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DIVERSITY OF THE MONOCOT CLIMBERS OF WEST BENGAL, INDIA

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ABSTRACT

The state of West Bengal has a diversified floristic composition which are explored by different workers but no comprehensive work has been undertaken on the Monocot climbers of the state. To fill up the lacuna the present work has been undertaken which reveals that occurrence of 60 species of Monocot climbers of the state belonging to 11 genera under 8 families. The maximum numbers of species have been recorded in the family Dioscoreaceae (19-species) followed by Smilacaceae (17-species). It is also noted that twiners are the predominating members (23-species) followed by tendril climbers (19-species). Interestingly, there are 35 species of Monocot climbers which are important from economic point of view, among which 12 species are used for human consumption and 27 species are applied for the treatment of 18 different categories of diseases. The study makes it clear that no Monocot climber is endemic to the state of West Bengal but there are seven species which are endemic to eastern Himalaya and north eastern states of India are also grown in this state.

***Keywords*:** Monocot, Climbers, Diversity, West Bengal, Economic Utility.

INTRODUCTION

Climbers are the fascinating group of plants which depends on other plants or object to raise their weak stem for biological purposes by means of different adaptive measures and they are the essential elements of the vegetation of any geographical region.

The state of West Bengal lies between 21°45 to 27° 16 N latitude and 85° 55 to 89° 56 E longitude, covering an area of 87, 676 Sq km which is about 2.70% of the total land area of India. At present the state of West Bengal is administratively divided in to 23 districts comprising of more than 400 blocks and over 4300 villages. The state can be divided into five geographical regions (Chakravarty *et al.,* 1999) *viz*., the Darjeeling, the Terai–Duars, the Western undulating highland plateau, North & South Bengal plains and Gangetic Delta. Among these five vegetation zones, the Darjeeling–Himalaya being the East–Himalayan Hotspots region is the richest floristic zone of the state. The State has reported extent of recorded forest area (RFA) 11,879 sq km which is 13.38% of its geographical area. The reserved, protected and unclassified forests of the state are 59.38%, 31.76% and 8.86% respectively.

The state has a diversified floristic composition ranging from the southern littoral mangrove forest of Sundarbans to luxuriant vegetation of the Terai–Duars region of the North Bengal culminating upwards into the temperate vegetation of the Darjeeling Himalayas, coupled with the dry deciduous scrub vegetation of the Western stretches. Prain (1903) in his work enumerate a numbers of climbing taxa from the then Bengal presidency but his work was incomplete as he did not include the plants of Darjeeling Himalayas as well as the plants of Terai-Duars regions were poorly represented. After formation of West Bengal state due to partition of Bengal province under British rule in August 1947 and realignment of Indian states a numbers of workers had contributed on the flora of West Bengal, which were documented in the work of Mitra *et al.* (2010). Though some works were done on the climbing plants of different districts of the state of West Bengal, like-Bandyopadhyay & Mukherjee (2010), Das *et al* (2010), Mitra & Mukherjee (2012), Samanta & Das (1995), Sanyal (1993) but till date no comprehensive work has been done on the monocot climbers of the state. Therefore, the present endeavor has been undertaken to keep in mind to prepare an inventory of the monocot climbers growing in the political boundary of the state of West Bengal, which will not only help the students and field biologist to identify the members of that aforesaid group but also help the authority working on the conservational aspects of bio-resources of our country.

MATERIALS & METHODS

The present work is based on the consultation of the available literatures (both published and unpublished), and scrutiny of Herbarium specimens deposited at Llyod Botanical Garden Herbarium, Central National Herbarium (CAL), Industrial Section of the Indian Museum (BSIS), BSI, Sikkim Himalayan Circle (BSHC). Data obtained from the field trips undertaken by the authors in different districts of

West Bengal are also taken in to account. For collection and processing of the plant specimens standard technique were followed. For nomenclature the guidelines of Schenzen Code (19th ICN) is followed. Up dated nomenclature of the monocot climbers has been confirmed from the current literature and through consultation of the e-resources.

RESULT & DISCUSSION

Climbers recorded within the political boundary of the state of West Bengal are presented in the table – I. In the table all the collected data are enumerated family wise in alphabetical order.

Table I : List of monocot climbing species recorded from west bengal state.

