



NOTA

Update on the diversity of cicadas (Hemiptera: Cicadidae) in the province of Jujuy (Argentine Republic)

Actualización de la diversidad de cigarras (Hemiptera:
Cicadidae) de la provincia de Jujuy (República Argentina)

Allen F. Sanborn¹, María I. Zamar^{2*}, Mario A. Linares², Félix Ortiz³,
Freddy Burgos², César M. Farfán², Melisa D'Occio³

¹ 10900 County Road 352, Blanket, Texas, United States of America. asanborn@barry.edu

² Instituto de Biología de la Altura, Universidad Nacional de Jujuy, San Salvador de Jujuy (4600), Avenida Bolivia 1661, provincia de Jujuy, República Argentina.

³ INECO, CONICET-UNJu. (4600) San Salvador de Jujuy, Gorriti 237, provincia de Jujuy, República Argentina.

* Autor de correspondencia: <mizamar@inbial.unju.edu.ar>

ABSTRACT

The first records of *Proarna inignis* Distant, *Dorisiana metcalfi* Sanborn & Heath, *Guyalna cuta* (Walker), *Quesada gigas* (Olivier), *Carineta crassicauda* Torres, and *Herrera umbraphila* Sanborn & Heath are provided for the province of Jujuy. Included are the first provincial records for the genera *Dorisiana* Metcalf, *Guyalna* Boulard & Martinelli, and *Quesada* Distant. The additions increase the known cicada diversity 66.7% bringing the total known alpha diversity in Jujuy to 15 species representing 11 genera, five tribes, and three subfamilies.

Keywords: Cicadas, Biodiversity, Neotropical Region.

RESUMEN

Se aportan los primeros registros de *Proarna inignis* Distant, *Dorisiana metcalfi* Sanborn y Heath, *Guyalna cuta* (Walker), *Quesada gigas* (Olivier), *Carineta crassicauda* Torres y *Herrera umbraphila* Sanborn & Heath para la

► Ref. bibliográfica: Sanborn, A. F.; Zamar, M. I.; Linares, M. A.; Ortiz, F.; Burgos, F.; Farfán, C. M.; D'Occio, M. 2024. "Actualización de la diversidad de cigarras (Hemiptera: Cicadidae) de la provincia de Jujuy (República Argentina)". *Acta zoológica lilloana* 68 (2): 515-523. DOI: <https://doi.org/10.30550/j.azl/2006>

► Recibido: 2 de septiembre 2024 – Aceptado: 7 de octubre 2024.



OPEN ACCESS

► URL de la revista: <http://actazoolologica.lillo.org.ar>

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provincia de Jujuy. Se incluyen los primeros registros para la provincia de los géneros *Dorisiana* Metcalf, *Guyalna* Boulard & Martinelli y *Quesada* Distant. Las adiciones aumentan la diversidad conocida de cigarras en un 66,7%, lo que eleva la diversidad alfa total conocida en Jujuy a 15 especies que representan 11 géneros, cinco tribus y tres subfamilias.

Palabras clave: Cigarras, Biodiversidad, Región Neotropical.

Cicadas are large insects that produce species specific sounds to attract mates. Even with their often obvious presence in the environment, they often go uncollected and underrepresented in faunistic surveys. Argentina has a history of noted cicada researchers including Berg, Déletang and Torres yet a detailed study of the Argentine cicada fauna resulted in the addition of a new genus, 15 new species, 12 new country records, and multiple new synonymies and species with revised status (Sanborn and Heath, 2014).

The study of regional collections can be an important mechanism to determine the local fauna. These collections may have greater local diversity than larger, centralized collections due to the number of causal or accidental specimens collected by local individuals. The specimens can often increase the known diversity of a region and expand the known geographic range of species compared to other works (*e.g.* De Santis, Medrano, Sanborn and Bolcatto, 2007).

