

SHORT COMMUNICATIONS

***HETERAGRION BICKORUM* SPEC. NOV. FROM ECUADOR  
(ZYGOPTERA: MEGAPODAGRIONIDAE)**

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The new sp. is described and illustrated (holotype ♂ and allotype ♀ [pair in tandem]: Ecuador, Napo province, Limoncocha, 28-VIII-1980). The holotype and allotype are deposited in the Florida State Collection of Arthropods, Gainesville, Florida, USA.

INTRODUCTION

GARRISON (2003) listed 41 species and 1 subspecies of *Heteragrion*. The new species described herein brings the total described species of *Heteragrion* to 42.

***HETERAGRION BICKORUM* SP. NOV.**

Figures 1-5

**Material.** — **Holotype** ♂ and **allotype** ♀ (pair in tandem): ECUADOR, Sucumbios province, Limoncocha, 28-VIII-1980, S.W. Dunkle (SWD) leg.; — **Paratypes** (13 ♂, 2 ♀): — Ecuador, Napo province, La Selva, 100 km E Coca, streams in hillforest S of Napo R., 13-X-1988, 1 ♂ ♀ (pair in tandem), 1 ♂ (SWD) leg.; Napo province, stream 8.5 km E of Loreto, 14-XI-1997, 4 ♂, J.J. Daigle leg.; same data, 1 ♂ ♀ (pair in tandem), W.F. Mauffray leg.; Orellana province, forest stream, 3.6 km from Sci. Research Sta., Parque National Yasuni, 18-VII-1996, 4 ♂, K.J. Tennessen (KJT) leg.; Napo province, stream, Puyo Rd., 7.1 km S of Napo, 21-VII-1996, 2 ♂, (KJT) leg. The holotype and allotype pair plus the Mauffray paratype pair are deposited in the Florida State Collection of Arthropods (FSCA) in Gainesville, Florida, USA. The remaining paratypes are in the collections of Sidney W. Dunkle, Ken J. Tennessen, Jerrell J. Daigle, Ponteficia Universidad Catolica del Ecuador (PUCE), Ecuador, and the National Museum of Natural History (NMNH) in Washington, D.C., USA.

**Etymology.** — The species is named after George and Juanda Bick for their contributions to neotropical odonatology.

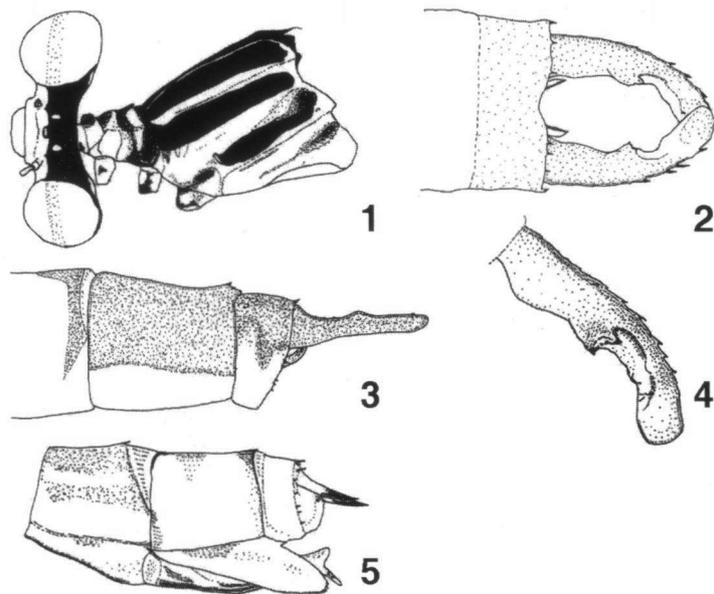
**MALE (holotype):** H e a d. — Eyes in life yellow with black dorsal area extending posteriorly from level of lateral ocelli. Face bright yellow dorsally to just before level of lateral ocelli (Fig. 4). Right antenna missing. Basal segment of left antennae yellow and the second segment brown with yellow tip. Remaining segments missing. Epicranium black with rear of head yellow.

**T h o r a x.** — Pronotum and posterior lobe black, propleuron yellow. Middorsal thoracic carina black. Black mesepisternum with a thin, curved pale yellow line dorsally and margined with yellow ventrally. Mesinfraepisternum mostly black, ventral margin yellow. Mesepimeron mostly black, margined with yellow dorsally and ventrally (Fig. 4). Metepisternum yellow dorsally, black ventrally with yellow margin. Metepimeron yellow with pale black mid-lateral stripe increasing in width apically. Metinfraepisternum black dorsally, yellow ventrally. Venter yellow.

**Legs.** — Armature and legs blackish-brown; coxae yellow with black ventral margins.

**Wings.** — 17-19 postnodal crossveins in forewing, 15-16 hindwing. Venation black, dark brown pterostigma overlying 1 1/2 to 2 cells with the proximal side oblique.

