

## LIVERWORTS AND HORNWORTS OF KAS PLATEAU

S. A. BAGAWAN AND B. A. KORE\*

Department of Botany, Yashvantrao Chavan Institute of Science, Satara - 415 001(M.S) INDIA

E-mail: basavaraj.kore@rediffmail.com

### KEY WORDS

Liverworts  
Hornworts  
Kas plateau

### Received on :

12.10.11

### Accepted on :

07.03.12

\*Corresponding  
author

### ABSTRACT

This paper reports for the first time, distribution of liverworts and hornworts of Kas plateau. It includes 20 species belonging to 12 genera, 8 families and 3 orders. *Riccia*, *Cythodium*, *Plagiochasma*, *Astrella*, *Fossombronia*, *Solenostoma*, *Anthoceros* and *Notothylas* were very common while *Cryptometrium* and *Porella* were very rare genera in the study area. This diversity needs to be conserved against anthropogenic pressure.

### INTRODUCTION

Presently, Western Ghats is experiencing tremendous physiognomic changes. Due to rapid urbanization and pressures inflicted by the inexorable growth of human population, forests have succumbed to heavy deforestation, forest fires, landslide, pollution, mass harvesting by professionals and other anthropogenic activities. Therefore, there is an urgent need to protect this unique flora of our fragile Western Ghats ecosystem (Saxena and Saxena, 2005).

Bryophytes form an important and striking part of the cool and humid regions of Western Ghats. They are found on various artificial substrata in and around hills and plateaus of Western Ghats (Daniels and Kariyappa, 2007).

Hepatics, the pioneer invaders of barren hills and plateaus provide seed bed to other vegetation, retain moisture and add organic matter to make environment congenial for forest establishment. Bryophytes play a key role in the formation of natural biotic community. They are indicators of unpolluted environment in forest ecosystem and health of forests (Frego, 2007).

Though they form the minor component of the total biomass, they play an important role in nutrient cycling. They are of immense use in biomonitoring and phytoremediation studies (Saxena and Harinder, 2004).

Bryological communities belong to comparatively small, fragile and disturbed ecosystems. Furthermore, the small size of individual plant increases their vulnerability due to human related activities and grazing of animals (Daniels and Kariyappa, 2007).

Due to ecological importance, sensitivity and vulnerability of bryophytes to changing environment, it is most essential to enlist bryophyte of a locality and revise it annually. There is need for a fresh check list by re-exploring various natural

habitats (Saxena and Saxena, 2005). The undisturbed habitats on plateau harbour healthy population of Bryophytes. However, till date we do not have any illustrated account of the bryophytes of Kas plateau. This necessitated immediate floristic studies. With this aim and first step in this direction, exploration of various natural habitats of Kas plateau was carried out for the last two years to document the Bryoflora.

### MATERIALS AND METHODS

Kas is a name of one of such 'Plateaus' located on western part of Satara District between 73°45' 3'' to 73°49' 40'' E L and 17°42' 20'' to 17°44' 30'' N L. The relative humidity is normally high during the monsoon period, sometimes being more than 90% that favours the growth of vegetation for longer period during the season. It has a mean annual temperature of 30°C maximum 18°C minimum and 24°C average (Anonymou, 1999).

A variety of bryophytes appear just after the first few showers of rains. Various natural habitats on Kas plateau were visited periodically for collection and photography of available specimens. Attempts were made to collect both gametophytes and sporophytes of specimens. Very little sample along with substratum was collected in polythene bags and other suitable small specimen bottles, field notes were taken at the time of collection to observe habit, habitat and association. The specimens were kept on wet bricks till identification in the laboratory. After washing they were examined for morphology and anatomy, sex organ, sporogonia, elaters, spores, rhizoid and scales. The important characters were photographed. The specimens were preserved in 4% Formaldehyde (Barve, 1992) and deposited in the Bryophyte herbarium of Botany Department of Yashvantrao Chavan Institute of Science, Satara. The study was carried out from June 2008 to December 2009.

