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Research Article

NOTE ON ABERRANT FORM HAVING SORI ON STERILE LAMINA IN *BOTRYCHIUM LANUGINOSUM* WALL. EX HOOK. & GREV. (OPHIOGLOSSACEAE)

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ABSTRACT
Botrychium lanuginosum Wall.ex Hook. & Grev. is simple, tri-quadripinnate, dimorphic fern of family Ophioglossaceae. Plant with aberrant form showing sori on sterile lamina was collected from Barlowgang near Jharipani. A brief note on its report and possible cause of its formation is discussed here.

Keywords: *Botrychium lanuginosum, Aberrant Sori, Sterile Lamina*

INTRODUCTION
The genus *Botrychium* Sw., (moonwort) has an almost cosmopolitan (Copeland, 1947) distribution in the subtropical, temperate and polar regions. The genus is represented by about 45-55 species (Clausen, 1938; Wagner, 1990) of which 19 species (Sahashi, 1999) occur in Asia. Seven species of genus *Botrychium* Sw. were reported from India (Beddome, 1883; Clarke, 1880; Hope, 1899-1904; Dixit, 1984; Khullar, 1994; Fraser-Jenkins, 2008; Kholia, 2012).
Botrychium lanuginosum Wall.ex Hook. & Grev. is usually terrestrial but some plants grow epiphytically on tree trunk in dense forests. This species is occurring at hilly regions in India, Ceylon, Southeast Asia, South western China and Formaosana. The species is characterized by presence of fertile spike usually above the base of the sterile lamina (Kato & Sahashi, 1977).
Morphological variation *viz.,* forking, dichotomy, abnormality in pteridophytes were studies by various worker's from time to time (Tryon, 1938; Wagner, 1952; Kramer, 1987; Bower, 1926; Chrysler, 1925, 1926). From India several reports on morphological variations in number of species in genus *Adiantum, Athyrium, Ctenopteris, Dicranopteris, Lepisorus, Pyrrosia, Phymatopteris, Polystichum* and *Pteris* were made by Singh (1931), Kashyap and Mehra (1933), Punetha (1979), Punetha & Kholia (1991), Pande & Pande (1991, 1993), Khare (1995), Pande (2003), Kumar *et al.,* (2013). The scrutiny of these works reveals that till date not any report on morphological variation and aberrant forms in the genus of family Ophioglossaceae were documented in India. Recently, Punetha *et al.,* (2009) reported formation of abnormal spike in *Ophioglossum reticulatum* L., a plant material collected from Pithoragarh district of Uttarakhand.

MATERIALS AND METHODS
During the plant collection and survey conducted at Barlogang, enroute to mossy fall, Mussoorie area of district Dehradun, Uttarakhand the authors collected an interesting plant material of *Botrychium lanuginosum* which shows presence of sori on tropophore. This material (Uttarakhand, Mussoorie, Barlowganj, enroute to Mossy falls, 120818, 13.09.2016, A. Srivastava, P.Joshi and B. Kumar) is deposited at Herbarium, Botanical survey of India, Northern Regional Centre, Dehardun (BSD).

RESULTS AND DISCUSSION
Bower (1962) studied and described various abnormal modification in the leaf and formation of accessory parts, such as doubling of the sterile blade, or increase in number of the fertile spikes, abnormalities involving the distribution of the sporangia in family ophioglossaceae including genus *Botrychium, Ophioglossuum* and *Helminthostachys*. Chrysler (1925, 1926) documented the observation on the abnormal forms of the fern genus *Botrychium* and other genus in field and herbarium. He described three classes of abnormalities in genus *Botrychium viz.*, 1. Branching or duplication of the fertile spike, as a

result: (a) Splitting or chorisis (b) Wide separation of an ordinary branch. (c) Reversion; 2. Occurrence of Sporangia on Pinnae ordinary sterile; 3. More or less complete sterilization of the fertile spike. In the light of these variations Chrysler considered *Botrychium lanuginosum* a highly variable species of the genus after *Botrychium lunaria*. Based on abnormal position of sori *Botrychium lanuginosum* var. *nepalense* Nair & Dixit (1981) was described, but no such species is recognized in which these changes have become permanent. The occurrence of sporangia on sterile lamina seems to be reversed to ancestral character. This report in this species is quite interesting for molecular and cytological investigations which may leads to understand the phylogeny of the species in future.

