BIODIVERSITY UNVEILED

The Flora of Government PG College, Rajouri

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Government Post Graduate College, Rajouri

"BIODIVERSITY UNVEILED: THE FLORA OF GOVERNMENT PG COLLEGE, RAJOURI"




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FOREWORD

It is a matter of immense pride to introduce *Flora of Government P.G. College, Rajouri*, a commendable work that documents the rich botanical diversity of college campus. This book stands as a testament to the dedication and scientific curiosity of the authors, whose efforts have resulted in a valuable contribution to the field of plant sciences.

Government P.G. College, Rajouri, has always been committed to academic excellence and environmental awareness. The documentation of campus flora not only enriches our knowledge but also emphasizes the importance of conservation and sustainability. I am confident that this book will serve as a useful reference for students, researchers, and nature enthusiasts who seek to explore and understand the plant diversity of this region.

I extend my heartfelt congratulations to the authors for their diligent research and commitment to this project. Their work will undoubtedly inspire future generations to appreciate and safeguard our natural heritage.

Dr. Shamim Ahmed Azad
Principal
Government Degree College, Nowshera

PREFACE

Biodiversity forms the foundation of ecological stability, supporting natural ecosystems and human livelihoods. Among its components, floristic diversity plays a vital role in ecosystem services, sustainable development, and cultural heritage. The conservation and systematic documentation of plant diversity are essential for understanding ecological roles and ensuring judicious management of natural resources.

This monograph, *Flora of PG College Rajouri*, is a dedicated effort by the Department of Botany, PG College Rajouri, to systematically document and explore the plant diversity of the college campus and its surrounding areas. The diverse topography and climatic conditions of the region have given rise to a unique assemblage of plant species, many of which hold potential for medicinal, ornamental, and ecological applications. Through extensive field surveys, taxonomic identification, and ecological assessments, this work provides a comprehensive inventory of the flora, complete with identification keys and detailed species descriptions.

The Flora also highlights the importance of fostering student innovation in botanical studies by encouraging creative methods of ecological exploration and conservation. It is designed to serve as a valuable resource for graduate students interested in research, conservationists, and nature enthusiasts, promoting awareness of the ecological significance of Rajouri's natural heritage.

By shedding light on the flora of PG College Rajouri, this monograph not only contributes to a broader understanding of plant diversity but also underscores the urgent need for its conservation. We hope this effort will inspire future generations of botanists, environmentalists, and students to explore, innovate, and preserve the rich natural heritage of Rajouri for the benefit of present and future generations.

ACKNOWLEDGEMENT

In the name of God, the Most Gracious, the Most Merciful, we sincerely express our gratitude to the Almighty for His countless blessings, as well as for granting us endurance, patience, courage, ability, and strength to successfully complete this work.

We express our heartfelt gratitude to **Dr. K.K. Sharma**, Principal of Government P.G. College Rajouri, for his unwavering support and encouragement throughout this project. Our sincere thanks also go to **Dr. Shameem Ahmed Azad**, former Principal, for his invaluable insights and guidance.We deeply appreciate the non-teaching staff, **Mohd Bashir**, **Mushtaq Ahmed**, **Muhammad Ayoob**, and **Farooq Muhammad**, for their technical assistance, which greatly facilitated this work.

Special acknowledgment is due to **Dr. Sushil Verma**, Head of the Department of Botany, and **Dr. Abishek Dutta**, contractual Assistant Professor at the University of Jammu, for their expert guidance, provision of essential resources, and invaluable contributions to the identification and authentication of plant species. Their support was instrumental in the success of this work.

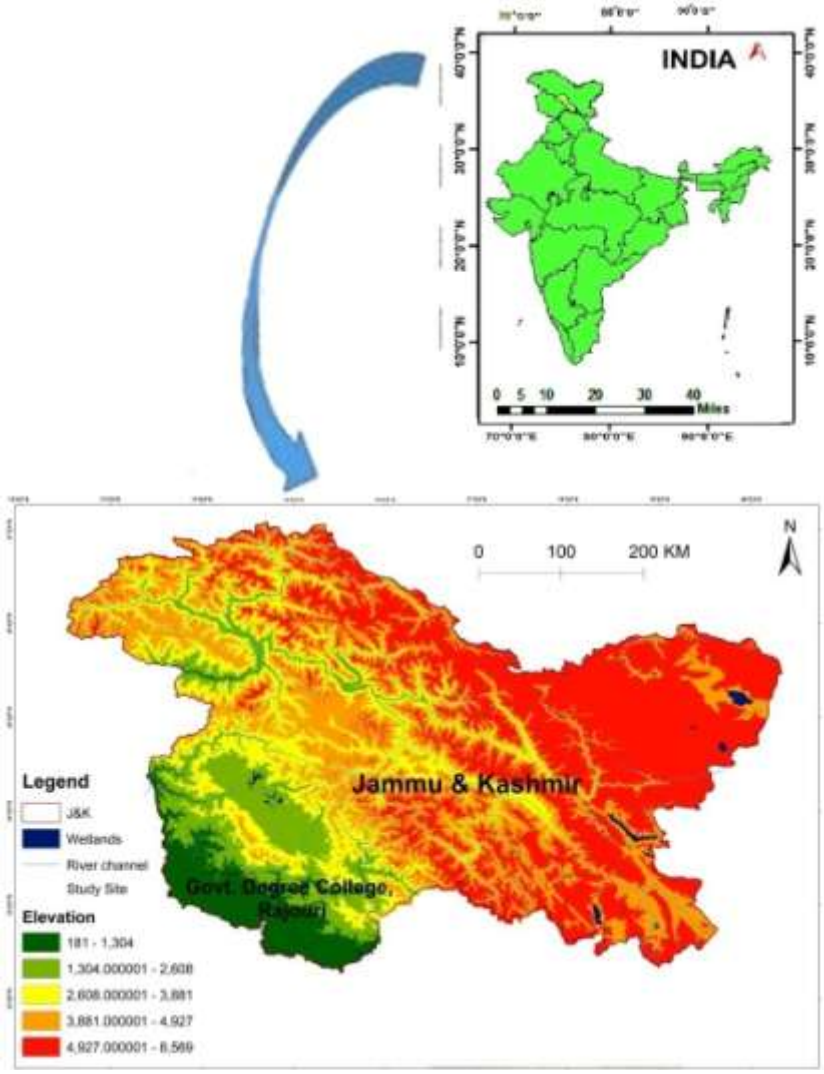
Our gratitude also extends to the dedicated teaching staff and enthusiastic students of the Botany Department at Government P.G. College Rajouri, whose collaborative efforts and participation were vital to the successful completion of *"Flora of PG College Rajouri."*

Lastly, we extend our heartfelt thanks to every individual who supported this project, directly or indirectly, contributing to this valuable addition to the treasure of the campus and the Department of Botany.

INTRODUCTION

District Rajouri, located in the Shiwalik range at the foothills of the Pir Panjal range in the Union Territory of Jammu and Kashmir, covers an area of 2630 km² and has a population of 642,415, with 91.85% of the population residing in rural areas. It constitutes 5 sub-divisions, 13 tehsils, and 19 blocks. Geographically, it is positioned between latitudes 32°-58′ and 33°-35′ North and longitudes 70°-74°-10′ East, at elevations ranging from 460 m to 4600 m above sea level. The district is bordered by Poonch to the north, Jammu to the southeast, Reasi and Kulgam to the east, and Mirpur (Pakistan) to the west and southwest. Rajouri's topography features a mountainous terrain stretching from east-southeast to west-northwest, with hills and valleys interspersed with meandering brooks. The Dhaula Dhar range runs across the northeastern part of the district, and the Kali Dhar range divides the tehsils of Sunderbani in Rajouri and Akhnoor in Jammu. As one moves towards the north, the altitude increases, reaching peaks such as Dhakiar (4648 m), Rupri (4092 m), and JanjanwaliChhe Sari (3777 m). The climate of Rajouri is characterized by warm summers and extremely cold winters, with lush valleys and snow-covered peaks in the north. The district is rich in ethno-medicinal plants and diverse forms of flora and fauna, including both flowering species (angiosperms) and non-flowering species (lichens, bryophytes, pteridophytes, and gymnosperms). The subtropical zone of Rajouri experiences maximum rainfall during the monsoon months of July-September, and its forest types range from sub-tropical dry deciduous to Himalayan moist temperate forests, covering a total of 1,267 km².

Govt. P. G. College Rajouri, established on June 6, 1981, is located inKheora village, approximately 154 km from Jammu and serves as the district headquarters. Situated in the Pir Panjal mountains, the college offers a picturesque view of snow-capped peaks and is geographically positioned at 33.3923°N, 74.3206°E. The Darhal Tawi river flows along the western side of the campus, with the historic town of Rajouri lying to the south. The college campus spans 100 kanals of land and is home to a rich diversity of flora, with about 60% of the land dedicated to various plant species, including ethnic and introduced ornamental, medicinal, aesthetic, and aromatic plants. The Department of Botany has established and maintains a Botanical Garden, where a variety of ecologically, economically, and ethnomedicinally important plant species are preserved. In this handbook, the department aims to document the diverse flora of the college campus to offer valuable insights into its plant diversity. This documentation assists students, researchers, nature enthusiasts, and individuals from diverse backgrounds in becoming familiar with the campus's rich botanical resources. The study includes a total of 225 species from 80 families, comprising 149 genera of angiosperms from 68 families, 7 genera of gymnosperms from 6 families, 3 genera of pteridophytes from 2 families, and 3 genera of bryophytes. This effort highlights the ecological significance and potential for further research on the campus's plant life.


INDIA
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Wetlands
River channel
Study Site
Elevation
181 - 1,304
1,304.000001 - 2,608
2,608.000001 - 3,881
3,881.000001 - 4,927
4,927.000001 - 6,569
Jammu & Kashmir
Govt. Degree College, Rajouri

FLORISTIC DESCRIPTION

Family: Acanthaceae

Dicliptera paniculata (Forssk.) I.Darbysh.,

Kew Bull. 62(1): 122 (2007). *Dianthera paniculata* Forsskål, Fl. Aegypt.-Arab. 7. 1775; *D.bicalyculata*Retzius; *Dicliptera paniculata* (Forsskål) I. Darbyshire; *Justicia bicalyculata*(Retzius) Vahl; *Peristrophebicalyculata*(Retzius) Nees.

Herbs 1.2 m tall, erect, perennial. Stems hirsute, usually 4- or 6-angled. Petiole 3- 12 mm; leaf blade ovate to lanceolate, (1-)3-4.5 × (0.5-)1.5-2 cm, abaxially scabrid, adaxially slightly scabrid, base attenuate to broadly cuneate, margin remotely serrulate and slightly ciliate, apex acuminate, acute, or sometimes rounded. Inflorescences of axillary pedunculate cymes with (1) 4 (or more) involucres (cymes sometimes branched internally) in axils of leaves or bracts and collectively often forming a terminal leafy panicle-like complex; rachis and inflorescence branches pubescent; outer involucral bracteoles unequal, abaxially pubescent with gland-tipped (sometimes absent) and non-glandular trichomes, larger outer involucral bracteole ± linear, ca. 10 × 2 mm, 1-veined, and apex acute and mucronate, shorter outer involucre bracteole subulate to lanceolate, ca. 6 × 0.1 mm; inner involucralbracteoles narrowly linear to subulate, unequal in length. Calyx lobes lanceolate, ca. 3 mm, outside sparsely pubescent with non-glandular trichomes, inside sparsely pubescent with sessile gland-tipped trichomes, margin membranous at base, apex long acuminate. Corolla light to

dark purple, ca. 1 cm, outside pubescent with non-glandular trichomes; tube basally cylindric for ca. 5 mm; lip in lower position narrowly elliptic, 5-7 × 1-2 mm, apex emarginate; lip in upper position elliptic, 3-7 × 2-3 mm, 3-lobed. Staminal filaments ca. 5 mm, white hairy; anther thecae ovoid, superposed, not touching. Ovary ovoid, pubescent and glandular; style glabrous; stigma 2-lobed. Capsule 0.9-1.3 cm, pubescent with non-glandular trichomes. Seeds 2.2-2.5 mm, rough and tuberculate.

Fl. Aug-Dec. **Fr**. Oct-Feb.

Distribution: Tropical and Subtropical regions

Uses: It has antibacterial properties; also used as a flavoring and spicing agent.

Justicia procumbensL., Sp. Pl. 1: 15. 1753. *Ecbolium procumbens* (Linnaeus) Kuntze; *Justiciahayatae*Yamamotovar. *decumbens*Yamamoto; *J.procumbens* var. *hirsute* Yamamoto; *J.procumbens*var. *linearifolia*Yamamoto; *Rostellulariaprocumbens*(Linnaeus) Nees; *R. procumbens* var. *hirsute* (Yamamoto) S. S. Ying; *R. procumbens* var. *linearifolia*(Yamamoto) S. S. Ying; *R. trichochila*Miquel.

Herbs 20-50 cm tall, procumbent. Stems 4-angled, sulcate, pubescent. Petiole 3-8 mm, pubescent; leaf blade elliptic, ovate-elliptic, or elliptic-oblong, 1.5-4 × 0.8-1.5 cm, subglabrous to sparsely hispid, cystoliths numerous, secondary veins 3-6 on each side of midvein and prominent, base broadly cuneate to subrounded and slightly decurrent onto petiole, margin entire or slightly undulate, apex acute to obtuse. Spikes terminal or axillary in upper leaf axils, cylindric, 1-6 cm, dense; peduncle 0.5-7 cm, densely pilose; bracts ovate to elliptic-lanceolate, 2.5-8 × 0.6-1.3 mm, abaxially pilose, margin ciliate;

bracteoles lanceolate, 2.5-5 mm, abaxially pilose, margin ciliate. Calyx 4-6 mm, 4-lobed to base; lobes linear, outside pilose along veins, 1- veined, margin yellowish white and ciliate. Corolla pink or white and red-spotted on lower lip, 5-8.5 mm; lower lip ca. 3 × 3.5 mm, 3-lobed, lobes ovate, middle lobe slightly larger and ca. 1 × 1-1.5 mm; upper lip ca. 3 mm, apex emarginate. Stamens exserted; filaments ca. 4 mm, glabrous; anther thecae superposed, lower one spurred at base, upper one muticous. Ovary pubescent; style ca. 5 mm, pubescent. Capsule 4-6 mm, 4-seeded. Seeds ovate in outline, ca. 1 × 1 mm, rugose.

Fl. and **Fr**. Jan-Dec.

Distribution: Throughout the India.

Uses: It is valued in traditional medicine; in addition cultivated for ornamental purposes in tropical gardens because of its attractive flowers.

Strobilanthes atropurpurea Nees in Wall., Pl. Asiat. Rar. 3: 86. 1832. var. *atropurpureus*. var. *stenophylla* (C.B. Clarke) Y.F. Deng & J.R.I. Wood, J. Trop. Subtrop. Bot. 18(5): 482. 2010.

Deep-Blue curved bells,erectup to 3 ft tall, perennial shrublet with succulent, 4-angled or deeply 4-furrowed, white velvet-hairy branches. Leaves are almost hairless, stalkless or with up to 8 cm long, winged stalk. Blade of lower leaves on sterile shoots is elliptic-oblong, 25-30 x 6-8 cm, long-pointed. Blade of flowering shoot leaves is ovate or ovate-lanceshaped, 3-7.5 x 2.5-3 cm, toothed to sharply toothed. Flowers are blue to dark blackish-blue, 2.5-3 cm across, single or

paired, in interrupted leafy, up to 15 cm long spikes. Bracts are leaf-like, up to 2.5 cm persistent. Bracteoles are linear-oblong, hairy. Sepal tube is 5-lobed to the base, about 1.2 long. Sepals are linear-oblong, about 0.8-1 cm long, blunt, patently glandular-hairy, slightly enlarged in fruit. Flowers are 2.5-4.5 cm long, tube pale to nearly white, cylindrical below, curved above, hairy within. Limb lobes are nearly equal, blunt. Filaments are hairy. Style tips are recurved. Capsule is oblong, 1.6-1.8 cm long, 4-seeded, hairless. Seeds are 3 mm hairy. Deep-Blue Curved Bells is commonly found growing gregariously in the Himalayas, from Indus eastwards, at altitudes of 1300-3600 m.

Fl: June-October.

Distribution: Jammu and Kashmir, Arunachal Pradesh, Himachal Pradesh, Sikkim, and Punjab.

Uses: Widely grown for its decorative value.

Family: Adoxaceae

Viburnum grandiflorum Wallich ex Candolle, Prodr. 4: 329. 1830.

Shrubs or small trees, deciduous, upto 5 m tall. Bark gray-brownish. Branchlets of current year green, glabrous, or sometimes pubescent; branchlets of previous year gray or brown, trabeculate, glabrous, with sparse, dispersed, small, rounded lenticels. Winter buds are ellipsoid, with 2 or 3 pairs of separate scales; scales reddish brown, ciliate, apex acute. Leaves always opposite, not clustered at apices of branchlets; stipules absent; petiole purplish, robust, 1-1.5 cm, sparsely stellatepubescent or

glabrous; leaf blade purplish green when young, elliptic-oblong, rarely elliptic or obovate-elliptic, 6-10 × 2.5-4 cm, papery, abaxially densely pubescent, adaxially sparsely pubescent, later pubescent only on veins and in axils of veins abaxially, midvein raised abaxially, lateral veins 6-10-jugate, pinnate, straight or slightly arched, branched, ending in teeth, raised abaxially, impressed adaxially, veinlets transverse, inconspicuous or slightly impressed on both surfaces, not lobed, base cuneate, without glands, margin crenate-serrate except at base, apex acuminate. Flowers appear before leaves; inflorescence paniculate, densely clustered at apices of leafless short branchlets, 2-7 × 3-4 cm; rays opposite, decussate; first node of inflorescence with 2 rays, lax, sericeous, without large sterile radiant flowers, subtended by ovate to orbicular-ovate scales; outer scales nearly leaflike, to ca. 1 cm, intense brown, pubescent or glabrous; inner scales tomentose on margins of both sides; scales deciduous when inflorescence opens; peduncles very short when flowers just open, later gradually elongated; bracts caducous, leaflike, reddish, oblong to linear, to 1 cm, silvery sericeous at first, later glabrous; bracteoles oblong to linear. Flowers on rays from 1st to 3rd orders, fragrant, sessile. Calyx reddish; tube tubular, ca. 3 mm, glabrous; lobes triangular, small, ca. 1 mm, glabrous, apex obtuse. Corolla pink outside, white inside, hypocrateriform, ca. 1 cm in diam., glabrous; tube to 1 cm; lobes spreading, broadly ovate, 4-5 mm, apex rounded, margin entire. Stamens shorter than corolla, inserted at or above middle of corolla tube, generally at different heights; filaments ca. 3 mm; anthers yellow, elliptic-oblong, ca. 2 mm. Styles exceeding calyx lobes; stigmas discoid, 2-lobed. Fruit initially turning yellow, maturing purple-reddish, ellipsoid or oblong-ellipsoid, ca. 12 × 8 mm, usually only 1 infructescence mature, base rounded, apex rounded,

glabrous; pyrenes slightly compressed, oblong, 9-11 × 5-6 mm, with 1 deep ventral groove, apex rounded.

Fl. May, **Fr**. Jun-Jul.

Distribution: Himalaya, Bhutan, India, Kashmir, Nepal Pakistan.

Uses: Mostly valued for its aesthetic qualities.

Family: Aizoaceae

Mesembryanthemum cordifolium L.f., Suppl. Pl. 260 (1782). *Aptenia cordifolia* (L.f.) Schwantes in Gartenflora 77: 69 (1928). *Litocarpus cordifolius* (L.f.) L.Bolus in Fl. Pl. South Africa 7: t. 261 (1927)

Perennial, scrambling, prostrate, mat-forming or weakly erect, succulent herb, up to 0.25 m high. Stems 4-angled. Leaves opposite, flat, heart-shaped with glassy bladder cells. Flowers pink, up to 20 mm diam. Flowering time Dec.-Apr. Capsules without valve wings. Leaves never 'skeletonized'. Prostrate, mat-forming perennial with 4-angled stems. Leaves flat, heart-shaped. Flowers magenta, 20 mm diam. Fruits without valve wings.

Fl. Almost throughout the year.

Distribution: throughout the country in cultivated state.

Uses: An attractive, low-maintenance plant manily valued for its aesthetic values.

Family: Amaranthaceae

Achyranthus aspera var. *aspera* L. Sp. Pl. 204. 1753; FBI. 4: 730. 1885; PP. 181. 1916; FS. 414. 1902, 1921; Fl. W. Pak. 41: 33. 1974; FBH. 233. 1977; FBH. 233. 1977; Shah, Fl. Gujarat State 1: 587. 1978; Sharma &Kacharoo, III. Fl. Jammu 2: t: 241. 1983; Mudgal et al., Fl. Madhya Pradesh 2:448. 1997; FSIR. 533. 2004.

Erect, pubescent herbs or undershurb. Stems 30-120cm tall, branched, ribbed, vicid, hairy, tinged with purple. Leaves opposite, 1.5-7.6 X 0.9-5cm long ovate-elliptic or obovate, obtuse, apiculate, entire, base narrow, downward, thick leathery not long pointed; petiole pubescent, 0.5-2cm long. Flowers pale to bright. Purple, distant below, compact above in long spikes, rachis appressed-hairy. Bracts 3-3.5mm long, deltoid, membranous. Bracteoles 4-5mm long, ovate, wing 1.5-2.5mm long, margin ciliate, spine 3mm long. Tepals 6mm long, ovate, lanceolate, acute margin 142 membranous. Stamens 5, fimbriate. Stigma capitate. Fruits oglong-cylindric, yellowish-brown, smooth glabrous; with a single seed enclosed by the perianth.

Fl. & **Fr**.: Jan-Dec.

Distribution: Distributed in Temperate and Subtropical regions.

Uses: Widely used in traditional medicines as an anti inflammatory agent.

***Amaranthus viridis* L.**, Sp. Pl., ed. 2. 2: 1405 (1763).*Euxolus viridis* (L.) Moq. in A.P.de Candolle, Prodr. 13(2): 273 (1849). *Glomeraria viridis* (L.)

Cav. in Descr. Pl.: 319 (1802). *Pyxidium viride* (L.) Moq. in A.P.de Candolle, Prodr. 13(2): 274 (1849).

Stem erect, green or somewhat tinged purple, 40 – 80 cm tall, conspicuously angulate, slightly branched, glabrous. Petiole 3.6 cm, green or somewhat tinged purple; leaf blade ovate, ovate oblong or ovate ellipitic, 3.9 × 2.5.6 cm, base broadly cunneate or subtruncate, margin entire or slightly undulate, apex notched 149 or rounded. Terminal complex thyrsoid structures 6.12 × 1.5.3 cm, branched, composed of spikes; spikes erect, slender, terminal ones longer than lateral ones; rachis 2.2.5 cm. Lanceolate bracts and bracteoles shorter than 1mm, with pointed apex. Tepals broadly oblanceolate or oblong, 1.2.1.5 mm, having acute apex. Shorter stamens than perianth; stigmas 3 or 2. Utricles green, longer than perianth, globose, slightly compressed, ca. 2 mm in diam., very rugose, indehiscent. Seeds black or brownish black, subglobose, ca. 1 mm in diam.

Fl. & **Fr**.: March-November

Distribution: Fields and waste lands alongside sheds and occupied lands.

Uses: It has many culinary, medicinal and agricultural uses. Also helpful in agricultural practices.

Alternanthera ficoidea Griseb., Fl. Brit. W.I. [Grisebach] 67 (1859).

Procumbent or decumbent hispidulous or glabrate perennials, branching stems upto 100 cm. long. Leaves slightly pubescent but soon glabrate, elliptic to broadly ovate or obovate, apically acuminate to acute and mucronate, basally rounded to cuneate, 2-6

cm. long, 0.5-2 cm. wide; petioles 2-10 mm. long, usually winged. Inflorescences of stramineous to white globose to ovoid heads, 3-10 mm. long, 3-6 mm. broad, sessile in the axils. Flowers perfect, bracts and bracteoles subequal, ovate, aristate, 1.5-3 mm. long; sepals 5, the outer 3 broader, 3-ribbed, basally indurate, and hispidulous, 3-5 mm. long; stamens 5, united below into a tube, the pseudostaminodia lacerate and exceeding the filaments; ovary obovoid; style 1, 2-3 times as long as the capitate stigma. Fruit an indehiscent suborbicular utricle, 1-1.5 mm. long; seeds reddish brown, cochleate-orbiculate, 0.8-1.2 mm. broad.

Fl. Sep. Oct.

Distribution: Waste land and roadsides

Uses: Primaily used for ornamental purposes in landscapes and mostly valued for its aesthetic appeal.

Alternanthera pungens Kunth, Nov. Gen. Sp. [H.B.K.] 2: 206 (1818). *Achyranthes repens* Linnaeus; *Alternanthera repens* (Linnaeus) Link. *Achyranthes leiantha* (Seub.) Standl. in J. Washington Acad. Sci. 5: 73 (1915). *Alternanthera achyrantha* var. *leiantha* Seub. in C.F.P.von Martius &auct. suc. (eds.), Fl. Bras. 5(1): 183 (1875). *Alternanthera leiantha* (Seub.) Alain in Contr. Ocas. Mus. Hist. Nat. Colegio "De La Salle" 9: 1 (1950). *Alternanthera pungens* var. *leiantha* (Seub.) Suess. in Mitt. Bot. Staatssamml. München 4: 103 (1952). *Telanthera pungens* (Kunth) Moq. in A.P.de Candolle, Prodr. 13(2): 371 (1849).

Herbs annual. Stem diffuse, creeping, much branched, 20-30 cm tall, densely rigidly hairy. Petiole 3-10 mm, glabrous or hairy; leaf blade ovate, obovate, or elliptic-obovate, 1.5-4.5 × 0.5-1.5 cm, unequal in each pair, glabrous or annexed pilose, base acuminate, apex obtuse. Heads sessile, 1-3, axillary, white, globose, or oblong, 5-10 mm. Bracts lanceolate, ca. 4 mm, spiny at apex; bracteoles lanceolate, 3-4 mm, apex acuminate, without spines. Tepals unequal, outer 2 lanceolate, ca. 5 mm, 3-veined below, rigid after anthesis, midvein stretching into spines; central segment elliptic, 3-3.5 mm, compressed; inner 2 small, enclosing ovary. Stamens 5; filaments 0.5-0.8 mm; pseudostaminodes shorter than filaments, entire or irregularly dentate. Style very short. Utricles brown, broadly ellipsoid, 1-1.5 mm.

Fl. May, **Fr**. Jul.

Distribution: Roadsides. Fujian, Sichuan [native to South America; naturalized in Bhutan, Myanmar, Thailand, other parts of Indo-China, Australia, and United States.

Uses: Useful in traditional medicine and as a fodder crop.

Alternanthera philoxeroides (Mart.) Griseb., Abh. Königl. Ges. Wiss. Göttingen 24: 36 (1879). *Bucholzia philoxeroides* C. Martius, Nov. Actorum Acad. Caes. Leop.-Carol. Nat. Cur. 13(1): 107. 1825; *Achyranthes philoxeroides* (C. Martius) Standley; *Telanthera philoxeroides* (C. Martius) Moquin-Tandon.

Herbs perennial. Stem ascending from a creeping base, 55-120 cm, branched; young stem and leaf axil white hairy; old ones glabrous. Petiole 3-10 mm,

glabrous or slightly hairy; leaf blade oblong, oblong-obovate, or ovate-lanceolate, 2.5-5 × 0.7-2 cm, glabrous or ciliate, adaxially muricate, base attenuate, margin entire, apex acute or obtuse, with a mucro. Heads with a peduncle, solitary at leaf axil, globose, 0.8-1.5 cm in diam. Bracts and bracteoles white, 1-veined, apex acuminate; bracts ovate, 2-2.5 mm; bracteoles lanceolate, ca. 2 mm. Tepals white, shiny, oblong, 5-6 mm, glabrous, apex acute. Filaments 2.5-3 mm, connate into a cup at base; pseudostaminodes oblong-linear, ca. as long as stamens. Ovary obovoid, compressed, with short stalk. Fruit not known.

Fl. May-Oct.

Distribution:

Uses: In traditional medicine system and for livestock fodder.

Alternanthera sessilis (L.) DC.*Gomphrena sessilis* Linnaeus, Sp. Pl. 1: 225. 1753; *Alternanthera denticulata* R.
Brown; *A. nodiflora* R.
Brown; *Illecebrum sessile* (Linnaeus) Linnaeus.

