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THE SPECIES OF CALINEURIA AND DORONEURIA
(PLECOPTERA: PERLIDAE)¹

Bill P. Stark² and Arden R. Gaufin²

ABSTRACT.— The genus Doroneuria is reviewed, and characters necessary for recognition of its two included species are figured. Doroneuria baumannii, sp. nov., is described for the male, female, and nymph, and a male holotype and female allotype are designated. Calineuria is removed from the synonymy of Doroneuria, and the genus is characterized in detail. Distributional data are presented for species in both genera.

Doroneuria was proposed as a subgenus of Acroneuria by Needham and Claassen (1922) with the newly described theodora as the type species. This subgenus was omitted from the systematic list in the Needham and Claassen monograph (1925). Ricker (1954), apparently unaware of the former paper, proposed a new subgenus, Calineuria, for the species Acroneuria californica (Banks) and A. theodora Needham and Claassen with californica (Banks) as type species. Illies (1966) gave Doroneuria generic status and considered Calineuria a synonym.

A detailed study of these species has indicated clearly that two genera are involved and has led to the discovery of a new species of Doroneuria.

Calineuria Ricker


The genus Calineuria may be characterized in the adult male by (1) a longitudinally rectangular hammer on abdominal sternum 9, (2) a median, heavily sclerotized tergite on tergum 10 (Fig. 1), and (3) the aedeagus (Figs. 1, 2) bearing on the basal portion 4 prominent patches of long golden-brown spinules (2 lateral, 1 ventral, and 1 apical). Adult females are characterized by (1) the unproduced, shallowly notched posterior margin of sternum 8 with an unsclerotized, U-shaped border around the notch (Fig. 3) and (2) a membranous vagina that extends forward to near the anterior margin of sternum 7 and is not lined internally by spinulae.

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Mature nymphs are characterized by (1) an incomplete, irregularly spaced row of spines across the occiput, (2) numerous prominent spines on each abdominal tergum in addition to the posterior fringe, (3) a dense fringe of long silky hairs along the mesal surface of the cerci originating in the whorl of spines on each cercal segment (Fig. 14), and (4) usually a complete posterior fringe of spines across

Figs. 1-3. Calineuria californica: 1, Male terminalia with aedeagus extruded, dorsal; 2, Aedeagus, lateral; 3, Female abdominal sternum 8. (ap=apical patch, lp=lateral patch, vp=ventral patch).
Fig. 4. Distribution map of *C. californica*, *D. baumannii*, and *D. theodora*.

Abdominal sternum 7 (Fig. 14). This monotypic genus is known only from western North America.

*Calineuria californica* (Banks)

*Perla californica* Banks (1905:87). Holotype ♀; Claremont, California. (MCZ #11318).

**MALE.**—Macropterous. Length of forewings 19-21 mm; length of body 18-20 mm. General color yellow brown. Wings hyaline, veins brown. Paraprocts sclerotized, fingerlike, with a small terminal acute spine. Aedeagus (Figs. 1, 2) as described above. Occasional specimens with ventral patch of aedeagal spinules variously reduced in size.

**FEMALE.**—Macropterous. Length of forewings 24-27 mm; length of body 22-23 mm. Subgenital plate (Fig. 3) and vagina as described above.

**Nymph.**—Length of mature male 17-18 mm; mature female 22-23 mm. General color yellow and brown. Head with distinctive large yellow spot covering ocular area. Abdominal sterna and cerci (Fig. 14) as described above.

*Calineuria californica* is a species of the Pacific coast and northern Rocky Mountains (Fig. 4). Previous studies (Gauvin et al., 1966; Baumann, 1973; Stark et al., 1973) have recorded the species from Colorado and Utah, but an examination of all this material in the University of Utah collection previously determined as *californica* has shown these records are of a presently undetermined species of *Acroneuria* (possibly *depressa* Needham and Claassen).

Doroneuria Needham and Claassen

Acroneuria (Doroneuria) Needham and Claassen (1922:249). Type species Acroneuria theodora Needham and Claassen by original designation.


