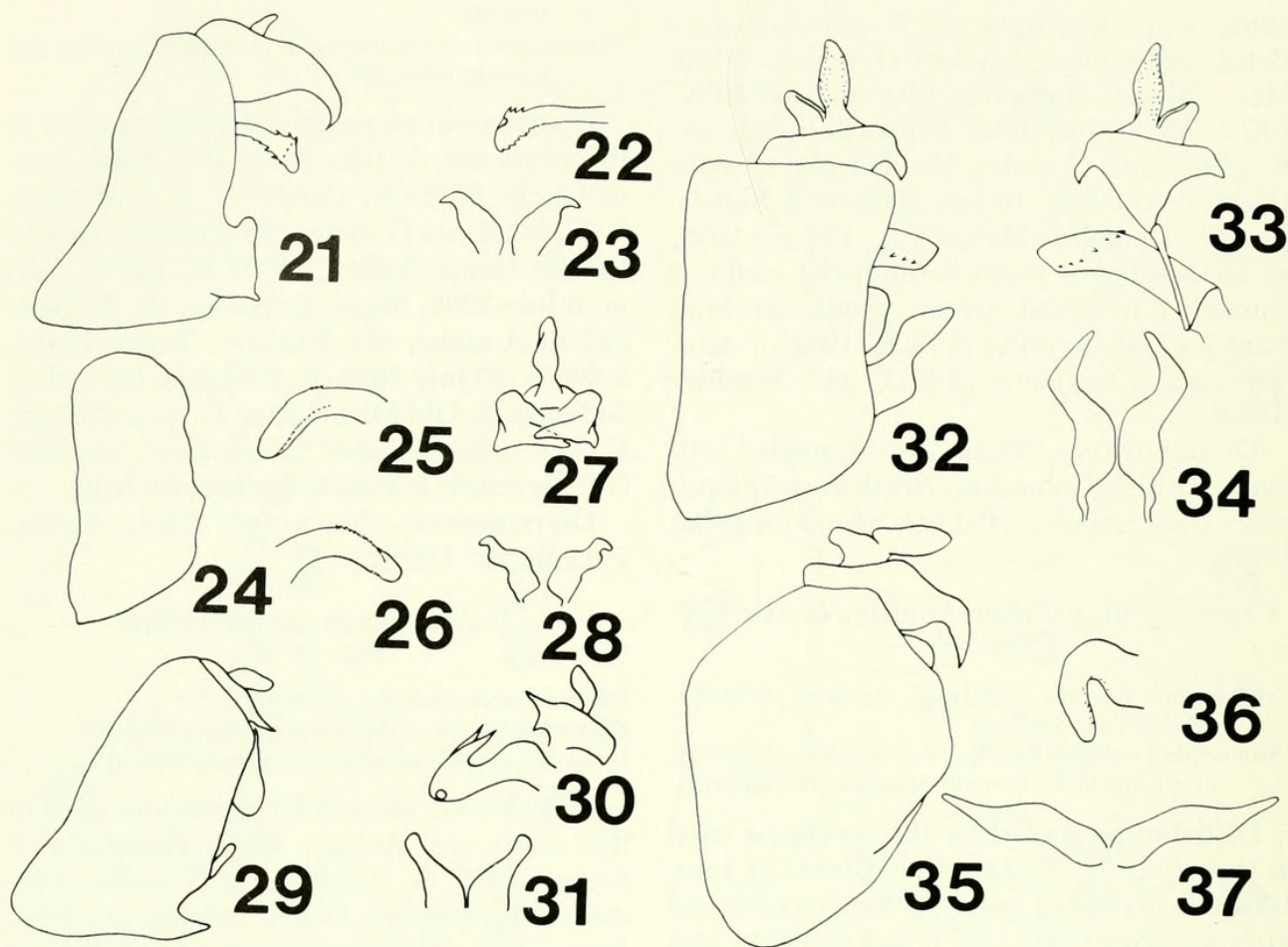
Chilodelphax magnifrons (Crawford),
n. comb.
Figs. 21–23

Megamelus magnifrons Crawford, 1914:614

Eurysa magnifrons (Crawford): Muir and Giffard 1924:8

Beamer (1952a) included four North American species in *Eurysa* but suggested they might belong in *Eurybregma*. Examination of Palearctic *Eurysa* and *Eurybregma* indicates clearly that, based on features of the male genitalia, this species belongs in neither genus. It appears similar to *Chilodelphax silvaticus* Vilbaste as described and illustrated by Kwon (1982); I tentatively place it in *Chilodelphax* Vilbaste (1968).

