

**DESCRIPTION OF THE LARVA OF
PROTONEURA AILSA DONNELLY
(ZYGOPTERA: PROTONEURIDAE)**

F. MEURGEY

Muséum d'Histoire Naturelle, 12 rue Voltaire, F-44000 Nantes, France
Francois.Meurgey@mairie-nantes.fr

Received May 25, 2007 / Revised and Accepted December 2, 2007

The last instar larva is described and illustrated for the first time based on specimens from Martinique in the Lesser Antilles. Additional notes on its ecology and larval habitat are included.

INTRODUCTION

Protoneura is a widespread neotropical genus consisting of 21 species. Currently, seven species have been recorded in the West Indies (PAULSON, 2007) with two species known from the Lesser Antilles (MEURGEY, 2006). The larvae of most *Protoneura* species are unknown with only the larval stages of *P. capillaris* (Rambur) (WESTFALL & MAY, 1996) described.

Protoneura ailsa Donnelly is currently known from Dominica, Martinique, and St Lucia (DONNELLY, 1961, 1970; MEURGEY, 2005). I describe the final larval instar, based on specimens from Martinique, and give additional ecological notes. The larva identified as *P. ailsa* by Donnelly (1970) from Dominica is really *Enallagma coecum* (Hagen), based on my examination of reared specimens of that species.

***PROTONEURA AILSA* DONNELLY**

Figures 1-10

Material. – 45 last instar larvae (6 reared). MARTINIQUE: Trois-Îlets, La Pagerie, 14-III-2007, G. David leg. All material deposited in the Natural History Museum of Nantes in Nantes, France.

DESCRIPTION. – **Head.** – Trapezoidal, widest at eye level, larger than protho-

rax (Fig. 1). Occipital margin strongly concave. Uncleft prementum prominent, strongly convex, and finely serrated with two premental setae (Fig. 2). Margins sinuate with 10-11 small, strong setae on the distal third. Palpal lobe with 5 setae; movable hook slender, curved, and longer than palpal setae. Distal margin of palpal lobe with a long sinuous medial hook and a short truncate, hook-shaped serrated lobe (Fig. 3). Antenna (Fig. 4) seven segmented, ringed with black and white on segments 2-5, third segment the longest.

T h o r a x. – Pronotum quadrangular. Pterothorax marked with black spots on each side. Translucent wing pads parallel, the inner ones reaching the end of abdominal segment four. White legs with three dark bands on femora and tibiae, tarsus with one dark band.

A b d o m e n. – Cylindrical, dark with a longitudinal whitish stripe extending from abdominal segment 1-8, enlarged on 9; laterally bordered with black spots. Female gonapophyses surpassing distal end of segment 10 and outer ones denticulate (Fig. 5). Male gonapophyses as in figure 6. Male and female cercus as in figures 7 and 8. Caudal lamellae lanceolate, planate, except for the midrib, with the apex extending into a finely acute point. Central lamella (Fig. 9) about five times as long as its maximum width; nodus located at 0.51 of its length, trapezoidal and ending in an acute spine on each side. Both dorsal carina and ventral carina with approximately 12-15 setae. Lateral lamella (Fig. 10) about six times as long as wide with a strong, S-shaped nodus ending in an acute spine, located at 0.65 of its length. Dorsal carina with approximately 10-12 setae, ventral carina with approximately 20-30 setae. Basal portion of the lamellae strongly sclerotized and patterned with black transverse spots. Distal portion paler, whitish and unspotted.

M e a s u r e m e n t s (in mm). – Total length (without caudal lamellae) 8.4-9.0, inner wing pads 3.4-4.0, abdomen (without caudal lamellae) 2.8-3.5, central caudal lamellae 2.7-3.4, lateral caudal lamellae 2.9-3.6.