Herbs perennial, 10-45 cm tall. Stem ascending or creeping, green or somewhat tinged purple, striped, hairy, across nodes with a transverse row of hairs. Petiole 1-4 mm, glabrous or pilose; leaf blade linear-lanceolate, oblong-obovate, or ovate-oblong, 1-8 ×

0.2-2 cm, glabrous or pilose, base attenuate, margin entire or slightly serrate, apex acute or obtuse. Heads 1-4, axillary, sessile, at first globose, later cylindric, 3-6 mm in diam. Flowers dense; rachis densely white hairy. Bracts and bracteoles white, glabrous, apex acuminate; bracts ovate-lanceolate, ca. 1 mm; bracteoles subulate, 1-1.5 mm. Tepals white, ovate, 2-3 mm, glabrous, with a vein, apex acuminate or acute. Stamens 3; filaments ca. 0.7 mm, connate into a cup at base; anthers oblong; pseudostaminodes subulate, shorter than stamens, margin entire, apex acuminate. Style very short; stigma shortly parted. Utricles enclosed in perianth, dark brown, obovoid, 2-2.5 mm. Seeds ovoid.

Fl. May-Jul, **Fr**. Jul-Sep. s

Distribution: Roadsides, gardens, swamps. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Zhejiang, Yunnan [Bhutan, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Sikkim, Thailand, Vietnam].

Uses: Used in agriculture as provide fodder.

Gomphrena serrata L., Sp. Pl. 1: 224 (1753). *Xeraea serrata* (L.) Kuntze in Revis. Gen. Pl. 2: 543 (1891).

Erect or procumbent perennial herb, to 30 cm tall, manybranched from a woody base, plant usually reddish tinged; stems obtusely 4-angular or cylindrical, collapsing when dried, pinkish at nodes, covered with ascending long hairs, especially on young parts and nodes. Leaf blades

2-4.5 x 0.8-1.2 cm, elliptic or oblanceolate, chartaceous, densely covered with appressed long hairs on both surfaces, the apex acute, mucronate, the base tapering into a clasping petiole < 1 cm long, the margins entire and ciliate. Heads globose or nearly cylindrical, subtended by a pair of reduced leaves at base, with densely strigose axis; bracts triangular, m e m branous; bracteoles 5-7 mm long, lanceolate, involute, white, covering the flower. Pedicels with woolly hairs at base; tepals 4.5 mm long, lanceolate, greenish, with hyaline margins; staminal tube yellow; ovary white, smooth, lenticular. Fruit ca. 2 mm long, flattened to nearly globose, smooth, whitish. Seeds ca. 1 mm long, lenticular, smooth, yellowish and shiny.

Fl. Jan-Dec.

Distribution: Roadsides, gardens, swamps, throughout the world.

Uses: *Gomphrena serrata* is a plant used in traditional Indian medicine to treat a variety of ailments, including:allergies, dermatitis, piles, diarrhea, asthma, hay fever, pains, and diabetes.

Family: Amaryllidaceae

Crinum asiaticum L., Sp. Pl. 1: 292 (1753). *Bulbine asiatica* (L.) Gaertn. in Fruct. Week. Pl. 1:42 (1788). *Crinum brevifolium* Roxb. in Hort. Bengal.: 23 (1814), noun. superfl. *Crinum toxicarium* var. *asiaticum* (L.) Herb. in Bot. Mag. 47:t. 2121 (1820), noun. superfl.

Crinum asiaticum, commonly known as the Giant Crinum Lily or Asian Spider Lily, is a tropical bulbous perennial plant with striking ornamental features. The leaves of *Crinum asiaticum* are long, strap-like, and arranged in

a rosette formation. They can grow up to 1.5 meters (5 feet) in height and are dark green with a glossy texture. Leaves emerge from a central bulb and arch gracefully outward, giving the plant a dramatic appearance. Flowers of *Crinum asiaticum* are large, showy, and fragrant, borne on tall stalks that rise above the foliage. Each flower cluster contains numerous individual flowers, which are typically white but can also be pink or pinkish-white. The flowers have a trumpet-like shape with six petals arranged in a star-like pattern.The plant grows from large, fleshy bulbs, which are partially exposed above the soil surface. These

bulbs store nutrients and energy for the plant and can produce offsets or bulbils, allowing the plant to propagate vegetatively. It has a robust root system, with thick, fleshy roots that anchor the plant and absorb water and nutrients from the soil.

Fl. May-July.

Distribution: Seashores, sandy places near river banks. Fujian, Guangdong, Guangxi, Taiwan.

Uses: *Crinum asiaticum*, also known as the poison bulb or giant crinum lily, has many uses in traditional medicine: used to treat pain; crushed leaves can be used to wash piles, or a mixture of leaves and honey can be applied to wounds and abscesses.

Hymenocallis littoralis (Jacq.) Salisb. Trans. Hort. Soc. london 1: 338 (1812). *Hymenocallis adnata* Herb. in Amaryllidaceae: 215 (1837), nom. superfl. *Hymenocallis adnata* var. *littoralis* (Jacq.) Herb. in Amaryllidaceae: 215 (1837), nom. superfl. *Hymenocallis adnata* var. *princeps* Herb. in Amaryllidaceae: 215 (1837), nom. superfl.

Hymenocallis littoralis var. *longituba* Herb. in Bot. Mag. 53: t. 2621 (1826), not validly publ. *Pancratium littorale* Jacq. in Select. Stirp. Amer. Hist.: 99 (1763). *Troxistemon littoralis* (Jacq.) Raf. in Fl. Tellur. 4: 23 (1838).

The plant is 30-70cm tall, with narrow sword shaped leaves. The flowers are in fragrant white umbels, each flower with slender recurved petals and elongated stamens emerging from a central cup. The flower tube is 14-17 cm long or longer, and there are six segments, which are united at the base by a thin membranous cup of corolla. The flowers are borne in cluster of 2-12 flower on around 2 ft long stalk arising from the center of the leaves. It is called spiderly because of the petals, which look like spider legs. The flowers open one by one in 4-5 days. The sword shaped leaves are about 4-5 cm broad and the plant flowers throughout the year. Beach Spider Lily is

Fl. July-Sep.

Distribution:Throughout the world.

Uses: Hymenocallis littoralis, also known as the spider lily, has many uses:In traditional medicine, the spider lily is used to treat wounds, gastric ulcers, and respiratory problems. The bulb, root, and anther extracts have antioxidant and wound healing properties.

Family: Anacardiaceae

Mangifera indica L. Sp. Pl. 1: 200. 1753. *Mangifera austroyunnanensis* Hu. 290

Trees, 10-20 m tall; branchlets brown, glabrous. Petiole 2-6 cm, grooved apically, inflated basally; leaf blade oblong to oblong-lanceolate, 12-30 × 3.5-6.5 cm, leathery, deep green adaxially, light green abaxially, glabrous on both sides, base cuneate to obtuse, margin entire, undulate, apex acute to long

acuminate, lateral veins 20-25 pairs, midrib prominent on both sides, reticulate venation obscure. Inflorescence paniculate, terminal, 20-35 cm, glabrous to tomentose-pilose; bracts ca. 1.5 mm, lanceolate pubescent. Pedicels 1.5-3 mm, articulate. Sepals ovate-lanceolate, 2.5-3 × ca. 1.5 mm, glabrous to pubescent, acuminate. Petals light yellow with prominent red tree-shaped pattern adaxially, oblong, or oblong-lanceolate, 3.5-4 × ca. 1.5 mm, glabrous, recurved at anthesis. Fertile stamen 1, ca. 2.5 mm, with ovate anther; staminodes 4, 0.7-1 mm. Disk inflated, fleshy, 5-lobed. Ovary oblique, ovate, ca. 1.5 mm in diam. at anthesis; style ca. 2.5 mm, eccentric. Drupe oblong to subreniform, greenish yellow to red, 5-10 × 3-4.5 cm; fleshy mesocarp bright yellow; endocarp ± compressed.

Fl. Mar-Apr. **Fr**. May-Jul.

Distribution: warm subtropical and tropical regions.

Uses: *Mangiferaindica* is highly valued for its fruit, which is consumed worldwide in various forms:Ripe mangoes are eaten fresh and are known for their sweet, juicy flavor.

Family: Apocynaceae

Alstonia macrophylla Wall. ex G.Don, Gen. Hist. 4(1): 87 (1837)

Trees to 20 m tall. Bark smooth; branches nearly 4-angled. Leaves in whorls of 3 or 4; petiole 1-4 cm; leaf blade narrowly obovate or narrowly elliptic, 10-53 X 4-19 cm, leathery, pubescent abaxially, apex usually acuminate; lateral veins 16-33 pairs, at 60-70° to midvein. Cymes terminal, 3-branched, 5-9 together, pubescent; peduncle 4-6 cm. Pedicel 4-5 mm. Corolla tube slightly longer than lobes, 4.5-6 mm; lobes overlapping to right, ciliate; disc

absent. Ovaries distinct, glabrous. Follicles linear, to 61 cm X 2-5 mm. Seeds pubescent, ends with deltoid wings, with long stiff hairs all around,

Fl. Oct-Nov.

Distribution: S Guangdong, S Yunnan [Indonesia, Malaysia, Philippines, Thailand, Vietnam].Cultivated for medicine.

Uses:Various parts of *Alstonia* trees have been used in traditional medicine. The bark is often used to treat fever, malaria, respiratory issues, and digestive problems.

Asclepias curassavica L., Sp. Pl. 1: 215 (1753). *Asclepias aurantiaca* Salisb. in Prodr. Stirp. Chap. Allerton: 150 (1796), nom. superfl. *Asclepias bicolor* Moench in Methodus: 717 (1794), nom. superfl. *Asclepias nivea* var. *curassavica* (L.) Kuntze in Revis. Gen. Pl. 2: 418 (1891), nom. superfl.

Perennial herb, 0.4-1.0(-1.5) m high. Leaves opposite or 3-whorled; lamina lanceolate to elliptic-lanceolate, 60-100 x 8-20 mm, base cuneate, apex acute, brilliant green; petioles up to 15 mm long. Inflorescences: corymbose umbellate, 6-12(-20)-flowered; peduncle 35-75 mm long. Flowers: corolla lobes red, sharply reflexed, 7-9 x 4 mm; staminal column 6.8-8.0 mm high, noticeably stipitate by ± 2.7 mm long. Corona: lobes orange to yellow, cucullate, not laterally compressed, 3.5-4.0 mm high, 1.5 mm wide; upper proximal edge blunt (level with style-stigma-head), curving up into an acutely blunt distal end, overtopping style-stigma-head. Anther orbicular,

incumbent on style-stigmahead. Follicles fusiform, 60-80 x 10-15 mm, apex acuminate, beaked, glabrous.

Fl. Throughout the year.

Distribution: Common in hills above 500m, in marshy land, along stream banks. Native to tropical America. Naturalized in India, Sri Lanka.

Uses: The milky sap of the stems is used to treat warts and skin parasites. A paste made of the crushed leaves, combined with salt, vegetable oil and bread, is used for treating skin ulcers.

Carissa opaca Stapf ex Haines in Ind. Forester. 47.378. 1921. Parker, l.c. 330; R. R. Stewart, l.c.

Shrub, up to 3.5 m, evergreen, branches glabrous, or puberulous, spines arising between the petiole, straight or bifurcate, sharp, hard, 2.5-3.5 cm long, young shoots with milky juice. Leaves glabrous, opposite, elliptic, ovate, or rounded, c.1.25x.7-2 cm, acute-mucronate, apiculate, rarely obtuse, coriaceous; shining green above, paler, puberulous on nerves beneath; petiole c. 2.5 mm long. Flowers white or light rose, sweet scented, c. 2 cm across. Peduncle c. 1.25 cm long, sometimes bifurcate, usually 3 flowered; pedicel c. 2.5 mm long; bracts small, subulate, c. 1 mm long. Calyx c. 2 mm long, lobes lanceolate, acuminate, puberulous or ciliate, reaching almost to the base of the calyx tube. Corolla tube slender, 8-12 mm long, lanceolate, acute overlapping to the right, in bud, spreading. Stamens inserted at the top of corolla tube. Ovary one ovuled; stigma slightly bifid. Berry somewhat ellipsoid or subglobose, 6-8 mm long, dark purple when ripe, with milky juice, edible.

Fl.: April-June.

Distribution: Drier parts of India and Pakistan (from Punjab-Himalayas upto 6000 ft, in Murree), Burma and Sri Lanka.

Uses: used to treat a variety of ailments, including asthma, fever, diarrhea, hepatitis, and cardiac problems. The leaves are used to treat asthma, jaundice, and hepatitis. The roots are used to treat wounds and injuries.

Cascabela thevetia (L.) Lippold, Feddes Repert. 91: 52 (1980).*Cerbera peruviana* Persoon, Syn. Pl. 1: 267. 1805; *Cascabela thevetia* (Linnaeus) Lippold; *Cerbera thevetia* Linnaeus; *Thevetia linearis* A. de Candolle; *T. neriifolia* Jussieu ex Steudel, nom. invalid.; *T. neriifolia* Jussieu ex A. de Candolle; *T. thevetia* (Linnaeus) Millspaugh.

Trees upto 6 m tall. Bark chocolate-brown, lenticellate; lower branches pendulous, young branches greenish gray. Petiole ca. 3 mm; leaf blades lustrous green adaxially, light green abaxially, very narrowly oblong, 10-15 X 0.5-1.2 cm, somewhat leathery, glabrous, apex acuminate, lateral veins obscure. Pedicel 2.5-5 cm. Flowers fragrant. Sepals green, narrowly triangular, apex acuminate. Corolla 6-7 X 4.5-5.5 cm; tube 4-5 cm, shorter than lobes; corona scales present, connected by a transverse row of long white hairs, lobes obliquely obovate. Drupes compressed triangular-globose, 2.5-4 cm in dm. Seeds light gray, lenticular, ca. 2 X 3.5 cm.

Fl. May-Dec.

Distribution:Fujian, Guangdong, Guangxi, Hainan, Taiwan, Yunnan [native to Central and South America]

Uses: Used in gardens and parks as a flowering shrub or small tree. It can tolerate most soils and drought. The plant's toxins have been tested for use in biological pest control.

Cryptolepis buchananii Schultes in Roemer & Schultes, Syst. Veg. 4: 409. 1819. *Trachelospermum cavalerie*iH. Léveillé.

Lianas to 6 m, glabrous throughout. Branchlets pale gray, not exfoliating. Petiole ca. 1 cm; leaf blade oblong or elliptic, 10-18 × 4.5-7.5 cm, base broadly cuneate, apex rounded, or sometimes acute and apiculate; lateral veins ca. 30 pairs. Cymes extra-axillary, paniculate, shorter than leaves. Pedicel 2-5 mm. Sepals broadly ovate, ca. 1.5 × 1 mm; basal glands 10. Corolla greenish yellow or yellow-white; tube ca. 2mm; lobes linear-lanceolate, ca. 7 × 1.5-2 mm. Corona lobes club-shaped. Anthers hirsute at base. Follicles cylindric, 6.5-9 × 1-2 cm, with 2 longitudinal ridges. Seeds brownish, ovate-oblong, ca. 6 × 3 mm; coma white, ca. 3.5 cm.

Fl. Mar-Aug, **Fr**. Jun-Dec.

Distribution: Jammu and Kashmir, Bhutan, Sri Lanka, Thailand, Vietnam etc.

Uses: The stems are used to treat muscle and joint pain, arthritis, and tendon stiffness. The leaves are used as a poultice on inflamed areas.

Nerium oleander L., Sp. Pl. 1: 209. 1753. *Nerium indicum* Mill., Gard. Dict. ed. 8 No. 2, p. 37. 1768. *Nerium odorum* Sol. ex Aiton, Hort. Kew ed. 1. 1: 297. 1789.

Stem to 6 m tall. Leaves very narrowly elliptic, 5-21 X 1-3.5 cm, leathery, base cuneate or decurrent on petiole, apex acuminate or acute. Flowers showy, fragrant. Sepals narrowly triangular to narrowly ovate, 3-10 mm. Corolla purplish red, pink, white, salmon, or yellow, tube 1.2-2.2 cm; lobes 1.3-3 cm, single or double. Follicles cylindric, 12-23 cm. Seeds oblong, coma 0.9-1.2 cm.

Fl. spring-autumn.

Distribution: on the banks of streams in subtropical regions

Uses: Widely used in landscaping for its attractive, vibrant flowers and evergreen foliage. Ideal for gardens, parks, and urban spaces.

Family Araceae

Amorphophallus paeoniifolius (Dennst.) Nicolson, Taxon 26: 338 (1977).*Amorphophallus giganteus* Blume in Rumphia 1:144 (1837), nom. illeg. *Arum rumphii* Gaudich. in Voy. Urania: 43 (1826), name. illeg. *Candarum hookeri* Schott in HWSchott&SLEndlicher, Melet. Bot.: 17 (1832), name. illeg. *Candarum roxburghii* Schott in HWSchott&SLEndlicher, Melet. Bot.: 17 (1832), name. illeg. *Candarum rumphii* Schott in HWSchott&SLEndlicher, Melet. Bot.: 17 (1832), name. illeg. *Conophallus giganteus* Schott ex Miq. in Fl. Ind. 3:198 (1856), noun. illeg. *Dracontium paeoniifolium* Dennst. in Schlüssel Hortus Malab.: 38 (1818). *Kunda verrucosa* Raf. in Fl. Tellur. 2:82 (1837), noun. illeg.

Tuber dark brown, depressed globose, ca. 20 cm high, to ca. 30 cm in diam., weighing up to ca. 15 kg; root scars prominent, annulate; offsets produced every season, thick and rhizomatous, to ca. 10 × 4 cm. Leaves 1 or 2; petiole background pale to dark green or blackish green, usually with large and small pale blotches and numerous tiny dark dots, large blotches often confluent, especially near base, petiole to ca. 2 m × 20 cm, shallowly corrugate to strongly echinate-verrucate; leaf blade highly dissected, to ca. 3 m in diam.; rachises narrowly or broadly winged almost to base; leaflets abaxially mid-green or pale green, adaxially mid-green, orbicular, oval, ovate, obovate, elliptic, elliptic-oblong, elliptic-lanceolate, or lanceolate, 3-35 × 2-12 cm, apex acuminate. Inflorescence shortly pedunculate; peduncle 3-20 × 1-8 cm, usually paler and more glabrous than petioles. Spathe campanulate, broader than long, 10-45 × 15-60 cm, base and limb often separated by a shallow constriction; limb spreading, background ranging from pale green to dark brown, usually with both large and small, orbicular paler spots, base inside proximal part deep maroon, distal part dirty whitish or very pale pinkish, limb outside as base but with more prominent maroon flushes, especially near margin, limb inside usually glossy dark maroon, strongly undulate, base outside very variable, base within densely verrucate, verrucae variable, mostly conic, fleshy. Spadix giving off a stench of rotting meat, sessile, shorter or longer than spathe, 7-70 cm; female zone cylindric, 3-25 × 1-12 cm, flowers congested or slightly distant; ovary entirely pale green or largely maroon with a whitish base, depressed, orbicular in cross section, 1.5-2.5 mm high, 3-5 mm in diam., 2- or 3-loculed; style maroon, 3-15 mm, slender, 1-1.5 mm in diam.; stigma pale or deep yellow, oval or triangular in cross section, large, 3-5 mm high, 4-7 mm in diam., often strongly laterally

compressed, then cordate in longitudinal section, verruculose, shallowly or deeply 2- or 3-lobed, lobes rounded or conic, sometimes with a strong groove on outward side; male zone cylindric or strongly obconic, 2.5-15 cm, 1-10 cm in diam. at base, 1-20 cm in diam. at apex, flowers congested; male flowers consisting of 4-6 stamens; stamens 4-6 mm; filaments ca. 0.5 mm, connate; anthers off-white, cylindric, 3.5-5.5 × ca. 1.5 mm, subtruncate; pollen psilate; appendix very variable, glossy dark maroon, rarely pinkish or yellow, inflated, globose, depressed globose, ovoid, or triangular-conic (pyramidal), 1.5-30 cm, 1.2-30 cm in diam.

Fl. Apr-May, fr. Oct-Nov.

Distribution: Guangdong, Guangxi, Hainan, Taiwan, Yunnan [Bangladesh, India, Indonesia, Laos, Myanmar, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; N Australia, Pacific islands; naturalized in Indian Ocean islands (Seychelles)].

Uses: The tubers are used in ethnomedicinal practices to treat a variety of conditions, including:Gastrointestinal diseases like hemorrhoids, vomiting, anorexia, and constipation; Abdominal pain .

Family: Arecaceae

Phoenix sylvestris (L.) Roxb., Fl. Ind. (Roxburgh) 3: 787 (1832).*Elate sylvestris* L. in Sp. Pl.: 1189 (1753).

The plant is a small to medium-sized palm that is popular in ornamental horticulture. This species displays the following morphological characteristics: Pygmy Date Palms typically grow to about 1.5 to 3 meters (5

to 10 feet) tall, making them one of the smaller species in the Phoenix genus. Leaves are pinnate (feather-like) and arch gracefully, forming a dense crown. Each leaf can reach up to 1 meter (3 feet) in length and is composed of numerous slender leaflets arranged along a central rachis. The leaflets are dark green, with a leathery texture, and can be slightly spiny near the base. The stem is slender and covered with old leaf bases, giving it a rough texture. It is often single but can sometimes form a clump of multiple stems. Flowers are small, yellowish, and inconspicuous, borne on inflorescences that emerge from the axils of the leaves. The plant is dioecious, meaning there are separate male and female plants. The fruit is a small, oblong drupe, about 1 cm in length, turning from green to dark purple or black when ripe. The fruit is edible but not commonly consumed due to its small size and relatively low flesh content.

Fl. March-April. Fr.August-October.

Distribution: According to Aitchison this wild date palm is indigenous in the Indus basin. It is also cultivated in Sind and Punjab.

Uses: the plantis primarily valued for its ornamental qualities, but it also has some additional uses:widely used in landscaping for their attractive appearance and manageable size. They are suitable for small gardens, patios, and indoor spaces. Due to their compact growth habit, these palms are ideal for growing in containers, making them popular choices for decorating indoor and outdoor living.

Phoenix humilis Royle, Ill. Bot. Himal. Mts. [Royle] [10]: 394 (1839).

Clustering palm tree, reach upto 6 m tall, slender, often with remnants of old leaf bases creating a rough texture. Pinnate (feather-like), green to bluish-green, 1.5-3 meters long, with numerous leaflets arranged in a feather-like manner. Branched, arising among the leaves, producing small yellowish flowers. Oval to round drupe, about 1-2 cm in diameter, turning orange or red when ripe, containing a single seed (date).

Fl. March-April. Fr.August-October.

Distribution: *Phoenix humilis* is native to the Himalayan region, including parts of Afghanistan, Pakistan, India, Nepal, and Bhutan.

Uses: The pith from the top of the stem is eaten, and the fruits are sweet and edible. The leaves can be used to make cordage.

Rhapis excelsa (Thunb.) A.Henry, J. Arnold Arbor. 11(3): 153 (1930). *Chamaerops excelsa* Thunb. in J.A.Murray (ed.), Syst. Veg., ed. 14.: 984 (1784)*Rhapis flabelliformis* L'Hér. in W.Aiton, Hort. Kew. 3: 473 (1789), nom. superfl.*Trachycarpus excelsus* (Thunb.) H.Wendl. in Bull. Soc. Bot. France 8: 429 (1861)

Stems clustered, rhizomatous, forming large, loose colonies, to 3 m tall, to 1.5 cm in diam., covered with persistent, fibrous leaf sheaths. Leaf sheaths with coarse, black fibers producing a square mesh; ligules not persistent; blades not split to base, divided into 2-13 segments, these with ± straight sides and jagged apices, to 40 × 7 cm, outermost narrowest. Inflorescences borne among leaves, branched to 2 or 3 orders; bracts tubular, sheathing; rachis to 26 cm; rachillae to 11 cm, glabrous; male flowers to 6 mm; sepals

united into a tubular, 3-lobed calyx; petals united into a tubular corolla with a 3-lobed, valvate apex; stamens 6, borne in 2 series; filaments keeled adaxially; female flowers similar to but shorter than male. Fruits developing from 1 carpel, yellow, globose to ellipsoid, to 1 × 0.8 cm.

Fl. June- Sep.

Distribution: Scattered localities in lowland forests or dry forests, on slopes; below 1000 m. Fujian, Guangdong, Guizhou, Hainan, Yunnan Vietnam.

Family: Asteraceae

Achillea millefolium L. *l. c.* 899; Hook. F. Fl. Brit. Ind. 3 : 312, 1812; Duthie, Cat. Pl. Kumaon 92, 1906; Collet, Fl. Siml. 265, 1921.

An erect, pubescent herb, stem leafy and grooved. Leaves are alternate, oblong lanceolate, 3-pinnatisect, segments linear, acute, radical, leaves stalked, upper sessile. Heads radiate, crowded in compound corymbs. Involucral bracts few, erect, outer one shorter. Receptacle flat, covered with thin oblong scales, nearly as long as the flowers. Flowers white or pale pink; pappus none; ligules rounded, reflexed, Achenes oblong, flatended.

Fl. &Fr. : May-October.

Distribution: N.W. montane and alpine Himalaya, S. India; Asia, Europe and N.America.

Artemisia absinthium L., Sp. Pl. 2: 848 (1753). *Absinthium officinale*Brot. in Fl. Lusit. 1: 357 (1804), nom. superfl. *Absinthium*

vulgare Lam. in Fl. Franç. 2: 45 (1779) *Artemisia pendula* Salisb. in Prodr. Stirp. Chap. Allerton: 191 (1796), nom. superfl.

Herbs, perennial, 60-150 cm tall, somewhat woody at base, gray sericeous or puberulent. Stems 1-3. Basal leaves: petiole 6-12 cm; leaf blade ovate-elliptic or ovate, 8-12 × 7-9 cm, 2- or 3-pinnatisect; segments 4 or 5 pairs, pinnately lobed; lobules lanceolate-elliptic or -linear, 8-15 × 2-4(-7) mm, apex obtuse. Middle stem leaves: petiole 2-6 cm; leaf blade ovate or elliptic-ovate, 2-pinnatisect; lobules linear-lanceolate, (8-)10-25 × 2-3(-5) mm. Uppermost leaves 4-6 × 2-4 cm, pinnatisect or 5-lobed; leaflike bracts 3-lobed or entire; lobes lanceolate or linear-lanceolate. Synflorescence usually a broad conical panicle; primary branches straight, ascending or ± oblique spreading, up to 30 cm and secondary branches up to 12 cm. Capitula shortly pedunculate, nodding. Involucre globose or sub-globose, 2.5-3.5(-4) mm in diam.; receptacle hemispheric, densely pubescent. Marginal female florets 15-25; corolla yellow, obliquely 2-toothed. Disk florets 30-70(-90), bisexual; corolla yellow. Achenes oblong, 0.8-1 mm, with apical corona or not.

Fl. and **Fr.** Aug-Sep.

Distribuiton: Hillsides, steppes, scrub, forest margins, often in locally moist situations; 1100-1500 m. Jiangsu, NW and W Xinjiang [Afghanistan, India, Japan, Kazakhstan, Kyrgyzstan, Pakistan, Russia; N Africa, SW Asia, Europe, North America].

Uses: In traditional medicine, parts of the plant are used to treat a variety of conditions, including digestive issues, respiratory conditions, and skin

conditions. However, there is a lack of scientific research to confirm these effects.

Bidens pilosaL. Sp. Pl. 832. 1753; *Bidens leucanthema* var. *pilosa* (L.) Griseb. in Cat. Pl. Cub.: 155 (1866). *Bidens pilosa* subvar. *discoidea* Pit. in Iles Canaries: 226 (1909), not validly publ.*Bidens pilosa* f. *discoidea* Sch.Bip. in P.B.Webb&S.Berthelot, Hist. Nat. Iles Canaries 3(2; 2): 242 (1844), not validly publ.*Bidens pilosa* var. *discoidea* J.A.Schmidt in Beitr. Fl. Cap Verd. Ins.: 197 (1852), not validly publ.*Ceratocephalus pilosus* (L.) Rich. in F.Marthe, Cat. Pl. Jard. Méd. Paris: 91 (1801). *Cosmea pilosa* (L.) Spreng. in Syst. Veg., ed. 16. 3: 615 (1826). *Kerneria pilosa* (L.) Lowe in Man. Fl. Madeira 1: 474 (1868). *Kerneria pilosa* var. *discoidea* Lowe in Man. Fl. Madeira 1: 474 (1868), not validly publ.*Kerneria tetragona* Moench in Methodus: 595 (1794), nom. superfl.

