

SCIENTIFIC NOTE

Eufriesea pulchra Smith (Hymenoptera: Apidae: Euglossini): Extended Geographic Distribution and Filling Gaps in Mato Grosso State, Brazil

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ABSTRACT - This study was conducted in the Cotriguaçu district, situated on the bank of the Juruena River, in Mato Grosso state. The collects were carried out from August 22 to 25, 2007 with chemical baits to attract male orchid bees. The bees were captured on a daily basis, from 8 a.m. to 12 p.m. Of the 89 males captured three belonged to *Eufriesea pulchra* Smith. Before the present study, *E. pulchra* had been reported in the states of Pará, Amazonas, Amapá, (dubiously) São Paulo, and Maranhão. This occurrence extends its geographical distribution range by 900 to 2,000 km southwards in South America, as it is now recorded in the Amazon and Platina basins.

KEY WORDS: Apinae, orchid bee, Amazon forest

Euglossini is represented by a Neotropical tribe of small to large bees (8-31 mm) that occur from lowlands to tropical forests from southern Texas (USA) and northern Mexico to northern Argentina (Moure 1967, Dressler 1982). It comprises five genera, one of which is *Eufriesea* Cockerell (Cockerell 1908). The description of the genus *Eufriesea* was originally based only on a single species, *E. pulchra* Smith, described as *Euglossa pulchra* Smith (Smith 1854). The second species placed in this genus, *E. lucifera* Kimsey, was added 123 years after Smith's work (see Smith 1854, Kimsey 1977, Moure *et al* 2007), originally described as *Euplusia lucifera* Kimsey (Kimsey 1977).

Eufriesea pulchra belongs to the *pulchra* group, which is represented by only six species. The holotype is a female collected in the Tapajós River, in the state of Pará (Smith 1854). According to Kimsey's work (1982), *E. pulchra* occurs from Central (Costa Rica and Panama) to South America (Colombia, Venezuela, Trinidad Island, Peru and Brazil), and also at the Dawa Field Station, Republic of Guyana (Williams & Dodson 1972, Ackerman 1983, Dressler 1985, Pearson & Dressler 1985). This species was recently recorded in the central Pacific plain of Colombia, Chocó region (Otero & Sandino 2003), and also in the French Guiana and Ecuador (Dick *et al* 2004). In Brazil, several males were collected in the states of Pará (Ducke 1901, Kimsey 1982), Amazonas (Braga 1978, Kimsey 1982, Becker *et al* 1991, Oliveira 1999), Amapá (Kimsey 1982, Moure *et al* 2007), and more recently in Maranhão (Rebêlo 2001, Brito & Rêgo 2002). Nevertheless, Kimsey (1982) pointed out that this species was also recorded in southern Brazil, in São Paulo state (São Paulo city). But, curiously in the last 25 years no record has been catalogued between the Cerrado and Atlantic forest domains, after all *E. pulchra* was registered in Brazil only in the Amazon Basin (Ramírez *et al* 2002). As a matter

of fact, Silveira *et al* (2002) and Moure *et al* (2007) have already included this dubious record in their books, which is incorrect. Various references to St. Paul or Sao Paolo refer to São Paulo de Olivença (e.g. Moure & Schindwein 2002), actually an old village of descendants of 17th century Jesuit missionaries and established as a municipality in 1882, situated in the vicinity of the Alto Solimões River, near Tabatinga, Amazonia state, and not in São Paulo state, as erroneously indicated by Kimsey (1982). According to the current literature however, the unverified report that *E. pulchra* was recorded in São Paulo state (Kimsey 1982, Silveira *et al* 2002, Moure *et al* 2007) should be disregarded. Therefore, in the *E. pulchra* geographic distribution map a question mark is indicated at São Paulo city and the correct locations of the *E. pulchra* records in São Paulo de Olivença are included (Fig 1).

