Rev. Biol. Trop., 41 (3): 703-707, 1993

Psaironeura selvatica sp. nov. (Odonata: Protoneuridae), a new damselfly from

Carlos Esquivel
Escuela de Ciencias Biológicas, Universidad Nacional, Heredia, Costa Rica.

(Rec. 23-X-1992. Acep. 22-II-1993)

Abstract: *Psaironeura selvatica* sp. nov. (Odonata: Protoneuridae) is described. Males of *P. selvatica* can be readily distinguished from *P. remissa* by the red coloration of their labrum and clypeus (brown in *P. remissa)* and the shape of the cerci. Females are easily distinguished by the length of the ovipositor, which is extended beyond the tips of the cerci in *P. selvatica*. The new species often perches in the shadow and male-male aerial encounters can last one minute. At La Selva *P. selvatica* occurred from February through March and then again from July through September; the adults were more common in August, the only month when this species was more common than *P. remissa*. *P. remissa* was present the whole year except for October.

Key words: Odonata, Protoneuridae, *Psaironeura*, taxonomy, neotropical damselflies, ecology, behavior.

A new species of protoneurid damselfly belonging to the genus *Psaironeura* was found by D.R. Paulson (Burke Museum, Washington) in 1966 during repeated visits to La Selva Biological Station. He called my attention to this species during a survey of dragonfly diversity I carried out at La Selva between February and December of 1988 and graciously allowed me to describe it.

Psaironeura is a neotropical genus composed of four species. Three (*P. bifurcata* (Sjöstedt), *P. cerasina* Williamson and *P. tenuissima* (Selys)) are characterized by the semicircular forcipate cerci in the males. The fourth, *P. remissa* (Calvert), stands apart from the others in having large, perpendicularly directed cerci. Only *P. remissa* is known to occur in Central America (Calvert 1901-1908, Paulson 1982), the other species of the genus being South American in distribution (Williamson 1915).

PSAIRONEURA SELVATICA, SP. NOV.

Material - All from Costa Rica. Holotype: ♂: Heredia prov., Sarapiquí, Puerto Viejo, La Selva Biological Station, 22 September 1988, coll. C. Esquivel H. - Allotype: ♀, same data as holotype except 24 February 1988 - Paratypes: 64 ♂, 7 ♀, same data as holotype except as follows: 6 ♂, 24 August 1988; 2 ♂, 19 September 1988; 1 ♀, 19 July 1988; 1 ♀, 29 April 1988; 2 ♂, 18 September 1966, coll. D.R. and M.L. Paulson; 1 ♂, 1 ♀, Alajuela prov., Los Chiles, 30 July 1966, same colls.; 2 ♂, 1♀, same locality and colls., 14 October 1966; 2 ♂, same loc. and colls., 24 November 1966; 2 ♂, 1 ♀, La Selva Biol. Station, 02 July 1969, colls. M.J. and D.N. Westfall; 47 ♂, 2 ♀, Limón prov., Guápiles, 7 July 1969, same colls.

All specimens are preserved dry in cellophane envelopes. The holotype, allotype

and one paratype (1 ♂) are deposited in the National Institute of Biodiversity (INBio). One paratype (1 ♂) is deposited in the Museo de Insectos of the Universidad de Costa Rica; two paratypes (1 ♂, 1 ♀) are deposited in the author's collection; five paratype males are deposited in the U.S. National Museum, and 62 paratypes (56 ♂, 6 ♀) are deposited in the International Odonata Research Institute (Gainesville, Florida).

The species is named after its habitat, primary wet forest ("selva", in Spanish), and after La Selva Biological Station, where the species was collected.

Holotype male - Dimensions (in mm). Total length including cerci: 33.5; abdomen: 29.5; FW: 17.5; HW: 16.5

Head: labium entirely translucent pale brown; maxillae and mandibles brown. Labrum and clypeus metallic red; base of mandibles and genae reddish-brown; frons brown; entire dorsal and rear surface of head metallic dark green; antennae brown; compound eyes translucent (wine red in life).

Prothorax: black dorsally, pale yellow medioventrally.

Pterothorax: mesepimeron dark metallic green with a narrow black stripe along humeral suture; mesepimeron dark metallic green except along basal half of the interpleural suture where green is bordered with black and remainder pale yellow; metepimeron pale yellow except for dark metallic green at uppermost corner; metepisternum light yellow. Legs pale yellow except for black tibia-femur joints.

Wings: venation brown, pterostigma black, membrane hyaline. CuA closer to antenodal 1 than 2. Postnodals: 11 (FW), 10 (HW); M_2 arising at postnodal 6 (FW) or 4 (HW); pterostigma surmounting slightly less than one cell, almost quadrangular, costal side a little shorter than the posterior, all sides except the costal one distinctly convex.