Glabrous, erect, annual herbs. Stems 15-90 cm, grooved, quadrangular, glabrous near the base, pubescent upward; branches opposite, stalked 4-11 x 1.5cm, usually 1-pinnate; sometimes 3-foliate, but usually consisting of 2 opposite pairs of leaflets; when undivided, ovate and toothed; leaflets toothed or 1-2 pinnatisect. Inflorescence corymbose, 1.2-1.5cm in diameter, white; on 3-6cm long, thick, diverging stalks; heterogamous or radiate consisting of outer ray florets and inner disk florets; surrounded by involucres of bracts, outer involucres bracts spathulate, 5mm long inner ones oblong lanceolate or obtuse 5-7mm long. Heads

elongating in fruit. Ray florets Bracteate, epigynous, incomplete, zygomorphic, 5-6 mm long, ligulate, white or yellow. Calyx of 2 or 3 erect, stiff, barbed bristles. Corolla ligulate, white or yellow. Gynoecium, Fruits and Seeds as an disk florets. Disc Florets Bracteate, sessile, regular, actinomorphic, pentamerous, tubular, 4mm long, epigynous. Calyx as in ray florets. Corolla tubular, narrow, dilated at the top, 5-toothed. Stamens 5, rarely 4, epipetalous, i.e. attached to the corolla tube;syngesious, i.e. filaments usually free, but anthers fused to form a tube around the style, rarely segitate, dithecous, i.e. 2-celled, introse, basifixed, dehiscence by lateral slits, superior. Gynoecium Bicarpellary, syncarpous, ovary inferior, unilocular with a single basal ovule; style linear, usually divided at the top in two stigmatic arms. Fruits (Achenes or Cypsella) rough, linear. 0.8-1cm long, quadrangular, slightly tapering towards the apex, glabrous, with a pappus of 3-4 unequal barbed bristles. Seeds exalbuminous.

Fl. &**Fr** : September-October.

Distribution: Submontane and montane Himalaya; Sri Lanka, C. Ans S. America and Africa.

Uses: *Bidenspilosa* has been traditionally used to treat inflammation and pain. Extracts from the plant have been shown to have anti-inflammatory and antimicrobial properties.

Cichorium intybus L., Sp. Pl. 2: 813. 1753. *Cichorium intybus* var. *sylvestre* Vis. in Fl. Dalmat. 2: 97 (1847), not validly publ.*Cichorium intybus* f. *sylvestre* Bisch. in Beitr. Fl. Deutschl.: 25 (1851), not validly publ.*Cichorium rigidum* Salisb. in Prodr. Stirp. Chap. Allerton: 183 (1796), nom. superfl.*Cichorium sylvestre* Lam. in Fl. Franç. 2: 120 (1779), nom. superfl.

Herbs 40-110 cm tall, perennial, with a strong taproot. Stem usually solitary, erect; branches spreading-ascending, subglabrous. Basal leaves rosulate, obovate to oblanceolate, 15-34 × 2-4 cm, attenuate into a petiole-like basal portion, undivided to usually runcinately pinnatipartite, sparsely covered with long multicellular hairs, base attenuate, margin dentate; lateral lobes 3-6 pairs, triangular; terminal lobe distinctly larger than lateral ones, apex rounded to acute. Stem leaves similar to basal leaves but smaller and less divided, gradually reduced toward stem apex, base clasping, apex acute. Synflorescence of main axis and larger branches spiciform-paniculiform. Capitula axillary and terminal, solitary or in clusters of a few, sessile or on a several cm long, thick, and apically slightly inflated peduncle, with usually 15-20 florets. Involucre cylindric, 0.9-1.4 cm. Phyllaries abaxially sparsely with glandular or simple hairs, apex ± acute; outer phyllaries lanceolate, longest > 1/2 as long as to approaching inner ones in length, spreading-erect, margin ciliate; inner phyllaries linear-lanceolate. Florets blue or exceptionally pink or bluish white. Achene brown, subcylindric to obovoid, 2-3 mm, stout, rugulose, apex truncate. Pappus (0.1-)0.2-0.3 mm.

Fl. May-Oct.

Distribution: By rivers, wastelands along seashores, slopes, by ditches; low elevations. ?Gansu, Hebei, Heilongjiang, Henan, ?Jilin, Liaoning, Shaanxi, Shandong, Shanxi, Taiwan, Xinjiang [N Africa, C and SW Asia, Europe].

Uses: Chicory is used in salads, teas, and tea blends. Chicory has been used to treat a variety of ailments, including wounds. It has anti-inflammatory, antibacterial, antiviral, and antifungal properties.

Cirsium wallichii DC., Prodr. 6: 646. 1838. *Cnicus wallichii* (DC.) C.B. Clarke, Compos. Ind.: 219. 1876. var. *wallichi*i; var. *cernua* (Hook.f.) Karthik. & Moorthy, Fl. Pl. India, 215. 2009. *Cnicus wallichii* var. cernuaHook.f., Fl. Brit. India 3: 364. 1881.

Herbs, annual to perennial, bisexual or dioecious. Stems (when developed) unwinged or sometimes with spiny wings. Leaves subentire to bipinnately divided, lanceolate or wider, margin spinulose or spiny. Capitula solitary to clustered. Phyllaries numerous, regularly imbricate or of subequal length, abaxially often with a dark glandular resinous medial swelling below apex, apex ending in a straight or gradually recurved spine, spinule, or acumen. Florets normally all bisexual, or if unisexual then plants dioecious. Stamen filaments pubescent; anther with short subentire to lacerate basal appendages. Achene narrowly obovoid, laterally compressed, often with 4 or more slender spaced longitudinal ribs or striae, otherwise smooth; apical rim forming a smooth-margined upright crown; elaiosome crowned by an inconspicuous disk. Pappus of 3 or 4 rows of plumose bristles, outer ones not much shorter than inner.

Fl. &**Fr**.: March-April.

Distribution: Jammu and Kashmir, Sikkim, Arunachal Pradesh, Himachal Pradesh, and West Bengal.

Uses: Cirsium plants contain antimicrobial components such as flavonoids, triterpenoids, and phenolic acids. These components can damage the cell membrane, cell walls, mitochondria, and nucleus of bacteria.

Chrysanthemum indicum L. , Sp. Pl. 2: 889 (1753). *Dendranthema indicum* (L.) Des Moul. in Actes Soc. Linn. Bordeaux 20: 562 (1855). *Matricaria indica* (L.) Desr. in J.B.A.M.de Lamarck, Encycl. 3: 734 (1792), nom. illeg. *Pyrethrum indicum* (L.) Cass. in G.-F.Cuvier, Dict. Sci. Nat., ed. 2. 44: 149 (1826), nom. illeg. *Tanacetum indicum* (L.) Sch.Bip. in Tanaceteen: 50 (1844).

Herbs, perennial, 0.25-1 m tall, with long or short procumbent rhizomes. Stems erect or diffuse, branched, sparsely pilose. Lower leaves withered at anthesis. Middle stem leaves: petiole 1-2 cm; leaf blade ovate, long ovate, or elliptic-ovate, 3-7(-10) × 2-4(-7) cm, both surfaces pale green or olive, sparsely pubescent or less densely so abaxially, pinnatifid, pinnatilobed, or inconspicuously divided, base truncate, somewhat cordate or broadly cuneate. Synflorescence a lax terminal flat-topped cyme. Capitula many or few. Phyllaries in 5 rows, scarious margin broad, white, or brown, apex obtuse or rounded, outer ones ovate or ovate-triangular, 2.5-3 mm, middle ones ovate, 6-8 mm, inner ones narrowly elliptic, ca. 1.1 cm. Ray floret lamina yellow, 1-1.3 cm, apex entire or 3-denticulate. Achenes 1.5-1.8 mm.

Fl. and **Fr**. Aug-Nov.

Distribution: Grasslands on mountain slopes, thickets, wet places by rivers, fields, roadsides, saline places by seashores, under shrubs; 100-2900 m. Uses:*Cirsium* plants contain antimicrobial components such as flavonoids,

triterpenoids, and phenolic acids. These components can damage the cell membrane, cell walls, mitochondria, and nucleus of bacteria.

Cosmos sulphureus Cavanilles, Icon. 1: 56. 1791. *Bidens sulphurea* (Cav.) Sch.Bip. in B.Seemann, Bot. Voy. Herald: 308 (1856). *Cosmea sulphurea* (Cav.) Willd. in Sp. Pl., ed. 4. 3: 2250 (1803). *Cosmos sulphureus* var. *typicus* Sherff in Brittonia 6: 341 (1948), not validly publ.

Plants 30-200 cm tall, glabrous or sparsely pilose to hispid. Leaves petiolate; petiole 1-7 cm; blade 5-12(-25) cm, ultimate lobes 2-5 mm wide, margin sparsely spinulose-ciliate, apex apiculate. Peduncles 10-20 cm; calycular bracts spreading-ascending, linear-subulate, 5-7(-10) mm, apices acute; involucre 6-10 mm in diam.; phyllaries erect, oblong-lanceolate, 9-13(-18) mm, apices acute to rounded-obtuse. Ray corollas intensely yellow to red-orange, lamina obovate, 18-30 mm, apices ± truncate, denticulate. Disk corollas 6-7 mm. Achenes 15-30 mm, usually hispidulous, rarely glabrous; pappus absent, or of 2 or 3 widely divergent awns 1-7 mm.

Fl. Jun-Sep.

Distribution: Introduced.

Uses: The flowers are edible and can be used in salads, cakes, or savory dishes. They have a slightly bitter and spicy flavor. The young shoots can be eaten raw or cooked in Indonesia.

Erigeron bonariensisL., Sp. Pl. 2: 863. 1753. *Conyza ambigua* Candolle; *C. bonariensis* (Linnaeus) Cronquist; C. crispa (Pourret) Ruprecht; *C.leucodasys* Miquel; Erigeron crispus Pourret; *E.linifolius*Willdenow; *Leptilonbonariense* (Linnaeus) Small; *Marsea bonariensis* (Linnaeus) V. M. Badillo.

Herbs, annual or biennial, 10-50 cm tall; roots fusiform, fibrous rooted. Stems erect or ascending, thin, often branched above middle, densely leafy, densely strigose, sparsely hirsute. Leaves: basal withered at anthesis, lower cauline long petiolate, blade oblanceolate or oblong-lanceolate, 3–5[–8] × 0.3–1[– 2.5] cm, surfaces densely strigose or hispidulous, base attenuate, margin usually coarsely serrate or pinnatilobed, sometimes entire, apex acute or obtuse, mid and upper shortly petiolate or sessile, blade narrowly lanceolate or linear, [1–]3–7 × 0.2–0.5[–1] cm, margin of mid dentate, margin of upper entire. Capitula 3–10 mm in diam., numerous, in racemiform or racemose-paniculiformsynflorescences; peduncles 10–15 mm. Involucre urceolate, ca. 5 × 8 mm; phyllaries 2- or 3- seriate, linear, abaxially densely gray-white scabrous, apex acute, outer ones slightly short or ca. 1/2 as long as inner, inner ones ca. 4 × 0.7 mm, margin scarious. Ray florets 65–150 or more, white, 3– 3.5 mm, elaminate or 3- or 4- denticulate at apex; disk florets ca. 3 mm, tube sparsely puberulent. Achenes linear-lanceoloid, compressed, ca. 1.5 mm, sparsely strigillose [or glabrous]. Pappus reddish, sordid, or tawny, 3–4 mm.

Fl. May–Oct.

Distribution: Grassy slopes, roadsides; widely distributed in tropical and subtropical regions worldwide.

Uses:Planthas been used as a natural insecticide to repel fleas since Roman times. You can also rub the leaves on clothing or paths to repel mosquitoes, flies, gnats, and ticks.

Lactuca virosa L., Sp. Pl. 2: 795 (1753).*Lactuca scariola* subsp. *virosa* (L.) Maire &Petitm. in Bull. Séances Soc. Sci. Nancy, sér. 3, 9: 379 (1908). *Lactuca scariola proles virosa* (L.) Rouy in G.Rouy&J.Foucaud, Fl. France 9: 199 (1905). *Lactuca scariola* subsp. *virosa* (L.) Bonnier &Layens in Tabl. Syn. Pl. Vasc. France: 187 (1894), nom. illeg.Wiestia *virosa* (L.) Sch.Bip. in Jahrb. Pract. Pharm. VerwandteFächer 4: 154 (1841)

commonly known as wild lettuce, is a robust plant with distinct features:The stem is erect, hollow, and can grow up to 1.5 meters tall. It exudes a milky latex when cut or broken. The leaves are alternate, oblong to lanceolate, and can grow up to 30 cm long. They have a slightly toothed or lobed margin and often have spiny edges and undersides.

The plant produces small, yellow flowers arranged in loose panicles. Each flower head is composed of multiple tiny florets.The fruit is a small achene, equipped with a pappus that aids in wind dispersal.The root system is deep and robust, helping the plant to access nutrients and water from deeper soil layers.

Fl. May- Oct.

Distribution: Disturbed sites

Uses: *Lactucavirosa* has been utilized for various purposes, particularly for its medicinal properties:Various parts of the plant are used in traditional remedies for a range of ailments, reflecting its importance in herbal medicine.

Parthenium hysterophorus L. Sp. Pl. 988. 1753; R. S. Rao in J. Bombay Nat. Hist. Soc. 54: 218. 1956; Mathew, Fl. Tamil. Carnat. 2: t.383. 1982; FHP. 2: 404.1984; Rao et al., Fl. Ind. Enum. Asteraceae. 56. 1988; hajra*et al*., Fl. Ind. Asteraceae. 12:403. 1995; FK. 389. 1999; FSIR. 389. 2004; FC. 424. 2006.

Annual-perennial, aromatic herb. Stems erect, 0.8-1.8 high, much branched, ridged, angular, puberulous to strigillose, glandular-scabrid. Leaves alternate, 2-15 X 0.4-5 cm, entire or highly divided, ususlly lanceolate above to pinnately dissected downwards, glandular, pubescent on both sides; segment oblong-lanceolate, entireto deeply lobed, puberulous, acute with decurrent base; petioles 3-4cm long. Heads yellowish-white or cream coloured, radiate, 2-3.5 X 3-4mm, numerous, in 9-15cm long, axillary and terminal, lax, leafy, corymb-like cymes; 314 peduncules 4-10cm long, densely pubescent. Receptacle convex, small. Involucral bracts 2- seriate; outer 2.5-5 X 1-3mm, ovate-oblong, acute, green, margins membranous, pubescent in the upper half, 3-nerved from base; Inner 4-5 ca 2- 2.5mm long, broadly obovate, obtuse, scarious, tip rounded, puberulus, 3- nerved from the middle or slightly below the top; subtending a jug-shaped female flower with one male flower on each side. Male flowers many, surrounded by scarious bracts.Ray florets 5, with 2-seriate disc florets on either side. Corolla white to cream, ovate-orbicular, bilobed, obtuse, cup-shaped; style 1mm long, with stout, oblong, obtuse stigma. Disc Florets many. Corolla light yellow, narrowly campanulate, 1.5-2mm long, 5- toothed or lobed, ovate- acute. Stamens 5, epipetalous,

alternating with corolla lobes; anthers 2-loculed, syngenesious forming a tube around style, not tailed with terminal appendages. Ovary inferior, unilocular, often compressed with a copular nectar; style 1-5mm, puberulous, entire; ovule solitary. Fruit (Achenes) black, 2-2.5 X 1-1.5mm, elliptic or flattened, obovoid, margin narrowly winged. Pappus of 2 broad, strongly reflected awns, 0.3-0.5mm long, puberulous along the side.

Fl. & **Fr**.: Almost throughout the year.

Distribution: Jammu & Kashmir to Bhutan.

Uses: Extracts from the plant have anti-inflammatory, antioxidant, and anti-microbial properties.

Sonchus oleraceus L., Sp. Pl. 2: 794. 1753. *Sonchus ciliatus*Lamarck; *S. mairei*H. Léveillé (1913), not H. Léveillé (1915).

Herbs 40-150 cm tall, annual or sometimes biennial. Stem below synflorescence simple or branched, glabrous. Basal and lower stem leaves with basal portion petiole-like and attenuate, mostly smaller than middle stem leaves, otherwise similar. Middle and upper stem leaves extremely variable, elliptic, oblanceolate, or lanceolate, 6-20 × 2-9 cm, almost entire to ± irregularly pinnatisect, soft, glabrous, adaxially dull green, base auriculately clasping with auricles usually acutely prostrate, margin ± coarsely spinulosely dentate, apex acute; lateral lobes

triangular to elliptic, usually recurved, apex acute to acuminate; terminal lobe larger than others, broadly triangular, broadly hastate, or obovate-cordate. Synflorescence shortly corymbiform or racemiform, with few to several

capitula. Capitula with many florets; peduncle 0.5-3(-5) cm, slender, glabrous, glandular hairy, or apically white tomentose. Involucre ± campanulate, 1-1.2 cm. Phyllaries glabrous or with few glandular hairs, apex ± obtuse; outer phyllaries triangular to
narrowly lanceolate, 1-3 mm wide. Corolla 1-2 cm. Achene obcolumnar, 2.5-4 mm, distinctly compressed, between lateral ribs with 3(-5) slender ribs on either side, space between slender ribs much wider than ribs, distinctly rugose when fully mature. Pappus 6-8 mm, ± persistent.
Fl. and **Fr**. May-Dec.
Distribution: Throughout India.

Uses: The young leaves and shoots of Common Snowthistle are edible and are often used in salads, soups, and stews.

Synedrella nodiflora (L.) Gaertner, Fruct. Sem. Pl. 2: 456. 1791. *Verbesina nodiflora* Linnaeus, Cent. Pl. 1: 28. 1755.

Annuals, 10-80 cm tall. Stems erect or ascending, branched from bases or ± throughout. Leaves cauline, opposite, petiolate; blade ovate to elliptic, 3-10 × 2-5 cm, both surfaces ± scabrid, usually 3-veined, base cuneate to rounded, margin toothed. Capitula radiate, sessile or subsessile in axillary glomerules or capitula solitary; involucres cylindric to campanulate, 3-6 mm in diam.; phyllaries persistent, 2-5+, 1(or 2)-seriate, lanceolate, herbaceous to papery; receptacle

convex; paleae linear-lanceolate, scarious, flat or weakly cupped at bases. Ray florets 2-9, 1- or 2-seriate,

female, fertile; corollas yellowish, ca. 2 mm; lamina ovate to linear, 2-4 mm. Disk florets 4-12+, bisexual, fertile; corollas yellowish, tubes ca. 4 mm, ± equaling slightly enlarged cylindric throats, 4-lobed, orbicular-deltate.

Fl. year-round.

Distribution: Throughout India.

Uses: In traditional medicine, various parts of *Synedrellanodiflora* are used to treat ailments such as skin infections, diarrhea, and respiratory issues. It is believed to have antimicrobial and anti-inflammatory.

Taraxacum officinale F.H.Wigg., Prim. Fl. Holsat. 56 (1780).

Plants 5–40 cm; taproots seldom branched. Stems 1–10+, erect or ascending, sometimes ± purplish (usually equaling or surpassing leaves), glabrous or sparsely villous, slightly more so distally. Leaves 20+, horizontal to erect; petioles ± narrowly winged; blades oblanceolate, oblong, or obovate (often runcinate), 45 × 1–10 cm, bases attenuate to narrowly cuneate, margins usually shallowly to deeply lobed to lacerate or toothed, lobes retrorse, broadly to narrowly triangular to nearly lanceolate, acute to long-acuminate, terminals ± as large as distal laterals, ultimate margins toothed or entire (secondary lobules irregular, perpendicular to retrorse), teeth minute to pronounced apices acute to acuminate or obtuse, faces glabrous or sparsely

villous (commonly on midveins). Calyculi of 12–18, reflexed, sometimes ± glaucous, lanceolate bractlets in 2 series, 6–12 × 2.8–3.5 mm, margins very narrowly white-scarious, sometimes villous-ciliate distally, apices acuminate, hornless. Involucres green to dark green or brownish green, tips dark gray or purplish, campanulate, 14–25 mm. Phyllaries 13–18 in 2 series, lanceolate, 2–2.8 mm wide, margins scarious (proximal $^{2}/3$) to narrowly scarious, apices acuminate, erose-scarious, usually hornless (seldom appendaged), callous. Florets 40–100+; corollas yellow (orange-yellow), 15–22 × 1.7–2 mm (outer). Cypselae olivaceous or olive-brown, or straw-colored to grayish, bodies oblanceoloid, 2.5–2.8 mm, cones shortly terete, 0.5–0.9 mm, beaks slender, 7–9 mm, ribs 4–12, sharp, faces proximally smooth to ± tuberculate, muricate in distal $^{1}/3$; pappi white to sordid, 5–6(–8) mm.

Fl. year-round.

Distribution: Often damp low places, lawns, roadsides, waste grounds, disturbed banks and shores; 0–2000+ m; introduced; Greenland.

Uses: Dandelion leaves can be eaten in salads and sandwiches, and the roots can be used as a coffee substitute. The flowers can be used to make wine.

Tagetes erecta L., Sp. Pl. 2: 887. 1753. *Tagetes patula* Linnaeus; *T. tenuifolia* Cavanilles.

Annuals, 10-120 cm. Leaf blades 30-120(-250) mm overall, principal lobes/leaflets 9- 25, lanceolate to linear-lanceolate, 15-25(-45) × 3-8(-12) mm. Capitula solitary; peduncles 30-100(-150) mm; involucres 10-22+ × (3-)5-12 mm; phyllaries 5-8. Ray florets (3-)5-8(-100 in "double" cultivars); lamina yellow to orange, red-brown (sometimes bi-colored: yellow/ red-brown), or white (some cultivars),

flabellate toovate-quadrate, (2-)12-18(-25) mm. Disk florets (10-)50-120; corollas 7-12 mm. Achenes 6-11 mm; pappus of 0-2 subulate-aristate scales 6-12 mm and 2-4 distinct or connate, linear-oblong, erose scales 2-6+ mm.

Fl. Jun-Oct.

Distribution: Throughout India.

Uses: Treating digestive issues like stomach pain, diarrhea, colic, liver problems, bile, vomiting, and indigestion.

Tagetes minuta L., Sp. Pl. 2: 887 (1753).

Annual herbs, 10-250 cm, plant aromatic. Stems much branched in larger plants and almost woody, ribbed, glabrous, glandular. Leaves mostly opposite, often alternate in upper part, dark green, pinnatisect, elliptic in outline, 3-30 × 0.7-8 cm, rachis narrowly winged, lobes up to 17, linear-oblong, to 11 × 1 cm, with orange glands. Synflorescence a dense terminal corymb. Capitula narrowly cylindric; involucre 8-12 mm; phyllaries 3 or 4, yellow-green, fused, glabrous, with brown or orange linear glands. Ray florets 2 or 3, pale yellow to cream, lamina 2-3.5 mm. Disk florets 4-7, yellow to dark yellow, 4-5 mm. Achenes black, narrowly ellipsoid, 6-7 mm, pilose; pappus of 1 or 2 setae to 3 mm and 3 or 4 scales to 1 mm, apices ciliate

Fl. June-Nov.

Distribution:Recently naturalized in Taiwan, widespread in Central and South America; naturalized in Africa (Kenya, South Africa) and Australia.

Uses: Medicine: Tagetes minuta has been used in folk medicine to treat a variety of ailments, including stomach issues, respiratory problems, and skin infections.

Xanthium strumarium L., Sp. Pl. 2: 987 (1753).

Herbs, annual, 20-120 cm; nodal spines absent. Petiole 3.5-10 cm, not winged; median cauline leaves ovate-deltate, 9-25 cm, papery, densely scabrid on both surfaces, base shallowly cordate to broadly cuneate, margin irregularly dentate, often obsoletely 3-lobed, apex acute. Capitula monoecious. Male capitula in terminal umbels; phyllaries 1-seriate, oblong-lanceolate, ca. 2.2 mm; outer paleae oblong-lanceolate, inner paleae lanceolate, ca. 2.2 mm; corolla white, tubular, ca. 2.5 mm, 5-dentate. Female capitula axillary; phyllaries 1-seriate, oblong-lanceolate, ca. 3 mm, inner bracts connate with outer paleae. Burs sessile, oblong, ellipsoid, or ovoid, 10-18 × 6-12 mm, densely puberulent, 2-beaked.

Fl. Jul-Aug, **Fr**. Sep-Oct.

Distribution: India: Assam, Bihar, Odisha, Madhya Pradesh, Maharastra, Uttar Pradesh; Europe, America, Sri Lanka, China, Malaysia, Sumatra, Java

Uses: **Medicine**: In traditional medicine, X. strumarium is used to treat a variety of ailments, including headaches, nasal congestion, rheumatism, arthritis, and bacterial and fungal infections. It's also used in Indian medicine to treat malaria.

Family: Asparagaceae

Agave Americana L. Sp. Pl. 323 (1753). *Agave spectabilis* Salisb. in Prodr. Stirp. Chap. Allerton: 247 (1796), nom. superfl.*Aloe americana* (L.) Crantz in Inst. Rei Herb. 1: 466 (1766)

Stems indistinct. Leaves usually 30--40 or more, in a massive basal rosette, oblanceolate, 1--2 m × 15--20 cm, fleshy, margin spiny, apex recurved and tipped with a dark brown spine 1.5--2.5 cm. Panicle many branched, 6--12 m, usually bearing few bulblets after anthesis. Perianth greenish yellow; tube ca. 1.2 cm; lobes 2.5--3 cm. Stamens ca. 2 × as long as perianth. Capsule oblong, ca. 5 cm.

Fl. June-Aug.

Distribution: Widely cultivated. Naturalized in S. China, native to tropical America.

Uses: Plant is a popular ornamental plant in gardens and roadsides around the world. It's often used in xeriscaping and desert-themed gardens.

Agave angustifolia Haw., Syn. Pl. Succ. 1: 72 (1812).*Agave aboriginum*Trel., Trans. Acad. Sci. St. Louis 18: 34. 1909. *Agave angustifolia* Haw. forma sarg.Trel.,Rep. (Annual) Missouri Bot. Gard. 22: 99, pl. 100,101. 1911. *Agave angustifolia* Haw., var. *deweyana* (Trel.) Gentry, *Agaves* Cont. N. Amer. 564. 1992. *Agave angustifolia* Haw., var. *letonae* (F. W. A. Taylor ex Trel.) Gentry, *Agaves* Cont. N. Amer. 564. 1992. *Agave angustifolia* Haw., var. *nivea* (Trel.) Gentry, *Agaves* Cont. N. Amer. 566. 1982.

Small to medium-sized, clump-forming agave that grows up to 0.9 m tall. Smooth, stiff leaves are linear with a sharply pointed apex ending in a spine. They can grow up to 0.6 m long or more depending on their growing

conditions. Fleshy leaves are light green with cream-coloured margins. White to greenish yellow flowers are arranged in a branched cluster known as a terminal panicle. The inflorescence stalk can be 2.5 m tall. Plants flower only once starting from 10 years of age or more.

Fl. July-Nov.

Distribution: Native to Mexico and Central America. Introduced to many other regions: Bangladesh, East Himalaya, India, Ecuador, Cuba, Cayman Islands.

Uses: *Agave angustifolia* is used in traditional medicine to treat a variety of conditions, including wound pain, rheumatic damage.

***Asparagus officinalis* L.**Sp. Pl. 313 (1753).

Herbs dioecious. Roots 2--3 mm thick, rather slender. Stems suberect, to 1 m, usually slightly pendent apically; branches soft. Cladodes in fascicles of 3--6, 0.5--3 cm × ca. 0.4 mm, subterete, slightly flattened, irregularly grooved. Leaf spur slightly spinescent or indistinct. Inflorescences developing after cladodes. Flowers of both sexes solitary of in clusters of 2--4; pedicel 0.8-1.2 cm. Male flowers: perianth yellowish green, campanulate, 5--6 mm; filaments adnate to perianth segments for ca. 1/2 their length; anthers 1--1.5 mm. Female flowers: perianth ca. 3 mm. Berry red, 7--8 mm in diam., 2- or 3-seeded.

Fl. May-Jun, fr. Aug. 2

Distribuiton: Steppes. NW Xinjiang [Kazakhstan, Mongolia, Russia; NW Africa, C and SW Asia, Europe, widely cultivated elsewhere].

