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**Primary survey of Climbing Flora of Bhandaria Forest area,
Dist. - Bhavnagar, Gujarat**

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Abstract

The primary survey of wild and ornamental climbing flora of Bhandaria forest area was carried out. Totally 63 climbing plants belonging to 62 species, 48 genera and 20 families were identified. The most dominant families were Convolvulaceae (20%), Cucurbitaceae (17.46%) and Fabaceae (12.69%). Climbers are important for various sectors such as ornamental, horticulture, medicine, agriculture as well as food.

Key-Words: Primary survey, Climbing flora, Bhandaria forest, Bhavnagar

Introduction

This diversity of living creatures forms a support system which has been used by living organism for its growth and development. Climbing plants are one of the most interesting group but a much neglected group of plants. Climbing plants differ from self-supporting plants, such as shrubs and trees, in a range of characteristics; most notable is the mechanical properties of the stem. Lianas^[1-2], the woody vines are an important, but understudied growth-form, common in most forests throughout the world, particularly in the tropics^[3]. The past few decades have brought increasing awareness for the importance of lianas to species diversity^[4-7].

Climbers occur in all woody ecosystem of the world although their abundance is considered to be a characteristic of tropical and subtropical forests. Climbers play an important ecological role in the forest ecosystem dynamics and functioning^[8], they contribute substantially to the canopy closure after tree fall and help to stabilize the microclimate^[3]. Early morphologists included these climbers under weak stemmed plants^[9]. Climbers are the plants that germinate on floor and grow for part of their life by winding ground, anchoring or adhering to other plants^[10] to attain great stature^[11]. They rely on other plants for mechanical support. Due to their weak stem, they attach themselves to any neighboring object by means of some special organs of attachment. They show great diversity in their climbing mechanism depending on which they are classified as, root climbers, hook climbers, tendril climbers, leaf or stem climbers or twinner.

In lianas, the shift from self-supporting to non-self-supporting growth is accompanied by remarkable changes in anatomical development^[12-13]. A greater number of twinner revolve in a course opposed to that of sun, or to the hands of a watch, than in the reversed course, and consequently the majority as is well known, ascend their supports from left to right^[14]. Twining often occurs in one direction, and many show a predisposition to turn to the right. There is a limit to the size of the trunk that most twiners can use, and hardly ever are twiners found around thick trunks^[15].

Material and Methods

The Bhandaria forest area is situated 28 kms. away from Bhavnagar city having historical background and unique hilly dry deciduous ecosystem. The forest area is located within geographical co-ordinates of 21°35' 056' N longitudes and 072° 06'150° E latitude. The mentioned investigation was carried out during year 2012-2014. Bhandaria forest area was frequently visited, to collect the information about the climbing plant species. A good number of the trips were arranged in accordance with the different seasons throughout these years. The fully grown plants were collected during monsoon and in the later part of the rainy season. The collected plants were brought to the laboratory, identified and classified to their respective species level^[16-18]. During the explorations we have taken photographs of the certain species. For convenience, according to Bentham & Hooker all the selected plants species are arranged and scientific names, local names, families are given in the present research paper.

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Results and Discussion

The present survey reveals that angiospermic climbers of the area are represented by 62 species under 47 genera belonging to 20 families (19 dicots and 01 monocot family). Some climbers are wild while others are cultivated. Among all families, Convolvulaceae was found to be the most abundant having 13 species followed by family Cucurbitaceae having 11 species and Fabaceae with 08 and Asclepiadaceae- 06, Manispermaceae -04 and Vitaceae - 03, Passifloraceae, Cuscutaceae, and Liliaceae with 02 species. Convolvulaceae is the most dominating family as per number of species and Cucurbitaceae is dominant family as per number of genera. All other families are represented by single species only. [11] reported 746 species of climbers in Upper Guinean forests. [19] recorded 149 species of herbaceous climbers and 79 lianas species from the forest of North Andaman, covering 55 families. [20] had recorded 42 climber species from Fatehpur (U.P) covering 15 families. A total of 175 angiosperm climbing plants in 100 genera and 40 families were recorded from the total of 150 grids of southern Eastern Ghats forests recorded by [7]. [21] studied many climbers in their study of medicinal flora of Gujarat, while 81 climbers were recorded by [22] in Modasa Taluka, District Sabarkantha, Gujarat. Climbers of Urban area of Ahmedabad and Gandhinagar were documented by [2] and Saraswati River and Region of Patan district of North Gujarat were documented by [23] respectively. 41 Climbers species of reserve forest Victoria park was recorded by [24]. Climbers found in field survey are listed in Table-1 along with their botanical name, vernacular (local name) and family as per classification order.

