



## New combinations in Neotropical Lycopodiaceae

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### Abstract

This paper proposes new nomenclatural combinations for accepted Neotropical species, according to a new classification with nine Neotropical genera in three subfamilies of the Lycopodiaceae. New combinations for the species occurring in Brazil, are proposed elsewhere (Øllgaard, in press). There is one new combination in *Palhinhaea*, 119 in *Phlegmariurus*, and two in *Pseudolycopodiella*.

### Introduction

The classification of the Lycopodiaceae has been subject to important changes during the last five decades. The results of several studies of morphology (Øllgaard 1979, 1987), anatomy (Bruce 1976a, Øllgaard 1975), chromosomes (Wagner 1992), spores (Wilce 1972, Tryon & Lugardon 1991), gametophytes (Bruce 1976b, 1979, Whittier 2006, Whittier, Pintaud & Braggins 2005, Whittier & Renzaglia 2005, Whittier & Storchova 2007, Whittier & Webster 1986), and molecular studies (Wikström & Kenrick 2000, 2001) have made it increasingly clear that the family includes up to 16 ancient, distinct and monophyletic groups (Holub 1964, 1975, 1983, 1985, 1991, Wagner & Beitel 1992, Haines 2003, Wikström & Kenrick 2001).

Tryon & Tryon (1982) maintained one genus *Lycopodium* L. for all species in the family (apart from *Phylloglossum*), while Øllgaard (1987, 1989a, 1990, 1992) and Øllgaard & Windisch (1987) distinguished the genera *Huperzia* Bernh., *Lycopodium*, and *Lycopodiella* Holub in the Neotropics. These genera were subdivided in formal (sections) or informal groups, corresponding closely to the genera of Holub (1964, 1975, 1983, 1985, 1991) and to the subfamilies and genera of Wagner & Beitel (1992). Christenhusz *et al.* (2011) accepted (one to) three genera, and included *Phylloglossum* in *Huperzia*. Under the impression of the molecular studies (cladograms in Wikström & Kenrick 2000, 2001) and the arguments in Wagner & Beitel (1992), I accept a narrower circumscription of the genera, and their subdivision of the family into three subfamilies (corresponding to the genera of Christenhusz *et al.* 2011). In addition to the microscopic and molecular characters these genera are readily recognizable at a glance, and no intergeneric hybrids are known.

The necessary new combinations for the Brazilian species have been made elsewhere (Øllgaard, in press). The remaining new combinations for the Neotropical species are proposed here.

### Key to the neotropical genera of Lycopodiaceae

The following key summarizes the characters that identify the nine Neotropical genera.

- 1 Stems isotomously branched throughout, without elongate, indeterminate main stems, but sometimes heteroblastic with creeping or subterranean shoots, from which aerial shoots arise, roots usually forming one basal tuft, sporophylls and vegetative leaves alike, or the sporophylls, if smaller, green and persisting after spore dispersal, not