

## Nomenclatural Act

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# The first record of *Agoo* Bahder & Bartlett, 2019 (Hemiptera: Fulgoroidea: Derbidae) for the state of Amazonas, Brazil, with the description of a new species

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**Abstract.** For the first time, the occurrence of the genus *Agoo* Bahder & Bartlett, 2019 (Hemiptera: Fulgoroidea: Derbidae) was recorded in the state of Amazonas, Brazil, through the discovery of a new species for the genus. Additionally, we describe and illustrate *Agoo galbina* sp. nov. and present a geographic distribution map of Brazilian species based on literature data.

**Keywords:** Amazon, Cenchreini, planthopper, taxonomy.

The genus *Agoo* Bahder & Bartlett, 2019 (Derbidae: Derbinae: Cenchreini) was recently described, with as its type species *Agoo xavieri* (Bahder & Bartlett, 2019) from Costa Rica. Its representatives differ from other genera of Cenchreini by presenting head rounded in lateral view, pygofer with a subtriangular medioventral process without lateral processes, and almost symmetrical aedeagus, with long and thin spines (Bahder et al. 2019; Bahder et al. 2020a).

*Agoo* was described as a monotypic subgenus of *Omolicina* Fennah, 1945 due to *A. xavieri* differing from the other species of the genus morphologically by the narrow frons and the paranotal region of the pronotum more expansively foliated, as well as genetically (18S rRNA genes and cytochrome c oxidase subunit I - COI) (Bahder et al. 2019). Furthermore, maximum likelihood phylogenetic analyses based on 18S rRNA and COI gene sequences demonstrated that *O. (Agoo)* was phylogenetically distinct from *Omolicina* (Bahder et al. 2020a). Based on these results, the taxonomic status of *O. (Agoo)* was elevated to genus level by Bahder et al. (2020a) and the authors transferred the species *Omolicina rubrimarginata* Fennah, 1945 (Trinidad) to *Agoo* and described the species *Agoo dahliana* Bahder & Bartlett, 2020 (Costa Rica).

In the same year, Bahder et al. (2020b) described an additional species for the *Agoo*, *Agoo luzdenia* Bahder & Bartlett, 2020 (Costa Rica), and provided the first identification key for the genus. Dollet et al. (2020), in the study on Derbidae planthoppers associated with coconut and palm oil, described two species from Brazil, *Agoo spina* Bahder & Bartlett, 2020 and *Agoo argutiola* Bahder & Bartlett, 2020, and also provided a key to distinguish *Omolicina* and *Agoo*, as well as to identify species of *Agoo*. Later, Bahder et al. (2020c) described another species, *Agoo beani* Bahder & Bartlett, 2020, from Jamaica, and presented a Neotropical identification key.

*Agoo* is restricted to the Neotropical Region (Brazil, Costa Rica, Jamaica, and Trinidad and Tobago) and is composed of seven species: *A. argutiola* (from Brazil: Roraima), *A. beani* (Costa Rica and Jamaica), *A. dahliana* (Costa Rica), *A. luzdenia* (Costa Rica), *A. rubrimarginata* (Trinidad and Tobago), *A. spina* (from Brazil: Sergipe), and *A. xavieri* (Costa Rica) (Dollet et al. 2020; Bahder et al. 2020c).

Here, we report the first record of the genus *Agoo* in the state of Amazonas, Brazil, together with the description and illustration of *Agoo galbina* sp. nov.

The studied specimens in this paper belong to the Invertebrate

Collection of the National Institute of Amazonian Research - INPA, Manaus, Brazil.

For analysis and illustration of the genital structures, the abdomen was removed from the thorax, treated with hot 85% lactic acid and stored in a microvial with glycerin after drawing and subsequently pinned together with their respective specimen. Forewing of a specimen was removed, cleaned by a fast xylol bath, and mounted between cover glasses with Euparal for photography. After drying, sides of cover slides were glued to a small piece of cardboard and pinned with the specimen.

