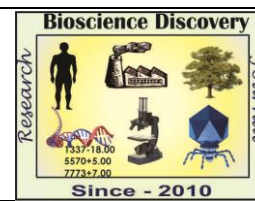


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Print & Online, Open Access, Research Journal Available on <http://jbsd.in>

ISSN: 2229-3469 (Print); ISSN: 2231-024X (Online)

**Research Article**



## Climbing Angiosperms of Manas National Park, Assam: Diversity and Ethnobotany

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### Article Info

Received: 22-02-2017,

Revised: 19-03-2017,

Accepted: 30-03-2017

### Keywords:

Climbers, Diversity,  
Habitat, Traditional uses,

### Abstract

The Manas National Park located at the foothills of the Bhutan Himalayas in Baksa and Chirang districts of Assam with a plethora of diverse vegetation types that plays a pivotal role in conservation of varied ecosystem. The inhabitants in and around the Park are of different ethnic group like Bodo, Garo, Rabha, etc. and they play a vital role in conservation of flora and fauna of the Park. However, these people also depend on the plant resources of the area in their day to day life. The present study highlights the prevalence of climbers in the floristic composition of the area and also recorded the uses of some of the climbers by the ethnic groups of the area. A total of 88 species along with their habitat and ability recorded from the area and out of these 33 species are found to be used by the local ethnic communities of area.

### INTRODUCTION

The climbing plants are part of Indian flora (Sharma and Arya, 2016). Some of the climbing species are often exhibit vigorous growth and fast growing. Depending on climbing mechanism climbers are classified into root climbers, hook climbers, tendril climbers, leaf or stem climbers or twinnings (Agarwal, 2013). They are used by all the people either directly as folk medicine or indirectly in the preparation of pharmaceuticals (Majumdar *et al.*, 2006; Manikandan *et al.* 2009). Thus the peoples depend on climbers for several purposes like medications, non timbers forest product, food, etc. In different part of India studies on diversity of climbers were undertaken by a number of workers (Gentry, 1991, Ghosh and Mukherjee, 2006; Bandopadhyaya and Mukherjee, 2010; Jangid and Sharma, 2011) and opined that climbers form the main components of ecosystem. However, no attempt has been made as such to study the diversity of climbing species in NE India. Even the work of Das *et al.*, 2009; Hajra, 1978; Rabha, 2001 did not

adequately dealt about the climbing species of Manas National Park. In the present work, an attempt have been made to explore the diversity of climbers in Manas National Park (MNP) and their habitat specificity contribution to the vegetation

### MATERIALS AND METHODS:

#### Study area

Manas National Park occupies an area of 500 sq. km and it is located at the foothills of the Bhutan Himalayas in Baksa and Chirang districts of Assam with a longitude 26°35'-26°50'N and latitude 90°45'-91°15'E. The prominent vegetation types of MNP comprises of Sub-Himalayan Light Alluvial Semi-Evergreen forests in the northern parts, East Himalayan mixed Moist and Dry Deciduous forests (the most common type), and Low Alluvial Savanna Woodland and Assam Valley Semi-Evergreen Alluvial Grasslands.

The present work was conducted during the session 2015-16 as a part of the floristic exploration of the area.

Extensive field work, exploration and collection of plants were carried out in different seasons. Identification of collected specimens were made with the help of relevant literature (Bor and Raizada, 1982; Mahajan, 2006; Bandopadhyaya and

Mukherjee, 2010; Balachandran and Rajendiran, 2014). Herbarium specimens were prepared by following standard methodology (Jain and Rao, 1977) and were deposited in the Herbarium of Botany Department, Gauhati University (GUBH).