Sl. No.	Family	Sl. No.	Scientific Name	Phenology	Occurrence	Climbing Nature	Remaks
1	Araceae	1	***Pothos chinensis*** (Raf.) Merr. in J. Arnold Arbor. 29: 210. 1948. *Tapanava chinensis* Raf., Fl. Tellur. 4: 14. 1838. *P. cathcartii* Schott	Apr. – Jun.	Dar., Terai Duars, Mld.	Rtc	Med. (Lf - Bodyache)
		2	***Pothos junghuhnii*** de Vriese in F.A.W.Miquel, Pl. Jungh. 104. 1851. *Pothos roxburghii* Schott	May – July	Dar.	Rtc	Med. (Rt. – Small Pox).
		3	***Pothos scandens*** L., Sp. Pl. 968. 1753. *Pothos angustifolius* Reinw. *ex* Miq.; *Pothos leptospadix* de Vriese; *Pothos zollingeri* Engl..	Apr. – Aug.	Kcb, Dar.	Rtc	Med. (Lf – Asthma., Bone Fracturec.; Rt. - Small Pox).
		4	***Rhaphidophora calophylla*** Schott in Bonplandia (Hann.) 5: 45. 1857; *R. lancifolia* Schott.	Mar. – Oct.	Dar,	Rtc	
		5	***Rhaphidophora glauca*** (Wall.) Schott in Bonplandia (Hann.) 5: 45. 1857. *Pothos glaucus* Wall., Pl. Asiat. Rar. 2: 45. 1831 [*"glauca"*].	Aug.– Nov.	Dar,	Rtc	Med. (Wp – Bone Fracture.)
		6	***Rhaphidophora decursiva*** (Roxb.) Schott in Bonplandia (Hann.) 5: 45. 1857. *Pothos decursivus* Roxb., Fl. Ind. 1: 456. 1820 [*"decursiva"*]. *R. grandis* Schott	Jul. – Oct.	Dar,	Rtc	
		7	***Rhaphidophora hookeri*** Schott in Bonplandia (Hann.). 5: 45. 1857.	Dec. – Jun.	Dar,	Rtc	
		8	***Rhaphidophora peepla*** (Roxb.) Schott in Bonplandia (Hann.) 5: 45. 1857. *Pothos peepla* Roxb., Fl. Ind. 1: 454. 1820; *Monstera peepla* (Roxb.) Schott; *Scindapsus peepla* (Roxb.) Schott.	May–Sept.	Terai Duars ;	Rtc	
		9	***Scindapsus officinalis*** (Roxb.) Scott in H.W.Schott & S.L.Endlicher, Melet. Bot. 21. 1832. *Pothos officinalis* Roxb. Fl. Ind. 1: 452 . 1820.	Aug.– Nov.	WS	Rtc	Med. (Wp – Bone Fracture; Rt. – Cough, Stmoachache,)
2	Arecaceae	10	***Calamus acanthospathus*** Griff. in Calcutta J. Nat. Hist. 5: 39. 1845. *Palmijuncus acanthospathus* (Griffith) Kuntze; *P. montanus* (T. Anders.) Kuntze.	–	Dar.	Scr	
		11	***Calamus flagellum*** Griff. *ex* Mart., Hist. Nat. Palm. 3: 333. 1853. *C. polygamus* Roxb.; *Palmijuncus flagellum* (Grif. ex Mart.) Kuntze; *P. polygamus* (Roxb.) Kuntze.	May - July	Terai Duars, Dar.	Scr	
		12	***Calamus guruba*** Buch. – Ham. *ex* Mart., Hist. Nat. Palm. 3: 211. 1845. *Palmijuncus guruba* (Buch. – Ham. *ex* Mart.) Kuntze; *P. nitidus* (Mart.) Kuntze.	–	Terai Duars, Dar.	Scr	Edible - TSh.
		13	***Calamus inermis*** T. Anders. in J. Linn. Soc., Bot. 11: 11. 1869.	–	Dar.	Scr	Edible - TSh.
		14	***Calamus latifolius*** Roxb. Hort. Bengal. 73. 1814; *Calamus humilis* Roxb.; *Palmijuncus humilis* (Roxb.) Kuntze.	Mar.– Sept.	Kcb, Terai Duars, Dar.	Scr	
		15	***Calamus leptospadix*** Griff. in Calcutta J. Nat. Hist. 5: 49. 1845; *Palmijuncus leptospadix* (Griff.) Kuntze.	Oct. – Feb.	Kcb, Terai Duars, Dar,	Scr	
		16	***Calamus tenuis*** Roxb. Fl. Ind. 3:780. 1832.	July – Dec.	Terai Duars, Sundarbans,	Scr	Med. (Bk - Leucorrhoea.
		17	***Calamus viminalis*** Willd., Sp. Pl. 203. 1799. *Calamus extensus* Mart.; *Palmijuncus fasciculatus* (Roxb.) Kuntze.	Sept. – May	Sundarbans,. Mursh.	Scr	Edible - Fruit
		18	***Plectocomia himalayana*** Griff. in Calcutta J. Nat. Hist. 5: 100. 1845. *Plectocomia montana* Griffith *ex* T. Anders.	May – Aug.	Dar.	Scr	
3	Asparagaceae	19	***Asparagus filicinus*** D. Don, ProDar. Fl. Nepal. 49. 1825.	Sept.– Nov.	Dar.	Tw	
		20	***Asparagus gonoclados*** Beck. in J. Linn. Soc., Bot. 14: 627. 1875; *Protasparagus gonoclados* (Baker) Kamble.	Aug. – Oct.	Mid., Hg	Tw	Med. (Rt Bk - Muscular Pain)
		21	***Asparagus racemosus*** Willd. Sp. Pl. 152. 1799.	Sept. – Dec.	WS	Tw	Edible – Rt; .Med: (Rt - Haematuria,

