



12-27-1991

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### Recommended Citation

Whiting, Michael F. (1991) "New species of *Sialis* from Southern California (Megaloptera: Sialidae)," *Great Basin Naturalist*: Vol. 51 : No. 4 , Article 13.

Available at: <https://scholarsarchive.byu.edu/gbn/vol51/iss4/13>

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NEW SPECIES OF *SIALIS* FROM SOUTHERN CALIFORNIA  
(MEGALOPTERA: SIALIDAE)

Michael F. Whiting<sup>1</sup>

ABSTRACT.—*Sialis bilobata* is described as a new species of the alderfly family Sialidae from Los Angeles County, California. A brief description of the species, illustrations, and diagnosis that compares it with *Sialis arvalis* Ross are provided.

*Key words:* Sialis, Sialidae, Megaloptera, Neuroptera, alderflies, aquatic insects.

Alderflies are relatively rare semiaquatic insects found as adults along the margins of streams and lakes. Currently all alderflies in North America are placed in the genus *Sialis*. There have been 23 species of *Sialis* described from North America (Ross 1937, Townsend 1939, Flint 1964). During a study of phylogenetic relationships of the North American alderflies, I found an undescribed species among material loaned from Southern California. This new species is very interesting because it helps unravel the phylogenetic history of the California species group in western North America.

DIAGNOSIS

*Sialis bilobata* is most closely related to *S. arvalis* Ross and has been identified as such by previous workers. The terminal plate of *S. bilobata* swells apically to produce two large bulbous lobes that diverge laterally, whereas in *S. arvalis*, the apical portion of the terminal plate is only slightly swollen, and the small bulbs do not diverge but are contiguous mesally. From a lateral aspect (Fig. 1), the apical portion of the terminal plate in *S. bilobata* is more than twice as wide as the basal portion where swelling begins; in *S. arvalis* it is only slightly wider than the basal region. The genital plate in the two species is similar in shape, but in *S. bilobata* it is twice as large as in *S. arvalis*. In *S. bilobata* the plate is 0.144–0.154 mm in length; in *S. arvalis* it is 0.060–0.077 mm in length.

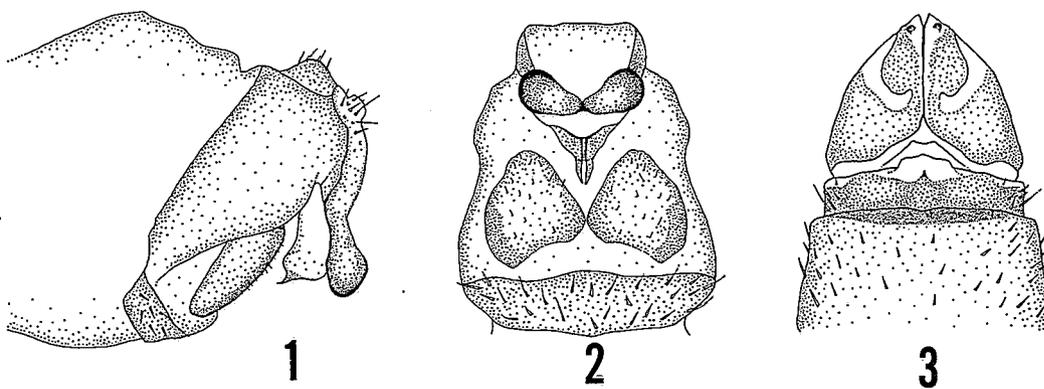
*Sialis bilobata* is distributed along the southern Pacific Coast and is known only from Ventura and Los Angeles counties in California. *S. arvalis* is distributed along the Pacific Coast from Douglas Co., Oregon, south to Santa Barbara Co., California.

*Sialis bilobata*, n. sp.

MALE.—Body length 10.5–12.0 mm; wing length 9.2–10.0 mm. Head, body, and appendages black except: raised lines and dots on head and narrow ring around eye, yellowish; vertex clothed with abundant short setae; legs shading to brown; wings dark brown, slightly lighter towards apex. Sternum 9 narrow and bandlike, with sparse, short setae (Fig. 2). Lateral plates triangular, with middle portions closely appressed on meson. Genital plate small, quadrate, heavily sclerotized, and bearing short setae. Genital plate with a pair of short, closely appressed genital hooks attached basally which taper to a fine point. Genital plate basally attached to a clear, saclike membrane; membrane fused to ventral surface of terminal plate. Terminal plate U-shaped with apical margins swollen into two bulbous lobes diverging laterally (Fig. 2). From lateral aspect, these bulbs protrude caudally further than any other genital structure. Tergum 9 heavily sclerotized with a large extruded dorsal hump bearing coarse setae.

FEMALE.—Body length 12–14 mm; wing length 10.0–11.3 mm. Color and general structure as in male. Sternum 7 heavily sclerotized

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Figs. 1-3. Genitalia of *Sialis bilobata* n.sp.: 1, ♂ (lateral); 2, ♂ (ventral); 3, ♀ (ventral).

and clothed with sparse setae (Fig. 3). Sternum 8 tilted, base depressed and apex raised; mesal portion slightly depressed longitudinally and bearing a heavily sclerotized spine; setae only moderately long mesally but longer laterally. Apical portion of segment bears a small, round depression on meson. Sternum 9 membranous but fairly rigid, forming a wide V.

**TYPE MATERIAL.**—The male holotype was collected from Brents Mountain Crags, Los Angeles Co., California, 20-V-1939, collector unknown; the female allotype is from Santa Ynez Canyon, Los Angeles Co., California, 30-III-57, V. A. Tucker. Paratypes are from the following localities: one male from Tapia Camp, Santa Monica Mountains, Los Angeles Co., California, 22-III-47, L. M. Martin; one male from Santa Ynez Canyon, Los Angeles Co., California, 30-III-57, V. A. Tucker; and one male from Ventura Co., Sespe Creek, 5 miles north of Fillmore, 1-IV-1981, R. W. Baumann & J. A. Stanger.

The holotype, allotype, and all paratypes except the Sespe Creek specimen are at the Los Angeles County Museum. The remaining paratype is in the Brigham Young University collection.

#### DISCUSSION

In Ross's taxonomic key to the Sialidae (1937), *S. bilobata* would come out in couplet 19b. with *S. arvalis*, but the two can be separated by the characters given above. According to the preliminary species groups

as described by Ross (1937), *S. bilobata* is in the Californica species group. Based on phylogenetic analysis of morphological characters, *S. bilobata* appears to be very closely related to *S. arvalis*. Indeed, only these two species share the character of a uniquely shaped genital plate resting on a saclike membrane. That the distributions of both species are along the Pacific Coast further indicates that these species diverged from a common ancestor.

Evans (1971) designated an allotype for *S. arvalis* from a female collected from California, Ventura Co., Los Pardes National Forest, Sespe Creek, Sespe Gorge Campground, Hwy 33, 3-VI-1968, E. D. Evans. Because this specimen was collected from a locality in which *S. bilobata* is known, it is probable that this allotype is a female *S. bilobata*. Because the females of these species are identical in appearance, no known morphological data can be used to support or refute this supposition. Nevertheless, based on the distinct distributional range of the species, it is suggested that the allotype designation for *S. arvalis* be withdrawn.

#### ACKNOWLEDGMENTS

I thank Richard W. Baumann for helpful suggestions and Stephen L. Wood for reviewing early drafts of this manuscript. Thanks are also extended to Charlie Hogue at the Los Angeles County Museum for the loan of specimens and to Sun Yung Kim for making the illustrations.

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*Received 20 June 1990*  
*Accepted 1 August 1991*