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RESEARCH ARTICLE

OCCURRENCE OF THE TWO ENDEMIC BAMBOOS IN NORTHERN WESTERN GHATS OF MAHARASHTRA, INDIA

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ABSTRACT

The two bamboo species namely *Dendrocalamus stocksii* Roxb. And *Munrochloa ritchiei* are reported as endemic to Western Ghats. The occurrence of both the species have been reported vaguely in Maharashtra, India. The places of occurrence with detailed geographical and GPS locations are provided. This is reported first time with details for both the species in Northern Western Ghats (Sahyadri).

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INTRODUCTION

Dendrocalamus stocksii (Munro) M. Kumar, Rameshand Unnikrishan (Synonym *Pseudoxytnanthera stocksii*) and *Munrochloa ritchiei* (Munro) Kumar and Ramesh (Synonym *Pseudoxytnanthera ritcheyi*) are the two endemic species of bamboo among 22 other endemic species to Western Ghats. (Seethalkshmi *et al*., 1998, Muktesh Kumar *et al*. (2011). *D. stocksii* (Munro) M. kumar ,Ramesh and Unnikrishnan was earlier known as *Oxytenethera stocksii* Munro. (1868). According to Verma and Bahadur (1989) it was later shifted to *Pseudotenanthera stocksii*. Naithani (1990) found it appropriate to shift it to *Pseudoxytnanthera stocksii*. In 2004, Muktesh Kumar *et al*. (2009) again shifted the species to *Dendrocalamus stocksii* (Munro) M. Kumar, Ramesh and Unnikrishnan, which was finally accepted and used by Annapurna *et al*. (2013) and Rane *et al*. (2014, 2015). Seethalkshmi *et al*. (1998) mentioned its appearance in coastal belts of Karnataka and it is basically cultivated in south Konkan and Goa of Central Western Ghats of India. It is very strong and semisolid bamboo occurring in Western Ghats. M. Kumar (2009) mentioned its endemism to Western Ghats with its appearance in northern Kerala, Karnataka along with Konkan coast of Goa and Maharashtra. Rane *et al*. (2014,2015) mentioned that it is endemic to Central western Ghats and occurs in Karnataka, Goa, Kerala and Maharashtra (in Ratnagiri and Sindhudurg districts). It occurs between 12 to17.5 North Latitudes. Generally, it occurs along the banks of water currents. Institute of wood Science and Technology (IWST) collected several biotypes of *D.stocksii* from Western Ghats from these areas.*Munrochloa ritchiei* (Munro) M.Kumar and Ramesh is a new genera erected by M.Kumar and Ramesh (2011), showing its differentiation from its old name *Pseudoxytnanthera ritcheyi* (Munro) Ohrnberger. Seethalkshmi *et al*. (1998) and M.Kumar (2008) mentioned its endemism to Western Ghats. Previous literature survey indicated that both the species are reported with vague locations in Northern Western Ghats but the specific locations are not reported for both the species. Various locations of Northern Western Ghats and other areas were visited repeatedly during *et al*., 2014-2017 to note the appearance of both the species in various parts of Sahyadri with specific places of occurrence. Kulkarni *et al*. (2001) reported its occurrence and the gregarious flowering of M. ritchiei from the foot hills of Rajgad fort near Velha, Pune district.

MATERIALS AND METHODS

For this study visits were organized in all the districts of the Northern Western Ghats during the period 2014-2017, for the search of occurrence and the availability of these two species.

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Table 1. Occurrence of *D.stocksii* in various districts of Northern Western Ghats and its abundance

