



DIVERSITY OF SOME ANGIOSPERMIC CLIMBERS IN DIGRAS TEHSIL OF YAVATMAL DISTRICT, MAHARASHTRA

*Ku. R. R. Kolhe¹, Dr. M. M. Dhore², Mr. P. V. Gadkar³

^{1,2,3} Department of Botany, Bapuraoji Butle Arts, Narayanrao Bhat Commerce and Bapusaheb Patil Science College Digras. (Corresponding Author)

ABSTRACT

The work in question deals with an extensive study on the diversity of flowering climbing plants in Digras tehsil of Yavatmal district. The investigation is carried out to survey, identify the climbing species, and determine to what extent their biodiversity has declined in the region in terms of population as well as community level. We identified about 99 species of angiospermic climbers belonging to 35 families. Fabaceae, Cucurbitaceae, Asclepiadaceae, and Convolvulaceae were found to be the most dominant. Habitat fragmentation, anthropogenic activities, declined pollinator diversity, changing agricultural practices, and less public awareness about the importance of these species influenced the diversity of climbing plants in the area.

KEYWORDS: Climbers, Diversity, Abundance, Conservation Status

INTRODUCTION

Climbers play diverse roles in the ecology of forests. Climber species due to its fragile nature are suitable to any change in the forests. Knowledge about climber species in the forests is relatively inadequate and this is the first effort to report the climber plant species in Digras Tehsil of Yavatmal District. Angiospermic climbers are flowering plants that have adapted to grow vertically by using other plants or structures as support. They are commonly found in various ecosystems, including forests, grasslands, and urban areas. These climbers can belong to a wide range of families and genera, showcasing a diverse array of characteristics and adaptations. A plant species which cannot withstand on itself due to weak stem and takes support of other plants or objects to continue its growth and ascending up to trap the solar energy is by and large considered as a climber. Climber is defined as plant species that require mechanical support for its growth (Putz & Windsor 1987). It includes herbaceous and woody lianas (Gentry 1991). According to an estimate, climbers are one half of vascular plant species. A liana is a woody climber that generally has roots in woodland or forest floor but its leaves often in full sun, blanketing canopies of trees, often many meters from the ground. All these climbing elements having various morphological forms including climbers, twiners and lianas are components of vegetation and play a crucial role to maintain the diversity of the particular area.

A climber floristically plays an important role in tropical forest and considered to be a structural component that affects the physiognomy of the forest (Gentry 1991). A climber plant species plays a vital role in forest ecosystem as it provides habitat and food for animals (Hladik 1978; Emmons & Gentry 1983; Gentry 1991; Gelatti & Padroni 1994). Climbers are almost neglected in all floristic studies but this group represents one of the major part of plant collections (Gentry 1991). A climber starts its life on the forest floor and spends

almost one-fourth of its life on forest surface. After this phase the adhering, anchoring, and leaning starts on other plants to achieve immense stature (Jongkind & Hawthorne 2005). Families such as Cucurbitaceae, Convolvulaceae, and Dioscoreaceae are considered to be climber rich. Amongst the climber-rich families, Apocynaceae, Rubiaceae, Celastraceae, and Leguminosae have more than 50 species (Gentry 1991; Schnitzer & Bongers 2002). Diversity is also found in the climbing mechanism in the form of branch twiners, stem twiners, tendril climbers, root adhesive climbers, hook climbers, and scramblers (Bongers et al. 2005; Jongking & Hawthorne 2005). The liana life-form is dependent on host tree species for mechanical support and further on animals for dispersal, underlines the intersystem coupling of forest functional ecology in maintenance of biodiversity (C. Muthumperumal et al. 2012). Study on the diversity and distribution of climbing plants is still scanty in the Indian scenario when compared to their study worldwide. (Kashung et al. 2021).

MATERIALS AND METHODS

Study Area

Digras is the tehsil located in district Yavatmal of Maharashtra state in India. There are 80 villages and 1 town in Digras Taluka, surrounded by lush green forests and farmlands. There is a rich diversity of angiosperms in the area, consisting of various floras like herbs, shrubs, trees, and climbers in wild habitat as well as in cultivated gardens and farmlands. The climbers are one of the most important canopy structures in deciduous forests. Many tribes in the area depend on the angiospermic climbers for ethnomedicine and as wild vegetables in their day-to-day lives.

