NEW RECORDS OF ODONATA FROM A TROPICAL DRY FOREST IN THE DEPARTMENT OF HUILA, COLOMBIA
NUEVOS REGISTROS DE ODONATA DE BOSQUE SECO TROPICAL PARA EL DEPARTAMENTO DEL HUILA, COLOMBIA

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SUMMARY

The presence of *Micrathyria aequalis* (Hagen, 1861), *Miathyria marcella* (Selys, 1857), *Lestes forfícula* (Rambur 1842), and *Acanthagrion inexpectum* (Leonard, 1977) is reported for the first time for the Department of Huila, bringing the total number of Odonata species in this part of Colombia to 29.

Key words: insects, damselflies, dragonflies, dry forest, Colombia.

RESUMEN

Se reporta la presencia de *Micrathyria aequalis* (Hagen, 1861), *Miathyria marcella* (Selys, 1857), *Lestes forfícula* (Rambur, 1842) y *Acanthagrion inexpectum* (Leonard, 1977) por primera vez para el bosque seco en el departamento del Huila, sumando un total de 29 especies para esta zona del país.

Palabras clave: insectos, caballitos del diablo, libélulas, bosque seco, Colombia.

INTRODUCTION

The tropical dry forest is a biome characterized by a marked seasonal rainfall pattern, including several months without rain. The Department of Huila is a part of the country with this kind of vegetation. It has an annual average temperature of 25° C and an annual rainfall ranging between 800 and 1400 mm. The topography is predominantly mountainous terrain reaching elevations below 1500 meters above sea level (MASL). Currently, about 95 % of the dry forests that were formerly present in Colombia have become areas used for raising livestock, agriculture, and recreational activities. Moreover, the dry region of Magdalena Valley, located in the Departments of Tolima, Cundinamarca, and Huila, is one of the least known. Few papers have been published on the biodiversity of its insects (Pizano & García 2014).

For an extremely-diverse country like Colombia, discussion of the geographic distribution of a species within the country seems to be useless and unnecessary. However, to know the number of species present and determine their ranges has important implications for understanding biodiversity and conservation (Primack & Ros 2002). Although the study of dragonflies and damselflies in Colombia has increased in recent years, as evidenced by the descriptions of new species, as well as by ecological, taxonomic and genetic studies (e.g. Herrera *et al.* 2010, Altamiranda-Saavedra *et al.* 2013, Altamiranda & Ortega 2012, Palacino-Rodriguez & Contreras-Sanchez 2014, Bota-Sierra 2014), these investigations have focused on the departments with the most dragonflies already reported, such as Meta, Cundinamarca and Antioquia. The lack of research on dragonflies in other departments, like Huila, has resulted from the lack of sampling and taxonomic studies, caused by social problems, lack of resources and support for researchers in the country (Fernández 2011, Palacino-Rodríguez 2013).

Taking into account the above, the present research shows a list of dragonflies collected in three separated locations of a tropical dry forest in the Department of Huila, with four new records for the department.

MATERIALS AND METHODS

On November 7, 2014 and from February 19 to 24, 2015, sampling was carried out at three loca-

tions from El Agrado municipality in Huila between 08:00 and 15:00, hours of highest activity of these organisms (Figure 1). All localities were previously used for intensive farming and are currently part of the ecological restoration area of the El Quimbo hydroelectric project. The first locality is an area of about 300 m^2 at a water well located on the property of Comejenes, in the rural area called El Pedernal (2°17′22.62″ N 75°40′43.27″W), with a maximal elevation of 730 masl. The second locality is located in the rural area called San José de Belén, which belongs to the property of La Laguna (2°16′2.99″N 75°40′26.33″W), with an elevation reaching 780 masl. In this locality all specimens were collected in a swampy area of 1300 m^2. The last location is Mesa Alta, in the rural area called Pedernal (2°18′13.92″ N 75°41′34.40″W), which reaches a maximal elevation of 870 masl. It is a transitional area between grassland and shrubland containing relics of a riparian forest.

