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Research Article

Pseudephemerum (Limb.) I. Hagen (Dicranaceae, Dicranales, Bryopsida) A new generic record to Peninsular India.

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Abstract: *Pseudephemerum* (Limb.) I. Hagen, represented *by P. nitidum* (Hedw.) Loeske, collected from the forests of Banda Village, Visakhapatnam district, Andhra Pradesh is a new generic record to Peninsular India.

Keywords: *Pseudephemerum*; Generic record; Peninsular India.

Introduction

The Peninsular India comprises eight states viz., Andhra Pradesh, Goa, Karnataka, Kerala, Maharashtra, Odisha, Tamil Nadu and Telangana and one union territory, Pondicherry. Bounded by Indian Ocean on south, Vindhyan Mountains in the north, Bay of Bengal in the east and Arabian sea in the west, geographically the region is divided into Deccan Plateau, Eastern Ghats and Western Ghats (Singh and Jayanthi, 2012). The Deccan Plateau is the largest Plateau in India. The Western Ghats cover an area of 1,64,280 sq. km, starts from south of the Tapti River and runs about 1600 kilometers, pass through the states of Maharashtra, Goa, Karnataka, Kerala and end at Kanyakumari in Tamil Nadu (Nayar *et al.,* 2014). The Eastern Ghats are an assemblage of discontinuous hill ranges located down the east side of Peninsular India and the ranges cover an area 75,000 km^2, which passes through the states of Odisha, Andhra Pradesh, Telangana, Tamil Nadu and small portions of Karnataka (Sreenath and Rao, 2019). The study area, Andhra Pradesh is the seventh largest state in Indian union covering about 162, 970 km^2 and lies between 12°37′ and 19^o 25′ N. Latitude and 76^o 45′ and 84^o 72′ E. Longitude. Altitude ranges from sea level to 1690 m. The state comprises 13 districts; four of them constitute Rayalaseema region and nine districts, Coastal Andhra. Of the total geographical area, 17.86% is under forest cover (FSI, 2019).

Past studies on bryoflora of different regions in Peninsular India include: Mosses of Eastern India (Gangulee, 1969-1980); India (Dandotiya *et al.,* 2011); Moss flora of India (Alam 2015); Moss flora of Central India (Alam *et al.,* 2015); Western Ghats of Maharashtra (Magdum *et al.,* 2017); Bryophytes Karnataka (Singh and Singh *et al.,* 2018); Kerala (Bryophytes of Kerala, 2020; Tamil Nadu (Daniel *et al.,* 2010); Odisha (Mishra *et al.,* 2016) and Andhra Pradesh Rao *et al.,* (1999); Sowghandika (2010); Sandhya Rani et al. (2011a, 2011b & 2012); Sowghandika *et al.,* (2011); Pullaiah *et al.* (2012) and Sandhya Rani *et al.,* (2014).

As a part of our explorations in Andhra Pradesh for bryophytes, during 2017 we could collect some curious acrocarpus moss plant specimens from Banda Reserve forest, Near Varaha River, Visakhapatnam district, Andhra Pradesh. Critical examination of the specimens revealed its identification with *Pseudephemerum nitidum* (Hedw.) Loeske.

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The genus *Pseudephemermum* (Limb.) I. Hagen of the family Dicranaceae, comprise four species (World Flora Online, 2020). In India, it is represented by one species, *Pseudephemerum nitidum*, recorded only from Assam and Eastern Himalayas (Dandotiya *et al.,* 2011; Alam 2015). Perusal of published literature (Daniels, 2010; Dandotiya *et al.,* 2011; Sandhya Rani *et al.,* 2014; Alam 2015; Alam *et al.,* 2015; Mishra *et al.,* 2016; Magdum *et al.,* 2017; Singh *et al.,* 2018; Bryophytes of Kerala, 2020) revealed that the genus *Pseudephemerum* (Limb.) I. Hagen is not recorded from any locality in Peninsular India till date and hence our collection *P.nitidum* (Hedw.) Loeske representing the genus, form a new distributional record for Peninsular India.