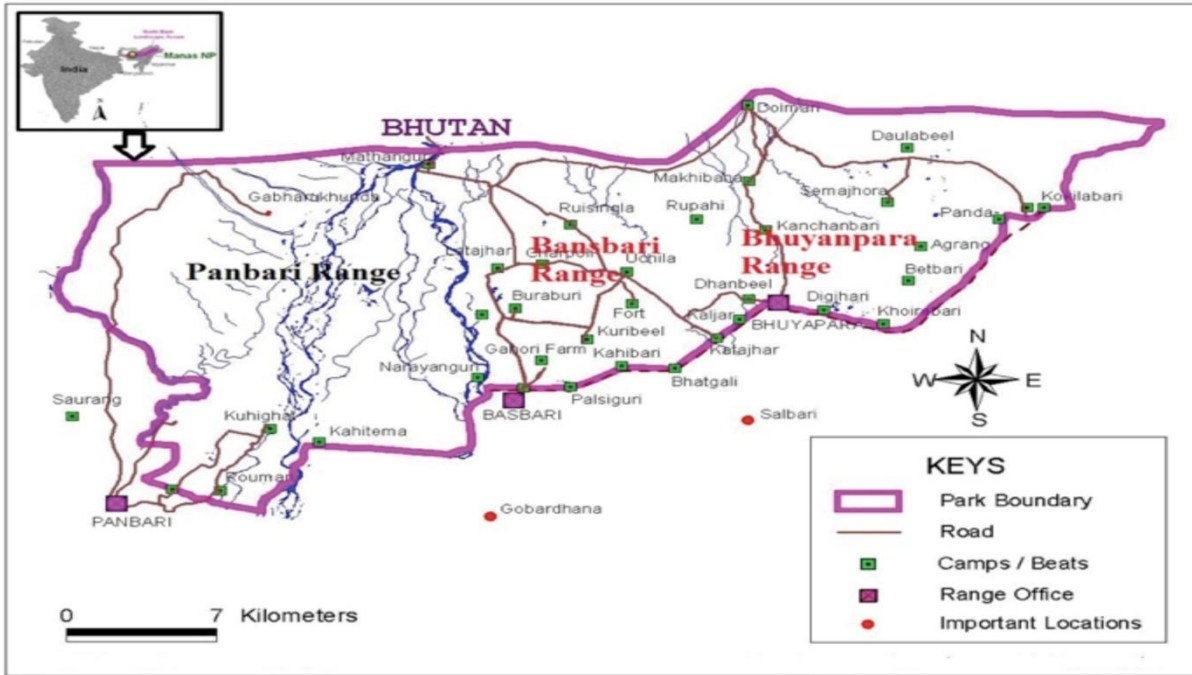


Figure 1. Manas National Park

Figure: 1. Source: <https://www.google.co.in>

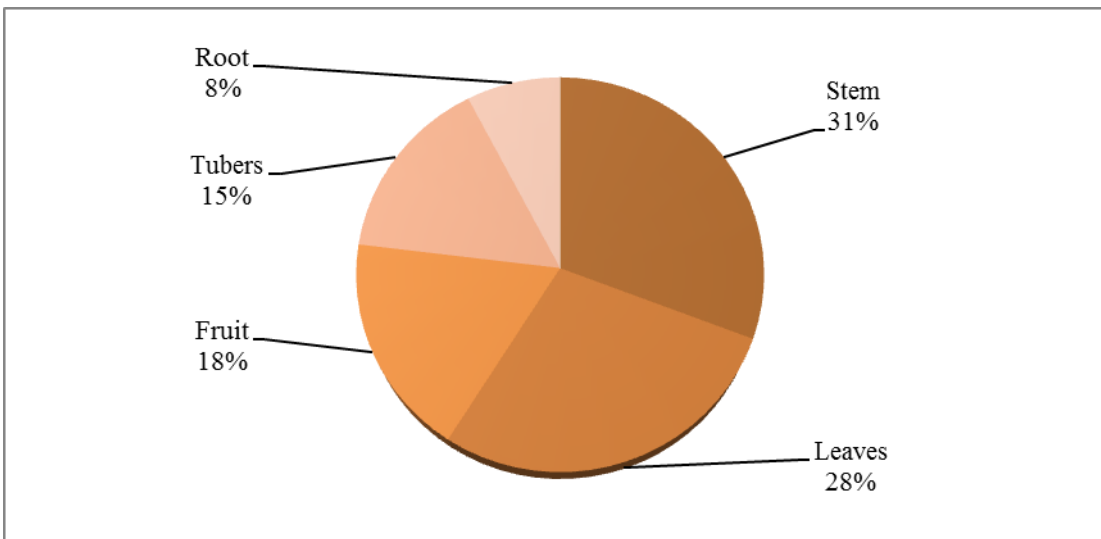


Figure: 2. Pie diagram shows ethnobotanical use of the plant part.

