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A new species of *Lindsaea* (Lindsaeaceae, Polypodiopsida) from Mt. Hamiguitan, Mindanao, Philippines

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Abstract

A new species of *Lindsaea* from the Philippines, *Lindsaea hamiguitanensis* is described. The phylogenetic relationships of *L. hamiguitanensis* were analysed by sequencing *trnL-trnF* and *trnH-psbA* intergenic spacer regions and performing a cladistic analysis of the *Lindsaea* section *Schizoloma*. *Lindsaea hamiguitanensis* groups together with *L. bouillodii* and *L.* cf. *cambodgensis*, from which it differs morphologically by the length of its petioles and the entire pinnules, as well as genetically by three apomorphic substitutions in the *trnL-trnF* intergenic spacer, and by two apomorphic substitutions in *trnH-psbA* spacer region.

Introduction

The pantropical fern genus *Lindsaea* Dryander (1797: 39) comprises ca. 200 species, with about two thirds of the species occurring in the Old World tropics. A few species occur in subtropical Japan and Tasmania. The genus usually occurs in moist forests below 3000 m (Kramer 1971). Most species are terrestrial with some species at higher elevations also growing as epiphytes (Kramer 1971). Some lowland species can also grow on decaying wood (Tuomisto 1998).

Mount Hamiguitan Range Wildlife Sanctuary in Davao Oriental, Mindanao, Philippines is a protected area covering 6 834 ha located between 6°40'N to 6°47'N and 126°09'E to 126°13'E. The mountain range is known for its unique characteristics and the largest pygmy 'bonsai forest' in the Philippines. Ultramafic rocks form the predominant substrate and weather into soil with an unusually high concentration of iron and magnesium (Amoroso *et al*. 2009). An inventory of pteridophytes revealed 141 species of ferns and 14 lycophytes on the mountain, with 9 being endemic to the range (Amoroso *et al*. 2011). During botanical fieldwork in 2009, we collected a distinctive species of *Lindsaea* which we could not identify using standard references (Kramer 1971). Molecular analyses of this species revealed it as distinct, and therefore it is here described as a new species.

Methods

We investigated the phylogenetic relationships of *Lindsaea hamiguitanensis* by sequencing *trnL-trnF* and *trnH-psbA* intergenic spacer regions and performing a cladistic analysis of *Lindsaea* sect. *Schizoloma*, with *L. linearis* Swartz (1801: 78) as outgroup. Laboratory protocols for DNA extraction, amplification, and sequencing followed Lehtonen *et al*. (2010). Data for other taxa included here were taken from Lehtonen *et al.*

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