

Biodiversity of Angiospermic Climbers in Murud-Janjira Tahsil, Raigad District, Maharashtra, India

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Abstract: *The present study documents the biodiversity of angiospermic climbers in Murud-Janjira Tahsil, Raigad District, Maharashtra, India. A total of 28 climbing species belonging to 17 families were recorded and studied based on their habit and uses. The dominant families were Fabaceae, Convolvulaceae, and Cucurbitaceae. The climbers exhibited diverse habits, including woody, herbaceous, twining, and creeping forms. Most species were found to have medicinal, edible, ornamental, or ecological importance, highlighting their role in local biodiversity and traditional practices. The study emphasizes the need for conservation and sustainable utilization of these climbers in the region.*

Keywords: *Copper oxide nanoparticles; Green synthesis; Plant extracts; Phytochemicals; Nanotechnology; Photocatalysis; Antimicrobial activity. Angiosperm, biodiversity, climbers, Murud Tahsil.*

I. INTRODUCTION

Climbing plants i.e. climbers, twiners and lianas are important components of vegetation. Climbers are plants rooted in the ground but need support for their weak stems (Richards, 1952). 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 considered as a climber. 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. The climbers in the wild generally utilize the neighboring plants as external supporting structures to ascend (Den & Oosterbeek, 1995). The early and somewhat sound classification of climbers is that of Schimper (1903), who categorized them into scrambles, root climbers, twiners and tendril climbers.







India is having richest biodiversity in the world. The Flora of India is consists of 47513 plant species of all groups and 18117 flowering plant species. (Arisdason & Lakshminarasimhan, 2019). India is also known as a mega-diversity center among 12 in the world .Vegetation may be described as the plant life of a region. India, one of the 12 megacentres of origin of cultivated plants is also one of the richest centers of biodiversity (Kohli et al., 2004). Environmental condition supports the diversity of different plant species. The current study focuses on documentation of Biodiversity of plants especially climbers of Angiosperms in Murud Janjira Tahsil from Raigad District (Maharashtra State), India.





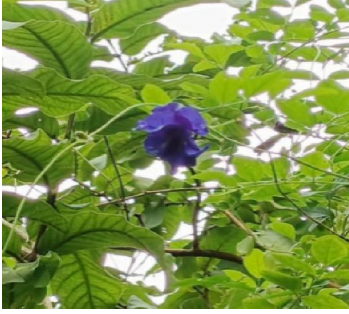









II. MATERIALS AND METHODS

The exploration of the area under study includes the planned study tours to various places for collection of climbers in study area. It was carried out during 2024-26. Several daily and seasonal field tours were made to cover the entire Murud Tahsil. Flowering and fruiting specimens were collected and field observations on habit, habitat, color of flower, local name etc. were noted. After completing the plant specimen collection from study area, herbariums of collected specimens were prepared (Jain & Rao 1978; Diane & Leonard, 1998). Close up of flowering/fruiting material and habit along with associated plants were photographed. Special attention was paid to collect the plants from different areas and as far as possible all localities have been covered during all seasons. Extensive field work, exploration and collection of plants were carried out in different seasons. The identification of the collected specimens was carried out with the help of relevant literature.

The laboratory work primarily involved the correct identification of the specimens. The specimens were identified using standard published floras such as *Flora of British India* by Hooker (1898), *Flora of the Presidency of Bombay* by Cooke (1958), *The Flora of Maharashtra State: Monocotyledons* by Sharma et al. (1996), and *Flora of Maharashtra* Volumes I-IV by Almeida and Almeida (2001, 2003). *Flora of Maharashtra State: Dicotyledons Vol-I*, Singh and Karthikeyan (2001), *Flora of Maharashtra state Dicotyledons Vol-II*, Singh et al. (2001). *Flora of Kolhapur District*, Yadav, and Sardesai (2002), 'Flora of Baramati', Bhagat et al. (2008), *Flora of Khandala on the Western Ghats of India*, Santapau (1953), *Flora of Purandar*, Santapau (1958), *Botanical collectors' manual*, Santapau (1958) etc.

		
<i>Abrus precatorius</i> L.	<i>Ampelocissus latifolia</i> (Roxb.) Planch.	<i>Ampelocissus latifolia</i> (Roxb.) Planch.
		
<i>Argyreia nervosa</i> (Burm.f.) Bojer	<i>Asparagus racemosus</i> Willd.	<i>Camonea umbellata</i> (L.) A.R. Simões & Staples



		
<i>Canavalia cathartica</i> Thouars	<i>ceropegia bulbosa</i>	<i>Clitoria ternatea</i> L.
		
