

**A NEW SPECIES OF NEBRIA LATREILLE  
FROM UTAH**

DAVID H. KAVANAUGH

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## A NEW SPECIES OF *NEBRIA*<sup>1</sup> LATREILLE FROM UTAH<sup>2</sup>

DAVID H. KAVANAUGH<sup>3</sup>

### ABSTRACT

A new species, *Nebria desolata*, is described from southcentral Utah. It is compared particularly with *N. diversa* LeConte. Illustrations of pronota, male genitalia, and styli of female ovipositors are provided for both species. A key to the species of the *mannerheimi* group is presented.

I collected a number of specimens of the genus *Nebria* Latreille in southcentral Utah in July, 1969. I was unable to identify individuals of one particular sample using the available keys (Hatch, 1939; Lindroth, 1961). These specimens most closely resemble individuals of *N. diversa* LeConte and are similar to other members of the *mannerheimi* group (*sensu* Lindroth, 1961).

Lindroth distinguishes members of the *mannerheimi* group from others by the following characters: pronotum without a lateral setigerous puncture at or anterior to middle; sides of pronotum with a narrow, poorly defined explanation, hind angles either rectangular or acute; body stout, moderately convex. Within the group, Lindroth separates species on the basis of wing length, body and leg coloration, and distribution of setigerous punctures on various elytral intervals. I have utilized characters that are here for the first time applied to North American members of *Nebria*. Bell (1960) successfully applied some of these in the classification of the genus *Chlaenius* Bonelli, and I have found them useful in characterizing *N. desolata*.

Male genitalia were prepared using the method of Erwin (1965).

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<sup>1</sup> Coleoptera: Carabidae.

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<sup>3</sup> Present address: Department of Entomology, University of Alberta, Edmonton, Alberta, Canada.

In *Nebria*, the internal sac lacks sclerites; therefore, the clearing step was not used.

Material examined: *N. desolata*, new species, 44 ♀, 38 ♂; *N. diversa* LeConte, 40 ♂, 50 ♀; *N. mannerheimi* Fischer, 41 ♂, 27 ♀; *N. eschscholtzi* Menetries, 28 ♂, 24 ♀.

*Nebria desolata*, new species

(Figs. 1, 2, 5-9)

*Diagnosis.* Color entirely pale, reddish yellow, with black eyes; wing reduced to less than length of an elytron; width of head behind eyes 2.0 to 2.4 times head length; elytral intervals 5 and 7 without setigerous punctures.

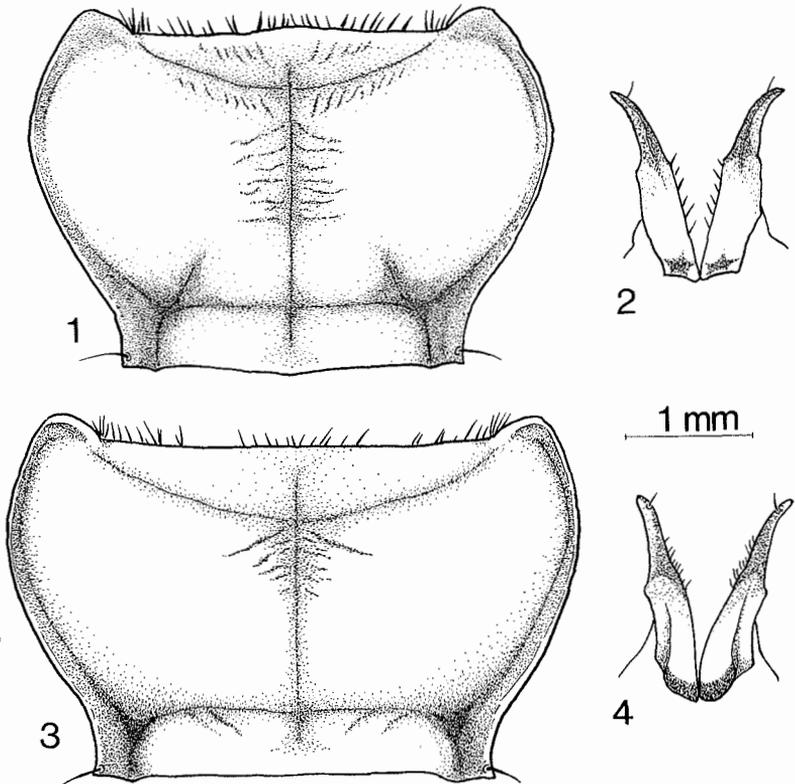
**MALE.** Body length 12.3 mm,<sup>4</sup> width 4.9 mm. Color entirely pale, reddish yellow, with black eyes. Elongate, with slender legs and antennae. Microsculpture. Vertex of head and disc of pronotum with isodiametric to irregular meshes; elytral intervals with isodiametric meshes. Head. Length 2.6 mm; flat, narrow, width behind eyes 2.2 times width of anterior margin of labrum; neck not constricted behind eyes; antennae long, extended beyond middle of elytron; scape widest near middle; length of articles 3 and 5 each greater than width of labrum; anterior margin of labrum slightly emarginate and produced at middle; mental tooth deeply emarginate, bifid; submentum unisetose laterally.