To date, Argentina has 108 registered species of Cicadidae, distributed in 37 genera, nine tribes and four subfamilies. Of these, 44% are present in the Argentine Northwest (NWA). In this region, the best represented province is Tucumán with 24 species. Although the province of Jujuy has a wide variety of ecoregions, to date it only has 10 registered cicada species, several of them described from local specimens (Torres, 1948, 1958, 1959; Sanborn and Heath, 2014). However, the study of the diversity and distribution of Cicadidae in this province did not have the detail that was observed in other provinces, being limited to the mention of the presence of a species in lists that bring together the known diversity (De Santis et al., 2007; Marino de Remes Lenicov, Maciá and Pianzola, 2015).

The collection “Dra. Lilia Estela Neder” of the Instituto de Biología de la Altura, Universidad Nacional de Jujuy, preserves specimens from arthropods diversity surveys in the province. Six new cicada species records for Jujuy were identified there, representing a 66.7% increase in the known cicada fauna for the province.

The following information is provided for each species: Material examined: DEPARTMENT: Locality (wgs84 coordinates, meters above sea level (m a.s.l.)), date of collection, number and sex (male: M, female: F) of specimen, Collector (coll.) and Taxonomist (det.). Collection number. Information on its current distribution in Argentina are also provided.

NEW RECORDS FOR JUJUY PROVINCE

Proarna insignis Distant, 1881

Material examined: SAN PEDRO: San Juan de Dios, Estancia Las Lauras (-24.564629°, -64.651530°, 957 m a.s.l.), 12-01-2024, 1M, F. Burgos coll., A. Sanborn det. (7343).

Current distribution in Argentina: Jujuy and Salta provinces.

Dorisiana metcalfi Sanborn & Heath

Material examined: SAN PEDRO: San Juan de Dios. Estancia Las Lauras (-24.564629°, -64.651530°, 957 m a.s.l.), 12-01-2024, 1M, F. Burgos coll., A. Sanborn det. (7372). PALPALÁ: Palpalá (-24.24697°, -65.187538°, 1086 m a.s.l.), 20-12-2021, 1M, F. Ortiz coll., A. Sanborn det. (7376).

Current distribution in Argentina: Jujuy and Salta provinces.

Guyalna cuta (Walker)

Material examined: LEDESMA: Yuto (-23.610929°, -64.524188°, 434 m a.s.l.), 12-12-2022, 1F, M. D'ochio coll., A. Sanborn det. (7378).

Current distribution in Argentina: Catamarca, Jujuy, Salta and Tucumán provinces.

Quesada gigas (Olivier)

Fig. 2f

Material examined: PALPALÁ: Palpalá (-24.246970°, -65.187538°, 1086 m a.s.l.), 20-11-2019, 1M, F. Ortiz coll., A. Sanborn det. (7370). EL CARMEN: Severino (-24.351983°, -65.191903°, 1071 m a.s.l.), 16-12-2022, 1F, M. A. Linares coll., A. Sanborn det. (7368).

Current distribution in Argentina: Catamarca, Chaco, Córdoba, Corrientes, Entre Ríos, Formosa, Jujuy, La Rioja, Misiones, Salta, San Luis, Santa Fe, Santiago del Estero and Tucumán provinces.

Carineta crassicauda Torres

Fig. 2b

Material examined: TUMBAYA: Tumbaya Grande (-23.843522°, -65.503965°, 2397 m. a.s.l.), 02-02-2023, 1M, Ortiz F. coll., Sanborn A. det. (7344). DOCTOR MANUEL BELGRANO: Termas de Reyes (-24.155851°, -65.48092°, 1835 m. a.s.l.), 12-03-2023, 1F, F. Burgos coll., A. Sanborn det. (7369).

Current distribution in Argentina: Catamarca, Jujuy, Salta and Tucumán provinces.

Table 1. Taxonomy of the known cicada fauna of Jujuy province (República Argentina).