							Nocternal Emmision).
4	Commelinaceae	22	***Streptilirion volubile*** Edgw. in Proc. Linn. Soc. London 1: 254. 1845.	Aug. – Dec.	Dar,.	Tw	
5	Dioscoreaceae	23	***Dioscorea aculeata*** Sp. Pl. 1033.1753.	Aug. – Dec.		Tw	Med. (Tu - Headache)
		24	***Dioscorea alata*** L. Sp. Pl. 1033. 1753.	Sept.– Nov.	Dar, Kcb, 24Prgs. Pu, WD,	Tw	Edible - Tu; Med.: (Tu -Hydrocoele., Abdominal pain).
		25	***Dioscorea belophylla*** (Prain) Voight *ex* Haines, Forest Fl. Chota Nagpur 530. 1910; *Dioscorea nummularia* var. *belophylla* Prain Beng. Pl. 2: 1067. 1903. *Dioscorea sagittata* Royle	Sept. – Jan.	Dar, Bnk,	Tw	Edible - Tu;
		26	***Dioscorea bulbifera*** L., Sp. Pl. 1033. 1753. *Helmia bulbifera* (L.) Kunth.	Jun. – Nov.	WS	Tw	Edible - Tu;
		27	***Dioscorea deltoidea*** Wall. *ex* Griseb. in Mart., Fl. Bras. 3(1): 43. 1842.	Jun. – Sept.	Dar, Terai Duars,	Tw	Edible - Tu;
		28	***Dioscorea esculenta*** (Lour.) Burkill in Gard. Bull. Straits Settlem. 1: 396. 1917.	Jun. – Jan.	Hw, 24prgs.	Tw	Med. (Tu - Stomachae)
		29	***Dioscorea glabra*** Roxb., Fl. Ind. 804. 1832. *Dioscorea glabra* var. *longifolia* Prain & Burkill; *D. nummularia* Roxb. (1832), *non* Lam. (1789).	Jul. Dec.	Dar, Kcb, Hw, 24Prgs, Bnk, WD	Tw	Edible - Tu;
		30	***Dioscorea hamiltonii*** Hook *f.* in Fl. Brit. India 6: 294. 1892; *Dioscorea persimilis* Prain & Burkill.	Sept. – Dec.	Dar, Terai Duars, Bnk,	Tw	
		31	***Dioscorea hispida*** Dennstedt, in Schluss. Hort. Malab. 15, 33. 1818. *Dioscorea daemona* Roxb.; *D. hispida* var. *daemona* (Roxb.) Prain & Burkill; *D. mollissima* Bl.	Oct. – Jan.	Dar, Kcb, Hw, 24Prgs, Bnk, WD	Tw	Edible - Tu; Med. (Tu – Bite of Dog/ Jackel,/Rabbit)
		32	***Dioscorea kamoonensis*** Kunth, Enum. Pl. 5: 395. 1850; *Dioscorea bonatiana* Prain & Burkill.	Aug.– Sept.	Dar,	Tw	
		33	***Dioscorea lepcharum*** Prain & Burkill in J. Proc. Asiat. Soc. Bengal 10: 36. 1914.	Jun. – Nov.	Dar.	Tw	
		34	***Dioscorea oppositifolia*** Griseb.in C.F.P.von Martius & auct. Suc. (eds.), Fl. Bras. 3(1): 46. 1842.	Aug. – Dec.	24 Prgs, Bnk,	Tw	Med. (Lf – Dysentery.)
		35	***Dioscorea pentaphylla*** L., Sp. Pl. 1032. 1753.	Jun. – Dec.	WS	Tw	Edible - Tu; Med. (tu – Cough, Asthma)
		36	***Dioscorea prazeri*** Prain & Burkill in J. Asiat. Soc. Beng. 73 (2): 2. 1896; *D. sikkimensis* Prain & Burkill	Sept. – Dec.	Dar, Terai Duars	Tw	
		37	***Dioscorea pubera*** Bl., Enum. Pl. Jav. 1: 21. 1827; *D. anguina* Roxb.; *D. cornifolia* Kunth.	Dec. – Feb.	Dar, 24 Prgs, Terai Duars, Bnk,	Tw	Med. (Lf – Stomach Complain.)
		38	***Dioscorea tomentosa*** Koeng *ex* Spreng. Pl. Min. Cogn. Pug. 2: 92. 1815.	Jan. – Sept.	Dar,	Tw	
		39	***Dioscorea trinervia*** Roxb. *ex* Prain & Burkill in J. Proc. Asiat. Soc. Bengal 10: 32 .1914.		Dar,	Tw	Med (St. – Skin disease)
		40	***Dioscorea wallichii*** Hook. *f.,* in Fl. Brit. India. 6: 295. 1892.	Apr. – Dec.	Kcb, WD	Tw	
		41	***Dioscorea wattii*** Prain & Burkill in J. Proc. Asiat. Soc. Bengal 4: 457. 1908.	May – Nov.	Dar.	Tw	Med. (Lf – Stomach complain)
6	Flagellariaceae	42	***Flagellaria indica*** L., Sp. Pl. 333. 1753.	Apr. – Nov.	Hw, 24Prgs,	Tc	Edible - Fr.
7	Liliaceae	43	***Gloriosa superba*** L., Sp. Pl. 305. 1753.	Jul. – Aug.	WS	Tc	Med (Rh – Abortificiant, Scorpion. Sting; Rt – Anthelmintic., Lf. – Skin Disease.)
8	Smilacaceae	44	***Smilax aspera*** L., Sp. Pl. 1028. 1753; *S. maculate* Roxb.; S. *fulgens* Wall., Cat. No. 5122.1830, *nom. nud.*	Nov.– Aug.	Dar, Terai Duars,	Tc	Med. (Rt – Skin Disease ., Lf. – Wounds,); Misc. – (St. – Cordages).
		45	***Smilax aspericaulis*** Wall. *ex* A. DC., *Monogr. Phan.* 1: 195. 1878; *S. verruculosa* Merr.	Oct. – May	Dar.	Tc	Med (Lf. - Skin Disease)
		46	***Smilax bockii*** Warb., in Bot. Jahrb. Syst. 29: 259.1900. *Heterosmilax japonica* Kunth	May – Nov.	Dar.	Tc	Med. (Rt - Toothache)
		47	***Smilax perfoliata*** Lour.**,** Fl. Cochinch. 622. 1790.	Jul. – Feb.	Hw, Kcb, Terai Duars, 24 Prgs,	Tc	Med (Fl. – Blood Purifier, Rt. – Skin Disease)
		48	***Smilax elegans*** Wall. *ex* Kunth, Enum. Pl. 5: 163. 1850; S. *parviflora* Wall. *ex* Hook. f., *S. glaucophylla* Klotzsch*; S. longebracteolata* Hook. *f.*	Jun. – Dec.	Dar.	Tc	

