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Abhishek Valvi

P.G. Scholar, Department of Botany, St. Xavier's College (Autonomous), Ahmedabad, Gujarat, India

Goral Jani

Head & Assistant Professor, Department of Botany, Government Arts & Science College, Bavla, Gujarat, India

Maulik Gadani

Associate Professor, Department of Botany, St. Xavier's College (Autonomous), Ahmedabad, Gujarat, India

Floristic Diversity, Taxonomic Composition and Conservation Significance of Climbing Angiosperms in Gujarat, India

Abhishek Valvi, Goral Jani and Maulik Gadani

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Abstract

Climbing plants, a key functional group in Gujarat's forests, rely on host trees for canopy access amid fierce resource competition. Our dataset documents 255 species across 36 families, dominated by Fabaceae (50 spp.), Convolvulaceae (49), Cucurbitaceae (34), and Apocynaceae (31), which collectively comprise 64% of the flora.

These climbers offer immense ethnobotanical value to Bhil, Rathwa, and Choudhary communities for medicines, veterinary uses, and food, while fueling herbal industries. Yet, anthropogenic pressures and climate-induced heat stress threaten them, including 31 RET (Rare, Endangered, and Threatened) species like *Corallocarpus epigaeus*, *Ipomoea muricata*, and *Tinospora cordifolia*.

Conservation is vital, with potential in urban green walls for cooling and air purification.

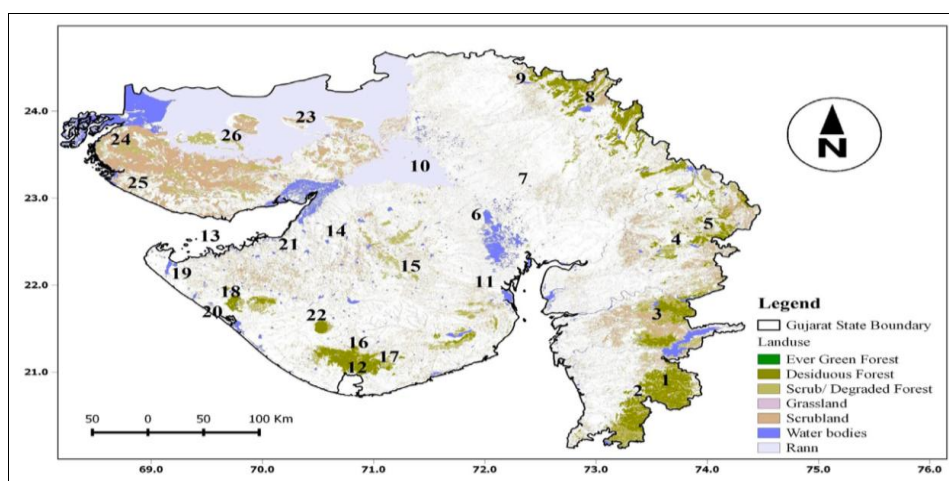
Keywords: Climbing plants, Diversity, Gujarat

Introduction

A climber is a specialized functional group of plants characterized by its non-self-supporting growth habit. Unlike trees, shrubs, or herbs, climbers lack the structural rigidity to stand upright but climber plants rely on external supports like other plants, rocks, or manmade structures. In forests, climbers reach the upper canopy levels to maximise sunlight ^[1].

It is estimated that there are about 25,000 climber plant species in the world ^[2]. According to the comprehensive checklist data, there are 2624 climber plant species across India ^[3]. In Gujarat, about 180 species were recorded by G.L. Shah in the Flora of Gujarat in 1978.

Gujarat encompasses a total geographical area of approximately 196,024 sq. km, positioned between 20°06'N to 24°42'N latitude and 68°10'E to 74°28'E longitude. The state represents a critical phytogeographical transition zone where the arid ecosystems of the Thar Desert meet the humid, biodiversity-rich environments of the Western Ghats and the Vindhya Satpura ranges ^[4].



Map 1: Geographical map of Gujarat state, Vegetation cover is indicated by colours.

Corresponding Author:**Abhishek Valvi**

P.G. Scholar, Department of Botany, St. Xavier's College (Autonomous), Ahmedabad, Gujarat, India

Climbing plants exhibit remarkable diversity in their physical adaptation. They can be categorized by their specific climbing mechanisms into root climbers, hook climbers, tendril climbers, leaf or stem climbers, and twiners. By utilizing these varied methods to ascend, they engage in intense competition with trees for essential resources both above and below the soil. This competitive pressure significantly hinders tree growth, slows the natural regeneration of seedlings, and suppresses the development of new sprouts [6].

Climbing plant growth follows a sharp seasonal cycle driven by water availability. The highest growth occurs during the monsoon (July to September), where high humidity and soil moisture trigger rapid stem elongation and leaf production. Growth slows significantly or stops during the winter (November to February).

In Gujarat, a study of climber plants recorded 81 species by M.S. [7] for the Medicinal Flora of Gujarat. In Valsad Taluka, 61 climber species were recorded in 2018 by G.K.

Tandel and M.S. Jangid. In the Bhavnagar forest area, 63 climber species were recorded by Naresh H. Chavda and Shailesh K. Mehat, respectively. Furthermore, in Gandhinagar, 78 climber species were recorded in the e-Flora of Gandhinagar by Dr. Maulik Gadani and Dr. Goral Jani. Therefore, the objective of this review paper is to document these climber plants in a systematic manner.

Taxonomic Diversity

The climbing flora data comprises a total of 255 species distributed across 36 distinct families, showcasing a diverse botanical landscape (Table 1). The collection is significantly dominated by four key families: Fabaceae, which is the most prevalent with 50 species (approximately 19.6%), followed closely by Convolvulaceae with 49 species, Cucurbitaceae with 34 species, and Apocynaceae with 31 species. Together, these four dominant families account for 164 species, representing approximately 64% of the total climber flora recorded in the dataset.