Family	Subfamily	Tribe	Genus	Species	References
Cicadidae Batsch, 1789	Cicadinae Batsch, 1789	Zammarini Distant, 1905	<i>Adusella</i> Haupt, 1918	<i>A. insignifera</i> (Berg)	Torres, 1946 <i>This work</i>
			<i>Fidicinoides</i> Boulard & Martinelli, 1996	<i>F. determinata</i> (Walker)	Sanborn et & Heath 2014 <i>This work</i>
			<i>Proarna</i> Stål, 1864	<i>P. bergi</i> (Distant)	Sanborn et & Heath 2014 <i>This work</i>
				<i>P. insignis</i> Distant	<i>This work</i>
			<i>Ariasa</i> Distant, 1905	<i>A. colombiae</i> (Distant)	Sanborn et & Heath 2014
				<i>A. nigrovittata</i> Distant	Torres, 1945 <i>This work</i>
			<i>Dorisiana</i> Metcalf, 1952	<i>D. metcalfi</i> Sanborn & Heath	<i>This work</i>
			<i>Guyalna</i> Boulard & Martinelli, 1996	<i>G. cuta</i> (Walker)	<i>This work</i>
			<i>Quesada</i> Distant, 1905	<i>Q. gigas</i> (Olivier)	<i>This work</i>
	Cicadettinae Buckton, 1890	Cicadatrini Distant, 1905 Carinetini Distant, 1905	<i>Pachypsaltia</i> Stål, 1863	<i>P. peristicta</i> Torres	Torres, 1959
			<i>Carineta</i> Amyot & Audinet-Serville, 1843	<i>C. crassicauda</i> Torres	<i>This work</i>
				<i>C. scripta</i> Torres	Torres, 1948
				<i>C. propinqua</i> Torres	Torres, 1948
			<i>Herrera</i> Distant, 1905	<i>H. humilastrata</i> Sanborn & Heath	Sanborn & Heath, 2014
				<i>H. umbraphila</i> Sanborn & Heath	<i>This work</i>
	Tibicininae Distant, 1905	Tettigadini Distant, 1905	<i>Psephenotettix</i> Torres, 1958	<i>P. minor</i> Torres	Torres (1958)

Herrera umbraphila Sanborn & Heath

Fig. 2c

Material examined: DOCTOR MANUEL BELGRANO: San Salvador de Jujuy (-24.185780°, -65.302539°, 1279 m. a.s.l.), 1M, M. A. Linares coll., A. Sanborn A. det. (7348).

Current distribution in Argentina: Jujuy, Salta and Tucumán provinces.

Likewise, specimens of the following species already cited for the province of Jujuy were incorporated into the entomological collection “Dra. Lilia Estela Nader” of the Institute of Altitude Biology (Sanborn and Heath, 2014; Marino de Remes Lenicov et al., 2015).