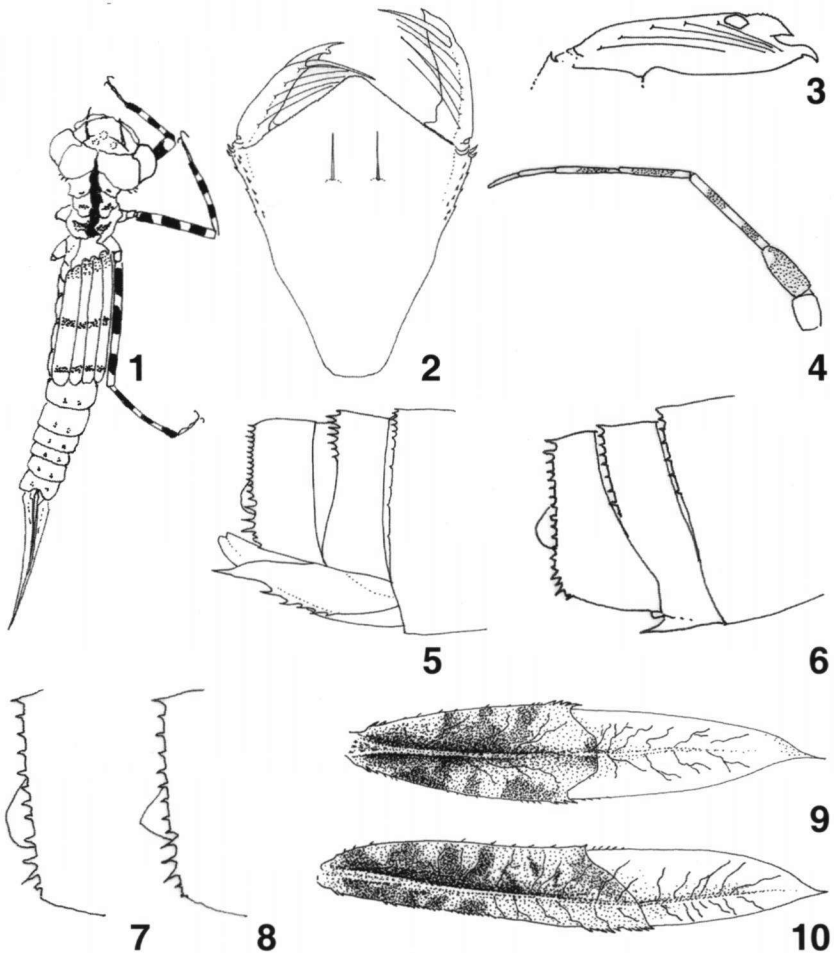
ECOLOGICAL NOTES

Protoneura ailsa is a common species in Martinique, occurring between sea level and 400 meters elevation. In Dominica, DONNELLY (1970) reported this species from 16 stations between 460 and 600 meters altitude, and states that *P. ailsa* is common along small streams. On the same island, MEURGEY (2007) reported *P. ailsa* from 8 stations between 46 and 360 meters altitude on highly vegetated streams. On St Lucia, where the species was first described, the type locality is situated on the upper Cul de Sac river, near Bexon, Castries Quart, and was found in a narrow stream with alternate riffles and pools (DONNELLY, 1961).

P. ailsa can be found flying in shaded and heavily vegetated areas along the banks of streams and small rivers, or hanging vertically on small branches. Adults can also be seen flying in nearby forested areas. Both males and females feed on

small insects caught at slow areas at basins and pools. Mating takes place in the vegetation along the banks of streams and rivers. Tandem pairs fly to a suitable oviposition site. Females oviposit in tandem (very rarely alone) in leaves, stream debris, mosses, or stems of aquatic plants or roots in slow or standing waters of pools, basins, ditches or dams.

In Martinique, larvae were found at three stations on the same river, between



Figs 1-10. *Protoneura ailsa*, last larval instar: (1) general aspect, dorsal view; - (2) prementum, dorsal view; - (3) left palpal lobe, movable hook omitted, dorsal view; - (4) left antenna, lateral view; - (5) female gonapophyses, lateral view; - (6) male gonapophyses, lateral view; - (7) female cercus, lateral view; - (8) male cercus, lateral view; - (9) central lamella, lateral view; - (10) lateral lamella, lateral view.

5 and 50 meters elevation. The depth of this temporary river with alternating pools is highly variable, dependent on rainfall and usually does not exceed 50 centimeters. Exuviae were found clinging vertically on the sides of a bridge and in shaded areas near the water surface. Emerging individuals were seen under the bridge, clinging to the roof. One emergence took place on a small rock close to the water surface. *Dythemis sterilis* (Hagen) larvae were also found at this site.

DISCUSSION

Generically, *Protoneura ailsa* larvae share with *P. capillaris* (WESTFALL & MAY, 1996) the presence of two premental setae and five palpal setae. *P. ailsa* is a moist montane or a drier transition forest species from Martinique, St. Lucia, and Dominica. It can be found at lower elevations, especially if suitable habitats are present. This has consequences for its conservation status as a Lesser Antilles endemic. Most disturbances and pollution from sugarcane and banana plantations occur between sea level and 500 meters elevation on these islands, especially Martinique. Pollutants are directly discharged into the nearby streams and rivers. Monitoring of these sources and its impacts on receiving water bodies is necessary to insure the water quality and survival of *P. ailsa*.

ACKNOWLEDGEMENTS

I thank JERRELL J. DAIGLE, T.W. DONNELLY, and DENNIS R. PAULSON for suggestions on the manuscript, and GWENËL DAVID and BÉNÉDICTE THIEBAUT for collecting specimens.

REFERENCES

- DONNELLY, T.W., 1961. A new species of damselfly from St. Lucia, British West Indies (Odonata: Protoneuridae). *Fla Ent.* 44(3): 119-121.
- DONNELLY, T.W., 1970. The Odonata of Dominica, British West Indies, *Smithson. Contrib. Zool.* 37: 1-20.
- MEURGEY, F., 2005. *Etude faunistique des odonates de Martinique*. SFO/DIREN Martinique.
- MEURGEY, F., 2006. *Protoneura romanae* sp. n. from Guadeloupe (French West Indies). *Odonatologica* 35(4): 369-373.
- MEURGEY, F., 2007. *A contribution to the knowledge of the Odonata of Dominica (British West Indies)*. Odonata report 3, Muséum d'Histoire Naturelle de Nantes/Ministry of Agriculture and the Environment, Forestry, Wildlife and Parks Division.
- PAULSON, D., 2007. West Indian Odonata, by Island or Islands Group. Revised April 2007. <http://www.ups.edu/x7045.xml>.
- WESTFALL, M.J., 1964. A new damselfly from the West Indies (Odonata: Protoneuridae). *Quart. J. Fla. Acad. Sci.* 27: 111-119.
- WESTFALL, M.J. & M.L. MAY, 1996. *Damselflies of North America*. Scient. Publishers, Gainesville.