Materials and Methods

The plant material was collected by scraping, using manually bent and sharped flat spoon and collected specimens were placed in zip-lock polythene cover with labeled field number. Collected material brought to the laboratory, made it air dried at room temperature and preserved them in brown paper packets (12 × 18 cm) with detailed label (10 × 17 cm) (Bridson and Forman, 1989). Field observations were recorded in the field notes. Critical examination of the specimens was done by using temporary slides and plant parts were separated by using micro forceps (Varin) VR-15 curved, VR-11 straight with fine sharp edges. Slides were observed under light microscope (Olympus CH20i), light stereo microscope (Olympus SZ61) and micro measurements were taken by using ocular micro meter (ERMA) 19 mm, 100 segments in 1cm. Photographs were taken by using Moto g3 turbo and Samsung on6 equipped with 13 MP camera with 4xwide digital zoom, different dimensions were measured and identi-fication of the specimens by using standard floras.

Descriptions, habitat and ecology, voucher specimens, field and microscopic photographs were provided for the species. (Figure 1,2,3). Voucher specimens are deposited in Sri Krishnadevaraya University Herbarium (SKU) Anantapuramu (Figure 4).

Results

Technical description:

Pseudephemerum nitidum (Hedw.) Loeske, Stud. Morph. Syst. Laubm. 75 1933; *Pleuridiella colei* H. Roxb, J. Hattori Bot. Lab. 27: 125 1964; *P.colei* H. Rohinson, Gangulee Mosses E. India, 1(1): 184–185 1969. (Figure 1).

Plants very small, gregarious, loosely tufted to caespitose, yellowish green. Stem short, 0.4–2 mm, usually unbranched, rarely branched, rhizoids sparse, densely foliose. Leaves few, erect to flexuous when dry, reflexed to recurved when moist, lanceolate with sheathing base, upper and perichaetial leaves linear-lanceolate, tip elongated narrowly acuminate, 1.6- 2 × 0.18 - 0.3 mm, margins narrowly revolute, upper leaf margin serrulate by the projecting cell tips, sub marginal cells as well as cells on the costa surface similarly with projecting cell tips. Leaf basal and middle cells elongate to rectangular, basal cells more elongated 40-100 × 12-25 µm; middle cells slightly elongated 17-22 × 11-14 µm, apical cells short rectangular 11-14 × 11-14 µm. Costa, coarse, shortly excurrent. Sporophytes present on apical portion of the stem. Seta very short (5 - 6 seta were observed). Capsule immersed in perichaetial leaves, yellowish green when young and without spore's yellowish brown to brown when mature with spores, rounded to spherical 750-820 × 720-750 µm; apical cells inflated, stomata distributed round the base. Calyptra very small, mitriform to conical. Spores rounded, rarely elliptical 25-30 µm in diameter, pale brown to dark brown when mature, spore surface slightly papillose.