In this study, I record the occurrence of *E. pulchra* in the Amazon forest of Mato Grosso state, Brazil, for the first time. This paper also reports the first occurrence of the species in a savanna-like area, located in the Chapada dos Guimarães National Park. Samplings were carried out in São Nicolau Farm, located at Cotriguaçu district (09°52'24"S, 58°13'17"N), distant approximately 1,000 km northwest of the state capital Cuiabá, situated on the left bank of the Juruena River, in northern Mato Grosso state. The farm, owned by the Office National des Forêts – ONF Peugeot-Citroën Group, is characterized by smooth wavy reliefs with elevated hills at the sources of springs.

The study area lies within the Amazônia Legal (Legal Amazon) region and presents a hot and humid tropical climate, with an average annual temperature of 24°C, average relative humidity of 80%, and average annual rainfall of 2,300 mm. The typical kinds of vegetation are open forest and dense ombrophilous forest (Veloso *et al* 1991), with yellow

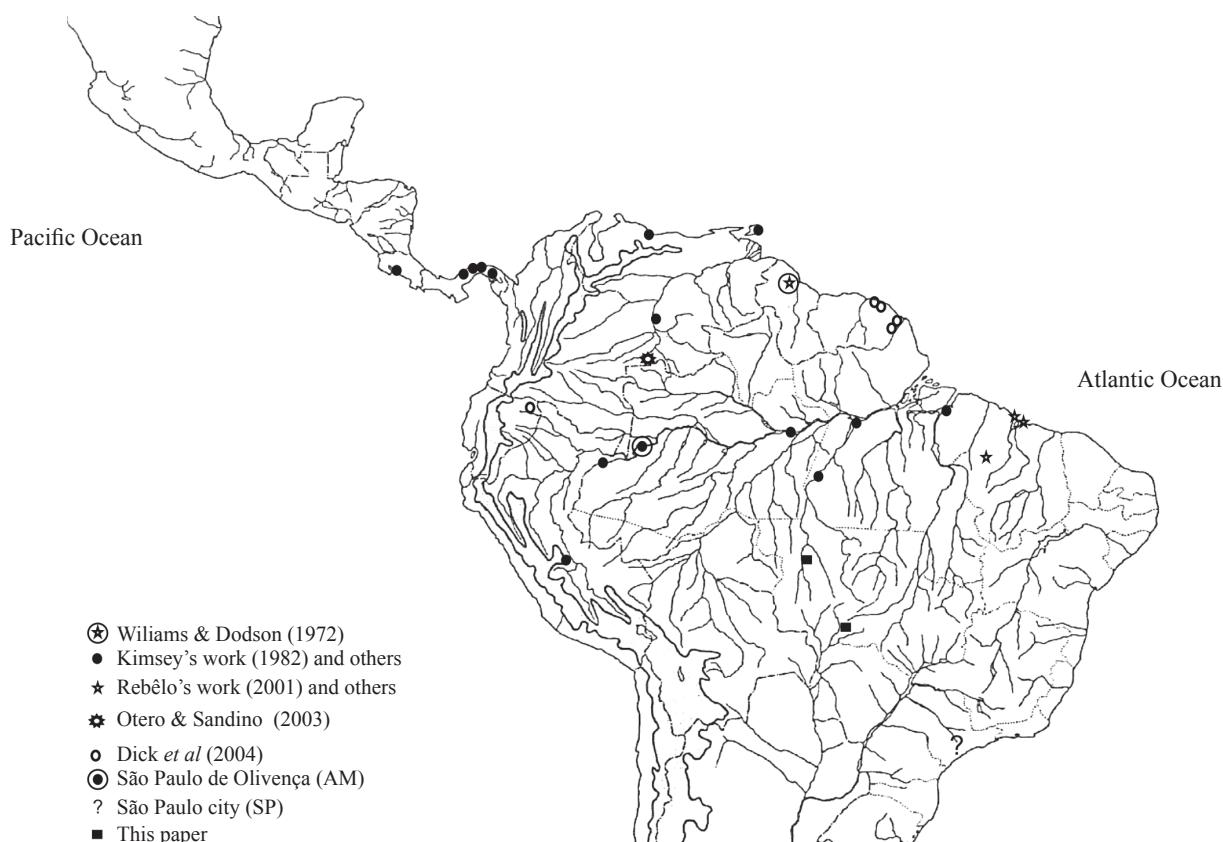


Fig 1 Geographic distribution map of *Eufriesea pulchra* in the Neotropics.

red Argissolo. The Fazenda São Nicolau covers a total area of 10,134.43 ha, 80% (8,107.54 ha) of which is a legally protected area, including 6,932.72 ha of protected forests, 957.71 ha of Permanently Protected Areas (APP) and finally 5,975.01 ha of conservation management areas.