		49	***Smilax ferox*** Wall. *ex* Kunth, Enum. Pl. 5: 251. 1850.	May – Dec.	Dar.	Tc	
		50	***Smilax lanceifolia*** Roxb., Fl. Ind. 3: 792. 1832.	May – Jul.	Dar,.	Tc	
		51	***Smilax menispermoidea*** A. DC., Monogr. Phan. 1: 108. 1878; *Smilax luteocaulis* H.Lév.; *Smilax rubriflora* Rehder	Jul. – Nov.	Dar.	Tc	
		52	***Smilax minutiflora*** A. DC., Mongr. Phan. 1:109.1878.	Jun. – Dec.	Dar.	Tc	
		53	***Smilax munita*** S.C. Chen, in Acta Phytotax. Sin. 34: 436. 1996. *S. rigida* Wall. *ex* Kunth; *Smilax myrtillus* A. DC., var. *rigida* Noltie.	Jun. – Nov.	Dar.	Tc	
		54	***Smilax orthoptera*** A. DC., Mongr. Phan. 1: 192. 1878.	May – Sept.	Dar, Terai Duars,	Tc	
		55	***Smilax ovalifolia*** Roxb. *ex* D. Don, ProDar. Fl. Nepal. 49.1825; *S. macrophylla* Roxb.; *Smilax roxburghii* Kunth	Jun. – Dec.	Dar. Kcb, 24 Prgs, WD,	Tc	Med. (Rt – Abortificiant., Dysentery., Frt – Skin Disease)
		56	***Smilax prolifera*** Roxb. Fl. Ind. 3: 795. 1832.	May – Nov.	Terai Duars , Dar, Murs. WD	Tc	
		57	***Smilax quadarata*** A. DC. Monogr. Phan. 1: 183. 1878.	Oct. – Dec.	Dar.	Tc	Vet. Med (Fr. – Mouth Sores of Cattle.)
		58	***Smilax roxburghiana*** Wall. *ex* A. DC. in Rapp. [Not.] Pl. Rar. Genève 7: 314 .1836; *Smilax laurifolia* Roxb.	Jun. – Jan.	Dar,	Tc	Med. (Lf. - Measles)
		59	***Smilax wallichii*** Kunth, Enum. Pl. 5: 246. 1850.	May – Nov.	Dar.	Tc	Med (Rt. – Anthelmintic.)
		60	***Smilax zeylanica*** L. Sp. Pl. 1029. 1753; *Smilax collina* Kunth; *Smilax elliptica* R.Br.; *Smilax indica* Burm.*f.*	Jun. – Jul.	WS	Tc	Med. (Rt. – Rheumatism.)