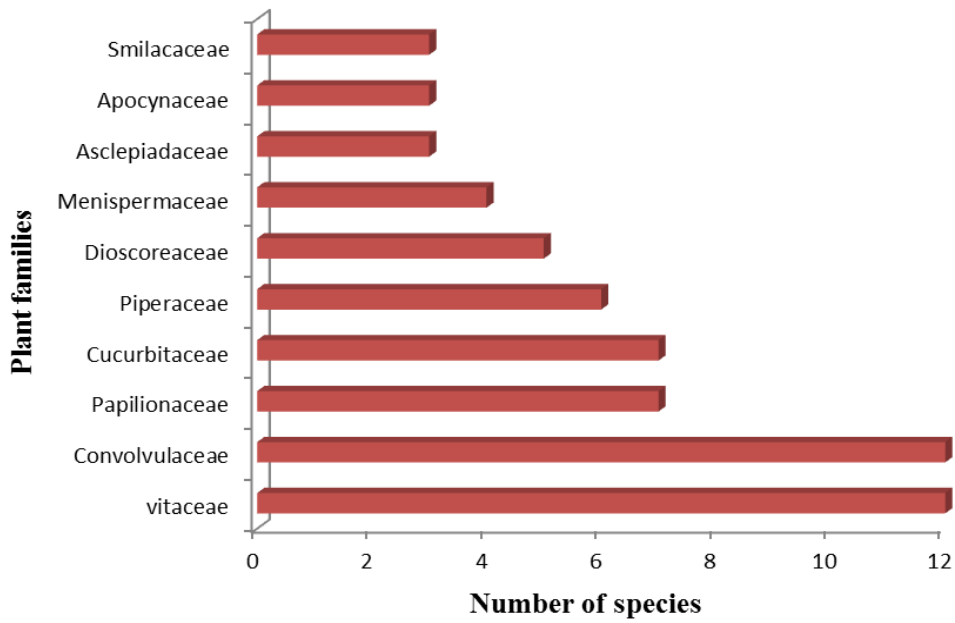


Figure: 3. ten dominant Angiosperm families contributing climbing species in the study area



Figure: 4. (A) *Passiflora foetida* L.; (B) *Beaumontia grandiflora* Wall.; (C) *Stephani japonica* (Thunb.) Miers.; (D) *Aristolochia cathcartii* Hook.f. (E) *Spatholobus parviflorus* (DC.) Kuntze (F) *Cuscuta reflexa* Roxb

