

Journal homepage: www.sciencearchives.org

ISSN: 2582-6697

<http://dx.doi.org/10.47587/SA.2021.2315>

Original Research Article



Neckeropsis undulata (hedw.) Reichardt (Neckeraceae, Hypnales, Bryopsida), a new distributional record to Bryoflora of India

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Received: Aug 20, 2021 / Revised: Sept 20, 2021/ Accepted: Sept 28, 2021

Abstract

Neckeropsis undulata (Hedw.) Reichardt (Neckeraceae), a pleurocarpous moss collected from the semi-evergreen forest of Visakhapatnam district, Andhra Pradesh, is a new distributional record to India.

Keywords *Neckeropsis*, Moss, Bryoflora of India, New Record.

Introduction

Part of our explorations on Bryoflora of Andhra Pradesh in 2017, we collected few curious pleurocarpous moss plant specimens from Ice Waterfalls located in semi-evergreen forests of Sileru in Visakhapatnam district. Critical investigation of these specimens revealed that they belong to *Neckeropsis undulata* (Hedw.) Reichardt.

The genus *Neckeropsis* Reichardt of the family Neckeraceae. The genus *Neckeropsis* Reichardt comprise 54 species and in India it is represented by nine species (Alam, 2015). A perusal of literature (Chopra, 1975; Gangule, 1974-77; Dandotiya et al., 2011; Sandhya Rani et al., 2014 and Alam, 2015) revealed that the present collection of *Neckeropsisundulata* form a new distributional record to India and represent a new genus for the state of Andhra Pradesh.

Materials and methods

The plant material was collected by using sharp-edged knife specimens found on the moist tree trunk. The collected specimens were put in a zip-lock polythene cover with labeled field numbers. Field observations were recorded in the field notes. Collected material brought to the laboratory, air-dried at room temperature and preserved in brown paper packets (12 x 18 cm) labeled with the filled label (10 x 17cm). Critical investigation of the specimens was done by using temporary slides and plant parts were divided by using micro

forceps (Varin) VR-15 curved, VR-11 straight with fine sharp edges. Slides were observed under the light microscope (Olympus CH20i) and sizes were taken by using an ocular micrometer (Erma) 19 mm, 100 segments in 1 cm. Photos were taken by using Moto g3 turbo equipped with 13 MP camera, 4x wide digital zoom, different dimensions were measured and identification of the specimens by using standard floras. Description, phenology, distribution, voucher specimen information, microscopic photos are provided for the species and a world distribution map was prepared using Origin 2017 software. Voucher specimens are deposited in the Sri Krishnadevaraya University Herbarium, (SKU) Ananthapuramu. Acronyms used for the collectors are AS (Ananthaneni Sreenath) and BR (B. Ravi Prasad Rao).

Results

Technical Description

Neckeropsis undulata (Hedw.) Reichard., Reise Novara 1: 181 1870 (Fig. 1 & Map 1).

Epiphytic, small to medium-sized plants, up to 6 cm long, secondary stems dendroid to 3 cm, pale green to dull green, rarely dark green, brown below near at rhizoids, and black to purple-tinged. Plants irregularly, freely, pinnately branched, up to 1 cm long, foliose stems and branches more or less complanate when dry and more complanate when moist, soft to slightly stiff when moist and slightly stiff to stiff when dry.

