Odonatologica 16(1): 93-97 *March 1, 1987*

PROTONEURA SANGUINIPES SPEC. NOV., A NEW PROTONEURID DAMSELFLY FROM THE DOMINICAN REPUBLIC, WEST INDIES (ZYGOPTERA)

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Received and Accepted November 28, 1986

P. sanguinipes sp. n. (holotype ♂ in tandem with allotype ♀: Arroyo Bermejo, Distrito Nacional, 10-VIII-1983; deposited in the Florida State Collection of Arthropods, Gainesville) is described and illustrated, and some notes on its ecology are provided.

INTRODUCTION

The only protoneurid thus far known from the Dominican Republic is *Protoneura viridis* which I described in 1964 from St John, St Thomas, Jamaica, Puerto Rico and the Dominican Republic. The first specimens I saw of the species here described were 3 ♂ and 2 ♀ collected 20, 23 May 1973 and sent to me by Oliver S. Flint, Jr of the U.S. National Museum. Later Rosser W. Garrison sent me a male which he collected 27 August 1980. I had drawings made but the description was not completed in hopes of getting more specimens. In 1983 GARRISON collected 31 ♂ and 34 ♀, mostly as tandem pairs as related in his paper of 1986. Garrison says in a letter that he reared one specimen but the exuviae lack gills and the last segment of the abdomen. A description of the larva will await better specimens.

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DESCRIPTION
PROTONEURA SANGUINIPES SP. N.

Material. — **Holotype** ♂ (No. 727): Dominican Republic: Arroyo Bermejo, 4 km NNE of Hatillo and Autopista Duarte, Distrito Nacional, 10 August 1983, Rosser W. Garrison leg. — **Allotype** ♀ (No. 728) taken in tandem with holotype. — **Paratypes** (35 ♂, 35 ♀ all Dominican Republic): same data as holotype, 30 ♂ and 33 ♀ (Nos. 729-791); 1 ♂ (No. 792) same data as for holotype but 27 August 1980; 3 ♂, 1 ♀ (Nos. 793-796) Rio Massacre-Balneario El Salto, Loma de Cabrera, Prov. Dajabón, 20 May 1973, Don and Mignon Davis leg.; 1 ♀ (No. 797) same data as last but 23 May 1973; 1 ♂ (No. 798) Villa Anacaona, Prov. Dajabón, 3 June 1986, R. Miller and L. Stange leg.

The Holotype, allotype and paratypes Nos. 729-736, 792, and 798, as well as ♂ No. 793 and ♀ No. 794 from which the drawings were made, are deposited in the Florida State Collection of Arthropods (FSCA) in Gainesville, Florida. Paratypes Nos. 737-791 are in the collection of Rosser Garrison except for some which he has distributed to other collections. Paratypes Nos. 795-797 are in the U.S. National Museum.

Etymology. — The species name *sanguinipes* refers to the bright red legs of this beautiful insect which will distinguish it from all other known species of *Protoneura*, and from most other Zygoptera in the Antilles.

MALE (holotype). — Head. — Top of head metallic red with no markings; anterior surface of frons, anteclypeus and genae yellow orange; postclypeus and labrum shining black; labium light tan; rear of head black.