[Abbreviation Use]
Area: Bnk = Bankura, Dar. = Darjeeling; Hg. = Hooghly, Hw = Howrah; Kcb. = Koch Behar, Mid. = Midnapur, Mld = Maldah, Mursh. = Murshidabad; Pu = Purulia, Ws = Whole State, WD = West Denajpur (Undivided), 24 – Prgs = 24 parganahas.
Climbing Nature: Rtc. = Root Climber; Scr. = Scrambler; Tc = Tendril Climber; Tw. = Twiner.
Use: Med. = Medicinial; Vet. Med = Veterinary Medicine; Met – Material Use.
Plant Parts: Rt = Root; Lf = Leaf; Fl. = Flower, Fr. = Fruit. Bk = Bark; Rt Bk = Root Bark, Tu = Tuber, Tsh = Tender Shoot; Wp = Whole plant]

The present study recorded the occurrence of 60 species of Monocot climbers from the state of West Bengal, belonging to 11 genera under 8 families. Family wise Distribution of the Genera and species are given in the Table –II.

Table II : Conspectus of Monocot Climbers of the State of West Bengal

Sl. No.	Name of the Family	No. of Genera	No. of Species
1	Araceae	3	9
2	Arecaceae	2	9
3	Asparagaceae	1	3
4	Commelinaceae	1	1
5	Dioscoreaceae	1	19
6	Flagellariaceae	1	1
7	Liliaceae	1	1
8	Smilacaceae	1	17
Total		**11**	**60**

From the table – II, it is clear from the view point of the species diversity, Dioscoreaceae and the Smilacaceae are the most diversified family with 19 and 17 Species, respectively. But on the basis of the numbers of genera Araceae is the most diversified family comprising of 3 genera, followed by Arecaceae with 2 genera in their credit. It is interesting to note that, among these 60 species of climbers twiners are the most dominating types with 23 species, followed by the tendril climbers with 19 Species. (Figure - I)

It is evident from the table – I, that, there are 35 species of Monocot Climbers which are used in different purposes. A total of 54 uses of Monocot Climbers have been recorded during study. There are 17 species which are consumed by the local inhabitant and 27 species are applied for the treatment of 18 categories of ailments and some species have more than one uses. A Graphical representation of different usages of Monocot climbing species is given in Figure – II. A conspectus of the different ailments of the human being is given in the table – III.