Table 1: Listing of Climbing plants Gujarat State

Sr. No.	Scientific Name	Family Name (APG)	Fam (Bentham & Hooker)	Common Name
1.	<i>Abrus precatorius</i> L.	Fabaceae	Leguminosae	Rosary Pea / Chanothi
2.	<i>Allamanda cathartica</i> L.	Apocynaceae	Apocynaceae	Yellow Bell / Pilu karel
3.	<i>Allamanda violacea</i> Gardner	Apocynaceae	Apocynaceae	Purple Allamanda
4.	<i>Ampelocissus arnottiana</i> Planch.	Vitaceae	Ampelidaceae	Wild Grape
5.	<i>Ampelocissus latifolia</i> (Roxb.) Planch.	Vitaceae	Ampelidaceae	Jungle Angur / Khat-khatumbo
6.	<i>Ampelocissus tomentosa</i> (Roth) Planch.	Vitaceae	Ampelidaceae	Hairy Wild Grape
7.	<i>Antigonon leptopus</i> Hook. & Arn.	Polygonaceae	Polygonaceae	Coral Vine / Laila Majnu
8.	<i>Argyrea nervosa</i> (Burm.f.) Bojer	Convolvulaceae	Convolvulaceae	Elephant Creeper / Samudra shosh
9.	<i>Argyrea sericea</i> Dalzell & A.Gibson	Convolvulaceae	Convolvulaceae	Silky Elephant Creeper
10.	<i>Argyrea strigosa</i> (Roth) Roberty	Convolvulaceae	Convolvulaceae	Bristly Elephant Creeper
11.	<i>Aristolochia bracteolata</i> Lam.	Aristolochiaceae	Aristolochiaceae	Worm Killer / Kidamari
12.	<i>Aristolochia elegans</i> Mast.	Aristolochiaceae	Aristolochiaceae	Calico Flower / Duck Flower
13.	<i>Aristolochia indica</i> L.	Aristolochiaceae	Aristolochiaceae	Indian Birthwort / Sapan
14.	<i>Artabotrys hexapetalus</i> (L.f.) Bhandari	Annonaceae	Annonaceae	Climbing Ylang-Ylang / Lilo champo
15.	<i>Asparagus gonocladus</i> Baker	Asparagaceae	Liliaceae	Shatavari variety
16.	<i>Asparagus racemosus</i> Willd.	Asparagaceae	Liliaceae	Asparagus / Shatavari
17.	<i>Aspidopterys cordata</i> (B.Heyne ex Wall.) A.Juss.	Malpighiaceae	Malpighiaceae	Heart-leaved Climber / Bokadvel
18.	<i>Atylosia platycarpa</i> Benth.	Fabaceae	Leguminosae	Broad-podded Atylosia
19.	<i>Atylosia scarabaeoides</i> (L.) Benth.	Fabaceae	Leguminosae	Beetle Atylosia / Ran-tur
20.	<i>Basella alba</i> L.	Basellaceae	Chenopodiaceae	Malabar Spinach / Poi ni bhaji
21.	<i>Bauhinia vahlii</i> Wight & Arn.	Fabaceae	Leguminosae	Camel's Foot Climber / Maljan
22.	<i>Beaumontia grandiflora</i> Wall.	Apocynaceae	Apocynaceae	Herald's Trumpet
23.	<i>Blastania garcinii</i> (Burm.f.) Cogn.	Cucurbitaceae	Cucurbitaceae	Garcini's Gourd
24.	<i>Bougainvillea spectabilis</i> Willd.	Nyctaginaceae	Nyctaginaceae	Bougainvillea / Boganvel
25.	<i>Butea parviflora</i> Roxb.	Fabaceae	Leguminosae	Climbing Palash / Khakhari
26.	<i>Butea superba</i> Roxb.	Fabaceae	Leguminosae	Superb Palash / Vel-khakhro
27.	<i>Caesalpinia bonduc</i> (L.) Roxb.	Fabaceae	Leguminosae	Fever Nut / Kachka
28.	<i>Caesalpinia crista</i> L.	Fabaceae	Leguminosae	Nicker Bean / Kankach
29.	<i>Caesalpinia decapetala</i> (Roth) Alston	Fabaceae	Leguminosae	Mysore Thorn / Chilari
30.	<i>Calycopteris floribunda</i> Lam.	Combretaceae	Combretaceae	Paper Flower Climber / Ukshi
31.	<i>Campsis radicans</i> (L.) Seem.	Bignoniaceae	Bignoniaceae	Trumpet Vine
32.	<i>Canavalia gladiata</i> (Jacq.) DC.	Fabaceae	Leguminosae	Sword Bean / Tarvardi
33.	<i>Canavalia virosa</i> (Roxb.) Wight & Arn.	Fabaceae	Leguminosae	Wild Sword Bean / Kadu-tarvardi
34.	<i>Capparis sepiaria</i> L.	Capparaceae	Capparidaceae	Wild Caper / Kanthar
35.	<i>Capparis zeylanica</i> L.	Capparaceae	Capparidaceae	Ceylon Caper / Govindphal
36.	<i>Cardiospermum halicacabum</i> L.	Sapindaceae	Sapindaceae	Balloon Vine / Kagdoliyo
37.	<i>Carissa congesta</i> Wight	Apocynaceae	Apocynaceae	Karanda / Karamdi
38.	<i>Cayratia carnosa</i> (Lam.) Gagnep.	Vitaceae	Ampelidaceae	Fox Grape / Khat-khatumbo
39.	<i>Cayratia trifolia</i> (L.) Domin	Vitaceae	Ampelidaceae	Three-leaved Caper / Khat-khatumbo
40.	<i>Celastrus paniculatus</i> Willd.	Celastraceae	Celastraceae	Black Oil Plant / Malkangani
41.	<i>Ceropegia bulbosa</i> Roxb.	Apocynaceae	Asclepiadaceae	Bulbous Ceropegia / Patal-tumbdi
42.	<i>Ceropegia evansii</i> McCann	Apocynaceae	Asclepiadaceae	Evans' Ceropegia
43.	<i>Ceropegia hirsuta</i> Wight & Arn.	Apocynaceae	Asclepiadaceae	Hairy Ceropegia
44.	<i>Ceropegia odorata</i> Nimmo	Apocynaceae	Asclepiadaceae	Fragrant Ceropegia
45.	<i>Chonemorpha fragrans</i> (Moon) Alston	Apocynaceae	Apocynaceae	Frangipani Vine
46.	<i>Cissampelos hernandiifolia</i> Willd.	Menispermaceae	Menispermaceae	Hernandia-leaved Velvetbean
47.	<i>Cissampelos pareira</i> L.	Menispermaceae	Menispermaceae	Velvetleaf / Venivel

