First report of *Cladonota crassepunctata* (Sakakibara, 1971) (Hemiptera: Membracidae: Membracinae: Hypsoprorini) in Paraguay

Primer reporte de *Cladonota crassepunctata* (Sakakibara, 1971) (Hemiptera: Membracidae: Membracinae: Hypsoprorini) en Paraguay

Morgan G. Pinkerton¹, Dawn J. Flynn² & John M. Leavengood, Jr.³

¹Department of Entomology and Nematology, University of Florida, 1881 Natural Area Drive, Gainesville, FL 32611 USA. E-mail: morgan0402@ufl.edu
²Schiele Museum, 1500 East Garrison Blvd., Gastonia, NC 28054 USA. E-mail: dawnf49@gmail.com
³United States Department of Agriculture, APHIS, PPQ, 9325 Bay Plaza Blvd, Suite 206, Tampa, FL 33619 USA. E-mail: john.m.leavengood@usda.gov

Abstract.- The species *Cladonota crassepunctata* (Sakakibara, 1971) (Hemiptera: Membracidae: Membracinae: Hypsoprorini) is recorded from Paraguay as a new country record. Furthermore, this is also the first report of the genus *Cladonota Stål*, 1869 in Paraguay (sensu Flynn, 2018).

Key words: new country record, distribution, pronotal process, treehoppers.


Palabras clave: primer reporte, distribución, cuerno pronotal

In the last century, the native ecosystems in South America have become increasingly vulnerable to threats that impact the biodiversity of the region (Jarvis *et al*., 2010; Luque *et al*., 2011). Specifically, Paraguay has faced threats to the native ecosystems from fires, conversion of land to agriculture, grazing pressure, and deforestation that has changed the local flora and fauna over time (Jarvis *et al*., 2010). Historically, the biodiversity of Paraguay is relatively understudied (Wild, 2007), and these threats to the country’s ecosystems may leave much of this knowledge lost to time. To date, checklists of the insects of Paraguay are limited and particularly, there are few species of membracids known from the country.

Recent expeditions in Paraguay have contributed to expanding this limited knowledge of entomofauna including a 2019 trip in which *Cladonota (Cladonota) crassepunctata* (Sakakibara, 1971) (Hemiptera: Membracidae: Membracinae: Hypsoprorini) was discovered.

This species was originally described as *Sphongophorus crassepunctata* but all species in the genus were reassigned to *Cladonota Stål* (1869) by McKamey (1997). The genus *Cladonota* is diagnosed by the head being trilobed (fig. 3) with supra-antennal lobes on each side of the clypeus (Funkhouser, 1951). The genus has four subgenera that includes *Cladonota Stål*, *Falculifera* McKamey, *Lecythifera* Fowler, and *Lobocladisca* Stål. The subgenus *Cladonota* can be distinguished from the three other subgenera of *Cladonota* by having an intermediate pronotal process, a posterior edge on the anterior pronotal process that is entire, and an anterior pronotal process that surpasses the intermediate pronotal process posteriorly (Flynn, 2018).

The genus *Cladonota* is currently under review by Flynn, providing distributional information and keys to all 55 species in the genus. Thus far, Part I covered the subgenus *Falculifera* (2018), Part II covered the subgenus *Cladonota*...
(2019), and Part III covered the subgenus Le-
cythifera (2020). Until now, C. crassepunctata had not yet been recorded from Paraguay, nor any species in the genus Cladonota. This paper presents the new country record for C. crasse-
punctata in Paraguay.

Materials and methods
One specimen was examined from the JMLC (John Leavengood, private collection, Brandon, Florida, USA). The specimen was collected by beating foliage on a 2019 scientific expedition in Paraguay led by Dr. John B. Heppner (Lepidoptera Expeditions). The GPS coordinates, which could have included a locality up to 1 kilometer away from the true coordinates, were taken once during a four-day encampment. The specimen was collected by the third author and identified to species by the second author.

There were no records of any species of Cladonota from Paraguay at the USNM (National Museum of Natural History, Smithsonian Institute, Washington, D.C., USA) and overall, there are only 14 identified species of membracids, and no hypsoprorines from the country (pers. comm. Dr. Stuart McKamey). Additionally, we examined the Cladonota at the FSCA (Florida State Collection of Arthropods, Gainesville, Florida, USA) which included one unidentified Cladonota sp. from Paraguay that was too da-
maged for adequate identification, but it is likely C. crassepunctata.

