

EIGHT NEW LEAFHOPPERS FROM THE UNITED STATES
(HOMOPTERA: CICADELLIDAE)

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Four *Erythroneura* of the Obliqua Group from Ohio, two *Orocastus* and a *Laevicephalus* from the southwest, and an *Athysanella* from South Dakota are included in this paper.

Erythroneura ampla n. sp.

Figures 18, 19

In the Obliqua Group, characterized especially by long straight posterior point of style and broad-based aedeagus, in lateral view, without processes.

Ground color semihyaline to yellowish white with orange markings. Vertex with orange inverted U enlarged on basal half toward but not touching eyes; continued across pronotum as two irregular vittae not reaching margins. Scutellum with basal angles yellow, tip orange. Elytra with usual oblique stripes, apices slightly infuscated near crossveins. Venter stramineous.

Genitalia. ♂ style with short foot, heel projecting slightly, anterior point almost rectangular, posterior point heavy, longer than base, straight, narrowed to sharp tip. Aedeagus in lateral view very broad on basal half, half as broad as long, narrowed on ventral half to rounded tip.

Length: 2.8. mm.

♂ holotype and 6 paratypes, Delaware Co., Ohio, March 25, 1945; 3 paratypes, April 30, 1944; 1, April 8, 1945; 1, May 29, 1945; 1, Hocking Co., April 11, 1945. All collected by D.J. & J.N. Knull and in collection of writer.

Erythroneura enata n. sp.

Figures 16, 17

Near *E. eluta* McAtee but with shorter blunt-tipped aedeagus with minute ventral projection.

Robust, short, ground color yellowish white anteriorly, whitish semihyaline elytra with bright orange vittae. Inverted V of vertex and arms continued across pronotum broad; basal angles of scutellum yellow outlined with orange and tip orange. Usual vittae of elytra distinct, apical cells faintly fumose. Below yellowish white, orange markings on face.

Genitalia: ♂ style with medium foot, base gently curved; heel sharply projecting; posterior point as long as base, sharp, thick; anterior point less than right angle, projecting a little. Aedeagus of medium size, in lateral view parallel-sided, gently curved dorsad toward rounded apical keel, minute projection before opening of shaft on ventral portion of aedeagus.

Length: 2.8. mm.

Described from ♂s from Ohio collected by D.J. & J.N. Knull and placed in collection of author and of The Ohio State University. Holotype and 14 paratypes, Delaware Co., March 25, 1945; 1, May 11; 5, April 8, 1945; 1, Sept. 29, 1945; 1, Greene Co., April 28, 1949; 1, Highland Co., June 6, 1945; 4, Hocking Co., April 11, 1945; 2, Scioto Co., June 10 and 1, June 17, 1944; 2, Put-in-Bay, Sept. 18, 1945; and 1, Hartwick St. Park, Mich., July 17, Mary Auten, Collector.

Erythroneura freta n. sp.

Figures 12, 13

Near *E. stulta* Auten & Johnson and *E. obliqua* (Say) but aedeagus broad and straight in lateral view without processes.

Background color white with red-orange vittae. Inverted V of vertex with arms broadened toward eyes, continuations of arms on pronotum broad and not touching either margin; scutellum with basal angles pale orange, tip bright red-orange. Vittae of elytra broad, apical cells fumose,

and three dusky rounded spots before crossveins. Below creamy white with orange markings on face.

Genitalia: ♂ style with heavy foot, base curved, heel slightly projecting, posterior point as long or a little longer than base, thick, blunt; anterior point less than right angle, projecting slightly. Aedeagus in lateral view with dorsal keel curved very slightly dorsad, broad and narrowed only a little from base to apex.

Length: 2.9 mm.

Six ♂s, holotype and paratypes, Delaware Co., Ohio, March 25, 1945; 2, April 30, 1944, D.J. & J.N. Knull collectors, in collection of writer.

Erythroneura tolerata n. sp.

Figures 14, 15

Near *E. infinita* Beamer and *E. penobliqua* Beamer but with aedeagus in lateral view with long slender apical fin and pair of processes arising well below base on ventral portion of aedeagus.

Background yellowish white to semihyaline on elytra, with anterior markings pellucid orange, to bright orange oblique stripes on elytra. Inverted V of vertex with arms broad toward eyes; continued across pronotum forming broad-based, irregular U; basal angles and tip of scutellum orange. Dark elongate spot in apex of anteapical cell next to costa. Below yellowish white with orange markings on face and a few dark spines on posterior femora.

