FOURTEEN NEW SPECIES OF
ERYTHRONEURA (ERYTHRIDULA)
(HOMOPTERA: CICADELLIDAE) V

L. W. HEPNER
Department of Entomology, Mississippi State University
Mississippi State, Mississippi 39762

ABSTRACT

Fourteen new species of Erythroneura (Erythridula) are described: pfrimmeni, navoides, quadratooides, vartyi, velutinae, hamiltoni, pagodifoliae, rubiphylia, meridiana, iseii, phelliphylia, nigripalymphylia, lyratiphylia, leucophylia.

In this subgenus there are various processes associated with the aedeagal shaft. In some species there are “basal processes” that originate on the socket a short distance from the base of the shaft, at the base of the shaft or on the shaft itself. What are termed “lateral processes” appear to be more closely associated with the shaft and may be very narrow (at which time they may resemble basal processes) or they may extend half way or more along the length of the shaft and appear flange-like in posterolateral view. In a few cases, the same structures might be termed either basal processes or lateral processes, depending on their interpretation.

While studying this subgenus a number of types were borrowed from the Francis Huntington Snow Museum at the University of Kansas. For the species related to those described in this paper the following types were examined: holotype of E. naiv Bmr., E. cornipes Bmr., E. geditia Bmr., E. jucua Bmr., and E. difflsa Bmr. and paratypes of E. cotidiana Bmr., E. tenebrosa Knill, E. idonea Bmr., E. quadrata Bmr., E. scissa Bmr., E. kanzo Itob., and E. spatulata Bmr.

Unless otherwise stated all specimens were collected or reared by the author. All holotypes will be deposited in the collection of the Illinois Natural History Survey, and paratypes in the Florida State Collection of Arthropods, Division of Plant Industry, the United States National Museum, and the author’s collection. Upon completing the descriptions of new species in this subgenus, it is anticipated that a key to all species in the subgenus will be published.

Erythroneura (Erythridula) pfrimmeni Hepner, new species
(Fig. 1)

Length 2.8 mm; pale with typical markings yellow except for brown scutellum.

Aedeagal shaft in lateral view broadest at base, lateral processes small, near gonopore; in posterolateral view pointed, lateral flanges small, slender and curved. Dorsal process about length of instep, anterior point distinct but short. Pygofer hook pointed.

1Publication No. 3346, Mississippi Agricultural and Forestry Experiment Station, Mississippi State, Mississippi 39762
Holotype male, State College, Mississippi, 16-VIII-1960, and 4 male paratypes, State College, Miss., 1 each 24-III-1962, 12-VI-1960, and 2 on 30-III-1962.

Nearest *E. iconica* McAtee, but with smaller aedeagal shaft and smaller lateral processes and larger foot of style.

*Erythroneura (Erythridula) navoides* Hepner, new species
(Fig. 2)

Length 3 mm; yellow-tan with pointed crown.

Aedeagal shaft in lateral view curved, broad, apically narrowed; in posterodorsal view slender, apically forked into two lateral processes.

Fig. 1-6. *Erythroneura (Erythridula)* n. spp. 1) *E. pfirrmeri*; 2) *E. navoides*; 3) *E. quadratoides*; 4) *E. vartyi*; 5) *E. velutinae*; 6) *E. hamiltoni*. A. Aedeagus, lateral view; B. Aedeagus, posterodorsal view; C. Foot of style, lateral view.
strongly curved laterally on outer third. Dorsal process about length of
shaft. Foot of style with small points, anterior point straight, posterior
point curved. Pygofer hook apically narrowed.

Holotype male, allotype female and 12 pairs of paratypes, State
College, Mississippi, reared in cage #34, 1963, *Ilex decidua*. Additional
male paratypes from Mississippi as follows: State College, 1 each col-
decidua*, and 2, Canton, 29-I-1962.

Nearest *E. nava* Beamer but with much larger aedeagal shaft and dorsal
process and longer lateral processes in posteroventral view.

*Erythroneura (Erythridula) quadratoides* Hepner, new species
(Fig. 3)

Length 3 mm; pale with typical markings yellow.

