GENUS COLOLEJEUNEA (SPRUCE) SCHIFFN. IN NILGIRI HILLS (WESTERN GHATS)

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ABSTRACT

The present paper deals with the status of the Cololejeunea (Spruce) Schiffn. in Nilgiri hills of Western Ghats. Till date the genus is represented in Nilgiri hills by 5 species Cololejeunea nilgiriensis G. Asthana & S. C. Srivast., C. latilobula (Herzog) Tixier, C. minutissima (Sm.) Schiffn. C. appressa (A. Evans) Benedix and C. pseudofloccosa (Horik.) Benedix. Recent investigations have however, shown the presence of two more species, C. udarii G. Asthana & S. C. Srivast. and C. cardiocarpa (Mont.) A. Evans.

Keywords: Bryophyta, Cololejeunea, Hepaticae, Nilgiri hills, Western Ghats.

INTRODUCTION

The Nilgiri hills of Tamil Nadu is considered to be one of the treasurer houses of the bryo-diversity including Hepaticae, Anthocerotae and Musci not only in Western Ghats but also in entire peninsular India. Due to the tropical and subtropical climate, coupled with physical and biotic factors, the area is well suited for the growth and differentiation of Lejeuneaceae, Jubulaceae and Porellaceae. The family Lejeuneaceae has maximum generic as well as species diversity in Nilgiri hills. The genus Cololejeunea (subfamily Cololejeuneoideae) is frequently distributed in tropical and subtropical part of the world and mostly found as epiphytic population more commonly as folicolous (epiphyllous) form and less so corticolous (Pócs, 1982). The genus is one of the most delicate among the hepaticae and is characterized by hyaline nature of leaf, lack of underleaves and highly reduced stem anatomy (i.e. comprising only single medullary cell surrounded by cortical cells) and asexual reproduction by means of discoid gemmae occurring exogenously on leaf surface. In India the genus has a rich diversity with 30 validly recognized species. The South Indian territory is represented with 22 species of which 5 species are known from Nilgiri, Cololejeunea latilobula (Herzog) Tixier, C. nilgiriensis G. Asthana & S. C. Srivast., C. minutissima (Sm.) Schiffn., C. appressa (A. Evans) Benedix and C. pseudofloccosa (Horik.) Benedix (Asthana & Srivastava, 2003). During a recent exploration in the area two more species of genus Cololejeunea, C. cardiocarpa (Mont.) A. Evans, and C. udarii G. Asthana & S. C. Srivast. were collected from Nilgiri hills making a total of 7 species in the area. The paper also discusses the peculiarities of the species with range of distribution in India as well as abroad.

Key to subgenera and species of genus Cololejeunea

1a. Plants small (up to 2 mm long), fragile in nature; leaves distantly arranged
    ...Cololejeunea subgen. Aphanolejeunea (C. nilgiriensis)

1b. Plants medium to long (4 mm to 16 mm long); branching thecal, Lejeunea type, leaves sub-imbricate to closely imbricate

2a. Leaves with dimorphic leaf-lobule, ligulate or inflated; leaf-lobe margin with elongated, hyaline cells
    ...Cololejeunea subgen. Pedinolejeunea...3

2b. Leaves with monomorphic leaf-lobule, only inflated, ligulate lobule absent, leaf-lobe margin crenate (hyaline cell always absent)

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3a. Marginal hyaline cells of leaf-lobule elongated (finger like projection); in cluster at the tip of apex ...*C. cardiocarpa*

3b. Marginal cells of leaf-lobule rectangular, present all along the margin...4

4a. Leaf-lobule lingulate to triangulate, with defined first tooth, while second tooth absent ...*C. latilobula*

4b. Leaf-lobule variable, lingulate to inflated, with distinct first and second tooth ...*C. udarii*

5a. Dorsal pappilosity on leaf-cells absent, plants loosely appressed ...*Cololejeunea subgen. Leptocolea* (*C. minutissima*)

5b. Dorsal pappilosity on leaf-cells well developed and prominently present throughout all the leaves, plants closely appressed *Cololejeunea subgen. Taeniolejeunea ...*6

6a. Vitta present, first tooth larger than second tooth ...*C. appressa*

6b. Vitta absent, second tooth larger than the first tooth *C. pseudofloccosa*


*Type locality*: India (Tamil Nadu-Avalanche).

*Range*: Endemic to India (Nilgiri hills).

*Distribution*: India : South India: Tamil Nadu-Nilgiri hills (Avalanche, Ebanadu, Ketabettu (see also Asthana and Srivastava, 2003)).