Abdomen: thin, predominantly black, with golden pilosity from segment 6 on including cerci; segments 7 and 8 pale yellow ventrally, 9 pruinose black.

Cerci: slightly longer than segment 10, black dorsomedially, pale ventrally; in lateral view (Fig. 1) basal half of dorsal margin nearly straight, horizontal, with a small basal tubercle, followed by a large bluntly pointed branch at about 45°; ventral branch parallel-sided and broadly rounded at tip, which is longitudinally sharply divided in two areas of different thickness, the proximal one thin, membranous, the distal area as thick as remainder of cercus. In dorsal view (Fig. 2) forcipate, outer margin evenly curved, inner side with basal half nearly straight, distal half concave. Paraprocts small, rudimentary, rounded.

Allotype female - Dimensions. Total length: 31.5; abdomen: 27.5; FW: 18.5; HW: 17.

Head: labrum, clypeus, frons and antennae pale yellow; entire dorsum and rear of head black.

Prothorax: black, dark metallic green dorsally, pale yellow laterally.

Pterothorax: mesepisternum as in the male; mesepimeron whitish along humeral suture and all its basal fourth, remainder dark metallic green; rest of thorax and legs as in the male.

Wings: as in the male except that pterostigma is brown and surmounts a cell or sligtly more, and M_2 arises at postnodal 3 on the right HW. Postnodals: 12 (FW), 10 (HW).

Abdomen: segments 1 and 2 black dorsally, light yellow lateroventrally; 3-7 predominantly orange-brown, with a narrow, diffuse dark brown ring distally; segments 8-9 black dorsally becoming red laterally and whitish ventrally; segment 10 black dorsally, brown lateroventraly.

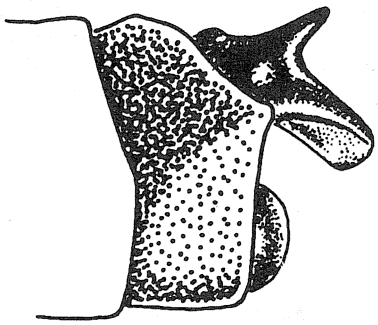
Cerci and ovipositor (Fig. 4): cerci shorter than segment 10, conical shaped in side view; ovipositor pale yellow extending backward beyond tip of cerci.

Male paratypes - Similar to holotype but younger males have the metallic green of the thorax confined to the mesepimeron and lack the pruinosity on abdominal segment 9. Pterostigma surmounts only a cell in some males. Other venational variations: postnodals 11-13 (FW), 9-10 (HW); M_2 arising at postnodal 5 in FW in some males.

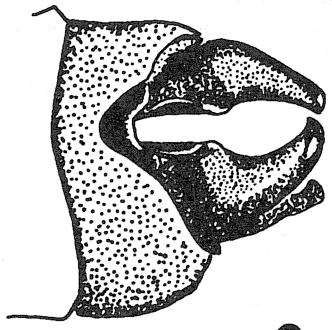
Female paratypes: similar to allotype female. Pterostigma surmounts slightly less than a cell in some females. M_2 arises at postnodal 5 in one or both FW in some females. Postnodals: 12-13 (FW), 9-11 (HW).

Comparison with other species

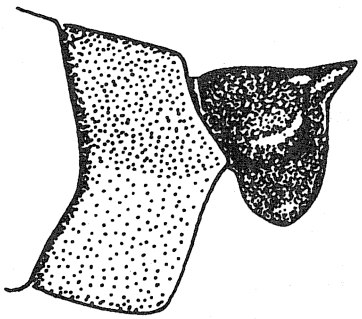
Psaironeura selvatica is morphologically similar to *P. remissa* Calvert but the main



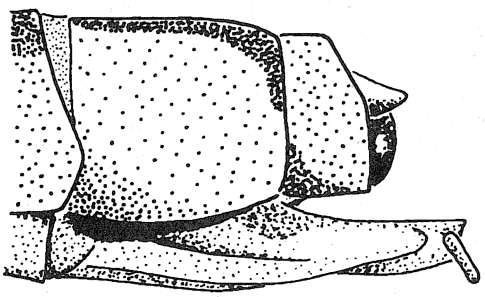
1



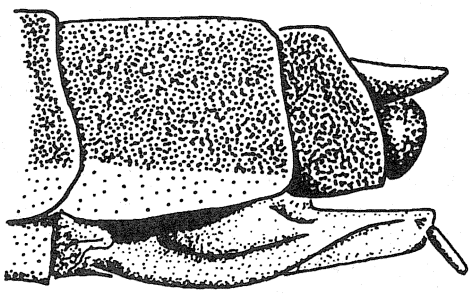
2



3



4



5

Figs. 1-5. Morphological details of *Psaironeura selvatica* sp. nov. and *P. remissa*. 1) Side and 2) dorsal views of *P. selvatica* male cerci. 3) Side view of the *P. remissa* male cerci. 4) *P. selvatica* ovipositor. 5) *P.remissa* ovipositor.