Aedeagal shaft in lateral view curved, apically narrowed; in postero-
ventral view with lateral processes parallel margined extending along
shaft from base to almost apex. Dorsal process about half length of shaft.
Foot of style small with posterior point about half length of instep, an-
terior point small but distinct. Pygofer hook slender.

Holotype male reared, State College, Mississippi, cage #492, 1967,
*Quercus nigra*. One male paratype, State College, Miss., 19-VI-1968.

Nearest *E. quadrata* Beamer but with aedeagal shaft sinuate in lateral
view and foot of style with curved posterior point.

*Erythroneura (Erythridula) vartyi* Hepner, new species
(Fig. 4)

Length 2.9 mm; pale with typical yellow markings indicated.

Aedeagal shaft in lateral view slender, curved; in posteroventral view
slender with pair of broad, rectangular apical forks, or lateral processes.
Dorsal process about half length of shaft. Foot of style with short points,
posterior point more slender.

Holotype male, allotype female, 3 male and 10 female paratypes,
State College, Mississippi, reared cage #1591, 1964, *Crataegus marshallii*.
Additional paratypes with same data as holotype except different cages as
follows: 2 males, cage #102; 1 male, cage #756; 3 males, 1 female, cage
#757 and 5 males, 2 females, cage #1590.

Nearest *E. cornipes* Beamer but with shorter dorsal process and lateral
processes more diverging in posteroventral view.

*Erythroneura (Erythridula) velutinae* Hepner, new species
(Fig. 5)

Length 2.8 mm; pale with typical markings yellow.

Aedeagal shaft in lateral view slender, almost straight to upward
curved tip; in posteroventral view expanded apically into broad, thickened
forks. Dorsal process about two-fifths length of shaft. Foot of style with
posterior point almost length of instep, anterior point distinct, pointed.
Pygofer hook broad, rounded posteriorly.

Holotype male, allotype female, 4 female paratypes, State College,
Mississippi, #508, 1969, *Quercus velutina*. Additional male paratypes as

Nearest E. cornipes Beamer but with aedeagal shaft straight in lateral view, with shorter dorsal process and heavier lateral processes.

Erythroneura (Erythridula) hamiltoni Hepner, new species

(Fig. 6)

Length 2.9 mm; cream colored all over.
Aedeagal shaft in lateral view broadest basally; in posteroventral view slender, apically expanded with median notch. Dorsal process about half length of shaft. Foot of style slender with slender posterior point about half length of instep, anterior point almost a right angle. Pygofer hook short and broad.

Holotype male, allotype female, 5 male and 8 female paratypes, State College, Mississippi, reared in cage #793, 1964, Carpinus caroliniana. Additional male paratypes with same data except 4 reared in cage #311 and 1 in #313 in 1969.

Nearest E. scissa Beamer but with broader aedeagal shaft in lateral view and without broadened area basad of gonopore in posteroventral view.

Erythroneura (Erythridula) pagodifoliae Hepner, new species

(Fig. 7)

Length 2.9 mm; white with typical markings orange.
Aedeagal shaft in lateral view curved, slightly broadest basally; in posteroventral view almost parallel margined, three apical “points” about same length, the lateral processes curved outward. Dorsal process about two-thirds length of shaft. Foot of style with posterior point curved, longer than instep, anterior point short. Pygofer hook slender.

Holotype male, allotype female, 2 male and 4 female paratypes, State College, Mississippi, in cage #859, 1963, Quercus falcata var. pagodae-foila. Additional paratypes, 4 males, 6 females, same data, except reared in cage #179 in 1967.

Nearest E. frisoni Ross and DeLong but with lateral processes at tip of aedeagal shaft erect and extending beyond rest of shaft in posteroventral view.

Erythroneura (Erythridula) rubiphylla Hepner, new species

(Fig. 8)

Length 3.1 mm; yelow all over.
Aedeagal shaft in lateral view roughened on posterior margin, basal processes closely appressed to posterior margin, reaching beyond gonopore; in posteroventral view slender and pointed, basal processes broadly sinuate and curved laterally at tip. Dorsal process about half length of shaft. Foot of style with posterior point slightly curved, sharply pointed, almost length of instep, anterior point a right angle. Pygofer hood broad and short.

