Research Article

Addition to the Distributional Record of *Ageniella* (*Neotumagenia*) *amazonica* Fernández, 1998 (Hymenoptera: Pompilidae) and Establishment of a Neotype

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Ageniella is a diverse and poorly studied genus in Ageniellini (Pompilidae: Pepsinae). It is composed of nine subgenera with four being endemic to the Neotropical region. Herein, the second record in the literature for the subgenus *Neotumagenia* is documented, the distribution range is extended, and a neotype is established. This is the first record of this subgenus in Brazil.

1. Introduction

Ageniella Banks is the second most diverse genus in Ageniellini with about 110 valid species and nine subgenera. The genus is found throughout the New World [1], from Canada to Argentina, but it is most diverse in the Neotropical region [2].

Ageniella wasps are highly variable morphologically. Body size in males, for example, varies from some having a body length of <2.0 mm to longer than 15.0 mm [3]. Coloration of the species is also variable. Species can have all of the integument or certain parts areas red, orange, black, or blue metallic, with or without long setae. Taxonomists working on *Ageniella* struggle to determine diagnostic characters for the genus and its subgenera. Shimizu [4] performed a phylogenetic analysis of the genus using morphological characters but did not recover any synapomorphic characters, or a monophyletic *Ageniella*. The variation in the genus is not only remarkable within subgenera, but also within species as well.

The last subgenus added to *Ageniella* was *Neotumagenia* Fernández [5]. This subgenus is monotypic and is restricted to the Neotropics. *Ageniella* (*Neotumagenia*) *amazonica* Fernández was described from Colombia based on a single female exemplar. This species is unique within *Ageniella* by

having a large, grooved, polished swelling on the front, just above each torulus, and stout legs. The biology of *A. amazonica* is unknown, and the subgenus and species are based only on the female. The holotype of *Ageniella* (*Neotumagenia*) *amazonica* is currently lost (F. Fernández pers. com.).

Herein, we establish a Neotype for the species, provide illustrations, and extend the distributional range of the taxon to Brazil.

2. Material and Methods

The studied material was derived from a loan from the Museu Paraense Emílio Goeldi (MPEG), Belém, Pará, Brazil. Besides MPEG, two specimens will be deposited in different collections, as designated in text: Entomological Museum of Utah State University (EMUS), Logan, Utah, USA; Instituto de Ciencias Naturales-Museo de Historia Naturales (UNCB), Universidad Nacional de Colombia, Bogotá, Colombia.

Abbreviations used in the descriptions are the same as those used by Fernández [5] and Wasbauer and Kimsey [6]. They are defined as follows: FD = facial distance; LA3 = length of third antennal segment; MID = middle interocular distance; OOL = ocellular length; POL = postocellar length; TFD = transfacial distance; UID = upper interocular

distance; WA3 = width of third antennal segment. Measurements of the clypeus are as follows: WC, width of clypeus, measured from the widest points; LC, highest length of clypeus.

Collection locality of the specimens was obtained from the literature (holotype) and from the specimen labels (new records). These data were used to obtain the geographical coordinates with Google Earth to construct the distribution map with ArcView version 9 software by ESRI [7].

3. Results and Discussion

3.1. Taxonomy and New Records. Subgenus *Neotumagenia* Fernández.

Type-Species. *Ageniella* (*Neotumagenia*) *amazonica* Fernández, 1998. *Caldasia* 20:1-4 [f#, COLOMBIA (lost)]. Original designation.

Ageniella (*Neotumagenia*) *amazonica* Fernández, 1998 (Figures 1(a) and 1(b)).

Neotype. 1 female. Brasil, Pará, Serra Norte, N1-Mata, 28-31.x.1985, Armadilha 1.6 m suspensa, 6°00'25"S 50°18'32"W, N. Bittencourt [col.] (MPEG no. HYM 11005855).

Diagnosis. This species can be recognized from other *Ageniella* by the following combination of characters: the integument is black on head and metasoma, orange with black ventrally on mesosoma (Figure 1(a)); the face has two large protuberances (Figure 1(b)), and it is covered by silver scale-setae, except by the protuberances, which are shining; the clypeus is convex, with apical margin slightly prolonged; the fore wing is hyaline with a dark band.