48.	<i>Cissus quadrangularis</i> L.	Vitaceae	Ampelidaceae	Veldt Grape / Hadsankal
49.	<i>Cissus repanda</i> Vahl	Vitaceae	Ampelidaceae	Panibel
50.	<i>Citrullus colocynthis</i> (L.) Schrad.	Cucurbitaceae	Cucurbitaceae	Bitter Apple / Indravarna
51.	<i>Citrullus lanatus</i> (Thunb.) Matsum. & Nakai	Cucurbitaceae	Cucurbitaceae	Watermelon / Tarbuch
52.	<i>Clematis gouriana</i> Roxb. ex DC.	Ranunculaceae	Ranunculaceae	Indian Traveller's Joy / Tali
53.	<i>Clematis hedysarifolia</i> DC.	Ranunculaceae	Ranunculaceae	Hedysarum-leaved Clematis
54.	<i>Clematis heynei</i> M.A.Rau	Ranunculaceae	Ranunculaceae	Heyne's Clematis
55.	<i>Clematis roylei</i> Rehder	Ranunculaceae	Ranunculaceae	Royle's Clematis
56.	<i>Clematis triloba</i> Heyne ex Roth	Ranunculaceae	Ranunculaceae	Three-lobed Clematis / Trekhadi
57.	<i>Clerodendrum speciosum</i> Teijsm. & Binn.	Lamiaceae	Verbenaceae	Java Glory Bean
58.	<i>Clerodendrum splendens</i> G.Don	Lamiaceae	Verbenaceae	Flaming Glorybower
59.	<i>Clerodendrum thomsoniae</i> Balf.f.	Lamiaceae	Verbenaceae	Bleeding Heart Vine
60.	<i>Clitoria ternatea</i> L.	Fabaceae	Leguminosae	Butterfly Pea / Garni
61.	<i>Coccinia grandis</i> (L.) Voigt	Cucurbitaceae	Cucurbitaceae	Ivy Gourd / Tindora, Ghilodi
62.	<i>Cocculus hirsutus</i> (L.) Diels	Menispermaceae	Menispermaceae	Broom Creeper / Vevdi
63.	<i>Cocculus pendulus</i> (J.R.Forst. & G.Forst.) Diels	Menispermaceae	Menispermaceae	Pendulous Broom Creeper
64.	<i>Combretum albidum</i> G.Don	Combretaceae	Combretaceae	White Combretum
65.	<i>Combretum ovalifolium</i> Roxb.	Combretaceae	Combretaceae	Oval-leaved Combretum
66.	<i>Convolvulus auricomus</i> (A.Rich.) N.E.Br.	Convolvulaceae	Convolvulaceae	Golden Bindweed
67.	<i>Corallocarpus conocarpus</i> (Dalzell & A.Gibson) Hook.f.	Cucurbitaceae	Cucurbitaceae	Cone-fruited Corallocarpus
68.	<i>Corallocarpus epigeus</i> (Rottler) C.B.Clarke	Cucurbitaceae	Cucurbitaceae	Red-fruited Creeper / Kadvi-nai
69.	<i>Cosmostigma racemosum</i> (Roxb.) Wight	Apocynaceae	Asclepiadaceae	Cosmostigma
70.	<i>Cryptolepis buehneri</i> Roem. & Schult.	Apocynaceae	Asclepiadaceae	Wax Leaved Climber / Dudhi (Wild)
71.	<i>Cryptostegia grandiflora</i> R.Br.	Apocynaceae	Asclepiadaceae	Rubber Vine / Rubber vel
72.	<i>Ctenolepis cerasiformis</i> (Stokes) Hook.f.	Cucurbitaceae	Cucurbitaceae	Cherry-fruited Ctenolepis
73.	<i>Ctenolepis garcinii</i> (Burm.f.) C.B.Clarke	Cucurbitaceae	Cucurbitaceae	Garcini's Ctenolepis
74.	<i>Cucumis callosus</i> (Rottler) Cogn.	Cucurbitaceae	Cucurbitaceae	Bitter Cucumber / Kothimda
75.	<i>Cucumis melo</i> L.	Cucurbitaceae	Cucurbitaceae	Muskmelon / Sakarteti
76.	<i>Cucumis prophetarum</i> L.	Cucurbitaceae	Cucurbitaceae	Prophet's Cucumber / Kharo kothimdo
77.	<i>Cucumis sativus</i> L.	Cucurbitaceae	Cucurbitaceae	Cucumber / Kakdi
78.	<i>Cucumis setosus</i> Cogn.	Cucurbitaceae	Cucurbitaceae	Bristly Cucumber
79.	<i>Cucurbita maxima</i> Duchesne	Cucurbitaceae	Cucurbitaceae	Pumpkin / Kolu
80.	<i>Cucurbita pepo</i> L.	Cucurbitaceae	Cucurbitaceae	Zucchini / Marrow
81.	<i>Cuscuta chinensis</i> Lam.	Convolvulaceae	Convolvulaceae	Chinese Dodder / Amarvel
82.	<i>Cuscuta reflexa</i> Roxb.	Convolvulaceae	Convolvulaceae	Giant Dodder / Amarvel