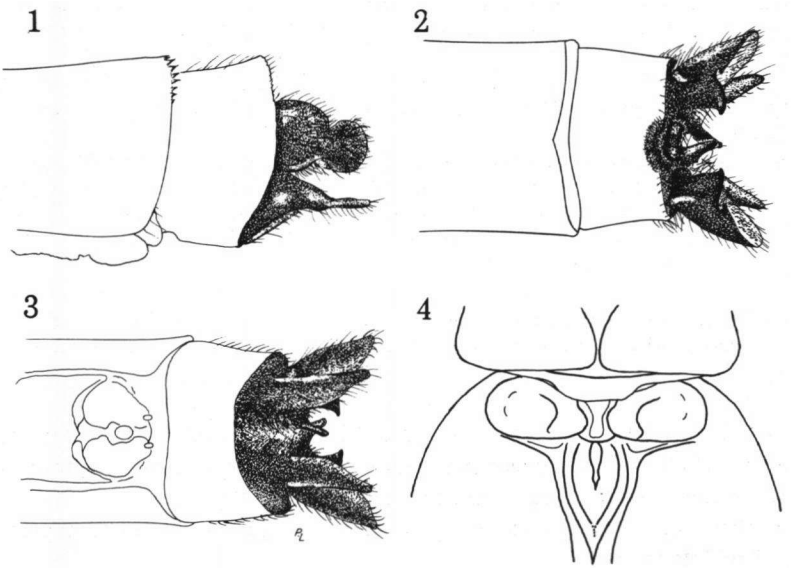
Prothorax. — Metallic red except for small dull yellow ventrolateral projection of middle lobe.

Synthorax. Metallic red to level of metapleural suture near wing bases and continuing about half way across metepisternum; metapleural suture with dark stripe wider near metacoxa and spreading over half of metepimeron near wing bases; broad yellow band anterior to metapleural suture covering lower tip of mesinfraepisternum and surrounding metaspiracle, narrowing as it approaches wing bases; a black line between metacoxae becoming broader and bifurcating posteriorly on venter of the metathorax, overlaid with white pruinosity.

Legs. — Coxae dull yellow, black on outer surfaces, overlaid with pruinosity. Legs bright red with black spines; femora with dark streaks on extensor surfaces, reaching from base to half length of femora.

Wings (notation follows Comstock-Needham system). — Hyaline, with brown to black pterostigma surmounting one cell. Second antenodal crossvein proximal to arculus, 3 antenodal (postquadrangular) cells in each wing, 12 postnodal crossveins in forewings, 11 in the hind, the 11th not continuous to M_1. Width of wings about one-sixth length; first antenodal space about equal to the third and about twice the second; Rs arising at subnodus, M_3 proximal to subnodus at a distance about equal to one-half length of postquadrangular cell below; M_2 arising slightly proximal to sixth postnodal crossvein in forewings, slightly proximal to fifth in hindwings; M_3 ending distal to pterostigma. Cu_1

ending from three-fourths of a cell to more than one cell beyond crossvein descending from subnodus. Distance from base of wing to nodus is one-third wing length, equalling distance from nodus to half way between seventh and eighth postnodal crossveins.



Figs 1-4. *Protoneura sanguinipes* sp. n. (1-3) paratype male No. 793, abdominal segments 9 and 10 with appendages: (1) Lateral view, — (2) Dorsal view, — (3) Ventral view; — (4) Paratype female No. 794, dorsal view to show mesostigmal plates and surrounding areas.

Abdomen. — Thin; segment 1 dark brown to black with a yellow spot on each side which reaches ventral margin; on venter a broad triangle of black with apex posteriorly; 2 orange with small diffuse lateral areas of brown basally and apically, weakly joined by brown lateral stripe; 3-5 with an apical dark brown to black annulus occupying about one-sixth length of segment, 4 and 5 with conspicuous narrow yellow annulus basally, remainder of dorsum brown, each segment becoming darker from 3 to 5; 6 and 7 black above, 6 with a basal yellow annulus, both segments becoming dull yellow ventrally; 8-10 black above, ventral margin of 8 dull yellow, 9 with yellow orange spot covering much of posterior half of dorsum, but not reaching apex of segment.

Superior abdominal appendages viewed laterally about as long as dorsal length of segment 10 and slightly longer than the inferiors (Fig. 1); superiors broad at base, strongly constricted at about two-thirds their length and then expanding to broad round apex. Viewed dorsally superiors diverging more than inferiors, base

broad with a large medial projection and a more distal minute pointed medial projection (Fig. 2); inferiors viewed ventrally of uniform width for about two-thirds length, then curving on medial side forming a narrow tip (Fig. 3).

Measurements (mm): total length including appendages, 37.0, abdomen 31.0, hindwing 17.5, hind femur 3.0, longest tibial spine on hind leg 0.45.

