

OCCASIONAL PAPERS OF THE MUSEUM OF
ZOOLOGY

UNIVERSITY OF MICHIGAN

ANN ARBOR, MICHIGAN THE UNIVERSITY OF MICHIGAN PRESS

SOMATOCHLORA OZARKENSIS, A NEW SPECIES
FROM OKLAHOMA (ODONATA-CORDULINAE)¹

BY RALPH D. BIRD

SEVERAL specimens of a species of *Somatochlora* were taken near Wilburton, Oklahoma, in the summer of 1931. In the field they were identified as *provocans*, but on closer examination they proved to be new.

The following description, in order to give uniformity, is based on the form and employs the terms used by Walker (*North American Species of Somatochlora*, 1925).

Somatochlora ozarkensis, new species

This is "a species related to *provocans* and approaching in some degree *hineana* and *tenebrosa*" (Walker by letter). It is of the same size and color pattern as *provocans*, and the appendages are very similar.

The male runs out in Walker's key (1925) to 15—*provocans*. For *provocans* substitute the following couplet:

- 15a. Superior appendage bent ventrad near the middle at an angle of 30°; in lateral view terminating in a rounded knob; in dorsal view bent mesad near the middle at an angle of 50°. *provocans*
15b. Superior appendage bent ventrad near the middle at an angle of

¹ Contribution No. 115, Zoological Laboratories, University of Oklahoma, Norman, Oklahoma.

40°; in lateral view terminating in a hatchet-shaped process; in dorsal view bent mesad near the middle at an angle of 20°.

..... *ozarkensis*

The female runs out under the same key to 2—*provocans*.

For *provocans* substitute the following couplet:

2a. Vulvar lamina projecting beyond sternum 11; in ventral view at least four times as long as its basal width, sides almost parallel.

..... *provocans*

2b. Vulvar lamina not reaching beyond sternum 11; in ventral view not more than three times as long as its basal width; conspicuously wider at base than middle

ozarkensis

Male. Head.—Labium and labrum pale yellow, the latter margined with dark brown and with a median dorso-ventral light brown stripe wider dorsally; clypeus, sides, and lower part of frons, pale yellow; the postclypeus with two dark brown impressed punctae; upper part of frons black with bright metallic green and violet reflections; lower margin of frons demarked by a brown line; vertex brown with green reflections. Pile of head brown. Rear of head shiny black with a submarginal fringe of whitish hairs.

Thorax.—Prothorax dark brown dorsally becoming lighter ventro-laterally; hind lobe yellowish white. Thorax dark brown dorsally, lighter laterally, with bronze-green and violet reflections more conspicuous dorsally. Lateral sutures dark lined. Pile laterally composed of a few scattered brownish hairs, dorsally of a dense area of whitish hairs, 1.5 mm. long anteriorly, becoming very short posteriorly. Two pale yellow lateral spots, the anterior 4.5 mm. long and 1 mm. wide dorsally, slightly narrower ventrally due to an anterior bend of the posterior margin which also bends anteriorly near the upper end giving a pointed end to the spot; the posterior 3.5 mm. long and 1.5 mm. wide, parallel sided on the metepimeron, converging ventrally as it passes over the sternum to meet its fellow of the opposite side, the upper end rounded but slightly indented posteriorly. Both spots extend to within 1 mm. of the wing base. There is a small yellowish sigmoid streak below the metastigma and still smaller spot

above. Upper alar sinuses and interalar areas pale. Wings hyaline; membranule smoky brown, pale at base; costal veins edged with yellow, venation otherwise black; stigma brown. Coxae brown, whitish posteriorly; anterior trochanter whitish; inner side of front and middle femurs brown; legs otherwise dark brown to black. Femurs posteriorly bear numerous short denticles situated in two rows in the front and middle legs, but in the hind femur, which is much heavier, there are six rows. The inner row in each leg terminates in a larger tooth. Front and middle tibia bear two rows of 7-8 long black spines; tarsal claws with a large inner tooth.

Abdomen.—Segments 1, 2, and base of 3 brown, 4-10 dark brown to black with greenish to blue reflections; the following parts pale yellow: posterior ventro-lateral edge of 1, a large subtriangular patch on the lower half of 2 in front of the transverse carina, a smaller patch occupying the posterior half of the genital lobes, a small area above these and a transverse apical annulus, a pair of triangular dorso-lateral spots and ventral tergal margins of 3. Dorsal appendages black, lower brown. Abdomen slender, flattened dorso-ventrally, broadest at distal end of 5, thence tapering very gradually to the end; segment 5 about twice as long as wide. Posterior margins of terga of 8 and 9 white. Genital lobes broadly ovate. Genitalia as in plate. Superior appendages, 3.75 mm. long, slightly longer than 9+10: in dorsal view almost parallel-sided but with a slight concavity for the proximal half, thence converging slightly lateral but parallel mediad. In profile slender, horizontal in the proximal half, bent ventrad at an angle of 40° , giving it the appearance of a boomerang; lower edge of distal fourth sharpened and scalpel-shaped. Inferior appendages 2.5 mm. long, triangular, 1.5 mm. wide at base; in profile gently curved upward with upper and lower edges nearly parallel; apex small, rounded with a small dorsal tooth.