**Table 1. List of Climbers and their uses in Manas National Park, Assam**

Sr. No.	Scientific name	Habitat	Fl. & Fr.	Part uses	Uses
1.	<i>Abrus precatorius</i> Linn. (Papilionaceae)	Scrub / deciduous forest	Oct.-Jan.	Root	Medicine
2.	<i>Ampelocissus barbata</i> (wall.) Planch. (vitaceae)	Open forest	Mar. - Sept.		
3.	<i>Ampelocissus latifolia</i> (Roxb.) Planch. (vitaceae)	Scrub forest, mixed forest	July-Sept.		
4.	<i>Aristolochia cathcartii</i> Hook.f. (Aristolochiaceae)	Hilly evergreen forest. /deciduous forests.	Mar.-Dec.	leaves	Medicine
5.	<i>Aristolochia tagala</i> Cham. (Aristolochiaceae)	Hilly evergreen forest.	Apr.-Dec.	Root	Medicine
6.	<i>Argyreia argentea</i> (Roxb.) Arn. ex Choisy (Convolvulaceae)	Mixed forest, roadside	July-Mar.		
7.	<i>Argyreia capitate</i> Arn. (Convolvulaceae)	Deciduous forest	Sept.-Mar.		
8.	<i>Argyreia roxburghii</i> Choisy (Convolvulaceae)	Deciduous forest	July-Dec.		
9.	<i>Beaumontia grandiflora</i> Wall. (Apocynaceae)	Hilly evergreen forest.	Mar-Oct.	Roots/ leaves	Medicine
10.	<i>Byttneria grandiflora</i> DC. (Malvaceae)	Semi evergreen hilly forests.	Apr.-Dec.		
11.	<i>Byttneria pilosa</i> Roxb. (Malvaceae)	Semi evergreen hilly forests	May-Nov.	Roots /bark	Medicine
12.	<i>Cayratia geniculata</i> (Blume) Gagnep. (Vitaceae)	Semi evergreen hilly forests	Mar.-Nov.		
13.	<i>Cayratia japonica</i> (Thunb.) Gagnep. (Vitaceae)	Forest areas, roadsides.	Mar.-June.		
14.	<i>Cissampelos pareira</i> L. (Menispermaceae)	Deciduous forest	Mar-Dec.	Stem	Medicine
15.	<i>Cissus quadrangularis</i> L (Vitaceae)	Open area	June - Jan.	Stem	Medicine
16.	<i>Cissus rependa</i> Vahl. (Vitaceae)	Secondary forest	May-Dec.		
17.	<i>Cissus repens</i> Lamk. (Vitaceae)	Dense hilly forest	Apr.-Nov.	Leaves / tender shoots	Vegetables
18.	<i>Clitoria ternatea</i> L. (Papilionaceae)	Open area	July-Dec.		
19.	<i>Clematis acuminata</i> DC. (Ranunculaceae)	Evergreen forest, Scrub forest	Feb-June.		
20.	<i>Coccinia grandis</i> (L.) Voigt (Cucurbitaceae)	Deciduous forest	Jan-Dec	Fruits	Vegetables
21.	<i>Cucumis trigonus</i> Roxb (Cucurbitaceae)	Deciduous forest	Dec-Mar.	Fruits	Vegetables
22.	<i>Cuscuta reflexa</i> Roxb (Cuscutaceae)	Dense / Deciduous forest	Aug.-Jan.	Stem	Medicine
23.	<i>Cyclea barbata</i> Miers	Hilly forest areas	July. May		



	(Menispermaceae)				
24.	<i>Cyphostemma auriculatum</i> (Roxb.) P.Singh & B.V.Shetty (Vitaceae)	Semi evergreen forest	July - Nov.		
25.	<i>Derris cuneifolia</i> Benth. (Papilionaceae)	Evergreen forests.	April-Nov.		
26.	<i>Derris elliptica</i> (Wall.) Benth. (Papilionaceae)	Evergreen /mixed forest	Apr.-Nov.		
27.	<i>Dischidia bengalensis</i> Colebr. (Apocynaceae)	Deciduous forest	April - May		
28.	<i>Dioscorea alata</i> Linn. (Dioscoreaceae)	Deciduous forest	Aug.-June.	Tubers	Vegetables.
29.	<i>Dioscorea bulbifera</i> L. (Dioscoreaceae)	Deciduous forest	July-May.	Tuber	Vegetable.
30.	<i>Dioscorea hamiltonii</i> Hook.f. (Dioscoreaceae)	Deciduous forest	May-Mar.		
31.	<i>Dioscorea hispida</i> Dennst. (Dioscoreaceae)	Deciduous forest	June-Dec.		
32.	<i>Dioscorea pentaphylla</i> L. (Dioscoreaceae)	Deciduous forest	June-Dec.	Tuber	Vegetable.
33.	<i>Diplocyclos palmatus</i> (L.) C. Jeffrey. (Cucurbitaceae)	In hilly forests.	Sep.-Oct.		
34.	<i>Epipremnum pinnatum</i> (Linnaeus) Engler (Araceae)	semi evergreen forests	Apr-Jul.		
35.	<i>Gloriosa superb</i> L. (Liliaceae)	Open area	Jul-Aug.	Leaves/ stem	Medicine
36.	<i>Gouania tiliaefolia</i> Lam. (Rhamnaceae)	semi evergreen forests	Feb.-Dec.		
37.	<i>Gymnopetalum cochinchinense</i> (Lour.) Kurz (Cucurbitaceae)	Deciduous forest	Mar.-Sept.	Fruits	vegetables
38.	<i>Hodgsonia macrocarpa</i> (Bl.) Cong. (Cucurbitaceae)	Semi evergreen forest.	Jan-Sept.	Fruits	Medicine
39.	<i>Hoya arnottiana</i> Benth. (Asclepiadaceae)	Semi evergreen forest.	June-Jan.		
40.	<i>Ipomoea hederifolia</i> L. (convolvulaceae)	Deciduous forest	June-Dec.		
41.	<i>Ipomoea fistulosa</i> Mart. ex Choisy (convolvulaceae)	Open forests in marshy areas.	Feb.-July.		
42.	<i>Ipomoea obscura</i> (L.) Ker Gawler (convolvulaceae)	Deciduous forests	Sept.-June.		
43.	<i>Ipomoea quamoclit</i> L. (convolvulaceae)	Deciduous forests	July-Dec.		
44.	<i>Jasminum coartatum</i> Roxb. (Oleaceae)	Semi evergreen forest	Mar-Nov.		-
45.	<i>Marsdenia roylei</i> Wight. (Asclepiadaceae)	Semi evergreen forest	May-Nov		
46.	<i>Merremia hederacea</i> (Burm. f.) Hallier (convolvulaceae)	open deciduous forests	Dec-Mar.		
47.	<i>Merremia umbellata</i> Hallier f. (convolvulaceae)	Deciduous forests	Mar-July.		
48.	<i>Merremia vitifolia</i> (Burm. f.) Hallier. f. (convolvulaceae)	Deciduous forests	Mar-Sep.		

