



Zootaxa 4042 (1): 001–134
www.mapress.com/zootaxa/

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Monograph

ISSN 1175-5326 (print edition)

ZOOTAXA

ISSN 1175-5334 (online edition)

<http://dx.doi.org/10.11646/zootaxa.4042.1.1>

<http://zoobank.org/urn:lsid:zoobank.org:pub:815FD81B-0B30-4C2B-BA78-4BC2A1C71002>

ZOOTAXA

4042

Damselflies of the genus *Argia* of the Guiana Shield (Odonata: Coenagrionidae)

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Male of *Argia azurea* from Guyana, with prey at a forest trail in Chenepau, photographed by NVE on 17 iii 2014.



Magnolia Press
Auckland, New Zealand

Accepted by D. Paulson: 30 Sept. 2015; published: 16 Nov. 2015

ROSSER W. GARRISON & NATALIA VON ELLENRIEDER
Damselflies of the genus *Argia* of the Guiana Shield (Odonata: Coenagrionidae)
(*Zootaxa* 4042)

134 pp.; 30 cm.

16 Nov. 2015

ISBN 978-1-77557-829-1 (paperback)

ISBN 978-1-77557-830-7 (Online edition)

FIRST PUBLISHED IN 2015 BY

Magnolia Press

P.O. Box 41-383

Auckland 1346

New Zealand

e-mail: zootaxa@mapress.com

<http://www.mapress.com/zootaxa/>

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ISSN 1175-5326 (Print edition)

ISSN 1175-5334 (Online edition)

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Abstract

This revision of all 21 species of *Argia* known to occur within the Guiana Shield includes descriptions of new species, synonymies, keys to both sexes based primarily on morphology of caudal appendages and genital ligula in males and of the mesostigmal plates in females, diagnoses accompanied by illustrations and distribution maps for all species. Twelve new species are described: *A. appendiculata* (Holotype ♂: Venezuela, Amazonas State, Cerro de la Neblina, Base Camp, 0°50' N, 66°10' W, 18 ii 1985, P.J. & P.M. Spangler, R.A. Faitoute leg., in USNM), *A. azurea* (Holotype ♂: Guyana, Potaro-Siparuni Region, Kaieteur Ravine, about 5°10' N, 59°28' W, 11 iv 1912, J.M. Geddes leg., in UMMZ), *A. cuneifera* (Holotype ♂: Venezuela, Amazonas State, Cerro de la Neblina, Base Camp, 0°50' N, 66°10' W, 20–24 iii 1984, O.S. Flint, Jr. & J.A. Louton leg., in USNM), *A. deceptor* (Holotype ♂: French Guiana, Cayenne Department, Régina Commune, Saut Athanase, 4°10'59" N, 52°20'6" W, 9 x 2001, L. Juillerat leg., in MHNN), *A. donnellyi* (Holotype ♂: Venezuela, Bolívar State, small marsh and creek on plateau surface above Coñac River, 10 km E of El Paují; about 4°31' N, 61°31' W, 5 viii 1990, RWG leg., in CSCA), *A. gemella* (Holotype ♂: Brazil, Amazonas State, Reserva Ducke, 26 km E Manaus (3°0'15" S, 59°56'23" W, 120 m), 2–4 ii 1979, O.S. Flint Jr. leg., in USNM), *A. guyanica* (Holotype ♂: Venezuela, Amazonas State, Cerro de la Neblina, Camp IV, 0°58' N, 65°57' W, 15–18 iii 1984, O.S. Flint, Jr. leg., in USNM), *A. joallynae* (Holotype ♂: Venezuela, Bolívar State, Canaima, palm marsh, 6°14'30" N, 62°50'53" W, 22–25 ix 1980, R.W. & J.A. Garrison. leg., in CSCA), *A. loutoni* (Holotype ♂: Brazil, Amazonas State, Purus River, Nova Olinda, about 3°30' S, 57°56' W, 6 ii 1979, O.S. Flint, Jr. leg., in FSCA), *A. meioura* (Holotype ♂: Brazil, Amazonas State, Manaus, about 2°55' S, 59°59' W, 26 vi 1922, J.H. Williamson & J.W. Strohm leg., in UMMZ), *A. palmata* (Holotype ♂: Brazil, Amazonas State, Manaus, about 5 miles N of Flores on route to Campos Sales, small creek in virgin forest, about 3°0'S, 60°1' W, 15 vi 1922, J.H. Williamson & J.W. Strohm leg., in UMMZ), and *A. recurvata* (Holotype ♂: Venezuela, Amazonas State, San Carlos de Río Negro, 1°55' N, 67°4' W, 97 m, 14–21 iii 1984, J. De Marmels leg., in MIZA). The status of *Argia impura* Rambur, 1842, is discussed and the following nomenclatural changes are proposed: *Argia stigmatica* Navás, 1934 and *A. umbriaca*

Fraser, 1946 are considered junior synonyms of *Argia indicatrix* Calvert, 1902, and *Argia elliptica* Selys, 1865 and *A. icterica* Navás, 1934 are considered junior synonyms of *A. oculata* Hagen in Selys, 1865.

