A NEW SPECIES OF ENALLAGMA FROM CENTRAL AMERICA (ODONATA: COENAGRIONIDAE)¹

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ABSTRACT

Enallagma rua n. sp., from the highlands of southern Mexico, Guatemala, and Honduras, is most closely related to the more northerly Enallagma praevarum (Hagen), from which it differs principally by the shape of the male appendages. The two species do not appear to intergrade in southern Mexico.

The species of Enallagma herein described has a wide distribution in the mountainous region between southern Mexico (Chiapas) and Honduras. It is very closely related to E. praevarum (Hagen), which ranges from the southwestern states of the United States south to Oaxaca, Mexico. The lowland region of Tahuantepec may effectively separate the two species, though there might be an effective ecological barrier should they be found to occur in the same region: E. praevarum prefers high, rather dry regions and the new species is found in more moist habitats.

Enallagma rua, new species

HOLOTYPE MALE: Head blue, black as follows: dorsal surface of antennae, except for broad, rounded postocular spots and isolated, elongate spot connecting these spots. Rear of head pale.

Prothorax: Black on dorsum except for comma-shaped, blue, lateral spots on middle lobe and obscure transverse band on fore lobe. Propodea blue.

Pterothorax: Black mid-dorsal, blue antehumeral, and black humeral stripe, the pale antehumeral stripe 1 1/3 times as broad as the pale mid-dorsal (to mid-dorsal carina only), and 3 times as broad as the humeral stripe, at mid-height. Sides and venter of thorax pale blue, except for black dash at posterior end of 2nd lateral suture. Mesostigmal laminae subrectangular, with rounded tip and raised, somewhat flattened apical portion.

Legs: Black on dorsum of femora and outer surface of tibiae, except for pale lines partially encircling bases of femora. Apices of tibiae pale, grading proximally into the black color. Spines and tips of tarsal claws black. Pale color of legs obscure bluish-brown.

Wings: Veins and stigmata black. 10 1/2 postnodal crossoveins in fore wing; 9 1/2 in hind wing. M₄ originating 5 1/2 cells from nodus in fore wing; 4 in hind wing, Subnodal cell bounded by M₁, Rs₅, and M₃ dis-

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tinctly broader than high; that is, the M₁ side is broader than the Ra₃ side. Wings stalked distinctly proximal to Ac.

Abdomen: Blue, except for black markings on apical half of 1; distal third of 2, fifth of 3, half of 4, two-thirds of 5, four-fifths of 6, seven-eights of 7; and dorsum of 10. Black of distal fifth of 3 - 6 extending ventrally to lateral mid-line of segments. Superior appendage dark, elongate, equal in length to the 10 segment at mid-height, slightly curved mesally, with broad ventral projection bearing a small, raised, subterminal pad. Inferior appendage pale with dark tip, pointed, extending two-thirds the length of the superior.

Genitalia: Penis very similar to that of E. praevatum (as figured by Donnelly 1968).

Allotype Female: Pale color obscure brownish-green (brown in dried specimens). Generally similar to male, except that the proximal black color on the femora is more restricted. The dorsum of the abdomen is black, with pale color limited to distal half of 1, proximal eighth of 4 and 5, seventh of 6, and sixth of 7. The dark color tapers on each segment to a rounded point proximally and expands abruptly at distal fifth of 3 - 7. Segments 8 - 10 black dorsally, with dark color narrowed very slightly distally on 9 and 10.

Mesostigmal laminae very similar to those of male, with anterior margin bilobed and centrally excavated, and tip curving abruptly posteriorly.

Dimensions and Variations Among the Type Series: Abdomen of holotype male 24 mm; allotype female, 23 mm. Hind wing of holotype male 17.5 mm; allotype female, 18.5 mm. Abdomens of paratypes vary from 22.5 to 25.5 mm (32 males), and from 22.5 to 25.5 mm (3 females). Hind wings vary from 15.5 to 18 mm (32 males), and from 16.5 to 19.5 mm (3 females). There is some variation in the relative extent of dark and pale colors: many specimens have the central spot between the pale postocular spots reduced, and a few have this spot enlarged to connect the postocular spots across the center of the head. Ten males have more dark color on the abdomen, with the distal three-fifths of 4 and four-fifths of 5 black. The four female specimens vary greatly in size but show little color variation. One female has the dark color at the base of the 8th segment narrowed abruptly to a rounded point.