**Table 1: List of Hepatics of Kas plateau**

Family	Genus	Species	Habitat	Frequency
I)Ricciaceae	a) <i>Riccia</i>	<i>billarderi</i> Mount et.N.	On moist ground associated with moss.(Terricolous)	++++
	b) <i>Riccia</i>	<i>crystallina</i> L.	Common on moist soil.(Terricolous)	++
	c) <i>Riccia</i>	<i>discolor</i> L.et.L	On moist soil.(Terricolous)	+++
	d) <i>Riccia</i>	<i>fluitans</i> L.	Aquatic, or terrestrial on the banks of streams and slow running water. (Terricolous)	+++
II)Targioniaceae	e) <i>Riccia</i>	<i>glauca</i> L.	On damp soil.(Terricolous)	++++
	f) <i>Targionia</i>	<i>hypophylla</i> (Mich)L.	Patches on moist ground.(Terricolous)	+++
	g) <i>Cythodium</i>	<i>tuberosum</i> Kash.	Terrestrial forming patches.(Terricolous)	++++
III)Marchantiaceae	h) <i>Plagiochasma</i>	<i>appendiculatum</i> L.et.L.	Thick patches on rocky ground and exposed walls. (Rupicolous)	++++
	i) <i>Plagiochasma</i>	<i>articulatum</i> Kash.	Wet exposed walls.(Rupicolous)	+++
	j) <i>Plagiochasma</i>	<i>intermedium</i> L.et.G.	On moist walls with <i>P.articulatum</i> .(Rupicolous)	+++
	k) <i>Plagiochasma</i>	<i>simlensis</i> Kash.	On rocky area and moist walls.(Rupicolous)	++++
	l) <i>Astellia</i>	<i>angusta</i> St.	Thick patches on wet walls.(Rupicolous)	++++
	m) <i>Astellia</i>	<i>reticulata</i> Kash.	In crevices of walls.(Rupicolous)	+++
	n) <i>Cryptometrium</i>	<i>himalayense</i> Kash.	Under dense shade of trees along with <i>Cythodium tuberosum</i> .(Terricolous)	+
	IV)Fossombroniaceae	o) <i>Fossombronia</i>	<i>himalayensis</i> Kash.	On moist rocks.(Rupicolous)
V)Lophoziaaceae	p) <i>Solenostoma</i>	<i>fossombronioides</i> Sch.	On moist soil.(Terricolous)	++++
VI)Lejeuneaceae	q) <i>Harpalejeunea</i>	<i>indica</i> St.	On tree trunk.(Corticolous)	+++
VII)Anthocerotaceae	r) <i>Anthoceros</i>	<i>erectus</i> Kash.	Dense clusters on damp soil. (Terricolous)	++++
	s) <i>Notothylas</i>	<i>levieri</i> Schiff(Ms).	On moist rocks. (Rupicolous)	++++
VIII)Porellaceae (Madothecaceae)	t) <i>Porella</i>	<i>platyphylla</i> L.	On rock and bark of tree.(Corticolous)	+

Frequent: + + + +, Abundant: + + +, Rare: + +, Very rare: +

Authentic literatures were used for identification of specimen (Wetson, 1968, Kashyap, 1972, and Shirke, 2002).

## RESULTS AND DISCUSSION

In the present study only Liverworts and Hornworts are reported. Among these a wide range of physiographic features were displayed on study site. A total of 20 species of hepatics were collected of which 18 are liverworts and 2 hornworts (Table 1). These 20 species belong to 12 genera, 8 families and 3 orders are reported for the first time from Kas plateau. A complete list of taxa collected during study, has been provided.

The present study indicates that Kas plateau is rich in bryophytes. Also at present the plateau is under threat due to anthropogenic activities. This anthropogenic pressure definitely affects the sensitive microhabitats of bryophytes which may lead to depletion of their population. Similar types of results were expressed by Daniels and Kariyappa (2007), Tanwir et al. (2008) and Dash and Saxena (2009). Taking these facts in account suitable conservation measures are essential to conserve the biodiversity of bryophytes of this area and plant wealth of our country.

## ACKNOWLEDGEMENT

Authors are thankful to the Principle Dr. Ashok Bohite, Dr. A. B. Pawar, Head, Botany Department for their consistent encouragement and providing necessary laboratory facilities

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