Genitalia: ♂ style with medium foot, base straight, heel almost rectangular, posterior point not as long as base, sharp, straight; anterior point rectangular. Aedeagus long and slender, in lateral view, ending in long, narrow dorsal fin below opening, almost $\frac{1}{3}$ as long as shaft, curved gently dorsad and with transverse tip. A pair of fine ventral processes arises half-way between base and opening, follows close to shaft and curves out slightly, not quite as long as shaft. Dorsal surface irregular near middle.

Length: 3.2 mm.

♂ holotype, Hocking Co., Ohio, October 19, 1945, and paratype, May 12, 1947, D.J. & J.N. Knull, in collection of writer.

Athysanella kadokana n. sp.

Figures 1, 2, 3

Near *A. salsa* Ball and Beamer in character of inner ♂ genitalia, but differing in genital characters in both sexes.

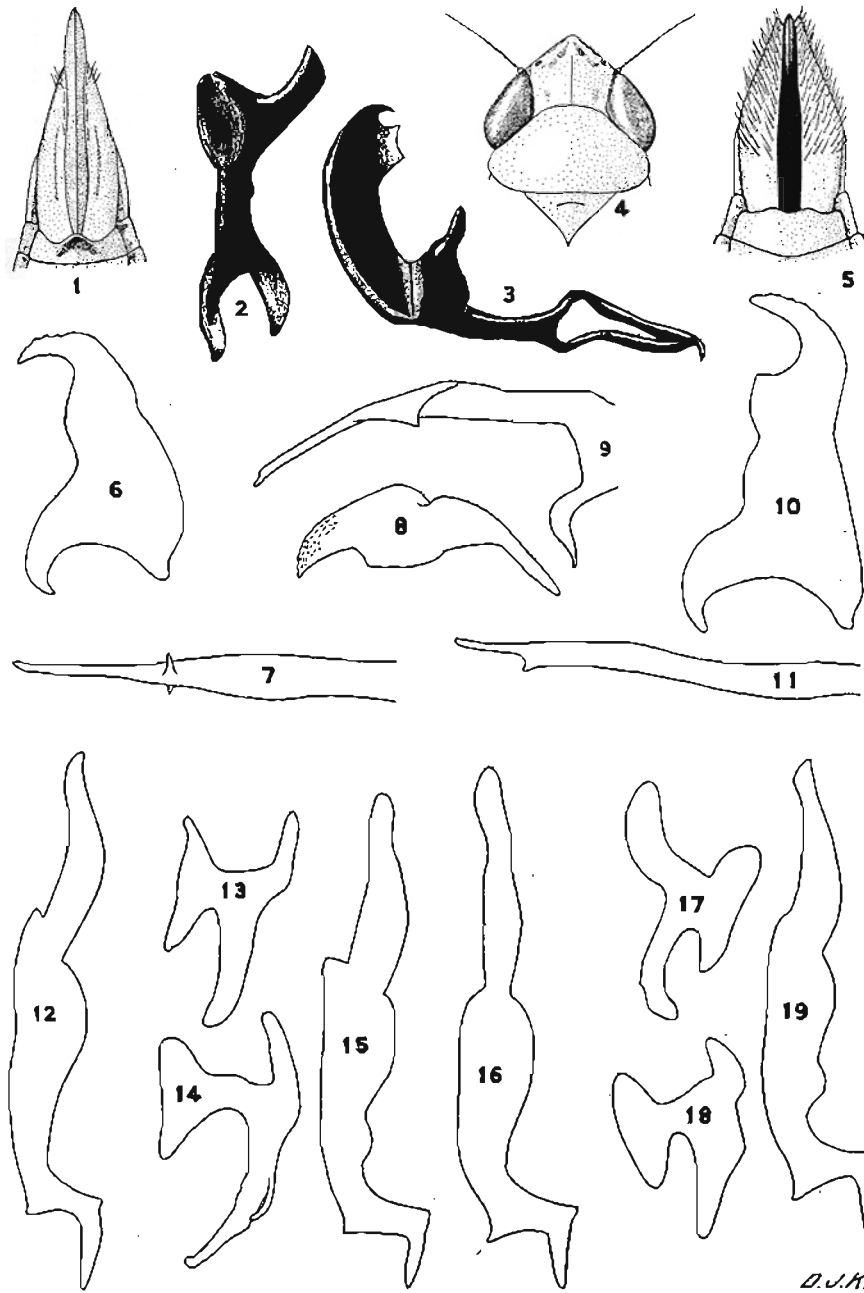
Vertex depressed medially, margins broadly rounded, bluntly produced, not as long as width between eyes. ♂ spur on hind tibia almost as long as first tarsal segment.

