A NEW COMBINATION IN SPINULUM (LYCOPODIACEAE) FROM INDIA

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Abstract: *Study revealed that Lycopodium zonatum (Lycopodiaceae) from China and India is not a synonym of Spinulum subarcticum. A new conbnation is made for Lycopodiumzonatum under Spinum following recent generic concept.*

Key words: – *Lycopodiaceae, Lectotypification, New combination, Spinulum.*

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1. Introduction:

The generic delimitation in Lycopodiaceae has long been the point at issue for taxonomists. Earlier authors mainly preferred to recognize a single genus *Lycopodium* L. *s.l.* (Tryon & Tryon, 1982). The trend in recent years has been to define *Lycopodium* more narrowly and to classify the other species into several genera, an arrangement that has been supported by both morphological and molecular data and adopted in numerous revisions and flora treatments. The number of accepted genera in most of the treatments is 3 which include *Huperzia* Bernh., *Lycopodiella* Holub and *Lycopodium* L. (Øllgaard, 1990). Contrary to previous concepts, the molecular phylogenetic result of Wikström & Kenrick (2000) and morphological diversity support the recognition of 16 genera which is the widely accepted concept at present (see Øllgaard, 2012a, b; Øllgaard & Windisch, 2014). These 16 genera almost completely represent the groups of Øllgaard (1987) and reflect ancient divergence of separate evolutionary lines in Lycopodiaceae (Øllgaard, 2012a).

Haines (2003) erected *Lycopodium* sect. *Annotina* (Rouy) Holub at genus level and named it *Spinulum* A. Haines. As shown by Øllgaard (1987) it is distinguishable by following combination of characters : sporophytes with creeping main stems, isophyllous; leaves in alternating whorls of 4-5, without piliferous or membranous apices; strobili epedunculate; sporophylls subpeltate; sporangial epidermis with occasional irregular pouch-like in- and evaginations on the side walls; spore reticulate, unornamented on the proximal faces; gametophytes convoluted disc-shaped; x = 34. *Lycopodium zonatum* Ching (synonym: *Lycopodium alticola* Ching) which is distributed in the alpine habitats of southern China belongs to this section. Fraser-Jenkins (2008) considered *L. zonatum* Ching to be conspecific to *Lycopodium annotinum* L. subsp. *alpestre* (Hartm.) Á. Löve & D. Löve. Which is a synonym of *Spinulum subarcticum* (V. N. Vassil.) A. Haines.

However, Type and specimens of *L. zonatum* from China (Dr. Nawal Shrestha, personal communication, 2015) and India (listed below) consistently showed entire leaves (teeth were completely absent) while minute dentations were present in the leaf margin of HolotypeLE01006327http://www.binran.ru/collections/zoom_image.asp?ID=1250804199887893_1.j(pg)andIso type(LE01006328;http://www.binran.ru/collections/zoom_image.asp?ID=1250804199950706_1.jpg) of *S. subarcticum*. Leaf serration is a non-plastic character (Bradshaw, 1965) which out rules the possibility that environmental factors may have contributed to its development. Considering this morphological difference, I can infer that these two taxa belong to different species lineages and are not conspecific as accepted by Fraser-Jenkins (2008). Based on this finding, I recognize *L. zonatum* as a species different from *S. subarcticum* and transfer it to *Spinulum*. I provide a new combination herein.

2. New Combination:

2.1. *Spinulum zonatum* (Ching) Mazumdar ***comb. nov.***

Lycopodium zonatum Ching, Acta Bot. Yunnan. 4(3): 218. 1982. Type: CHINA. Xizang: Bomi, in silvis, 3700 m, *T. S. Yin & D. Y. Hong 1155* (Isotype, PE00034640 image!).

Lycopodium alticola Ching, Acta Bot. Yunnan. 4(3): 219. 1982. Type: CHINA. Xizang: Kongbu, Lusha chu, creeping over ground and rocks, amongst dwarf rhododendrons, 13000 ft. 11/06/1938, *F. Ludlow, G. Sherriff & G. Taylor 4777* (Holotype, PE00133996 image!).

2.2. Specimens examined:

INDIA. Sikkim: alt. 11000-14000 ped., *J.D. Hooker s.n.* (CAL Acc. No. 29499); Uttarakhand: Kumaun, bogdwal bugyal, 3200-4500 m, 21/06/1958, *T. A. Rao 7123* (CAL Acc. No. 8509); Furkia/Pindari Moraine, 3500-5000 m, 23-24/09/1957, *T. A. Rao 4505* (CAL Acc. No. 8637, 10260, 10065).

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