**Prothorax.** Pronotum (Fig. 1) subcordate, moderately convex; length 2.5 mm, width 1.3 times length; anterior angles rounded, moderately prominent; lateral margin feebly developed at middle, slightly broadened anteriorly, narrowly explanate, with a short, shallow sinuation before rectangular posterior angle; lateral bead not quite extended to anterior or posterior angles; basal setigerous puncture present; basal fovea well defined, extended broadly from posterior margin anteriorly beyond posterior transverse impression; posterior transverse impression deep, apical transverse impression shallow; median longitudinal groove shallow, not extended to anterior or posterior margin; prosternal process margined laterally only; anterior tarsus with proximal 3 articles dilated, length of article 5 equal to or greater than width of labrum.

**Pterothorax.** Elytra elongate, oviform, moderately convex; length 1.5 times width; humeral angle moderately obtuse; striae obsoletely punctate, deeply impressed basally, more shallow apically, but evident to apex; intervals moderately convex; intervals 5 and 7 glabrous; setigerous scutellar puncture present; lateral elytral margin smoothly rounded, shallowly sinuate before apex; series of lateral umbilical

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<sup>4</sup> Body length is the sum of the following three measurements, all taken along the midline: head, anterior margin of labrum to center of the occipital ridge; pronotum, anterior margin to posterior margin; elytron, apex of the scutellum to the elytral apex.

