



## Noteworthy mosses and a new variety collected from the 2014 joint expedition of CAS and CMUH new to Mindanao Island of the Philippines

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### Abstract

Twenty-five mosses are reported as new additions to the moss flora of Mindanao with five species also new to the Philippines. A new variety of *Taxiphyllum arcuatum*, *T. arcuatum* var. *apiculatum*, is proposed.

**Key words:** bryophyte inventory, distribution, new records

### Introduction

Mindanao is the second largest land mass next to Luzon Island in the Philippines. It is located at the southern end of the country lying close to Borneo, Sulawesi and the Maluku (Moluccas) island groups, and has a rich flora that is not well collected and studied. Because of its geographical position, the island flora has been reported and predicted to have a strong affinity with the floras of Borneo and other neighboring Gondwana island groups, including New Guinea (Tan 1984, 1998, Tan & Linis 2008).

In April–May of 2014, the California Academy of Sciences (CAS) conducted a joint expedition with the CEBREM Office of Central Mindanao State University (CMUH) exploring and documenting the diversity of selected plant groups (mosses included) at three local mountains, namely Mt. Apo, Mt. Dulang-Dulang of Kitanglad Range, and Mt. Kiamo (Kiamu). These three mountains are located wide apart in two different provinces (Figure 1), namely North Cotabato Province (Mt. Apo) and Bukidnon Province (Mt. Dulang-Dulang of Kitanglad Range and Mt. Kiamo), offering a variety of habitats at different elevations of mainly montane forest vegetation, which harbors a great number of plant species.

The joint 2014 expedition of CAS and CMUH produced a total of more than 600 packets of moss specimens. Many of these are the widespread species across the archipelago. They represent the common Malesian mosses. Others are species of known Gondwana origin (Tan 1984, 1992, Tan & Linis 2008), such as *Othorrhynchium elegans* (Hooker f. & Wilson) Reichardt (1868: 116), *Cryptogonium phyllogonioides* (Sullivant) Isoviita (1986: 542) and *Dawsonia superba* Greville (1847: 226), with a localized Mindanao distribution in the country. Their presence among our collections is a good telltale sign of their continued survival *in situ*. Additionally, the 2014 expedition has yielded 24 species and one variety that are new to Mindanao (see below). Their discovery re-enforces, to a certain extent, the floristic affinity of the Mindanao mosses with the floras south of the country. Five taxa, namely *Calomnion complanatum* (Hooker f. & Wilson) Lindberg (1872: 240), *Fissidens coacervatus* Bruggeman-Nannenga (1985: 194), *Fissidens ganguleei* Norkett (in Gangulee 1971: 527), *Macrohymenium muelleri* Dozy & Molkenboer (1848: 168) and *Warburgiella leptocarpa* (Schwägrichen) M. Fleischer (1923: 1253), are new records for the Philippine moss flora (see asterisk \*). Of phytogeographical significance is the confirmation of Mindanao record of a number of species in the present study, such as *Bryoxiphium japonicum* (Berggren) E. Britten (1892: 24), *Pogonatum subtortile* (Müller Hal.) A. Jaeger (1875: 256), *Rhaphidostichum piliferum* (Brotherus) Brotherus (1925: 434), *Syrrhopodon gardneri* (Hooker) Schwägrichen (1824: 110), *S. japonicus* (Bescherelle) Brotherus (1924: 233) and *Taxiphyllum taxirameum* (Mitten) M. Fleischer (1923: 1435) hitherto known only from Luzon and adjacent Visayan island groups. Their occurrence in Mindanao

24. *Taxiphyllum taxirameum* (Mitten) M. Fleischer (1923: 1435). [Hypnaceae]—Mt. Apo, forested trail to permanent plot H at EDC near River Matingao on southwest slope, on wet boulder near a small waterfall at 1800 m, 29 April 2014, *Tan 2014-122B* (CMUH, H, UC). The species is rather widespread in Malesia. It has several records from Luzon and Visayan Islands. This is the first collection of this species in Mindanao.

\*25. *Warburgiella leptocarpa* (Schwägrichen) M. Fleischer (1923: 1253). [Sematophyllaceae]—Midslope of Mt. Dulang-Dulang along an alternative ridge route to summit, Mt. Kitanglad Range Natural Park, on fallen branch, 2200 m, 21 April 2014, *Shevock 44724* (CAS, CMUH, NY, TNS, UC). New to the Philippines. This species differs from *W. cupressinoides* Müller Hal. ex Brotherus (1900: 176), the common species of the genus in the country, in having unipapillose leaf cells. From other reported species of *Warburgiella* listed in Tan & Iwatsuki (1991), it can be distinguished by its broadly expanded leaf base with an abruptly narrowed and strongly toothed leaf acumen. *Warburgiella leptocarpa* is widely distributed in Malesia.

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