

Cybertaxonomy of microleafhoppers (Hemiptera, Cicadellidae, Typhlocybinae)

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ILLINOIS
NATURAL
HISTORY
SURVEY



Revisionary study of the New World Erythroneurini

Family Cicadellidae ~23 000 species

Subfamily Typhlocybinae ~4300 species

Tribe Erythroneurini:

198 genera and subgenera

~1900 species

>700 species and 4 genera in the New World

3I (Internet-accessible Interactive Identification)

This is a set of tools intended to facilitate the efficient production of internet based virtual taxonomic revisions, published monographs, and checklists.

The package facilitates storage, retrieval and integration of taxonomic nomenclature, specimen-level data on distributions and ecological associations, morphological character data and associated illustrations, and bibliographic information.

3I interhaces

3I - An Interactive Key to New World Genera of Erythronaurini

File Edit View Favorites Tools Help

Address http://ctap.inhs.uiuc.edu/dmitriev/key.asp?key=Erythronaura&lng=En&i=1&keyN=7

Google

An Interactive Key to New World Genera of Erythronaurini

3I Home page Help Preferences Search Clear all Back Proceed © 2003-2005 D. Dmitriev, C. Dietrich Best Viewed with IE 5.0+

Characters Useful for Identification

[Head](#) | [Wings](#) | [Legs](#) | [Abdomen](#) | [Male Genitalia](#) | [Anal Tube](#) | [Coloration](#) | [Geography and Ecology](#)

Head

1. **Male anteclypeus (chpellus)** (M, l=5)
 - not
2. **Crown fore margin** (MF, l=3)
 - not
3. **Face in profile** (MF, l=1)
 - not


Remaining Taxa (21)

[Images](#) [Comp](#)

- **Erythronaurini** Young, 1952
 - **Alnetoidia** Diabola, 1958
 - **Amazygina** Dietrich & Dmitriev, 2006
 - **Aztegina** Dietrich & Dmitriev, 2006
 - **Erasmoneura** Young, 1952
 - **Eratoneura** Young, 1952
 - **Erythridula** Young, 1952
 - **Erythronaura** Fitch, 1851
 - **Hamagina** Dietrich & Dmitriev, 2006

Coloration of mesonotum apex

+Coloration of mesonotum apex



concolorous with rest of mesonotum (110)
 dark, contrasting with adjacent pale areas (9)
 pale, contrasting with rest of mesonotum (4)

not


OK Cancel

Erythridula rufostigmosa (Beamer, 1930) - Internet Explorer provided by Dell

31 | Home page

[Erythronaura rufostigmosa](#) [Beamer, 1930b: 429](#)
[Erythronaura rufostigmosa](#) var. [subnubila](#) [Beamer, 1930b: 429](#) (syn.n.)
[Erythronaura](#) [subnubila](#) [Johnson, 1955a: 52](#) (missp.)
[Erythronaura](#) ([Erythridula](#)) [rufostigmosa](#) [Young, 1952b: 84](#)
[Erythridula rufostigmosa](#) [Dietrich & Dmitriev, 2005a: 130](#)

Images




Autogenerated Description

Body. Length 2.9–3.1 mm.

Male genitalia. Pygofer lobe rounded. Second point of style apex very short, toothlike, or absent. Third point elongate, about as long as or longer than distance between other two points. Angle between basal and third points 90°. Dorsal apodeme of aedeagus with distinct V-shaped ligaments, connected to anal tube and/or pygofer appendages. Aedeagus with preathum shorter than shaft. Aedeagal shaft curved dorsad, slender in lateral view, round in cross section, smooth, without dorsal carina or distal lobe. Aedeagal apex broadened in ventral view. Aedeagus ventral processes absent. Aedeagus distal processes short, apical, toothlike.

Coloration. Dorsum yellow or white. Color pattern red or orange or brown. Vertex with oblique lateral vittae or with large basal dark area often extended onto pronotum. Vertex midline pale or dark. Anteclypeus pale, concolorous with rest of face. Pronotum dark with pale lateral margins or pale with two longitudinal stripes. Mesonotum entirely dark, —mesonotum apex concolorous with rest of mesonotum. Thoracic venter with dark mesosternum, remainder pale. Forewings without oblique vittae or with oblique vittae or with oblique vittae usually forming continuous zigzag pattern, without crossbands. Clavus with continuous vitta parallel to suture or largely or entirely bright red or brown. Abdomen dark dorsally.