Terminology of the head characters mostly follows O'Brien & Wilson (1985), for forewing venation follows Bourgoïn et al. (2015), and for male genitalia mostly follows Bourgoïn & Huang (1990).

Specimens were photographed with a Leica MC170 HD camera, attached to a Leica M165C stereomicroscope. The distribution map was created with QGIS 3.20 (QGIS 2018), using geographical coordinates from specimen labels.

### *Agoo* Bahder & Bartlett, 2019

*Omolicina (Agoo)* Bahder & Bartlett, 2019 in Bahder et al. (2019): 506-510 (original designation, subgenus), Fig. 2

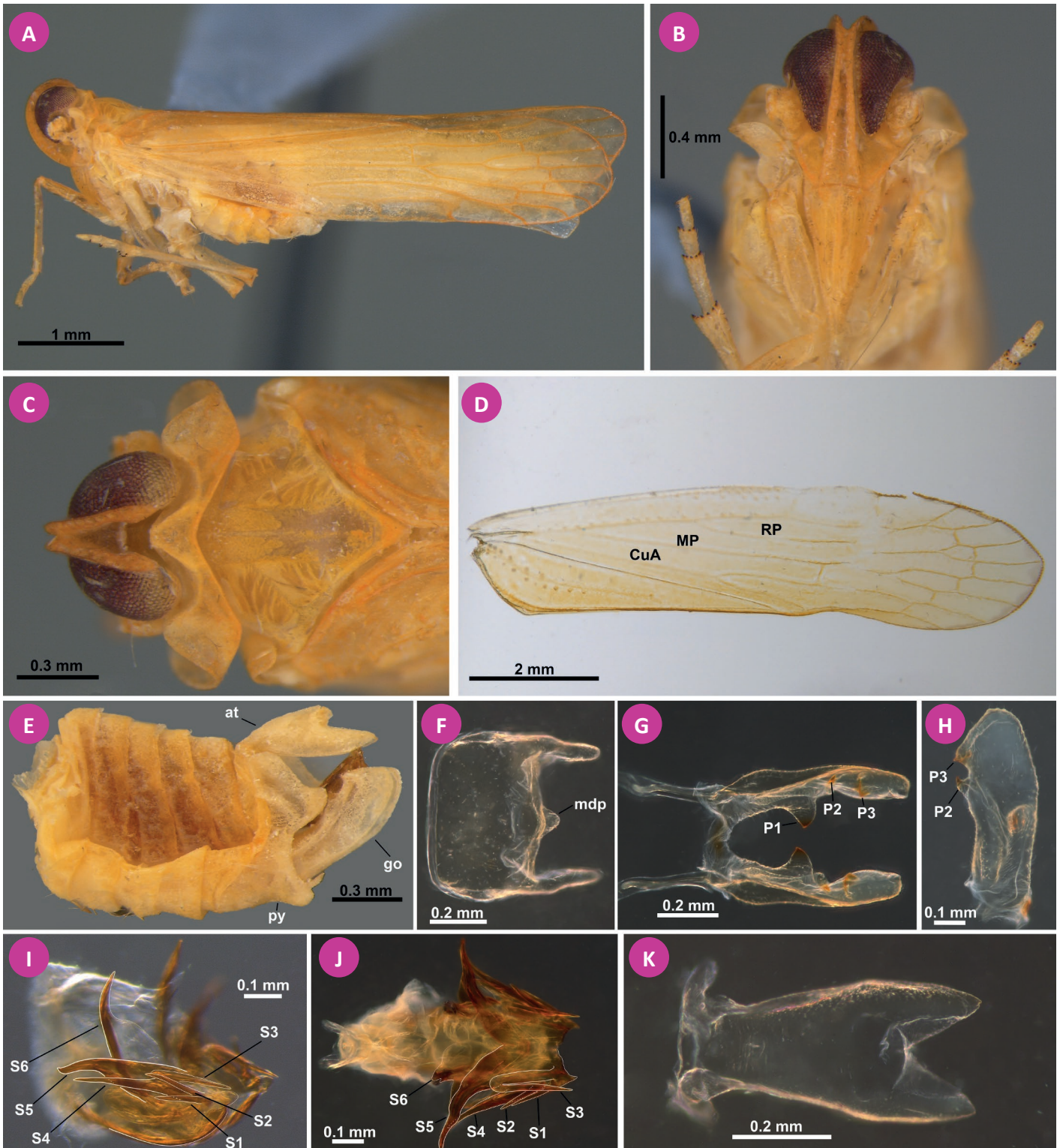
A-B, 3 A-C, 4 A-C, 5 A-C, 6 (head, tegmen, thorax, genitalia). Type species: *Omolicina (Agoo) xavieri* Bahder & Bartlett, 2019.