<i>Cucumis sativus</i> L.	<i>Dioscorea bulbifera</i> L.	<i>Epipremnum aureum</i>
		
<i>Gloriosa superba</i> L.	<i>Gnetum ula</i> Brongn.	<i>Ipomoea biloba</i> Forssk.
		
<i>Ipomoea nil</i> (L.) Roth	<i>Ipomoea pes-tigridis</i> L.	<i>Ipomoea triloba</i> L.










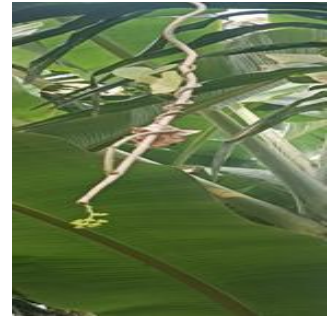

		
<i>Mansoa alliacea</i>	<i>Momordica charantia L.</i>	<i>Mucuna pruriens (L.) DC.</i>
		
<i>Passiflora Sp.</i>	<i>Pergularia daemia (Forssk.) Chiov. Utarn</i>	<i>Phaseolus vulgaris L.</i>
		
<i>Thunbergia grandiflora (Roxb. ex Rottl.) Roxb.</i>	<i>Tinospora cordifolia (Willd.) Hook.f. & Thomson</i>	<i>Trichosanthes cucumerina</i>





Fig. 1: Diversity of climber plants from various locations of Murud Tahsil, Raigad District, Maharashtra.

Sr. No.	Scientific Name	Common Name	Family	Habit	Major Uses
1	<i>Abrus precatorius</i> L.	Rosary pea	Fabaceae	Woody climber	Medicinal (traditional), ornamental (seeds)
2	<i>Ampelocissus latifolia</i> (Roxb.) Planch.	Wild grape	Vitaceae	Woody climber	Edible fruits, medicinal
3	<i>Argyreia nervosa</i> (Burm.f.) Bojer	Elephant creeper	Convolvulaceae	Woody climber	Medicinal, ornamental
4	<i>Asparagus racemosus</i> Willd.	Shatavari	Asparagaceae	Climbing shrub	Medicinal (Ayurveda)
5	<i>Camonea umbellata</i> (L.) A.R.Simões & Staples	Yellow merremia	Convolvulaceae	Herbaceous climber	Ornamental
6	<i>Canavalia cathartica</i> Thouars	Ground jack bean	Fabaceae	Herbaceous climber	Soil binder, medicinal
7	<i>ceropogia bulbosa</i>	Kandilpushp	Apocynaceae	Climber	Digestive problems, Inflammation, Fever
8	<i>Clitoria ternatea</i> L.	Butterfly pea	Fabaceae	Herbaceous climber	Medicinal, ornamental, dye
9	<i>Cucumis sativus</i> L.	Cucumber	Cucurbitaceae	Herbaceous climber	Vegetable
10	<i>Dioscorea bulbifera</i> L.	Air potato	Dioscoreaceae	Twining climber	Edible (after processing), medicinal
11	<i>Epipremnum aureum</i>	Money Plant	Araceae	Perennial evergreen climber	Ornamental plant, indoor air purifier
12	<i>Gloriosa superba</i> L.	Flame lily	Colchicaceae	Herbaceous climber	Medicinal, ornamental
13	<i>Gnetum ula</i> Brongn.	Gnetum	Gnetaceae	Woody climber	Edible leaves, medicinal
14	<i>Ipomoea biloba</i> Forssk.	Beach morning glory	Convolvulaceae	Creeping climber	Sand dune stabilizer



15	<i>Ipomoea nil</i> (L.) Roth	Japanese morning glory	Convolvulaceae	Herbaceous climber	Ornamental
16	<i>Ipomoea pes-tigridis</i> L.	Vaghpadi	Convolvulaceae	Annual climber	Ornamental, soil cover, traditional medicine
17	<i>Ipomoea triloba</i> L.	Three-lobed morning glory	Convolvulaceae	Herbaceous climber	Ornamental
18	<i>Mansoa alliacea</i>	Garlic Vine	Bignoniaceae	Woody climber	Ornamental, medicinal (anti-inflammatory, antimicrobial)
19	<i>Momordica charantia</i> L.	Bitter gourd (Karela)	Cucurbitaceae	Herbaceous climber	Vegetable, medicinal
20	<i>Mucuna pruriens</i> (L.) DC.	Velvet bean	Fabaceae	Herbaceous climber	Medicinal, green manure
21	<i>Passiflora Sp.</i>	Passion fruit	Passifloraceae	Woody climber	Edible fruits
22	<i>Pergularia daemia</i> (Forssk.) Chiov. Utarn	Utran	Apocynaceae	Twining climber	Medicinal (cough, asthma, skin diseases)
23	<i>Phaseolus vulgaris</i> L.	Garden bean	Fabaceae	Herbaceous climber	Vegetable
24	<i>Thunbergia grandiflora</i> (Roxb. ex Rottl.) Roxb.	Sky vine	Acanthaceae	Woody climber	Ornamental
25	<i>Tinospora cordifolia</i> (Willd.) Hook.f. & Thomson	Guduchi / Giloy	Menispermaceae	Woody climber	Medicinal
26	<i>Trichosanthes cucumerina</i>	Snake Gourd	Cucurbitaceae	Annual climber	Edible vegetable, medicinal
27	<i>Vigna luteola</i>	Australian Coastal Cowpea	Fabaceae	Creeping/climbing herb	Forage, soil binder, nitrogen fixer
28	<i>Vigna vexillata</i>	Wild Cowpea	Fabaceae	Twining climber	Food (tubers), fodder, soil enrichment

