

## *Argia mayi*, a new species from México (Zygoptera: Coenagrionidae)

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**Abstract** A new species of *Argia* is illustrated and described from material collected in the states of Colima, Guerrero, Jalisco, Michoacán, Morelos and Oaxaca, México. *Argia mayi* n. sp. is morphologically similar to *Argia pocomana* Calvert. It differs from the latter by the morphology of the abdominal appendages in the males and by having four postquadrangular cells in FW in both sexes, blue on the dorsum of males restricted to S8-9 and an erect hind margin of the mesostigmal plate in females.

**Keywords** Odonata · Damselfly · Coenagrionidae · *Argia* · *Argia mayi* n. sp. · México

### Introduction

*Argia* is the most speciose genus among the Zygoptera in America. In México 49 species have been recorded, and many more are expected to be discovered and named (González-Soriano and Novelo-Gutiérrez 2007). The number of species for this country is impressive because it surpass all the species reported for Central America (15) and other *Argia*-rich countries including the USA (32), Brazil (29) and Colombia (22). The new species I describe here had been recognized a long time ago by the late

Leonora K. Gloyd (R. W. Garrison in litt.) and later by myself. Garrison, who is presently working on a revisionary study of the genus, generously allowed me to describe this small and elusive species. He also provided illustrations of the holotype of *Argia pocomana* Calvert deposited at the Museum of Zoology, University of Michigan, Ann Arbor. The larva is unknown.

Terminology of wings follows Riek and Kukalová-Peck (1984); for other structures I follow Garrison (1994). Acronyms for collections are as follows: CNIN (Colección Nacional de Insectos-Universidad Nacional Autónoma de México), IEXA (Colección de Insectos, Instituto de Ecología, Xalapa) and RWG (Rosser W. Garrison Collection).

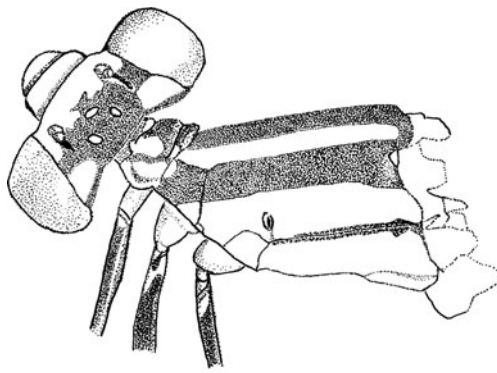
### *Argia mayi* n. sp

**Etymology** It is named after my friend Michael L. May for his many contributions in the field of odonatology.

**Type material** -Total 17♂♂ 4♀♀. **Holotype** ♂ : Mexico, **Oaxaca**, La Palma, 5.3 km NE of the cross-road, between the Salina Cruz and Santa Cruz Huatulco routes, 15° 48' 58.6", 96° 10' 33.2" 3-X-2005, E. González-Soriano, leg. (CNIN). Paratypes: ♀ allotype same data as holotype; 3 ♂♂ 1♀ same data as holotype, E. González-Soriano leg. (CNIN) (RWG); 1 ♂ 1♀ same data as holotype but 15-II-2005, E. González-Soriano leg. (CNIN); **Colima**, 1 ♂ El Salto, Mpio. Minatitlán, 19° 22' 12.24" 104° 05' 05.56" 646 m asl, 23/VII/2003, E. González-Soriano leg. (CNIN); **Guerrero**, 1 ♂, Rincón de la Vía, 16 km S Chilpancingo, 17° 17' 37.97", 99° 29' 06.01" 755 m, 4/VIII/2009, E. González-Soriano leg. (CNIN); **Jalisco**, 3 ♂♂, El Limón, Balneario Las

This is a contribution to the Festschrift for Michael L. May.

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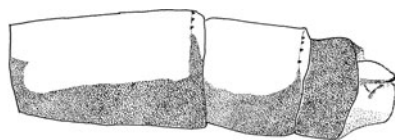
***Argia mayi* Holotype ♂; head and thorax**

**Fig. 1** *Argia mayi* n. sp. Holotype male. Head and prothorax

Higueras 19° 48' 25.42", 104° 08' 14.09" 840m, 2-VIII-1997. E. González-Soriano and A. Morales leg. (CNIN); **Michoacán**, 4 ♂♂, 1 ♀ Río Pinolapa, Mpio. Tepalcatepec, 19° 00' 52.4", 103° 01' 45.6" 616 m asl, R. Novelo y J. A. Gómez leg. (IEXA); **Morelos**, 1 ♂ Apotla, 24-VII-1985, 18° 41' 56.53", 99° 14' 32.98" 989 m, E. González-Soriano, R. Novelo-Gutiérrez y V. García leg. (CNIN); 2 ♂♂ 1 ♀ Río Amacuzac, near Balneario ISS-STE HUIXTLA, VIII-2005, 18° 32' 50.74", 99° 16' 10.40" 863m, Haydeé Peralta leg. (CNIN).