Uses: The root and seeds of the asparagus plant are used to make medicine. In Asian medicine, asparagus root is used to treat coughs, diarrhea, and nervous problems. In Ayurveda medicine, asparagus roots and leaves are used to treat female infertility.

Beaucarnea recurvata Lem., Ill. Hort. (1861) Misc. 59. *Dasylirion recurvatum* (K.Koch& Fintelm.) J F Macbr. in Contr. Gray Herb. 56:17 (1918). *Nolina recurvata* (K. Koch & Fintelm.) Hemsl. in Biol. Cent.-Amer., Bot. 3:372 (1884). *Pincenectia recurvata* K.Koch & Fintelm. in Wochenschr. GärtnereiPflanzenk. 2:112 (1859).

Plant is a slow-growing perennial that can reach heights of up to 15 feet (4.5 meters) in its native habitat but often stays much smaller when grown indoors.The plant features a distinctive swollen, bulbous base (caudex), which serves as a water storage organ, helping it survive prolonged dry periods. The trunk is thick and grayish-brown, resembling an elephant's foot, hence one of its common names.The leaves are long, narrow, and arching, giving the appearance of a cascading ponytail, which contributes to its common name, Ponytail Palm. They are dark green, leathery, and can grow up to 6 feet (1.8 meters) in length in mature specimens. Flowers are small, white or cream-colored flowers in large panicles. Flowering is rare, especially in indoor settings, and typically occurs in older, well-established plants.

Fl. May-Sep.

Distribution: Native to Mexico. Grows primarily in the desert and shrubland biome.

Uses: In warm, dry climates, the Ponytail Palm can be used as a landscape specimen. It can be planted in a container on a patio or in an open garden. The Ponytail Palm's bulbous base stores water, making it drought tolerant and able to withstand long periods of dryness.

Cordyline fruticosa (L.) A.Chev., Cat. Pl. Jard. Bot. Saigon 66 (1919). *Asparagus terminalis* L. in Sp. Pl., ed. 2.: 450 (1762), nom. superfl.*Calodracon jacquinii* (Kunth) Planch. in Fl. Serres Jard. Eur. 6: 132 (1850), nom. superfl.*Convallaria fruticosa* L. in Herb. Amb.: 16 (1754). *Cordyline ferrea* (L.) Endl. in Cat. Horti Vindob. 1: 149 (1842), nom. superfl.*Cordyline fruticosa* var. *ferrea* J.W.Moore in Bull. Bernice P. Bishop Mus. 102: 23 (1933), not validly publ.*Cordyline jacquinii* Kunth in Abh. Königl. Akad. Wiss. Berlin 1842: 30 (1844), nom. superfl.

Plants erect, shrubby. Stems simple or sometimes branched, 1-3 m × 1-3 cm. Leaves petiolate; petiole 10-30 cm, channeled adaxially, base dilated, clasping stem and other petiole bases; leaf blade green or variously colored, oblong-lanceolate, elliptic-lanceolate, or narrowly oblong, 25-50 × 5-10 cm, midvein distinct and raised abaxially, apex aristate. Panicle 30--60 cm; branches spreading, 6-13 cm, many flowered. Flowers subsessile or shortly pedicellate; pedicel (if distinct) to 4 mm, subtended by 3 bracteoles; bracteoles ovate, 2-3 mm, margin broadly membranous, apex cuspidate. Perianth reddish, yellowish, or bluish purple; tube 5-6 mm; lobes erect or recurved, nearly as long as tube. Stamens inserted in throat of perianth, scarcely exserted. Fruit reddish, several seeded.

Fl. Nov.-Mar.

Distribution: Widely cultivated, sometimes naturalized, probably native to Pacific Islands but cultivated pantropically.

Uses: In the leaves of the green-leafed form are used to wrap food and line fermentation pits. The rhizomes can be processed into a sweet pulp, and the roots can be mixed with water and fermented to make an alcoholic beverage called okolehao.

Dracaena hyacinthoides (L.) Mabb., Mabberley's Pl.-Book 1101 (2017). *Cordyline hyacinthoides* (L.) W.Wight in Contr. U.S. Natl. Herb. 9: 249 (1904). *Sansevieria hyacinthoides* (L.) Druce in Rep. Bot. Exch. Club Soc. Brit. Isles 3: 423 (1913 publ. 1914). *Aloe hyacinthoides* L. in Sp. Pl.: 321 (1753). *Aletris hyacinthoides* (L.) L. in Sp. Pl., ed. 2.: 456 (1762)
Rosette of erect leaves eventually forms a vase like structure at maturity.
This robust perennial forms open clusters of upright, flat, lanceolate leaves from an underground stem. They grow to about 60 cm tall and are attractively banded and mottled. The upright inflorescences hold many white and purplish flowers. Found in scrubland, often on rocky outcrops in the undergrowth of trees or shrubs in eastern and southern Africa. It makes a carefree and highly drought and shade tolerant ornamental plant for warm temperate and tropical climates as well as a very tough indoor plant.

Fl. Dec.-Jan.

Distribution: Mainly in tropical regions of Africa and Asia.

Uses: Fibers: The plant was used to make rope.

Medicine: The leaves, rhizomes, roots, and whole plant have been used in traditional medicine to treat a variety of ailments, including earaches, toothaches, and infections.

Dracaena angolensis (Welw. Ex Carriere) Byang &Christenth. Global Fl. 4: 64 (2018)*Sansevieria angolensis* Welw. ex Carrière in Rev. Hort. (Paris) 10: 447 (1861).

Rhizomatous succulent with rod-like leaves that alternate to form a fan-like shape, growing up to 0.9 - 1.2 m tall and 0.6 - 0.9 m wide. Stiff, cylindrical leaves taper to a sharp point and have a ribbed surface (0.6 - 1.5 m long, 2 - 3 cm wide). Leaves are greyish green with indistinct dark green bands that create a striped pattern. White, fragrant flowers are tubular with 5 linear lobes curled backwards (2.5 cm long). The long, white stamens extend well beyond the lobes. Flowers are arranged in a whorled pattern along a spike-like inflorescence that is a raceme.

Fl. May-July

Distribution: Mainly in tropical regions of Africa and Aasia.

Uses: Ornamental: This plant is popular for its unique shape and can be kept in homes and offices. Air purifying: It absorbs air pollutants and eliminates unpleasant odors.

Family: Asphodelaceae

Aloe arborescens Mill., Gard. Dict., ed. 8. n. 3 (1768). *Aloe perfoliata* var. *arborescens* (Mill.) Aiton in Hort. Kew. 1: 466 (1789). *Catevala arborescens* (Mill.) Medik. in Theodora: 67 (1786)

Plants tall, many branched, arborescent shrubs 2-3 met. high and about as broad. Stem up to 30 cm, dm at base, many branched and rebranched from the base or higher, old dried leaves persistent for 30-60 cm below the terminal rosettes of leaves, the rosettes up to 80 cm diam. Leaves many in a dense rosette, erectly-spreading to spreading and somewhat falcately deflexed, rather fleshy, averaging about 50-60 cm long, 5-7 cm, broad at base, gradually narrowing to the apex; upper surface usually flat, without spots or lines, dull green to grey-green; lower surface convex, dull green; margins armed with firm (not horny or pungent) pale teeth 3-5 mm long, 5-20 mm distant, the teeth usually curved forward, smaller and more crowded near base, larger and more distant upwards. Inflorescence usually simple, sometimes with a short branch, about 80 cm high including the raceme, 2-4 simultaneously from a rosette. Peduncle usually arcuate-erect, with several broadly deltoid slightly fleshy to sub-scarious many-nerved sterile bracts about 20 mm long, 15 mm broad. Racemes varying from conical (broader and shorter) to elongate-conical (narrower and longer), 20-30 cm long, about 10-12 cm diam., densely flowered, the apical buds densely congested and forming an acuminate apex, open flowers a little laxer. Bracts lowest ovate-acute to obtuse, 15-20 mm long, 10-12 mm broad, thin, sub-scarious, many-nerved, basally amplexicaul. Pedicels the lowest 35-40 mm long. Perianth nearest scarlet (R.C.S. I) cylindric-trigonous, exceedingly slightly trigonously constricted above the ovary, enlarging very slightly towards the throat, averaging 40 mm long; outer segments free to base, obscurely nerved, apices sub-acute slightly

spreading; inner segments free, not cohering to the outer, broader than the outer, white, and with a keel the color of the perianth turning greenish near apex, apices more obtuse and more spreading than the outer. Flowers scarlet, orange or occasionally yellow; stamens and stigma exserted.

Fl. April-July

Distribution: Native toBotswana, Cape Provinces, Free State, KwaZulu-Natal, Malawi, Mozambique, Northern Provinces, Swaziland, Zimbabwe.

Uses: *Aloe arborescens* is not native to Jammu and Kashmir but may be cultivated in the region for ornamental purposes and its medicinal properties.

Aloe vera (L.) Burman f., Fl. Indica. 83. 1768. *Aloe perfoliata* var. *vera* L. in Sp. Pl. 1: 320 (1753).

Plants short-stemmed, woody-based, stoloniferous. Stems to 50 cm; scarious leaf sheaths persistent. Leaves alternate, rosulate to distichous, 10–50 × 10–70 cm; blade glaucous-green to variegated with small white or glaucous dots, irregular bands, or blotches, often reddish near apex or margins, lanceolate to ensate, tapering from base to apex, glabrous, margins green, spiny-toothed, teeth 1–1.5 cm apart. Inflorescences terminal, usually unbranched, racemose, 10–15 dm, usually covered with scalelike bracts; racemes cylindrical, dense, 0.5 m; bracts glabrous or puberulent, with 3 prominent purple veins that are confluent at tips. Flowers: perianth yellow; tepals prominently 3-veined, connate basally for 1/2 their length, lobes broadly linear to oblong-lanceolate, apex rounded; stamens 6, included to slightly exserted, slightly unequal;

filaments 2–2.5 cm; anthers 2.5–4 mm; style usually exserted; stigmas not expanded; pedicel 2.2–3.3 cm. Capsules somewhat elongate.

Fl. March-June

Distribution: Throughout India.

Uses: ***Aloe vera*** is not native to Jammu and Kashmir but may be cultivated in the region for ornamental purposes and its medicinal properties.It is commonly grown in gardens and landscapes for its attractive foliage and vibrant flowers.

Family: Berberidaceae

Berberis lyceum Royle in Trans. Linn. Soc. 17:94. 1834. Hook. f., Bot. Mag.t.7075.1889; Hook.f., Fl. Brit. Ind. 1:110.1872 (partly); Collett, Fl. Siml. 22.1902; Parker, For. Fl. Punj. rep. ed.: 14.1958 (partly); Ahrendt in J. Linn. Soc. Bot. 57:87.1961.*Vern.:* Zarch.

Shrub, 2-3(-4) m tall, erect or suberect, semideciduous; stem and branches pale, whitish to greyish, terete to sub-sulcate, glabrescent, younger ones obscurely to distinctly puberulous; internodes 1.5-3.5 cm long; spines (1-)3-fid, (6-)10-20 mm long, yellowish to straw-colored. Leaves oblanceolate to oblong-obovate, (2-) 3-6 cm long, 6-12 mm broad, subsessile, usually conspicuously papillose, grey or white below, entire to 2-4 spinulose at the margins, acute to sub-acuminate, openly veined. Racemes (6-)10-25-flowered, 3-6(-7) cm long, rarely shorter and sub-fascicled (2-2.5 cm.). Flowers 6-8 mm across, usually pale-yellow; pedicels 6-12(-15) mm long, rarely longer, slender, thin, glabrous; bracts 2-2.5 mm.

long. Prophylls c. 1 mm long, ovate, reddish. Outer sepals much smaller than the middle and inner sepals; inner sepals 4.5- 5 mm long, 3 mm broad, obovate. Petals slightly shorter than the inner sepals, obovate, emarginate, with lanceolate basal glands. Stamens slightly shorter than petals, connectives produced or anthers apiculate. Ovules usually 4, shortly stipitate. Berries 7-8 mm long, c. 5 mm broad, ovoid or obovoid-subglobose, excluding 1 mm long style, blackish with heavy grey-white bloom; seeds 3-4 mm long.

Fl. April-June.

Distribution: Kashmir, Pakistan, and N. W. Himalayas.

Uses: In traditional medicine systems like Ayurveda and Unani, various parts of Berberislycium, including the roots, bark, and berries, are used for their medicinal properties.

Family: Bignoniaceae

Campsis radicans (L.) Seem., J. Bot. 5: 372, fig. 2 (1867). *Bignonia radicans* L. in Sp. Pl.: 624 (1753). *Gelseminum radicans* (L.) Kuntze in Revis. Gen. Pl. 2: 479 (1891). *Tecoma radicans* (L.) Duhamel in TraitéArbr. Arbust., nouv. éd., 2: 9 (1804).

Vines woody, deciduous, climbing by aerial roots. Leaves opposite, 1-pinnately compound; leaflets serrate. Inflorescences short paniculate, terminal, or flowers in clusters. Calyx campanulate, sub-leathery, irregularly 5-lobed. Corolla red or orange-red, campanulate-funnelform, slightly bilabiate; lobes spreading, semi-rounded. Stamens 4, didynamous, curved,

included. Ovary 2-locular, base surrounded by a large disc. Capsule dehiscing loculicidally. Seeds numerous, compressed, membranous, with semitransparent wings.

Fl. June-Sept.

Distribution: Native to Eastern US and extreme southern of Canada. Naturalized in many other countries.

Uses: A popular choice for its showy flowers and vigorous growth, *Campsis radicans* is often used to cover fences, arbors, walls, and trellises. The plant's tubular flowers and nectar attract hummingbirds, butterflies, and long-tongued bees. In traditional medicine, used to treat wounds, infections, and itching.

Podranea ricasoliana Sprague, Fl. Cap. (Harvey) 4(2.3): 450 (1904). *Pandorea ricasoliana* (Tanfani) K.Schum. in H.G.A.Engler&K.A.E.Prantl, Nat. Pflanzenfam. 4(3b): 230 (1894). *Tecoma ricasoliana* Tanfani in Bull. Soc. Tosc. Ortic. 17: t. 1-2 (1887). *Tecomaria ricasoliana* (Tanfani) Kraenzl. in Repert. Spec. Nov. Regni Veg. 17: 225 (1921)

Vine or subscandent shrub. Leaves imparipinnately compound, usually 7-9 foliolate, without tendrils, the leaflets more or less ovate, obtuse to short-acuminate, serrate, truncate to cuneate or somewhat attenuate, 2.5-3.8 cm long and. 1.5-2.0 cm wide, petiolulate. Inflorescence a terminal panicle. Flowers with the calyx large, cupular-campanulate, 1.5-2 cm long, strongly 5-dentate with apiculate lobes, pale lavender when fresh; corolla pale lavender or pinkish with a magenta patch at the base of the 2 adaxial lobes, the tube white with deep magenta lines inside and some pinkish splotches

near the base, cam- panulate above a short cylindric base, 6-8 cm long, with scattered lepidote scales on the lobes, glandular-pubescent at the level of stamen insertion inside and pubescent with kinky trichomes in the sinuses between lobes, otherwise glabrous; stamens didynamous, the thecae divaricate, 3 mm long, the longer filaments 1.9-2.0 cm long, shorter filaments 1.4-1.5 cm long, the staminode 3 mm long, inserted ca. 10 mm from base of corolla tube; pistil 3.2-3.4 cm long, the ovary linear, glabrous, 5 mm long and 1.5 mm wide, the ovules 6-seriate in each locule; disc pulvinate, 0.5 mm long and 1.5-2.0 mm wide. Capsule (Sprague) linear and leathery

Fl. Nov.- March.

Distribution: Native to South Africa, introduced to many countries.

Uses: Plant it against a fence or wall to provide a lush green screen.

Family: Brassicaceae

Cardamine hirsuta L., Sp. Pl. 2: 655 (1753). *Crucifera cardamine* E.H.L.Krause in J.W.Sturm, Deutschl. Fl. Abbild., ed. 2. 6: 112 (1902)*Ghinia hirsuta* (L.) Bubani in Fl. Pyren. 3: 162 (1901)

Herbs annual, 10-35 cm tall, sparsely hirsute at least along petioles of basal leaves, often glabrous above. Stems erect, ascending, or decumbent, 1 to several from base, simple or branched above, not flexuous. Basal leaves rosulate; petiole ciliate, 0.5-5 cm; leaf blade 2.5-10cm, lyrate-pinnatisect; terminal lobe reniform or orbicular, 0.4-2 × 0.6-3 cm, margin entire, repand, dentate, or 3-5-lobed; lateral lobes 3-7 on each side of midvein, petiolate, oblong, ovate, obovate, or orbicular, smaller than terminal lobe, entire, repand, crenate, or 3-lobed. Cauline leaves 1-4, rarely absent, shortly

petiolate, including petiole1.2-5.5 cm; petiole base not auriculate; lateral lobes 4-7on each side of midvein, ovate, oblong, oblanceolate, or linear, sessile, or shortly petiolate, entire, repand, or dentate. Fruiting pedicels erect or ascending, 3-10 mm, slender. Sepal oblong, 1.5-2.5 × 0.3-0.7 mm. Petals white, spatulate, 2.5-4.5× 0.5-1.1 mm, sometimes absent. Stamens 4 and lateral pair often absent, rarely 5 or 6; filaments 1.8-3 mm; anthers ovate, 0.3-0.5 mm. Ovules 14-40 per ovary. Fruit linear, 1.5-2.5cm ×1-1.4 mm; valves glabrous, torulose; style 0.1-0.6 mm. Seeds light brown, oblong or subquadrate, 0.9-1.3 × 0.6-0.9mm, narrowly margined.

Fl. Feb-May;**Fr**. Apr-Jul.

Distribution: Native to western Asia.

Uses: The leaves and flowers are edible and can be used in salads, and garnish. The leaves are high in vitamin C, calcium, magnesium, beta-carotene, and antioxidants; has deep roots that help improve soil structure and increase nutrient availability. Hairy bittercress attracts butterflies, moths, and hoverflies, which increases biodiversity in your garden.

Capsella bursa-pastoris Raf.**,** New Fl. [Rafinesque] 1: 28 (1836).

Annual or biennial, up to 45 cm tall, erect, glabrous or hairy with simple or branched hairs. Basal leaves rosulate, very variable, usually pinnatifid (lyrate to almost entire), 5-8-jugate, shortly stalked, usually up to 8 cm long, 2 cm broad; cauline leaves smaller, sessile. ± auricled and clasping the stem. Racemes many flowered, up to 30 cm long in fruit. Flowers c. 2.5 mm across, white; pedicels up to 18 mm long in fruit, spreading. Sepals c. 1.5 mm long, l mm broad. Petals c. 2.5 mm long, 1 mm broad, obovate-oblong, cuneate.

Stamens c. 1.5: 2 mm long. Siliculae obcordate- triangular, 5-9 mm long, 4-6 mm broad; valves usually with straight margins; apical notch wide, V-shaped ; style c. 0.5 mm long, hardly or not exceeding the notch; septum c. 1 mm broad, seeds 6-12 in each locule, c. 1 mm long, oblong-elliptic, pale brown.
Fl. May- July.
Distribution: Cosmopolitan weed, introduced from Europe. Introduced from Europe. Native to Europe.
Uses: Capsella bursa-pastoris gathered from the wild or cultivated has many uses, including for food, to supplement animal feed for stop bleeding.

Family: Buxaceae

Buxus wallichiana- Baill., Monogr. Buxac63:. 1859. Buxus sempervirens sensu Hook.f., Fl. Brit. India 5: 267: 1885, p.p., non L. 1753.

An evergreen shrub or small tree, sometimes up to 10 m tall. Stem straight, bark ash grey, young shoots tetragonal, hirsute, hairs spreading. Leaves lanceolate oblanceolate or very narrowly obovate or elliptic oblong, 1.5-6 cm long, 0.8-l.2 cm broad, attenuate at the base, obtuse or somewhat emarginate or apiculate at the apex, glabrous except the hirsute petiole and midrib on upper side, veins conspicuous. Racemes 6-8 mm long, rounded.

Floral parts akin to those of last species. Capsule ovoid, walnut brown, 7- 10 mm long, 5-6 mm in diameter, horns diver-gent, c. 2-3 mm long.

Fl. March-May.

Distribution: Himalayan Boxwood is found in moist hills in the Himalayas, from Afghanistan, Pakistan to Kashmir, Uttarakhand, Himachal, Nepal, and Bhutan, at altitudes up to 3000 m.

Uses: The leaves are used as a bitter tonic in traditional local medicine to treat a variety of conditions, including rheumatism, fevers.

Sarcococcasaligna(D. Don) Müll. Arg. in DC., Prodr. 16: 11. 1869. Buxus saligna D. Don, Prodr. Fl. Nepal 63. 1825. *Sarcococcapruniformis* var. *angustifolia* Lindl., Bot. Reg. 12: sub t. 1012. 1826. *Sarcococcapruniformis* sensu Hook.f., Fl. Brit. India 5: 266. 1887, p.p., non Lindl., 1826.

Evergreen, up to 2 m tall, glabrous shrub with green bark and profuse wandy branches. Leaves narrow to broadly lanceolate or very narrowly ovate, occasionally sub-falcate, 5.5-9.5 cm long, l-2.2 cm broad, distinctly 3-nerved, attenuate at the base, acuminate to caudate, acute; petiole 0.5-1.3 cm long. Racemes either male or female or mixed with male flowers towards the apex and female ones at the base; male racemes c. 6-8 mm long, females c. 1 cm long. Flowers almost sessile, greenishwhite, unisexual; bracts ovate, c. 2 mm long. Sepals elliptic to broadly elliptic, 2-3 mm long, c. l.5-2 mm wide, obtuse. Stamens with 6-7 mm long filaments, anthers 2-3 mm long. Ovary tricarpellary; styles 3 from outer edges of the ovary, longer than the sepals, flattened. Drupe sub-globose, c. 7-8 mm long, purple, smooth, tipped with style bases.

Fl.: Sept.-April.

Distribution: A common gregarious shrub of moist and shady places in W. Himalayas from Afghanistan to Kumaon between 1000-3000 m. Himachal Pradesh, Jammu &Kashmir, Uttarakhand, West Bengal.

Uses: It is often grown in gardens and landscapes for its attractive foliage and sweet-scented blooms.The plant's ability to thrive in shaded areas makes it a suitable choice for landscaping in regions like Jammu and Kashmir, where shade-tolerant plants are valued for their adaptability to the local climate and environment.

Family: Cactaceae

Opuntia cochenillifera (L.) Mill., Gard. Dict., ed. 8. n. 6 (1768). *Cactus cochenillifer* L. in Sp. Pl.: 468 (1753). *Nopalea cochenillifera* (L.) Salm-Dyck in Cact. Hort. Dyck.: 64 (1850).

Family: Cactaceae

Shrubs or small trees, 2-4 m tall. Trunk (when present) terete. Large joints green, elliptic to narrowly obovate, 8-40(-50) × 5-7.5(-15) cm, thick, margin entire, base and apex rounded. Areoles ca. 2 mm in diam. Spines usually absent, when present: 1-3 per areole, spreading, grayish tan, acicular, 3-9 mm; glochids early deciduous. Leaves conic, 3-4 mm, early deciduous. Flowers 1.2-1.5 cm in diam., erect. Sepal with brilliant red or green midrib, largest ones ovate-deltoid, 5-12 × 6-9 mm, margin entire, apex acute. Petal bright red, ovate to obovate, 1.3-1.5 × 0.6-1 cm, margin entire or undulate, apex rounded or acute. Filaments pink, 3-4 cm; anthers pink, ca. 1.5 mm. Style pink, 4-4.5 cm; stigmas 6-8, greenish, ca. 3 mm. Fruit red, ellipsoid, 3-5 × 2.5-3 cm, umbilicus developed but not conspicuous. Seeds gray or tannish, thickened discoid, ca. 3 mm in diam.

Fl. Jul-Feb.

Distribution: Native to southern Mexico and central America. Introduced to Bangladesh, China, India.

Uses: Fruit can be eaten by humans. The leaves can be fed to pigs, and the young sprouts can be eaten by sheep and goats.

Opuntia ficus-indica (L.) Mill., Gard. Dict., ed. 8. Opuntia no. 2 (1768). *Cactus ficus-indica* L. in Sp. Pl.: 468 (1753). *Cactus opuntia* var. *ficus-indica* (L.) DC. in Pl. Hist. Succ.: t. 138B (1804). *Platyopuntia ficus-indica* (L.) F.Ritter in KakteenSüdamerika 2: 403 (1980).

Trees, 3-6 m; trunk to 30-45 cm diam. Stem segments green, broadly oblong to ovate to narrowly elliptic, (20-)4-60 × 2-3+ cm, low tuberculate; areoles 7-11 per diagonal row across midstem segment, rhombic to subcircular, 2-4(-5) mm diam.; wool brown. Spines 1-6 per areole, absent or very highly reduced, or in marginal to nearly all areoles, erect to spreading, whitish, tan, or brown, setaceous only or setaceous and subulate, straight to slightly curved, basally angular-flattened, 1-10(-40) mm; 0-2 small bristlelike deflexed spines to 5 mm. Glochids along adaxial margin of areole and small, inconspicuous tuft, yellowish, aging brown, less than 2 mm. Flowers: inner tepals yellow to orange throughout, 25-50 mm; filaments and anthers yellow; style bright red; stigma lobes yellow. Fruits yellow to orange to purple, 50-100 × 40-90 mm, fleshy to ± juicy, glabrous, usually spineless; areoles 45-60, evenly distributed on fruit. Seeds pale tan, subcircular, 4-5 mm diam., warped; girdle protruding to 1 mm. 2*n* = 88.

Fl. March-June.

Distribution: Widespread in Africa, Asia, Southern Europe, Southern USA, Central America.

Uses: **Food**: The fruit and stems of the prickly pear cactus are eaten by indigenous populations and are used in beverages.

Opuntia stricta (Haw.) Haw., Syn. Pl. Succ. 191 (1812) (1812). *Cactus strictus* Haw. in Misc. Nat.: 188 (1803)

Shrubs, sprawling or erect, to 2 m. Stem segments not dis-articulating, green, flattened, narrowly elliptic or obovate, 10-25(-40) × 7.5-15(-25) cm, tuberculate, making margins appear scalloped between raised areoles, glabrous; areoles 3-5 per diagonal row across mid-stem segment, oval, 3-6.5 × 3.5 mm; wool dense, tan. Spines 0-11 per areole, in nearly all areoles to only in some marginal areoles or absent, spreading in all directions, yellow, aging brown, straight or curving, the longest stout, oval in cross section, 12-40(-60) mm, not markedly barbed. Glochids in-conspicuous, few to many in crescent at adaxial edge of areole, yellow, aging brown, often incurved, subequal to increasing in length toward adaxial edge of areole, to 4 mm. Flowers: inner tepals light yellow throughout, 25-30 mm; filaments yellow; anthers yellow; style and stigma lobes yellowish. Fruits purplish throughout, stipitate, ellipsoid or barrel-shaped, 40-60 × 25-30(-40) mm, juicy, spineless; areoles 6-10. Seeds tan, subcircular, 4-5 × 4-4.5 mm, with slightly irregular surface; girdle protruding to 1 mm. $2n = 44$ (cultivated).

Fl. March-June.

Distribution: The natural range of *Opuntia stricta* includes the southern United States, Mexico, Central America, the Caribbean, and tropical South

America. In the United States, it can be found in coastal beach scrub and sandy coastal environments in Alabama, Florida, Georgia, Louisiana, Mississippi, South Carolina, and Texas.

Uses: The fruit can be eaten raw or made into jams, jellies, or an alcoholic drink. The fruit juice can be used as a natural food dye.

Family: Cannabaceae

Cannabis sativa L., Sp. Pl. 2: 1027 (1753).

Cannabis sativa is a tall, annual herbaceous plant with sturdy stems and a distinctive appearance. The leaves are long, serrated, and palmately compound, typically with 5-7 leaflets. They are arranged alternately along the stem.

Flowers: Cannabis sativa produces dense clusters of small, greenish flowers that are either male or female. The female flowers are typically more resinous and contain higher levels of cannabinoids.The stems are sturdy and can grow several feet tall, providing support for the plant's leaves and flowers.The plant produces small, oval-shaped seeds that are used for propagation and can also be consumed.

Fl. May-Oct.

Distribution: Throughout country.

Uses: *Cannabis sativa* has a long history of medicinal use and is valued for its therapeutic properties:It is used to alleviate chronic pain, including neuropathic pain and pain associated with conditions like arthritis.