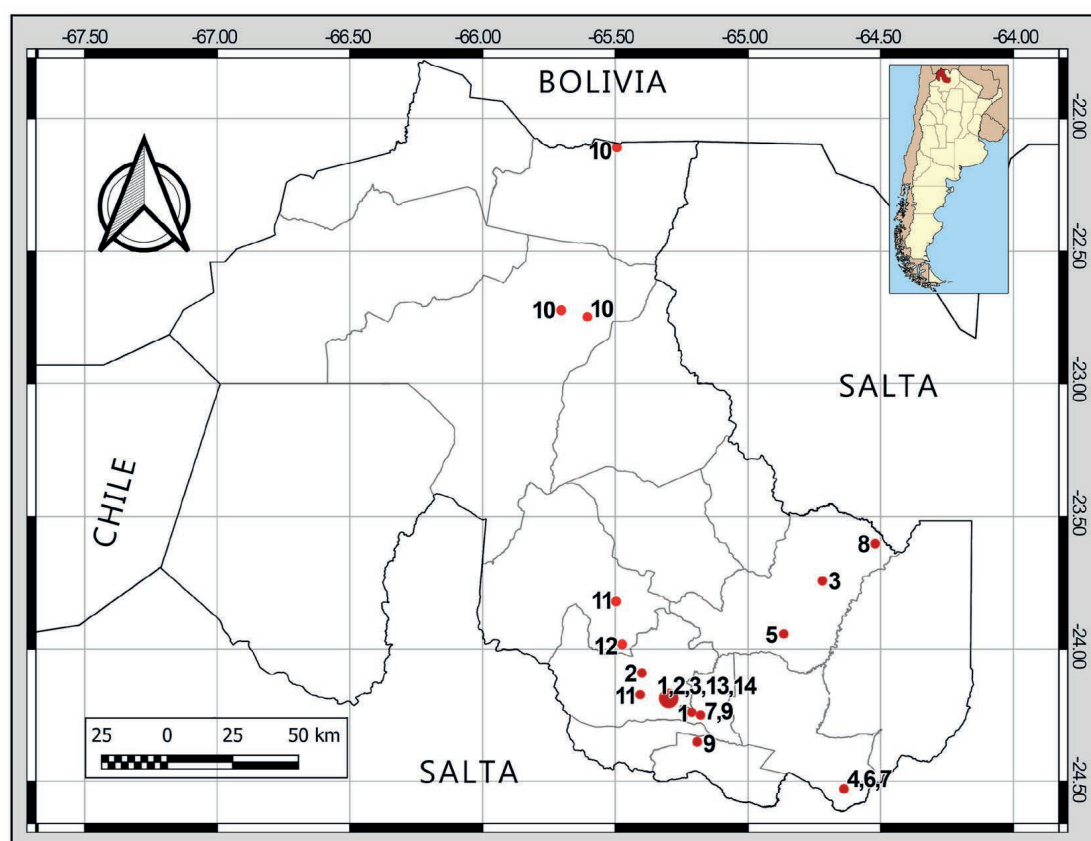


Figure 1. Known distribution of cicada species in Jujuy province. 1: *Adusella insignifera*; 2: *Fidicinoides determinata*; 3: *Proarna bergi*; 4: *Proarna insignis*; 5: *Ariasa colombiae*; 6: *Ariasa nigrovittata*; 7: *Dorisiana metcalfi*; 8: *Guyalna cuta*; 9: *Quesada gigas*; 10: *Pachypsaltria persicta*; 11: *Carineta crassicauda*; 12: *Carineta propinqua*; 13: *Herrera humilastrata*; 14: *Herrera umbraphila*.

Figura 1. Distribución de las especies de cigarras en la provincia de Jujuy. 1: *Adusella insignifera*; 2: *Fidicinoides determinata*; 3: *Proarna bergi*; 4: *Proarna insignis*; 5: *Ariasa colombiae*; 6: *Ariasa nigrovittata*; 7: *Dorisiana metcalfi*; 8: *Guyalna cuta*; 9: *Quesada gigas*; 10: *Pachypsaltria persicta*; 11: *Carineta crassicauda*; 12: *Carineta propinqua*; 13: *Herrera humilastrata*; 14: *Herrera umbraphila*.

Adusella insignifera (Berg)

Fig. 2a

Material examined: DOCTOR MANUEL BELGRANO: San Salvador de Jujuy (-24.178724°, -65.328586°, 1311 m. a.s.l.), 27/3/2023, 1F, M. A. Linares coll., A. Sanborn det. (7355); 21-03-2012, 1M, M. A. Linares coll., A. Sanborn det. (7356); (-24.196498°, -65.5331°, 1329 m. a.s.l.), nov-2023, 1M, C. M. Farfán coll., A. Sanborn, det. (7357); (-24.178718°, -65.331265°, 1319 m. a.s.l.), 1M, M. C. Martínez coll., A. Sanborn det. (7359). PALPALÁ: Río Blanco (-24.229938°, -65.236746°, 1161 m. a.s.l.) 10-12-2022, 1M, F. Ortiz coll., A. Sanborn det. (7358).