Color stramineous, varying from immaculate to heavily marked specimens. Usually a curved dash near ocellus and dots on abdomen more or less distinct; large black patches appear on pygofer, one either side of middle just below margin of last dorsal segment; face with seven or eight fine, dark, incomplete arcs and brownish longitudinal median streak either side of fine pale center line; sutures black; venter of abdomen and valve dark.

Genitalia: ♂ pygofer broad, almost rectangular, lower dorsal half heavily spinose; valve obtusely rounded; plates broadly rounded, extending beyond valve more than its median length. Styles projecting very slightly, finger-like process heavy, curved, parallel-sided, apex truncate, not narrowed as in *A. salsa*, base very heavy, triangular, broad flat outer surface pressing against plate. Aedeagus of medium length, in lateral view broad, almost parallel-sided, apex with hook

EXPLANATION OF PLATE

- 1, 2, 3. *Athysanella kadokana* n. sp. ♀ genitalia; ♂ style and aedeagus.
 4, 5, 8, 9. *Laevicephalus vaser* n. sp. ♂ head; ♀ genitalia; ♂ style, and aedeagus.
 6, 7. *Orocatus omani* n. sp. ♂ style and aedeagus.
 10, 11. *Orocatus aurarius* n. sp. ♂ style and aedeagus.
 12, 13. *Erythroneura freta* n. sp. ♂ style and aedeagus.
 14, 15. *Erythroneura tolerata* n. sp. ♂ aedeagus and style.
 16, 17. *Erythroneura enata* n. sp. ♂ style and aedeagus.
 18, 19. *Erythroneura ampla* n. sp. ♂ aedeagus and style.



on ventral tip and broad truncate portion below hook separated by circular space. ♀ last ventral segment with lateral lobes of posterior margin of medium size, projecting very slightly, median portion roundly produced almost as far as lateral lobes, darkened before margin. Great variation is found in the form of this segment.

Length: ♂ 3.3 mm.; ♀ 4.5 mm.

Holotype ♂, allotype and numerous paratypes of both sexes from Kadoka, S.D., Badlands, July 19, 1950, H.C. Severin, Collector. Types in collection of The Ohio State University, South Dakota State College, University of Kansas, and U.S. National Museum.

I am indebted to Dr. R.H. Beamer for examination of specimens and his opinion, and to Dr. H.C. Severin for the privilege of describing *A. kadokana*.

Orocastus omani n. sp.

Figures 6, 7

In Dr. Oman's description of the genus *Orocastus* he mentioned an undescribed species from Arizona. Specimens collected in southern mountain areas of Arizona sent to him proved to be this species, and together with the National Museum material collected by Dr. Ball, are described and named for Dr. Oman.

Small, golden yellow with veins toward apex lighter, eyes dark. Head wider than pronotum, roundly produced, not as long as pronotum. Elytra long, greatly exceeding abdomen.

Genitalia: ♂ valve small, sinuately triangular, narrower than last segment at base, plates long, narrowed near middle, produced to rounded tips, exceeded by pygofer by a third combined length; pygofer setose, row of setae on sides of plates. Dark oblique dashes either side of apex of valve are the feet of styles showing through plates. Underside of spines of hind tibiae and claws dark. Aedeagus V-shaped, basal portion at least half length of shaft. In lateral view shaft long, straight dorsally, ventrally broader near base and center, narrowed to slender blunt tip on outer fourth, a pair of minute sharp lateral processes projects laterad at right angles to shaft just before shaft narrows. Style with slender outcurved foot with four or more blunt teeth and narrow toe.

Length: 2.8 mm.

Described from ♂ specimens taken in late summer in mountains of southern Arizona. Holotype and 14 paratypes, Patagonia, August 7, 1950; 5, August 20, 1940; 2, Tumacacori Mts., August 7, 1950; 2, Huachuca Mts., August 12, 1950; 1, Santa Rita Mts., August 16, 1940, D.J. & J.N. Knull, in collection of The Ohio State University. Paratypes collected by Dr. E.D. Ball in U.S. National Museum: Nogales, 8, August 16, 1937; 1, August 15, 1937; 2, August 14, 1935; 1, July 29, 1933; 1, July 30, 1937; Santa Cruz River, 8, August 14, 1935; Benson, 3, August 9, 1937; 1, Far Away Ranch, August 11, 1937.