Celtis australis L. Sp. PL 1043; Brandt For. Fl. 428, t. 50; Ind. Trees 595; F. B. I. V., 482; Watt, E. D.; Kanjilal For- Fl. (ed. 2), 360; Gamble Man. 629; Collett Fl Siml. 455. *C.caucasica*, Wittd.; J. L. Stewart in Journ. Agri.-Hort. Soc. Ind. xiii, pt. 3, 299. Vern. Kharak, kharak-tfiena (Dehra Dim). Nettle-tree.

Trees, deciduous or evergreen. Branchlets never spinose, never corky or winged. Winter buds with scales or not. Stipules 2, free, membranous or thick papery, leaving a short transverse scar on each side of leaf base, caducous or terminal ones persistent and enveloping winter buds. Leaves alternate in several ranks; leaf blade margin entire or serrate; 3-veined from base; secondary veins anastomosing before reaching margin. Inflorescences panicles, racemes, or clustered cymelets. Flowers small, unisexual or bisexual. Tepals 4 or 5, basally slightly connate, caducous. Stamens equal in number to tepals. Style short; stigmas 2, linear. Ovary unilocular; ovule 1, anatropous. Male flowers: cauliflorus or clustered in proximal leaf axil of one-year-old branchlets. Female and bisexual flowers: usually borne apically in polygamous inflorescences. Fruit a drupe; endocarp bony, reticulately foveolate or nearly smooth. Endosperm scanty or lacking; embryo curved; cotyledons broad.

Fl. &**Fr**. March- May.

Distribution: Jammu and Kashmir, Sikkim and Uttarakhand.

Uses:Widely planted as an ornamental tree in parks and gardens due to its attractive foliage and shade-providing qualities. Wood is used for making furniture, tool handles, and occasionally for fuel.Various parts of the tree

have been used in traditional medicine for treating ailments such as rheumatism and toothache.

Family: Caryophyllaceae

Cerastium fontanum Baumg., Enum. Stirp. Transsilv. 1: 425 (1816).*Cerastium caespitosum* subsp. *fontanum* (Baumg.)Schinz&R.Keller in Fl. Schweiz, ed. 2, 1: 181 (1905). *Cerastium triviale* subsp. *fontanum* (Baumg.) Rouy &Foucaud in Fl. France 3: 205 (1896), nom. illeg.*Cerastium vulgatum* subsp. *fontanum* (Baumg.) Simonk.

Plants perennial (rarely annual), tufted to mat-forming, often rhizomatous. Stems: flowering stems erect from decumbent base, branched proximally, 10-45 cm, softly pubescent, eglandular with straight hairs; non flowering shoots, when present, produced proximally, decumbent, rooting at nodes, branched, 5-20 cm, often subglabrous with alternating lines of eglandular hairs; small axillary tufts of leaves usually absent. Leaves not marcescent; blade 10-25(-40) × 3-8(-12) mm, densely covered with patent to ascending, colorless, long, eglandular hairs; leaves of flowering shoots in distant pairs, sessile, blade elliptic to ovate-oblong, apex subacute; leaves of sterile shoots pseudopetiolate, often spatulate, blade oblanceolate, apex obtuse. Inflorescences lax, 3-50-flowered cymes; bracts lanceolate, reduced, herbaceous, eglandular-pubescent, distal often with narrow, scarious margins. Pedicels somewhat curved distally, 2-10(-20) mm, longer than sepals, densely pubescent with patent, eglandular, rarely glandular hairs. Flowers: sepals ovate-lanceolate, 5-7 mm, margins narrow, apex acute, scarious, pubescent with eglandular, rarely glandular, hairs; petals

oblanceolate, 1-1.5 times as long as sepals, apex deeply 2-fid; stamens 10, occasionally 5; styles 5. Capsules narrowly cylindric, curved, 9-17 mm, ca. 2 times sepals; teeth 10, erect, margins convolute. Seeds reddish brown, 0.4-1.2 mm, bluntly tuberculate; testa not inflated, tightly enclosing seed.

Fl. April-Nov.

Distribution: Throughout the country.

Uses: The leaves and young stems of Cerastiumfontanum are edible, raw or cooked.

Medicinal. Cherokee Indians used a compound infusion of the stem and root to treat worms in children.

Stellaria media (L.) Vill. Hist. Pl. Dauph. 3: 615. 1789; FBI. 1: 230. 1874, PP, FS. 52. 1902, 1921; Babu, Herb. Fl. Dehradun. 75. 1977; FBH. 40. 1977; Sharma &Kachroo. III. Fl. Jammu t.29. 1983; FHP. 1: 101. 1984; Naithani, Fl. Chamoli, 1: 88. 1984; Fk 160. 1999; Gaur, Fl. Garhwal. 131. 1999.; FGHNP. 78. 2000.; FSIR. 159. 2004. *Alsine media* L. Sp. Pl. 272. 1753.

A glabrous or pubescent, annual herb. Taproots branched. Stems nearly erect or procumbent, 10-60cm long weak, cylindrical, much branched, flaccid, green, slightly swollen and rooting at the nodes with a line of hairs running down 375 between the joints. Leaves simple, ramal and cauline, opposite and decussate, acute, 1-3.5cm long, glabrous on the lower surface, somewhat pubescent above; lower ones usually cordate, stalked, petiole 1-1.5cm long; upper sessile, often narrower, lanceolate, venation unicostate reticulate. Flowers white, 5-6mm, in axillary or terminal dichasial cyme. Bracteates, bracts leafy; ebracteolate, glandular, complete, actinomorphic, pentamerous, bisexual, hypogynous, pedicillate; pedicle 1.5-2cm long. Sepals 5 or4, free, lanceolate, broader at the base, apex acute, often visicidly pubescent,

glandular; aestivation quincantial imbricate. Petals as many as the sepals, white, shorter than the sepals, 4-5mm long, rarely none, deeply 2- lobed or 2-partite or bifid, aestivation imbricate. Stamens 2-3mm long, usually 10, arranged in two whorls of 5 each, occasionally 8 in two whorls of 5+3 obdiplostemnous; anthers adnate, dithecous, with longitudinal dehiscence. Ovary superior sessile, 0.5mm long, tricarpellary, syncarpous, unilocular with many ovules on free central placentae, remanants of septa incompletely dividing the ovary into 3 locules are visible; styles3, 0.75mm long; stigma minute. Fruits (Capsules): pyramidal or ovoid, 5-6mm long, with persistent calyx, opening by 3 valves. Seeds albuminous with curved embryo, usually numerous and small, rarely 1 or 2 or few and larger, 1 X 1mm, circular, brick red or brown, tubercled and herb, rough with minute sharp projections.

Fl.&**Fr**.: February-October.

Distribution: Himalaya and adjacent plains, Maharashtra, TamilNadu; Europe, America.

Uses: Young leaves and shoots are edible and can be used fresh in salads or cooked as a vegetable.Used in traditional medicine for treating skin irritations, minor wounds, and as a soothing herb.

Family: Celasteraceae

Gymnosporia royleana Wall. ex M.A. Lawson in Hook.f., Fl. Brit. India 1: 620. 1875*;* *Maytenus royleana* (Wall. ex M.A. Lawson) Cufod., Senckenberg. Biol. 43: 313. 1962. *Celastrus spinosa* Royle, Ill. Bot. Himal. Mts. 167. 1835.

Shrubs, with very spiny straight or slightly zigzag branches; thorns sturdy, 1-2.5 cm, axillary on annual branches. Petiole 2-4 mm; leaf blade obovate or

elliptic, 1.5-4 × 0.5-2 cm, thickly papery, base cuneate, margin entire or not obviously crenate, apex acute or obtuse, rarely rounded; lateral veins 5 or 6 pairs, quite tenuous. Cymes 1 to several, fascicled, 1-7-flowered; peduncle 2-5 mm when fruiting; branches and pedicels ca. 5 mm when fruiting. Petals white, oblong-ovate (flowers not seen). Capsule obtriangular, ca. 1 mm, dehiscing into 3 valves. Seeds long ellipsoid, black, ca. 6 mm; aril red, nearly covering seed.

Fl.&**Fr**. March and June.

Distribution: Mountain slopes in Afghanistan, India, Kashmir, Pakistan.

Uses: Antimicrobial properties, which may be due to its phenolic content.

Family: Combretaceae

Terminalia bellirica (Gaertn.) Roxb., Pl. Coromandel 2(4): 54, t. 198 (1805). *Buceras bellirica* (Gaertn.) Lyons in Pl. Nam.: 71 (1900). *Myrobalanus bellirica* Gaertn. in Fruct. Sem. Pl. 2: 90 (1790).*Terminalia myrobalana* B.Heyne ex Roth in Nov. Pl. Sp.: 378 (1821), nom. superfl.

A large deciduous tree, displaying several distinctive morphological characteristics:The tree can grow up to 30 meters tall.The bark is dark and covered with a rough texture, often fissured and flaky.The leaves are alternately arranged, large, and elliptic to broadly ovate, measuring up to 15-20 cm in length. They are glossy and dark green on the upper side and paler on the underside.The flowers are small, yellowish-white, and occur in simple, axillary spikes or terminal panicles. They are not particularly showy.The fruit is a drupe, ellipsoidal to ovoid, and about 2-3 cm long. When mature, it turns greyish-brown and has a hard outer shell. The fruit is also known as

"Bahera." The tree has a strong and extensive root system that helps in soil stabilization.

Fl.: Feb-April; Fr.: Nov.-March

Distribution: Indian subcontinent

Uses: *Terminalia bellirica* is one of the three key ingredients in the ancient Ayurvedic formulation Triphala, known for its detoxifying and rejuvenating properties.

Family: Commelinaceae

Commelina benghalensis L., Sp. Pl. 1: 41. 1753. *Commelina nervosa* Burm.f. in Fl. Ind. 18. t. 7, f. 3. 1768, non Ruiz & Pav., 1798. *Commelina cucullata* L., Mant. Pl. 2: 176. 1771. *Commelina mollis* Jacq., Collect. 3. p. 235. 1791.

Herbs perennial. Stems mostly creeping, ascending distally, diffuse, numerous branched, to 70cm, sparsely pubescent. Leaf sheaths sparsely hirsute-ciliate; petiole distinct; leaf blade ovate, 3--7 × 1.5--3.5 cm, subglabrous. Involucral bracts borne opposite leaves, often several, aggregated at apex of branches, very shortly stalked, funnelform, 0.8--1.2 cm, sparsely hairy, proximal margins connate, apex acute or obtuse. Proximal branch of cincinni with elongate peduncle and 1--3 exserted, infertile flowers, distal branch longer, with several included, fertile flowers. Sepals ca. 2 mm,

membranous. Petals blue, 3--5 mm. Capsule ellipsoid, 4--6 mm, 3-valved; posterior valve 1-seeded or seedless, indehiscent; other 2 valves each 2-seeded, dehiscent. Seeds black, cylindric or semi-cylindric, ca. 2 mm, rugose, irregularly reticulate, truncate at 1 end.

Fl. June-Oct.; **Fr**.: Aug.

Distribution: In wet places found throughout India, Tropical and subtropical Africa

Uses: Used in traditional medicine to treat a variety of ailments.

Tradescantia pallida (Rose) D. R. Hunt, Kew Bull. 30: 452. 1975. Setcreasea pallida Rose, Contr. U.S. Natl. Herb. 13: 294. 1911; S. purpurea Boom

Herbs, perennial, succulent. Stems suffused with purplish violet. Leaves spirally arranged; blade not variegated, suffused with purplish violet, lanceolate-oblong to oblong-elliptic,7-15 × 1.5-3 cm (distal leaf blades wider or narrower than sheaths when sheaths opened, flattened), base symmetric, rounded to broadly cuneate, margins ciliate or ciliolate, apex acute, glabrous, or glabrescent. Inflorescences terminal, often becoming leaf-opposed, pedunculate; peduncles 4-13 cm; bracts are similar to leaves but usually greatly reduced. Flowers subsessile; pedicels 4-9 mm, densely white-pilose at summit; sepals distinct, 7-10 mm, pilose basally; petals ± connate at base, pink, clawed, 1.5-2 cm; stamens epipetalous; filaments very sparsely bearded. Capsules 3.5 mm, glabrous. Seeds 2.5-3 mm.

Fl. June-Oct.

Distribution: Cultivated and Landfill sites.

Uses: The plant's bluish or purplish leaves and flowers make it a popular choice for gardens and parks. It can also be grown in containers, hanging baskets, or on balconies and skyrises.

Tradescantia zebrina (Schnizl.) D.R.Hunt, Kew Bull. 41(2): 404 (1986).

Herbs perennial. Stems prostrate or decumbent, often forming dense mats or colonies, branched, rooting at nodes, glabrous or pilose. Leaves alternate, sessile; leaf sheath 8-12 × 5-8 mm, thin, membranous, long-ciliate at mouth, otherwise glabrous or sparsely villous; leaf blade with 2 longitudinal, silver stripes adaxially, purple abaxially, ovate, 3-10 × 1.5-3.2 cm, somewhat fleshy, glabrous or sparsely pilose on both surfaces, base rounded, apex acute or acuminate. Flowers in clusters subtended by 2 large, leaflike, narrow, ciliate bracts. Sepals lanceolate to oblong-lanceolate, ca. 5 × 1.5 mm. Petals rose pink, ovate, ca. 6 mm, apex obtuse. Seeds rugulose.

Fl.: May-Dec.

Distribution: Naturalized in the regions of Europe, Asia, Africa and Australia.

Uses: It can be used as a trailing plant in seasonal containers or under larger houseplants.

Family: Crassulaceae

Echeveria gibbiflora DC., Prodr. [A. P. de Candolle] 3: 401 (1828). *Cotyledon gibbiflora* (DC.) Baker in Refug. Bot. 1: t. 65 (1869).

The plant is a beautiful succulent that forms short-stemmed rosettes of broad, reddish-green, more or less glaucous leaves. It is one of the largest species in the genus. The rosettes grow up to 12 inches (30 cm) tall and 16 inches (40

cm) in diameter. Leaves are spoon-shaped and up to 8 inches (20) cm long. Flowers are bell-shaped, red and yellow, and appear on up to 32 inches (80 cm) long flower stalks in fall.

Fl.: Sep.-Jan.

Distribution: Native to Central America, Mexico and north-western South America.

Uses: This attractive plant is often used in greenhouses, on windowsills, or in hanging pots. In Mexico, this plant has been a part of many personal rituals and cultural celebrations.

Kalanchoe daigremontiana Raym.-Hamet & H.Perrier, Ann. Mus. Colon. Marseille sér. 3, 2: 128 (1914). *Bryophyllum daigremontianum* (Raym.-Hamet &H.Perrier) A.Berger in H.G.A.Engler, Nat. Pflanzenfam., ed. 2. 18a: 412 (1930).

Perennial, succulent, monocarpic, purple-mottled, and glaucous herbs. Stems are mostly simple, 5–25 dm × 0.5–2 cm. Leaves are opposite, evenly spaced, simple, largest sub-peltate; petiole subterete, 1–5 cm; blade purple-blotched abaxially, triangular to lanceolate, 5–25 cm × 3–12 cm, margins serrate, apex acute, surfaces glaucous; bulbils borne in notches of leaf margins, spurs spoon-shaped. Inflorescence is a compound cyme, paniculate, 1.5–3 dm diameter; branches up to 15 cm. Pedicels 5–15 mm. Flowers pendulous, large, bisexual, calyx green or purplish, not inflated, 6–10 mm, tube 3–4 mm, lobes triangular, 3–7 mm, equaling or longer than tube, apex acute; corolla pink or lavender, 20–30 mm, not contracted basally, lobes obovate, 6–12 mm, apex rounded, apiculate. Nectar scales oblong, 1.5-2 x 0.3-1 mm.

Follicles, 7-10 x 2-4 mm. Seed 0.6-1 x 0.2-0.3 mm, oblong with longitudinal striae.

Fl. Dec.-March

Distribution: Native to southwest regions of Madagascar.

Uses: Itcontains flavonoids, which are known to have anti-inflammatory properties.

Kalanchoe serrata Mannoni & Boiteau, Notul. Syst. (Paris) 13: 152 (1947). *Bryophyllum lauzac-marchaliae* V.V.Byalt in Kaktus Klub 1999(3): 27 (1999). *Bryophyllum serratum* (Mannoni& Boiteau) Lauz.-March. in Compt. Rend. Hebd. Séances Acad. Sci., Sér. D 278(20): 2508 (1974), nom. illeg.

Herbs sometimes biennial, subshrubs, or shrubs. Roots usually fibrous. Leaves opposite, petiolate or sessile, usually amplexicaul; leaf blade margin entire, dentate, crenate, or leaves pinnate. Inflorescences terminal, cymose, sometimes also with subterminal cymes and thus paniculate, many flowered; bracts small. Flowers bisexual, erect, 4-merous. Sepals free or basally sub-connate, triangular to lanceolate, usually shorter than corolla tube. Corolla yellow (or white, red, pink, or orange), salverform; tube sub-quadrangular or basally inflated and urn-shaped, base slightly narrowed; lobes longer than tube. Stamens 2 × as many as petals, inserted near middle of corolla tube; filaments unequal in length, usually very short. Nectar scales linear to suborbicular. Carpels erect. Styles short or long. Follicles many seeded. Seeds ellipsoid.

Fl.: Dec.-April

Distribution: Native to southeast of Madagascar.

Uses: *Kalanchoe* species are used in traditional medicine to treat a variety of ailments, including infections, inflammation, and rheumatism. The leaves and juice of Kalanchoe have antimicrobial activity and are used to treat inflammation and as an antiseptic.

Family: Cucurbitaceae

Diplocyclos palmatus (L.) C. Jeffrey, Kew Bull. 15: 352. 1962. *Bryonia palmata* Linnaeus, Sp. Pl. 2: 1012. 1753; *B. affinis* Endlicher; *Bryonopsisaffinis* (Endlicher) Cogniaux; *B. laciniosa* (L.) Naudinvar. *erythrocarpa* Naudin; *B.laciniosa* var. *walkeri* Chakravarty; *Iloca niapedata* Merrill.

Root tuberous. Stems slender, glabrous. Tendrils glabrous. Petiole 4-6 cm, slightly puberulent; leaf blade broadly ovate, 8-12 × 8-12 cm, membranous, palmately 5-lobed; middle lobe oblong-lanceolate, 8-10 × 2-3.5 cm, apex acuminate or obtuse; lateral lobes short, lanceolate or oblong-lanceolate, both surfaces subglabrous, sinus rounded. Male and female flowers usually fasciculate in same axil. Male flowers: pedicel slender, 5-15 mm; calyx tube ca. 2 × 5-6 mm; segments subulate, 0.5-1 mm; corolla green-yellow, ca. 7 mm in diam.; segments ovate, ca. 2 × 0.5-1 mm; stamens 3; filaments 1-1.5 mm; anthers ovoid, ca. 2 mm; anther cells reflexed. Female flowers: calyx and corolla as in male flowers; ovary ovoid, smooth. Fruit yellow-green to

red, narrowly white striped, globose, indehiscent, 14-18 mm in diam., smooth. Seeds few, brown, ovate, ca. 5 × 3 mm.

Fl. Mar-Aug. &**Fr**. Sep.-Dec.

Distribution: Native to Tropical and S. Africa, S. Arabian Peninsula, Tropical and Sub-tropical Asia.

Uses: Used in traditional medicine for a variety of purposes, including as an anti-inflammatory, and antioxidant.

Family:Didereaceae

Portulacaria afra Jacq. 1: 160 (1787). *Crassula portulacaria* L. in Sp. Pl., ed. 2.: 406 (1762). *Haenkea crassifolia* Salisb. in Prodr. Stirp. Chap. Allerton: 174 (1796), nom. superfl. *Portulacaria portulacaria* (L.) Graebn. in P. F. A. Ascherson & K.O.R.Graebner, Syn. Mitteleur. Fl. 5(1): 436 (1915), not validly publ.*Claytonia portulacaria* (L.) L. in Mant. Pl. 2: 211 (1771).

Jade plant is a succulent plant with small pink or white flowers. It is an evergreen shrub, 1-3 m tall, with thick branches and smooth, rounded, fleshy leaves that grow in opposing pairs along the branches. Leaves are a rich jade green; some varieties may develop a red tinge on the edges of leaves when exposed to high levels of sunlight. New stem growth is the same color and texture as the leaves, but becomes brown and woody with age. Under the right conditions, they may produce small white or pink star like flowers in early spring. The jade plant lends itself easily to the bonsai form and is popular as an indoor bonsai.

Fl.: April-June

Distribution: Throughout the world. Native to South Africa.

Uses: Leaves are edible and can be eaten in salads or soups. The leaves are used to treat minor ailments, such as sore throats, mouth infections, blisters, and corns. The plant is a favorite food of tortoises and is also used to feed livestock during droughts.

Family: Dioscoraceae

Dioscorea bulbifera L., Sp. Pl. 2: 1033. 1753. Dioscorea sativa Thunb., Fl. Jap. 151. 1784, non L., 1753. Dioscorea sativa var. elongata F.M. Bailey, ., Queensl. Fl. 5: 1615. 1902. *Dioscorea bulbifera* var. *sativa* Prain, Bengal Pl. 2: 1066. 1903. *Dioscorea bulbifera* var. *elongata* (F.M. Bailey) Prain &Burkill, J. Proc. Asiat. Soc. Bengal 10: 27. 1914. *Dioscorea rogersii* Prain &Burkill, J. Asiat. Soc. Beng. 10: 27. 1914 var. *bulbifera*

Tubers usually solitary, renewed annually, ovoid or pear-shaped, 4--10 cm thick; corkblack; roots fibrous. Stem twining to left, glabrous, smooth. Bulblets purplish brownwith orbicular spots, globose or ovoid, variable in size, weight to 300 g. Leavesalternate, simple; petiole 2.5--5.5 cm; leaf blade broadly cordate, 8--15(--26) × 2--14(--26) cm, glabrous, margin entire or slightly undulate, apex caudate-acuminate. Malespikes usually clustered in leaf axils or along leafless, axillary shoots, drooping,sometimes branched. Male flowers: solitary, ± contiguous along rachis; bract andbracteole ovate; perianth purple, lobes lanceolate; stamens 6, inserted at base ofperianth, filaments nearly as long as anthers. Female spikes often 2 or more together, similar to male ones, 20--30 cm. Female flowers: staminodes 6, ca. 1/4 as long asperianth lobes. Capsule reflexed or drooping, straw-colored, densely purplish dotted,oblong-globose, 1.5--3 cm, glabrous, base and apex rounded;

wings 0.25--0.7 cmwide. Seeds inserted near apex of capsule, dark brown; wing pointing toward capsulebase, oblong, 1.2--1.6 × ca. 0.5 cm.

Fl. Jul--Oct, fr. Aug--Nov.

Distribution: Jammu and Kashmir, Andaman Nicobar, Mahrashtra, Madya Pradesh

and West Bengal.

Uses: In traditional Chinese and Indian medicine, D. bulbifera has been used to treat a variety of conditions, including sore throat, leprosy, tumors, and gastric cancer. It's also been used as a diuretic, anthelmintic, and in longevity preparations.

Family: Ebenaceae

Diospyros melanoxylon Roxb., *Plc.Coromandel* 1:36,1795. (Syn. *Diospyorusdubia* Wall. ex A.DC.; *Diospyros exsculpta* Bedd.; *Diospyros roylei* Wall.ex A.DC.; *Diospyros wightiana*Wall.)

Trees or shrubs, deciduous or evergreen. Terminal buds absent. Branchlet tips sometimes forming a spine. Leaves alternate, occasionally minutely translucent dotted 216or with gland pits. Flowers dioecious or polygamous. Male flowers in axillary cymes, usually on basal part of current year's branchlets, deciduous soon after anthesis; stamens 4 to numerous, often paired and forming 2 whorls; ovary rudimentary. Female flowers usually solitary, axillary; staminodes 1--16 or absent; stigma often 2- cleft. Calyx usually 3--5(--7)-lobed, sometimes truncate. Corolla urn-shaped, campanulate, or tubular, 3-5lobed, deciduous. Berries fleshy to somewhat leathery, usually with an enlarged persistent calyx. Seeds 1-10(or more), often laterally compressed.

Fl.&Fr.: June- Sep.

Distribution: Throughout temperate regions.

Uses: The leaves are used to wrap bidis, a cheap Indian smoke, and are a major source of income for many local families. The fruits are eaten and sold commercially. They have a cooling and astringent effect.

Family: Elaegnaceae

Elaeagnus umbellate Thunberg in Murray, Syst. Veg., ed. 14. 164. 1784. *Elaeagnus convexolepidota*Hayata; *E. coreana*H. Léveillé; *E. crispa*Thunberg; *E. crocea*Nakai; *E. fragrans* Nakai; *E. higoensis*Nakai; *E. longipes* A. Gray var. *crispa*(Thunberg) Maximowicz; *E. obovata*H. L. Li; *E. parvifolia*Wallich ex Royle; *E. salicifolia* D. Don exLoudon; *E.umbellata*var. *coreana*(H.Léveillé)H.Léveillé; *Eumbellata*f. *parvifolia*(WallichexRoyle) Kitamura; *E.umbellata*subsp. *Parvifolia*(Wallich ex Royle) Servettaz; *E. umbellate* var. *parvifolia*(Wallich ex Royle) C. K. Schneider.

Shrubs, deciduous, erect with branchlets spreading. New branches and buds silvery scaly. Petiole 3-5 mm; leaf blade obovate, 2.2-5.5 × 1-1.6 cm, papery, abaxially densely white scaly, adaxially sparsely scaly when young, lateral veins 5-8 per side of midrib, base cuneate, apex acute to obtuse. Flowers 1-3fasciculate in axils of both long and short shoots; pedicel 3-6mm, to 1.2 cm in fruit. Flowers silvery white. Calyx tube funnel-shaped, 5-7 mm, slender; lobes triangular-ovate, 2.8- 3 mm. Filaments ca. 0.7 mm; anthers elliptic, 1.8-2 mm. Style 6-7 mm, with stellate hairs; stigma ca. 2.2 mm. Drupe red, nearly globose, 8-9 mm. Seed ca. 7 mm.

Fl. Apr-May, **Fr**. Jul-Aug.

Distribution: Assam, Meghalaya, Manipur, Himachal Pradesh, Jammu and Kashmir.

Uses: The fruits are edible and can be consumed fresh or used in cooking and processing. Also valued for its ability to fix nitrogen in the soil, which enhances soil fertility and supports the growth of other plants.

Family: Elaeocarpaceae

Elaeocarpus angustifolius Blume, Bijdr. Fl. Ned. Ind. 3: 120 (1825).

Plant is a tall evergreen tree that can reach heights of 30-40 meters (98-130 feet). It has a straight trunk, often with buttressed roots, and a dense, rounded canopy. The bark is smooth and gray to brown, becoming rough and fissured with age. It may have vertical grooves and scales in older trees. The leaves are simple, alternate, and narrowly elliptic to lanceolate, hence the name "angustifolius" which means "narrow-leaved." They are dark green, glossy, and can grow up to 10-20 cm (4-8 inches) long. The leaves often turn red or orange before falling, creating a colorful display. The flowers are small, white to cream-colored, and fragrant. They are borne in racemes and have fringed petals, giving them a delicate, lace-like appearance. The blooming period typically occurs in spring and early summer.The fruit is a large, blue, globular drupe, about 2-4 cm (0.8-1.6 inches) in diameter. It has a hard, woody stone (endocarp) inside, which contains the seed. The blue fruit is attractive and conspicuous, often leading to the common name "Blue Marble Tree.

Fl. Aug-Sep, **Fr.** Sep-Nov.

Distribution: Broad-leaved mountain and valley rain forests; 400-1300 m. Guangxi, Hainan, Yunnan [Cambodia, NE India, Indonesia, Malaysia, Myanmar, Nepal, Thailand; Australia, Pacific islands (Fiji)].

Uses:A popular ornamental tree in gardens and parks due to its attractive foliage, fragrant flowers, and striking blue fruits. It provides aesthetic value and shade.

Family: Euphorbiaceae

Euphorbia heterophylla L., Sp. Pl. 1: 453. 1753. Euphorbia epilobiifolia W. T. Wang; E. geniculata Ortega; E. taiwaniana S. S. Ying; Poinsettia geniculata (Ortega) Klotzsch&Garcke var. heterophylla (Linnaeus) Klotzsch&Garcke.