83.	<i>Cyclea peltata</i> (Lam.) Hook.f. & Thomson	Menispermaceae	Menispermaceae	Pata Root / Karandhi
84.	<i>Cylista scariosa</i> Roxb.	Fabaceae	Leguminosae	Scarious Cylista
85.	<i>Cynanchum callialatum</i> Buch.-Ham. ex Wight	Apocynaceae	Asclepiadaceae	Winged Cynanchum
86.	<i>Dactyliandra welwitschii</i> Hook.f.	Cucurbitaceae	Cucurbitaceae	Welwitsch's Dactyliandra
87.	<i>Dalbergia horrida</i> (Dennst.) Mabb.	Fabaceae	Leguminosae	Thorny Dalbergia
88.	<i>Dalbergia sympathetica</i> Nimmo	Fabaceae	Leguminosae	Sympathetic Dalbergia / Titabli
89.	<i>Dalbergia volubilis</i> Roxb.	Fabaceae	Leguminosae	Climbing Dalbergia
90.	<i>Dendrophthoe falcata</i> (L.f.) Ettingsh.	Loranthaceae	Loranthaceae	Honey Suckle Mistletoe / Vanda
91.	<i>Derris heyneana</i> (Wight & Arn.) Benth.	Fabaceae	Leguminosae	Heyne's Derris
92.	<i>Derris indica</i> (Lam.) Bennet	Fabaceae	Leguminosae	Indian Beech / Karanj
93.	<i>Derris scandens</i> (Roxb.) Benth.	Fabaceae	Leguminosae	Jewel Vine / Kanaji
94.	<i>Dioscorea alata</i> L.	Dioscoreaceae	Dioscoreaceae	Purple Yam / Ratalu
95.	<i>Dioscorea belophylla</i> (Prain) Haines	Dioscoreaceae	Dioscoreaceae	Arrow-leaf Yam
96.	<i>Dioscorea bulbifera</i> L.	Dioscoreaceae	Dioscoreaceae	Air Potato / Goradu
97.	<i>Dioscorea hispida</i> Dennst.	Dioscoreaceae	Dioscoreaceae	Intoxicating Yam / Karanda
98.	<i>Dioscorea oppositifolia</i> L.	Dioscoreaceae	Dioscoreaceae	Chinese Yam
99.	<i>Dioscorea pentaphylla</i> L.	Dioscoreaceae	Dioscoreaceae	Five-leaf Yam
100.	<i>Dioscorea wallichii</i> Hook.f.	Dioscoreaceae	Dioscoreaceae	Wallich's Yam
101.	<i>Diploclisia glaucescens</i> (Blume) Diels	Menispermaceae	Menispermaceae	Glaucous Diploclisia
102.	<i>Diplocyclos palmatus</i> (L.) C.Jeffrey	Cucurbitaceae	Cucurbitaceae	Lollipop Climber / Shivlingi
103.	<i>Dolichandra unguis-cati</i> (L.) L.G.Lohmann	Bignoniaceae	Bignoniaceae	Cat's Claw Creeper
104.	<i>Dolichos falcatus</i> Klein ex Willd.	Fabaceae	Leguminosae	Sickle-podded Dolichos
105.	<i>Dolichos trilobus</i> L.	Fabaceae	Leguminosae	Three-lobed Dolichos
106.	<i>Dregea volubilis</i> (L.f.) Benth. ex Hook.f.	Apocynaceae	Asclepiadaceae	Sneeze Wort / Dodi, Jivanti
107.	<i>Dunbaria glandulosa</i> (Dalzell) Prain	Fabaceae	Leguminosae	Glandular Dunbaria
108.	<i>Epipremnum aureum</i> (Linden & André) G.S.Bunting	Araceae	Araceae	Money Plant / Pothos
109.	<i>Ficus pumila</i> L.	Moraceae	Urticaceae	Creeping Fig
110.	<i>Gloriosa superba</i> L.	Colchicaceae	Liliaceae	Flame Lily / Dudhiyo Vachhnag
111.	<i>Glycine wightii</i> (Wight & Arn.) Verdc.	Fabaceae	Leguminosae	Perennial Soybean
112.	<i>Gymnema sylvestre</i> (Retz.) R.Br. ex Sm.	Apocynaceae	Asclepiadaceae	Cowplant / Madhunashini
113.	<i>Hemidesmus indicus</i> (L.) R.Br. ex Schult.	Apocynaceae	Asclepiadaceae	Indian Sarsaparilla / Anantmool
114.	<i>Hewittia sublobata</i> (L.f.) Kuntze	Convolvulaceae	Convolvulaceae	Sublobed Hewittia
115.	<i>Hiptage benghalensis</i> (L.) Kurz	Malpighiaceae	Malpighiaceae	Madhavi Lata / Madhavi
116.	<i>Holostemma ada-kodien</i> Schult.	Apocynaceae	Asclepiadaceae	Holostemma / Khirvel
117.	<i>Holostemma annularium</i> (Roxb.) K.Schum.	Apocynaceae	Asclepiadaceae	Ringed Holostemma
118.	<i>Ichnocarpus frutescens</i> (L.) W.T.Aiton	Apocynaceae	Apocynaceae	Black Creeper / Kalidudhi