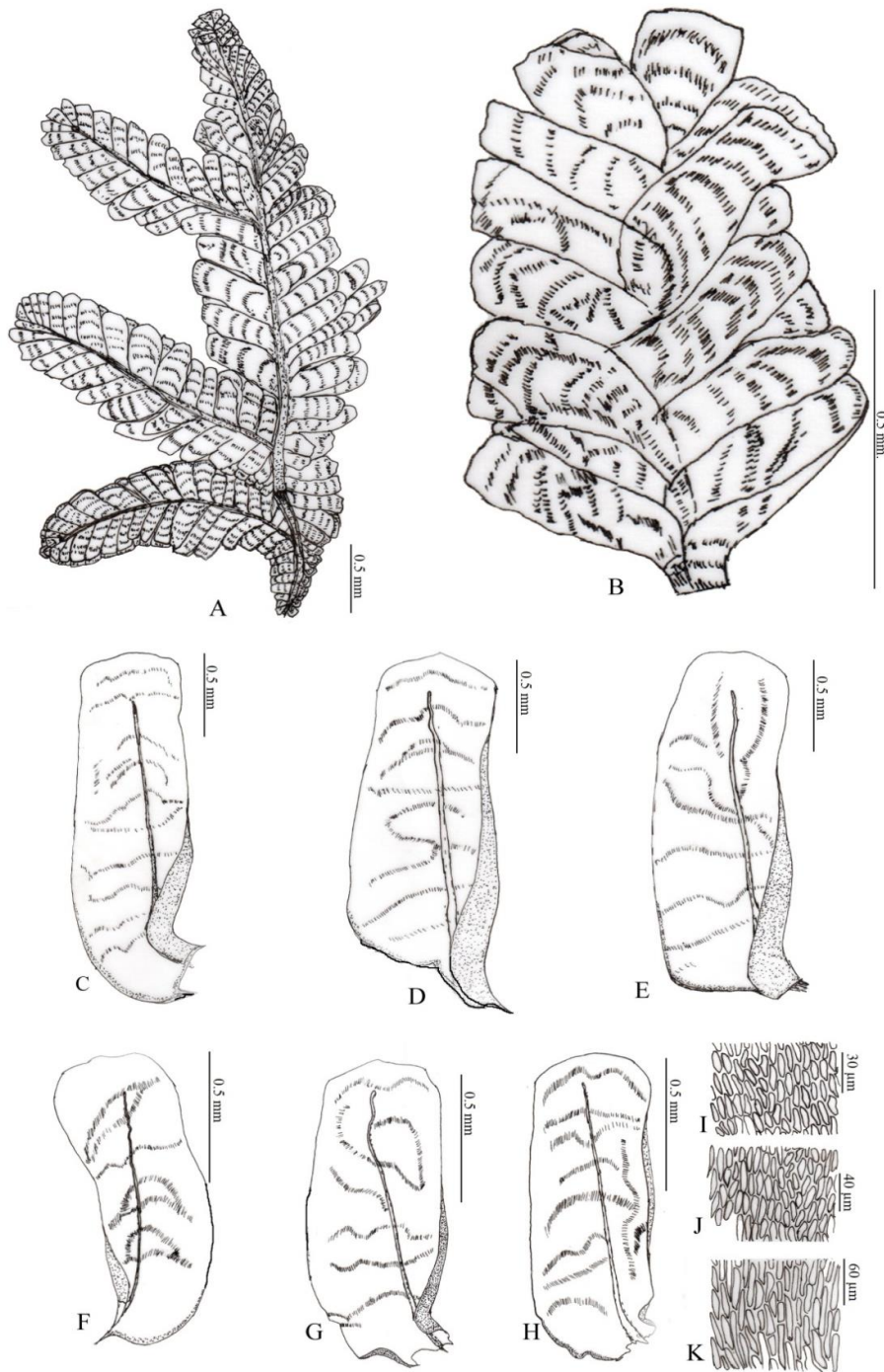
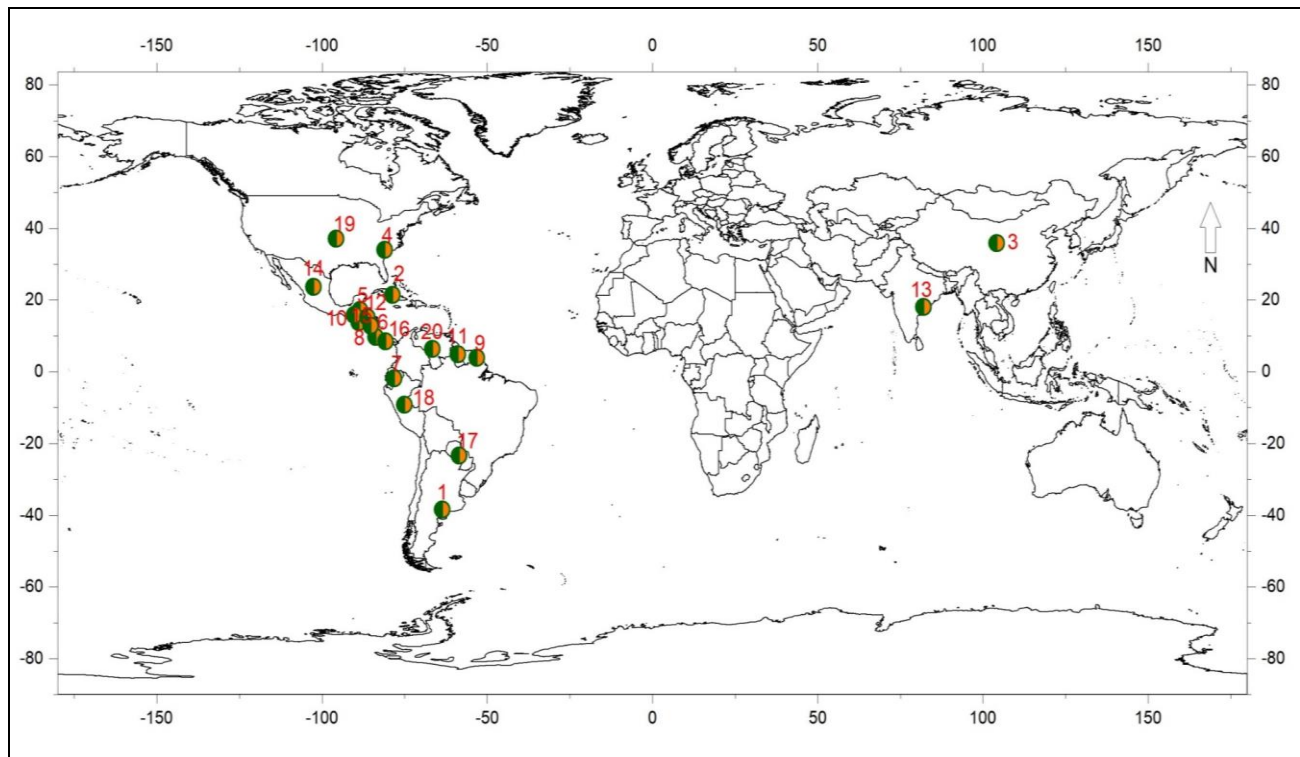