Distribution records for specimens used in this study are: ALASKA: Ferry, 4 June 1981, S. F. MacLean (9 males, 7 females). Other records are from Beamer (1952a).



Figs. 21–37. Figs. 21–23, *Chilodelphax magnifrons* (Crawford): 21, male genitalia, lateral view; 22, aedeagus, lateral view; 23, styles, caudal view. Figs. 24–28, *Ribautodelphax albostriatus* (Fieber): 24, pygofer, lateral view; 25, 26, aedeagus, lateral view; 27, anal tube, caudal view; 28, styles, caudal view. Figs. 29–31, *Acanthodelphax analis* (Crawford): 29, male genitalia, lateral view; 30, anal tube and aedeagus, lateral view; 31, styles, caudal view. Figs. 32–34, *Kusnezoviella macleani*, n. sp.: 32, male genitalia, lateral view; 33, anal tube and aedeagus, lateral view; 34, styles, caudal view. Figs. 35–37, *Javesella pellucida* (Fabricius): 35, male genitalia, lateral view; 36, aedeagus, lateral view; 37, styles, caudal view.

DISTRIBUTION.—NEARCTIC: Canada: British Columbia; USA: Alaska, Colorado, Montana, Wyoming.

Ribautodelphax albostriatus (Fieber)

Figs. 24–28

Delphax albostrata Fieber, 1866:525

Ribautodelphax albostriatus (Fieber): Wagner 1963: 170, 176

Distribution records for specimens used in this study are: ALASKA: Inspiration Base Camp (64°N, 148°40'W), 7 June 1981, S. F. MacLean (1 male); Umiat, 8 July 1959, R. Madge (2 males), 20 July 1959 (1 male), J. E. H. Martin, 13 July 1959 (1 male), 16 July 1959 (2 males), 23 July 1959 (2 males). Other records are from Nast (1972). This species was reported from dry grass fields by Ossianilsson (1978).

DISTRIBUTION.—NEARCTIC: USA: Alaska. PALEARCTIC: Austria, Belgium, Cyprus, Czechoslovakia, Denmark, Finland, France, East Germany, West Germany, Hungary, Italy, Mongolia, Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, Tunisia, USSR, Yugoslavia.

Acanthodelphax analis (Crawford), n. comb.
Figs. 29–31

Megamelus analis Crawford, 1914: 620

Delphacodes analis (Crawford): Muir and Giffard 1924:24

Distribution records for specimens used in this study are: ALASKA: Inspiration Base Camp (64°N, 148°40'W), 7 June 1981, S. F. MacLean (7 males); Hope, Kenai Peninsula, 24 May 1951, W. J. Brown, coll. (3 males, 1 female, 2 nymphs). Other records are from

DuBose (1960) and Wilson and McPherson (1980).

DISTRIBUTION.—NEARCTIC: Canada: Alberta; USA: Alaska, Illinois, Michigan, Minnesota, New York, North Carolina, Wisconsin.

Kusnezoviella Vilbaste

Kusnezoviella Vilbaste 1965: 16. Type species *Liburnia dimidiatifrons* Kusnezov, by original designation

The following description is based on a translation from the original Russian supplied by Vilbaste.

Vertex slightly longer than wide, widening anteriorly. Frons with lateral margins almost parallel, converging posteriorly; median carina distinct, forking at juncture with vertex. Antennal scape length subequal to width at apex; pedicel ca 2X length of scape. Beak extending to mesocoxae. Pronotal carinae distinct; lateral carinae curving posterolaterad and disappearing between eye and posterior margin of pronotum. Mesonotal carinae diverging at a 50–60-degree angle. Brachypterous forewings ca 2X longer than wide. Metatibia with 7 teeth (5 + 2) in transverse row at apex on plantar surface; spur foliaceous, with 18 teeth becoming larger apically, apical tooth small.

Pygofer, in lateral view, with caudal margin oblique, slightly concave in middle. Diaphragm with dorsoposteriorly directed extension bearing teeth laterad. Anal tube with pair of elongate, acute spines; bases of spines well separated, distance between them ca 1/2 length of spine. Styles directed posterodorsally, apex acute, base broad. Aedeagus directed caudally, with row of teeth around gonopore, gonopore on dorsal aspect.