Female.—The following description is drawn up from two teneral females which are all that are available. Color pattern of head and thorax as in males. Abdomen dark brown

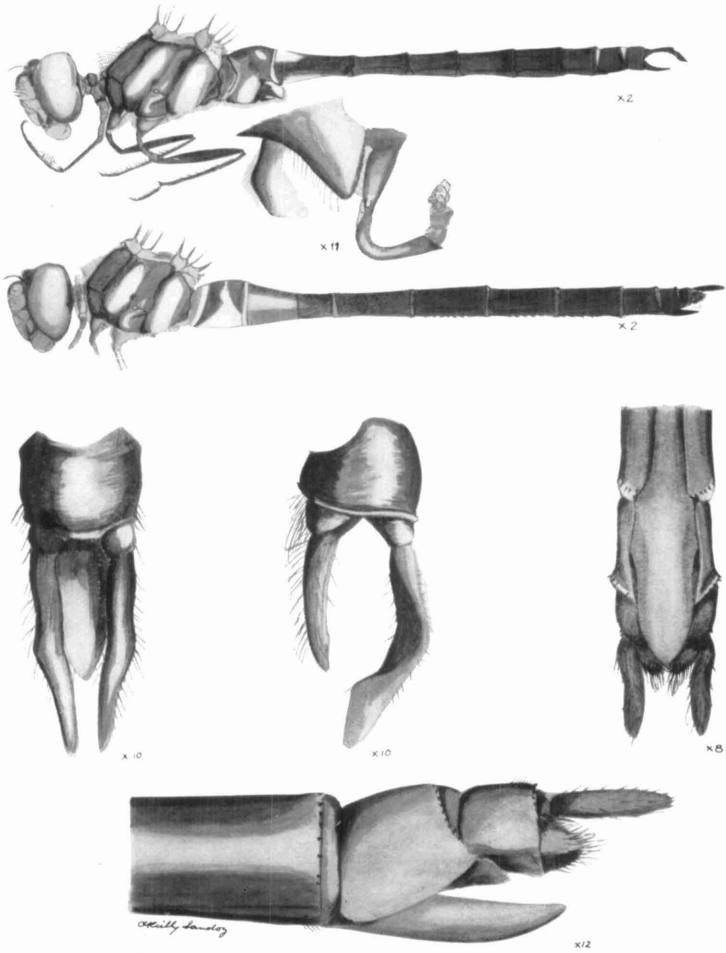
to brown except the following which are light yellow: sternum and lower half of posterior edge of tergum of 1, triangular patch on lower edge of tergum of 2 extending upward as a white bar in the middle of the segment almost to the dorsum, transverse apical annulus of 2, triangular basal dorso-lateral spots on 3, segments 8 and 9 with the posterior margins of the terga yellowish white. Appendages blackish. Vulvar lamina light brown in specimens examined but will possibly darken with age.

Abdomen narrowing from base of 3 which is 3.4 mm. wide at base and 8 mm. long. Viewed laterally from the base of 4 it enlarges slightly to the apex of 5, thence it is subparallel to 9 and 10 which are slightly smaller; viewed dorsally the sides are subparallel from the apex of 3. Flattened slightly laterally. Dorsum of segments 3 to 7 with many short black spines.

Appendages 2 mm. long; vulvar lamina 3.5 mm. in length projecting to the middle of sternum 11; in cross section **U**-shaped with the edges slightly turned out; in profile upper edge straight, lower curved upwards; 2 mm. wide at base.

Venation.—Antenodals: front wing, male, first series, 7 in 6 wings, 8 in 13 wings, 9 in 1 wing; second series, 7 in 6 wings, 8 in 13 wings, 9 in 1 wing; front wing, female, first series, 7 in 1 wing, 8 in 1 wing, 9 in 2 wings; second series, 8 in 1 wing, 9 in 3 wings; hind wing, male, first and second series, 5 in 18 wings, 6 in 2 wings; hind wing, female, first and second series, 5 in all wings. Postnodals: front wing, male, 5 in 3 wings, 6 in 15 wings, 7 in 2 wings; front wing, female, 6 in 2 wings, 7 in 2 wings; hind wing, male, 6 in 3 wings, 7 in 11 wings, 8 in 6 wings; hind wing, female, 7 in 3 wings, 8 in 1 wing. Number of cells between M_1 and M_{1a} : front wing, male, 9 in 1 wing, 10 in 2 wings, 11 in 2 wings, 12 in 6 wings, 13 in 3 wings, 14 in 1 wing, 15 in 3 wings; front wing, female, 11 in 1 wing, 15 in 2 wings, 17 in 1 wing; hind wing, male, 11 in 2 wings, 12 in 3 wings, 13 in 2 wings, 14 in 5 wings, 15 in 4 wings, 16 in 1 wing, 17 in 1 wing; hind wing, female, 13 in 1 wing, 15 in 2 wings, 16 in 1 wing. Triangles