FEMALE (allotype). — Head: as in holotype, except metallic green replacing metallic red. — Prothorax: metallic green except lateral areas of all lobes dull yellow. — Synthorax: coloration as in holotype except metallic green replacing red; lateral tips of mesostigmal plates and small streak on humeral suture near wing bases yellow. — Legs: coxae dull yellow with some pruinosity; remainder of legs dull red, extensor surfaces of femora with black or brown streaks almost full length, much wider on front femora. — Wings: as in holotype except 13 postnodal crossveins in left forewing, 12 in the right (last crossvein in each not continuous to M_1), and 10 in each hindwing; length of wing about 6.5 x width; M_2 arising at sixth postnodal crossvein in left forewing, slightly proximal to sixth in the eight; Cu_1 ending about two-thirds of a cell beyond crossvein descending from subnodus.

Measurements (mm): total length including appendages 34.0, abdomen 28.0, hind wing 19.5, hind femur 2.8, longest tibial spine on hind leg 0.43.

VARIATION AMONG PARATYPES

The paratypes are similar to the holotype and allotype. Female No. 797 has a narrow yellow stripe on the mesopleural suture for about three-fourths length, while others lack such a yellow stripe. Male No. 795 has an additional orange spot lateral to the dorsal one on abdominal segment 9, and near the ventral margin of the tergite; ♂ No. 796 has these spots connected with orange. The total length of ♂♂ is 34-37, ♀♀ 34-36; abdomen of ♂♂ 29-31, ♀♀ 27-28; hindwing of ♂♂ 17-18.5, ♀♀19-20. Postnodal crossveins in the forewing of ♂♂ 12-14, ♀♀ 12-14; hindwings of ♂♂ 10-12 (11th or 12th not continuous to M_1), ♀♀ 11-12.

ECOLOGY

Rosser Garrison, (in litt. 19 november 1983), wrote, "When I first searched the arroyo [Bermejo], I did not see this species. I went to one area of the stream where I collected a male of this species on 27 August 1980. There I found a tandem pair ovipositing on the sedges near the bank. Then I saw another, then another, then another. Soon, I was amazed to see several pairs restricted to this habitat. The brilliant red males were quite noticeable. Because so many pairs were concentrated in a small area, I picked up the female by the wings as she was ovipositing and placed the pair (the male would not let go) in an envelope. I collected all succeeding pairs this way. Two pairs were captured and eaten by *Anolis* lizards. I then combed the banks on the return trek to my car, and I collected many other pairs in this same manner. I was able to predict fairly well where ovipositing pairs would be, and it was obvious that I had overlooked these areas and specimens

when going upstream. This species is one that the collector is likely to miss unless he looks very carefully. Other dragonflies seen or collected were: *Hypolestes clara* (Calv.) — abundant, *Protoneura viridis* Westfall — rare, *Enallagma coecum* (Hag.) — common, *Telebasis dominicana* (Sel.) and *T. vulnerata* (Hag.) — both occasional, *Coryphaeschna viriditas* Calv. — males and females flew about 10-15 m over stream, occasional, *Dythemis rufinervis* (Burm.) — common, *Macrothemis celeno* (Sel.) — abundant, *Scapanea frontalis* (Burm.) — common, *Tramea abdominalis* (Ramb.) — rare. At other times I collected a male *Progomphus serenus* Hag., and I saw a male *Aphylla caraiba* (Sel.)".

The oviposition behavior described here differs radically from that of other neotropical protoneurids with which I am familiar. Instead of oviposition "on the sedges near the bank", other species oviposit in floating debris.

ACKNOWLEDGEMENTS

I thank Drs ROSSER W. GARRISON and Oliver S. FLINT, Jr for sending specimens, and I thank Drs Rosser W. Garrison and Sidney W. Dunkle for suggestions with the manuscript. The illustrations of the male were done by PAUL LAESSLE, former staff artist for the Zoology Department, and the figure of the female was drawn by Dr MICHAEL L. MAY.

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