Current distribution in Argentina: Jujuy, Salta y Tucumán provinces.

Pachypsaltia peristicta Torres

Fig. 2d

Material examined: YAVI: Yavi Chico (-22.106067°, -65.446294°, 3436 m. a.s.l.), 30-01-2016, 1M, M. I. Zamar coll., A. Sanborn det. (7351); 09-01-2020, 1F, M. I. Zamar coll., A. Sanborn det. (7380); 26-01-2021, 3M, M. I. Zamar coll., A. Sanborn det. (7352, 7353, 7381).

Current distribution in Argentina: Jujuy and Tucumán provinces.

Fidicinoides determinata (Walker)

Material examined: DOCTOR MANUEL BELGRANO: San Salvador de Jujuy (-24.187315°, -65.29287°, 1258 m. a.s.l.), nov-2016, 1M, N. Valerio coll., A. Sanborn, det. (7346); (-24.178855°, -65.328582°, 1307 m. a.s.l.), 20-03-2001, 1M, F. Ortiz coll., A. Sanborn det. (7347).

Current distribution in Argentina: Jujuy province.

Proarna bergi (Distant)

Fig. 2e

Material examined: DOCTOR MANUEL BELGRANO: San Salvador de Jujuy, (-24.176045°, -65.348119°, 1342 m. a.s.l.), 01-02-2022, 1M, M. I. Zamar coll., A. Sanborn det. (7349).

Current distribution in Argentina: Buenos Aires, Catamarca, Córdoba, Entre Ríos, Jujuy, La Rioja, Salta, San Luis, Santiago del Estero and Tucumán provinces.

Ariasa nigrovittata

Material examined: SAN PEDRO: San Juan de Dios, Estancia Las Lauras (-24.564629°, -64.651530°, 974 m a.s.l.), 12-01-2024, 1F, F. Burgos coll., A. Sanborn det. (7371).

Current distribution in Argentina: Jujuy, Salta, Santiago del Estero and Tucumán provinces.

The known alpha diversity of Jujuy cicadas is listed in Table 1. The current total brings the known diversity closer to the diversity recorded in other provinces of northwestern Argentina. Figure 1 shows the known distribution of cicada species in Jujuy. Because Torres (1958) described *Psephenottix minor* from specimens collected in the Puna of Jujuy, without mentioning the precise location, and the location of the discovery of *Car-*

ineta scripta is currently unknown, these two species are not included in figure 1.

Continued collection will undoubtedly find additional examples of known species from neighboring regions and bring the known diversity of cicadas in Jujuy to levels seen in neighboring provinces.

