New geographic distribution record of the phoretic association between the cerambycid beetle *Acrocinus longimanus* and the pseudoscorpion *Cordylochernes scorpioides* in the Colombian Amazonia

Gabriel J. Colorado Z.
Angélica M. Torres-Bejarano

Abstract

A case of phoretic association of the pseudoscorpion *Cordylochernes scorpioides* on the giant harlequin beetle *Acrocinus longimanus* is reported for the Colombian Amazonia. Despite the harlequin beetle reports for the area, no published records of this association are known for the Amazonia bioregion in Colombia. In March 2016, fifteen pseudoscorpions were collected from the upper abdomen of this beetle species in the municipality of Leticia, Amazonas department, Colombia. The need for reporting and publishing this type of interactions is highlighted.

Keywords: Acrocinus longimanus; Amazonia, Colombia; *Cordylochernes scorpioides*; phoresy.

Nuevo registro de distribución geográfica de la asociación forética entre el escarabajo cerambícido *Acrocinus longimanus* y el pseudoescorpión *Cordylochernes scorpioides* en la Amazonia colombiana

Resumen

Se reporta un caso de asociación forética del seudoescorpión *Cordylochernes scorpioides* sobre el escarabajo aserrador arlequín *Acrocinus longimanus* en la Amazonia colombiana. A pesar de los reportes del escarabajo aserrador para el área, no se conocen registros publicados de esta asociación para la bioregión amazónica en Colombia. En marzo de 2016, se colectaron quince seudoescorpiones del abdomen superior de esta especie de escarabajo en el municipio de Leticia, departamento del Amazonas, Colombia. Se destaca la necesidad de reportar y publicar este tipo de interacciones.

Palabras clave: Acrocinus longimanus; Amazonia, Colombia; *Cordylochernes scorpioides*; foresia.

Gabriel Jaime Colorado Zuluaga. Ingeniero forestal y magíster en Bosques y Conservación Ambiental de la Universidad Nacional de Colombia, sede Medellín. Doctorado en Medio Ambiente y Recursos Naturales de Ohio State University. Actualmente es profesor y coordinador de posgrados de la Universidad Nacional de Colombia, sede Amazonia y coordinador del grupo de investigación en Ecología y Conservación de Fauna y Flora. gjcoloradoz@unal.edu.co

Angélica María Torres Bejarano. Licenciada en Biología de la Universidad Pedagógica Nacional. Magíster y estudiante del Doctorado en Estudios Amazónicos en la Universidad Nacional de Colombia, sede Amazonia. Investigadora del grupo de investigación en Limnología Amazónica. angelikat83@gmail.com

Introduction

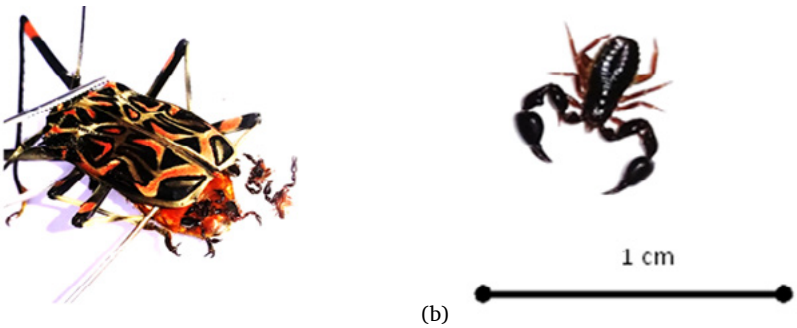
Phoresy (interspecific interaction in which an organism attaches to the host for purposes of dispersal; Houck & O'Connor 1991) is a striking animal association reported in taxa as diverse as mammals, birds, and insects. One such association is the riding of the pseudoscorpion *Cordylochernes scorpioides* (Linnaeus 1758) on the giant harlequin beetle *Acrocinus longimanus* (Linnaeus 1758), a broadly distributed Neotropical beetle (Chemsak 1983). This phoretic association has been reported more than a century ago (e.g. Ellingsen 1905), where the Harlequin beetle is the obligate dispersal agent of *C. scorpioides* (Zeh, Zeh & Tavakilian 1992; Zeh & Zeh 1994a, 1994b). Despite the wide distribution of this beetle species across the Neotropics, little is known about the distribution of this phenomenon (e.g. in the Amazon; Aguiar & Bührnheim 1998) and large gaps of records are still present. This is particularly relevant in highly diverse countries in the region such as Colombia. We report the presence of the obligate interaction between the harlequin beetle and the pseudoscorpion for one location at the southernmost part of the Colombian Amazonia, where no previous records are available. Despite the harlequin beetle being commonly reported for the country in different localities (22 records for Colombia; SiB Colombia 2016a), fewer records are available for the order Pseudoscorpionida (23 species; SiB Colombia 2016b), with only one published record of *C. scorpioides* for the Andes in the Cauca department (Ceballos & Flórez 2007).