The study was conducted at six continuous lowland (200 m) rainforest sites at different successional stages, all of which located in the Fazenda São Nicolau: 1) a preserved Amazon forest area (three sites), 2) vereda, a swamp-like area where buriti palms (*Mauritia flexuosa*, Arecaceae) grow, 3) secondary Amazon forest areas known as capoeira, and 4) in the artificial plantations of ipê trees (*Tabebuia heptaphylla*, Bignoniaceae), the last three habitats with single site collection. Lastly, a seventh site was included in this paper, a savanna-like area (cerrado *sensu stricto*) located in the Parque Nacional Chapada dos Guimarães (15°24'21"S – 55°50'12"W).

Male orchid bees were collected daily with an insect collecting net as they arrived at the chemical baits for four consecutive days, during the end of the dry season from August 22th to 25th. Euglossines were sampled for a total of 16h with six chemical baits, namely benzyl benzoate, 1,8 – cineole, eugenol, vanillin, methyl cinnamate, methyl salicylate. The baits were simultaneously applied to absorbent paper pads from 8 a.m. to 12 p.m. (midday). For additional information regarding this method, see Anjos-Silva *et al* (2006) and Anjos-Silva (2007, 2008).

A total of 89 males were attracted to the baits, distributed

in four genera and 20 species: *Eulaema* (five species, 33 males), *Euglossa* (13 species, 51 males) and *Exaerete* (two species, five males). *Eufriesea pulchra* was the single species representing the genus *Eufriesea* at all sites. Three males of *E. pulchra* were collected during the experiments, and all of them were attracted to methyl salicylate. A voucher specimen of *E. pulchra* (EJAS 3903) was deposited in the collection of the Departamento de Biologia da Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto-USP (RPSP).

Although previous studies developed for two years using eight chemical baits as attractants to the male orchid bees did not report *E. pulchra* in the gallery forest of the Parque Nacional Chapada dos Guimarães (Anjos-Silva *et al* 2006, Anjos-Silva 2007, 2008), surprisingly, on November 21 at 8:15 a.m., I saw a single female *E. pulchra* resting on the leaf of a murici tree, *Byrsonima coccolobifolia* (Malpighiaceae), before it flew off elsewhere. This single observation is a result of an ongoing research project on euglossines maintained by the Universidade do Estado de Mato Grosso. The results reveal that *E. pulchra* presents an isolated distribution pattern, but this paper extends its geographical distribution range in the Amazon Basin by 900 km to 1,500 km (Manaus and Belém to Cotriguaçu, Amazonas, Pará and Mato Grosso states, respectively), reducing the filling gaps in their distribution range to Mato Grosso state, the only collection site in the Cerrado domain, Central-Western Brazil. Nevertheless, this record in the Parque Nacional Chapada dos Guimarães extends the geographical distribution range from the Amazon

basin to the Platina basin by approximately 2,000 km, thus heavily reducing the filling gaps in the distribution range to the Platina Basin (see Fig 1). This is another example of the poor sampling of the cerrado fauna as observed in the record of *Aglae caerulea* Lepeletier & Serville (Anjos-Silva *et al* 2006), *Eulaema pseudocingulata* Oliveira (Anjos-Silva 2007), and *Euglossa cognata* Moure (Anjos-Silva 2008) for the Parque Nacional Chapada dos Guimarães and Província Serrana of Mato Grosso state, in three studies that amplified the geographical distribution range of these species southwards in South America. Unfortunately, there is not enough information regarding the records of euglossine bees in the Amazon forest of Mato Grosso state to provide additional information on their geographic distribution. Nonetheless, further biological studies shall be of interest in order to discover other euglossine distribution patterns and particularly some new orchid bee species in this vast region.

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