The C. crassepunctata specimen was pho-
tographed with a Nikon Digital Sight DS-Fi2 imaging system mounted on a Nikon SMZ-18 stereomicroscope. Photograph layers were stacked using Helicon Focus 6. Photographs were edited using Adobe® Photoshop® 2020 and formatted using Adobe® Illustrator® 2020.

Results and discussion
This record of C. crassepunctata in Para-
guay expands the known distribution of this species to two countries. Despite the notably unique pronotal ornamentation, the distributions of many species in the genus Cladonota are understudied, with numerous species having few known country distrib-
utions (Flynn, 2018). There is likely more to be discovered about the native range of many species of Cladonota, including C. crassepunctata. Moreover, there are gaps in the knowledge on the entomofauna of this region (Wild, 2007) and future scientific expeditions in Paraguay will surely continue to produce valuable information.

Cladonota crassepunctata
(Sakakibara, 1971)

Specimen Examined: PARAGUAY: MISIO-
NES DEPT.: San Ignacio, vic. Hotel Rural, S
26°52.508’ W [0]56°59.355’, elev. 451 ft. [137
m.], 5-8-XII-2019, Coll: Eger, Tyson, & Lea-
vengood (JMLC, 1♀).

Distribution: This species was previously
known from only Brazil (Sakakibara, 1971;
McKamey, 1997, 1998; Flynn, 2018). The ho-
lo-type is from Prudentópolis, Paraná and was
deposited in the DZUP (Museu de Entomolo-
gia Pe. Jesus Santiago Moure, Universidade
Federal do Paraná, Departamento de Zoologia,
Curitiba, Paraná, Brazil) (Sakakibara, 1971;
Flynn, 2019). Paraguay is a new country re-
cord for C. crassepunctata as well as for the

Cladonota crassepunctata

Species. This distribution is not surprising
given that Paraguay shares a border with Bra-
zil. Likewise, the type specimen was collected
in southern Brazil, located east of where this

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specimen was found in Paraguay.

Our specimen measured 6.36 mm in length and 2.31 mm in the width of the head which was the widest point. The anterior pronotal process in our specimen appears slightly more inflated (fig. 1) than in the original drawing of the holotype (Sakakibara, 1971; fig. 6), which could be attributed to mild genetic variation in the species or just in the Paraguay population. However, all other characteristics are consistent with the original description of the species and subsequent publications on the genus.

The damaged *Cladonota* sp. at the FSCA is very similar to our specimen of *C. crassepunctata* and was collected approximately 185 km away. However, due to damage of the anterior pronotal process, absolute identification is not possible. Future insect collecting efforts in Paraguay will likely produce more specimens of *C. crassepunctata*.

**Acknowledgments**

The authors thank the senior author’s advisors Dr. Amanda Hodges and Dr. Norman Leppla (University of Florida, Gainesville, Florida, United States) for their support of Doctor of Plant Medicine Program student internships. We thank Dr. Stuart McKamey (USDA, Systematic Entomology Laboratory) for confirming the absence of *Cladonota* from Paraguay in NMNH records. We extend our thanks to Kyle Schneppe (Assistant Curator, Florida Department of Agriculture and Consumer Services [FDCAS]) for help in accessing specimens at the FSCA and literature in the FDACS, Division of Plant Industry library. The authors are grateful to Luis Morán (Museum Director), John Kochalka (Chief of the Invertebrates Section) and Dr. Bolivar R. Garete-Barrett (Curator of Entomology) at the IBNP (Museo Nacional de Historia Natural del Paraguay, San Lorenzo, Paraguay) for collecting and exporting permits, and specimen loans. We thank Carlos Aguilar Julio and Marcelo Cortés (IBNP volunteers) and Dr. John B. Heppner (Lepidoptera Expeditions, Gainesville, Florida, United States) for field expedition arrangements. The authors thank Kevin Johns and Andre McCarrroll (USDA, APHIS, Tampa, Florida, United States) for their continued support of field work in order to develop PPQ Field Operations’ port reference collections.

**Literature**


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