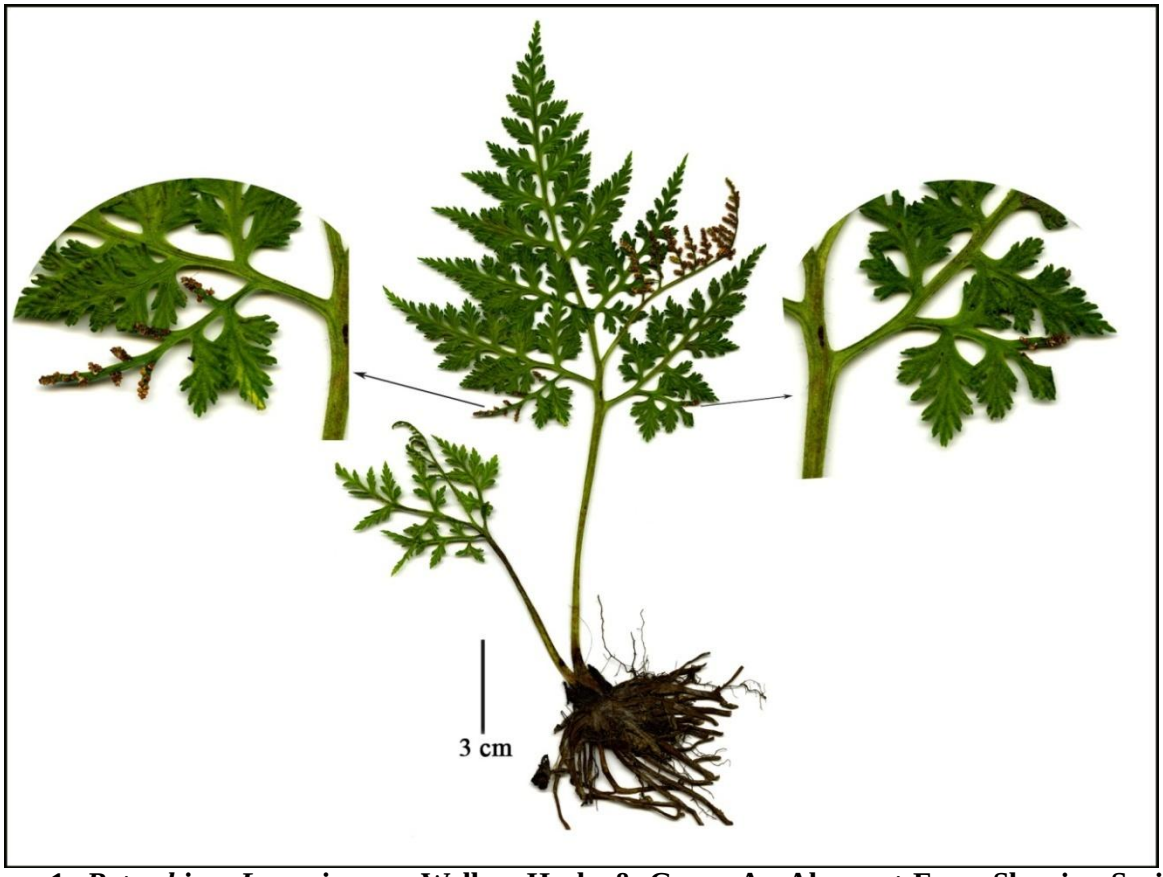

Figure 1: *Botrychium Lanuginosum* Wall.ex Hook. & Grev.- An Aberrant Form Showing Sori on Sterile Lamina

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