Methodology

The present work was conducted from June 2021 to May 2022 in all seasons. Angiospermic climbers were collected from different localities, like wild habitats in forests, farmlands,

gardens, and roadsides. Photographs were taken on site of climber species in the flowering stage for proper identification. Some important identifying characters were noted in field notes. Collected species were identified from regional floras like the Flora of Yavatmal district (Karthikeyan and Anand Kumar, 1993), the Flora of Maharashtra Dicotyledons Vol. I (Singh and Karthikeyan, 2000), and the Flora of Maharashtra Monocotyledons (Sharma et al., 1996), with the help of expertise. Herbarium of climbers was prepared and stored at the Department of Botany, Bapuraoji Butle Arts, Narayanrao Bhat Commerce, and Bapusaheb Patil Science College Digras.

RESULTS AND DISCUSSION

Sr.No	Name of the Species	Name of the Families	Common Name
1	<i>Artabotrys hexapetalus</i> (L.f.) Bhandari.	Annonaceae	Hirwa Chafa, Madan masta
2	<i>Cocculus hirsutus</i> (L.) Diels.	Menispermaceae	Vasanvel
3	<i>Tinospora cordifolia</i> (Willd.) Miers.	Menispermaceae	Gulvel
4	<i>Capparis zeylanica</i> L.	Capparaceae	Waghatai.
5	<i>Maerua arenaria</i> (DC.) Hook. f. & Thoms.	Capparaceae	Kaba, Kalwari
6	<i>Celastrus paniculata</i> Willd.	Celastraceae	Dhimarbel
7	<i>Ventilago denticulata</i> Willd.	Rhamnaceae	Lokhandi.
8	<i>Ampelocissus latifolia</i> (Roxb.) Planch.	Vitaceae	Dokela
9	<i>Cissus quadrangularis</i> L.	Vitaceae	Kandvel.
10	<i>Cissus repanda</i> Vahl.	Vitaceae	Gendal
11	<i>Cissus vitiginea</i> L.	Vitaceae	Jangli angur
12	<i>Cardiospermum helicacabum</i> L.	Sapindaceae	Ghanphodi.
13	<i>Bauhinia vahlii</i> Wight & Arn.	Caesalpiniaceae	veli aapta
14	<i>Caesalpinia bonduc</i> (L.) Roxb.	Caesalpiniaceae	Sagargota
15	<i>Abrus precatorius</i> L.	Fabaceae	Gunj.
16	<i>Butea superba</i> Roxb.	Fabaceae	Palasvel
17	<i>Cajanus platycarpus</i> (Bth.) van der Maes	Fabaceae	Gophanvel
18	<i>Clitoria ternatea</i> L.	Fabaceae	Gokarni
19	<i>Clitoria ternatea</i> var. <i>pilosula</i> L.	Fabaceae	Gokarni
20	<i>Derris scandens</i> Benth.	Fabaceae	Tupbel.
21	<i>Lablab purpureus</i> (L.) Sweet.	Fabaceae	Popat.
22	<i>Lablab purpureus</i> var. <i>lignosus</i> (L.), King.	Fabaceae	Waal.
23	<i>Lathyrus aphaca</i> L.	Fabaceae	Ran watana.
24	<i>Mucuna pruriens</i> (L.) DC.	Fabaceae	Khajkuri.
25	<i>Phaseolus radiatus</i>	Fabaceae	Jangli moong.
26	<i>Phaseolus vulgaris</i> L.	Fabaceae	Vilayati sem.
27	<i>Pisum sativum</i> L.	Fabaceae	Vatana.
28	<i>Rhynchosia bracteata</i> Benth.	Fabaceae	Turvel
29	<i>Rhynchosia minima</i> (L.) DC.	Fabaceae	Turvel