*Agoo* Bahder & Bartlett, 2019; Bahder et al. (2020a): 528-529, 534 (key, species description); Dollet et al. (2020): 8, 15 (citation, key, species description); Bahder et al. (2020b): 409, 410 (citation, species description).

Type species: *Omolicina (Agoo) xavieri* Bahder & Bartlett, 2019 (original designation).

**Amended diagnosis.** Head rounded in lateral view; frons narrow, lacking median carina, lateral carinae foliate; frons and vertex concave; median carina of the clypeus present; transition frons to vertex without transverse carina; medioventral process of pygofer (ventral view) broad, distally attenuating to rounded apex (subtriangular in form); phallic complex symmetrical.

**Distribution.** Brazil (Roraima, Sergipe), Costa Rica (Heredia, Tortugeuro), Jamaica (Portland Parish, St. Elizabeth Parish), Trinidad and Tobago.



**Figure 1 A-K.** *Agoo galbina* sp. nov., holotype male: **A.** Habitus, lateral view; **B.** Head, anteroventral view; **C.** Head and thorax, dorsal view. **D-K:** paratype male: **D.** Right forewing; **E.** Abdomen, lateral view; **F.** Pygofer, ventral view; **G.** Gonostyli, dorsal view; **H.** Gonostylus, lateral view; **I.** Phallic complex, left lateroposterior view; **J.** Phallic complex, dorsal view; **K.** Anal tube (segment X), dorsal view. Abbreviations: at, anal tube; go, gonostylus; mdp, medioventral process; p, process; py, pygofer; s, spines. Forewings: CuA, cubitus anterior vein; MP, media posterior vein; RP, radius posterior vein.

***Agoo galbina* sp. nov.**

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(Figs. 1 A-K; 2)

**Measurements.** Body length: male 2.9-3.0 mm (5.3-5.7 mm including wings) (N=5).

**Diagnosis.** Forewing semihyaline, apical third of veins orange. Pygofer with triangular process on posterodorsal margins (Fig. 1E). Anal tube (segment X) subtrapezoidal in dorsal view (Fig. 1K). Periandrium without spines.

**Description.** Coloration. General body color yellow (Fig. 1A).

Forewing: semihyaline, apical third of veins orange (Figs. 1A, D). Abdomen: lateral region of the tergites yellowish brown (Fig. 1E).

External morphological characters as in generic description (Bahder et al. 2020a).

**Male terminalia (Figs 1 E-K):** Pygofer with triangular process on posterodorsal margins (Fig. 1E); medioventral process short, conical, in lateral view, subtriangular and apex rounded in ventral view (Figs. 1E, F). Gonostyli symmetrical, dorsal margin with two processes near the apex. P1: large subtriangular process with posteriorly curved apex; P2: short subtriangular process (Figs. 1G, F); ventral margin with one sclerotized subtriangular process, located at middle region, with apex