Table No. 1 List of Climber plants



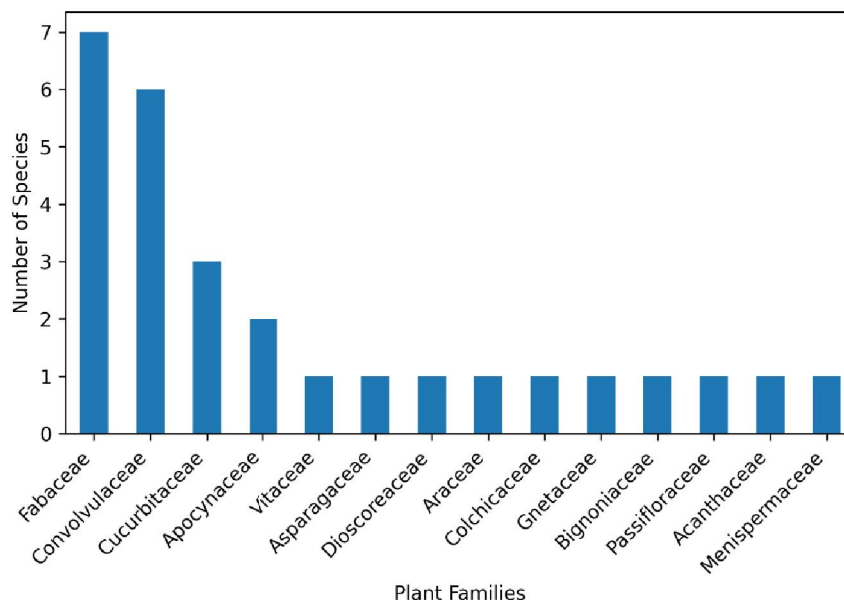


Fig 2: Family wise distribution of angiospermic climber in Murud- Janjira

III. RESULTS

Biodiversity is the capital asset of a nation and form the foundation upon which the human civilization are built. Biodiversity offers several direct and indirect economic benefits to human kind. Among different groups of plants, flowering plants play an important role and will continue to play major role in shaping the world's civilization (Gadgil & Meher-Homji 1990). Cultural, economic and overall development of a particular region is largely depending on the careful exploration, utilization as well as conservation of its natural resources

The present study on the biodiversity of angiospermic climbers in Murud-Janjira Tahsil, Raigad District, Maharashtra, revealed the occurrence of 28 species belonging to 26 genera and 17 families. Among these, Fabaceae was the most dominant family with the highest number of species, followed by Convolvulaceae and Cucurbitaceae, indicating their better adaptability to the local environmental conditions (Table 1 & Fig 2). Other families such as Apocynaceae, Vitaceae, Menispermaceae, Acanthaceae, and Passifloraceae were represented by fewer species. Based on their growth habit, the climbers were categorized into woody climbers, herbaceous climbers, twining climbers, creeping climbers, and climbing shrubs, showing considerable morphological diversity. Most of the recorded species were found to have multiple uses, including medicinal, edible, ornamental, and ecological importance. Species such as *Tinospora cordifolia*, *Asparagus racemosus*, *Gloriosa superba*, *Pergularia daemia*, and *Mucuna pruriens* were noted for their medicinal value, while *Cucumis sativus*, *Momordica charantia*, *Trichosanthes cucumerina*, and *Passiflora Sp.* were economically important as food plants. Some species like *Ipomoea biloba*, *Canavalia cathartica*, and *Vigna luteola* played a significant role in soil stabilization and nitrogen fixation. Overall, the results highlight the rich diversity and ecological significance of angiospermic climbers in the Murud-Janjira region.

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