Tribal people use some climbers for decorative, ornamental and horticultural purposes. Tribal people have also a unique knowledge to cure different human diseases and disorders by using these climbers. Fruits of many climbers are used as vegetables. Several species of climbers have more than one kind of uses. Some of the dominant climbers in the various locations of forests area observed during the survey are *Pergularia daemia* (Forsk.) Chiov, *Leptadenia reticulata* (Retz.) W.& A., *Ipomoea pes-tigridis* L., *Cryptostegia grandiflora* R. Br, *Trichosanthes cucumerina* L., *Ipomoea obscura* (L) Ker-Gawl., *Tinospora cordifolia* (Willd.) Miers., *Cardiospermum halicacabum* L., *Cuscuta reflexa* Roxb., *Asparagus racemosus* Willd. etc. Some following species are cultivated in forest and local peoples like *Bougainvillea spectabilis*, *Cissus quadrangularis* L., *Gymnema sylvestre* (Retz.) Schult., *Quisqualis indica* L.,

Jasminum flexile Vahl., *Tylophora indica* (Burm.f.) Merrill.

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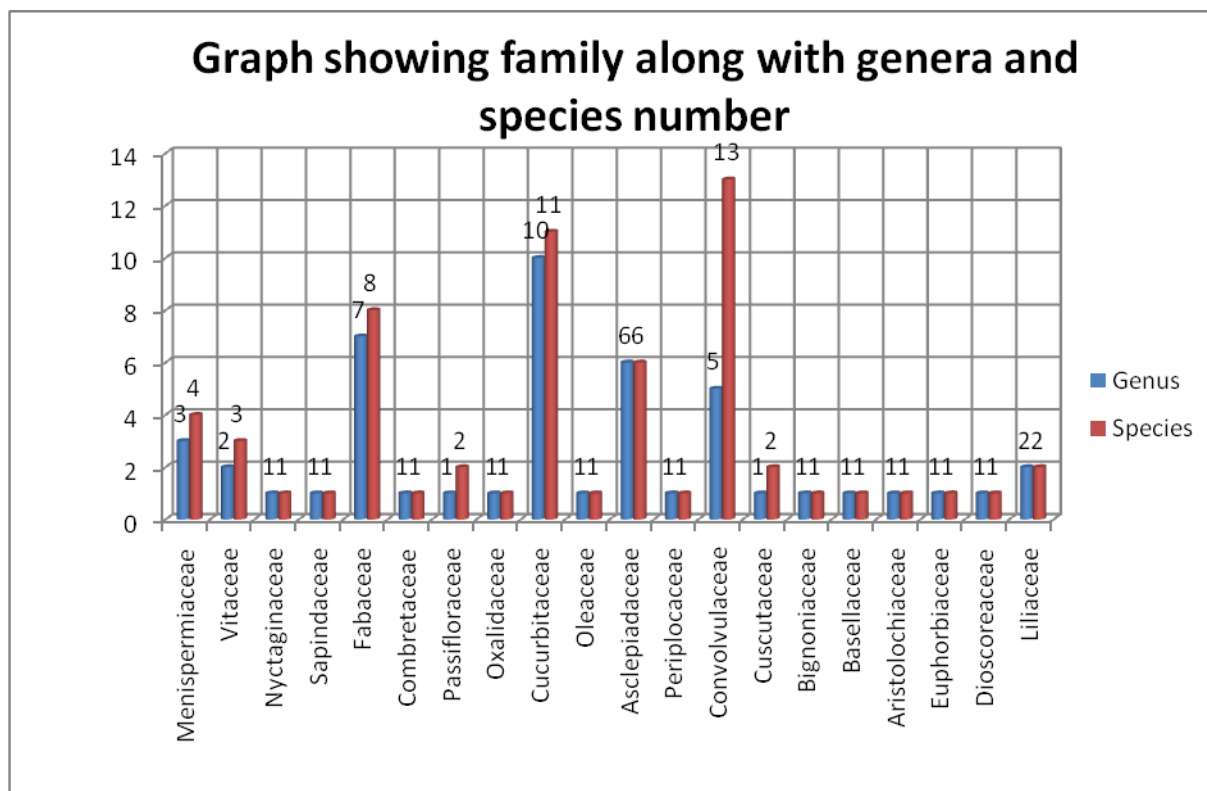
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Table 1: Enumeration of Climbers of Bhandaria forest area