49.	<i>Mikania micrantha</i> Kunth. (Asteraceae)	Open forest, mixed forest, road sides.	Dec.-Mar.	leaves	Medicine
50.	<i>Momordica charantia</i> L. (Cucurbitaceae)	roadside/Grassland	June-Oct.	Fruits	Vegetables.
51.	<i>Mucuna bracteata</i> DC., ( Papilionaceae)	Deciduous forests	Aug.-Jan.		
52.	<i>Mucuna pruriens</i> (L.) DC ( Papilionaceae)	Mixed forest, Grassland area.	Apr-Nov.		
53.	<i>Mukia maderaspatana</i> (L.) Roem (Cucurbitaceae)	Grassland area.	Apr-July		
54.	<i>Myriopteron extensum</i> (Weight) K. (Asclepiadaceae)	Mixed forest	May- Dec.		
55.	<i>Natsiatum hepaticum</i> , Buch- Ham (Icacinaceae)	Evergreen forest	Dec-Feb.		
56.	<i>Naravelia zeylanica</i> (L.)DC (Ranunculaceae)	Semi evergreen forest, mixed forest.	Oct- Mar.	Stem	Medicine
57.	<i>Operculina turpethum</i> (L.)Manso. (Convolvulaceae)	Grassland area.	Mar -July.		
58.	<i>Paederia foetida</i> L. (Rubiaceae)	Deciduous forests	Jan.-Oct.	Stem /leaves	Vegetables.
59.	<i>Passiflora edulis</i> Sims. (Passifloraceae)	Open forest, Mixed forest	Jun. - Nov.		
60.	<i>Passiflora foetida</i> L. (Passifloraceae)	Open forest, Mixed forest	Nov.-Mar.		
61.	<i>Pergularia daemia</i> Forssk. (Apocynaceae)	Deciduous forests	May - July.		
62.	<i>Piper betel</i> Linn (Piperaceae)	Semi evergreen forest	Dec-Apr.	Leaves	Sociocultur al
63.	<i>Piper griffithii</i> C. DC. (Piperaceae)	Dense hilly forests.	Apr.- Oct.		
64.	<i>Piper longum</i> L. (Piperaceae)	semi evergreen forest	Oct.-May.	Fruit	spice and Medicine
65.	<i>Piper nigrum</i> L. (Piperaceae)	Semi evergreen forest/ open forests.	Mar.-July.	Fruits	Condiment.
66.	<i>Piper trioicum</i> Roxb (Piperaceae)	Semi evergreen forest	Nov.-Jan.		
67.	<i>Piper sylvaticum</i> Roxb (Piperaceae)	Semi evergreen forest	Aug.-Oct.		
68.	<i>Pothos scandens</i> L. (Araceae)	In hilly forests	Feb.-Aug.		
69.	<i>Porana paniculata</i> Roxb. (Convolvulaceae)	In deciduous forests.	Nov.-Mar.		
70.	<i>Rhynchosia viscosa</i> (Roth) DC. ( Papilionaceae)	Grassland/deciduous forest	Aug-Oct.		
71.	<i>Spatholobus parviflorus</i> (DC.) Kuntze (Papilionaceae )	Deciduous forests	July-Dec.		
72.	<i>Smilax ovalifolia</i> Roxb. (Smilacaceae)	Deciduous forests	Aug- Nov.	Whole plant	Medicine
73.	<i>Smilax perfoliata</i> L. (Smilacaceae)	Semi evergreen forests	Jan.-Dec.	Whole plant	Medicine
74.	<i>Smilax zeylanica</i> L. (Smilacaceae)	Deciduous forests	June-Dec.	Young shoot	Vegetables.
75.	<i>Solena amplexicaulis</i> (Lam.)	Deciduous forests	June-Dec.	Young	Vegetables.