Ralph D. Bird



Somatochlora ozarkensis

crossed once in all wings. Subtriangle of fore wing 3-celled in all wings. Subtriangle of hind wing present in all wings. Cells between R_s and R_{sp1} : front wing, 5–10, average for 24 wings, 6.1; hind wings, 5–10, average for 24 wings, 7.4. Stigma 3 mm. long, subtended by 1 cross vein in all but 1 wing in which there are 2.

Measurements.—Length: male, 51–54 mm., female 54–55; thorax: male and female, 9–10; abdomen: male, 33–36, female, 39–39.5; length of segment 5: male, 4.5–5, female, 6–7; width of segment 5: male, 3, female, 2; length of hind wing: male, 34–37, female, 38; width of hind wing: male, 11.5–12, female, 13; width of head: male and female, 7.5–8; length of hind femur: male, 7.5–8.5, female, 8; length of appendages: male, 4, female, 2; length of vulvar lamina: 3.5.

Types.—Holotype male, along Cunneotubby Creek, two and one-half miles northwest of Wilburton, Latimer County, Oklahoma, July 14, 1931, Wilton Fisher, Collector.

Allotype female, a teneral, same locality as the type, June 9, 1931, R. D. Bird, Collector.

Material Studied.—Ten males, six adult, and four tenerals, two females both teneral; all from the same locality as the types. The specimens are deposited as follows: the types and paratype males, Nos. 2 and 8, in Museum of Zoology, University of Michigan; paratype male No. 9, Dr. E. M. Walker, University of Toronto; paratype males, Nos. 4 and 5, Academy of Natural Sciences of Philadelphia, in care of Dr. P. P. Calvert; all others are in the Museum of Zoology, University of Oklahoma.

Distribution and Affinities.—This species is known only from the type locality. It belongs to the small group of eastern and southern species that range south of the number of species of the genus. According to Walker in a letter, October 13, 1932, it is “a species related to *provocans* and approaching in some degree *hineana* and *tenebrosa*.” I believe it is closely related to *provocans* by virtue of its male appendages, which are quite similar but nevertheless distinct. In color pattern and size the two species are almost identical.

Both species are more slender and conspicuously lighter in build than *hineana*. *S. tenebrosa* differs considerably both in appendages and color pattern which is much darker and barely discernible in a dried specimen from Shannon County, Missouri, collected by E. B. Williamson.

Bionomics.—The type locality and region where all the specimens were taken is on Cunneotubby Creek about three miles north of Wilburton, Latimer County, Oklahoma. The stream originates in and flows for its entire length of a few miles through the Sans Bois Range north of the Kiamichi Mountains. The mountains are one of a series of east and west ranges of sandstone hills rising to 1500 feet above sea-level and 500 to 700 feet above the valleys. Cunneotubby Creek flows on the south side of the range in a southerly direction into Fourche Maline Creek and thence into the Poteau River. The hills are covered by a heavy oak hickory forest and some pine (*Pinus echinata*). Along the creek there is considerable birch, sycamore, walnut, and willow. The upper portion of the creek differs from the lower by having frequent rapids over rounded sandstone boulders bordered by a fringe of low willows. The forest trees here recede from the immediate proximity of the stream. In the lower portion there is a continuous series of deep muddy pools overhung by a heavy growth of forest trees. It was in the upper portion of the stream that the somatochloras were found. None were taken below the old concrete dam about two and one-half miles above Wilburton. All specimens taken were flushed from the willows bordering the rapids; they flew to the forest edge where they lit on trees six to ten feet above ground and were captured. They had all recently emerged although most of them were fully colored. No mated pairs nor ovipositing females were seen, but, judging by their similarity of color pattern, association, habits, and by the absence of any other species of *Somatochlora* with which they might be confused, there is little doubt that both sexes taken were of the same species.

There are a number of other streams of a similar nature in

the mountains of eastern Oklahoma and western Arkansas; it is quite possible that the species will be found throughout this region. I am calling the species *ozarkensis* after the area which is known in physiography as the Ozark Plateau.

Acknowledgments.—The plate accompanying this paper is the work of Mr. O'Reilly Sandoz, to whom I am much indebted.

I am grateful to the Museum of Zoology, University of Michigan, for the loan of specimens of *Somatochlora hineana* and *S. provocans* for the purpose of comparison.

Both Drs. P. P. Calvert and E. M. Walker have examined specimens of this species and agree with me that it is new.