The genus Doroneuria may be characterized in the adult male by (1) a longitudinally rectangular hammer on abdominal sternum 9 (Fig. 11), (2) tergum 10 without a median tergite, and (3) the aedeagus bearing a spatulate sclerotized plate dorsally and two elongate, narrow, sclerotized lateral bars (Figs. 5, 6). Adult females are characterized by (1) the almost straight (sometimes slightly produced mesally) posterior margin of sternum 8 (Fig. 7) and (2) a membranous vagina that extends forward to the posterior margin of sternum 7 and is lined with numerous small golden brown spinulae (Figs. 7, 8). Mature nymphs are characterized by (1) an incomplete, irregularly spaced row of spines across the occiput (Fig. 12), (2) numerous prominent spines on each abdominal tergum in addition to the posterior fringe, (3) a dense fringe of long silky hairs along the mesal surface of the cerci (Fig. 13), and (4) an
Figs. 5-8. *Doroneuria baumanni*: 5, Male terminalia with aedeagus extruded, dorsal; 6, Aedeagus, lateral; 7, Female abdominal sterna 7 and 8, vagina shown in outline; 8, Vagina. (pa = paraproct, dp = dorsal plate, lb = lateral bar).

incomplete posterior fringe of spines on abdominal sternum 7 (Fig. 13). The genus is presently known only from western North America.

*Doroneuria baumanni*, sp. nov.


Male.—Brachypterous to macropterous. Length of forewings 18-27 mm; length of body 22-25 mm. General color dark brown. Wings hyaline, veins black. Paraprocts similar to *D. theodora*, sclerotized and fingerlike. Aedeagus (Figs. 5, 6) with 12-22 prominent spines on the lateral sclerotized bars; ventral and lateral surfaces of aedeagus with numerous minute spinulae.

Female.—Macropterous. Length of forewings 31-33 mm; length of body 27-30 mm. Subgenital plate (Fig. 7) unproduced. Vagina (Figs. 7, 8) lined with minute golden brown spinulae.

Nymph.—Length of mature male 20-22 mm; mature female 31-34 mm. Similar to *D. theodora* in coloration and general morphology. Occiput with a transverse row of long silky hairs between the postfrontal suture and the row of spines. Frons with a single long seta near each antennal base. Dorsum of thorax and abdomen with a median longitudinal row of long silky hairs.

*Doroneuria baumanni* is a species of the Cascade and Sierra Nevada Mountains of western North America (Fig. 4) with relict populations in Nevada and southeastern Oregon. The lack of records for *Doroneuria* in Ricker’s (1943) study of southwestern British Columbia indicates that the species survived the Pleistocene glaciation.

Figs. 9-11. *Doroneuria theodora*: 9, Male terminalia with aedeagus extruded, dorsal; 10, Aedeagus, lateral; 11, Male abdominal sterna 9 and 10. (h = hammer, pa = paraproct, dp = dorsal plate, lb = lateral bar)
tions in a coastal refuge and has been unable to recolonize severely glaciated areas.


This species is named for Dr. Richard W. Baumann of the Smithsonian Institution who has assisted in obtaining material and by making suggestions for this and other studies in progress.

**Doroneuria theodora** (Needham and Claassen)

*Acroneuria* (*Doroneuria*) *theodora* Needham and Claassen (1922:254). Holotype ♀, allotype ♂; Yellowstone Nat'l Pk., Wyoming. (Cornell Univ. #1180).


**Male.**—Brachypterous to macropterous. Length of forewings 7-17 mm; length of body 19-22 mm. Similar to *D. baumannii* in
coloration and general features. Aedeagus (Figs. 9, 10) without spines on the lateral sclerotized bars; ventral and lateral surfaces of aedeagus with numerous minute spinulae.

**Female.**—Brachypterous to macropterous. Length of forewings 15-25 mm; length of body 29-31 mm. Subgenital plate and vagina similar to *D. baumannii.*
Nymph.—Length of mature male 20-22 mm; mature female 31-34 mm. Presently indistinguishable from D. baumanni.

Doroneuria theodora is a species of the northern Rocky Mountains (Fig. 4). Records are presently from north of the Wind River range in Wyoming into southern Canada and west through Idaho to eastern Oregon. Published records of theodora from Utah and Colorado are based on the same species of Acroneuria nymph discussed under Calineuria californica above and should be disregarded.


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