Kusnezoviella macleani, n. sp.

Figs. 32–34

Vertex pale beige, one dark brown spot laterally at base on each side, two dark brown spots medially anterior to V-shaped, transverse carina. Frons with carinae pale beige, area between carinae dark brown to pale in middle. Clypeus dark brown with pale, median carina.

Pronota and mesonota pale beige medially, dark brown lateral to lateral carinae. Brachypterous forewing hyaline, light brown. Legs straw-colored with brownish, longitudinal stripes.

Abdomen blackish, marked with pale beige.

MALE GENITALIA.—Pygofer subcylindrical; in lateral view, height ca 1.5X width; in caudal view, with weak dorsolaterally flaring lobes on lateral margin in dorsal 1/2; ventral margin of diaphragm opening with subtriangular extension, in lateral view, with one small spine on either side, in caudal view. Anal tube subcylindrical, two short, acute spines extending from dorsocaudal margin; each spine separated at base by distance subequal to length of spine. Styles converging at apices, narrowing toward subacute tips; apical 1/2 avicephali-form. Aedeagus subcylindrical, slightly laterally compressed, recurved; gonopore apical; apex appears to be broken but is identical in every specimen; with ca 6–7 teeth extending from near apex on ventral margin anterodorsally and 3 teeth on dorsal margin at point of downward curvature of aedeagus.

TYPES.—HOLOTYPE (male) brachypter with label: "Atkasuk, AKA., mouth of Meade R., 18 June 1977, S. F. MacLean, coll., 770617–03T." ALLOTYPE (female) brachypter, same data; in the Canadian National Collection, Ottawa. PARATYPES: ALASKA: Atkasuk, mouth of Meade R., 17 June 1977, S. F. MacLean, coll. (1 male), 18 June 1977 (1 male); Umiat, 23 July 1959, J. E. H. Martin (3 males); in the University of Kansas collection and collection of S. W. Wilson. These specimens were swept from two species of shrub willow (*Salix alaxensis* [Anderss.] Coville and *S. glauca* L.) (MacLean, personal correspondence); it is possible that their actual host plant may be a grass or sedge found under or near the willows.

Javesella pellucida (Fabricius)