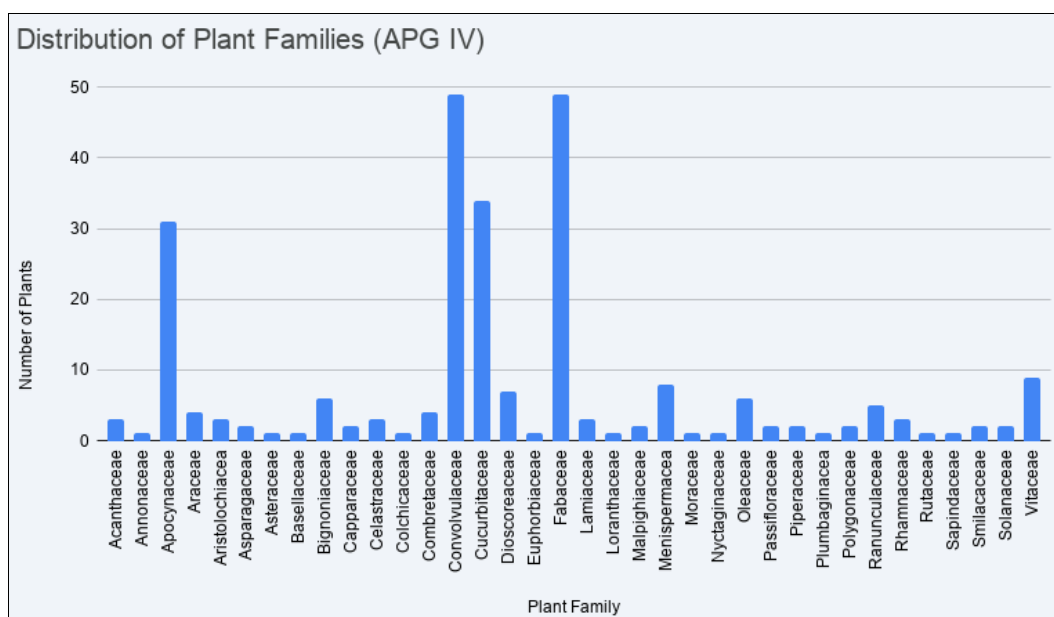
119.	<i>Ipomoea alba</i> L.	Convolvulaceae	Convolvulaceae	Moonflower / Chandrakant
120.	<i>Ipomoea aquatica</i> Forssk.	Convolvulaceae	Convolvulaceae	Water Spinach / Nali ni bhaji
121.	<i>Ipomoea batatas</i> (L.) Lam.	Convolvulaceae	Convolvulaceae	Sweet Potato / Shakkariya
122.	<i>Ipomoea cairica</i> (L.) Sweet	Convolvulaceae	Convolvulaceae	Railway Creeper / Garvel
123.	<i>Ipomoea carnea</i> Jacq.	Convolvulaceae	Convolvulaceae	Bush Morning Glory / Besharam
124.	<i>Ipomoea coptica</i> (L.) Roth ex Roem. & Schult.	Convolvulaceae	Convolvulaceae	Coptic Morning Glory
125.	<i>Ipomoea dasyperma</i> Jacq.	Convolvulaceae	Convolvulaceae	Rough-seeded Morning Glory
126.	<i>Ipomoea dichroa</i> (Roem. & Schult.) Choisy	Convolvulaceae	Convolvulaceae	Two-colored Ipomoea
127.	<i>Ipomoea eriocarpa</i> R.Br.	Convolvulaceae	Convolvulaceae	Tiny Morning Glory / Bodi kalar
128.	<i>Ipomoea fistulosa</i> Mart. ex Choisy	Convolvulaceae	Convolvulaceae	Pink Morning Glory / Nirlaj
129.	<i>Ipomoea hederifolia</i> L.	Convolvulaceae	Convolvulaceae	Star Ipomoea
130.	<i>Ipomoea horsfalliae</i> Hook.	Convolvulaceae	Convolvulaceae	Lady Doorly's Morning Glory
131.	<i>Ipomoea illustris</i> (C.B.Clarke) Prain	Convolvulaceae	Convolvulaceae	Illustrious Morning Glory
132.	<i>Ipomoea indica</i> (Burm.) Merr.	Convolvulaceae	Convolvulaceae	Oceanblue Morning Glory
133.	<i>Ipomoea marginata</i> (Desr.) Verdc.	Convolvulaceae	Convolvulaceae	Margined Morning Glory
134.	<i>Ipomoea muricata</i> (L.) Jacq.	Convolvulaceae	Convolvulaceae	Purple Moonflower / Gariya
135.	<i>Ipomoea nil</i> (L.) Roth	Convolvulaceae	Convolvulaceae	Ivy Morning Glory / Kaladana
136.	<i>Ipomoea obscura</i> (L.) Ker Gawl.	Convolvulaceae	Convolvulaceae	Obscure Morning Glory / Gumbad vel
137.	<i>Ipomoea pallida</i> Santapau & V.Patel	Convolvulaceae	Convolvulaceae	Pale Morning Glory
138.	<i>Ipomoea pes-caprae</i> (L.) R.Br.	Convolvulaceae	Convolvulaceae	Beach Morning Glory / Maryad vel
139.	<i>Ipomoea pes-tigridis</i> L.	Convolvulaceae	Convolvulaceae	Tiger Foot Morning Glory / Vagh-padi
140.	<i>Ipomoea pulchella</i> Roth	Convolvulaceae	Convolvulaceae	Beautiful Morning Glory
141.	<i>Ipomoea quamoclit</i> L.	Convolvulaceae	Convolvulaceae	Cypress Vine / Kamlata
142.	<i>Ipomoea sepiaria</i> Koenig ex Roxb.	Convolvulaceae	Convolvulaceae	Hedge Morning Glory / Hanuman vel
143.	<i>Ipomoea sindica</i> Stapf	Convolvulaceae	Convolvulaceae	Sind Morning Glory
144.	<i>Ipomoea sinensis</i> (Desr.) Choisy	Convolvulaceae	Convolvulaceae	Chinese Morning Glory
145.	<i>Ipomoea triloba</i> L.	Convolvulaceae	Convolvulaceae	Littlebell
146.	<i>Jacquemontia paniculata</i> (Burm.f.) Hallier f.	Convolvulaceae	Convolvulaceae	Panicked Jacquemontia
147.	<i>Jacquemontia pentantha</i> (Jacq.) G.Don	Convolvulaceae	Convolvulaceae	Skyblue Clustervine
148.	<i>Jasminum angustifolium</i> (L.) Willd.	Oleaceae	Oleaceae	Wild Jasmine / Ban mallika
149.	<i>Jasminum flexile</i> Vahl	Oleaceae	Oleaceae	Flexible Jasmine
150.	<i>Jasminum grandiflorum</i> L.	Oleaceae	Oleaceae	Spanish Jasmine / Chameli
151.	<i>Jasminum malabaricum</i> Wight	Oleaceae	Oleaceae	Malabar Jasmine / Ran-mogro
152.	<i>Jasminum multiflorum</i> (Burm.f.) Andrews	Oleaceae	Oleaceae	Downy Jasmine / Kund
153.	<i>Jasminum sambac</i> (L.) Aiton	Oleaceae	Oleaceae	Arabian Jasmine / Mogro
154.	<i>Kedrostis foetidissima</i> (Jacq.) Cogn.	Cucurbitaceae	Cucurbitaceae	Foetid Kedrostis