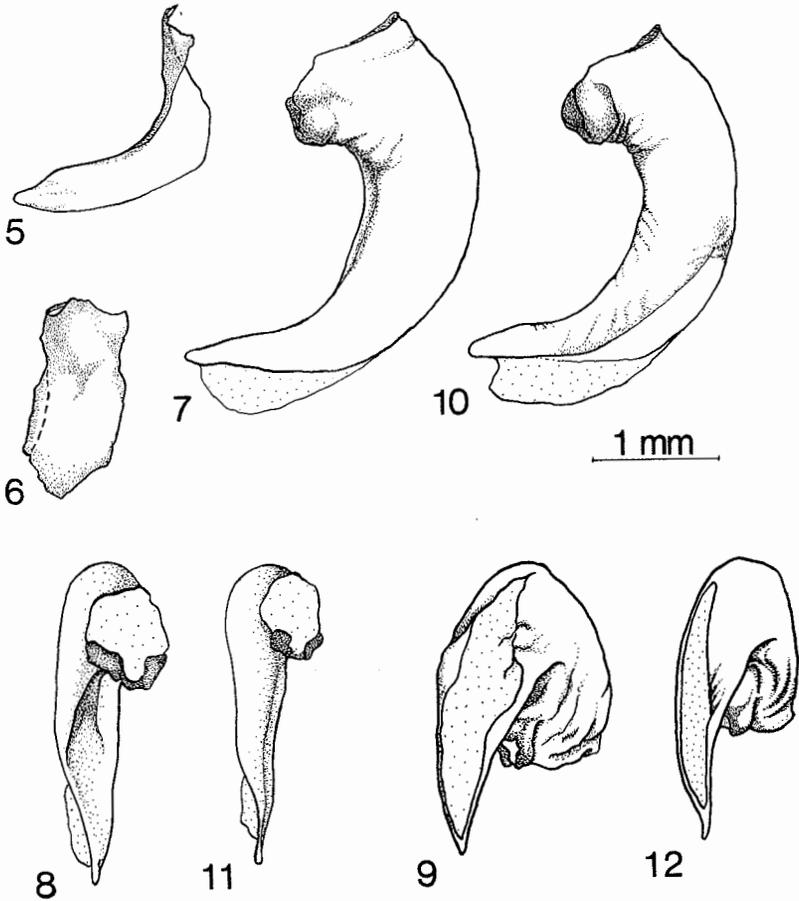


FIGS. 1-4. Figs. 1-2, *Nebria desolata*, new species. 1, pronotum, dorsal aspect; 2, styli of female ovipositor, ventral aspect. Figs. 3-4, *Nebria diversa* LeConte. 3, pronotum, dorsal aspect; 4, styli of female ovipositor, ventral aspect.

punctures widely separated along edge of elytron; metasternal process feebly margined; metasterna impunctate, length 1.5 times width; wing short, 0.7 times length of elytron, apex broadly rounded; posterior coxae bisetose basally.

Abdomen. Venter impunctate; sterna 3 to 5 with 2 to 3 setae on each side of midline; last visible sternum unisetose on each side of midline. Genitalia. Median lobe (Fig. 7) large, robust basally; shaft with a longitudinal trough on ventral curvature; apex (Figs. 7-9) short, narrow, rounded; apical orifice (Fig. 9) wide, longitudinally extended; left paramere (Fig. 6) spatulate, unevenly sclerotized; right paramere (Fig. 5) long, slender, arcuate.

FEMALE. Body length 12.7 mm, width 5.0 mm. Similar to male



FIGS. 5-12, male genitalia. Figs. 5-9, *Nebria desolata* new species. 5, right paramere, medial aspect; 6, left paramere, lateral aspect; 7, 8, 9, median lobe: lateral, ventral, and dorsal aspects respectively. Figs. 10-12, *Nebria diversa* LeConte. 10, 11, 12, median lobe: lateral, ventral, and dorsal aspects respectively.

except: anterior tarsus with all articles slender; last visible sternum bisetose on each side of midline; styli of ovipositor (Fig. 2) arcuately divergent from midline, each tapered apically, finely produced, and bearing a row of stout setae basally on the medial surface.

Variation of paratypes. Length 12.2 to 13.0 mm (mean, 12.6 mm); width 4.7 to 5.2 mm (mean, 4.9 mm); 3 to 7 (mean, 5) setae on elytral

interval 3; 2 to 5 (mean, 3) setae on each posterior coxa basally; 2 to 5 (mean, 3) setae each side of midline on sterna 3 to 5; last visible sternum usually unisetose each side of midline in males (unilaterally glabrous in one individual), and bisetose each side in females (1 or 3 setae unilaterally in 6 individuals).

Types. Holotype ♂, labeled as follows: "Utah, Garfield Co., 11 mi. S. W. Boulder, The Gulch, 5600', 16 July 69"; white, red, and orange ecology labels; "D. H. Kavanaugh, Collector; HOLOTYPE male, *Nebria desolata* D. Kavanaugh" (red label); allotype female, labeled as follows: "Utah, Garfield Co., 11 mi. S. W. Boulder, The Gulch, 5600' 16 July 69"; white, red, and orange ecology labels; "D. H. Kavanaugh, Collector; ALLOTYPE female, *Nebria desolata* D. Kavanaugh" (green label). Paratypes: 37 ♂, 43 ♀, same data as holotype.