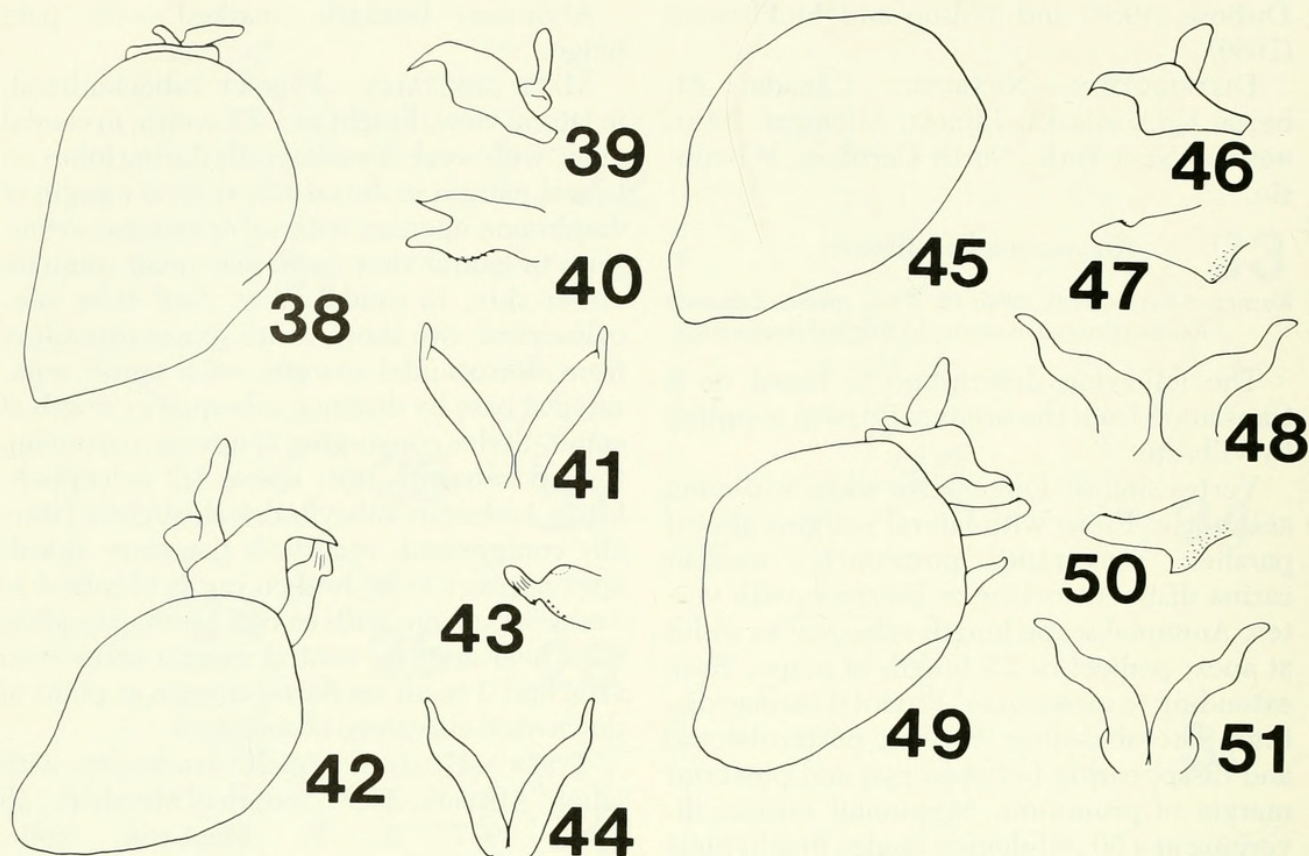
Figs. 35–37

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: Big Delta, 3 July 1951, Mason and McGillis (2 males); Cooper Landing, Kenai Peninsula, 7 June 1951, W. J. Brown (1 male); King Salmon, Naknek R., 3 July 1952, W. R. Mason (1 male), 23 July 1952 (2 males), 1 August 1952 (1 male), 8 August 1952 (1 male); Shaw Creek, M. 289 Rich. Hwy., 11 July 1951, Mason and McGillis



Figs. 38–51. Figs. 38–41, *Javesella obscurella* (Boheman): 38, male genitalia, lateral view; 39, anal tube, lateral view; 40, aedeagus, lateral view; 41, styles, caudal view. Figs. 42–44, *Javesella atrata* (Osborn): 42, male genitalia, lateral view; 43, aedeagus, lateral view; 44, styles, caudal view. Figs. 45–48, *Javesella simillima* (Linnavuori): 45, pygofer, lateral view; 46, anal tube, lateral view; 47, aedeagus, lateral view; 48, styles, caudal view. Figs. 49–51, *Javesella discolor* (Boheman): 49, male genitalia, lateral view; 50, aedeagus, lateral view; 51, styles, caudal view.

(1 male); Umiat, 4 July 1959, R. Madge (2 males), 8 July 1959 (1 male); Unqlakleet, 8 July 1981, R. Madge (1 male). Other records are from Dubose (1960), Muir and Giffard (1924), Nast (1972), and from my collection. *Javesella 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 Kishimoto (1971).

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

Javesella obscurella (Boheman)

Figs. 38–41

Delphax obscurella Boheman, 1847:53

Javesella obscurella (Boheman): LeQuesne 1964:57

Distribution records for specimens used in this study are: ALASKA: Atkasuq, 16 June 1977, mouth of Meade R., S. F. MacLean (1 male, 1 female), 17 June 1977 (1 male); 24 July 1977 (2 males); 31 July 1977 (3 males, 2 females); Brooks Range, Happy Valley, 69°05'N, 149°W, 320 m, 6 July 1982, Seppo Keponen, ex. *B. glandulosa* (3 females); Cape Thompson, 23 July 1961, R. Madge (7 males); Umiat, 4 July 1959, R. Madge (1 male), 8 July 1959 (1 male); USSR: Chaun Bay, 14 August 1977, S. F. MacLean, Jr., ex. *Poa* and *Festuca* (1 male, 3 parasitized males, 3 females, 6 nymphs). Other records are from Nast (1972). Records from New York given in Metcalf (1943) come from before the widespread use of genitalic features in delphacid identification and, thus,

are probably in error. 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: USA: Alaska. PALEARCTIC: Austria, Belgium, Bulgaria, Czechoslovakia, Denmark, Finland, France, East Germany, West Germany, Great Britain, Hungary, Ireland, Italy, Mongolia, Netherlands, Norway, Poland, Portugal, Romania, Sweden, Switzerland, Turkey, USSR, Yugoslavia.

