

SHORT COMMUNICATIONS

**POLYTHORE MANUA SPEC. NOV. FROM SOUTHERN PERU
(ZYGOPTERA: POLYTHORIDAE)**

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Received May 21, 1990 | Accepted June 11, 1990

P. manua sp. n. (holotype ♂, allotype ♀, property of Museo de Historia Natural, Lima, temporarily deposited in United States National Museum of Natural History) from Manu, southern Peru, is described. Its distinctive wings are figured in color, and its affinities with other members of the *boliviana* group are discussed.

INTRODUCTION

BICK & BICK (1985, 1986) revised the species of *Polythore*. In 1989 O.S. Flint, Jr, United States National Museum of Natural History (USNM) sent us for determination 84 ♂, 37 ♀, and 2 pairs of *Polythore* from southern Peru. These constitute a new species, *P. manua*, named for the locality of the type series, Parque Nacional del Manu.

POLYTHORE MANUA, SPEC. NOV.

Figure 1, Table I

Material — Holotype ♂, allotype ♀: Perú, Madre de Dios Dept., Manu, Pakitza (12°7'S: 70°58'W), 250 m, 9-IX-1988, O.S. Flint Jr. leg., property of Museo de Historia Natural, Lima, Peru (MJP), temporarily placed in USNM. Paratypes, same locality as holotype and allotype: 6 ♂, 1 ♀, X-1987 J. Louton, leg.; 43 ♂, 23 ♀, 1 pair, IX-1988, N. Adams, F. Chavez, O. Flint, A. Friedberg, J. Louton, M. Pogue leg.; 35 ♂, 12 ♀, 1 pair, IX-1989, N. Adams, D. Adamski, J. Gelhaus, D. Harvey, J. Louton, R. Robbins leg. Only females collected at the same time and place as males are included in the paratype series. Representative paratypes will be distributed to: British Museum Natural History, Florida State Collection of Arthropods, International Odonata Research Institute, MJP, Rosser Garrison Collection, University Michigan Ann Arbor, USNM.

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HOLOTYPE ♂ — Total length 52 mm (including appendages), abdomen 42. Body color pattern essentially as for other members of the genus (BICK & BICK, 1985, 1990) but wing color pattern distinctive (compare BICK & BICK, 1986, with Fig. 1, this paper).

Head — Labrum mostly yellow, black medially, anteriorly, and posteriorly; postclypeus black, laterally yellow; vertex black with 4 yellow spots rectangularly arranged.

Prothorax — Anterior and posterior lobes black; middle lobe black with a yellow band on each side, these not quite meeting at mid-line.

Pterothorax — Black with 5 yellow stripes on each side as we described (1985) for *P. lamerceda* BICK & BICK.

Wings (left f.w./h.w.) — Length 37/35 mm, pterostigma 4.1/3.6 along posterior border, surmounting 13/12 cells, antenodals 44/35, the 13/13 thickened, postnodals 56/56. Basally and apically transparent brown, darker apically, with a transverse, dark, orange yellow (72. d. OY, National Bureau of Standards, 1955) band or lunule in f.w. and a moderate yellowish brown (77. m. y Br) one in h.w. (Fig. 1). In f.w. the orange lunule begins 4.0 mm or 13 cells distad of nodus and extends distally 4.9 mm along R2. The lunule is straight distally, slightly indented proximally, and narrows to 3.2 mm at posterior wing border. In h.w. the brown lunule begins 6.0 mm or 21 cells distally of nodus and extends distad 4.6 mm. The lunule, concave proximally, convex distally, narrows to 2.3 mm at posterior wing border. In f.w. a white stripe between C and R2 borders the lunule anteriorly and extends 1 cell proximad and 2 distad of it. In h.w. this white stripe extends 8 cells proximad and 8 distad of the lunule. In both wings, R2 is distinctly paler than other veins distad of the lunule and the paleness almost reaches wing apex.

Abdomen — Black with the following lateral yellow markings on each side: segment I with a large spot, II a full-length stripe, III anterior marginal spot separated from full-length stripe, IV, V each with only a small basal spot.

