

Mapania multiflora, a distinctive new species of Cyperaceae (Mapanioideae) from Borneo

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Summary. *Mapania multiflora* is described and illustrated. It is vegetatively similar to taxa with broad leaves and pseudopetioles, such as *M. cuspidata*. However, it is reproductively similar to sect. *Thoractostachyum* with a paniculate inflorescence and furrowed fruit. The DNA is similar to *M. bancana* in sect. *Thoractostachyum*, in the three sampled cpDNA regions: *atpH-F*, *trnL-F* and *psbA-trnH*. However, it is identical to none of these due to its unique combination of vegetative, reproductive and molecular characteristics.

Key Words. conservation, Hypolytreae, taxonomy.

Introduction

The cosmopolitan sedge family Cyperaceae is the third-largest family in the monocots, after orchids and grasses, with 106 genera and c. 5400 species (Govaerts *et al.* 2007). A wide variety of habitats are occupied by sedges, from swamps to sand-dunes and tropical forests to high arctic tundra (Smith *et al.* 2009). Several species are ubiquitous weeds which occur in a variety of environments, others are endemic, narrowly distributed and of conservation concern (Naczi & Ford 2008). The family Cyperaceae comprises two subfamilies, Mapanioideae and Cyperoideae (Simpson *et al.* 2007; Muasya *et al.* 2009). Two tribes are assigned under Mapanioideae, namely Hypolytreae and Chrysitricheae. *Mapania* Aubl., a genus in tribe Hypolytreae contains a group of mostly forest-dwelling sedges which are widely distributed throughout the tropics (Simpson 1996). Borneo and Peninsular Malaysia are considered to be centres of diversity for *Mapania* with 25 and 16 species recorded respectively (Simpson 1992) and new species continue to be discovered (Shabdin *et al.* 2013). Fifty percent of the species in Borneo are endemic.

During fieldwork in Batu Berkarang, Limbang, northern Sarawak, specimens of *Mapania* were collected which did not match the morphology of any of the previously described species. There is little information on reproduction, breeding

behaviour or population biology of *Mapania* on which biological species might be based. Therefore we describe a new species based on its distinctions under the morphological/taxonomic species concepts (Cronquist 1978) and in its sampled DNA sequences.

Materials and methods

MORPHOLOGY. Macromorphological features were recorded using a conventional ruler calibrated in millimetres. Dissections of inflorescence parts were made by soaking an inflorescence in warm water in a Petri dish for 5 – 10 minutes, transferring it to a white glazed tile and then carefully teasing out the parts using mounted needles under a Leica Microsystems S6D binocular photomicroscope. Microscopic features were recorded using a calibrated eyepiece graticule in the microscope and also photographed. Data were recorded into a Microsoft Excel® spreadsheet.

DNA SEQUENCING. Total DNA was extracted from material collected in silica gel (Table 1). The modified CTAB method of Doyle & Doyle (1987) was used but extractions were precipitated in isopropanol for one week. The *trnL-F* intergenic spacer, together with the *psbA-trnH* and *atpH-F* plastid genes were each amplified as one complete piece using the following forward and reverse

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