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AEOLAGRION AXINE SPEC. NOV., A NEW DAMSELFLY FROM ECUADOR (ZYGOPTERA: COENAGRIONIDAE)

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A. axine sp. n. (holotype ♂: Ecuador, Napo Prov., Primavera, International Odonata Research Institute (IORI), Gainesville, Florida, USA) is described from 13 ♂, all from Napo Prov., lowland Amazonian Ecuador. The species is most similar to *A. dorsale* (Burmeister) and *A. foliaceum* (Sjöstedt), but ♂ *axine* are easily recognized by the ax-head shape of the cerci in lateral view. These 3 spp. are considered to be a monophyletic group, the "true" *Aeolagrion*, which probably deserves generic status because of the characteristic ♂ cerci and ♀ meskatepisternum. Remarks on other *"Aeolagrion"* are included.

INTRODUCTION

DAVIES & TOBIN (1984) listed 7 species of *Aeolagrion*, to which DE MARMELS (1988, 1989) added *chimantai* and *neblinae*. These species are all strictly South American. However, I agree with DE MARMELS (1989) who stated: *"Aeolagrion* ... is a heterogenous assemblage of species of the *Telebasis* complex and may not deserve any status. There are a number of intermediate species, some undescribed, which connect *Aeolagrion* to *Telebasis* Selys, *Helveciagrion* Machado, and even *Ceriagrion* Selys".

WILLIAMSON (1917) designated *Agrion dorsale* Burmeister, 1839 as the generotype of *Aeolagrion*. *A. dorsale*, *A. foliaceum* (Sjöstedt) and *A. axine* described below seem to form a monophyletic group, here called the *Aeolagrion* group, or the "true" *Aeolagrion*, even though the group might have some other taxonomic status, perhaps a subgenus of *Telebasis*. The *Aeolagrion* group is characterized by: male cerci greatly expanded vertically, pale colours blue, and known females with mesanapleural suture convex dorsally, as discussed under the taxonomy of the *Aeolagrion* group below. Since the latter character involves

a change in the basic Odonata thoracic structure, that might be reason enough to give the *Aeolagrion* group generic rank.

AEOLAGRION AXINE SPEC. NOV.

Figures 1-5

Material. — All Ecuador, Napo Province, Napo River drainage. **Holotype** ♂: Lake Taracoa south of Primavera (1°52'S, 79°48'W), 26-VIII-1980, S.W. Dunkle (SWD), International Odonata Research Institute (IORI) collection, Gainesville, Florida, USA. — **Paratype** ♂: 2 ♂, same data as holotype; 7 ♂, same data as holotype except 4-XI-1980, M.J. Westfall & D.G. Robinson, Florida State Collection of Arthropods (FSCA), Gainesville, Florida, USA; 1 ♂, Lake Limoncocha (0°24'S, 76°36'W), 300 m, 11-VII-1977, S.M. & K.W. Knopf, K.W. Knopf coll.; 1 ♂, pond near Jatun Sacha Biological Station, 23 km east Puerto Napo, 400 m, (1°04'S, 77°36'W), 18-X-1988, SWD; 1 ♂, slough off Rio Sindy, 5.3 km east Puerto Napo, 400 m, (1°04'S, 77°42'W), 16-X-1988, SWD. All specimens preserved by acetone treatment and stored dry in transparent envelopes. Unless stated otherwise, paratypes are at present in the S.W. Dunkle collection.

Etymology. — Axine is Greek for ax, referring to the shape of the male cerci.

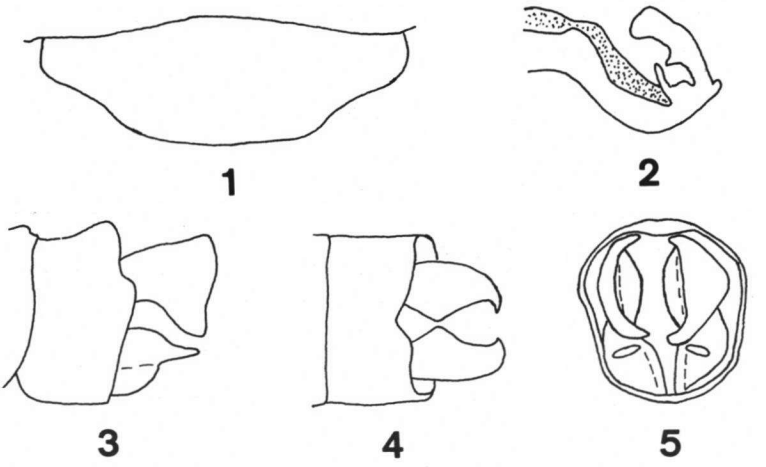
Diagnosis. — Male cerci distinctively ax-head shaped. Female and larva unknown.