The species was recently instituted species from Avalanche, Nilgiri hills (Asthana & Srivastava, 2003) and been recently collected from Coonoor (Ketabetu), a new locality from the area. The species is characterized by distantly arranged leaves with crenate margin of leaf lobe and dorsal pappilosity.


*Type locality*: North America (Cuba).

*Range*: Australia, Africa, Central & South America and Asia (see also Wigginton & Grolle, 1996; Verma, 2005).

*Distribution*: India : South India: Kerala-Murukkaddy; Tamil Nadu-Palni hills-Kodaikanal (Periyakulam, Perumalmalai) (see also Asthana & Srivastava, 2003), Nilgiri hills-Singara Tea Estate.


This species is a new addition to liverwort flora of Nilgiri hills, collected from Coonoor and easily separable from other species of *Cololejeunea* subgen. *Pedinolejeunea* in having finger like elongated non-chlorophyllous cells present at the tip of leaf - lobe. The species was earlier known from Kerala (Murukkaddy) and Tamil Nadu (Palni hills: Periyakulam, Perumalmalai) in south India (Asthana & Srivastava, 2003)


*Type locality*: China.

*Range*: Africa and Asia (see also Asthana & Srivastava, 2003).


Initially this species was reported from India as *Leptocolea himalayensis* (= *Cololejeunea himalayensis*) by Pande and Misra (1943) from Uttarakhand. It is and extensively distributed in all four major bryogeographical regions of the country. Recently Zhu and So (2001) reduced it as synonymies under *Cololejeunea latilobula* (see also Asthana & Srivastava, 2003).


Type locality: India: Karnataka (Jog falls).

Range: Endemic to India.


*Cololejeunea udarii* instituted from Jog falls, Karnataka (Asthana & Srivastava, 2003), shows an extended range of distribution in Nilgiri hills (Avalanche). The species is characterized by hyaline marginal cells present only along the antical margin and dimorphic leaf-lobule (lingulate to inflated).


Type locality: Great Britain.

Range: Australia, Africa, Asia, Europe, North and South America (see also Asthana & Srivastava, 2003; Mizutani, 1980, 1984).

Distribution: India: Eastern Himalaya: Meghalaya-Shillong (Vishnupur); West Bengal. South India: Karnataka-Mercara; Kerala-Thekkady, Murukkaddy, Trivandrum; Tamil Nadu-Nilgiri hills (Parson’s valley, Emerald, Kendurai, Government Botanical Garden, Avalanche; Palni hills-Kodaikanal.


This species was earlier reported from Nilgiri hills as *Lejeunea minutissima* (Mitten, 1861). Now it is one of the most abundant species of the genus in Nilgiri hills and seems closer to genus *Microlejeunea*, especially *M. ulicina* (Lejeuneoideae) because of its nature of appearance. The species is characterized by small plant, bidentate inflated leaf-lobule, with 2 celled first tooth.


Type locality: Taiwan.

Range: Australia and Asia (see Zhu & So, 2001).

Distribution: India: Eastern Himalaya: Arunachal Pradesh-E. Siang, Shimar forest; Sikkim; West Bengal-Darjeeling (Rimbic); Meghalaya-Cherrapunji. South India: Tamil Nadu-Nilgiri hills (Avalanche, Coonoor) (see also Asthana & Srivastava, 2003; Verma, 2005).


*Cololejeunea pseudofloccosa* was recently reported from Avalanche, Nilgiri hills (Asthana & Srivastava, 2003). The species is characterized by leaf lobule morphology where the first tooth of leaf-lobule is crossed over by the second tooth.

Type locality: Jamaica.

Range: Africa, Asia and South America (see also Zhu & So, 2001).

Distribution: India: Eastern Himalaya: Meghalaya-Cherrapunji, Shillong (Elephant falls); West Bengal – Darjeeling, Jorpokhri. South India: Karnataka-Agumbe, Jog falls; Tamil Nadu-Nilgiri hills [Kotagiri (Shollarmattum), Gudulur (Naduvattam reserve forest), Ootacamund (Ebanadu), Upper Bhavani (Avalanche)]; Palni hills-Kodaikanal, (Perumalmalai); Andaman and Nicobar Isl. (see also Asthana & Srivastava, 2003).


The species was initially reported from Avalanche, Nilgiri hills (Asthana & Srivastava, 2003). It has also been collected from Gudulur and Coonoor. The species is characterized by 4 celled uniseriate vitta and papillosity of the leaf.

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REFERENCES