Javesella atrata (Osborn), n. comb.

Figs. 42–44

Delphacodes atrata Osborn, 1938:344

Specimens from Alaska were not available for this study; illustrations were made from a "paramorphotype" with the following collecting data: OHIO: Rome, 19 July 1946, R. H. Beamer. Beamer (1951) recorded this species from Ketchikan, Alaska, as well as the other localities given below.

DISTRIBUTION.—NEARCTIC: USA: Alaska, Connecticut, Illinois, New Hampshire, New York, Ohio.

Javesella simillima (Linnavuori)

Figs. 45–48

Calligypona simillima Linnavuori, 1948:45

Delphacodes saileri Beamer 1952b:114. *New synonymy*

Javesella simillima (Linnavuori): Nast 1972:68

I was unable to determine who first placed this species in *Javesella*. Based on information given by Hulden (1974), it appears to be Linnavuori (1969), a paper which was unavailable to me. In the foregoing synonymy I list Nast (1972) as my reference for first placement in *Javesella*.

Distribution record for the specimen used in this study is: ALASKA: Umiat, 4 July 1959, R. Madge (1 male). Other records are from Beamer (1952b) and Nast (1972). This species is reported from *Eriophorum* and *Carex* by Ossiannilsson (1978).

DISTRIBUTION.—NEARCTIC: USA: Alaska. PALEARCTIC: Finland, USSR.

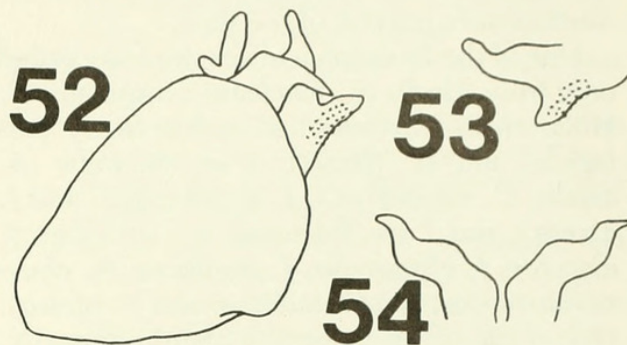
Javesella discolor (Boheman)

Figs. 49–51

Delphax discolor Boheman, 1847:61

Javesella discolor (Boheman): LeQuesne 1964:57

Distribution records for specimens used in this study are: ALASKA: Umiat, 3 July 1959,



Figs. 52–54. *Javesella arcanastyla* (Beamer): 52, male genitalia, lateral view; 53, aedeagus, lateral view; 54, styles, caudal view.

J. E. H. Martin (1 male); 4 July 1959, R. Madge (4 males), 8 July 1959 (3 males). Other records are from Nast (1972). 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: USA: Alaska. PALEARCTIC: Algeria, Austria, Belgium, Czechoslovakia, Denmark, Finland, France, East Germany, West Germany, Great Britain, Ireland, Italy, Mongolia, Netherlands, Norway, Poland, Romania, Sweden, Switzerland, USSR.

Javesella arcanastyla (Beamer), n. comb.

Figs. 52–54

Delphacodes arcanastyla Beamer, 1948:101

Distribution record for the specimen used in this study is: ALASKA: Matanuska, 9 June 1944, J. C. Chamberlain, Rotary Traps, 46–7695. Other records are from Beamer (1948) and the Michigan State University collection.

DISTRIBUTION.—NEARCTIC: USA: Alaska, Michigan, Washington, Wisconsin, Wyoming.

COMMENTS ON DISTRIBUTION

Localities represented in the material used for this study range from the Kenai and Alaska peninsulas in the south through east central Alaska extending to ca 100 km from the northern coast. Three other localities represent coastal sites, one on the north coast in the western one-third of the state, one on the west coast above the Arctic circle, and one on the

central west coast. Only one record is from the southeastern portion of the state.