Distribution



Discover Life Map

Host Plants

Plants	Number of Specimens Collected	(Localities)
Salix sp.	70 (17)	68.63%
Salix babylonica	14 (2)	13.73%
Salix interior	12 (2)	11.76%
Total	102 (27)	

Studied Material

Holotype: USA, 1m, Arkansas, Scott Co., on *Salix* sp., 24 VIII 1928 (Beamer), (KSEM). **1m** (Holotype of *Erythronaura rufostigmosa* var. *subnubila* Beamer, 1930), Kansas, Douglas Co., 1927, (Beamer), (KSEM). **Allotype:** 1f, Arkansas, Scott Co., on *Salix* sp., 24 VIII 1928 (Beamer), (KSEM). **1f** (Allotype of *Erythronaura rufostigmosa* var. *subnubila* Beamer, 1930), Kansas, Douglas Co., 1927, (Beamer), (KSEM). **Paratype:** 1m, 1f, Arkansas, Scott Co., on *Salix* sp., 23 VIII 1928 (Beamer), (USNM). **Paratype:** 1f, Arkansas, Scott Co., 23 VIII 1928 (Beamer), (BMNH). **Paratype:** 1m, 2f, Arkansas, Scott Co., 23 VIII 1928 (Beamer), (KSEM).

Museum Abbreviations

Abbreviation	Specimens	Museum	Location
INHS	53	Illinois Natural History Survey	USA, Illinois, Champaign
KSEM	190	University of Kansas Natural History Museum (Kansas Snow Entomological Museum)	USA, Kansas, Lawrence
MEM	12	Mississippi State University, Mississippi Entomological Museum	USA, Mississippi, Mississippi

References

DeLong, D.M., Caldwell, J.S., 1937: Check list of the Cicadellidae (Homoptera) of America, north of Mexico. Ohio State University, IV+93 p. (records).

DeLong, D.M., Knull, D.A., 1945a: Check list of the Cicadellidae (Homoptera) of America, north of Mexico. Columbus: Ohio St. Univ. Press, IV+102 p. (records).

Dietrich, C.H., Dmitriev, D.A., 2006a: Review of the New World genera of the leafhopper tribe Erythronaurini (Homoptera: Cicadellidae: Typhlocybinae). *Bull. Illinois Nat. Surv.* 37(5): I-IV, 119-190.

Johnson, D.M., 1955a: Leafhoppers of Ohio. Subfamily Typhlocybinae (Homoptera: Cicadellidae). *Bull. Ohio Biol. Surv.* 31: 29-122. (description, illustrations, key, records, hosts).

Erythridula Young, 1952

Internet | Protected Mode Off | 100%

Impacts of 3I on Taxonomy of Typhlocybiniae (past 5 years)

Total number of taxa in DB	12246
Valid names of genera	572
Valid names of species	4614
New genera described	14
New species described	87*
New synonyms recognized	276*
Genera in interactive keys	298
Species in interactive keys	913
Genera in paper revisions	21*
Species in paper revisions	505*
Number of illustrations	~15000
Number of specimens	127416
Georeferenced specimens	108353
Number of paper publications	10*
Number of paper pages	~540*

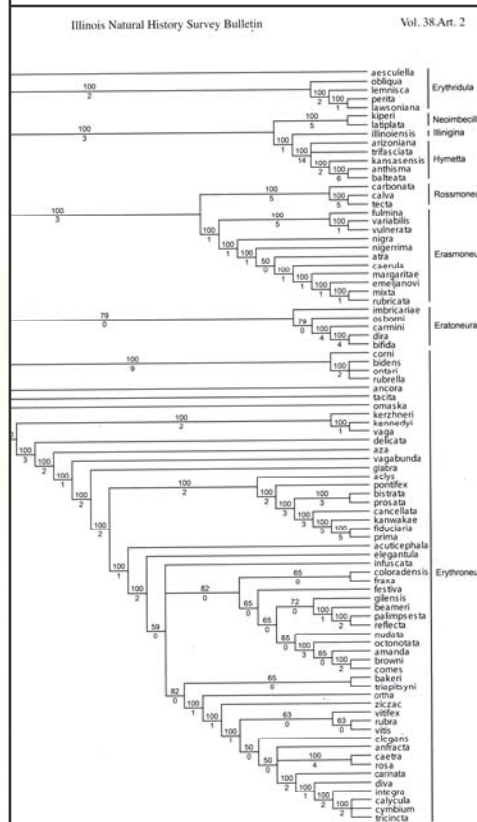
* Including papers in press

Review of the New World Genera of Erythroneurini

Review of the New World Genera of the Leafhopper Tribe Erythroneurini (Hemiptera: Cicadellidae: Typhlocybinae)