Herbs, annual, erect to 1 m tall, often tinged red. Stem glabrous to sparsely pilose at apex, hollow. Leaves alternate; stipules purplish glands, fairly conspicuous; petiole to 2(–4) cm; leaf blade ovate, to 12 × 6 cm, abaxially pilose especially on midrib and veins, glabrescent, adaxially glabrous to sparsely pilose near margin, base cuneate, margin with minute distant glandtipped teeth, apex obtuse. Cymes terminal and axillary, each forking ca. 5 times, cyathia densely clustered; basal bracts similar to leaves but paler green, progressively smaller. Cyathia ca. 3.5 × 2.5 mm; involucre barrel-shaped, glabrous; gland ca. 1 mm, funnel-shaped, opening circular, ca. 1.2 mm across, often red-rimmed; lobes ca. 1.3 mm, subcircular, deeply toothed with minutely ciliate margins. Male flowers: bracteoles few, ligulate,

feathery; stamens ca. 4 mm. Female flower: ovary pedicellate, glabrous or occasionally minutely puberulent, perianth forming an obvious rim; styles ca. 1 mm, occasionally minutely puberulent, bifid to halfway. Fruiting pedicel reflexed to 6 mm; capsule exserted, ca. 4.5 × 5.5 mm, deeply 3- lobed. Seeds conical, ca. 2.6 × 2.4 mm, apex acute, bluntly warty, blackish brown.

Fl. and **Fr.** Apr–Oct

Distribution: Throughout India.

Uses: The latex is applied topically to treat various skin conditions such as warts and fungal infections. However, caution is advised as it can cause irritation.Extracts from the plant have shown antimicrobial properties, making them useful in treating infections.

Euphorbia hirta L., Sp. Pl. 2: 454. 1753. Linn. Sp. PL ed. 1, 454; Roxb. Fl. Ind. ii, 472; N. E. Brown in FL Trop. Afr. vi, 496. E. pilulifera, Jacq. (not' of Linn.); F. B. L v9 250; Watt E. D.; Comm. Prod. Ind. 531; Prain Beng. PL 925; Cooke Fl. Bomb, ii, 568.

Herbs, annual, 30–60(–70) cm tall, usually few branched. Root fibrous, 3–5 mm. Stem branched from middle or above, ascending to erect, rarely prostrate, ca. 3 mm thick, with mixture of long yellow-brown multicellular hairs and much shorter white hairs. Leaves opposite; stipules membranous, triangular, 0.8–1.7 mm, caducous; petiole 1–3.5 mm; leaf blade lanceolate-oblong, long elliptic, or ovate-lanceolate, 10–50 × 3–16 mm, adaxially green to red, sometimes with purple blotch along

midrib, abaxially gray-green, both surfaces pilose, denser abaxially, base slightly oblique, margin entire or few serrulate below middle, finely serrulate above middle, apex acuminate or obtuse. Cyathia in dense, often headlike, pedunculate cymes at upper nodes, peduncle to 25 mm, all parts very hairy; involucre campanulate, ca. 1 × 1 mm, pilose, marginal lobes 5, triangular-ovate; glands 4, red, rounded to transversely elliptic, center slightly sunken, appendages white to reddish, narrowly elliptic to obdeltoid, to 0.3 × 0.2 mm, margin entire to slightly undulate. Male flowers 4 or 5; anthers red. Female flower: pedicel short, exserted from involucre; ovary 3-angular, sparsely pilose; styles free; stigma slightly 2-lobed. Capsule 3-angular, 1–1.5 × 1–1.5 mm, smooth, shortly pilose; fruiting peduncle to 1.5 mm. Seeds subglobosetetragonal, 0.7–0.9 × 0.4–0.5 mm, reddish, sides transversely furrowed; caruncle absent.

Fl. and**Fr**. Jun–Dec.

Distribution: Throughout India.

Uses: Extracts from the plant have shown antimicrobial properties, making them useful in treating infections.

Euphorbia milii Des Moul., Bull. Hist. Nat. Soc. Linn. Bordeaux 1: 27 (1826).

Shrubs, scrambling, many branched, 60-90 cm. Stems obscurely 3-5-angled, densely spiny. Leaves alternate, clustered at stem apex; stipules forming spines 1-1.3(-2) cm; petiole absent or nearly so; leaf blade obovate to oblong-oblanceolate, 1.5-5 × 0.8-1.8 cm, base attenuate, margin entire, apex rounded. Cyathia in subapical, dichasial cymes, peduncle 4-7 cm;

cyathophylls 2, reniform-rounded, 8-10 × 12-14 mm, usually bright red (pink, white, or yellow in some cultivars), apex rounded; involucre campanulate, 3-4 × 3.5-4 mm, lobes 5, lanceolate; glands 5, reniform-rounded, ca. 1 × 2 mm, yellow-red. Male flowers many; bracteoles linear, apex pilose. Female flower: ovary smooth and glabrous, usually included with involucre; styles connate below middle; stigma 2-lobed. Capsule 3-lobed-ovoid, ca. 3.5 × 4 mm, smooth and glabrous. Seeds ovoid-terete, ca. 2.5 × 2 mm, gray-brown, reticulate; caruncle absent.

Fl. and **Fr.**Throughout year.

Distribution: Throughout India.

Uses: The plant is used to treat a variety of ailments, including warts, fever, digestive issues, and breathing problems. The plant's latex is used to treat warts in Brazil, while the bulbs are used to treat stomach aches, indigestion, diarrhea, constipation, and nausea.

Euphorbia prostrataAiton, Hort. Kew. 2: 139. 1789. *Anisophyllum prostratum* (Aiton) Haw. in Syn. Pl. Succ.: 163 (1812). *Aplarina prostrata* (Aiton) Raf. in New Fl. 4: 99 (1838). *Chamaesyce prostrata* (Aiton) Small in Fl. S.E. U.S.: 713 (1903). *Tithymalus prostratus* (Aiton) Samp. in Anais Fac. Sci. Porto 17: 45 (1931).

Small herbs, annual, 15–19 cm tall. Root fibrous. No. of stems arise from base; prostrate, usually light red or red,

occasionally green or yellow-green, glabrous or sparsely pubescent. Leaves opposite; stipules long triangular, easily fallen; petiole very short or sessile; leaf blade elliptic to obovate, 3–7 × 2–4 mm, adaxially green, sometimes with light red or red abaxially, margin entire or irregularly finely serrulate, apex rounded. Cyathia single, axillary or few clustered, peduncle 2–3 mm; involucre turbinate, ca. 1 × 1 mm, usually glabrous, sometimes with some pubescence, marginal lobes 5, triangular or rounded; glands 4, appendages white, extremely narrow. Male flowers many, usually shorter than cup. Female flower pedicellate, exserted from involucre; ovary sparsely pubescent 228 on angles; styles nearly connate at base; stigma 2-lobed. Capsule 3-angular, ca. 1.5 × 1.4 mm, smooth, glabrous except for white hairs along angles. Seeds ovoid-tetragonal, ca. 0.9 × 0.5 mm, yellow, each side with 6 or 7 transverse furrows; caruncle absent.

Fl. and **Fr**. Apr–Oct.

Distribution: Throughout India.

Uses: The aerial parts of the plant are used to treat normal or slow transit constipation.Traditional medicine utilizes the plant for treating various skin ailments.

Euphorbia pulcherrima Willd. ex Klotzsch, Allg. Gartenzeitung (Otto & Dietrich) 2(4): 27 (1834). *Poinsettia pulcherrima* (Willd. ex Klotzsch) Graham in Edinburgh New Philos. J. 20: 412 (1836).

Shrubs to small trees, 1-3(-4) m, many branched. Stems glabrous. Leaves alternate; stipules minute, membranous, caducous; petiole 2-5 cm, glabrous; leaf blade ovate-elliptic, oblong, or lanceolate, often shallowly lobed, 6-25 ×

4-10 cm, abaxially pubescent, adaxially shortly pubescent or glabrous, base attenuate, apex acuminate or acute. Cyathia in a very congested, 1-sided synflorescence, subtended by 5-7 petiolate leaflike bracts, these narrowly elliptic, 3-7 × 1-2 cm, usually entire, sometimes repand-lobed, scarlet, peduncle 3-4 mm; involucre urceolate, light green, 7-9 × 6-8 mm, lobes 5, lacerate, triangular, glabrous; glands usually 1, rarely 2, yellow, compressed, 2-lipped, 4-5 × ca. 3 mm. Male flowers many, usually exserted from involucre; bracts linear, pilose. Female flower: ovary glabrous, pedicellate, exserted from involucre, smooth; styles connate below middle; stigma deeply 2-lobed. Capsule, 3-lobed-globose, 1.5-2 × ca. 1.5 cm, smooth and glabrous. Seeds ovoid, ca. 10 × 8-9 mm, gray or light gray, subsmooth, without caruncle.

Fl. and **Fr**. Oct-Apr.

Distribution: Widely cultivated and occasionally escaped and naturalized. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang; also cultivated in C and N China [native to Central America].

Uses: Acommercially important plant due to its popularity as a decorative plant, particularly during Christmas.

Euphorbia royleana Boissier in A. Candolle, Prodr. 15(2): 83. 1862.; Brandis For. FL 438; Ind. Trees 558; F. B. I. v, 257 ; Watt E. D.; Comm. Prod. Ind. 531 ; Kanjilal For. Fl. ed 2, 343; Gamble Man. 591; Collett Fl. Siml 446. E. pentagona, Royle 111. 329, t. 82, fig. Vern. Thor (N. Ind.), thuor (Dehra-Dun), Sihund (Kumaon).

An erect glabrous fleshy cactus-like small tree or shrub up to 16 feet tall and with a girth of usually 2-3 ft., or occasionally up to 5 ft. Branches with 5-7 prominent angles and 5-7 broad flat intervening faces; the spines in pairs on the protuberant portions of the undulating edges. Leaves alternate, apically clustered; stipules pricklelike, spines paired, 3 –5 mm; petiole absent; leaf blade oblanceolate to spoonshaped, 5–15× 1–4 cm, slightly succulent, base attenuate, margin entire, apex obtuse or subtruncate; veins inconspicuous. Cyathia in subterminal cymes, yellow, peduncle ca. 5mm; cyathophylls as long as involcure ca. 2.5 × 2.5 mm; glands 5, transversely elliptic, dark yellow. Capsule 3 lobed, 1–1.2 × 1–1.5 cm, smooth and glabrous. Seeds 3–3.5 × 2.5–3 mm, brown, adaxially striate; caruncle absent. Styles free nearly to the base.

Fl. and **Fr**. May–Jul.

Distribution: Outer ranges of the W.Himalaya from Kumaon to the Jammu and Kashmir in subtropical and temperate regions.

Uses: The latex of Euphorbia royleana has anti-inflammatory and anti-arithritic properties. The stem bark extract of Euphorbia royleana has piscicidal and antiacetylcholinesterase activity.

Family: Fabaceae

Albizia lebbeck (L.) Bentham, London J. Bot. 3: 87. 1844. *Mimosa lebbeck*L., Sp. Pl. 1: 516. 1753; *Acacia lebbeck*(L.) Willdenow.

Tree, deciduous, 8-12 m tall. Bark rough. Branchlets minutely pubescent, glabrous when old. Stipules caducous, small; leaf rachis with disklike glands near base and at base of pinnae, pubescent or glabrous; pinnae 2-4 pairs, 6-15 cm; leaflets 4-8 pairs, narrowly elliptic or slightly obliquely oblong, 2-4.5 ×1.3- 2 cm, both surfaces glabrous or abaxially sparsely finely pubescent, main vein slightly closer to upper margin, apex obtuse or retuse. Peduncles axillary, 2 or more together, to 10 cm; corymbs 30-40-flowered. Flowers dimorphic, fragrant; pedicels 3-4 mm, puberulent. Calyx funnel-shaped, ca. 4 mm, puberulent, with 148 short teeth. Corolla green-yellow, funnel-shaped, 7-8 mm; lobes deltoid-ovate. Stamens white or light yellow-green; tube shorter than corolla tube. Ovary glabrous, sessile. Legume straw-colored, strap-shaped, flat, 15-28 × 2.5-4.5 cm, remaining on trees long after ripening. Seeds brown, 4-12, ellipsoidal, ca. 10 × 6-7 mm; pleurogram parallel to margins of seed.

Fl. May-Sep.**Fr**. Oct-May

Distribution: E. Afghanistan, Pakistan, Kashmir, NW India

Uses:The bark is the most commonly used part of the plant, and is also used to treat inflammation. The leaves are used to treat convulsions, and the flowers are used in Chinese traditional medicine to treat insomnia. *Albizia lebbeck* is a good soil binder and erosion control tool, and is often used to stabilize land in coastal areas.

Bauhinia purpurea L., Sp. Pl. 1: 375 (1753).*Caspareopsis purpurea* (L.) Pittier in H.F. Pittier & al., Cat. Fl. Venez. 1: 363 (1945). *Perlebia purpurea* (L.) A.Schmitz in Bull. Jard. Bot. Natl. Belg. 43: 382 (1973).

Phanera purpurea (L.) Benth. in F.A.W.Miquel, Pl. Jungh.: 262 (1852). *Telestria purpurea* (L.) Raf. in Sylva Tellur.: 122 (1838).

Trees or erect shrubs, 7-10 m tall. Bark grayish to dark brownish, thick, smooth; branches puberulent when young, later glabrous. Petiole 3-4 cm; leaf blade suborbicular, 10-15 × 9-14 cm, stiffly papery, abaxially almost glabrous, adaxially glabrous, primary veins 9-11, secondary and higher order veins protruding, base shallowly cordate, apex bifid to 1/3-1/2, lobes slightly acute or rarely rounded at apex. Inflorescence a raceme with few flowers, or a panicle with up to 20 flowers, axillary or terminal. Flower buds fusiform, 4- or 5-ridged, with an obtuse apex. Pedicel 7-12 mm. Calyx open as a spathe into 2 lobes, one with 2 teeth and other 3-toothed. Petals light pink, oblanceolate, 4-5 cm, clawed. Fertile stamens 3; filaments ca. as long as petals. Staminodes 5 or 6, 6-10 mm. Ovary stalked, velvety; style curved; stigma slightly enlarged, peltate. Legume linear, flat, 12-25 × 2-2.5 cm; valves woody. Seeds compressed, suborbicular, 12-15 mm in diam

Fl. Sep-Nov, **Fr.** next Feb-Mar.

Distribution: Widely cultivated as ornamental trees. Fujian, Guangdong, Guangxi, Hainan, Taiwan, Yunnan [probably only native from Nepal through continental monsoon Asia (Cambodia, Laos, Myanmar, Thailand, Vietnam).

Uses: *Bauhinia purpurea* has various uses, including ornamental, medicinal, and ecological.

Cassia fistula L., *Cassia rhombifolia* L., Sp. Pl. 1: 377. 1753. *Bactyrilobiu fistula* Willd., Enum. Pl. 1: 440. 1809.

Tree, deciduous, upto 15 m tall. Leaves 30-40 cm, with 3 or 4 pairs of leaflets; leaflets adaxially shiny, broadly ovate or ovate-oblong, 8-13 × 4-8 cm, leathery, both surfaces puberulent when young, glabrous when mature, base broadly cuneate, apex acute. Racemes axillary, 20-40(-60) cm, lax, pendent, many flowered; flowers 3.5-4 cm in diam. Pedicels 3-5 cm, slender. Sepals narrowly ovate, 1-1.5 cm, reflexed at anthesis. Petals golden yellow, broadly ovate, subequal, 2.5-3.5 cm, shortly clawed. Stamens 10, 3 long with curved filaments 3-4 cm, anthers ca. 5 mm, exceeding petals, 4 short with straight filaments 6-10 mm, reduced stamens with minute anthers. Ovary stalked, strigulose; stigma small. Legume pendulous, blackish brown, terete, sausage-shaped, indehiscent, 30-60 cm, 2-2.5 cm in diam. Seeds numerous, separated by papery septa, glossy brown, elliptic, flattened.

Fl. and **Fr**. July- Sep.

Distribution: Subtropical and tropical regions.

Uses: The pulp of the fruit is used as a gentle laxative.Extracts from the plant have demonstrated antibacterial properties.The tree is widely planted for ornamental purposes due to its vibrant yellow flowers, making it a popular choice for parks, gardens, and roadside planting.The wood is used in making tools and furniture.The flowers are used to produce a yellow dye.

Dalbergia sissoo Roxb., Fl. Ind. ed. 1832, 3: 223. 1832. Pterocarpus sissoo (Roxb. ex DC.) Wight & Arn., Prodr. Fl. Ind. Orient. 1: 264. 1834. *Amerimnon sissoo* (Roxb.) Kuntze, Revis. Gen. Pl. 1: 159. 1891

Branches numerous, horizontally spreading; young shoots puberulent. Leaves 12-15 cm; stipules caducous, lanceolate; leaflets 3-5; petiolules 8-10 mm,

initially puberulent, ultimately glabrous; blades green when young, shiny when old, suborbicular, occasionally rhombic-obovate, 3.5-6 cm, puberulent when young, glabrous when old, apex rounded, shortly caudate. Panicles axillary, short, ca. 7 cm; rachis and bracteoles puberulent. Flowers nearly sessile, fragrant; bracts caducous, lanceolate. Calyx campanulate, 6-7 mm, enclosed within 2 large, broadly ovate, membranous, very caducous bracteoles, outside puberulent, 5-toothed; teeth shorter than tube, upper pair rounded, lateral 2 subacute, shorter than lowest, lowest rather narrowly lanceolate. Corolla yellowish white; petals rather long clawed; standard broadly obovate, emarginate; wings and keel oblanceolate, base without auricles, cuneate, attenuate to claw. Stamens 9, monadelphous. Ovary oblong, pubescent, with rather long stipe ca. 4.5 mm, 4-6-ovuled; style very short; stigma capitate. Legume pale brown when dry, linear-oblong to strap-shaped, 4-8 × 0.6-1.2 cm, leathery, glabrous, faintly veined opposite 1 or 2(or 3) seeds. Seeds reniform, compressed.

Fl. Mar-Apr;**Fr**. Jun-Nov.

Distribution: Jammu and Kashmir, Himachal Pradesh, Haryana, Uttarakhand, Punjab.

Uses: The Ponytail Palm is primarily grown as an ornamental plant. As a house plant.It is known for its ability to improve indoor air quality by removing toxins and releasing oxygen.

Desmodium triflorum (L.) Candolle, Prodr. 2: 334. 1825. *Hedysarum triflorum* L., Sp. Pl. 2: 749. 1753; *Desmodium triflorum* var. *adpressum* Ohwi.

Herbs, perennial, prostrate, 10–50 cm tall, spreading pubescent. Leaves 3-foliolate; petiole ca. 5 mm; terminal leaflet blade obcordate, obtriangular, or obovate, 2.5–10 × 2.5–10 mm, base cuneate, apex truncate, slightly emarginate. Flowers solitary or 2 or 3 in leaf axils. Pedicel 3–8 mm, elongated to 1.3 cm at fruiting. Calyx densely villous, 5-parted; lobes narrowly lanceolate, longer than tube. Corolla purple-red, nearly as long as calyx; standard obcordate, base attenuate, long clawed; wings elliptic, shortly clawed; keel slightly falcate, longer than wings, curved, long clawed. Stamens diadelphous. Legume narrowly oblong, slightly falcate, flat, 5–12 × ca. 2.5 mm, lower suture undulate, upper suture 213 straight, 3–5-jointed; articles nearly quadrate, with short, hooked hairs, reticulate veined.

Fl. and Fr. Jun– Oct.

Distribution: subtropical to temperate regions.

Uses: In traditional medicine, *Desmodiumtriflorum* is used to treat a variety of conditions, including:Stomach aches and abdominal pain, Diarrhoea and dysentery.

Erythrina variegata L., Herb. Amboin. (Linn.) 10 (1754).

Medium to large deciduous tree that can reach the height of 10-20 meters (33-66 feet). It has a spreading canopy with a broad crown, making it a prominent feature in its native habitat. The bark is grayish-brown and rough, often with thorny protuberances. Young branches may also exhibit thorny characteristics. The leaves are trifoliate, meaning they are composed of three leaflets. Each leaflet is ovate to lanceolate, with a smooth or slightly serrated margin. The leaves are bright green and can grow up to 15-30 cm (6-12

inches) long. *Erythrina amazonica* produces striking, bright red to orange-red flowers that are borne in dense clusters (racemes). The flowers are tubular, with a shape resembling a parrot's beak, which attracts hummingbirds and other pollinators. Flowering typically occurs before the leaves emerge, creating a vivid display.

Fl. Feb-May, **Fr.** Apr-Aug.

Distribution: Fujian, Guangdong, Guangxi, Hainan, Taiwan [Bangladesh, Cambodia, India, Indonesia, Japan (Ryukyu Islands), Laos, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam; Australia, Pacific islands; introduced to Africa and Central and South America].

Uses: The tree's large coral-red flowers and variegated leaves make it an attractive ornamental plant. The tree's strong root system helps conserve water and soil. The tree's foliage is high in protein and can be used as feed for livestock.

Leucaena leucocephala (Lam.) de Wit, Taxon 10: 54. 1961. *Mimosa glauca* L., Sp. Pl. ed. 2, 1: 1504. 1763, non L., 1753. *Mimosa leucocephala* Lam., Encycl. 1: 12. 1783. *Acacia glauca* (L.) Moench., Methodus 466. 1794. *Acacia frondosa* Willd., Sp. Pl. ed. 4, 4: 1076. 1806. *Acacia leucocephala* (Lam.) Link, Enum. Hort. Berol. Alt. 2: 444. 1822. *Acacia leucocephala* DC., Prodr. 2: 468. 1825. *Leucaena glauca* Benth., Hook., London J. Bot. 4: 416. 1842.

Shrubs or small trees, 2-6 m tall. Branchlets pubescent, glabrous when old, with brown lenticels. Stipules caducous, deltoid, very small; pinnae 4-8 pairs,

5-9(-16) cm, rachis pubescent with black glands at location of lowest pinnae; leaflets 5-15 pairs, linear-oblong, 7-13 × 1.5-3 mm, main vein close to upper margin, base cuneate, margin ciliate, apex acute. Heads usually 1 or 2, axillary, 2-3 cm in diam.; peduncle 2- 4 cm; bracts deciduous, pubescent. Flowers white. Calyx ca. 3 mm, outside glabrous at base, puberulent at apex, 5-toothed. Petals narrowly oblanceolate, ca. 5 mm, outside pubescent. Stamens 10, sparsely pubescent, ca. 7 mm. Ovary shortly stipitate, sparsely pubescent; stigma cupular. Legume straight, strap-shaped, flat, 10-18 × 1.4-2 cm, leathery, base attenuate, pedicel to 3 cm, pubescent, beak acute, hard. Seeds 6-25, brown, glossy, narrowly ovoid, flat, 6-9 × 3-4.5 mm.

Fl. Apr-Jul, **Fr**. Aug-Oct.

Distribution: widely distributed in tropical and subtropical regions.

Uses: *Leucaena* is a nitrogen-fixing legume that can help improve soil, control erosion, and conserve soil. Its leaves and shoots are used as fodder and green manure.

Pleurolobus gangeticus (L.) J.St.-Hil. Ex H.Ohashi & K.Ohashi. *Desmodium gangeticum* (L.) Candolle, Prodr. 2: 327. 1825. *Hedysarum gangeticum* Linnaeus, Sp. Pl. 2: 746. 1753; *Desmodium cavaleriei* H. Léveillé.

Shrubs, erect or nearly so, to 1 m tall, much branched, pilose. Leaves 1-foliolate, variable in shape and size; petiole 1-2 cm; blade narrowly elliptic-ovate, sometimes ovate or lanceolate, 3-13 × 2-7 cm, abaxially sparsely gray villous, adaxially glabrous except for hairy midvein, base rounded, apex acute. Racemes terminal and axillary or sometimes panicles, 10-30 cm, 2-6-flowered at each node. Pedicel 2-5 mm, hairy. Calyx ca. 2 mm, 4-lobed;

lobes slightly longer than tube. Corolla green-white, 3-4 mm; standard obovate; wings oblong, base auriculate, shortly clawed; keel narrowly obovate, not auriculate. Ovary hairy. Legume linear, slightly curved, 1.2-2 × ca. 0.25 cm, lower suture deeply undulate, upper suture slightly constricted between seeds, hooked pubescent, 6-8-jointed.

Fl. Apr-Aug, **Fr**. Aug.

Distribution*:* Secondary forests, waste grasslands; 300-900 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Sichuan, SC Taiwan, S and SE Yunnan [Bhutan, Cambodia, India, Kashmir, Laos, Malaysia, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam; tropical Africa, Australia, Pacific islands; naturalized in the West Indies].

Uses: The entire plant can be used as an anthelmintic to remove parasitic worms and other internal parasites.

Senna spectabilis (DC.) H.S. Irwin & Barneby, Mem. New York Bot. Gard. 35: 600. 1982; *Cassia spectabilis* DC.; *Pseudocassia spectabilis* (DC.) Britton & Rose.

Trees, evergreen, small, 5-7(-10) m tall, with long, spreading branches. Young branches, petioles, and rachises of leaves densely yellowish brown velutinous. Leaves 12-30 cm; rachis and petiole without glands; leaflets 8-15(-19) pairs, elliptic or oblong-lanceolate, 3-7 × 1-2 cm (lowermost pair usually much smaller and early caducous), abaxially densely yellowish brown velutinous, adaxially glabrous or puberulent, base subrounded and slightly oblique, apex acute, cuspidate. Flowers in terminal panicles or axillary racemes; peduncles and pedicels densely yellowish brown velutinous; bracts caducous, ovate, 4-5 mm. Sepals 5, orange-yellow, unequal: 2 outer smaller, ovate, 5-7 mm, pubescent; 3 inner larger,

suborbicular, 8-11 mm in diam. Petals yellow, darkly brownish yellow veined, unequal in size, broadly to narrowly obovate, shortly clawed. Stamens 10, 7 of them fertile, anthers opening by apical pores, staminodes 3, smaller. Ovary linear, ca. 3 cm, recurved; style and stigma inconspicuous. Legume pendulous, black, narrowly cylindric, slightly compressed, 25-35 × 1-1.5 cm, slightly contracted between seeds, annulate-septate, glabrous. Seeds 50-70, suborbicular, ca. 5 mm in diam.

Fl. Oct–Dec.

Distribution: is an invasive plant species that has spread throughout several parts of India.

Uses: Traditional healers in Cameroon use it to treat epilepsy, anxiety, insomnia, and constipation. It's also used to treat ringworm and skin diseases.

Trifolium repens L., Sp. Pl. 2: 767. 1753.

Perennial herbs, stoloniferous, glabrous to glabrescent. Stems 10-30 cm, prostrate, rooting at nodes. Leaves long petiolate, palmately 3-foliolate; stipules ovatelanceolate, membranous, with veins green or red, sheathing at base, apex subulate; petiolule 1-1.5 mm; leaflets obovate to ovate, 6-20(-40) × 8-16(-25) mm, lateral veins 13 pairs, prominent on both surfaces, base cuneate, apex emarginate to broadly rounded. Flowers 20-50(-80), in terminal, globose umbels, 1.5-4 cm; peduncle equal to or longer than petiole; involucre absent; bracts lanceolate-ovate, membranous; pedicels 2-5 mm, reflexed after anthesis. Calyx 3-5 mm, veins 6-10; teeth shorter than tube. Corolla white, rarely pink-tinged, 5-12 mm, fragrant; standard elliptic, ca. 2 × wings and keel. Ovary sessile; ovules 3 or 4. Legume linear-oblong. Seeds 2-4, ovoid to reniform.

Fl. and **Fr**. May-Oct.

Distribution: Grasslands, ravines and along roadsides.

Uses:White clover is commonly used as a forage crop for livestock due to its high nutritional value and palatability. Its extensive root system helps to stabilize soil and prevent erosion caused by water runoff.

Family: Fagaceae

Quercus leucotricophora A. Camus in Riviera Sci. 22: 66. 1935; Bahadur, Indian For. 101: 101. 1975; Naithani, Fl. Chamoli 2: 598. 1985. *Q. incana*Roxb., Fl. Indica 3: 642. 1932; Hook. f. in Fl. Brit. India 5: 603. 1888.

Evergreen trees, upto 40 m in height. Leaves ovate-lanceolate, 5-11.5 x 2-5.5cm, acuminate, cuspidate-serrate, coriaceous, glossy dark-green above, densely white pubescent beneath, base cuneate; lateral nerves 12-20 pairs. Male catkins 5-10cm long, pale-white, slender, pubescent, interrupted. Female flowers solitary or clustered on short spikes, axillary. Acorns ovoid, 1-1.5cm long, smooth, cup covering half or more than the half of the nut.