Orocastus aurarius n. sp.

Figures 10, 11

Indistinguishable from *O. omani* Knull except through characters of inner ♂ genitalia.

Slightly larger than *O. omani*. Aedeagus with base V-shaped, more than half as long as shaft, slightly sinuate and parallel-margined in lateral view, narrowed abruptly and hollowed out ventrally to less than half its width and produced in a long, narrow dorsal keel, twice as long as width before notch. Style heavier than in *O. omani* with toe more bluntly produced and with five or six blunt teeth on outer margin.

Length: 3 mm.

3 ♂s, holotype and paratype, Davis Mts., Texas, August 2, 1937; and Chiricahua Mts., Ar., August 28, 1940, D.J. & J.N. Knull, in The Ohio State University Collection.

Laovicephalus vafer n. sp.

Figures 4, 5, 8, 9

Somewhat similar in general appearance to *L. acus* (S. & DeL.) but ♀ with last ventral segment not as produced and aedeagus in ♂ with large diamond-shaped process on shaft near middle.

Elongate, head as wide as pronotum, right angled, not quite as long as pronotum. Pale buff with orange tinge on head, pronotum and scutellum. Vertex with median impressed line.

ocelli, arcuate line from apex toward eye and short dash before base either side nearer eyes than middle, brown. Trace of longitudinal stripes on pronotum in some specimens, scutellum pale. Elytra milky semi-hyaline, veins lighter, yellow margined dark segments of dorsum showing through. Face brown with five arcs and center buff, sutures dark, venter pale laterally, dark medially, ovipositor dark.

Genitalia: ♀ last ventral segment bisinuate on outer margin, very slightly produced, area above ovipositor finely, longitudinally striate, and semihyaline. ♂ plates elongate, narrowed on outer half to fine, blunt tips, not as long as triangular pygofers. Aedeagus in lateral view long, straight, and broad on basal half, with broad triangular enlargements extending laterad from ventral surface, forming large diamond in ventral view, apical half less than half width of basal, and bent dorsad at about 45° angle. Styles elongate, narrowed on outer half with blunt tip covered with bucculae on outer portion.

Length: ♂ 3.5 mm.; ♀ 3.8 mm.

♂ holotype, allotype and 3 ♀ paratypes, Huachuca Mts., Arizona, Sept. 9, 1938, D.J. & J.N. Knull, in collection of The Ohio State University. 8 ♀ paratypes, Santa Rita Mts., Arizona, Sept. 21, 1935, E.D. Ball, in U.S. National Museum.

Dr. P.W. Oman and Dr. R.H. Beamer examined the Huachuca Mts. specimens and considered them undescribed.

The May Number of the OHIO JOURNAL OF SCIENCE contained

THE GLACIAL BORDER —
CLIMATIC, SOIL, AND BIOTIC FEATURES

A Symposium of the Ecological Society of America held at Columbus, Ohio, September 13, 1950, during the Meeting of Biological Societies sponsored by the American Institute of Biological Sciences.

E. LUCY BRAUN, *Chairman*

VEGETATION AND CRYOPLANATION.....	<i>Hugh M. Raup</i>
PLEISTOCENE FROST ACTION NEAR THE BORDER OF THE WISCONSIN DRIFT IN PENNSYLVANIA.....	<i>Charles S. Denny</i>
THE FOSSIL RECORD NEAR THE GLACIAL BORDER.....	<i>J. E. Potzger</i>
THE POSSIBLE ROLE OF MICROCLIMATE.....	<i>John N. Wolfe</i>
ANIMALS OF THE GLACIAL BORDER.....	<i>Edward S. Thomas</i>
PLANT DISTRIBUTION IN RELATION TO THE GLACIAL BOUNDARY.....	<i>E. Lucy Braun</i>

Copies of the May Number containing the papers in the Symposium may be obtained from the Business Manager of the JOURNAL at \$1.00 each. Reprints of the revised and expanded paper by E. S. Thomas, "Distribution of Ohio Animals," will be sent without additional expense to all who order the May Number.