District	Taluka	Abundance	District	Taluka	Abundence
Palghar	Dahanu	**	Sindhudurg	Kudal	****
	Palghar	**		Malvan	**
	Wada	**		Vengurla	**
	Javhar	***		Sawantwadi	**
	Vikramdad	**		Dodamarg	***
	Vasai	**		Kankavli	**
	Talasari	***		Vaibhavwadi	***
	Mokhada	***		Devgad	***
Thane	Thane	*	Kolhapur	Chandgad	****
	Kalyan	*		Ajra	****
	Murbad	**		Radhanagari	***
	Shahapur	**		Gagan Bavda	****
	Bhiwandi	**		Shahuwadi	***
	Ulhasnagar	*		Hatkangale	*
	Ambarnath	**		Kagal	*
Raigad	Pen	*		Karavir	*
	Roha	*		Panhala	**
	Alibaug	*		Shirol	*
	Murud	**		Bhudargad	**
	Panvel	***		Gadhinglaj	***
	Uran	*	Sangali	Shirala	**
	Karjat	**	Satara	Patan	***
	Khalapur	***		Karad	**
	Mangaon	**		Satara	***
	Tala	***		Wai	***
	sudhagad-Pali	**		Mahabaleshwar	*
	Mahad	***		Jaoli	***
	Poladpur	**	Pune	Bhor	****
	Shrivardhan	***		Velha	****
	Mhasala	***		Mulshi	****
Ratnagiri	Mandangad	**		Maval	**
	Dapoli	***			
	Khed	**			
	Chiplun	***			
	Guhagar	**			
	Sangameshwar	****			
	Ratnagiri	***			
	Lanja	****			
	Rajapur	***			

*occasional, ** noticeable, *** ample, **** abundant, **** everywhere.

Table 2. Occurrence of Munrochloa ritchiei at various places in northern Western Ghats

Occurrence of *Munrochloa ritchiei* at various places in Northern Western Ghats				
Sr. No.	District	Taluka	Location	MSL
1	Pune	Mulshi	Tamhini ghat	618.6
2	Pune	Mulshi	Wandre	815.49
3	Pune	Mulshi	Shedani	692.79
4	Pune	Bhor	Hirdoshi	812.79
5	Pune	Bhor	Hirdoshi forest	945.31
6	Pune	Velha	Rajgad Fort foot hills	936.14
7	Pune	Maval	Uksan Dam	635.65
8	Satara	Patan	Helwak	580.37
9	Satara	Patan	Walmik	673.3
10	Satara	Wai	Jor	950.49
11	Satara	Wai	Jambhali	756.73
12	Ratnagiri	Chiplun	Adare	65.73
13	Ratnagiri	Sangameshwar	Sakharpa	173.05
14	Kolhapur	Chandgad	Tilari Dam	1177.53

The exact locations were noted with recordings of GPS locations. In case of *D. stocksii* the abundance is noted Taluka wise according to the availability.

RESULTS

Dendrocalamus stocksii (Synonym Pseudoxytnanthera *stocksii*) is abundantly available in almost all the districts and Talukas of Northern Western Ghats. There are distinctly two types, locally known as Mes and Managa. It is observed that there are certain morphological and behavioral differences between these two locally separated types of *D.stocksii*.

Managa is available throughout the Northern WesternGhats. While Mes is restricted to the four Talukas of Pune District namely Bhor, Velha, Mulshi and Maval. In these areas Managa is also present but with very little number of clumps. Mes also has a biotype with harder and uneven nodes and named as Dofil. Dofil and Mes show the similarity in behavior except the internodal differences. This is totally cultivated bamboo along the homesteads as well as planted on sloppy private waste lands. One estimate shows that mes worth of Rs.125 crores worth harvested every year from the Bhor, Velha and Mulshi Talukas of Pune district (Bedekar, 2017). Table 1 provides the extensive list of locations of occurrence of both

the species available in various districts and Talukas of Northern Western Ghats (Sahyadri)

Munrochloa ritchiei (*Pseudoxytnanthera ritcheyi* Naithani): It is available in almost all the Districts of Northern Western Ghats with their geographical locations in isolated patches of forests. The table 2 provides the details of the occurrence of *M.ritchiei* in Northern Western Ghats (Sahyadri). It is also cultivated at some places. The planting material in such cases is received from the nearby forests.

Conclusion

This is the first extensive report on the occurrence of these two endemic bamboo species in Northern Western Ghats of Maharashtra. The village wise survey is required to get the potential of these bamboos in Northern Western Ghats (Sahyadri). The abundant availability of these species shows the scope for the future plantations for Soil conservation, Water harvesting and other ecological benefits. Both the species are present at various elevations in Sahyadri. The lowest elevation was at Adare (Chiplun) at 65.73 M and highest was at Chandgad (Kolhapur) at 1177.53 M.

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