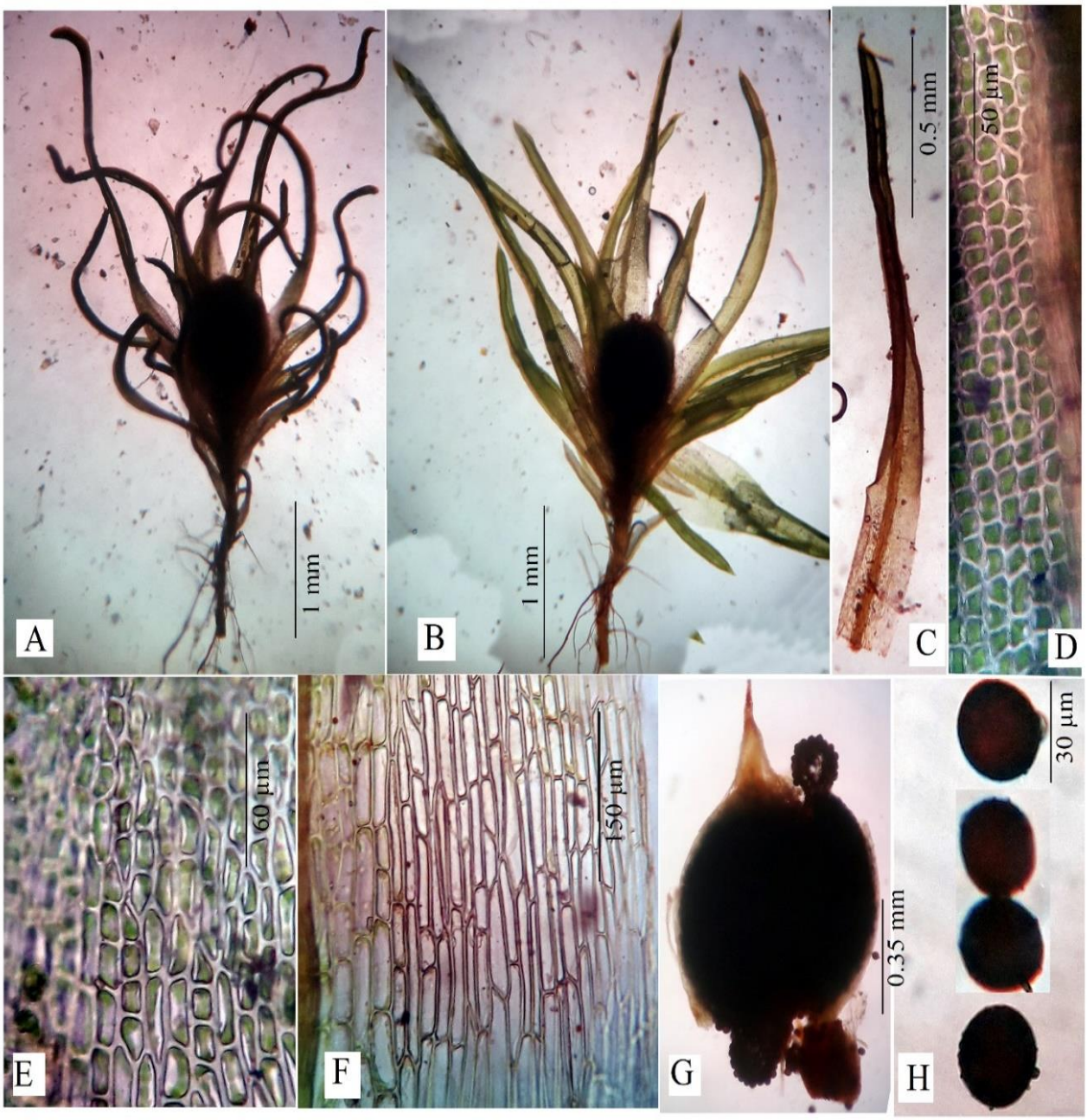
Habitat and ecology: Terrestrial forms, on wet rocks, found near agricultural grass lands and

along river banks, as mono dominant plant or sometimes associated with *Barbula indica*.

Specimens examined: India, Andhra Pradesh, Visakhapatnam district, Banda Reserve Forest, Near Varaha River, 17 December 2017, 53957, SKU, Boyina Ravi Prasad Rao & Ananthaneni Sreenath (Figure 1 & 4).

Distributions: **World**: Australia, Brazil, Canada, Domestic Republic of the Congo, Japan, Kenya, Macedonia, Madagascar, Mexico, Nepal, New Zealand, Republic of the Congo, Reunion, Rwanda, Sri Lanka, Tanzania, Uganda, United States, Zaire and In **India**: Assam and Eastern Himalaya (Figure. 2 & 3).

Figure 1: *Pseudephemerum nitidum* (Hedw.) Loeske



Legends in the figure.1: **A**. Dry plant; **B.** Wet plant; **C.** Leaf; **D.** Leaf apical cells; **E**. Leaf middle cells; **F**. Leaf basal cells; **G**. Capsule with calyptra and **H**. Spores.