Christopher H. Dietrich and Dmitry A. Dmitriev

Illinois Natural History Survey Bulletin
Volume 37, Article 5
July 2006



tree from phylogenetic analysis. Percentage of the trees supporting the node are given above the branches, and decay indices are given below the branches.

- The first record from Neotropics
- 14 new genera
- 14 new species
- Keys for the New World genera
- Phylogenetic analysis suggested at least 3 independent invasions from the Old World

Revision of the genus *Neozygina*

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Revision of the New World leafhopper genus *Neozygina* Dietrich & Dmitriev (Hemiptera: Cicadellidae: Typhlocybinae: Erythroneurini)

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Abstract

The New World erythroneurine leafhopper genus *Neozygina* Dietrich & Dmitriev is revised based on comparative morphological study, and a key for identification of adult males is provided. Twenty-five valid species are recognized, nine of which were previously described and 16 of which are new. One new synonymy is recognized: *Neozygina alvizi* (Dacner) equals *N. virida* (Dacner), new synonym. The known range of the genus extends from the U.S.A. to Chile and Argentina.

Key words: *Erythroneura*, *Zygina*, taxonomy, morphology, identification

Introduction

Dietrich and Dmitriev (2006) reviewed the New World genera of the leafhopper tribe Erythroneurini, erecting a new genus, *Neozygina*, to include North American species placed by previous authors in the informal “*Zygina caenotharia* species group” (Young 1952), and following Dworakowska’s (1970) concept of *Zygina* Fieber, which includes only Old World species. Species of *Neozygina* differ from other New World Erythroneurini in having both dorsal and ventral appendages present on the male pygofer, one or more macrostriae just basad of the dorsal appendage on the pygofer margin, and a pair of conspicuous black spots on the crown.

The few available host records indicate that species of the genus feed on shrubs or herbaceous vegetation, including grasses. This habit is unusual for New World Erythroneurini, most species of which appear to feed on trees, but is similar to that of the superficially similar European genus *Arboridia* Zachvatkin and many other Old World erythroneurines.

Although all previously known *Neozygina* species are recorded from North America, the vast majority from the western U.S.A., examination of specimens from North American collections and recent sampling in the Neotropical region indicate that the range of the genus extends southward to Chile and Argentina, and that many species remain undescribed. In this paper, we review the previously described species included in the genus (Dietrich and Dmitriev 2006) and describe 16 new species. More intensive sampling in the Neotropics will undoubtedly reveal additional undescribed species of *Neozygina*.

Morphological terminology follows Dietrich and Dmitriev (2006). Specimens examined are housed in the following collections: Canadian National Collection, Ottawa (CNC); Illinois Natural History Survey, Champaign (INHS); U.S. National Museum of Natural History, Washington (USNM); North Carolina State University, Raleigh (NCSU); Ohio State University, Columbus (OSU); University of Kansas, Lawrence (KU).

- Key for identification of 25 species
- 16 New species
- 1 Synonym



Revisions of the genera *Erythroneura*, *Erasmoneura*, *Rossmoneura*, and *Hymetta*

Review of the New World Erythroneurini

I. Genera *Erythroneura*, *Erasmoneura*, *Rossmoneura*, and *Hymetta*

Dmitry A. Dmitriev and Christopher H. Dietrich



Plate 1. Photos of Erythroneurini. a – *Erythroneura palimpsesta* McAtee; b – *E. calycula* McAtee; c – *E. acuticephala* Robinson; d – *E. infusata* Gillette; e – *Erasmoneura vulnerata* Fitch; f – *E. nigra* Gillette; g – *Rossmoneura carbonata* McAtee; h – *Hymetta balteata* McAtee. h – photo by Claude Pilon.