	<i>Gandhi</i> (Cucurbitaceae)			leaves/ stem	
76.	<i>Stephania japonica</i> (Thunb.) Miers. (Menispermaceae)	Semi evergreen forests , Grassland	Mar.-Dec.	leaves	Medicine
77.	<i>Stixis scandens</i> Lour (Capparaceae)	tropical forests and subtropical forests	Feb.-Nov.		
78.	<i>Tetrastigma bracteolatum</i> (Wall.) Planch (Vitaceae)	Semi evergreen hilly forests.	Mar.-Dec.		
79.	<i>Tetrastigma lanceolarium</i> Planch. (Vitaceae)	Semi-evergreen hilly forests.	June-Feb.		
80.	<i>Thunbergia grandiflora</i> (Rotlb) Roxb. (Thunbergiaceae)	Deciduous forests	Apr.-Sept.		
81.	<i>Tinospora cordifolia</i> (Willd) Miers (Menispermaceae)	Hilly or plain deciduous forest.	Jan.-May.	Stem	Medicine
82.	<i>Uncaria macrophylla</i> Wall. ( Rubiaceae)	Evergreen/ semi-evergreen	Sep.-Apr.		
83.	<i>Vitis riparia</i> Michx. (Vitaceae)	semi-evergreen	June-Sept.		
84.	<i>Vitis repanda</i> (Vahl) W & A. (Vitaceae)	semi-evergreen	Feb. - Aug.		
85.	<i>Vitis tuberculata</i> M. Lawson (Vitaceae)	Dense hilly forests.	Mar.-Nov.		
86.	<i>Zanthoxylum nitidum</i> (Roxb.) D.C. (Rutaceae)	Evergreen forest	Feb.- Oct.	Young leaves /shoot	Vegetables.

## RESULTS AND DISCUSSION

Climbing species are found to be present in all types of the vegetation in the study area. However, their presence is pronounced in the semi evergreen forests. A total of 86 species were recorded under 56 genera and 24 families. Among the recorded families, 5 families belong to monocot and 19 families belong to dicot. Out of the total 86 species, 31 species have been found to be used by the ethnic communities inhabiting in the area in their day to day life. viz. medicine, sociocultural practices and as source of food.

The floristic study forms a vital component of any natural resource management and planning activities at the local, regional and global levels. Sustainable utilization of natural resources of an area contributes significantly in economy of a region. Their evaluation and proper database is a prerequisite for all the developmental activities envisaged for the area ( Bor and Raizada, 1954; Pal, 1960; Das *et al.*, 2009; Ghosh , 2013; Barooah and Ahmed, 2014).

## ACKNOWLEDGEMENT

The first author is grateful to the University Grants Commission (UGC) awarding Ravij Gandhi National Fellowships (RGNF) for PhD programme

vide its Letter No. FI- 17.1/2014-2015/RGNF-2014-15-ST-Ass-65516.

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How to Cite this Article:

**D Baro and S K Borthakur, 2017.** Climbing Angiosperms of Manas National Park, Assam: Diversity and Ethnobotany. *Bioscience Discovery*, **8(2):**158-165.