Holotype male, Highlands, North Carolina 31-VII-1962, Rubus sp. (blackberry).

Nearest E. minuta Johnson but with aedeagal shaft sinuate in lateral view and basal processes much larger.
**Erythroneura (Erythridula) meridiana** Hepner, new species
(Fig. 9)

Length 3 mm; yellow-tan all over.
Aedeagal shaft in lateral view curved, almost parallel margined. Dorsal process about half length of shaft. Foot of style with posterior point about length of instep, anterior point short. Pygofer hook small. (Only slides of genitalia are available, so the dorsoventral view is unknown.)
Holotype male, 8 male paratypes, Sebring, Florida, 28-XII-1960.
Nearest *E. spatulata* Beamer but with more strongly curved aedeagal shaft in lateral view, yellow-tan in color and with heavier foot of style.

*Erythroneura (Erythridula) isei* Hepner, new species
(Fig. 10)

Length 3 mm; white with typical markings broad and orange-tan, scutellum dark.
Aedeagal shaft in lateral view slightly broadened at middle; in posteroventral view broad and pointed. Lateral processes from near middle of shaft, strongly curved apically. Dorsal process about half length of shaft. Foot of style with curved posterior point about length of instep, anterior point small. Pygofer hook medium.
Holotype male, State College, Mississippi, reared in cage #249 in 1969, *Quercus nigra*.
Nearest *E. iconica* Beamer but with lateral processes in posteroventral view parallel margined, curved strongly at tip and with posterior point of foot of style much heavier.

*Erythroneura (Erythridula) phelliphylla* Hepner, new species
(Fig. 11)

Length 3.1 mm; pale with typical markings yellow-orange.
Aedeagal shaft in lateral view slender, slightly curved, almost parallel margined; in posteroventral view slender, apically narrowed with three apical almost equal "points", the lateral processes curved laterally. Dorsal process about half length of shaft. Foot of style with posterior point about half length of instep, anterior point short but distinct. Pygofer hook slender.
Nearest *E. jocosa* Beamer but with aedeagal shaft smaller and lateral processes much shorter in posteroventral view.

*Erythroneura (Erythridula) nigrophylla* Hepner, new species
(Fig. 12)

Length 2.6 mm; light with typical markings yellow-orange.
Aedeagal shaft in lateral view curved just beyond middle, almost parallel margined; in posteroventral view with three slender apical processes, the middle one twice as long as the curved lateral processes. Dorsal process about half length of shaft. Foot of style with posterior point about one-third length of instep, anterior point projecting and about length of posterior point. Pygofer hook slender.
Holotype male, allotype female, 2 male and 1 female paratypes, State College, Mississippi, reared, cage #401 in 1964, *Quercus nigra*. Additional paratypes, all reared at State College, Miss. as follows: 2 pairs, 1967, in cage #379, *Quercus nigra*, and 3 pairs, 1969 in cage #1228, *Quercus phellos*.
Nearest *E. jocosa* Beamer but with much smaller lateral processes
evenly curved in posteroventral view and with foot of style with much shorter posterior point.

_Erythroneura (Erythridula) lyratiphylia_ Hepner, new species
(Fig. 13)

Length 2.7 mm; pale with typical markings yellow-orange.
Aedeagal shaft in lateral view slender, curved, broadest basally, in posteroventral view broad, almost parallel margined, a pair of broad apical lateral processes slightly curved laterally. Dorsal process slightly more than half length of shaft. Foot of style slender, posterior point about half length of instep, anterior point distinct. Pygofer hook with a posterior convexity.

Holotype male, Starkville, Mississippi, 16-VII-1963, _Quercus lyrata_.

Nearest _E. jocosa_ Beamer but with narrower aedeagal shaft in lateral view and broader aedeagal shaft on basal half in posteroventral view.

