

SYNONYMY OF THE GENUS PSEUDOXENOS
SAUNDERS (STREPSIPTERA, XENIDÆ) AND
RECORDS OF STYLOPIZED HYMENOPTERA
FROM NORTH CAROLINA

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The genus *Pseudoxenos* was erected in 1872 by S. S. Saunders for parasites of the eumenid genus *Odynerus*. Further taxonomic work on members of the genus was done by Pierce, 1908, 1909, 1911, 1918; A. Ogloblin, 1924; Monod, 1925; and Esaki, 1932. Altho considerable information is available as a result of the efforts of these men, certain important characters of the female and first larva have been inadequately described.

Males, females, and first stage larvae of several undescribed species of *Pseudoxenos* are in the author's collection. From this material the following has been observed. In the male the anterior edges of the scutellum may be convergent or may be nearly parallel, thus invalidating the character used by Pierce, 1918, to separate the tribe Pseudoxenini from parasites of the Sphecoidea; the female has three genital tubes as do the parasites of Sphecinae; and the first stage larva has five ocelli as in all the known strepsipterous parasites on wasps.

A careful comparison in all stages of these typical *Pseudoxenos* with specimens in the author's collection of the genera erected by Pierce, 1908, 1909, on the basis of host relationships and insufficient data; that is, *Leionotoxenos* from *Odynerus* and *Eupathocera*, *Ophthalmochlus*, *Homilops*, and *Sceliphronecthrus* from Sphecinae, has failed to show any generic differences whatsoever. The characters used by Pierce, such as the shape of the scutellum and "consistency" of the postlumbium in the male, and shape of the cephalothorax and position of the spiracles in the female, vary widely and hence are useless.

Therefore, the author has come to the inescapable conclusion that the aforementioned genera are synonymous with *Pseudoxenos*. Altho no specimens have been examined of *Macroxenos* Schultze, 1925, from *Odynerus*, according to the description and figures this genus should also be referred to *Pseudoxenos*.

The following is a synopsis of the genus as herein re-defined.

Genus *Pseudoxenos* Saunders, 1872

Eupathocera Pierce, 1908a; *Ophthalmochlus* Pierce, 1908b; *Homilops* Pierce, 1908c; *Leionotoxenos* Pierce, 1909a; *Sceliphronecthrus* Pierce, 1909b; *Macroxenos* Schultze, 1925.

Male. Radius of the hind wing with the detached apical portion distinct and originating posterior to the main vein; otherwise similar to *Xenos*. Metathoracic scutellum strongly narrowed anteriorly and with its anterior edges usually convergent but sometimes almost parallel. Metathoracic postlumbium not strongly spindle-shaped but frequently somewhat constricted at the middle. *Æ*deagus extremely variable according to species and apparently without generic significance.

Female. Cephalothorax darker on the anterior one-half than on the posterior one-half. Abdomen with three genital tubes entering the brood canal, as contrasted with four in *Xenos*.

First Stage Larva. Each eye composed of five ocelli, three dorsal, one lateral, and one ventral. Hind femur with one apical bristle, hind tibia with one outer bristle and three inner bristles, hind tarsus with a small subterminal pulvillus giving it a forked appearance in profile. Abdomen with six rows of stout bristles on sternites two to seven. Sternite nine bearing a pair of short stout tubercles furnished with long apical bristles and very short subapical ones. Tenth abdominal segment with a pair of latero-dorsal spines which are approximately half as long as the terminal stylets.

STYLOPIZED HYMENOPTERA FROM NORTH CAROLINA

It is interesting to note that only very rarely has the State of North Carolina been included as a locality in lists of

Hymenoptera parasitized by Strepsiptera. The only previous record with which the author is familiar was made by George Salt, 1927, who recorded a parasitized specimen of *Chlorion pennsylvanicum* (Linn.) from Southern Pines.

Additional records are now available thru the efforts of Mr. C. S. Brimley of the North Carolina Department of Agriculture who has sent the author a number of stylopized specimens and furnished additional records by letter.

Whenever possible the identity of the parasite has been determined and included in the following list. The portion of each reference before the colon refers in every case to the host and that after the colon to the parasite.

Sphecidae

Chlorion (*Ammobia*) *flavitaris* (Fernald). Swannanoa, Sept. 3, 1924, one specimen, T. B. Mitchell coll.: mature male, *Pseudoxenos*¹ sp. near *smithii* (Von Heyden).

Chlorion (*Ammobia*) *habenum* (Say). Raleigh, Aug. 24, 1921, two specimens, C. S. Brimley coll.: male puparium and female, *Pseudoxenos* sp. near *smithii* (Von Heyden).

Chlorion (*Ammobia*) *ichneumoneum* (Linn.). Raleigh, June 16, 1933, three specimens, D. L. Wray coll.: male puparium, exuvia, and two females, *Pseudoxenos smithii* (Von Heyden).