Fl. &**Fr**.: March-October.

Distribution: Submontane to montane Himalaya, Garhwal to Nepal; Sri Lanka, Pakistan and Myanmar.

Uses: The leaves, bark, seeds, and gum resin of the *Quercus leucotrichophora* are used in traditional medicine to treat a variety of

ailments, including diarrhoea, dysentery, etc. The wood of the *Quercus leucotrichophora* has a high calorific value and is often used for fuelwood.

Family: Geraniaceae

Geranium nepalense Sweet, Geraniaceae 1: t. 12. 1820. *Geranium radicans* DC., Prodr. 1: 639. 1824. *Geranium affine* Wight & Arn., Prodr. Fl. Ind. Orient 1: 133. 1834, non Ledeb., 1831 *Geranium arnottianum*Steud., Nomencl. Bot. ed. 2 1: 677. 1840. Edgew. & Hook. f., l.c., Knuth, l.c. 192; Blatter, l.c. 67; Schönbeck-Temesy, l.c.23.

Procumbent diffuse, pubescent to hairy annual. Stem 1-3(-4), slender, sometimes rooting at the nodes. Leaves 5(-7) palmatifid or partite, upper usually ternate, 10-35 x 15-60 mm; segments broad rhomboid-cuneate, dentate, lobes obtuse-mucronate. Petals up to 1.8 cm long, retrorsely hairy. Stipules 5-7(-9) mm long, subulate or lanceolate, sometimes 2-fid, pubescent-hairy, ciliate. Peduncles usually 2-flowered, 2.5-14.5 cm, slender. Flowers 4-6 mm broad. Pedicel 1-2.5 cm, deflexed in fruit. Bracts 3-4 mm, lanceolate-subulate. Sepals 5-6 mm long, ovate-lanceolate, 3-nerved, pubescent or patently hairy; awn 0.3-1 mm long. Petals slightly longer than the sepals, 242 obovate, slightly retuse or entire, pale pink, sparsely ciliate. Filaments base dilated and ciliate. Beak 10-15 mm long, pubes-cent. Mericarps pubescent and patent hairy. Seed 2-2.5 mm long, elliptic-oblong, brownish black, minutely reticulate.

Fl.: April-September.

Distribution: Afghanistan, temperate Himalaya, China, Japan and Sri Lanka.

Uses: Used in traditional Chinese medicine to treat influenza, dysentery, and as an antiphlogistic and analgesic tonic.Harvested from the wild for local use as food.

Geranium rotundifolium L., Sp. Pl. 2: 683. 1753.

Annuals. Stem 10-40 cm tall, erect, no rooting at nodes, with 0.2-1.2 mm patent non glandular trichomes and 0.2-0.6 mm patent glandular trichomes. Stipules lanceolate, distinct. Leaves opposite; petiole with 0.2-1 mm patent non-glandular trichomes and 0.2-0.6 mm patent glandular trichomes; leaf blade 1.2-3.3 cm, palmately cleft, ratio of main sinus/middle segment length = 0.55-0.65, pilose with appressed non-glandular and sometimes glandular trichomes; segments 5, obtriangular, 5-10 mm wide at base, (3-)6-8-lobed at apex, ratio of second sinus/middle segment length = 0.13-0.2. Cymules solitary, 2-flowered; peduncle 1.8-3 cm. Pedicel 0.7-2 cm, with 0.3-1 mm patent non-glandular trichomes and 0.3-0.6 mm patent glandular trichomes; bracteoles linear-lanceolate. Sepals 4.5-6 mm, mucro 0.3-0.6 mm, ratio of mucro/sepal length = 0.06-0.1, outside with 0.4-1 mm patent non-glandular trichomes and 0.4-0.9 mm patent glandular trichomes, inside glabrous. Petals purplish, 6-7 mm, erect to patent, both surfaces glabrous or sometimes inside with scattered trichomes, apex rounded. Staminal filaments whitish, lanceolate, basally slightly dilated, glabrous except proximal half with some 0.1-0.2 mm cilia; anthers yellowish, ca. 0.5 mm. Nectaries 5, hemispheric, glabrous. Stigma reddish. Fruit 1.6-1.8 cm, erect when immature; mericarps smooth, with a basal callus, with 0.2-0.3 mm ± patent non-glandular trichomes; rostrum 1.2-1.3 cm, with a 2-3 mm narrowed apex; stigmatic remains 1-1.2 mm. Seeds 1.8-2 mm.

Fl. May-Jun, **Fr**. Jun-Jul

Distributin: Steppes; 900-1400 m. NW Xinjiang [Afghanistan, Kashmir, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, Turkmenistan, Uzbekistan; N Africa, W Asia, Europe].

Uses: When fresh, the plant has astringent, vulnerary, and resolvent properties and can be used to treat sore throats, bruises.

Family: Iridaceae

Iris pumila L., Sp. Pl. 1: 38 (1753).

The leaves of *Iris pumila* are narrow, sword-shaped, and arranged in a basal clump. They are typically 10-30 centimeters in length and have a bluish-green coloration. The leaves may be semi-evergreen in mild climates. Flowers of are solitary or appear in small clusters at the tips of erect stems. Each flower consists of six petals arranged in a flattened, fan-like pattern. The petals are typically purple, blue, yellow, or white, often with contrasting veining or markings. The flowers are relatively small, typically 5-8 cm in diameter, but they are notable for their exquisite beauty and intricate patterns. Rhizomatous roots, which are underground stems that produce new shoots and roots. The rhizomes are short, thick, and fleshy, allowing the plant to store nutrients and water for growth and reproduction.

Fl. May- Sep.

Distribution: Albania, Austria, Bulgaria, Central European Russia, Czechoslovakia, East European Russia, Hungary, Kazakhstan, Krym, North

Caucasus, Romania, South European Russia, Transcaucasus, Ukraine, Yugoslavia. Introduced in Belgium, Germany, Illinois, India, Indiana, Maine, Michigan, Missouri, Ohio, Ontario, Wisconsin

Uses:*Iris pumila* is highly valued as an ornamental plant. The dense root system of Iris pumila helps to stabilize soil and prevent erosion, making it useful for planting on slopes or in areas prone to soil disturbance.

Family: Lamiaceae

Ajuga parviflora Benth. in Wall., Pl. As. rar. 1: 59. 1830. Benth. in DC., Prodr. 12: 598. 1848; Hook. f., l.c. 703; Blatter, Beaut. Flow. Kashmir 2: 129. 1928; Mukerjee, l.c. 225; Hedge, l.c. 149; Stewart, Ann. Cat. Vasc. Pl. W. Pak. & 147 Kashm. 609. 1972; Sharma &Kachroo, Fl. Jammu 265. 1981; Rech. f., H. Iran. 150: 21, t. 14. 1982. *Vern*.: Neel Kanthi, Kharbanei. I.C. Hedge

Short lived perennial or annual, stems ascending or spreading, 10 -25 cm, generally unbranched, with a sparse to dense glandular indumentum of long villous multicellular hairs. Rosette leaves or not, variable in size, up to 45 x 25 mm, obovate spathulatae to elliptic, crenate to entire, narrowed into petiole, entire to irregularly crenate, with multicellular aglandular hairs, thin textured; petiole on basal leaves up to 20 mm; cauline leaves smaller than basal and reducing up the stem. Unbranched inflorescence upto 18 distant or approximating 8 - 12 flowered verticillasters. Calyx 2.5 – 4mm with similarindumentums to stem and with or without sessile oil globules, campanulate; teeth triangular lanceolate, acute, as long as tube; basally enlarged as nutlets mature. Corolla pink, bluish white to white, 5-6 (-8) mm,

pilose; tube slender, shortly exserted from calyx lobes. Stamens usually included in corolla tube. Nutlets pale brown, transversely rugose with prominent ridges, c. 1.5 x 1 mm.

Fl. &**Fr**.: May-Jun.

Distribution: E. Afghanistan, Pakistan, Kashmir, NW India.

Uses: Ajuga parviflora has been used in folk medicine to treat a variety of conditions, including:Fever, asthma, jaundice.

Mentha piperata Stokes , Bot. Mat. Med. 3: 315 (1812)

Stems erect-ascending, 30-100 cm tall, branched, purple-red, glabrous or angles sparsely minutely hispid. Petiole 1-2 mm, purple; leaf blade lanceolate to ovate-lanceolate, 2.5-3 × 0.8-2 cm, glabrous or abaxially minutely hispid on veins, densely glandular, base rounded to shallow cordate, margin unequally acute serrate, apex acute. Verticillasters in cylindric terminal spikes, interrupted at base; bracts linear-lanceolate, slightly longer than calyx, ciliate. Pedicel ca. 1 mm. Calyx tubular, tinged purple, puberulent or subglabrous, glandular outside; teeth 5, linear-subulate, ca. 1 mm, ciliate. Corolla white, tinged red on lobes, ca. 4 mm, tube nearly as long as calyx; lobes subequal, upper emarginate. Nutlets brown, obovoid, ca. 0.7 mm, apex glandular.

Fl. Fl. Jul, fr. Aug.

Distribution: Beijing Shi, Nanjing Shi, and other cities [India, Japan, Kyrgyzstan, Russia, Tukmenistan; SW Asia, Europe, North America]

Uses: Peppermint is used to treat a variety of conditions, includingNausea: Peppermint oil is an antispasmodic that can help relieve stomach cramps, bloating, and flatulence.

Ocimum tenuiflorum L., Sp. Pl. 2: 597. 1753. *Ocimum sanctum* L., Mant. Pl. 1: 85. 1767. *Ocimum inodorum*Burm.f., Fl. Indica 130. 1768. *Ocimum hirsutum* Benth. in Wall., Pl. Asiat. Rar. 2: 14. 1830. *Ocimum villosum* Roxb., Fl. Ind. ed. 2, 3: 13. 1832. *Ocimum sanctum* var. *hirsutum* (Benth.) Hook.f., Fl. Brit. India 4: 609. 1885. *Geniosporum tenuiflorum* (L.) Merr., Philipp. J. Sci. 19: 379. 1921, p.p.

Subshrubs to 1 m tall, much branched. Stems erect, base woody, spreading pilose. Petiole 1-2.5 cm; leaf blade oblong, 2.5-5.5 × 1-3 cm, puberulent, glandular, pilose on veins, base cuneate to rounded, margin shallowly undulate-serrate, apex obtuse. Verticillasters 6-flowered, in pedunculate, terminal thyrses or panicles 6-8 cm; bractssessile, cordate, ca. 1.5 × 1.5 mm, apex acute; peduncle 1-1.5 cm. Pedicel ca. 2.5 mm.Calyx campanulate, ca. 2.5 mm, villous, tube ca. 1.5 mm; middle tooth of upper lipbroadly oblate, abruptly acute; lateral teeth broadly triangular, shorter than lower lipteeth, spinescent; lower lip teeth lanceolate, apex spinescent; fruiting calyx to 6 × 4mm, conspicuously veined. Corolla white to reddish, ca. 3 mm, slightly exserted,sparsely puberulent; tube ca. 2 mm, dilated at throat; upper lip less than 1 × 2.5 mm,lobes ovate; lower lip oblong, ca. 1 × 0.6 mm, flat. Stamens slightly exserted, free;posterior filaments puberulent at base. Nutlets brown, ovoid, ca. 1 × 0.7 mm,glandular-foveolate.

Fl. Feb-Jun, fr. Mar-Aug.

Distribution: Almost throughout the India. Indonesia, Laos, Malaysia, Myanmar,Philippines, Thailand, Asia.

Uses:Holy basil is a key medicinal plant in traditional and folk systems of medicine in Southeast Asia. It's used to treat a wide range of diseases, including cancer, bronchitis, inflammation, and rheumatism.

Vitex negundo L., Sp. Pl. 2: 638. 1753. *Agnus-castus negundo* (L.) Carrière in Rev. Hort. (Paris) 42: 415 (1870 publ. 1871). *Vitex agnus-castus* var. *negundo* (L.) Kuntze in Revis. Gen. Pl. 2: 511 (1891).

Shrubs or small trees. Branchlets densely gray tomentose. Leaves 3-7-foliolate; central leaflet distinctly petiolate. Calyx campanulate, 5-dentate, gray tomentose. Corolla 2-lipped, 5-lobed, outside puberulent. Stamens exserted. Ovary subglabrous.

Fl. July- Aug.

Distribution: Japan, Africa, SE Asia, Pacific Islands.

Uses:The leaves of have been used in Ayurvedic medicine as an anti-inflammatory, analgesic, and anti-itching agent. The seeds have been used in folk medicine in China to treat pain disorders like stomach ache.

Family: Lauraceae

Cinnamomum tamala T.Nees &Eberm., Handb. Med. Pharm. Bot. ii. 426. *Laurus tamala* Buch.-Ham. in Trans. Linn. Soc. London 13: 533 (1822).

Trees, up to 20 m tall, to 20 cm d.b.h. Bark gray-brown, scented. Branchlets tea-brown, terete, glabrous, young ones ± angled, sparsely gray puberulent initially soon glabrate. Leaves alternate or those on young branchlets sometimes subopposite; petiole 0.5-1.3 cm, slightly sulcate adaxially, glabrous; leaf blade green-white and opaque abaxially, green and shiny adaxially, ovate, oblong, or lanceolate, 7.5-15 × 3-5.5 cm, thinly leathery, glabrous on both surfaces, triplinerved, midrib extending to leaf apex, basal

lateral veins very elevated abaxially, slightly elevated adaxially, transverse veins undulate, veinlets reticulate, ± conspicuous on both surfaces, base acute or broadly cuneate, margin entire, apex long acuminate. Panicle axillary or terminal, 5-10 cm, many flowered, branched, apex of branch bearing a 3-5-flowered cyme; peduncle 1-4 cm, peduncle and rachis sparsely finely gray puberulent. Pedicels 4-6 mm, slender, finely gray puberulent. Flowers white-green, up to 6 mm. Perianth sparsely gray puberulent outside but densely so inside; perianth tube obconical, short, less than 2 mm; perianth lobes obovate-oblong, ca. 4 × 1.5 mm, obtuse. Fertile stamens 9, ca. 3.8 mm (of 1st and 2nd whorls) or ca. 4 mm (of 3rd whorl); filaments gray villous, ca. 2.5 mm, those of 3rd whorl each with 2 finely stalked ovate-cordate glands at lower 1/3, others glandless; anthers of 1st and 2nd whorls ovate-oblong, ca. 1.3 mm, with introrse cells, those of 3rd whorl oblong, ca. 1.5 mm, with extrorse cells. Staminodes 3, ca. 1.7 mm, villous, long stalked, apex triangular-sagittate. Ovary ovoid, ca. 1.2 mm, villous; style slender, ca. 3.6 mm; stigma small, inconspicuous. Fruit obovoid or ellipsoid, 10-14 mm; perianth lobes persistent on rim of cupule.

Fl. Apr-May.

Distribution: Mountain slopes, evergreen broad-leaved forests in valleys, watersides; 1100-2000 m. W Yunnan [Bhutan, India, Nepal].

Uses: Tejpat leaves have long been used in traditional medicine for their various health benefits.

Family: Linderniaceae

Torenia crustacea (L.) Cham. &Schltdl. *Lindernia crustacea* (Linnaeus) F. Mueller, Syst. Census Austral. Pl. 1: 97. 1882. *Capraria crustacea* Linnaeus,

Mant. Pl. 1: 87. 1767; *Vandellia bodinieri* H. Léveillé; *V. crustacea* (Linnaeus) Bentham.

Annuals, 10-20 cm tall, much branched. Branches widely spreading, sub-quadrangular, deeply sulcate, glabrous. Petiole 1-8 mm; leaf blade triangular-ovate to broadly ovate, 1-2 X 0.5-1.1 cm, abaxially pilose along veins to subglabrous, adaxially subglabrous, base broadly cuneate to rounded, margin shallowly crenate or serrate, apex obtuse to subacute. Flowers axillary and solitary or in short apical racemes. Pedicel slender, 0.5-2.2 cm, subglabrous. Calyx urnlike, 3-5 mm, shallowly lobed; lobes triangular-ovate, outside sparsely pubescent. Corolla purple, 5-8 mm; tube slightly longer than calyx; lower lip 3-lobed, middle lobe larger and slightly longer than upper lip; upper lip ovate, sometimes shallowly 2-lobed. Stamens di-dynamous. Style fugacious. Capsule broadly ellipsoid, almost as long as persistent calyx. Seeds pale yellow-brown, sub-globose, scrobiculate.

Fl. and **Fr.**Throughout year.

Distribution: Moist areas, rice fields, grassland, trailsides; below 1300 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [widely distributed in tropics and subtropics].

Uses: Used in traditional medicine to treat a variety of ailments, including earaches, bruises, fevers, thrush, and skin disorders. It's also used to treat diabetes by the Bodo tribes in Assam, India.

Family: Loranthaceae

Scurrula parasitica L. Sp. Pl.: 110 (1753). *Cichlanthus scurrula* (L.) Tiegh. in Bull. Soc. Bot. France 42: 253 (1895). *Dendrophthoe scurrula* (L.) Blume in J.J.Roemer&J.A.Schultes, Syst. Veg., ed. 15[bis]. 7: 1730 (1830). *Loranthus scurrula* L. in Sp. Pl., ed. 2.: 472 (1762), nom. superfl.*Scurrula roxburghii* G.Don in Gen. Hist. 3: 421 (1834). *Taxillus parasiticus* (L.) S.T.Chiu in Taiwania 41: 159 (1996).

Shrubs 0.5-1 m tall, branchlets and leaves with dense stellate hairs when young, becoming glabrous. Branches brownish gray, lenticellate. Leaves opposite or subopposite; petiole 5-6 mm; leaf blade ovate to ovate-oblong, 5-8 × 2-4 cm, papery, lateral veins 5 or 6 pairs, both surfaces brownish or ferruginous pubescent when young, glabrous when mature, base broadly cuneate, apex obtuse. Racemes solitary or 2- or 3-fascicled, axillary, sometimes at leafless nodes, 3-7-flowered; peduncle 2-3 mm, brown pubescent; bracts ovate to triangular, 0.5-1.5 mm. Calyx turbinate, 2-2.5 mm, limb annular. Mature bud tubular, tip ellipsoid, apex acute. Corolla red or greenish yellow, slightly curved, 1-2.5 cm, apical portion inflated, lobes lanceolate, 3-8 mm, reflexed. Filaments 2-3 mm; anthers 1.5-2 mm. Stigma subcapitate. Berry reddish yellow, broadly pyriform, 8-10 × ca. 3 mm, base tapering into stalk.

Fl. and fr. Oct-Jan.

Distribution: Plains, hills, mountain slopes; 100-2100(-2800) m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Sichuan, Taiwan, SE Xizang, Yunnan.

Family: Lythraceae

Cuphea hyssopifolia Kunth. *199. Parsonsia hyssopifolia* (Kunth) Standl. in Contr. U.S. Natl. Herb. 23: 1018 (1924). 1-8 mm.

Short, evergreen shrubs growing 20-70 cm tall. Leaves opposite, narrowly lanceolate, 10-35× Solitary flowers grow from the leaf axils along the branches. Each flower has 6 pink, purple or white petals (3-3.5 mm long) emerging from a green floral tube (5-8 m long). The calyx teeth are triangular and the calyx may be glabrous or with a few stiff hairs. Fruits are 3 lobed capsules containing 5-8 long). The calyx teeth are triangular and the calyx may be glabrous or with a few stiff hairs. Fruits are 3-lobed capsules containing 5-8 seeds, each about 1 mm in diameter.

Fl. Almost throughout the year

Distribution: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico Central, Mexico Gulf, Mexico Northeast, Mexico Northwest, Mexico Southeast, Mexico Southwest, Nicaragua, Panamá

Uses: The plant's small, star-shaped purple flowers are beautiful and can be used as an ornamental plant. The plant is drought-tolerant, making it a good choice for dry climates.

Woodfordiafruticosa(L.) Kurz in J. Asiat. Soc. Bengal 40: 56. 1871; Raizada & Saxena, Fl.

Muss. 251. 1978; Naithani, Fl. Chamoli 1: 236. 1984. *Lythrum fructicosum* L., Sp. Pl. Ed. 2: 641. 1762. *W. floribunda* Salisbury, Parad. London t. 42. 1805; C.B. Clarke in Hook. F., Fl. Brit. India 2: 572. 1879.

Shrubs, 1-5 m tall. Stems and branches pendulous, long, pubescent when young, becoming glabrous. Leaves lanceolate or ovate-lanceolate, 3-14 × 1-4 cm, leathery, abaxially sparsely to densely tomentose and orange to black glandular punctate, adaxially glabrous, base rounded to subcordate, apex acuminate. Inflorescences condensed axillary shoots of 1-15 flowers. Floral tube light red, red-orange, or deep red, greenish basally, narrowly cyathiform, 9-15 mm; sepals oblong-ovate or deltate, 2-3 mm; epicalyx segments scarcely present. Petals 6, thin, linear-lanceolate, 1-5 mm, ca. as long as sepals. Stamens 12 , inserted above ovary base, long-exserted. Ovary 2-loculed; ovules 100+. Capsules elongate, elliptic. Seeds reddish brown, ca. 1.5 mm.

Fl. Jan-May (mainly Mar-Apr), Fr. Apr-May.

Distribution: Assam, Bangladesh, China South-Central, China Southeast, Comoros, East Himalaya, India, Jawa, Laos, Lesser Sunda Is., Madagascar, Myanmar, Nepal, Pakistan, Philippines, Saudi Arabia, Sri Lanka, Sulawesi, Tanzania, Thailand, Vietnam, West Himalaya.

Uses: A water decoction of fresh flowers is used to treat dysentery, and powdered bark is used to treat diarrhea.

Family: Magnoliaceae

Magnolia champaca (L.) Figlar, Proc. Internat. Symp. Fam. Magnoliac. 1998 21

(2000). *Michelia champaca* L. in Sp. Pl.: 536 (1753). *Michelia champacca* var. *champaca* (L.) P.Parm. in Bull. Sci. France Belgique 27: 280 (1895 publ. 1896).

Trees, to 30 m tall but usually shorter when cultivated. Bark pale brown to gray, thinly scaly fissured. Twigs, vegetative buds, petioles, and leaf blade abaxial surfaces densely brown to grayish brown shortly tomentose but abaxial surface of young leaf blades glabrous. Twigs thick and strong. Petiole 1.5-4 cm, deeply furrowed, without a stipular scar; leaf blade elliptic, oblong-elliptic, or obovate-oblong, 10-20 × 4-7(-10) cm, thickly leathery, adaxially deep green and glossy, secondary veins 8-10 on each side of midvein, base cuneate, apex obtuse to shortly mucronate. Flowers 15-20 cm in diam., fragrant. Tepals 9-12, white, obovate, 6-10 × 5-7 cm, thickly fleshy. Stamens ca. 2 cm; filaments purple, flat; connective exserted and forming a mucro; anthers introrse. Gynoecium ellipsoid, densely long tomentose; carpels ovoid, 1-1.5 cm; styles reclinate. Fruit terete to ovoid, 7-10 × 4-5 cm, densely brown to pale grayish yellow tomentose; mature carpels abaxially rounded, dehiscing along dorsal sutures, apex long beaked. Seeds ovoid, ca. 1.4 × 0.6 cm; testa red.

Fl. May-Jun, **Fr**. Sep-Oct.

Distribution: Assam, Bangladesh, Borneo, Cambodia, China South-Central, India, Jawa, Laos, Lesser Sunda Is., Malaya, Myanmar, Sumatera, Thailand, Tibet, Vietnam.

Uses: *Magnolia* species are highly valued for their ornamental beauty, particularly their large, fragrant flowers. They are cultivated in gardens,

parks, and public landscapes in Jammu and Kashmir for their aesthetic appeal.

Family: Malvaceae

Hibiscus fragilis DC., Prodr. [A. P. de Candolle] 1: 446 (1824).

Small to medium-sized evergreen shrub, typically growing upto a height of 2-4 meters (6.5 to 13 feet). It has a bushy and compact growth habit. Leaves are simple, alternate, and ovate to lanceolate in shape, with a serrated margin. They are dark green and glossy, providing a lush appearance. Flowers are large and showy, characteristic of the *Hibiscus* genus. They are typically red, pink, or orange, with five petals and a prominent central column of fused stamens and pistils. Each flower measures about 10 to 15 cm in diameter. Fruit is a dry capsule that splits open when mature, releasing several seeds. The seeds are small and dark brown.

Fl. Jul-Oct.

Distribution: Native to Mauritius

Uses: The plant is highly valued for its striking flowers and lush foliage, making it a popular choice for ornamental gardens and landscaping in tropical and subtropical regions.

Hibiscus rosa-sinensis L., Sp. Pl. [Linnaeus] 2: 694 (1753).*Hibiscus* × *festalis* Salisb. in Prodr. Stirp. Chap. Allerton: 383 (1796), nom. superfl. *Hibiscus* × *rosa-*

sinensis var. *genuinus* Hochr. in AnnuaireConserv. Jard. Bot. Genève 4: 134 (1900), not validly publ. *Hibiscus* × *rosiflorus* Stokes in Bot. Mat. Med. 3: 543 (1812), nom. superfl.

Shrubs or trees, 1–3m. Stems: new growth finely and sparingly stellate- or simple-hairy. Leaves: stipules linear to lanceolate, 8–16 mm; petiole usually to 1/3 blade, adaxial groove hairy with minute, ± sinuous hairs, sometimes villous; blade ovate, unlobed or only very rarely lobed, 5–12 × 3–8.5 cm, base rounded to cuneate, margins coarsely serrate in distal 2/3–3/4, apex acute to short-acuminate, surfaces glabrate, nectary present abaxially on midvein near base. Inflorescences solitary flowers, in axils of distal leaves. Pedicels jointed closer to flower, 4–9.5 cm, sparsely stellate-pilose or ± glabrous; involuclarbractlets 6–8, narrowly lanceolate to narrowly triangular, 0.3–2.2 cm, width varying in same flower, margins not ciliate, surface and margins puberulent or glabrate. Flowers showy, horizontal or declinate, sometimes double; calyx divided 1/2–3/4 length, narrowly campanulate, 2–3 cm, lobes triangular or narrowly so, apices acute to acuminate, often minutely, sparingly hairy, nectaries absent; corolla funnelform to rotate or petals slightly reflexed, petals usually red, sometimes pink, white, or yellow (or other colors in horticultural forms), usually darker at base, broadly to narrowly obovate, 6–10.5 × 4–6.5 cm, margins entire or crenate, often undulate, finely hairy abaxially mostly where exposed in bud; staminal column straight or moderately curved, usually red, often pink or white, 6.5–11.5 cm, bearing filaments in distal 1/2; free portion of filaments not secund, 3–9 mm, pollen yellow; styles red, pink, or white, 6–15 mm; stigmas usually reddish, sometimes golden yellow. Capsules seldom produced, brown, ovoid, 2.5–3 cm, apex rounded or beaked,

glabrous. Seeds (rarely produced in cultivation), dark brown to black, reniform, 5 mm, minutely pubescent.

Fl. Throughout year.

Distribtuion: Cultivated as an ornamental. Fujian, Guangdong, Guangxi, Hainan, Sichuan, Taiwan, Yunnan [not known in the wild but believed to have originated in China; now widely cultivated.

Uses: *Hibiscus* is commonly consumed in teas made from its flowers, leaves, and roots. *Hibiscus* leaves can also be used in soups.

Malva sylvestris L., Sp. Pl. 2: 689 (1753).

Usually biennial, up to 1.25 m tall, pubescent to glabrescent herbs. Leaves 2-4 cm long, 2-5 cm broad, 3-lobed, truncate to broadly cordate at; stipule lanceolate, scarious, c. 5 mm long, 1.5 mm broad; petiole 2-6 cm,pilose. Flowers axillary (1-) 2-4 in fascicles; pedicel c. 2 cm long. Epicalyx segments ovate, 2-3 mm long, 1.5 mm broad. Calyx free to the middle, 3-6 mm long, glabrescent; lobes broadly triangular, 2-3 mm broad. Petals pink-purple cm long, c.1 cm broad, obovate, emarginate, claw ciliate. Staminal c. 3 mm long, stellate pubescent. Fruit glabrous, 5-6 mm across, mericarps 10-12, reticulate. Seeds brown, c. 2.5 mm long and broad.

Fl. June-Oct.