30	<i>Vigna unguiculata</i> (L.) Walp.	Fabaceae	Barbati.
31	<i>Calycotris floribunda</i> (Roxb.) Poir.	Combretaceae	Ukshi.
32	<i>Combretum ovalifolium</i> Roxb.	Combretaceae	Madbel,
33	<i>Quisqualis indica</i> L.	Combretaceae	Lalchameli.
34	<i>Passiflora foetida</i> L.	Passifloraceae	Gangurli
35	<i>Passiflora incarnata</i> L.	Passifloraceae	Krishnkamal.
36	<i>Citrullus colocynthis</i> (L.) Schrad.	Cucurbitaceae	Indrayan
37	<i>Citrullus fistulosus</i> Stock	Cucurbitaceae	Dhemse.
38	<i>Citrullus lantus</i> Matsumura et Nakai.	Cucurbitaceae	Tarbooz,
39	<i>Coccinia grandis</i> (L.) Voigt.	Cucurbitaceae	Tondli.
40	<i>Cucumis callosus</i> (Rottl.) Cogn.	Cucurbitaceae	Pangogri kadu.
41	<i>Cucumis melo</i> var. <i>agrestis</i> Naud.	Cucurbitaceae	Shendada.
42	<i>Cucumis sativus</i> L.	Cucurbitaceae	Kakadi.
43	<i>Cucurbita maxima</i> Duch.	Cucurbitaceae	Bhopala, Kaddu.
44	<i>Cucurbita moschata</i> (Duch.) Poir.	Cucurbitaceae	Kala bhopala
45	<i>Cucurbita pepo</i> L.	Cucurbitaceae	Kashibhopala.
46	<i>Diplocyclos palmatus</i> (L.) Jeffrey	Cucurbitaceae	Shankar-vel
47	<i>Lagenaria siceraria</i> (Molina) Standley.	Cucurbitaceae	Dudhi bhopala.
48	<i>Luffa acutangula</i> (L.) Roxb.	Cucurbitaceae	Dodka.
49	<i>Luffa cylindrica</i> (L.) Roem.	Cucurbitaceae	Chopda Dodka.
50	<i>Momordica charantia</i> L.	Cucurbitaceae	Karle.
51	<i>Momordica dioica</i> Roxb.	Cucurbitaceae	Kartoli.
52	<i>Trichosanthes anguina</i> L.	Cucurbitaceae	Padval.
53	<i>Trichosanthes cucumerina</i> L.	Cucurbitaceae	Jangli Padval.
54	<i>Mikania micrantha</i> Kunth.	Asteraceae	
55	<i>Jasminum officinale</i> L. var. <i>officinale</i> .	Oleaceae	
56	<i>Jasminum officinale</i> L. var. <i>grandiflorum</i>	Oleaceae	Chameli, jai
57	<i>Jasminum sambac</i> Ait.	Oleaceae	Batmogra.
58	<i>Allamanda cathartica</i> L.	Apocynaceae	-
59	<i>Quirivelia frutescens</i> (L.) M.R. & S.M. Almeida.	Apocynaceae	Shamlata, Kadhidudhi.,
60	<i>Leptadenia reticulata</i> (Retz.) Wt. & Arn.	Asclepiadaceae	Hirandodi
61	<i>Pergularia daemia</i> (Forsk.) Chiov.	Asclepiadaceae	Utaranvel, Utarni.
62	<i>Telosma pallida</i> (Roxb.) Craib.	Asclepiadaceae	Jiwati
63	<i>Tylophora indica</i> (Burm.f.) Merr.	Asclepiadaceae	Potmari.
64	<i>Wattakaka volubilis</i> (L.f.) Stapf.	Asclepiadaceae	Ambri
65	<i>Cryptolepis buehnanii</i> Roem. & Sch.	Periplocaceae	Dudhivel
66	<i>Hemidesmus indicus</i> var. <i>indicus</i> (L.)	Periplocaceae	Anantmul,