differences between the two species are shown in Table 1. Males of *P. selvatica* can be readily distinguished from *P. remissa* by the red coloration of their labrum and clypeus (brown in *P. remissa*) and the shape of the cerci (Figs. 1, 3). Females are easily distinguished by the length of the ovipositor, which is extended beyond the tips of the cerci in *P. selvatica* (Figs. 4, 5).

TABLE 1

Morphological comparison between Psaironeura selvatica *and* P. remissa

Character	*P. selvatica*	*P. remissa*
	Males	
Head		
Labrum and clypeus	Bright red	Brown (pale or dark)
Thorax		
Areas with dark metallic green	Mesepisternum and most of metepimeron only	From mesepisternum to most of metepimeron
Abdomen		
Ventral projection of cerci	Narrow, parallel-sided (Fig. 1)	Obtusely rounded (Fig. 3)
	Females	
Abdomen coloration	Pale brown throughout	Pale brown basall brown distally
Cerci	Shorter than segment 10 (Fig 5)	As long as segment 10 (Fig. 4)
Ovipositor	Valvules projecting beyond the tip of cerci (Fig. 5)	Valvules projecting backward as far as the tip of cerci (Fig. 4)

Biology: *P. selvatica* was found in shaded swamps and borders of grass-filled ponds surrounded by primary forest where it was seen in company with *P. remissa*. Both sexes of *P. selvatica* perched on the stems of plants or leaf tips close to the ground, always in shade, where they remained most of the time. Their inactivity and dark coloration makes them difficult to see in the gloomy forest understory.

I saw no reproductive activity but the allotype and most of the paratype females bear two dorsolateral scars on each side of the prothorax, where the male cerci probably engage during tandem.

When two males met, they hovered facing each other, keeping the body straight and staying about 2 cm appart; then they would rapidly vibrate the whole body up and down for several seconds, some for almost a minute, until they separated or one of them would very briefly follow the other and then go his own way. I also observed this behavior in males of *P. remissa*.

Other species found at the type locality, besides the more common *P. remissa*, were *Perithemis mooma* Kirby, *Perithemis* sp. nov., *Orthemis cultriformis* Calvert, *Argia indicatrix* Calvert and *Metaleptobasis bovilla* Calvert.

At La Selva *P. selvatica* occurred from February through March and then again from July through September; the adults were more common in August, the only month when this species was more common than *P. remissa*. I did not see it at other times of the year. *P. remissa*, however, was present the whole year except for October. It was more common in June and July.

ACKNOWLEDGEMENTS

I thank D.R. Paulson for first calling my attention to this species and his suggestions for

my field work, and R. Garrison for his many valuable suggestions to the manuscript. I also thank M.J. Westfall and S.W. Dunkle for their help with the taxonomy of this and many other species. The Organization for Tropical Studies financed my stay at La Selva through a De Noyes Fellowship.

RESUMEN

Se describe *Psaironeura selvatica* (Odonata: Protoneuridae), una nueva especie de zigóptero. La especie fue encontrada en la Estación Biológica La Selva y ha sido recolectada en otras localidades de la zona Atlántica de Costa Rica, donde generalmente es simpátrica con su congénere *P. remissa*. Ambas especies son similares, pero se distinguen fácilmente por el rojo de labro y clípeo (pardo en *P. remissa*), por la morfología de los cercos de los machos y por oviscapto de las hembras, el cual se extiende más allá de los cercos en *P. selvatica*. La nueva especie se posa generalmente a la sombra; y los encuentros aéreos entre machos duran hasta un minuto.

REFERENCES

Calvert, P.P. 1901-1908. Neuroptera (Odonata), p. 17-420. *In* F.D. Godman & O. Salvin (eds.). Biologia Centrali-Americana. Porter, Dulau & Co., London . vol. 50.

Paulson, D.R. 1982. Odonata, p. 249-277. *In* S.H. Hurlbert & A. Villalobos F. (eds.). Aquatic biota of Mexico, Central America and the West Indies. Sn. Diego State University, San Diego.

Williamson, E.B. 1915. Notes on neotropical dragonflies, or Odonata. Proc. U.S. Nat. Hist. Mus. 48:608-638