**Description** Holotype dimensions (mm): HW 20.3; abdomen 27.5; total length 33.9. Holotype: Head with labium cream; labrum, clypeus and frons blue; epicranium black with two large postocular blue spots; occipital bar blue, small pale spots anterolateral to each lateral ocellus; antennae black, rear of head pale (Fig. 1).

Prothorax blue, black dorsally with following pale areas: lateral corners and narrow stripe along distal margin of frontal lobe, dorsolateral spots on median lobe and lateral corners of hind lobe. Synthorax violet-blue with wide middorsal stripe occupying 0.45 of mesepisternum;



***Argia mayi* Holotype ♂; abdominal segments 8-10**

**Fig. 2** *Argia mayi* n. sp. Holotype male. Abdominal segments 8-10

black humeral stripe wide, forked above extending from base of mesinfraepisternum; a narrow dark stripe along metapleural suture (Fig. 1). Wings slightly yellowish, venation black, pterostigma dark brown surmounting 1 cell in all wings except in LFW in which it covers 1.25, postquadrangular cells: FW 4/4, HW 3/3, RP2 originating at FW 6/6, in HW between 5-5. Legs: coxae and trochanters pale; femora black dorsally, pale ventrally; tibiae pale dorsally, black ventrally; tarsi and claws black.

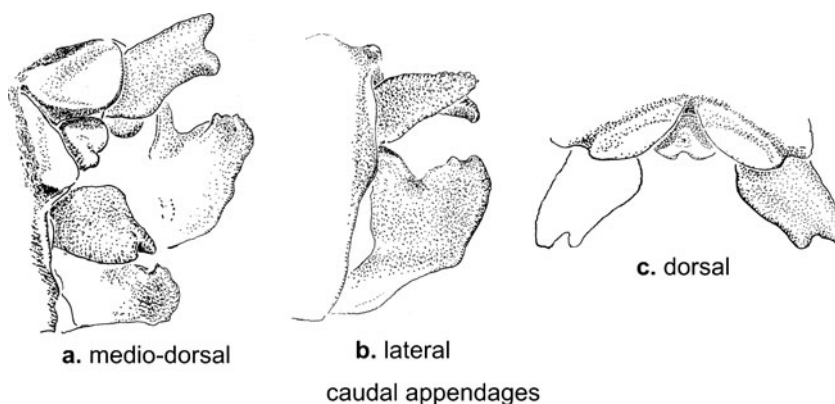
Abdomen black, S1 violet-blue with black dorsobasal spot and a line of same color along posterolateral angle, S2 as in 1 with black dorsolateral stripe extending to 0.80 segment length, its end enlarged and extending but not connecting above with black line above lateroventral carina; S3-6 with a wide blue pale stripe on dorsum, S7 black; S8-9 blue above with ventrolateral black stripes; S10 black (Fig. 2).

Torifer flat and wide; torus not prominent, almost as wide as long; epiproct not prominent (Figs. 3a, c paratype). Cercus black, almost twice as long as wide, in lateral view wider at base, then dorsal margin gradually sloping, ending posteriorly in a acute tip (Fig. 3b paratype), in mediodorsal view with apex bifid, outer branch sharply pointed and apically directed, robust inner branch decumbent (Fig. 3c paratype). Paraprocts slightly higher than long, in lateral view apicoventral margin rounded, superior lobe with two small tubercles on its dorsal surface (Fig. 3b paratype).

Female allotype: tan, with head and thoracic patterns similar to male; head with an "x"-like spot (but with lower branches incomplete) anterior to median ocellus and lateral stripes running from each side of median ocellus to base of antennae. Thorax as in male; mesostigmal plate small, and with well-developed mesostigmal lobe, the latter with posterior margin strongly erect (Fig. 4a,b paratype). Abdomen mostly black on dorsum, except S1, which has only a diffuse dark color on the dorsum, S2-8 with pale dorsolateral stripes, in S9 these represented only by pale spots; S2 with a narrow pale dorsal stripe, this stripe becoming a small line on S3-4; S10 dark; cerci dark, very small, less than 0.50 length of S10 and in lateral view sharply pointed.