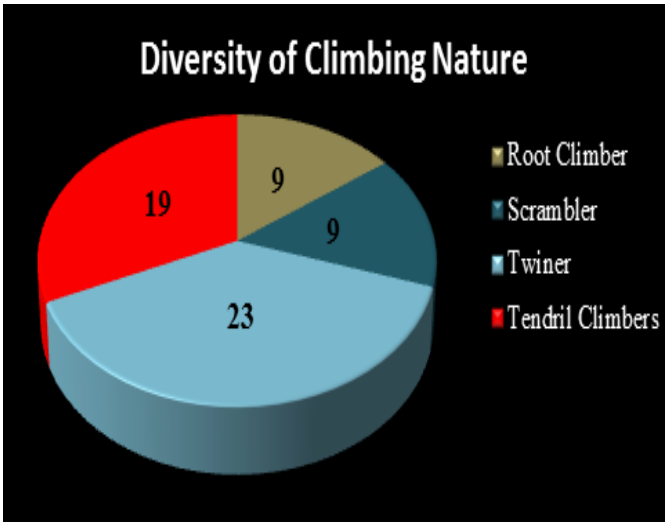

Fig. - I. Diversity of the Climbing Nature of the Monocot Climbers of the State of West Bengal

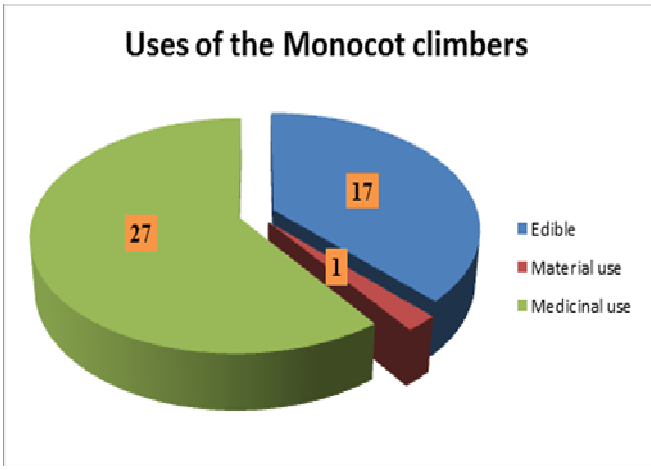

Fig. II : Conspectus of economic usages of the Monocot climbers.

Table III : Statistical Analysis of Different diseases

Sl. No.	Name of the Diseases	No. of Cases reported	%
1	Abortificiant	1	3.13
2	Aches & pain	4	12.5
3	Anthelmentic	1	3.13
4	Asthma	2	6.25
5	Blood purifier	1	3.13
6	Bone Fracture	3	9.38
7	Cold & Cough	2	6.25
8	Diarrhoea & Dysentery	1	3.13
9	Dogbite	1	3.13
10	Gastric disorder	3	9.38
11	Haematurea	1	3.13
12	Hydrocele	1	3.13
13	Leucorhoea	1	3.13
14	Nocternal emission	1	3.13
15	Skin Diseases	5	15.63.
16	Small Pox	2	6.25
17	Tooth & Gum Care	1	3.13
18	Wounds Healing	1	3.13
	Total = 18	32	

From the table – III it is noted that, Skin diseases are the commonly prevalent disease which is treated by the species of Monocot climbers of the state followed by the Pains, Bone fracture and Gastric disorder respectively. A conspectus of different ailments is given in the Figure – III.