Sr. No	Scientific name	Family	Local name	Type
1	<i>Cissampelos pareira</i> L.	Manispermaceae	V e n i v e l	W
2	<i>Cocculus hirsutus</i> (L.) Diels.	Manispermaceae	V e v d i	W
3	<i>Cocculus pendulus</i> (Forst.) Diels.	Manispermaceae	V e v d i	W
4	<i>Tinospora cordifolia</i> (Willd.) Miers.	Manispermaceae	G a l o	W
5	<i>Bougainvillea spectabilis</i>	Nyctaginaceae	B o u g a n v e l l	C
6	<i>Cayratia carnos</i> (Lam.) Gagnep.	V i t a c e a e	Khat-khatombo	W
7	<i>Cayratia trifolia</i> (L.) Domin.	V i t a c e a e	- - - - -	W
8	<i>Cissus quadrangularis</i> L.	V i t a c e a e	H a d - s a n k a l	W
9	<i>Cardiospermum halicacabum</i> L.	Sapindaceae	K a g d o l i o	W
10	<i>Butea superba</i> Roxb.	F a b a c e a e	K h a k h r a v e l	W
11	<i>Canavalia gladiata</i> (Jacq.) DC.	F a b a c e a e	T a r v a r d i	W
12	<i>Abrus precatorius</i> L.	F a b a c e a e	C h a n o t h i	W
13	<i>Abrus precatorius</i> L.	F a b a c e a e	S a f e d C h a n o t h i	W
14	<i>Clitoria ternarea</i> L.	F a b a c e a e	G a r n i	W
15	<i>Rhynchosia manima</i> (L.) DC.	F a b a c e a e	N a n i k a m a l v e l	W
16	<i>Vigna trilobata</i> (L.) Verduort.	F a b a c e a e	M a g a m a t h i	W
17	<i>Lathyrus odoratus</i> L.	F a b a c e a e	V a t a n a	C
18	<i>Quisqualis indica</i> L.	Combretaceae	M a d h u m a l t i	C
19	<i>Passiflora edulis</i> Sims.	Passifloraceae	K r i s h n a k a m a l	C
20	<i>Passiflora foetida</i> L.	Passifloraceae	N a n u K r i s h n a k a m a l	W