Variation in paratypes (mm): Males ( $N=15$ ): total length 30-34.5, HW 18-21.4 mm, abdomen 23.5-27.8, postnodal cross veins (FW/HW) 13-15/11-13; origin of RP2 6-8/4-6; postquadrangular cells 3-4/2-3. Females ( $N=4$ ) total length 30-33, HW 18.2-21.5, abdomen 24-26.5; postnodal

**Fig. 3** *Argia mayi* n. sp. Paratype male. Male caudal appendages. **a)** Mediodorsal, **b)** lateral, **c)** dorsal views



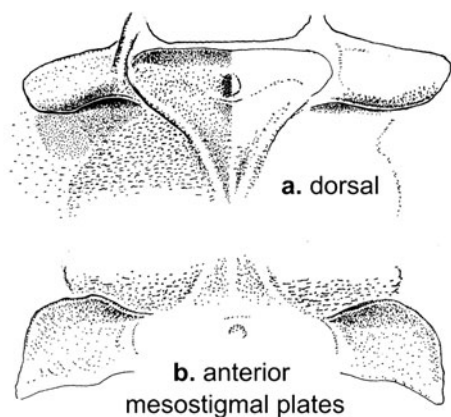
***Argia mayi* Paratype ♂: MX: La Palma**

crossveins 13–14/11, origin of RP2 6-7/5-6, postquadrangular cells 4/3. Two males collected in February at the type locality have a very narrow black humeral stripe and additional lateral pale postbasal stripes on S3-7 extending 0.80 length of each segment, probably representing young individuals.

## Discussion

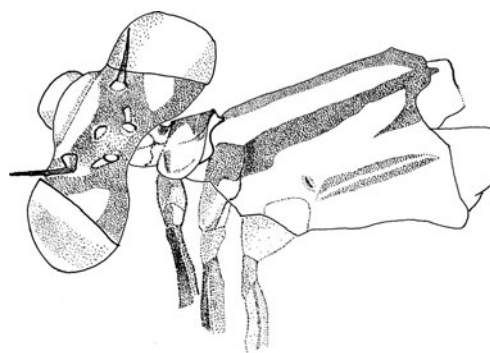
*A. mayi* is morphologically similar to *A. pocomana* Calvert (Fig. 5). In males, it differs from the latter species by having

a less developed inner branch of the male cerci [in a medi-odorsal view], and the outer branch is more distally directed than in *A. pocomana* (Fig. 6a,c). In a lateral view, the upper lobe of the paraproct in *A. mayi* is wider and has two small tubercles on its dorsal surface in *A. pocomana* the upper lobe is narrower (Fig. 6b). Males have S8-9 blue in *A. mayi*, while in *A. pocomana* blue extends on S8-10 (Fig. 7); females have black on the dorsum of S8-9 with pale spots; in *A. pocomana* these segments are pale with black spots. Females of *A. mayi* have a well-developed erect mesostigmal lobe while in *A. pocomana* this lobe is lacking with only the posterior margin of the mesostigmal plate slightly raised (Fig. 8a,b). *Argia pocomana* occurs in Central America



***Argia mayi* Paratype ♀: MX: La Palma**

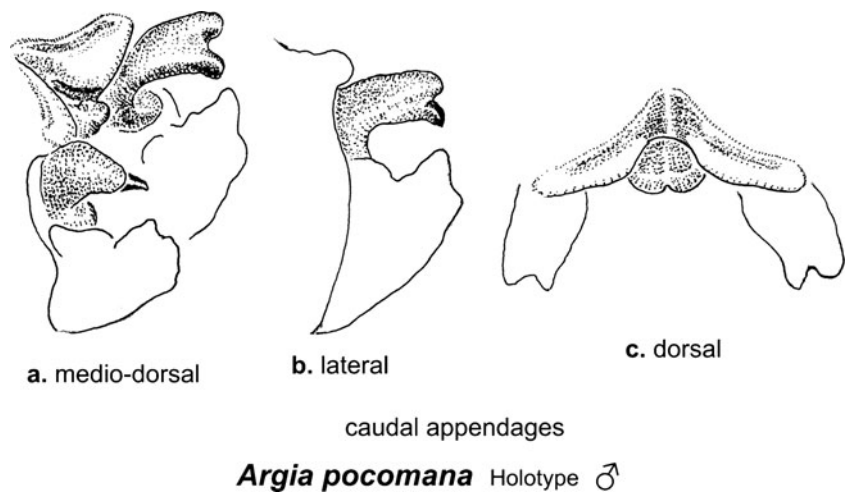
**Fig. 4** *Argia mayi* n. sp. Paratype female. Mesostigmal plates. **a)** dorsal, **b)** anterior views



***Argia pocomana* ♂; head and thorax**

**Fig. 5** *Argia pocomana* Calvert. Male. Head and prothorax

**Fig. 6** *Argia pocomana* Calvert. Male caudal appendages. **a)** Mediodorsal, **b)** lateral, **c)** dorsal views

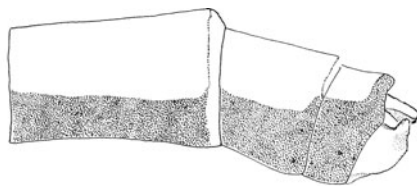


from Guatemala to Panamá. Its presence in southern México (González-Soriano and Paulson 2011) needs further confirmation (D. Paulson personal communication). *A. mayi* occurs mainly along the Pacific coast of Mexico and is allopatric with *A. pocomana* (Fig. 9).