MALE **Holotype.** — Labrum black. Bases of mandibles, genae, and clypeus blue. Frons below transverse ridge brown, small dark median spot in fronto-clypeal suture. Antennae brown, except basal 2/3 pedicel pale. Top of frons, vertex, and occiput metallic black, except for a short pale stripe extending from each lateral ocellus toward base of antenna. Lower rear half of head and labium pale. Compound eyes in life black dorsally, green ventrally.

Prothorax black dorsally, blue laterally, posterior lobe convex, only slightly trilobed (Fig. 1). Mesepisternum black with blue antehumeral stripe 1/3 width of each mesepisternum. Mesepimeron black, this stripe extending onto dorsal meskatepisternum. Rest of thorax blue, paler beneath, except diffuse brown stripe on metapleural suture. Coxae blue, rest of legs tan with black extensor surfaces and armature. Ventral tooth of claw large but shorter than tip.

Wing venation and pterostigma brown. Anal Crossing (CuA) about halfway between Antenodals (AN) 1 and 2. Wings petiolate for about length of CuA distal to it. Crossveins between subnodus and rear edge of wing nearly in straight line, 3 antenodal cells. Forewing Postnodals (PN) 13, hindwing PN 11, R3 branching at PN 6 in forewings, PN 4-5 in hindwings. Pterostigma a parallelogram longer than wide, covering 1 cell.

Abdomen black dorsally, dull blue ventrally, except dorsal segment 8 and dorsobasal third of 9 dark blue, and narrow blue partial rings at bases of 3-7. Distal segment of penis heavily sclerotized (brown) dorsally, the white recurved part also stiffer than in most Zygoptera. Recurved part has both internal and external basal transverse membranous flaps, a blunt internal median projection, and short rounded distolateral lobes (Fig. 2). Cerci black, slightly shorter than



Figs 1-5. *Aeolagrion axine* sp. n., males: (1) Dorsal view of pronotal hind lobe; — (2) Right lateral view of penis; — (3-5) Left lateral view, dorsal view, and posterior view of abdominal segment 10 and appendages. — [Fig. 2 from a topoparatype, other Figs from holotype. Figs 1-2 drawn at 50X, Figs 3-5 at 25x]

segment 10, in lateral view truncate, ax-head shaped, with a large ventral projection (Fig. 3); in dorsal view medial edges concave, each cercus with medial tooth at tip (Fig. 4). Inner surfaces of cerci pale, membranous, in life probably soft or even inflatable, covered with hair-setae and white wax. In posterior view, cerci with dorsal and ventral incurved blunt teeth (Fig. 5). Dorsal rear edge of segment 10 flattened in transverse plane, emarginate medially in dorsal view (Fig. 4). Epiproct blunt, reduced, recessed under edge of segment 10. Paraprocts brown, as long as cerci, in lateral view tapered to blunt tip (Fig. 3), in ventral view lateral edges parallel, in posterior view tips flattened horizontally (Fig. 5).

Measurements (mm). — Total length including cerci 35, abdomen 29, hindwing 18.

MALE **paratypes.** — Similar to holotype. During aging, front of frons turns black, wings tint brown, and sparse white granular pruinosity covers rear of head, thorax, abdominal segment 1, and dorsal blue areas of segments 8-9. One topoparatype has abdominal segment 8 nearly all blue, plus the basal half of 9 blue. One topoparatype has short pterostigmata, each about as wide as long. CuA about 1/3 distance between AN 1 and 2 and petiolation ceasing at CuA in some wings. Forewing PN 12-15, hindwing PN 11-12. R3 of forewing branches at PN 5-6, of hindwing at PN 4-5.

Measurements (mm). — Total length 35-37, abdomen 28-30, hindwing 18-19.