One of the 15 delphacid species is recorded only from Alaska (*K. macleani*); 3 species are Holarctic in distribution (*A. subarctica*, *J. pelucida*, and *M. flavus*), 4 are Nearctic (*A. analis*, *C. magnifrons*, *J. arcanastyla*, and *J. atrata*), and 7 are Palearctic (*C. wilhelmi*, *J. discolor*, *J. obscurella*, *J. simillima*, *N. eburneocarينات*, *R. albostratus*, and *U. excisa*). One of the seven Palearctic planthoppers (*N. eburneocarينات*) appears to have an amphiberingean distribution; five of the seven have only been collected north of the Brooks Range; all seven are apparently restricted to tundra habitats in Alaska. The diversity of the Alaskan delphacid fauna is comparable to that reported by Vilbaste (1980), who listed 10 species from the Kamchatka Peninsula.

ACKNOWLEDGMENTS

Thanks are tendered to Dr. G. G. E. Scudder, Department of Entomology, University of British Columbia, Vancouver, Canada, who recommended me as someone who might be able to identify Alaskan delphacids; Dr. S. F. MacLean, Jr., Department of Zoology, University of Alaska, Fairbanks, for providing detailed information on the collecting localities; Dr. K. G. A. Hamilton, Biosystematics Research Centre, Agriculture Canada, Ottawa, for the loan of material; the late Dr. J. Vilbaste, Institute of Zoology and Botany, Academy of Sciences, Tartu, Estonian SSR, who suggested the generic placement of the new species and provided an English translation of his description; Drs. M. Asche, H. Hoch, and R. Remane, Fachbereich Biologie-Zoologie, Philipps Universität, Marburg, West Germany, for their invaluable aid in identifying Palearctic material; and Dr. L. B. O'Brien for commenting on the manuscript. I appreciate support for work at Philipps Universität, where some of this research was done, from the German Academic Exchange and the Graduate School, Central Missouri State University.

LITERATURE CITED

- ANUFRIEV, G. A. 1972. New and little known leaf-hoppers from the family Delphacidae (Homoptera) from the Maritime District. Zool. Zh. 51: 612-615.
- . 1977. Delphacids (Homoptera, Auchenorrhyncha) of the Kurile Islands Fauna. Zool. Zh. 61: 855-869.
- . 1979. Notes on the genus *Tyrphodelphax* Vilbaste, 1968 with descriptions of two new Asiatic species (Homoptera, Delphacidae). Reichenbachia 17: 295-301.
- ANUFRIEV, G. A., AND A. M. AVERKIN. 1982a. Cicadinea of the family Delphacidae (Homoptera, Auchenorrhyncha) from the Sokhondo Reserve (Transbaikalia). Ins. Mongolia 8: 123-139.
- . 1982b. On delphacids of the Komsomolsky Reserve (Khabarovsk Region, USSR) (Insecta, Homoptera, Auchenorrhyncha, Delphacidae). Faun. Abh. 9: 95-100.
- ANUFRIEV, G. A., AND A. F. EMELJANOV. 1981. The genus *Achorotile* Fieb. (Homoptera, Delphacidae) and its systematics in the Palearctic Region. Entomol. Rev. 59: 87-97.
- ASHMEAD, W. H. 1904. The Homoptera of Alaska. Harri-man Alaska Expedition 8: 129-137.
- BEAMER, R. H. 1948. Some new species of *Delphacodes* (Homoptera, Fulgoridae, Delphacinae). J. Kansas Entomol. Soc. 21: 96-110.
- . 1951. Some species of *Delphacodes*, new and old (Homoptera-Fulgoridae-Delphacinae). J. Kansas Entomol. Soc. 24: 11-15.
- . 1952a. The genus *Eurysa* in America north of Mexico (Homoptera: Fulgoridae, Delphacinae). Pan-Pacific Entomol. 28: 51-55.
- . 1952b. One old and five new species of delphacine fulgorids (Homoptera: Fulgoridae). J. Kansas Entomol. Soc. 25: 111-115.
- . 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.
- 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.
- DOZIER, H. L. 1926. Notes on new and interesting delphacids. J. New York Entomol. Soc. 34: 257-263.
- DUBOSE, W. P. 1960. The genus *Delphacodes* Fieber in North Carolina (Homoptera: Delphacidae). J. Elisha Mitchell Sci. Soc. 76: 36-63.
- 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 synonimis, 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.