Appendages — Black, 1.5 mm, with a mid-length, ventromedial process as we illustrated (1985) for *P. lamerceda*.

Penis — horns short (0.125 mm), straight, flagella broken but 2-segmented in paratypes.

ALLOTYPE ♀ — Total length 46 mm, abdomen length 36. Head, prothorax, pterothorax color patterns as in holotype. Abdomen black with these yellow marks on each side: I-III as in holotype, IV a basal spot and a full-length stripe, V, VI each with only a small basal spot.

Wings (left f.w./h.w.) — length 37/35 mm, pterostigma 3.9/3.2 along posterior border, surmounting 10/10 cells, antenodals 43/32, 12/11 thickened, postnodals 53/51.

Both wings are basally and apically light transparent brown. In f.w. the lunule, colored strong orange, 50.s.O (Natn. Bureau Standards, 1955) is much brighter than that of the holotype. In h.w. the much duller lunule is grayish brown, 61. gy.

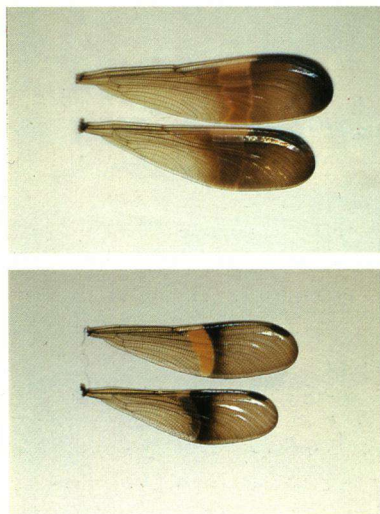


Fig. 1. *Polythore manua* sp. n., left fore and hind wing: male (top), — female (bottom).

Br., somewhat as in the male. The f.w. lunule, beginning 3.5 mm or 10 cells distad of nodus, extends distally for 4.6 mm along R2 and narrows to 3.0 at posterior wing border. The h.w. lunule, beginning 5.2 mm or 14 cells distally of nodus, extends distad 3.0 mm and narrows to 2.0 at posterior wing border. Each lunule is bordered distally by a black band of irregular width (1.0-2.2 mm); the band is obvious only in f.w. because of color contrast. Unlike the holotype, both f.w. and h.w. of the allotype lack the white stripe anterior of the lunule and R2 is not pale.

PARATYPES — As expected from the geographically restricted collecting area, little variation was observed among the paratypes, the most obvious difference being wing color due to maturation. There were 19 immature males and 13 immature females wherein all lunules were white rather than orange or brown. In spite of this obvious change in wing color, maturation resulted in no change in body color pattern. Indeed, the only variant was the absence of both the posterior pair of pale vertex spots and the lateral pale postclypeal markings in one mature female.

In one exceptional male, the area from midway between lunule and pterostigma to wing tip was almost black rather than transparent brown. The most proximal point of origin of the lunules was 3.3-7.7 mm beyond the nodus in f.w., 4.7-9.7 mm in h.w. (Tab. I). The white stripe anterior of the lunule extended as far as 11 cells distad from the lunule in the f.w., as far 15 in h.w. where it closely approached the pterostigma.

The terminal segment of the penis was essentially as figured for *boliviana* (BICK & BICK, 1986) but with horns slightly longer, 0.075-0.125 mm (\bar{X} = 0.100,