Key words: Damselfly, Neotropics, Keys, diagnoses, distribution maps

Resumen

Esta revisión de las 21 especies de *Argia* que se conocen del Escudo de Guayana incluye descripciones de nuevas especies, sinonimias, claves para ambos sexos basadas primariamente en la morfología de los apéndices caudales y lígula genital en machos y de las láminas mesostigmas en hembras, diagnosis acompañadas por ilustraciones y mapas de distribución para todas las especies. Doce especies nuevas son descritas: *A. appendiculata* (Holotipo ♂: Venezuela, Estado Amazonas, Cerro de la Neblina, Campamento Base, 0°50' N, 66°10' W, 18 ii 1985, P.J. & P.M. Spangler, R.A. Faitoute leg., en USNM), *A. azurea* (Holotipo ♂: Guyana, Región Potaro-Siparuni, barranco de Kaieteur, aproximadamente 5°10' N, 59°28' W, 11 iv 1912, J.M. Geddes leg., en UMMZ), *A. cuneifera* (Holotipo ♂: Venezuela, Estado Amazonas, Cerro de la Neblina, Campamento Base, 0°50' N, 66°10' W, 20–24 iii 1984, O.S. Flint, Jr. & J.A. Louton leg., en USNM), *A. deceptor* (Holotipo ♂: Guayana Francesa, Departamento Cayenne, Comuna Régina, Saut Athanase, 4°10'59" N, 52°20'6" W, 9 x 2001, L. Juillerat leg., en MHNN), *A. donnellyi* (Holotipo ♂: Venezuela, Estado Bolívar, pequeño pantano y arroyo en superficie de la meseta arriba del Río Coñac, 10 km E de El Paují; aproximadamente 4°31' N, 61°31' W, 5 viii 1990, RWG leg., en CSCA), *A. gemella* (Holotipo ♂: Brasil, Estado Amazonas, Reserva Ducke, 26 km E de Manaus (3°0'15" S, 59°56'23" W, 120 m), 2–4 ii 1979, O.S. Flint Jr. leg., en USNM), *A. guyanica* (Holotipo ♂: Venezuela, Estado Amazonas, Cerro de la Neblina, Campamento IV, 0°58' N, 65°57' W, 15–18 iii 1984, O.S. Flint, Jr. leg., en USNM), *A. joallynae* (Holotipo ♂: Venezuela, Bolívar State, Canaima, pantano en palmar, 6°14'30" N, 62°50'53" W, 22–25 ix 1980, R.W. & J.A. Garrison. leg., en CSCA), *A. loutoni* (Holotipo ♂: Brasil, Estado Amazonas, Río Purus, Nova Olinda, aproximadamente 3°30' S, 57°56' W, 6 ii 1979, O.S. Flint, Jr. leg., en FSCA), *A. meiourea* (Holotipo ♂: Brasil, Estado Amazonas, Manaus, aproximadamente 2°55' S, 59°59' W, 26 vi 1922, J.H. Williamson & J.W. Strohm leg., en UMMZ), *A. palmata* (Holotipo ♂: Brasil, Estado Amazonas, Manaus, 5 millas N de Flores en ruta a Campos Sales, pequeño arroyo en selva virgen, aproximadamente 3°0'S, 60°1' W, 15 vi 1922, J.H. Williamson & J.W. Strohm leg., en UMMZ), y *A. recurvata* (Holotipo ♂: Venezuela, Estado Amazonas, San Carlos de Río Negro, 1°55' N, 67°4' W, 97 m, 14–21 iii 1984, J. De Marmels leg., en MIZA). El estado de *Argia impura* Rambur, 1842 es discutido y los siguientes cambios nomenclaturales son propuestos: *Argia stigmatica* Navás, 1934 y *A. umbriaca* Fraser, 1946 son considerados sinónimos junior de *Argia indicatrix* Calvert, 1902, y *Argia elliptica* Selys, 1865 y *A. icterica* Navás, 1934 son considerados sinónimos junior de *A. oculata* Hagen in Selys, 1865.

Palabras clave: Libélulas, Neotrópico, claves, diagnosis, mapas de distribución

Introduction

The genus *Argia* Rambur, found exclusively in the New World, is the most speciose genus of Odonata in the world. Approximately 200 names have been proposed or have been used in combination with this genus since it was first established by Rambur (1842), and it currently includes 114 described species (Garrison & von Ellenrieder 2015). They range from southern Canada at approximately 51.7° N (2 ♂♂ *Argia vivida* Hagen in Selys, Alberta, cave and basin thermal pools, Banff, 51°10' S, 115°35' W, in RWG) south to approximately 34.6° S in Uruguay (1 ♀ *Argia albistigma* Hagen in Selys, Uruguay, Maldonado, Arroyo El Rodeo, route 60, km 23, 34°40' S, 55°14' W, in CSCA), displaying their highest diversity in the Neotropics, indicating that the genus arose in this region. Adults comprise a major odonate element of lotic aquatic ecosystems throughout the New World, and they represent, with the exception of the former 'protoneurid' damselflies, one of the few coenagrionid damselfly genera that regularly breeds in stream habitats in this region. Adults range from 21 mm [*Argia bicellulata* (Calvert)] to 57 mm [*Argia funcki* (Selys)] in total body length and, with rare exceptions, are black and blue or violet. Specimens are numerous in almost any collection of Neotropical Odonata, and although the genus is easily defined by a combination of characters (Garrison 1994; Garrison *et al.* 2010), they are difficult to identify specifically. Discriminatory characters of adults are found primarily in the caudal appendages of the males and the mesostigmal laminae of the females. These characters are often difficult to see, and it is not easy to distinguish among intra- and interspecific variation.

Calvert (1902a, 1907) provided an excellent and detailed review of the Central American fauna, and Garrison