155.	<i>Lablab purpureus</i> (L.) Sweet	Fabaceae	Leguminosae	Hyacinth Bean / Val
156.	<i>Lagenaria siceraria</i> (Molina) Standl.	Cucurbitaceae	Cucurbitaceae	Bottle Gourd / Dudhi
157.	<i>Leptadenia pyrotechnica</i> (Forssk.) Decne.	Apocynaceae	Asclepiadaceae	Broom Bush / Khup
158.	<i>Leptadenia reticulata</i> (Retz.) Wight & Arn.	Apocynaceae	Asclepiadaceae	Cork Swallow-wort / Jivanti
159.	<i>Loeseneriella africana</i> (Willd.) N.Hallé	Celastraceae	Celastraceae	African Loeseneriella
160.	<i>Luffa acutangula</i> (L.) Roxb.	Cucurbitaceae	Cucurbitaceae	Ridge Gourd / Turiya
161.	<i>Luffa cylindrica</i> (L.) M.Roem.	Cucurbitaceae	Cucurbitaceae	Sponge Gourd / Galaka
162.	<i>Luffa echinata</i> Roxb.	Cucurbitaceae	Cucurbitaceae	Bristly Luffa / Kukur-vel
163.	<i>Luffa tuberosa</i> Roxb.	Cucurbitaceae	Cucurbitaceae	Tuberous Luffa
164.	<i>Melothria maderaspatana</i> Cogn.	Cucurbitaceae	Cucurbitaceae	Madras Pea Pumpkin / Chirpoti
165.	<i>Merremia aegyptia</i> (L.) Urb.	Convolvulaceae	Convolvulaceae	Hairy Woodrose
166.	<i>Merremia gangetica</i> (L.) Cufod.	Convolvulaceae	Convolvulaceae	Kidney Leaf Morning Glory / Undarkani
167.	<i>Merremia hederacea</i> (Burm.f.) Hallier f.	Convolvulaceae	Convolvulaceae	Ivy-leaf Merremia
168.	<i>Merremia quinquefolia</i> (L.) Hallier f.	Convolvulaceae	Convolvulaceae	Rock Rosemary
169.	<i>Merremia rajasthanensis</i> Bhandari	Convolvulaceae	Convolvulaceae	Rajasthan Merremia
170.	<i>Merremia rhynchorhiza</i> (Dalzell) Hallier f.	Convolvulaceae	Convolvulaceae	Beak-rooted Merremia
171.	<i>Merremia tridentata</i> (L.) Hallier f.	Convolvulaceae	Convolvulaceae	Arrow-leaf Morning Glory / Jini-undarkani
172.	<i>Merremia tuberosa</i> (L.) Rendle	Convolvulaceae	Convolvulaceae	Wood Rose / Pili-garvel
173.	<i>Merremia turpethum</i> (L.) Rendle	Convolvulaceae	Convolvulaceae	Indian Jalap / Nasottar
174.	<i>Millettia auriculata</i> Baker ex Brandis	Fabaceae	Leguminosae	Ear-leaved Millettia / Garanji
175.	<i>Millettia racemosa</i> (Roxb.) Benth.	Fabaceae	Leguminosae	Racemose Millettia
176.	<i>Momordica balsamina</i> L.	Cucurbitaceae	Cucurbitaceae	Balsam Apple / Chibdi
177.	<i>Momordica charantia</i> L.	Cucurbitaceae	Cucurbitaceae	Bitter Gourd / Karela
178.	<i>Momordica denudata</i> C.B.Clarke	Cucurbitaceae	Cucurbitaceae	Denuded Momordica
179.	<i>Momordica dioica</i> Roxb. ex Willd.	Cucurbitaceae	Cucurbitaceae	Spine Gourd / Kantola
180.	<i>Mucuna gigantea</i> (Willd.) DC.	Fabaceae	Leguminosae	Sea Bean
181.	<i>Mucuna pruriens</i> (L.) DC.	Fabaceae	Leguminosae	Velvet Bean / Kavach
182.	<i>Muehlenbeckia platyclados</i> (F.Muell.) Meisn.	Polygonaceae	Polygonaceae	Tapeworm Plant / Centipede Plant
183.	<i>Mukia maderaspatana</i> (L.) M.Roem.	Cucurbitaceae	Cucurbitaceae	Madras Pea Pumpkin / Chirpoti
184.	<i>Operculina turpethum</i> (L.) Silva Manso	Convolvulaceae	Convolvulaceae	Indian Jalap / Nasottar
185.	<i>Oxystelma esculentum</i> (L.f.) Sm.	Apocynaceae	Asclepiadaceae	Rosy Milkweed / Jal-dudhi
186.	<i>Passiflora edulis</i> Sims	Passifloraceae	Passifloraceae	Passion Fruit / Krishna-kamal (var)
187.	<i>Passiflora foetida</i> L.	Passifloraceae	Passifloraceae	Stinking Passionflower
188.	<i>Pentatropis capensis</i> (L.f.) Bullock	Apocynaceae	Asclepiadaceae	Cape Pentatropis / Shingroti
189.	<i>Pentatropis spiralis</i> (Forssk.) Decne.	Apocynaceae	Asclepiadaceae	Spiral Pentatropis / Shingroti