2 1	<i>Oxalis corniculata</i> L.	Oxalidaceae	Khathi-mithi	W
2 2	<i>Citrullus colocynthis</i> L.	Cucurbitaceae	Indravarna	W
2 3	<i>Coccinia grandis</i> (L.) Voigt.	Cucurbitaceae	T i n d o r a	W
2 4	<i>Corallocarpus epigaeus</i> (Arl) CL.	Cucurbitaceae	K a d v i n a i	W
2 5	<i>Ctenolepis ceresiformis</i> (Stocks.) Hk.	Cucurbitaceae	Ankhfutamani	W
2 6	<i>Cucumis callosus</i> (Rottl.) Cogn.	Cucurbitaceae	K o t h i m d u	W
2 7	<i>Diplocylos palmatus</i> (L.) C. Jeffery.	Cucurbitaceae	S h i v l i n g i	W
2 8	<i>Luffa acutangula</i> (L.) Roxb.	Cucurbitaceae	T u r i y a	C
2 9	<i>Momordica dioca</i> Roxb. ex. Willd.	Cucurbitaceae	K a n t o l a	W
3 0	<i>Momordica charantia</i> L.	Cucurbitaceae	K a r e l a	W
3 1	<i>Mukia maderaspatana</i> (L.) M. Roem.	Cucurbitaceae	Chanak chibhdi	W
3 2	<i>Trichosathes cucumerina</i> L.	Cucurbitaceae	Jangli Parval	W
3 3	<i>Jasminum flexile</i> Vahl.	O l e a c e a e	J u i	C
3 4	<i>Dregea volubilis</i> (I.F.) Bth.ex.H.f	Asclepiadaceae	M o t i d o d i	W
3 5	<i>Leptadema reticulate</i> (Retz.) W & A.	Asclepiadaceae	K h a r k o d i	W
3 6	<i>Pentatropis capensis</i> (L.f.) Bullock.	Asclepiadaceae	S h i n g r o t i	W
3 7	<i>Pergularia daemia</i> (Forsk.) Chiov.	Asclepiadaceae	Negla-dudhli	W
3 8	<i>Gymnema sylvestre</i> (Retz) Schuil	Asclepiadaceae	Madhunashini	C
3 9	<i>Tylophora indica</i> (Burm.f.) Merrill.	Asclepiadaceae	D a m v e l	C
4 0	<i>Cryprostegia grandiflora</i> R. Br.	Periplocaceae	R u b b e r v e l	W
4 1	<i>Convolvulus arvensis</i> L.	Convolvulaceae	V e l d i	W
4 2	<i>Convoivulus microphyllus</i> (Roth.) sieb.ex.	Convolvulaceae	Shankhawali	W
4 3	<i>Evolvulus alsinoides</i> (L.) L.	Convolvulaceae	Kali shankhawali	W
4 4	<i>Ipomoea cairica</i> (L.) Sw.	Convolvulaceae	- - - - -	W
4 5	<i>Ipomoea eriocapa</i> R. Br.	Convolvulaceae	B o d i f u d a r d i	W
4 6	<i>Ipomoea fistulosa</i> Mart.	Convolvulaceae	N a f f t v e l	W
4 7	<i>Ipomoea muricata</i> (L.) Jacq.	Convolvulaceae	B h a m a r d i	W
4 8	<i>Ipomoea nil</i> (L.) Roth.	Convolvulaceae	K a l a d a n a	W
4 9	<i>Ipomoea obscura</i> (L.) Ker-Gawl.	Convolvulaceae	V a j v e l	W
5 0	<i>Ipomoea pes-caprae</i> (L.) Sw.	Convolvulaceae	M a r y a d v e l	W
5 1	<i>Ipomoea pes-tigridis</i> L.	Convolvulaceae	W a g h p a d i	W
5 2	<i>Merremia gangetica</i> (L.) Cufod.	Convolvulaceae	U n d a r d i	W
5 3	<i>Rivea hypocrateriformis</i> (Desr.)Choisy	Convolvulaceae	F a n g	W
5 4	<i>Cuscuta chinensis</i> Lam.	Cuscutaceae	Chidiyo amarvel	W
5 5	<i>Cuscuta reflexa</i> Roxb.	Cuscutaceae	A m a r v e l	W
5 6	<i>Tecomella undulata</i> (Smeeth.) Seem.	Bignoniaceae	Ragat rohido	C
5 7	<i>Basella rubra</i> L.	Basellaceae	P o i	C
5 8	<i>Aristolochia indica</i> L.	Aristolochiaceae	Vaysar, Kidamari	W
5 9	<i>Dalechampia scandens</i> L.	Euphorbiaceae	K h a j v e l	W
6 0	<i>Dioscorea bulbifera</i> L.	Dioscoreaceae	Dukkar kand	W
6 1	<i>Gloriosa superb</i> L.	Liliaceae	V a c h h n a g	W
6 2	<i>Asparagus racemosus</i> Willd.	Liliaceae	S a t a v a r i	W



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