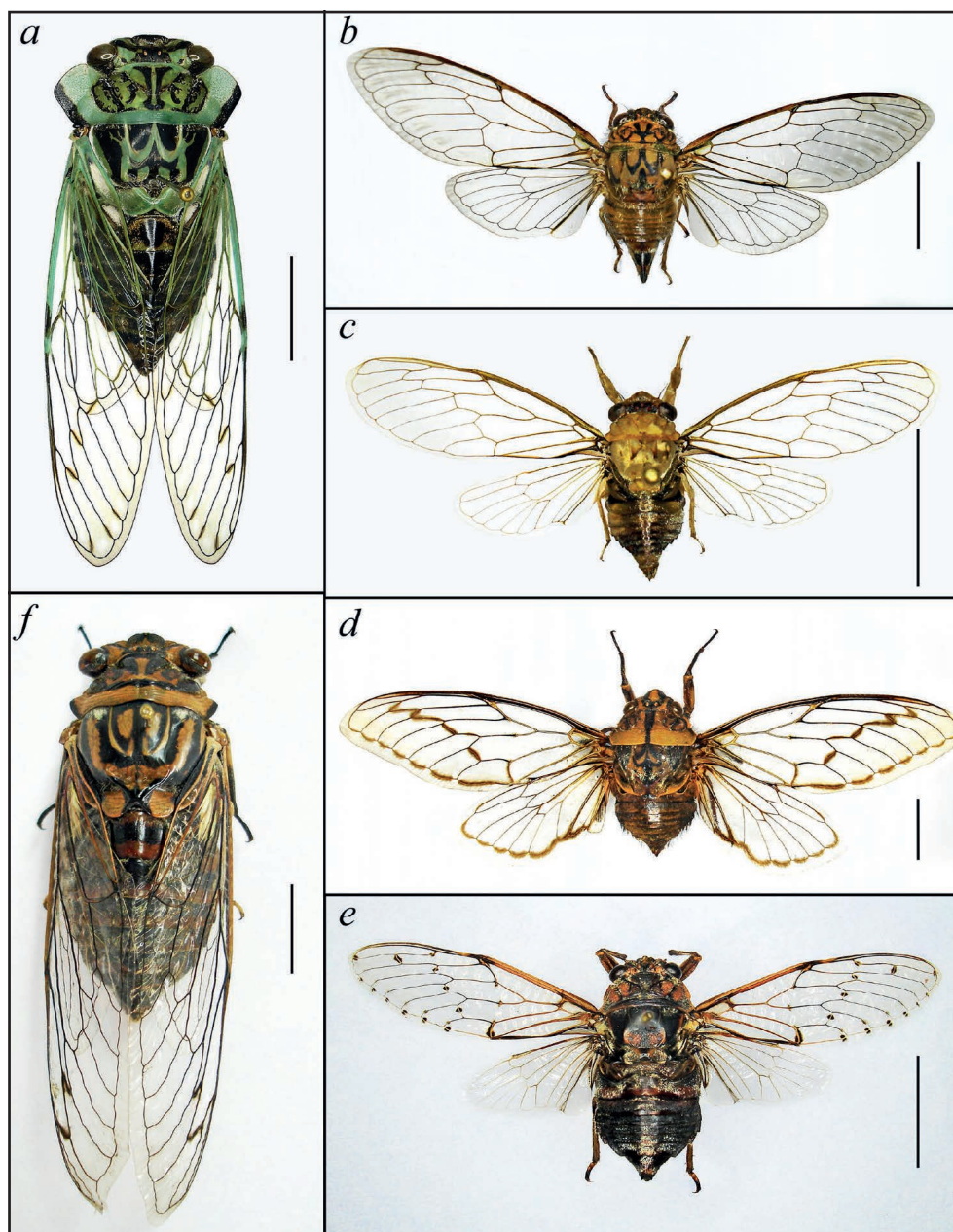


Figure 2. Cicadidae species recorded in Jujuy, a: *Adusella insignifera*; b: *Carineta crassicauda*; c: *Herrera umbraphila*; d: *Pachypsaltia peristicta*; e: *Proarna bergi*; f: *Quesada gigas*. Scale: 1 cm.

Figura 2. Especies de Cicadidae registradas en Jujuy, a: *Adusella insignifera*; b: *Carineta crassicauda*; c: *Herrera umbraphila*; d: *Pachypsaltia peristicta*; e: *Proarna bergi*; f: *Quesada gigas*. Escala: 1 cm.

FINANCING

This work was carried out within the framework of the project “Biodiversidad y servicios ecosistémicos de los artrópodos de Jujuy, funded by Secretaría de Ciencia y Técnica y Estudios Regionales, Universidad Nacional de Jujuy. Category A. Code F/0030. Res. C.S. N°0229/19 and Res R. N° 0977/20.

AUTHOR CONTRIBUTIONS

Identification and writing: Sanborn; writing: Zamar and Linares; figures editing: Linares; collection of specimens: Burgos, Ortiz, Linares, Farfán, Zamar, D’ochio.

DECLARATION OF CONFLICTING INTERESTS

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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