Chlorion (*Ammobia*) *pennsylvanicum* (Linn.). Raleigh, Sept. 2, 1927, two specimens; Aug. 6, 1924, one specimen; Aug. 6, 1904, one specimen; C. S. Brimley coll.: male puparium, exuvia, and three females, *Pseudoxenos* sp. near *smithii* (Von Heyden).

Sphecx aureonotatus (Cam.) (det. by H. T. Fernald). Raleigh, mid June, 1914, one specimen, C. L. Metcalf coll. Raleigh, mid July (no year), three specimens; Sept. 8, 1921, one specimen; Sept. 9, 1904, one specimen; Sept. 13, 1921, one specimen; C. S. Brimley coll. Raleigh, mid Sept., 1921, T. B. Mitchell coll. Willard,

¹Refer to *Homilops* Pierce and *Ophthalmochlus* Pierce in the synopsis of this paper.

July 15, 1925, one specimen, C. S. Brimley coll. Charlotte, July 6, 1921, one specimen, T. B. Mitchell coll. Elizabeth City, early Aug., 1919, one specimen, F. Sherman coll.: two mature males, two male puparia, two exuviae, and thirteen females, *Pseudoxenos* sp.¹

Sphex urnarius (Dahlb.) (det. by H. T. Fernald). Raleigh, June 30, 1921, one specimen; Sept. 13, 1921, one specimen; early Nov. (no year), one specimen; C. S. Brimley coll. Southern Pines, June 11, 1911, A. H. Manee coll.: four exuviae and three females, *Pseudoxenos* sp. (apparently the same species as that on *S. aureonotatus*).

Vespidæ

Ancistrocerus fulvipes (Sauss.). Raleigh, Aug. 13, 1925, one specimen, C. S. Brimley coll.: female, *Pseudoxenos* sp.

Odynerus pedestris Sauss. Raleigh, mid April, 1921, one specimen, C. S. Brimley coll.: male puparium and female, *Pseudoxenos* sp. (probably *pedestridis* Pierce).

Zethus spinipes Say var. *variegatus* Sauss. Beaufort, Aug. 11, 1902, one specimen, F. Sherman coll.: female, probably *Pseudoxenos* sp.

Polistes canadensis (Linn.) var. *annularis* (Linn.) Biltmore, July 29, 1933, one specimen, D. L. Wray coll.: female, *Xenos pallidus* Brues.

Polistes fuscatus (Fabr.) var. *pallipes* (Lepel). Raleigh, Apr. 10, 1905, one specimen, G. M. Bentley coll.; mid Oct., 1917, one specimen, J. E. Eckert coll. Currituck, June 5, 1935, one specimen, D. L. Wray coll. Fayetteville, June 25, 1933, one specimen, D. L. Wray coll. Elizabeth City, mid Aug., 1919, one specimen, F. Sherman coll.: one mature male, three male puparia, exuviae, four females, *Xenos peckii* Kirby.

Polistes fuscatus (Fabr.) var. *variatus* (Cresson). Raleigh, June 7, 1933, one specimen, D. L. Wray coll. Ashe-

¹Refer to *Eupathocera* Pierce in the synopsis of this paper.

ville, Sept. 6, 1932, one specimen, D. L. Wray coll.: eight male puparia and one female, *Xenos peckii* Kirby.

Andrenidæ

Andrena sp. Raleigh, Mar. 24, 1925, one specimen on willow, T. B. Mitchell coll.: female, *Stylops* sp.

Halictidæ

Halictus (*Chloralictus*) sp. Late May, 1921, one specimen on *Penstemon*, T. B. Mitchell coll.: female *Halictoxenos crawfordi* Pierce.

Halictus (*Chloralictus*) *sparsus* Robt. Bryson City, no date: *Halictoxenos sparsi* Pierce. (Host and parasite determined by J. C. Crawford).

Halictus (*Chloralictus*) *versatus* Robt. Bryson City, July 8, 1923: *Halictoxenos versati* Pierce. (Host and parasite determined by J. C. Crawford).

Halictus (*Chloralictus*) *zephyrus* Smith. Bryson City, Aug. 23, 1923: *Halictoxenos zephyri* Pierce. (Host and parasite determined by J. C. Crawford).

Panurgidæ

Panurginus sp. Bryson City, no date: *Crawfordia* sp. (Recorded by J. C. Crawford).

The last four references above were taken from correspondence with Mr. C. S. Brimley.

With records from Bryson City, Biltmore, Asheville, and Swannanoa in the west; Charlotte, Southern Pines, Fayetteville, and Raleigh in the central portion; and Beaufort, Elizabeth City, and Currituck in the east; Strepsiptera are now well represented in records from North Carolina.

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