THE *AEOLAGRION* GROUP

Biology. — All 3 species of the *Aeolagrion* Group are shade-dwellers of ponds, sloughs, and swamps. At water they perch on shaded emergent plants or waterside twigs, and they forage among gloomy rainforest undergrowth. Their reproductive behavior and larvae are unknown. The 3 species occur at Limoncocha, Ecuador, and various combinations of 2 species are syntopic elsewhere. All species are Amazonian. *A. axine* is known only from Ecuador. *A. dorsale* is recorded from Brazil, Ecuador, Peru, Surinam, Trinidad, and Venezuela, and I have seen specimens from all countries except the last, which record is from an unpublished 1966 list by RACENIS. *A. foliaceum* was described from Brazil, and I have seen specimens from Bolivia, Ecuador and Peru. The known flight season of *axine* is 11 July - 4 Nov., of *dorsale* 12 Jan. (FSCA) - Nov. (SJÖSTEDT, 1918) and of *foliaceum* 17 Mar. (FSCA) - 11 Oct. (FSCA).

Taxonomy. — Males of the 3 known species of this group (*axine, dorsale, foliaceum*) are easily differentiated by the shape of the cerci in lateral view, and by other characters summarized in the key below. Female *dorsale* have a brown tubercle at the dorsal edge of the meskatepisternum, and development of the tubercle has pushed the mesanapleural suture convexly upwards. Female *foliaceum* lack such a tubercle, but the mesanapleural suture is also convex upward. I know of no other Odonata with such a modification in the mesanapleural suture area. Female *dorsale* are also readily distinguished from female *foliaceum* by color pattern. The former has a brown labrum and black abdominal segment 8, *foliaceum* has these structures blue.

KEY TO MALES OF THE *AEOLAGRION* GROUP

1A Cerci in lateral view ax-head shaped, shorter than abdominal segment 10; posterior 2/3 of segment 9 black ..... ***axine***

1B Cerci in lateral view mitten- or trapezoid-shaped, longer than abdominal segment 10; segment 9 all blue 2

2A Cerci in lateral view mitten-shaped, distinctly bifid; labrum black .....***dorsale***

2B Cerci in lateral view trapezoidal, scarcely bifid; labrum blue.....***foliaceum***

REMARKS ON OTHER *"AEOLAGRION"*

A. inca (Selys, 1876) is known only from the type series of 1 male which lacked abdominal segments 8-10, and 2 females, all from Jurimaguas, Peru. SJÖSTEDT (1918) stated that his *foliaceum* differed by the position of CuA, the width and color of the posthumeral stripe, and the form of the prothorax. However, *foliaceum* corresponds very well with the description of *inca,* and possibly *foliaceum* is a synonym of *inca.*

A. inalatum Calvert is a small species (abdomen 17 mm) known only from the holotype female from Iquitos, Peru. This species is probably a *Telebasis,* because its description (CALVERT, 1961) corresponds with females I have collected in tandem with red-abdomened typical *Telebasis* males near Iquitos. Unfortunately the holotype of *inalatum,* thought to be in alchohol at the Philadelphia Academy of Sciences, cannot be located (D. Azuma, M. Westfall, pers. comm.).

A. demararum Williamson is, I think, a *Telebasis,* though it lacks any red markings, judging by the shapes of the male cerci and the hind lobe of the female pronotum. The late J. Racenis also considered it a *Telebasis,* and a male in the FSCA was so determined by him in 1960. The larva, described by GEIJSKES (1941), is similar to described *Telebasis* larvae, particularly that of *T. willinki* Fraser described by BULLA (1970). In Trinidad I found *demararum* on the same wet season slough with *dorsale,* the former in the open, the latter in the shade.

The 4 remaining species ascribed to "Aeolagrion" are *chimantai* De Marmels, *fulvum* Needham, *neblinae* De Marmels, and *flammeum* (Selys). The first 3 are known only from Venezuela, while *flammeum* occurs widely in Amazonia. Males of these 4 species have partially to entirely red abdomens, and straight to incurved cerci. Except in *fulvum,* the male cerci have a distoventral prong or tooth. The penes of *chimantai* and *neblinae* are simple, that of *flammeum* has chitinized tips on the lateral lobes (pers. obs.), and that of *fulvum* has pointed distal lobes and uniquely serrated lateral lobes (DE MARMELS, 1985). *A. flammeum* has a strange thoracic pattern, rusty orange with vivid turquoise lateral stripes "...haphazardly placed on the insect by an artist who carelessly disregarded the boundaries of the sclerites..." (WILLIAMSON, 1917), and mature males have the face and the anterior parts of the compound eyes bright red (pers. obs.). These 4 species need further study, and probably discovery of their larvae, before they can be satisfactorily classified in existing or new genera.

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