Fig.1 A. Single erect branch, B. Elongated view of a portion of branch, C, D & E. Stem leaves, F, G & H. Branch leaves, I. Elongated leaf apical cells, J. Elongated leaf middle cells and K. Elongated leaf basal cells.



Plate 1. A. Dried Branch, B & C. Wet Branches, D & E. Magnified view of a portion of branch, F-H. Stem Leaves, I-L. Branch Leaves, M-P. Magnified view of different types of leaf tips, Q. Stem leaf basal cells, R. Stem leaf middle cells, S. Stem leaf apical cells, T. Branch leaf apical cells, U. Branch leaf middle cells and V. Branch leaf basal cells.



Map 1. 1. Argentina, 2. Belize, 3. Caribbean, 4. China, 5. Colombia, 6. Costa Rica, 7. Ecuador, 8. El Salvador, 9. French Guiana, 10. Guatemala, 11. Guyana, 12. Honduras, 13. India, 14. Mexico, 15. Nicaragua, 16. Panama, 17. Paraguay, 18. Peru, 19. United States and 20. Venezuela.

Leaves 4-6 rows arranged in an overlapping manner. Stem leaves and branch leaves are slightly differentiated with size, color, and shape, older stem leaves somewhat smaller, less complanate, and undulates in moist and dry conditions, younger stem, and branch leaves strongly complanate, mostly wide-spreading. All leaf bases curved. Stem leaves 1.5 - 2.1 mm × 0.3 - 0.7 mm, obovate to oblong-ligulate, undulate in both moist and dry conditions, rounded to truncate at apex, clasping, broadly cordate to slightly auriculate at the base. Leaf margin entire and sometimes slightly serrulate at the apex. Branch leaves 1.2 - 1.7 mm × 0.5 - 0.8 mm, obovate, elliptic to oblong-ligulate and undulates in moist and dry conditions, rounded to truncate at apex, clasping, slightly cordate to auriculate at base, leaf margin entire at the base, and slightly crenulate to serrulate at the apex and Inflexed below one side of the leaf base. Costa is single, slender, reaching over two-thirds of the leaf length and ending just below the apex ca. 3/4 of the leaf length. Leaf cells irregularly hexagonal, smooth, thick-walled; basal cells irregularly elongated to hexagonal, 6 times as long as broad, 29.5 - 32.5 μm × 5 - 7.5 μm; middle and apical cells irregularly hexagonal, 3 times as long as wide, middle cells

18 - 20 μm × 5 - 7 μm; apical cells 12 - 15 μm × 3.8 - 5 μm wide. Sporophytes not seen.

Habitat and Ecology

Corticulous near water stream areas in moist deciduous forest, associated with *Homaliodendronexicum* (Neckeraceae) and other pleurocarpous mosses.

Specimens examined

India, Andhra Pradesh, Visakhapatnam District, near Siler, Ice waterfall, 26-11-2017, BR & AS 53844 A (SKU).

Distribution

World

Argentina, Belize, Caribbean, China, Colombia, Costa Rica, Ecuador, El Salvador, French Guiana, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, United States, and Venezuela; India: Andhra Pradesh State.

Acknowledgments

Authors thank Andhra Pradesh Forest Department for permission for fieldwork.

Conflict of Interest

The author hereby declares no conflict of interest.

Funding support

The author declares that they have no funding support for this study.

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How to cite this article:

Sreenath, A. and Rao, B. R. P. (2021). Effect the alcoholic *Neckeropsis undulata* (hedw.) Reichardt (Neckeraceae, Hypnales, Bryopsida), A new distributional record to Bryoflora of India. *Science Archives*, Vol. 2 (3), 245-249. <http://dx.doi.org/10.47587/SA.2021.2315>