190.	<i>Pergularia daemia</i> (Forssk.) Chiov.	Apocynaceae	Asclepiadaceae	Trellis Vine / Chamar-dudheli
191.	<i>Phanera integrifolia</i> (Roxb.) Benth.	Fabaceae	Leguminosae	Entire-leaved Phanera
192.	<i>Phaseolus vulgaris</i> L.	Fabaceae	Leguminosae	French Bean / Fansi
193.	<i>Piper betle</i> L.	Piperaceae	Piperaceae	Betel Leaf / Nagarvel
194.	<i>Piper longum</i> L.	Piperaceae	Piperaceae	Long Pepper / Lindi piper
195.	<i>Pisum sativum</i> L.	Fabaceae	Leguminosae	Garden Pea / Vatana
196.	<i>Plumbago zeylanica</i> L.	Plumbaginaceae	Plumbaginaceae	Ceylon Leadwort / Chitrak
197.	<i>Podranea ricasoliana</i> (Tanfani) Sprague	Bignoniaceae	Bignoniaceae	Pink Trumpet Vine
198.	<i>Pothos scandens</i> L.	Araceae	Araceae	Climbing Aroid
199.	<i>Pueraria lobata</i> (Willd.) Ohwi	Fabaceae	Leguminosae	Kudzu Vine
200.	<i>Pueraria phaseoloides</i> (Roxb.) Benth.	Fabaceae	Leguminosae	Tropical Kudzu
201.	<i>Pueraria tuberosa</i> (Roxb. ex Willd.) DC.	Fabaceae	Leguminosae	Indian Kudzu / Vidari Kand
202.	<i>Pyrostegia venusta</i> (Ker Gawl.) Miers	Bignoniaceae	Bignoniaceae	Flame Vine
203.	<i>Quisqualis indica</i> L.	Combretaceae	Combretaceae	Rangoon Creeper / Madhumalti
204.	<i>Reissantia indica</i> (Willd.) N.Hallé	Celastraceae	Celastraceae	Indian Reissantia
205.	<i>Rhaphidophora pertusa</i> (Roxb.) Schott	Araceae	Araceae	Perforated Philodendron
206.	<i>Rhynchosia bracteata</i> Benth. ex Baker	Fabaceae	Leguminosae	Bracted Snoutbean
207.	<i>Rhynchosia minima</i> (L.) DC.	Fabaceae	Leguminosae	Least Snoutbean / Nahani magvel
208.	<i>Rhynchosia pulchra</i> (Vell.) J.F.Macbr.	Fabaceae	Leguminosae	Beautiful Snoutbean
209.	<i>Rhynchosia rothii</i> Benth. ex Aitch.	Fabaceae	Leguminosae	Roth's Snoutbean
210.	<i>Rhynchosia viscosa</i> (Roth) DC.	Fabaceae	Leguminosae	Sticky Snoutbean
211.	<i>Rivea hypocrateriformis</i> (Desr.) Choisy	Convolvulaceae	Convolvulaceae	Midnapore Creeper / Phang
212.	<i>Rivea laotica</i> Ooststr.	Convolvulaceae	Convolvulaceae	Laotian Rivea
213.	<i>Scindapsus officinalis</i> (Roxb.) Schott	Araceae	Araceae	Gaj Pipali
214.	<i>Smilax ovalifolia</i> Roxb. ex D.Don	Smilacaceae	Liliaceae	Oval-leaved Smilax / Chopchini
215.	<i>Smilax zeylanica</i> L.	Smilacaceae	Liliaceae	Ceylon Smilax / Chopchini
216.	<i>Solanum jasminoides</i> Paxton	Solanaceae	Solanaceae	Potato Vine
217.	<i>Solanum seaforthianum</i> Andrews	Solanaceae	Solanaceae	Brazilian Nightshade
218.	<i>Solena amplexicaulis</i> (Lam.) Gandhi	Cucurbitaceae	Cucurbitaceae	Creeping Cucumber / Gometi
219.	<i>Stephania japonica</i> (Thunb.) Miers	Menispermaceae	Menispermaceae	Snake Vine / Karandhi
220.	<i>Tecoma stans</i> (L.) Juss. ex Kunth	Bignoniaceae	Bignoniaceae	Yellow Bells
221.	<i>Tecomaria capensis</i> (Thunb.) Spach	Bignoniaceae	Bignoniaceae	Cape Honeysuckle
222.	<i>Telosma pallida</i> (Roxb.) Craib	Apocynaceae	Asclepiadaceae	Pale Telosma
223.	<i>Teramnus labialis</i> (L.f.) Spreng.	Fabaceae	Leguminosae	Blue Marlin / Mashparni
224.	<i>Teramnus mollis</i> Benth.	Fabaceae	Leguminosae	Soft Teramnus
225.	<i>Thunbergia fragrans</i> Roxb.	Acanthaceae	Acanthaceae	Sweet Clock-vine
226.	<i>Thunbergia grandiflora</i> Roxb.	Acanthaceae	Acanthaceae	Bengal Clock-vine
227.	<i>Thunbergia laevis</i> Nees	Acanthaceae	Acanthaceae	Smooth Clock-vine
228.	<i>Tinospora cordifolia</i> (Willd.) Miers	Menispermaceae	Menispermaceae	Heart-leaved Moonseed / Galo
229.	<i>Toddalia asiatica</i> (L.) Lam.	Rutaceae	Rutaceae	Orange Climber / Kanj
230.	<i>Tragia involucrata</i> L.	Euphorbiaceae	Euphorbiaceae	Climbing Nettle / Kanchkuri
231.	<i>Trichosanthes anguina</i> L.	Cucurbitaceae	Cucurbitaceae	Snake Gourd / Pandola
232.	<i>Trichosanthes bracteata</i> (Lam.) Voigt	Cucurbitaceae	Cucurbitaceae	Bracted Trichosanthes / Ratan-indravarna
233.	<i>Trichosanthes cucumerina</i> L.	Cucurbitaceae	Cucurbitaceae	Wild Snake Gourd / Kadu-padval
234.	<i>Trichosanthes dioica</i> Roxb.	Cucurbitaceae	Cucurbitaceae	Pointed Gourd / Parval
235.	<i>Tylophora dalzellii</i> Hook.f.	Apocynaceae	Asclepiadaceae	Dalzell's Tylophora
236.	<i>Tylophora indica</i> (Burm.f.) Merr.	Apocynaceae	Asclepiadaceae	Asthmatic Swallow-wort / Antamool
237.	<i>Vallisneria spiralis</i> (L.) Kuntze	Apocynaceae	Apocynaceae	Bread Flower
238.	<i>Ventilago denticulata</i> Willd.	Rhamnaceae	Rhamnaceae	Red Creeper / Raidhani
239.	<i>Vernonia elliptica</i> DC.	Asteraceae	Compositae	Curtain Creeper
240.	<i>Vicia hirsuta</i> (L.) Gray	Fabaceae	Leguminosae	Hairy Tare / Chaniyo
241.	<i>Vicia sativa</i> L.	Fabaceae	Leguminosae	Common Vetch
242.	<i>Vigna aconitifolia</i> (Jacq.) Maréchal	Fabaceae	Leguminosae	Moth Bean / Math
243.	<i>Vigna mungo</i> (L.) Hepper	Fabaceae	Leguminosae	Black Gram / Udad
244.	<i>Vigna radiata</i> (L.) R.Wilczek	Fabaceae	Leguminosae	Green Gram / Mag
245.	<i>Vigna trilobata</i> (L.) Verdc.	Fabaceae	Leguminosae	Three-lobed Vigna
246.	<i>Vigna umbellata</i> (Thunb.) Ohwi & H.Ohashi	Fabaceae	Leguminosae	Ricebean
247.	<i>Vigna unguiculata</i> (L.) Walp.	Fabaceae	Leguminosae	Cowpea / Chola
248.	<i>Vigna vexillata</i> (L.) A.Rich.	Fabaceae	Leguminosae	Zombi Pea
249.	<i>Vincetoxicum spirale</i> (Forssk.) Kuntze	Apocynaceae	Asclepiadaceae	Spiral Swallow-wort
250.	<i>Vitis cinerea</i> var. <i>helleri</i> (L.H.Bailey) M.O.Moore	Vitaceae	Ampelidaceae	Heller's Grape
251.	<i>Vitis vinifera</i> L.	Vitaceae	Ampelidaceae	Common Grape Vine / Draksh
252.	<i>Wattakaka volubilis</i> (L.f.) Stapf	Apocynaceae	Asclepiadaceae	Sneeze Wort / Dodi, Jivanti
253.	<i>Xenostegia tridentata</i> (L.) D.F.Austin & Staples	Convolvulaceae	Convolvulaceae	Tridentate Morning Glory
254.	<i>Ziziphus oenoplia</i> (L.) Mill.	Rhamnaceae	Rhamnaceae	Jackal Jujube / Makod bor
255.	<i>Ziziphus rugosa</i> Lam.	Rhamnaceae	Rhamnaceae	