curved ventrally (Fig. 1 H). Phallic complex robust, periandrium without spines; aedeagus with six retrorse spines (Figs. 1 I, J): two spines short, slender, and almost straight, directed anteriorly, inserted near base (S1, S2); one long, slender (about twice length of S2 spine), curved in the median region and directed posteriorly (S3); one slender, elongated (about twice length of S2 spine) directed anteriorly (S4); one elongated and sinuous spine, apex curved dorsally, in posterolateral view, directed anteriorly (S5), one long process, wider in the basal half and narrowing towards the apex, directed dorsally, in posterolateral view (S6) (Figs. 1 I, J). Anal tube (segment X) robust, subtrapezoidal in dorsal view, with almost straight ventral margin, and apex deeply notched, occupying almost apical 1/3 of the total length of anal tube (Figs. 1 E, K).

**Material Examined:** HOLOTYPE male (INPA). BRAZIL, Amazonas, Novo Aripuanã, Reserva Soka, 05°15'53"S-60°07'08"W, 17-25.VIII.1999, Arm. Malaise, J.F. Vidal & [A.]L. Henrique[s]. PARATYPES, Amazonas, Manaus, 09.IX.1986, Ulysses: Luis (1 m#, INPA); *idem*, 31.IX.1986 (2 m#, INPA); Rio Abacaxis [Maués], 05°15'09"S-58°41'52"W, 28.V.2008, Arm. luz no barco, J.A. Rafael equipe (1 m#, INPA).

**Condition of the holotype.** Right and left flagellum broken and lost. Left mesothoracic leg broken and lost at the level of the trochanter.

**Distribution.** Brazil (Amazonas) (Fig. 2).

**Taxonomic notes.** *Agoo galbina* sp. nov. is most similar to *A. beani* by the general color of body and anal tube (segment X) with apex deeply notched. However, *A. galbina* sp. nov. differs from the latter by the pygofer with triangular process on posterodorsal margins, periandrium without spines and aedeagus with one spine, curved in the median region and directed posteriorly (S3). In turn, *A. beani* differs from *A. galbina* sp. nov. by the pygofer without process on posterodorsal margins, periandrium with one spine and aedeagus with all spines (S1-S6) directed anteriorly.

**Etymology.** From the Latin *galbus*, galbinus. The species name is allusive to the yellow coloration.

## Taxonomic Authorities

*Agoo* Bahder & Bartlett, 2019 in Bahder et al. (2019). *Agoo xavieri* Bahder & Bartlett, 2019 in Bahder et al. (2019). *Agoo dahliana* Bahder & Bartlett, 2020 in Bahder et al. (2020a). *Agoo luzdenia* Bahder & Bartlett, 2020 in Bahder et al. (2020b). *Agoo beani* Bahder & Bartlett, 2020 in Bahder et al. (2020c). *Agoo argutiola* Bahder & Bartlett, 2020 in Dollet et al. (2020). *Agoo spina* Bahder & Bartlett, 2020 in Dollet et al. (2020). *Omolicna* Fennah, 1945 in Fennah (1945). *Omolicna rubrimarginata* Fennah, 1945 in Fennah (1945). *Omolicna (Agoo)* Bahder & Bartlett, 2019 in Bahder et al. (2019). *Omolicna (Agoo) xavieri* Bahder & Bartlett, 2019 in Bahder et al. (2019).

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Figure 2. Geographical distribution of *Agoo* species of Brazil.

## Authors' Contributions

ICLN: Conceptualization, Writing - original draft, Writing - review & edition; EFGV: Conceptualization, Writing - original draft, Writing - review & edition; RAR: Conceptualization, Writing - original draft, Writing - review & edition.

## Conflict of Interest Statement

The authors declare no conflict of interest.