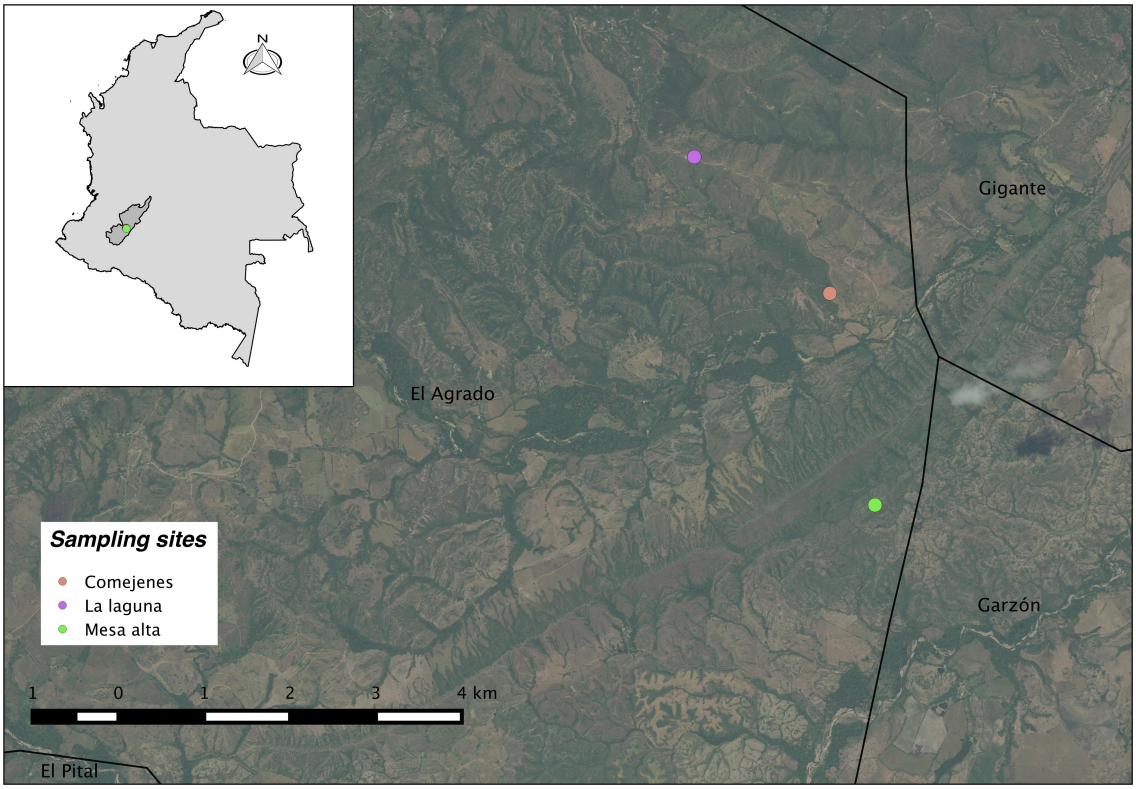

Figure 1. Location of the sampling sites in El Agrado municipality, Department of Huila, Colombia.

Adults were collected using an entomological net, 36 cm in diameter and 1.2 m long, with a sampling effort of one person per hour in each site. Within 24 hours after their capture, all specimens were immersed in acetone and left for 18 to 24 hours. They were then air dried and deposited in polypropylene bags with their collecting data (Garrison *et al.* 2010). For identification, specimens were observed under a stereomicroscope. The genitalia were examined after treatment with 7 % ammonia to reveal the structures used as features in the keys by Leonard (1977), Needham *et al.* (2000), Costa *et al.* (2002), Paulson (2003), Westfall & May (2006), Heckman (2006, 2008), von Ellenrieder & Lozano (2008), Garrison *et al.* (2006, 2010), Realpe (2010), and Garrison & von Ellenrieder (2014). The map was made with the software QGIS Development Team (2015).

RESULTS

In the sampling area, 28 individuals belonging to 11 genera were collected; of them, two individuals were identified to genus and the remaining 26 to species. A total of 12 species were found in the sampled area, 8 species are in the suborder Anisoptera, and four belong to Zygoptera (Table 1).