Table I
Wing characteristics of *P. manua* paratypes, 35 ♂, 23 ♀

	Wing length	Antenodals	Thickened antenodals	Postnodals	pterostigma			lunule		
					Cells under	Length mm at posterior border	mm from nodus	Cells from nodus	Width at R2	Width of black band
♂ — f.w.										
Range	34-44	39-53	11-16	49-65	12-16	3.2-5.0	3.3-7.7	12-27	3.6-5.8	
Mean	37.1	44.7	12.9	57.5	13.4	4.2	5.1	16.8	4.8	
♂ — h.w.										
Range	33-41	31-53	10-16	49-67	10-16	2.7-4.1	4.7-9.7	13-31	3.5-6.3	
Mean	36.3	35.2	12.0	55.5	12.7	3.5	6.5	19.8	4.6	
♀ — f.w.										
Range	31-37	34-44	10-13	42-56	8-11	3.2-4.0	2.0-3.6	5-10	2.6-4.7	1.0-5.5
Mean	35.0	40.0	12.4	48.2	9.5	3.7	2.8	8.2	3.7	2.5
♀ — h.w.										
Range	30-36	27-35	10-13	41-55	7-10	2.7-3.4	3.5-5.0	9-15	2.1-3.8	1.0-6.0
Mean	33.0	32.3	11.2	46.6	8.6	3.1	4.4	12.4	2.8	3.1

N = 8); flagella were always 2-segmented.

The lunule of each wing began nearer the nodus in females than in males and was less varied in its point of origin (Tab. I): 2.0-3.6 mm beyond nodus in f.w., 3.5-5.0 in h.w. The white stripe anterior of the lunule, characteristic of males, was noted only rarely in females. The width of the bordering black in females varied from 1.0-5.5 mm (f.w.) and 1.0-6.0 (h.w.).

DISCUSSION

Males of *P. boliviana* (McLachlan), *P. ornata* (Selys), *P. manua*, agree in the following details (series of numbers refer to these 3 species respectively): (1) mean h.w. length, 37.8, 38.2, 36.3 mm; (2) mean h.w. cells under pterostigma, 12.9, 11.7, 12.7; (3) mean length of penis horns, 0.119, 0.102, 0.100 mm; (4) each with a white stripe in each wing anterior to the lunule between C and R2; (5) each with R2 of all wings distinctly pale distally of the lunule; (6) each with 2-segmented penis flagella. These characteristics suggest that *manua* should be placed in the *boliviana* group whose species are readily separated by wing color patterns (BICK & BICK, 1986) and Figure 1 in this paper.

However, mature male *P. manua* wing color pattern superficially resembles *P. batesi* (Selys), but these 2 differ greatly: (1) lunules orange in f.w., brown in h.w. (*manua*), orange in both wings (*batesi*); — (2) lunules begin 4.7-9.7 mm h.w. distally of nodus (*manua*), 1-3 mm (*batesi*); — (3) h.w. pterostigma surmounts 10-16 cells (*manua*), 7-8 (*batesi*); — (4) white stripe anterior to lunule between C and R2 present (*manua*), absent (*batesi*); — (5) R2 distally pale (*manua*), dark (*batesi*); — (6) penis flagellum 2-segmented (*manua*), 1 (*batesi*).

Determination of females as *P. manua* without associated males is risky; wings of *manua* females (Fig. 2) most closely resemble those of *P. batesi* and *P. boliviana* (BICK & BICK, 1986) the 3 being sympatric in southern Peru. The pterostigma of *manua* (f.w. 3.2-4.0, h.w. 2.7-3.4) is longer than that of *batesi* (2.2-2.6, 2.0-2.2). Wings of *manua* females with a narrow black band distally of the nodus differ conspicuously from those of *boliviana* (BICK & BICK, 1986) with a wide band. Unfortunately because of variation (Tab. I) in width of this band in *manua*, we cannot differentiate all females of these 2 species.

All specimens were collected near Pakitza, an entrance post of Parque Nacional del Manu. This area on the eastern slope of the southern Andes is drained by Rio Manu, a tributary of Rio Madre de Dios in the southern headwaters of the Amazon drainage. The Manu exerts a controlling influence on the Parque as discussed and pictured by MOORE & MOORE (1983) and TERBORGH (1983).

Nearly all specimens were collected in September, the last month of the dry season (May-September) with a precipitation of 5 cm. Specimens were collected from seeps, small streams, and along forest trails.

ACKNOWLEDGEMENTS

We thank O.S. FLINT Jr and J.A. LOUTON for the loan of specimens and for giving us the

privilege of describing this new species. O.S. Flint called attention to literature on Manu Parque, and both he and R.W. GARRISON gave valued comments on the manuscript.

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