67	<i>Hemidesmus indicus</i> var. <i>pubescens</i> (Wight & Arn.) Hook.f.	Periplocaceae	-
68	<i>Argyrea nervosa</i> (Burm.f.) Boj.	Convolvulaceae	Samudrashoth.
69	<i>Convolvulus arvensis</i> L.	Convolvulaceae	Chandvel.
70	<i>Ipomoea cairica</i> (L.) Sweet.	Convolvulaceae	Garwel.
71	<i>Ipomoea hederifolia</i> L.	Convolvulaceae	-
72	<i>Ipomoea muricata</i> (L.) Jacq.	Convolvulaceae	-
73	<i>Ipomoea nil</i> (L.) Roth.	Convolvulaceae	Kaladana.
74	<i>Ipomoea obscura</i> (L.) Ker-Gawl.	Convolvulaceae	Pungali.
75	<i>Ipomoea pes-tigridis</i> L.	Convolvulaceae	Belukeja.
76	<i>Ipomoea quamoclit</i> L.	Convolvulaceae	Ganesh pushpa.
77	<i>Ipomoea sinensis</i> (Desv.) Choisy.	Convolvulaceae	-
78	<i>Jacquemontia paniculata</i> (Burm.f.) Hallier	Convolvulaceae	-
79	<i>Operculina turpethum</i> (L.) S. Manso.	Convolvulaceae	Dudhkalmi, Nishottar.
80	<i>Cuscuta reflexa</i> Roxb.	Cuscutaceae	Amarwel
81	<i>Bignonia unguis-cati</i> L.	Bignoniaceae	-
82	<i>Asystasia gangetica</i> (L.) T. Ander.	Acanthaceae	-
83	<i>Thunbergia fragrans</i> Roxb.	Thunbergiaceae	-
85	<i>Clerodendrum splendens</i> G. Don	Verbenaceae	-
86	<i>Petrea volubilis</i> L.	Verbenaceae	-
87	<i>Bougainvillea glabra</i> Choisy.	Nyctaginaceae	-
88	<i>Bougainvillea spectabilis</i> Willd.	Nyctaginaceae	-
89	<i>Basella rubra</i> L.	Basellaceae	Velbondi.
90	<i>Antigonon leptopus</i> Hook. & Arn.	Polygonaceae	-
91	<i>Aristolochia indica</i> L.	Aristolochiaceae	Badakvel
92	<i>Piper betle</i> L.	Piperaceae	Pan, Nagwel.
93	<i>Cassytha filiformis</i> L.	Cassythaceae	Adharvel, Am-arbel.
94	<i>Tragia plukenetii</i> L.	Euphorbiaceae	Khajvel
95	<i>Dioscorea bulbifera</i> L.	Dioscoreaceae	Akashvel, Kadu-karanda.
96	<i>Asparagus racemosus</i> Willd. var. <i>javanica</i> Baker	Liliaceae	Shatawari.
97	<i>Gloriosa superba</i> L.	Liliaceae	Kallavi
98	<i>Smilax perfoliata</i> Lour.	Smilacaceae	-
99	<i>Pothos scandens</i> L.	Araceae	-

Table. 1. Enumeration of various angiospermic climber species.

the present study reveals 99 species of climbers belonging to 35 families of climbing species of angiosperms in the area which marked the rich diversity of climbers in the given region but the population of some species is declining. Climbers associated with diverse habitats such as forests, grasslands, and wetlands. Deforestation, urbanization, and agricultural expansion can lead to the destruction of these habitats, affecting the climbers

that rely on them for support and resources. The diversity of climber species like *Artabotrys hexapetalus* (L.f.) Bhandari., *Cardiospermum helicacabum* L., *Telosma pallida* (Roxb.) Craib., *Hemidesmus indicus* var. *indicus* (L.) *Aristolochia indica* L., *Dioscorea bulbifera* L., *Gloriosa superba* L were rare among all climbers. Invasive plant species are outcompeting native climbers, leading to a decline in their populations. Invasive species disrupting the natural ecological balance and threatening the survival of native plants. In some cases, climbers are harvested for various purposes, such as medicinal or ornamental use. Unsustainable harvesting have negatively impact on the populations. Climate change also altering the distribution and timing of plant species, including climbers. Shifts in temperature and precipitation patterns affecting their growth and reproductive cycles. We have took conservation efforts with classical approach by collecting seeds of rare and medicinal climbers for seed banks.

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