**A b d o m e n.** — Mostly black dorsally, yellow ventrally, with tiny yellow basal rings and complete black apical rings. Segment 1 yellow with obscure dark dorsal area. Segment 2 yellow, black dorsally with yellow mid-dorsal line tapering poste-



Figs 1-5. *Heteragrion bickorum* sp. n., holotype ♂ (1-4), and allotype ♀ (5): (1) head, prothorax, and thorax, lateral view; — (2) caudal appendages, lateral view; — (3) same, dorsal view; — (4) right cercus, mediodorsal view; — (5) ovipositor, lateral view.

riorly. Segments 2 and 3 with decreasing yellow mid-dorsal line. Segments 3-7 black with thin yellow basal ring and black apical ring, the yellow latero-ventral area about 0.5 to 0.75 segment length. Yellow basal ring mostly obscured on segment 7. Segment 8 mostly yellowish-orange with black basal triangular area dorsally. Segment 9 black with yellow ventral area sharply demarcated. Segment 10 black, margined with undulating ventral yellow area. In lateral view, cercus slender, ventral medial carina not visible (Fig. 5). Viewed dorsally, cercus black with apical portion wider and stockier, the recessed area pale (Fig. 6). Dorsal medial tooth prominent, forming a convex molar-like structure distinctly separated from ventral median tooth. Paraproct yellow with black tip.

**M e a s u r e m e n t s** (mm). — Total length including appendages 43.5, abdomen 36.3, forewing 22.5 and hindwing 22.5.

**FEMALE (allotype)**. — Similar to holotype except face mostly black, postclypeus with black concave area rearwards. Pale yellow line from eye to eye through median ocellus. Top of head mostly black with smudged yellow areas. Rear of head yellow. Pronotum and thorax with paler yellow areas. Mid-lateral abdominal areas, basal and apical rings wider. Segment 8 reduced in size, mostly brown. Segments 9 and 10 yellow, light brown dorsally. Ovipositor yellow, genital valve with minute, even dentition (Fig. 11). Stylus light brown with yellow tip. Cercus yellow with brown tip.

**Wings**. — Similar to holotype but 19 postnodal crossveins in forewing and 16 postnodal crossveins in hindwing. Pterostigma overlies 2 1/2 to 3 cells.

**M e a s u r e m e n t s** (mm). — Total length including appendages 38.0, abdomen 31.0, forewing 24.5 and hindwing 24.0.

**VARIATION AMONG PARATYPES**. — Paratypes similar to holotype and allotype. Total length (mm) of ♂ ranges from 42-47, ♀ 41.5-42; abdomen ♂ 35-39, ♀ 33-35; forewing ♂ 22-23, ♀ 25-25.5; hindwing ♂ 22-24 and ♀ 24-26. Postnodal crossveins in forewing ♂ 16-20, ♀ 17-18 and hindwing ♂ 14-16, ♀ 14-17.

## DISCUSSION

*Heteragrion bickorum* is most similar in coloration and size to *H. bariyai*, a species known from Rondonia State in Brazil (GARRISON, 1989), Madre de Dios Department, Peru (BUTT, 1995), eastern Ecuador and Venezuela (DE MARMELS, 1989). It has some similarities with *H. inca*, another companion species. In the field, the contrasting yellow and black eye combination in *H. bickorum* males will separate it from *H. bariyai* males whose eyes are black above and olivaceous green below, and from *H. inca* males which have blue eyes. Also, *H. inca* has a green thoracic stripe (antehumeral stripe of some workers) but this stripe is yellow in *H. bickorum* and *H. bariyai*. *H. bickorum* lacks the black teardrop spot between the antennae and the eye (WILLIAMSON, 1919, p. 74, fig. 47) seen in *H. inca* and some Ecuador *H. bariyai*. The middle pronotal lobe is black with yellow on the extreme lateral margin in *H. bickorum*, brownish yellow in *H. bariyai*, and variable in the wide-ranging

*H. inca* (WILLIAMSON, 1919). The black and yellow demarcation on the lateral sides of abdominal segments 9 and 10 in *H. bickorum* is strikingly more contrasting than in *H. bariyai* and *H. inca* which have 9 and 10 brown dorsally and more diffusely marked laterally.

In lateral view, the ventral medial carina of the cercus is usually not visible in *H. bickorum* and *H. inca*, whereas it is visible in *H. bariyai*. Viewed laterally, the dorsal medial carina is elevated and visible in *H. bickorum* and *H. inca*, but it is not seen in *H. bariyai* (DE MARMELS, 1989, p. 58, fig. 8).

In *H. bariyai*, the dorsal and ventral medial carinae are more distally located compared to *H. bickorum* and *H. inca*. *H. bickorum* is more similar to *H. inca* (WILLIAMSON, 1919, p. 84, fig. 114) in the appearance of the apical portion on the cercus. In dorsal view, the ventral tooth is longer and more prominent than the dorsal tooth in *H. bariyai*. It is subequal or shorter in *H. bickorum* and *H. inca*.

It should be noted that some specimens of *H. inca* from eastern Ecuador have a dark labrum and a brighter green antehumeral stripe than specimens further south from Peru and Bolivia. Also, the females of these three *Heteragrion* species are very similar and difficult to diagnose. Positive identification of the females can best be made with mated or tandem pairs.

*Heteragrion bickorum* is thus far known only from eastern Ecuador. *H. bickorum* is a lowland rainforest species but has been found in the low foothills of the eastern Andes. It prefers small shaded, muddy streams with some gravel. Other odonate species collected with *H. bickorum* include *H. bariyai* De Marmels, *H. inca* Calvert, *Perilestes kahli* Williamson & Williamson, *Protoneura woytkowskii* Gloyd, and *Oligoclada abbreviata* (Rambur).

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