Tabla 1. Dragonflies present in the three sampling areas in the municipality of El Agrado, from Huila department. Ll: La Laguna, Ma: Mesa Alta, Co: Comejenes

Suborder	Genus	Species	Individuals	Locality
Anisoptera	*Erythemis*	*vesiculosa*	2♂, 1♀	Ll, Ma
	Erythrodiplax	sp.	1♀	Ma
	Erythrodiplax	*umbrata*	1♂	Ma
	Miathyria	*marcella*	1♂	Ma
	Micrathyria	*aequalis*	1♂	Co
	Micrathyria	*ocellata*	1♂	Co
	Orthemis	*discolor*	1♂	Co
	Pantala	*flavescens*	1♀	Ma
	Perithemis	*mooma*	2♂	Co
Zygoptera	*Acanthagrion*	*inexpectum*	3♂, 1♀	Co
	Argia	*oculata*	2♂	Ma
	Ischnura	*capreolus*	4♂	Co
	Ischnura	sp.	1♀	Co
	Lestes	*forficula*	2♂, 3♀	Ll

DISCUSSION

The Odonata list for Colombia published by Palacino-Rodriguez & Pérez-Gutierrez (2011) recorded three species of Anisoptera for Huila: *Rhionaeschna cornígera* (Brauer 1865), *Rhionaeschna marchali* (Rambur 1842) and *Erythemis vesiculosa* (Fabricius 1775). Later, the polythorid, *Polythore williamsoni* (Förster 1903), was reported as a new species for the country from Huila by Rojas-Riaño (2011). Then, Salazar *et al.* (2015) documented the presence of 21 previously unreported species in Huila: 10 in the suborder Anisoptera and 11 in the suborder Zygoptera. Herein, 4 additional species are added to the list for this department:

Micrathyria aequalis (Hagen, 1861) is a species distributed in the West Indies, Central America, Colombia, Ecuador, Venezuela, Trinidad and Tobago, Guyana, Surinam and French Guyana (Paulson 2015). In Colombia it has been located in the Departments of Atlántico, Cundinamarca, Magdalena, Quindío, Santander and Tolima (Pérez-Gutiérrez & Palacino-Rodríguez 2011).

Miathyria marcella (Selys, 1857) is distributed from Mexico, Central America, the Caribbean, and South America to Argentina (Needham et al. 2000). In Colombia, it has been found in the Departments of Atlántico, Bolívar, Cesar, Córdoba, Chocó, Magdalena, Sucre, Tolima and Valle (Pérez-Gutiérrez & Palacino-Rodríguez 2011).

Acanthagrion inexpectum (Leonard, 1977) is a species distributed from Mexico and Central America to Colombia and Venezuela (Paulson 2015). In Colombia, it has only been reported in the Department of Cundinamarca (Rojas & Sanchez 2009, Pérez-Gutiérrez & Palacino-Rodríguez 2011).

Lestes forfícula (Rambur, 1842) is a species that is distributed from Central America to Brazil and Argentina (Paulson 2015). In Colombia, it has been reported in Magdalena, Quindio and Valle (Pérez-Gutiérrez & Palacino-Rodríguez 2011).

CONCLUSIONS

The number of dragonflies known from the Department of Huila was increased to 29 species, 15 in the suborder Anisoptera and 14 in the suborder Zygoptera. The need to increase the number of samples taken from this area of the country is emphasized, considering that tropical dry forests are in a critical state of fragmentation and degradation, and hence their biodiversity is in imminent danger of being significantly diminished.

AKNOWLEDGEMENTS

I'm grateful to Dr. Rosser W. Garrison from the California Department of Food & Agriculture for his help in the identification and confirmation of different species of dragonflies, to the Fundación Natura Colombia for allowing me to collect specimens in the area, to Lic, Sergio Chaparro for his comments, and to Lic. Claudia Lara for her corrections of the English version of the manuscript. I must also make a very special thanks to the anonymous reviewers, whose contributions improved the paper substantially.

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Recibido febrero 9, 2015, publicado diciembre 2016.