- *Erythroneura* 54 species
- *Erasmoneura* 13 species
- *Rossmoneura* 3 species
- *Hymetta* 5 species
- 11 new species
- 21 new synonyms
- Keys for identification

Revision of the genus *Zyginama*

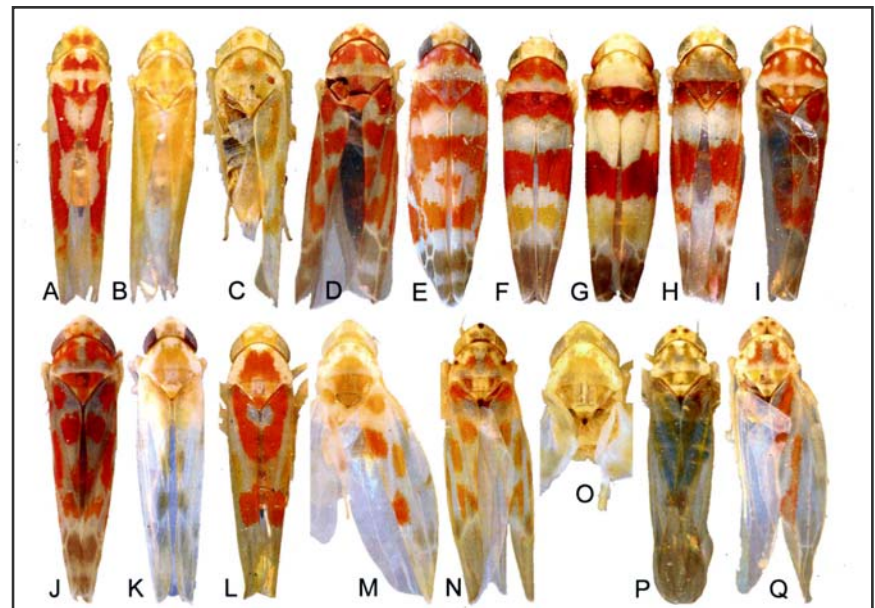
Review of the Species of New World
Erythroneurini
(Hemiptera: Cicadellidae: Typhlocybinae)
II. Genus *Zyginama*

Christopher H. Dietrich and Dmitry A. Dmitriev

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April 2008

Illinois Natural History Survey,
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- Keys for identification of 78 species
- 43 new species
- 4 new synonyms



Revision of the genus *Erythridula*

Review of the Species of New World Erythroneurini (Hemiptera: Cicadellidae: Typhlocybinae)

III. Genus *Erythridula*

Dmitry A. Dmitriev and Christopher H. Dietrich



Plate 1. a—*Erythridula diffusa* (Beamer); b—*E. ulmosa* (Ross & DeLong); c—*E. brundusa* (Robinson); d—*E. lemnisca* (McAtee); e—*E. fumida* (Gillette); f—*E. crevecoeuri* (Gillette); g—*E. aesculella* (Ross & DeLong); h—*E. modica* (Beamer).

- Key to 135 species
- 3 new species
- 129 new synonyms

118. *Erythridula rufostigmosa* (Beamer, 1930) (Fig. 118)
Erythroneura rufostigmosa Beamer, 1930b:429
Erythroneura rufostigmosa var. *subnubila* Beamer,
1930b:429, **syn.n.**
Erythroneura subnubila Johnson, 1935a:52, missp.
Erythroneura (*Erythridula*) *rufostigmosa* Young,
1952b:84
Erythridula rufostigmosa Dietrich & Dmitriev,
2006a:130



Description: Length 2.9–3.1 mm. 2S abdominal apodemes large, broad, reach 3S posterior margin. Pygofer lobe rounded; dorsal appendage with dorsal tooth or hump. Second point of style apex very short, toothlike; third point elongate, about as long as distance between other two points; angle between basal and third points less than 90°. Dorsal apodeme of aedeagus with distinct V-shaped ligaments; preatrium shorter than shaft; shaft curved dorsad, slender in lateral view, round in cross-section; preatrium without dorsal carina or distal lobe; aedeagal apex broadened and emarginate in ventral view; ventral processes absent; distal processes short, toothlike, apical. Dorsum yellowish with red and brown color pattern; vertex with oblique lateral vittae or with large basal dark area, often extended onto pronotum, vertex midline pale or dark; anteclypeus pale, concolorous with rest of face; pronotum dark with pale lateral margins; mesonotum entirely dark; thoracic venter with dark mesosternum, remainder pale. Forewings with oblique vittae, often fused together, or without oblique vittae; clavus largely or entirely bright red or brown; abdomen dark dorsally.