The holotype and allotype have been deposited in the collections of the California Academy of Sciences, San Francisco. Eighty paratypes are in collections of the following institutions or persons: Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts; Department of Biological Sciences, San Jose State College, San Jose, California; G. E. Ball, Edmonton, Alberta; T. L. Erwin, Cambridge, Massachusetts; D. H. Kavanaugh, Denver, Colorado.

**Etymology.** Latin, *desolatus* = forsaken; referring to the remoteness of the type locality.

The extent of wing reduction suggests that members of this species are flightless. Non-teneral adults were collected in mid-July. Otherwise, the life history of the species is unknown. The beetles were taken at the base of steep sandstone cliffs, in cool, moist, shaded conditions, in honeycombed, particulate debris and under angular blocks of sandstone. The adjacent stream probably ceases to flow in late summer. The species is known only from the type locality. Species of the following genera were taken in the same habitat: *Bembidion*, *Tachys*, *Agonum*, *Bradycellus*, *Chlaenius*, and *Brachinus*.

#### Revised Key to Species of *Nebria* Latreille in the *mannerheimi* Group

The key presented here is designed to replace couplets 11 through 13 in Lindroth (1961: 62-63). I have used Lindroth's characters where possible. Lindroth believes that *Nebria lyelli* Van Dyke belongs in a different group; but I have retained it in this portion of the key in order to be consistent with Lindroth's entire key.

11. Wing full; body black or dark piceous ..... 11a  
     Wing reduced in length, less than length of one elytron; body  
     dark or pale ..... 12
- 11a. Antennae and legs pale, yellowish; antennal scape almost cylindrical ..... *eschschoeltzi* Menetries  
     Antennae and legs dark, dark rufous to black; antennal scape  
     more stout, widest towards apex ..... *mannerheimi* Fischer

12. Body dark; humeri strongly obtuse and narrowed .....  
 ..... *lyelli* Van Dyke  
 Body entirely pale, reddish yellow (except for eyes black);  
 humeri slightly obtuse, not narrowed appreciably ..... 13
13. Elytral intervals 3, 5, and 7 with 1 to 5 setigerous punctures;  
 pronotal width at least 1.7 times length .....  
 ..... *diversa* LeConte  
 Only elytral interval 3 with setigerous punctures; pronotal width  
 1.5 times length or less ..... *desolata*, new species

The elongate form and relative body proportions of *N. desolata* specimens are similar to those of *N. eschscholtzi* and *N. mannerheimi*. All have long, slender antennae and legs, and lack setigerous punctures on all but elytral interval 3. Reduced wing length and pale color are sufficient to separate specimens of *N. desolata* from specimens of the other two species.

Specimens of *N. desolata* resemble those of *N. diversa* in having reduced wings and entirely pale coloration; but, in addition to the key characters, they differ as follows: in *N. desolata*, the head behind the eyes is narrower (head width behind eyes is almost 3.0 times the width of the labrum in *N. diversa*); the fifth article of the anterior tarsus and the third and fifth antennal articles are longer, more slender (all are shorter than the width of the labrum in *N. diversa*); the median lobe of the aedeagus is more robust (Figs. 7, 8), with apex shorter (Figs. 7-12) and apical orifice longer and wider than in *N. diversa* (Figs. 11, 12); the macrosculpture of the median lobe differs from that of *N. diversa*, specifically in the presence of the trough on the ventral curvature; setae on the stylus of the ovipositor (Figs. 2, 4) are more stout, more confined to the basal portion of the medial surface than in *N. diversa*.

The marked geographic isolation of the single known population of *N. desolata* from the populations of the other species of the *mannerheimi* group suggests for the former a relict occurrence. The habitat is unique for the known North American species of *Nebria*, but it is probably no more ecologically extreme than the ocean beach habitat occupied by populations of *N. diversa*. Perhaps the ability to tolerate ecological extremes, to make the necessary physiological adjustments to such extremes, is characteristic of the *mannerheimi* group.

#### ACKNOWLEDGEMENTS

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