- HULDEN, L. 1974. The *Javesella discolor* group (Homoptera, Delphacidae) of North Europe, with description of a new species. Not. Entomol. 54: 114-116.
- KWON, Y. J. 1982. New and little known planthoppers of the family Delphacidae (Homoptera: Auchenorrhyncha). Korean J. Entomol. 12: 1-11.
- LEQUESNE, W. J. 1964. Some taxonomic observations on the British Delphacidae (Homoptera). Proc. Royal Entomol. Soc., London (B) 33: 56-58.
- LINNAVUORI, R. 1948. Neue oder bemerkenswerte Zikadenfunde aus Finnland, nebst einer Beschreibung einer neuen art. Ann. Entomol. Fenn. 14: 45-47.
- . 1968. Hemipter IV. Ann. Fenn. 13: 1-312.
- MACLEAN, S. F., JR., AND I. D. HODKINSON. 1980. The distribution of psyllids (Homoptera: Psylloidea) in arctic and subarctic Alaska. Arct. Alp. Res. 12: 369-376.
- MELICHAR, L. 1898. Eine neue Homopteren-Art aus Schleswig-Holstein. Wiener Entomol. Zeit. 17: 67-69.
- METCALF, Z. P. 1943. General catalogue of the Hemiptera. Fasc. IV, Fulgoroidea. Part 3, Araeopidae (Delphacidae). Smith Coll., Northampton, Massachusetts. 552 pp.
- MOCHIDA, O., AND R. KISIMOTO. 1971. A review of the studies on *Javesella pellucida* (F.) (Hom., Delphacidae) and associated subjects. Rev. Plant Prot. Res. 4: 1-57.
- MUIR, F. 1919. Notes on the Delphacidae in the British Museum collection. Canadian Entomol. 51: 6-8.
- MUIR, F., AND W. M. GIFFARD. 1924. Studies in North American Delphacidae (Homoptera). Bull. Expt. Sta. Hawaiian Sugar Planters' 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.
- OSBORN, H. 1938. The Fulgoridae of Ohio. Bull. Ohio Biol. Surv. 6: 283-349.
- OSSIANNILSSON, F. 1978. The Auchenorrhyncha (Homoptera) of Fennoscandia and Denmark. Part 1: Introduction, infraorder Fulgoromorpha. Fauna Entomol. Scand. 7: 5-222.
- SCUDDER, G. G. E. 1963. Studies on the Canadian and Alaskan Fulgoromorpha (Hemiptera). I. The genera *Achrotile* Fieber and *Laccocera* Van Duzee (Delphacidae). Canadian Entomol. 95: 167-177.
- . 1964. Studies on the Canadian and Alaskan Fulgoromorpha (Hemiptera). II. The genus *Megamelus* Fieber (Delphacidae). Canadian Entomol. 96: 813-820.
- VILBASTE, J. 1965. On the Altaic cicaden fauna. Tartu. 144 pp.
- . 1968. On the cicaden fauna of the Primorsk region. Tallinn. 179 pp.
- . 1980. On the Homoptera-Cicadinea of Kamchatka. Ann. Zool. 35: 367-417.
- WAGNER, W. 1963. Dynamische Taxonomie, angewandt auf die Delphaciden Mitteleuropas. Mitt. Hamburg Zool. Mus. Inst. 60: 111-180.
- WILSON, S. W., AND J. E. MCPHERSON. 1980. The distribution of the Fulgoroidea of the eastern United States (Homoptera). Trans. Illinois Acad. Sci. 73(4): 7-20.
- WILSON, S. W., AND L. B. O'BRIEN. 1987. A survey of planthopper pests of economically important plants (Homoptera: Fulgoroidea). Pages 343-360 in Proc. 2nd Int. Workshop on Leafhoppers and Planthoppers of Economic Importance.



Wilson, Stephen W. 1988. "Delphacidae of Alaska (Homoptera: Fulgoroidea)." *Great Basin naturalist memoirs* 12, 335–343.

<https://doi.org/10.5962/bhl.part.10989>.

View This Item Online: <https://www.biodiversitylibrary.org/item/33368>

DOI: <https://doi.org/10.5962/bhl.part.10989>

Permalink: <https://www.biodiversitylibrary.org/partpdf/10989>

Holding Institution

Harvard University, Museum of Comparative Zoology, Ernst Mayr Library

Sponsored by

Harvard University, Museum of Comparative Zoology, Ernst Mayr Library

Copyright & Reuse

Copyright Status: In copyright. Digitized with the permission of the rights holder.

Rights Holder: Brigham Young University

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.