_Erythroneura (Erythridula) leucophylla_ Hepner, new species
(Fig. 14)

Length 3 mm; pale with typical markings yellow-orange.
Aedeagal shaft in lateral view curved, almost parallel margined, apically narrowed; in posteroventral view slender with a pair of curved apical lateral processes and a very small median apical process. Dorsal process about three-fifths length of shaft. Foot of style large, posterior point as long as instep, anterior point barely evident. Pygofer hook slender.

Holotype male, allotype female, 7 male and 3 female paratypes reared, State College, Mississippi, 1968 in cage #543, _Quercus falcata_ var. _pagodaefolia_.

Nearest _E. jocosa_ Beamer but with lateral processes extending well beyond tip of aedeagal shaft proper and posterior point of foot of style about length of instep and meeting instep at an oblique angle.

**Response of Mexican bean beetle larvae and the parasitoid _Pediobius foveolatus_ to Dimilin.—(Note)** Laboratory studies were conducted to determine the effects of Dimilin® (1-(4 chlorophenyl)-3-(2,6 diflorbenzoyl)-urea) on _Epilachna varivestis_ Mulsant larvae and the subsequent development of its parasitoid, _Pediobius foveolatus_ Crawford. Dimilin has successfully controlled other insect pests with minimum effects on their parasites (J. R. Abee, R. P. Weet, and M. Shepard. 1975. J. Econ. Ent. 68:624-9; J. Granett, D. M. Dunbar, and R. M. Weseloh. 1976. J. Econ. Ent. 69:403-4).

Test insects were maintained in a rearing chamber at 26.7 ± 2°C, 50 ± 10% RH, and a photoperiod of L:D 14:10. Dimilin concentrations were prepared from a 25% WP formulation.

Toxicity of Dimilin to _E. varivestis_ was determined by placing 20, 3rd stage larvae singly in 100 × 15 mm petri dishes per treatment, and feeding the _E. varivestis_ larvae on lima bean leaves dipped in solutions of 3.12, 6.25, 12.5, and 25 ppm. The control group was fed bean leaves dipped in distilled water. After 24 h, all larvae were transferred to fresh, untreated leaves. Larvae were observed daily and provided fresh leaves until death or adult emergence. These data were subjected to probit analysis and the LC<sub>50</sub> was determined.
Fourth instar Mexican bean beetles were used to determine the effects of Dimilin on *P. foveolatus*. Twenty larvae per treatment were placed on a bouquet of bean leaves dipped in concentrations of 3, 6, and 12 ppm. Each group of larvae was contained in a 14 x 11 cm cylindrical plastic container with a 52 x 52 mesh Lumite® screen lid. The control group was treated with distilled water. After the bouquets were dry, 5 female, laboratory reared *P. foveolatus* were allowed to remain in each container for 24 h. Larvae were kept on treated foliage for 43 h. They were then removed and supplied fresh foliage until mummies (parasitized larvae) formed or adult beetles emerged.

Response of the 3rd stage Mexican bean beetle larvae at each concentration is illustrated in Fig. 1. The I.C.₅₀ for 3rd instar beetles, as determined by probit analysis, was 3.4 ppm. Although direct comparison of these data to those which may be obtained under field conditions cannot be made, bean beetle larvae would be susceptible to low doses of Dimilin.

Parasitization, determined by dissection, was evident, but *P. foveolatus* failed to develop even at the lowest concentration (3 ppm). Results from these experiments indicate that Dimilin has the potential to control successfully *E. variequisis* populations but inhibits development of *P. foveolatus*. Thus, use of Dimilin with simultaneous releases of *P. foveolatus* in an integrated control program may not be desirable. R. McWhorter, and M. Shepard, Clemson University, Dep. Ent. and Econ. Zool., Clemson, S. Car. 29631. Tech. Contrib. No. 1436 published by permission of the Director, S. Car. Agr. Exp. Sta.

Dosage mortality curves for 3rd-stage Mexican bean beetle larvae after feeding on lima bean leaves dipped in solutions of Dimilin.