Type locality: Holotype ♂, USA, Arkansas, Scott Co., on *Salix* sp., 24 VIII 1928 (Beamer), (KSEM).

Distribution: Central and southeastern USA.

Host plants: *Salix babylonica*, *S. interior*, *S. nigra*, and other species of *Salix*.

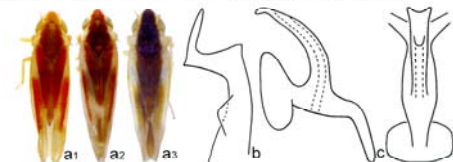


Figure 118. *E. rufostigmosa* (Beamer), a1–a3 – color variations: a1 – paratype, *E. rufostigmosa* Beamer; a2 – color var. *subnubila* Beamer.

Revision of the genus *Eratoneura*




- In press
- Key to 198 species
- 2 new species
- 123 new synonyms

Short papers

Volume 117, Number 1, 2008, 208

JOURNAL OF ZOOLOGICAL SYSTEMATICS

A new program for creating Internet-accessible interactive keys and taxonomic databases and its application for taxonomy of Cicadina (Homoptera)

 Zootaxa 1851: 65–68 (2008)
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Correspondence

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New and little known species of *Erasmoneura* Young (Hemiptera: Cicadellidae: Typhlocybinae)

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The North American leafhopper genus *Erasmoneura* Young was described as Young (1952) to comprise the informal *Erythroneura vulnerata* Fitch species group (1938, 1946). *Erasmoneura* was recently elevated to generic status (Dietrich & Dietrich, 2007). In this paper, the male of *Erasmoneura bipentagona* (Beamer), holotype and placed in the genus based on external similarity and features of w. Dmitriev, 2006; Dmitriev & Dietrich, 2007, see also the note for the species beld key for identification of all 13 species of the genus is provided. The key is base Although individual species have a characteristic color pattern, details and inter and intraspecifically.

Morphological terminology follows Dietrich & Dmitriev (2006). Specimens collections: Canadian National Collection, Ottawa (CNC); University of Kansas History Survey, Champaign (INHS).

Typhlocybinae Kirschbaum
Erythroneurini Young, 1952
Erasmoneura Young, 1952


Erasmoneura (Erasmoneura) Young, 1952: 80

Journal of Zoological Systematics 117: 1–14 (2008)
DOI: 10.1111/j.1365-3113.2008.00361.x

Rapid taxonomic revisions using Internet-integrated relational databases: an example using *Erythroneura* (*sensu lato*)

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Abstract

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Nomenclatural changes and notes in the tribe Erythroneurini (Homoptera: Cicadellidae: Typhlocybinae)

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Abstract

The tribe Erythroneurini (Homoptera: Cicadellidae: Typhlocybinae) is one of the most diverse and complex groups of leafhoppers. In this paper, we present a key to the tribe and a list of species. The tribe is divided into subtribes and genera. The tribe is characterized by the presence of a large, dark, triangular patch on the hind tibiae. The tribe is distributed in the Americas, Europe, and Asia.

Key words: Erythroneurini, Typhlocybinae, Cicadellidae, Homoptera, taxonomy, nomenclature.

Introduction

The tribe Erythroneurini (Homoptera: Cicadellidae: Typhlocybinae) is one of the most diverse and complex groups of leafhoppers. In this paper, we present a key to the tribe and a list of species. The tribe is divided into subtribes and genera. The tribe is characterized by the presence of a large, dark, triangular patch on the hind tibiae. The tribe is distributed in the Americas, Europe, and Asia.

Revisionary study of the genus *Empoasca*

Subfamily Typhlocybinae ~4300 species.

Tribe Empoascini:

86 genera and subgenera

~1300 species

Genus *Empoasca*:

~700 species and 11 subgenera

Subgenus *Empoasca*:

634 species

Status of the revision of the genus *Empoasca*

	Number	%
Number of species in the interactive key	486	77
Number of species with illustrations	~150	24
Specimen records	18467	~70
Georeferenced specimen records		~50

Thanks for your attention

- The work was supported by two NSF RevSys grants and NSF PEET grant.