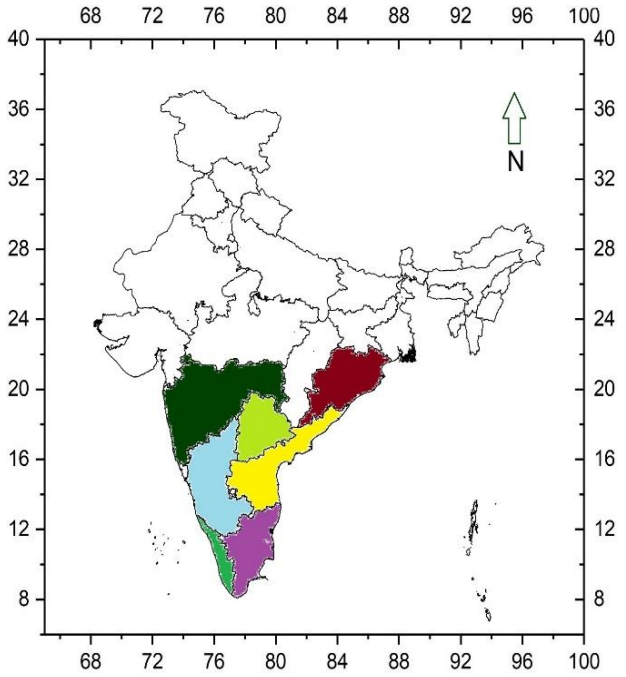


Figure 2 : Colored map representing Peninsular India.

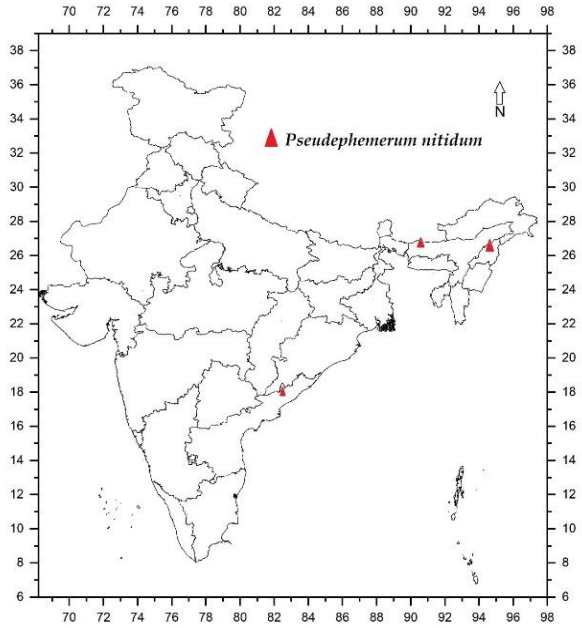


Figure 3: Map showing Distribution of *Pseudephemerum nitidum* in India.

Conservation Status: Least Concern (IUCN, 2020).

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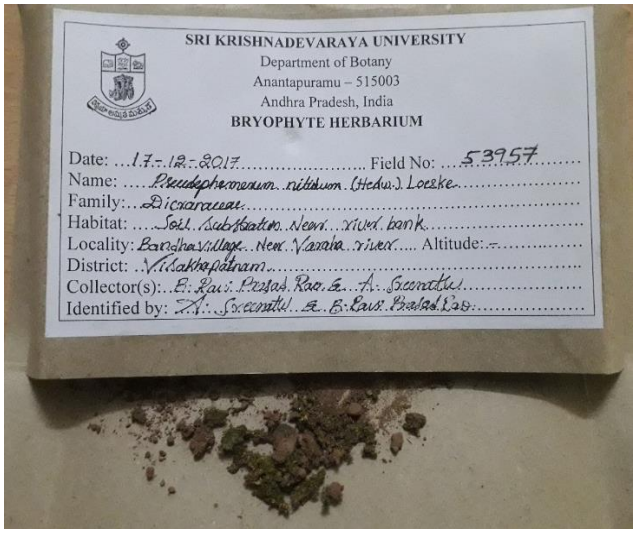
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BRYOPHYTE HERBARIUM
Date: 17-12-2017 Field No: 53957
Name: Pseudephemerum nitidum (Hedw.) Loeske
Family: Dicranaceae
Habitat: Soil, Substratum, Near river bank
Locality: Bandha Village, Near Varaha river Altitude: –
District: Vizakhapatnam
Collector(s): B. Ravi Prasad Rao & A. Sreenathu
Identified by: A. Sreenathu & B. Ravi Prasad Rao

Figure 4. Herbarium image of *Pseudephemerum nitidum.*

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