

Edeagophore of *C. horni*, dorsal view, text-figure 5.

The edeagophore of *C. horni* and *C. californica* is much broader than in the majority of the species at present placed in the genus *Cymatodera*, at least this is true of all those I have had the opportunity to examine, but the breadth (proportionately) is nearly equal in *C. sirpata* Horn, being but slightly less broad. In many of our species these organs are very slender, the apicale but slightly and very gradually broader basally, the clava being in some instances greatly exserted. In *C. balteata* LeConte the distal portion of the apicale curves upward very strongly; this is the only species in which I have noticed this form of the apicale.

TWO NEW FORMS OF CICINDELA WITH REMARKS ON OTHER FORMS.

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The McPherson Scientific Expedition consisting of H. H. Ninger, Head of the Department of Biology of McPherson College; Forest Hoover, his assistant, and the writer spent eight weeks during July and August, 1921, in Southern Wyoming, Southwest Utah, Southwest Nevada and Southern California.

Among the new species of Coleoptera collected were: one new variety and one new form of *Cicindela*:—

***Cicindela denverensis* Csy., *propinqua*, new variety.**

Similar in form and color to *denverensis* but smaller and with a shorter body. Color light green, with slight golden sheen on elytra except suture and elytral margin. Head and thorax similar to *denverensis*. The frontal declivity of head, the under sides of the thorax, and the legs covered with dense, erect, white vestiture. Sides of the abdominal segments sparsely clothed with decumbent white vestiture. Elytra without markings except a triangular dash of white at the apices. Length 9 mm, width 3.5 mm.

Ash Meadow, Nye County, Nevada. Altitude 2,050 feet, one specimen, a male, August 16, 1921. On mud at margin of stream. No other specimen seen in five days collecting. In the same vicinity were taken *Cicindela nevadica*, *C. tenuisignata*, *C. var. hæmorrhagica*,

C. var. pacifica, *C. var. bisignata*, *C. var. chihuahuæ* and *C. punctulata*.

The type locality is separated from the western limit of *denverensis* by the states of Nevada, Utah and half of Colorado.

Denverensis occurs in April and May and again in September and October while *propinqua* was taken the middle of August. *Denverensis* is taken at elevations of from 2,500 to 5,500 feet, much higher in altitude, it will be noted, than the type locality of *propinqua*.

Cicindela pusilla var. *imperfecta*, *continua*, new form.

Same size and color as *imperfecta*, but differs in having the middle band, where it approaches the margin, extended and joining the marginal end of the apical lunule, thus making a continuous connection from the inner angulation of the humeral lunule to the tip of the apical lunule.

Specimens taken August 8, 1921, on the beach of Baldwin Lake near Pine Knot, San Bernardino Mountains, California, elevation 8,500 feet. No variations in the elytral markings were observed in the six specimens taken. Type and paratype in my collection and paratypes in the collection of McPherson College and Edwin A. Calder collection, Providence, Rhode Island.

At Ash Meadow, Nev., 16 miles northeast of Death Valley Junction, California, our expedition was fortunate in securing a fine series of the extremely rare *Cicindela nevadica*.

This species was described in 1871 by Leconte from a single specimen without a recorded locality in Nevada.

The type specimen is in the Leconte collection at Harvard University and an excellent figure of this species appeared in Schaupp's paper on North American Cicindelidæ, published in the bulletin of the Brooklyn Entomological Society for 1876. This with a single specimen in the Philadelphia Academy of Science collection were the only specimens known until August 21, 1919, when Mr. Morgan Hebard, of the Philadelphia Academy of Science, while collecting Orthoptera at Ash Meadow took ten specimens. He reported them as exceedingly wary and difficult to catch.

Our expedition reached Ash Meadow August 14 and made headquarters at the old Fairbanks ranch house on the north edge of the Meadow. About a half mile south of the home at the margin of a stream, fed by one of the numerous springs along the north

and east edge of the Meadow, we took our first specimen of *nevadica*; two other specimens were taken nearby. The next day by working further down the streams, other specimens were taken, and the succeeding four days by following the streams southward until they united into a single stream, the collecting became much better. The last day's work added as many specimens as the preceding four days combined.

Nevadica keeps very close to the water's edge, and in its flight will not leave the water for any distance. It frequently flies from one side of the stream to the other and would sometimes light in the edge of the water. They were not especially wary and were netted with comparative ease. A number of specimens were taken soon after transforming from pupæ, as the wing covers were not yet hardened nor the markings clearly defined.

Toward the north end of the Meadow on many of the streams, beaches or bars were charged with salt but lower down where the salt had disappeared, *nevadica* was found in greater numbers, an evidence that they were not confined to saline localities.

They were usually found associated with one or more species of the following:

C. var. hæmorrhagica, var. *pacifica*, var. *bisignata*, var. *chihuahua*, *punctulata* and *tenuisignata*.

Concerning the status of *Cicindela nevadica* var. *knausi*, I am inclined to believe *knausi* should have full specific standing. *Knausi* is found in southeast Kansas (salt marsh at Fredonia, Wilson County); Central Oklahoma (salt marsh region) and Lincoln, Neb. (*C. lincolniana* Csy.), extreme northern limit, southwestward to Santa Rosa, N. M., the extreme southwestern limit being recorded at Winslow, Ariz.

Nevadica is evidently confined to southwest Nevada and possibly to isolated localities across the line westward into California.

Knausi occurs in June and July, *nevadica* the latter part of July and August. It is a month later in approximately the same latitude and elevation in Kansas.

Knausi has complete elytral markings connected with a marginal white area. *Nevadica* has no marginal white area. The middle band in only one per cent. of specimens examined being connected

with a marginal white area, and in only 2 per cent. does the middle band tend to expand at the margin. The middle band of *knausi* drops backward, and the termination reaches the suture so far toward the apices that a line drawn from the marginal tips of the apical lunule of each elytron intersects the sutural terminations of the middle bands. In *nevadica* the backward extension of the middle band is much shorter, so that a line drawn as in *knausi* will come well below the sutural terminal of the middle band.

So far as observed *knausi* is always found on saline mud at the water's edge, while *nevadica* is much more abundant on moist mud not charged with saline matter.

The distribution and habits of *Cicindela fulgida* var. *parowana* Wickham are interesting.

This variety was first taken in August 1904 by H. F. Wickham near Little Salt Lake, seven miles northwest of Parowan, Utah. In 1917 a few specimens were taken by Geo. P. Englehart at Iron Springs, 15 miles northwest of Cedar City, Utah. On July 7, 1921, the McPherson Scientific Expedition took three specimens near the Beaver River, Milford, Utah, 50 miles northwest of Parowan. On July 24 and 25, a nice series was taken six miles northwest of Parowan about a mile from Little Salt Lake. There occurred only a few at each locality where found, usually around a reservoir filled from artesian wells and along the irrigation ditches leading out of the reservoirs. They were quite wary and were not easily taken. No specimens were found nearer than four miles northwest of Parowan.

Associated with *parowana* were *tranquebarica*, var. *imperfecta*, var. *chihuahuæ* and var. *echo*.

So far as known *parowana* has not been taken outside of Utah in the United States, but Mr. Chas. Liebeck of Philadelphia recently informed me that he had two specimens of this variety from Mr. J. B. Wallis of Manitoba, Canada, who took them in British Columbia. These specimens when examined proved to be typical *parowana*. This extends their habitat far to the north, and it is to be expected that this form will sooner or later be found in Idaho and Montana.



Knaus, Warren. 1922. "Two New Forms of *Cicindela* with Remarks on Other Forms." *Journal of the New York Entomological Society* 30, 194–197.

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