(Source: [8], Patel, R. I. (1971). Forest flora of Gujarat state. Forest Department, Gujarat State; [7], [9], [10], [11] (Patel et al.2013) E-Flora of Gandhinagar; <https://www.efloraofgandhinagar.in/>.)

Table 2: List of species number in family

Family	Number of Plant Species
Acanthaceae	3
Annonaceae	1
Apocynaceae	31
Araceae	4
Aristolochiaceae	3
Asparagaceae	2
Asteraceae	1
Basellaceae	1
Bignoniaceae	6
Capparaceae	2
Celastraceae	3
Colchicaceae	1
Combretaceae	4
Convolvulaceae	49
Cucurbitaceae	34
Dioscoreaceae	7
Euphorbiaceae	1
Fabaceae	51
Lamiaceae	3
Loranthaceae	1
Malpighiaceae	2
Menispermaceae	8
Moraceae	1
Nyctaginaceae	1
Oleaceae	6
Passifloraceae	2
Piperaceae	2
Plumbaginaceae	1
Polygonaceae	2
Ranunculaceae	5
Rhamnaceae	3
Rutaceae	1
Sapindaceae	1
Smilacaceae	2
Solanaceae	2
Vitaceae	9

**Fig 1:** Number of climbing plant species per family

Dominant and Non dominant

Dominant

Four families Fabaceae, Convolvulaceae, Cucurbitaceae, and Apocynaceae exhibit high species counts, indicating a high degree of adaptiveness.

Non dominant families

The families with only one or two species represent the low-frequency members of the ecosystem, indicating high

taxonomic variety but limited ecological dominance compared to the more prevalent groups.

Classification	Total Species Count	Number of Families
Dominant (> 20 species)	164	4
Non-dominant (≤ 20 species)	91	32
Total	255	36

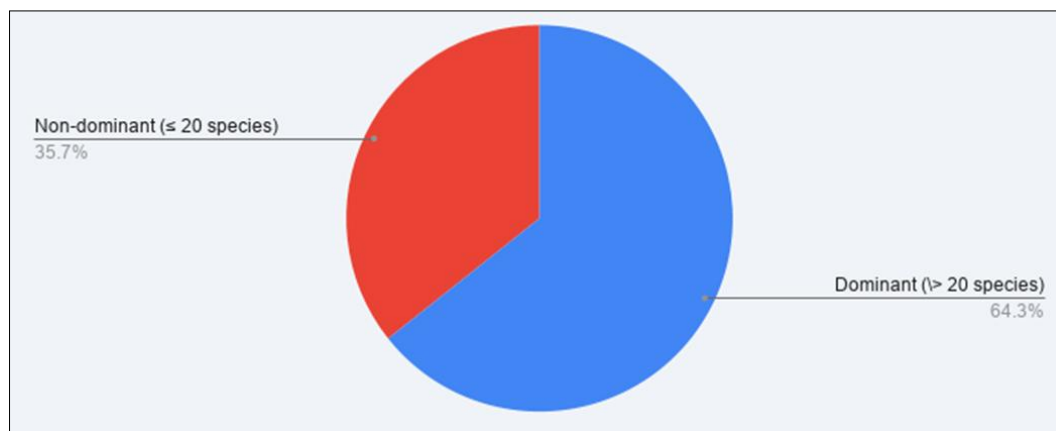


Fig 2: Pie chart Comparison and Non-dominant Species

Ethnobotanical Importance

In Gujarat, climber plants (locally known as Velos) are used as traditional medicine for tribal communities such as the Bhils, Rathwas, and Choudharys. Because climbers have concentrated phytochemicals in their stems and tubers, they are highly valued in ethnobotany. The flowers of the *Pergularia pallida* (locally known as Bugdodi in the Tapi district) are finely chopped and cooked with oil and spices to be administered as a traditional veterinary remedy for treating udder inflammation in cattle.^[12] *Aganosma dichotoma* flower and leaf powder are used to treat bronchitis and eye conditions^[13]. To treat snake bites, the juice extracted from the leaves of *Aristolochia indica* L. is traditionally administered^[13]. Eighty-one species of climber plants were recorded 81 species by M.S.^[7] for the Medicinal Flora of Gujarat.

Economic importance

Climbing plants are primary sources for the herbal drug industry^[14]. The tubers of *Dioscorea* species are rich in starch and are traditionally used as a food substitute by tribes, reducing their dependence on purchased grains.

The rapid expansion of the pharmaceutical industry has led to an increased global demand for these plants. Traditional knowledge of these plants serves as a foundation for researching novel bioactive compounds and developing purified natural products or synthetic derivatives with increased profitability^[15].

Threats and conservation status

In a natural environment, due to anthropogenic stresses, climbers are, quite frequently, unable to find their ideal hosts conveniently or nearby since the host population and distribution are adversely affected by such stresses^[16].

Among the 31 RET climber species documented, endangered species include *Ceropegia mannarana*

(Asclepiadaceae) and *Gloriosa superba* (Liliaceae). Rare species include *Celastrus paniculatus* (Celastraceae) and *Aganosma cymosa* (Apocynaceae)^[17].

Highest Risk: Species such as *Corallocarpus epigaeus*, *Ipomoea muricata*, and *Tinospora cordifolia* are at the highest risk^[9].

Environmental impact on climbers

Climate change significantly affects climbing plants, altering their growth, distribution, and climbing behaviors. These impacts stem from shifts in temperature, precipitation, and related environmental factors, with climbers showing varied responses based on species and habitat. Heat Stress: High temperatures can denature proteins and enzymes (like Rubisco), slowing down photosynthesis. It also causes pollen sterility, meaning the plant might look healthy but won't produce seeds or fruit^[18]. Stomatal Closure: To prevent dehydration, plants close their stomata. While this saves water, it also stops CO₂ intake, effectively starving and affecting plant growth.

Contribution to sustainable development

In cities, climbers reduce urban heat islands, purify air, and boost aesthetics by covering structures. They lower carbon allocation to stems, promoting energy-efficient growth suitable for green walls and near-zero-energy buildings.

The use of climbers in restoration matrices prioritises species with ornamental or medicinal value common in India. For pharmacognosy-focused work in Gujarat, climbers like those in Dombivli support conservation amid urbanization^[19].

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