The holotype and allotype are deposited in the Florida State Collection
of Arthropoda. Paratypes will be deposited in the Museum of Zoology, University of Michigan; the United States National Museum, and several other collections.

A total of 79♂♂ and 9♀♀ of E. praevarum from central and southern Mexico, as well as many from the United States, were examined. These specimens were all borrowed from the Williamson collection at the University of Michigan, and are distributed approximately as follows: Specimens from Oaxaca, Michoacán, Querétaro, Distrito Federal, and San Luis Potosí, all collected between 1890 and 1903, principally by Dean and by Adams; specimens from Guerrero and Guanajuato collected in 1932 by Smith and Taylor; and specimens from Jalisco collected in 1923 by J. H. Williamson.

The new species bears approximately the same relationship to E. praevarum in the southern part of its range as does E. anna Williamson in the north. E. praevarum is a remarkably stable species throughout a wide range and occurs with a large variety of other Odonata species at most of the places it is found. Both anna and rua live in marginal areas which must be considered harsher, judged by the relatively more restricted faunas with which they coexist. E. rua was found in one locality (Santa Cruz de Verapaz) flying virtually alone, with only one specimen of another species (Anomalagrion hastatum (Say)). Seen at Caldera Lake, it was found along with Libellula foliata (Kirby), Aeshna jalapensis Williamson, Sympetrum illotum (Hagen), and Argia fissa Selys. At Los Aposentos it flew with A. jalapensis, Coryphaeschna luteipennis (Burmeister), S. illotum and Enallagma civile (Hager). At none of the three Guatemala localities was the Odonata fauna especially rich, nor were specimens abundant. No information is available on the Honduran and southern Mexico occurrences.

All of the localities at which E. rua were found were at fairly high elevations. At the Honduras locality the elevation is given as 5800 feet; at Santa Druz de Verapaz it is about 4900 feet; at Caldera Lake, 5000 feet; at Los Aposentos, 6500 feet; at Jitotol, 5800 feet; and at San Cristobal de las Casas, 7400 feet.

Morphologically rua and anna differ from praevarum in about the same way. Both species have distinctly longer superior appendages than does praevarum, though anna is a relatively stout species, with heavy appendages, and rua is more delicate. E. rua is distinguished from praevarum by its longer superior appendages, with the mesal-ventral projection far less prominent in lateral view than is that of praevarum. The lateral aspect of the appendage of praevarum is that of a blunt appendage, as high as long, and distinctly shorter than the tenth segment. The appendage of rua is thinner and distinctly longer than high in lateral view. The females are not easily distinguished. The mesostigmal laminae of rua have the mesal lobe of the anterior margin more prominent than that of praevarum, and the tip of the laminae less tapered and more abruptly rounded.

Though the species rua and praevarum are obviously close, both appeared to be internally consistent, and there was no tendency towards gradation between the two species. The northern species anna is closer
Fig. 1-3, *Enallagma rua*, n. sp.; Fig. 4-6, *E. praeverum*; Fig. 7-9, *E. anna*. Fig. 1, 4, 7, lateral view of male appendage; Fig. 2, 5, 8, inclined view of male appendage; Fig. 3, 6, 9, dorsal view of mesostigmatic lamina of female.
to *rue* in appearance, though it is stockier than that species and is separated from *rue* by the much heavier superior appendage of the male by the different form of the mesostigmal laminae, by its yellow costa, and by the fact that the range of the two species are separated by about 2000 miles. Very possibly both *anna* and *rue* are only slightly derived from an ancestral form which *praevaeum* effectively displaced in the major part of the range of that hypothetical species.

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**Literature Cited**


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