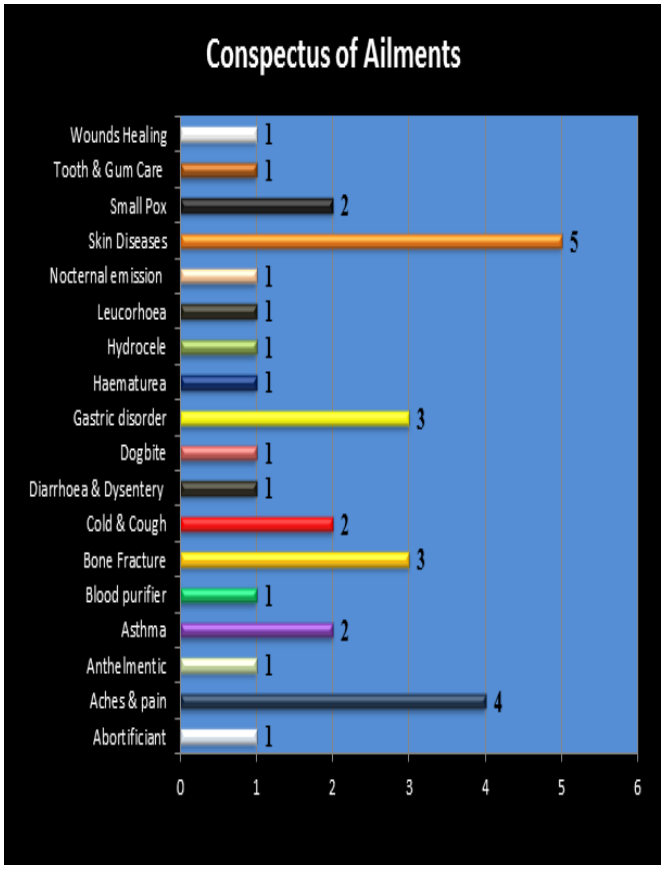

Fig. III : Conspectus of the Ailments treated by Monocot Climbing Species.

As per distribution the species like *Asparagus racemosus, Dioscorea bulbifera, D. pentaphylla, D. glabra, Gloriosa superba, Scindapsus officinalis, Smilax perfoliata, etc.* are the most common species and found to occur in more or less all the districts of the state of West Bengal. Whereas species like *Calamus flagellum, D. alata, D. deltoidea, D. prazeri, Pothos chinensis, Pothos scandens, Rhaphidophora glauca, Smilax prolifera, S. ovalifolia, S. roxburghiana, etc.* are generally found to grow in terai duars region as well as lower hill forests of Darjeeling district. On the other hand *Dioscorea kamoonensis, Rhaphidophora hookeri, Smilax bockii, S. aspera, S. elegans, S. lancifolia, S. wallichi, S. minutiflora, Streptolerion volubili, etc.* are restricted to the middle and upper hill foresta of Darjeeling Himalaya.

On the view point of the endemic flora, the state of West Bengal is not in a very prominent position and so, in respect to the Monocot Climbing taxa of the state the situation is not changed a lot. But there are seven species of monocot climbers which are endemic to eastern Himalayan region and in the North Eastern states of India are also found to grow in the state. Therefore the state of West Bengal possesses 7 – endemic monocot climbing species (11.66%) in its credit. All these endemic climbers of the state and their distribution are given in the table – IV.

Table IV : Conspectus of the Endemic Monocot Climbers of the State.

Sl. No.	Family	Genera	Species	Distribution
1	Areceae	*Calamus*	*C. latifolius* Roxb.	Kcb, Jal., Terai Duars, Dar., and N Eastern states of India; Nepal, Bhutam
2			*C. leptospadix* Griff.	Kcb, Terai duars, Dar, and N Eastern states of India
3		*Plectocomia*	*P. himalayana* Griff.	Dar..
4	Dioscoreaceae	*Dioscorea*	*D. prazeri* Prain & Burkill	Dar, Terai Duars and N Eastern states of India
5	Smilacaceae	*Smilax*	*D. minutiflora* A. DC.	Dar. (5000 – 10000ft), and N Eastern states of India
6		*Smilax*	*S. orthoptera* A. DC.	Dar, Terai Duars, and N Eastern states of India
7		*Smilax*	*S. wallichii* Kunth	Eastern Himalayan region including Darjeeling district of West Bengal.

Some of the plants which are rare in occurrence includes *Calamus guruba, Dioscorea pubera, D. tomemtosa, D. hamiltonii, Flagellaria indica, Plectopomilla himalaica, Raphidophora hookeri, Smilax bokeii.* Though these plants are not included in the list of the IUCN RED list plants or in the CITES Appendix but then also these plants are mentioned here as rare in the state as because their population becomes very less in their normal habitat. It is understandable that the rapid deforestation, urbanization and habitat loss put a numbers of Monocot climbers under threats. So, necessary conservational practices should be employed in a war state urgency to protect the threatened taxa from extinction.

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