## References

- Bahder, B. W.; Bartlett, C. R.; Barrantes, E. A.; Echavarría, M. A. Z.; Humphries, A. R.; Helmick, E. E.; Ascunce, M. S.; Goss, E. M. (2019) A new species of *Omolicna* (Hemiptera: Auchenorrhyncha: Fulgoroidea: Derbidae) from coconut palm in Costa Rica and new country records for *Omolicna brunnea* and *Omolicna triata*. *Zootaxa*, 4577(3): 501-514. doi: [10.11646/zootaxa.4577.3.5](https://doi.org/10.11646/zootaxa.4577.3.5)
- Bahder, B. W.; Bartlett, C. R.; Helmick, E. E.; Barrantes, E. A.; Echavarría, M. A. Z.; Goss, E. M.; Ascunce, M. S. (2020a) Revised status of *Omolicna* subgenus *Agoo* (Hemiptera: Auchenorrhyncha: Fulgoroidea: Derbidae) with a new species from Costa Rica and new country records. *Zootaxa*, 4718 (4): 521-535. doi: [10.11646/zootaxa.4718.4.6](https://doi.org/10.11646/zootaxa.4718.4.6)
- Bahder, B. W.; Echavarría, M. A. Z.; Barrantes, E. A. B.; Kunz, G.; Helmick, E. E.; Bartlett, C. R. (2020b) A new species of planthopper in the genus *Agoo* (Hemiptera: Fulgoroidea: Derbidae) from coquito palms (*Astrocaryum alatum*) in Costa Rica. *Zootaxa*, 4779(3): 409-418. doi: [10.11646/zootaxa.4779.3.8](https://doi.org/10.11646/zootaxa.4779.3.8)
- Bahder, B. W., Mou, D. F., Bartlett, C. R., Helmick, E. E., Bertaccini, A., & Myrie, W. (2020c) A new species of planthopper in the genus *Agoo* Bahder & Bartlett (Hemiptera: Fulgoroidea: Derbidae) from coconut palm (*Cocos nucifera* L.) in Jamaica. *Zootaxa*, 4853(2): 254-264. doi: [10.11646/zootaxa.4853.2.6](https://doi.org/10.11646/zootaxa.4853.2.6)
- Bourgoin, T.; Huang, J. (1990) Morphologie comparée des genitalia mâles des Trypetimorphini et remarques phylogénétiques (Hemiptera: Fulgoromorpha: Tropiduchidae). *Annales de la Société Entomologique de France*, Nouvelle Serie, 26: 555-564. doi: [10.1080/21686351.1990.12277614](https://doi.org/10.1080/21686351.1990.12277614)
- Bourgoin, T.; Wang, R. R.; Asche, M.; Hoch, H.; Soulierv-Perkins, A.; Stroinski, A.; Yap, S.; Szvedo, J. (2015) From micropterism to hyperpterism: recognition strategy and standardized homology-driven terminology of the forewing venation patterns in planthoppers (Hemiptera: Fulgoromorpha). *Zoomorphology*, 134(1): 63-77. doi: [10.1007/s00435-014-0243-6](https://doi.org/10.1007/s00435-014-0243-6)
- Dollet, M.; Fidelis, E. G.; Dos Passos, E.; Da Silva, F.; Aberlenc, H. P.; Schurt, D. A.; Bahder, B. W.; Diniz, L. C.; Bartlett, C. R. (2020) Derbid planthoppers (Hemiptera: Fulgoroidea: Derbidae) associated with coconut and oil palm in Brazil. *Neotropical Entomology*, 49: 722-738. doi: [10.1007/s13744-020-00788-5](https://doi.org/10.1007/s13744-020-00788-5)
- Fennah, R. G. (1945) The Fulgoroidea, or lanternflies, of Trinidad and adjacent parts of South America. *Proceedings of the United States National Museum*. Washington 95: 411-520 [440]. doi: [10.5479/si.00963801.95-3184.411](https://doi.org/10.5479/si.00963801.95-3184.411)
- O'Brien, L. B.; Wilson, S. W. (1985) Planthopper systematics and external morphology. In: Nault, LR; Rodriguez, JG. (Eds.), *The Leafhoppers and Planthoppers*, p. 61-102. Wiley, New York.
- QGIS (2018) QGIS Geographic Information System (Version 3.2.0). QGIS Association. <http://www.qgis.org>