### Biology

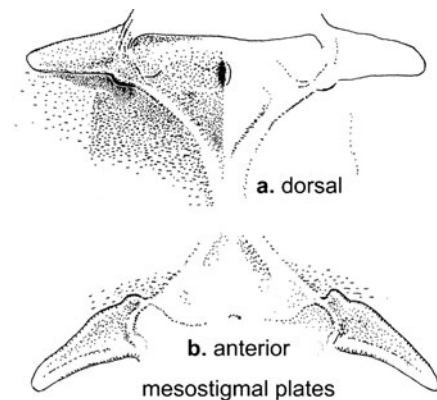
*A. mayi* was collected in Colima, Oaxaca, Jalisco and Guerrero states on small outlets of small shady springs. The Huatulco site consists of a small spring covered by *Xantho-*

*soma robustum* (“Hoja elegante,” “elephant ear”); *A. mayi* has been observed to be active simultaneously with the following zygopterans: *A. carlcooki* Daigle, *A. oculata* Hagen in Selys, *A. oenea* Hagen in Selys and *Protoneura cara* Calvert.



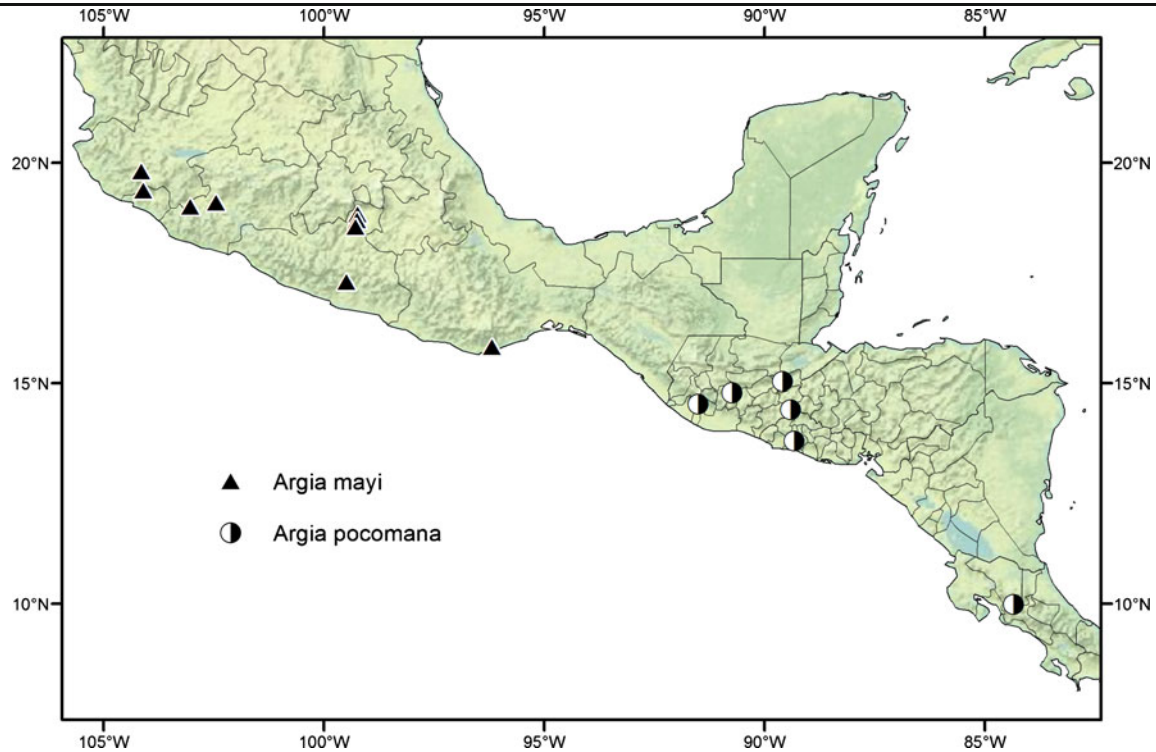
**Argia pocomana** ♂; abdominal segments 8–10

**Fig. 7** *Argia pocomana* Calvert. Abdominal segments 8–10



**Argia pocomana** ♀: GUAT: Zacapa, Río Hondo

**Fig. 8** *Argia pocomana* Calvert. Female mesostigmal plates. **a)** dorsal, **b)** anterior views



**Fig. 9** *Argia mayi* n. sp. and *A. pocomana* Calvert. Distribution. *A. mayi* (triangles), *A. pocomana* (circles)

**Acknowledgments** I wish to thank R.W. Garrison who graciously permitted me to describe this species, and provided enormous help with the drawings accompanying the text. Thanks are also extended to Rodolfo Novelo (IEXA) for the loan of specimens from the state of Michoacán.

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