

**NOTES ON GEOGRAPHIC DISTRIBUTION: POTTIACEAE, *HYOPHILA INVOLUTA* (HOOK.) JAEG. & SAUERB. (NEW OCCURRENCE IN THE STATE OF MARANHÃO, BRAZIL), *HYOPHILA APICULATA* FLEISCH (NEW OCCURRENCE IN BRAZIL)**

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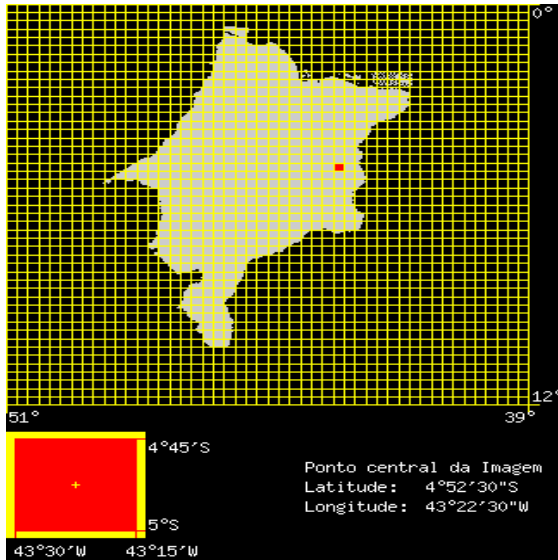
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The family Pottiaceae, according to Zander (1993) is the largest family of the class Bryopsida, with 76 genera and approximately 1500 species. Identification is considered difficult due to the small size of these mosses, morphological and physiological plasticity, and frequent absence of sporophytes (Cardenas, 1995). In Brazil there are 36 genera and 132 species (Yano, 1996). This family is distributed mainly in flat mountainous regions, where most species grow in soils of variable environments, sometimes forming conspicuous portions of the vegetation. The genus *Hyophila* includes about 80 species in temperate and tropical regions; in the neotropics there are 25 species and *H. involuta* (Hook.) Jaeg., is probably the only common and widely distributed species (Gradstein *et al.* 2001).

Specimens of *Hyophila* were collected during 2006 and 2007 in the dry and rainy seasons in the municipality of Caxias (figure 1 and 2), located on the middle course margins of Itapecuru River, part of the Itapecuru River basin. It is located between the coordinates 04°53'30"S/ 43°24'53"W and 77m of

altitude. The climate is dry subhumid; annual precipitation varies from 1400 to 1600mm, distributed mainly from November to May; hydric potential varies from low to medium; soils are sandy from residual hills with stony hillsides separated by flat valleys. Vegetation is complex and diverse, with an ecological tension zone between the cerrado and the seasonal forest, with diverse phytophysiological aspects of the cerrado (Rios, 2001). The material was collected and processed according to Yano (1984). The species were determined preliminarily at the Laboratório de Biologia Vegetal of the Centro de Estudos Superiores de Caxias (CESC), Universidade Estadual do Maranhão (UEMA) and duplicates were sent to specialists for confirmation and/or determination.



**Figure 1.** Map of the State of Maranhão showing the Municipality of Caxias (red dot), where the species of *Hyophila* were collected. Map adapted from Miranda & Coutinho (2004).



**Figure 2.** Landsat Image of the municipality of Caxias, showing the remnants of forested vegetation (in green) and urbanized central areas (in purple).

The family Pottiaceae in Caxias, State of Maranhão, Brazil, is represented by two species:

1. *Hyophila involuta* (Hook.). Jaeg. & Sauerb. (figure 3)

**Geographic distribution:** Western USA, Mexico, Central and South America, West Indies, Africa, Europe, China, India, Indonesia, Oceania and Brazil. In Brazil (AM, BA, ES, GO, MS, PA, PB, PE, PI, PR, RJ, RO, RS, SP, DF).

Material examined: **BRAZIL, MARANHÃO:** Caxias, Área de Proteção Ambiental Municipal do Inhamum, Trail of the Merin stream (figure 4) 12/ I / 2007, E.S. Brito & G. M. Conceição 150, Pedro Mato Trail, 12 / V /2007, E.S. Brito & G. M. Conceição 201, 204.

Comments: Fertile habit: Rupicolous, found on a brick sink.



**Figure 3.** Fertile habit of *Hyophila involuta*, found in Caxias, Maranhão, Brazil (new occurrence for the State of Maranhão).



**Figure 4** Fragment of vegetation on the Área de Proteção Ambiental Municipal do Inhamum, Caxias, Maranhão, Brazil (occurrence site of *Hyophila involuta*).

2. *Hyophila apiculata* Fleisch (figure 5 and 6): **NEW OCCURRENCE FOR BRAZIL**

**Geographic distribution:** Australia, Indonesia and the Philippines

Material examined: **BRAZIL,**

**MARANHÃO:** Caxias, urban area – vegetation fragment (figure 7), 10/V/2006, E.S. Brito & G. M. Conceição 127.

Comments: Fertile habit, found on a small wall in front of the CESC/UEMA (Caxias, State of Maranhão, Brazil).



**Figure 7.** Fragment of vegetation on the Morro do Alecrim, showing the habitat of *Hyophila apiculata*, on the wall.



**Figure 5.** Fertile habit of *Hyophila apiculata*, found in Caxias, Maranhão, Brazil (new occurrence for Brazil).



**Figure 6.** Fertile habit of *Hyophila apiculata*, found in Caxias, Maranhão, Brazil, in the dry season (on artificial substrate).

*Hyophila involuta* (Hook.). Jaeg, is therefore considered a NEW OCCURRENCE FOR THE STATE OF MARANHÃO, placing this state in the geographic distribution of this species in Brazil.

*Hyophila apiculata* Fleisch, is a NEW OCCURRENCE FOR BRAZIL, increasing from 20 to 21 the species in the genus *Hyophila* in Brasil. This also increases the number of species of the family Pottiaceae in Brasil from 132 to 133 species. New collection efforts should be undertaken to increase the knowledge of the bryoflora in the State of Maranhão and in Brazil.

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