One female harlequin beetle (3.89 g; fig. 1a) was collected using a sweep net on 7 March 2016 on the exterior wall of an office at the campus of the Universidad Nacional de Colombia, in Leticia, Amazonas (4°11'37.25" S, 69°56'24.66" O), elevation 81 m, and surrounding habitat ~30-year secondary forest.

(a) (b)

Figure 1
(a) Female *Acrocinus longimanus,* Colombian Amazonia.
(b) Same individual with two pseudoscorpions *C. scorpioides* (near left front leg), showing the difference in size.

Fifteen pseudoscorpions *C. scorpioides* were collected from the upper abdomen of the individual, dorsally underneath the elytra (figs. 1b & 2a, 2b). Pseudoscorpions weighed in total 0.093 g (range 0.0042 – 0.0098 g, average ± SD = 0.0058 ± 0.0016 g, N = 13), representing 2.4 % of the total weight of the harlequin beetle.



(a) (b)

Figure 2
Harlequin Beetle *Acrocinus longimanus* – pseudoscorpion *Cordylochernes scorpioides* association. (a) Pseudoscorpions on the upper side of the abdomen. (b) Pseudoscorpion individual with scale bar.

Filling gaps of knowledge in the distribution of this type of interaction as well as the appropriate identification of the species involved is key for recognition and conservation of biodiversity in the Neotropics. This is particularly important for the Colombian Amazonia, which encompasses approximately one third of the political territory of the country and clearly undergoes inadequate research and monitoring.

Acknowledgments

We thank the Universidad Nacional de Colombia for institutional support. To Lilibeth Ortegon and the group of Ecology and Conservation of Fauna and Flora for their assistance in the laboratory.

References

AGUIAR, N.O. & P.F. BÜHRNHEIM (1998). "Phoretic Pseudoscorpions associated with flying Insects in Brazilian Amazonia". *The Journal of Arachnology* 26: 452-459.

CEBALLOS, A. & E. FLÓREZ (2007). "Pseudoescorpiones de Colombia (Arachnida: Pseudoscorpiones): lista actualizada de especies". *Biota Colombiana* 8(1): 47-51.

CHEMSAK, J.A. (1983). "*Acrocinus longimanus"*. In: D.H. Janzen (ed.). *Costa Rican Natural History,* pp. 678-679. Chicago: University of Chicago Press.

ELLINGSEN, E. (1905). "Pseudoscorpions from South America. Collected by A. Borelli, A. Bertoni de Winkelried, & Prof. Goeldi". *Bollettino dei Musei di Zoologia ed Anatomia Comparata della R. Universita di Torino* 20(500): 1-17.

HOUCK, M.A. & B.M. OCONNOR. (1991). "Ecological and evolutionary significance of phoresy in the Astigmata". *Annual Review of Entomology* 36: 611-636. DOI: https://doi.org/10.1146/annurev.ento.36.1.611

SIB COLOMBIA – Sistema de Información sobre Biodiversidad de Colombia. (2016a). Datos de registros biológicos Colombianos de *Acrocinus longimanus.* Disponible en el portal de datos del SiB Colombia: http://data.sibcolombia.net

———. (2016b). Datos de registros biológicos colombianos del orden Pseudoescorpionida. Disponible en el portal de datos del SiB Colombia: http://data.sibcolombia.net

ZEH, D.W., J.A. ZEH & G. TAVAKILIAN. (1992). "Sexual selection and sexual dimorphism in the harlequin beetle *Acrocinus longimanus"*. *Biotropica* 24(1): 86-96. DOI: https://doi.org/10.2307/2388476

ZEH, D.W. & J.A. ZEH. (1994a). "When morphology misleads: interpopulation uniformity in sexual selection masks genetic divergence in harlequin beetle-riding pseudoscorpion populations". *Evolution* 48(4): 1168-1182. DOI: https://doi.org/10.2307/2410376

ZEH, J.A. & D.W. ZEH. (1994b). "Tropical liaisons on a beetle's back". *Natural History* 103: 36-43.

Submission date: 23 January 2017.

Acceptance date: 1 February 2017.