Measurements (mm) and Ratios. Body length: 7.72; forewing 6.59; maximum wing width 1.80. FD: 1.69; MID: 1.18; UID: 0.78; LID: 0.94; TFD: 2.00; OOL: 0.19; POL: 0.08; WC: 0.98; LC: 0.47; WA3 0.33X LA3.

3.2. Examined Material

1 Female. Brasil, Pará, Serra Norte, Serraria, 20-23.vi.1986, armadilha 1.6 m suspensa, 5°58'37"S 50°19'43"W, J. Dias [col.] (MPEG no. HYM 11006147; deposited in UNCB);

1 Female. Brasil, Pará, Juruti, Beneficiamento, Malaise 4, 15-25.vi.2009, 2°31'29"S 56°11'13"W (MPGE);

1 Female. Brasil, Amazonas, Marãa, R. Japurá, Maguari, 11-17.x.1988, Armadilha 1.6 m suspensa, 1°49'28"S 65°21'28"W, J. Dias [col.] (MPGE # HYM 11090903; deposited in EMUS).

The Neotype (Figures 1(a) and 1(b)) does not vary from the original description, and there is no notable variation between studied specimens.

(a)

(b)

FIGURE 1: Neotype of *Ageniella* (*Neotumagenia*) *amazonica*. (a) Habitus, lateral view. Scale = 2.4 mm. (b) Head, frontal view. Scale = 1.29 mm.

The frontal processes (Figure 1(b)) present in this species are intriguing, but other examples of this feature exist in the family (e.g., *Auplopus iris* (Banks)) and even in the genus *Ageniella*. In *Ageniella*, these processes are present also in *Ageniella* (*Cyrtagenia*) *fallax* Arlé, but in this taxon, they are not as large or as prominent as the shiny protuberances found in *A. amazonica*. Other genera of Pompilidae, such as some African *Cryptocheilus* reported by Arnold [8], have frontal protuberance as well. *Auplopus iris* (Banks) has very similar head morphology, differing only by having silver scale setae in small areas of inner face of the eyes, and the clypeus is more sharpened medially and convex; while *A. amazonica* has setae covering most of the face, but the protuberances and the apical margin of clypeus are less prolonged. *Ageniella amazonica* has the frontal processes acute, invaginated, and asetose, which has an obvious groove for housing the antenna. Perhaps the frontal processes in *A. amazonica* are related to antennal support while female is hunting for a spider or building a nest, but this is conjecture, and the function of these processes remains a mystery.

Ageniella amazonica also differs from the other species of *Ageniella* by having stout front legs. Many species of *Ageniella* dig nests on ground using the front legs [9]. It is possible that these females use the head to close the burrow

FIGURE 2: Distributional map of *Ageniella* (*Neotumagenia*) *amazonica*.

dug and pack the soil. In this case, the stout femora of the front legs, the polished head with scale-like setae, and frontal protuberances may be adaptations to this behavior.

Unfortunately, the Neotropical fauna of *Ageniella* is taxonomically unknown and poorly studied. The species described for the Neotropics lack comprehensible descriptions, keys, and illustration. Moreover, the current outdated taxonomy of the group impedes ecological, behavioral, and biogeographic studies. The last Neotropical survey was made by Evans [10], who studied the Ageniellini of the Neotropics, provided a key for females to subgenera, and corrected taxonomic problems created by Haupt.

This study represents the first record of *A. amazonica* for Brazil. It was previously only known from the type locality [5, 11]. Our study indicates that this species is restricted to the Amazon Forest (Figure 2), and it is probably widespread through it. Yearly precipitation in the occurrence area varies from 1600 mm to 3600 mm; regional variation in climate is homogenous and is the least variable in Brazil [12].

Finally, the designation of a neotype and the record of new specimens are significant to the taxonomy of *Ageniella*, contributing to enrich distributional and morphologic information regarding this New World taxon.

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