Distribution: Afghanistan, Albania, Algeria, Altay, Austria, Azores, Baleares, Baltic States, Belarus, Belgium, Bulgaria, Central European Russia, Corse, Cyprus, Czechoslovakia, Denmark, East Aegean Is., East European Russia, Egypt, Finland, France, Germany, Greece, Hungary, Iran, Iraq, Italy,

Kazakhstan, Kirgizstan, Kriti, Krym, Lebanon-Syria, Libya, Madeira, Morocco, Netherlands, North Caucasus, North European Russia, Northwest European Russia, Norway, Palestine, Poland, Portugal, Romania, Sardegna, Sicilia, Sinai, South European Russia, Spain, Sweden, Switzerland, Tadzhikistan, Tibet, Transcaucasus, Tunisia, Turkey, Turkey-in-Europe, Turkmenistan, Ukraine, Uzbekistan, West Himalaya, Yugoslavia

Uses: Used in traditional European and Mediterranean medicine to treat a variety of conditions, including:Inflammatory conditions, Injuries, Infections and diseases, such as colds, coughs, bronchitis, tonsillitis, and digestive problems, Skin care and acne .

Malvastrum coromandelianum (L.) Gracke in Bonplandia 5: 297. 1857; PP. 238. 1916; FF. 36. 1918; Santapau Fl. Saurashtra 1: 54. 1962. Maheshwari. III. Fl. Delhi. F. 26. 1966; Borssum Waalkes in Blumea 14: 152. 1966; FBH. 45. 1977; Fl. Imd. 3: 277. 1993; Raizada & Saxena, Fl. Mussoori. 1: 65. 20002; FSIR. 171. 2004. *Malva coromandeleana* L. Sp. Pl. 687. 1753. *Malvestrum tricuspidatum* R. Br. A. Gray, Pl. Wrught. 1: 16. 1852: FBI. 1: 321. 1874; FF. 36. 1918; Duthie, Fl. Upp. Gang. Plains 1. 75. 1960. *Malvestrum tricuspidatum* R. Br. in W.T. Ait. Hort. Kew. ed. 2. 4: 22. 1812.

A decumbent-ascending, branched, appressed, hairy perennial herb. Stems 35- 75cm tall, hairy, branches stellate hairy. Leaves 2-7.5cm long, glabrescent to hairy, ovate to oblong, base rounded, margin serrate, acute or subacute, lateral nerves 4-6 pairs, densely covered with 4 armed stellate hairs; petiolate ca 4cm long; stipules 3-8mm long, linear, lanceolate, entire, hairy, ununited. Flowers solitary, axillary, sessile or sub-sessile, 1cm long,

orange –yellow on 5-6mm long, hairy pedicle. Bracteoles 3, linear, acute, hairy, 5.2-7mm long. Epicalyx 4-7 linear, lanceolate, acute, hairy. Calyx 6-7mm long, triangular, acuminate, hairy, lobes 5, campanulate, margin, densely stiff. Petals 5, 1cm long, orange-yellow, obliquely obovate, ciliate at base, twisted, overlapping, longer than the sepals. Stamens forming a stamina tube, antheriferous to the top, tube 3mm long, anthers 0.3mm long. Carpels styles as many as carpels, stigma capitate. Fruits 0.5-0.6cm across, globose, depressed at apex; reniform, hairy, bicuspidate with a persistant style, mericarps 10-12, 4mm long. Hairy, schizocarpic, single seeded. Seeds brown, reniform, glabrous, hairy, minutely pitted, 1.5mm across.

Fl. &**Fr**.: Throughout the year.

Distribution: Submontane Himalaya, almost throughout India; pantropical.

Uses: Plant extracts are used as remedies for inflammation and pain.

Pterospermum diversifolium Blume, Bijdr. Fl. Ned. Ind. 2: 88 (1825). *Dombeya diversifolia* (Blume) Spreng. in Syst. Veg., ed. 16. 4(2): 256 (1827). *Pterospermadendron diversifolium* (Blume) Kuntze in Revis. Gen. Pl. 1: 80 (1891).

Tree, 8–30 m high; crown with low branches; twigs slender densely hairy. Leaves obovate, ovate, ovate-oblong to elliptic, 15–30 x 10–17 cm, apex acute to broadly acute, base cordate to slightly oblique, margin entire, hairy then glabrescent on both surfaces; nerves and veins finely distinct on both surfaces. Flower buds tubular, 2–5 x 0.6–1 cm, surrounded by 3 caducous lanceolate bracts. Sepals 5, lanceolate, 8–17 x 0.5–0.8 cm, free or nearly so,

hairy on both surfaces. Petals 5, white, oblanceolate, 7–14 x 0.7–1 cm, free, hairy on outer surface. Stamens 15, 4–6 cm long; staminodes 5, 4–8 cm long, pellucid glands. Ovary ovoid, ca 10 x 4 mm, hairy; 5-locules, each with many ovules; styles slender, 3–4 cm long, densely hairy on lower half; stigmas 5, twisted. Fruits woody, oblong, 10–20 x 5.5–9 cm, with 5 straight longitudinal angles, hairy then glabrescent. Seeds many, ovate with a thin wing, 2–5 x 1 cm.

Fl. Sep- Oct.

Distributin**:** Andaman Is., Borneo, Cambodia, India, Jawa, Laos, Lesser Sunda Is., Malaya, Maluku, Myanmar, Philippines, Sulawesi, Sumatera, Thailand, Vietnam. (Native to these)

Uses: The fibrous bark can be used for rope and tying.The bark can be used for dye. The bark can be used to strengthen cloth and fish nets.

Sida cordifolia L. Sp. Pl. 684. 1753; FBI 1: 324; Gamble 64; Duthie, Fl. U. Gang. Pl. 1: 82. 1903.

An erect herb or undershrub, plant velvety with stellate hairs. Leaves ovate, the lower cordate, crenate. Flowers axillary, solitary or few flowered clusters, yellow. Fruit globose,enclosed by calyx.

Fl. &**Fr**.: August-November.

Distribution: Occurs all over the district in wastelands, roadsides and open forests.

Uses: *Sida cordifolia*, commonly known as "Heart-leaved Sida" or "Country Mallow," is a plant with several medicinal and therapeutic uses. Used to treat respiratory conditions like asthma, cough, and bronchitis, as well as to alleviate fevers and body pains.

Family: Mazaceae

Mazus pumilus (Burm. f.) Steenis, Nova Guinea, n.s. 9: 31. 1958; *Lobelia pumila* Burm. f.; *M. japonicus* (Thunb.) Kuntze; *M. rugosus* Lour.

Annuals, 3-30 cm tall, glabrous or sparsely pubescent. Primary root perpendicular, elongated or shortened; fibrous roots numerous, scattered or tufted. Stems 1 or more, erect, ascending, or procumbent-ascending, rooting from prostate nodes. Basal leaves early deciduous or few to numerous and sometimes rosulate; leaf blade obovate-spatulate to ovate-oblanceolate, 2-6 cm, membranous to papery, base cuneate and decurrent, margin coarsely and irregularly toothed or pinnately parted with 1 or 2 lobules, rarely subentire, apex entire or obscurely and sparsely toothed. Stem leaves opposite or few alternate. Racemes terminal, elongated to apically fascicled, usually 3-20-flowered, lax. Pedicel 3-12 mm. Calyx campanulate, 3-8 mm, enlarged in fruit or not; lobes ovate, almost as long as tube, apex acute. Corolla white, purple, or blue, ca. 1 cm; lower lip middle lobe smaller than lateral lobes, slightly exserted, obovate; upper lip lobes ovate-triangular. Ovary glabrous. Capsule globose.

Fl. and fr. Apr-Oct.

Distribution: Afghanistan, Altay, Amur, Assam, Bangladesh, Cambodia, China North-Central, China South-Central, China Southeast, East Himalaya, Hainan, India, Inner Mongolia, Japan, Jawa, Khabarovsk, West Himalaya

Uses: The plant is used as an aperient, emmenagogue, febrifuge, and tonic. The juice of the plant is used to treat typhoid. The young leaves can be cooked and eat

Family: Meliaceae

Azadirachta indica A.Juss., Mém. Mus. Hist. Nat. 19: 221 (1830). *Melia indica* (A.Juss.) Brandis in Forest Fl. N.W. India: 67 (1874)

Plant is an evergreen tree characterized by a dense, spreading crown. It can attain a height of 15-20 meters, providing ample shade and habitat for various organisms. Leaves: The leaves of neem are arranged alternately on the branches and are compound and pinnate in structure. Each leaf typically consists of 20-31 medium to dark green leaflets, giving the foliage a lushappearance.Flowers:Neem produces small, white, fragrant flowers that are arranged in dense clusters, adding ornamental value to the tree. These flowers attract pollinators and contribute to the tree's reproductive cycle. Fruit: The fruit of neem is a drupe, initially green in color when young and gradually turning yellow as it matures. Each fruit contains a single seed within its fleshy exterior.

Fl. Jan- May.

Distribution: India, Bangladesh, Cambodia, Laos, Myanmar, Thailand, Vietnam

Uses: Neem can treat infections caused by viruses. It can also exfoliate the skin to remove dead cells and prevent blemishes. Neem can reduce tooth plaque and gingivitis. Applying a gel containing neem leaf extract to the teeth or using a neem mouthwash can help.

Melia azedarach L., Sp. Pl. 1: 384. 1753. *Melia azedarach* subvar. *intermedia* Makino; *M.azedarach*var. *intermedia* (Makino)Makino; *M.azedarach* var. *subtripinnata* Miquel; *M.azedarach* var. *toosendan* (Siebold & Zuccarini) Makino; *M. japonica* G. Don var. *semperflorens* Makino; *M. toosendan* Siebold & Zuccarini.

Trees to 10 m tall, deciduous. Bark brownish gray, longitudinally exfoliating. Branches spreading; branchlets with leaf scars. Leaves odd-pinnate, 2-pinnate or 3- pinnate, 20-40 cm; leaflets opposite; leaflet blades ovate, elliptic, or lanceolate, 3-7 × 2-3 cm but terminal one usually slightly larger, both surfaces with stellate trichomes when young but glabrescent, secondary veins 12-16 on each side of midvein, outspread and ascending, base ± oblique and cuneate to broadly cuneate, margin crenate or sometimes entire, apex shortly acuminate. Thyrses ± ca. 1/2 as long as leaves, glabrous or covered with short lepidote pubescence. Flowers fragrant. Calyx 5-parted; sepals ovate to oblong-ovate, outside puberulent, apex acute. Petals lilac-colored, obovate-spatulate, 0.9-1.3 cm, both surfaces puberulent but usually outside more densely so. Staminal tube purple, 7-8 mm, with longitudinal stripes, glabrous or subglabrous, apical margin with 10 narrow lobes; lobes conic, further 2- or 3-lobed; anthers 10, inserted on inner side of lobes and alternate to lobes, narrowly elliptic, apex slightly mucronulate. Ovary spherical, glabrous, 5-8-locular, with 2 ovules per locule; style acerose; stigma capitate,

not included within filament tube, apex 5- dentate. Drupe globose to ellipsoid, 1-3 × 0.8-1.5 cm; endocarp ligneous. Seed ellipsoid.

Fl. Mar-May, **Fr**. Oct-Dec.

Distribution: Bhutan, Nepal, Sri Lanka, Vietnam, tropical Australia, Pacific islands.

Uses: The leaves, roots, and stem of the tree have medicinal properties. In India, it is used in ayurveda, and in Arab nations, it is used in unani medicine.

Toona ciliate M. Roemer, Fam. Nat. Syn. Monogr. 1: 139. 1846. *Cedrela toona* Roxburgh ex Rottler, Ges. Naturf. Freunde Berlin Neue Schriften 4: 198. 1803; *C. australis* R. Mudie, nom. superfl. (included type of *C. toona*); *C. australis* F. Mueller (1858), not R. Mudie (1829); *C. kingie* C. Candolle; *C. kingie* var. *birmanica* C. Candolle; *C. microcarpa* C. Candolle; *C.mollis* Handel Mazzetti; *C.toona* var. *gamblei* C.Candolle; *C.toona* var. *h aslettii*Haines; *C.toona* var. *latifolia* MiquelexC.Candolle; *C.toona*var. *multijuga*Haines; *C.toona*var. *nepalensis* C.Candolle; *C.toona* var. *parviflora* Bentham; *C.toona*var. *puberula* C.Candolle; *C.toona* var. *pubescens* Franchet; *C.toona*var. *pubinervis* C. Candolle; *C.toona* var. *Stracheyi* C. Candolle; *C. toona* var. *sublaxiflora* C. Candolle; *C.toona* var. *talbotii* C. Candolle; *C. toona* var. *vestita*C. T. White; *C. toona* var. *yunnanensis* C. Candolle; *Surenus australis* Kuntze; *S. microcarpa* (C. Candolle) Kuntze; *S. toona* (Roxburgh ex Rottler) Kuntze; *Toona australis* (Kuntze) Harms; *T. ciliate* var. *pubescens* (Franchet) Handel-Mazzetti; *T. ciliate* var. *Sublaxiflora* (C. Candolle) C. Y. Wu; *T. ciliata*var. *Vestita* (C. T. White) Harms; *T. ciliata*var. *Yunnanensis*(C. Candolle) Harms; *T. febrifuga* (Blume) M.

Roemer var. *cochinchinensis* Pierre; *T. febrifuga* var. *Griffithiana* Pierre; *T. febrifuga* var. *Ternatensis* Pierre; *T. kingie* (C. Candolle) Harms; *T. microcarpa* (C. Candolle) Harms; *T. mollis* (Handel- Mazzetti) A.Chevalier; *T.sureni* Blume) Merrillvar. *Cochinchinensis* (Pierre) Bahadur; *T. sureni*var. *pubescens* (Franchet) Chun.

Tree, medium sized to 30 m tall; with or without buttresses (to 3.5 m); crown usually rounded and spreading, occasionally dense. Bark grayish white to brown, usually fissured and flaking; inner bark brown to reddish, fibrous; sap-wood white, pink, or red, smelling strongly of cedar when cut. Twigs 385 pilose to glabrescent, inconspicuously lenticellate with small lenticels. Leaves 26-69 cm; petiole 6-11 cm, glabrous or pilose; rachis often reddish, glabrous or sparsely pilose, occasionally velutinous; leaflets usually 9-15 pairs; petiolules 2- 10 mm, glabrescent, rarely pilose to velutinous; leaflet blades lanceolate to ovate-lanceolate, 9-12.8 × 3.2-5 cm, glabrescent with trichomes on apical midvein or absent or sparse, occasionally moderately pilose, base usually asymmetric, margin entire, apex acute to acuminate. Inflorescences to 55 cm, pendent; rachis pilose to pilose-villous with short to long spreading or appressed trichomes. Flowers 3.5-5mm, sweetly scented. Pedicel 0.5-1 mm, usually pilose to occasionally villous. Calyx 0.7-1.3 mm, outside usually glabrescent, lobes imbricate; sepals spatulate,0.7-1 × 0.7-1.3 mm, margins shortly ciliate. Petals white to creamy white, 3.5-5.8 × 1.3-3.1 mm, usually glabrescent, occasionally outside pilose, margin shortly ciliate. Androgynophore 3-4.9 mm; filaments 1.2-2.5 mm (male flowers), 0.7-1.8 mm (female flowers), glabrous to pilose/villous; anthers of male flowers 0.6-1.1 × 0.4-0.9 mm, apex usually apiculate, often with long appendage;

antherodes of female flowers usually sagittate, 0.5-0.9 × 0.3-0.6 mm, often with a long apiculate appendage. Disk reddish orange, 1.2-2.5 mm in diam., densely pilose. Ovary 1.2-1.8 mm in diam., moderately pilose, with to 8 ovules per locule; style 1.2-3 × 0.2-0.4 mm (male), 0.3-1.5 × 0.3-0.5 mm (female), glabrous; stylehead 0.7-1.3 mm in diam. Capsule 1.5-2 cm; columella 1.5-2 × 0.5-0.7 cm, concave with apical scarring; valves red to reddish brown, smooth to lenticellate with 0.1-0.5 mm in diam. scattered lenticels. Seeds 1.1-1.9 cm × 2.5-4mm, winged at both ends; wings unequal, apex narrowly obtuse; seed body 5-7 × 1.2-3 mm.

Fl. Jan-Jun, **Fr**. Feb-Nov.
Distribution: Almost throughout the country.

Uses: Toona ciliata**,** commonly known as Australian Cedaror Red Cedar**,** is a tree with various medicinal and practical uses.

Family: Menispermaceae

Cissampleos pariera L. Sp. Pl. 102, 1753; Hook f. in Fl. Brit. Ind. 1: 103, 1872; Osmaston, For. Fl. Kumaon 16, 1927; Duthie, Cat. Pl. Kumaon 18, 1906; Collett, Fl. Siml. 19, 1921.

A climbing, softly pubescent shrub. Leaves orbicular, reniform or cordate. Flowers small. Male cymes long, peduncled, clustered in the leaf axis, hairy. Petals united in a shallow, 4-lobed cup. Stamens 4. Female flowers clustered in the axis of orbicular bracts crowded in long axillary racemes.

Sepals 1. Petal 1, opposite the sepal. Ovary one, hairy shortly 3 fid. Drupes hairy, globose, scarlet.

Fl.: May-August, **Fr**.: October-November.

Distribution: Throughout India; Pakistan, Nepal, Bhutan and Malaysia, Pantropical.

Uses: commonly known as Indian MoonseedorVelvetleaf**,** is a medicinal plant with several traditional uses. It has been used in traditional medicine to treat conditions like arthritis, joint pain, and muscle inflammation due to its anti-inflammatory properties. Also known to aid in digestion.

Family: Moraceae

Broussonetia papyrifera (L.) L'Héritier ex Ventenat, Tabl. Règn. Vég. 3: 547. 1799. *Morus papyrifera*Linnaeus, Sp. Pl. 2: 986. 1753; *Papyriuspapyrifera* (L.) Kuntze, Revis. Gen. Pl. 2: 629. 1891.

Tree, 10-20 m tall, flowers always produced on leafy stems; dioecious. Bark dark gray. Branchlets densely pubescent. Stipules ovate, 1.5-2 × 0.8-1 cm, apex 170 attenuate. Leaves spirally arranged; petiole 2.3-8 cm; leaf blade broadly ovate to narrowly elliptic-ovate, simple or 3-5-lobed on young trees, 6-18 × 5-9 cm, abaxially densely pubescent but veins with coarser hairs, adaxially scabridulous and sparsely pubescent, base cordate and asymmetric, margin coarsely serrate, apex acuminate; secondary veins 6 or 7 on each side of midvein. Male inflorescences long spicate, 3-8 cm; bracts lanceolate, pubescent. Female inflorescences globose; bracts clavate, apically pubescent. Male flowers: calyx 4-lobed, lobes triangular-ovate and pubescent; anthers

globose. Female flowers: calyx pipelike, lobes apically connate with style; ovary ovoid; stigma linear, pubescent. Syncarp orange-red when mature, 1.5-3 cm in diam., mostly pubescent with scattered stout and ± barbed hairs, fleshy. Drupelets equal in length to peduncle, with 2 rows of small verruca; exocarp shell-like.

Fl. Apr-May, **Fr**. Jun-Jul.

Distribution: Almost throughout India.

Uses: The plant is a versatile plant with a range of uses:The plant's inner bark is traditionally used in the production of paper, particularly in East Asia and the Pacific Islands, where it is used to make high-quality handmade paper.The wood is lightweight and used in making furniture, and the fibers from the bark are used to make ropes, textiles, and mats in some cultures.

Ficus carica L., Sp. Pl. 2: 1059. 1753. *Ficus caprificus* Risso, Fl. Nice, 434. 1844.

Shrubs, 10 m tall, many branched. Bark grayish brown, distinctly lenticellate. Branchlets straight, strong. Stipules red, ovate-lanceolate, ca. 1 cm. Leaves alternate; petiole strong, 2ñ5 cm; leaf blade broadly ovate, usually with 3-5 ovate lobes, thickpapery, abaxially densely covered with small cystoliths and short gray pubescence, adaxially scabrous, base ± cordate, margin irregularly toothed; basal lateral veins 2ñ4, secondary veins 5 to 7 on each side of midvein. Figs axillary on normal leafy shoots, solitary, purplish

red to yellow when mature, pear-shaped, large, 3ñ5 cm in diam., apical pore concave, sessile; involucral bracts ovate. Male flowers: near apical pore; calyx lobes 4 or 5; 235 stamens 1 or 3. Gall flowers: style lateral, short. Female flowers: calyx lobes 4 or 5; ovary ovoid, smooth; style lateral; stigma 2-branched, linear. Achenes lenslike.

Fl. and **Fr**. May Jul.

Distribution: Almost throughout India.

The fruit-bearing tree with numerous uses:The fruit is rich in vitamins (especially Vitamin A, C, and K), fiber, and minerals (like potassium and magnesium). It's commonly eaten fresh or dried, and is used in jams, juices, and desserts.Beyond being eaten directly, fig leaves are sometimes used to wrap food for grilling or baking, while the dried fruit is a popular ingredient in health foods, granola, and snacks.

Ficus elastica Roxb. ex Hornem., Hort. Bot. Hafn. Suppl. 7 (1819). *Stilpnophyllum elasticum* (Roxb. ex Hornem.) Drury in Handb. Ind. Fl. 3: 225 (1869). *Urostigma elasticum* (Roxb. ex Hornem.) Miq. in London J. Bot. 6: 578 (1847). *Visiania elastica* (Roxb. ex Hornem.) Gasp. in Nov. Gen. Fic.: 9 (1844). *Macrophthalma elastica* (Roxb. ex Hornem.) Gasp. in Ric. Caprifico: 83 (1845).

Trees, 20-30 m tall, d.b.h. 25-40 cm, epiphytic when young. Bark pale gray, smooth. Branchlets strong. Stipules dark red, ca. 10 cm, membranous; scar conspicuous. Petiole robust, 2-5 cm; leaf blade oblong to elliptic, 8-30 × 7-10 cm, thickly leathery, abaxially pale green, adaxially dark green and shiny, base broadly cuneate, margin entire, apex acute; secondary veins many,

closely parallel, inconspicuous. Figs axillary on leafless branchlets, paired, yellowish green, ovoid-ellipsoid, ca. 10 × 5-8 mm, subsessile; involucral bracts hoodlike, caducous, scar conspicuous. Male, gall, and female flowers within same fig. Male flowers: scattered among other flowers, pedicellate; calyx lobes 4, ovate; stamen 1; filament absent; anther ovoid-ellipsoid. Gall flowers: sepals 4; ovary ovoid, smooth; style subapical, curved. Female flowers: sessile; style persistent, long; stigma enlarged, ± capitate. Achenes ovoid, tuberculate.

Fl. Oct-Nov.

Distribution: 800-1500 m. W Yunnan [Bhutan, N India, Indonesia, Malaysia, Myanmar, Nepal, Sikkim.

Uses: commonly known as the Rubber Plant, is a popular ornamental plant with a variety of uses.

Ficus hispida L.f. , Suppl. Pl. 442 (1782). *Covellia hispida* (L.f.) Miq. in London J. Bot. 7: 462 (1848). *Gonosuke hispida* (L.f.) Raf. in Sylva Tellur.: 58 (1838)

Shrubs or small trees, coarsely hairy; dioecious. Stipules usually 4 and decussate on leafless fruiting branchlets, ovate-lanceolate. Leaves opposite; petiole 1-4 cm, with short thick hairs; leaf blade ovate, oblong, or obovate-oblong, 10-25 × 5-10 cm, thickly papery, abaxially with coarse gray hairs, adaxially rough and with short thick hairs, base rounded to ± cuneate, margin entire or

bluntly toothed, apex acute to mucronate; secondary veins 6-9 on each side of midvein. Figs axillary on normal leafy shoots, sometimes on leafless branchlets or branchlets from main branches, solitary or paired, yellow or red when mature, top-shaped, 1.2-3 cm in diam., with short scattered hairs, pedunculate; involucre bracts present; lateral bracts sometimes present. Male flowers: many, near apical pore; calyx lobes 3, thinly membranous; stamen 1. Gall flowers: calyx absent; style subapical, short, thick. Female flowers: calyx lobes absent; style lateral, with hairs.

Fl. Jun-Jul.

Distribtuion: Along streams, plains; 700-1500 m. Guangdong, Guangxi, Guizhou, Hainan, Yunnan [Bhutan, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Sikkim, Sri Lanka, Thailand, Vietnam; Australia.

Uses: In traditional medicine, various parts of the plant (such as the bark, leaves, and fruit) are used to treat ailments like fever, diarrhea, and respiratory issues. It is also considered to have anti-inflammatory and analgesic properties.

Ficus palmate Forssk. Fl. Aegypt. Arab. 179, 1775; Hook. f. Fl. Brit. India 5: 530,1888; Osmaston, For. Fl. Kumaun 511, 1927; Duthie, Cat. Pl. Kumaun 164, 1906.

A shrub with tomentose branches when young often becoming glabrous. Leaves

broadly ovate, deeply 3-5 lobed sometimes. Tip acute, base cordate or wedge shaped. Margins toothed, upper surface rough, lower pubescent. Figs axillary, stalked, solitary, globose or pear shaped, narrowed to the base, usually tomentose, purple when ripe.

Fl. & Fr.: July-November.

Distribution: North-West India; Afghanistan, Arabia, North-East Africa.

Uses:In traditional medicine, *Ficus palmata* is used to treat a variety of ailments. The leaves, fruits, and roots are often used for their anti-inflammatory, antimicrobial, and antidiabetic properties. It's commonly used in treating digestive issues, coughs, and skin disorders.The fruit of the Indian figisedible and rich in nutrients, including vitamins, minerals, and fiber. It is often eaten raw, dried, or used in jams and juices, providing a healthy source of energy.

Ficus religiosa L., Sp. Pl. 1059. 1753. *Urostigmareligiosum* (L.) Gasp., Ric. Caprifico 82, t. 7. f. 1-5. 1845. *Urostigma affine* Miq. in Hook., London J. Bot. 6: 564. 1847.

Tree, 15-25 m tall, d.b.h. 30-50 cm, epiphytic when young, crown wide when mature. Bark gray, smooth or longitudinally fissured. Branchlets grayish brown, sparsely pubescent when young. Stipules ovate, small, apex acute. Petiole slender, as long as or longer than leaf blade, articulate; leaf blade triangular-ovate, 9-17 × 8-12 cm, leathery, abaxially green, adaxially dark green and shiny, base broadly cuneate to cordate, margin entire or undulate, apex acute to caudate,basal lateral veins 2, secondary veins 5-7 on each side of midvein. Figs axillary on leafy branchlets, paired or solitary, red when

mature, globose to depressed globose, 1-1.5 cm in dm, smooth; peduncle 4-9 mm; involucre bracts ovate. Male, gall, and female flowers within same fig. Male flowers: few, near apical pore, sessile; calyx 2or 3-lobed, margin revolute; stamen 1; filament short. Gall flowers: pedicellate; calyx 3- or 4-lobed; ovary globose, smooth; style short; stigma enlarged, 2-lobed. Female flowers: sessile; calyx 4-lobed, broadly lanceolate; ovary globose, smooth; style thin; stigma narrow.

Fl. Mar-Apr, **Fr**. May-June.

Distribution: Throughout India and wild in sub-Himalayan region.

Uses:Used in traditional medicine for treating asthma, diabetes, and wounds.Sacred in Hinduism and Buddhism, symbolizing enlightenment and spirituality.Provides shade, purifies air, and supports biodiversity.

Morus alba L., Sp. Pl. 986. 1753. Boiss., Fl. Or. 4:1153. 1879; Hoot: l.c. 492. Bomber, Pl. Punj. 15. 1916; Yarnsolenko, Fl. U.R.S.S. 5: 377. 1936; Parker, l.c. 472. Stewart, l.c. 194; Townsend, Pl. Iraq 4(1): 81. Pl. 16. fig. 7-11.1980; Browicz.

A monoeous, deciduous, 8-15 m or rarely up to 20 m tall tree with a dense, compact leafy crown. Trunk c.1.5-2 m in circumference, with dark grey-brown, rough, vertically fissured bark, tender twigs hairy to glabrescent. Leaves with a crisped hairy, filiform,1-3 cm long petiole; lamina narrow tobroad. ovate, 5-15 cm long,4-12 cm wide, 3-costate from truncate to shallowly cordate base, upper surface glabrous, midrib and principal wins pubescent, secondary veins and ultimate veinlets glabrous, margin regularly serrate or crenate-serrate or ± irregularly 2-serrate, apex obtuse, acute or shortly acuminate; stipules lanceolate, brownish membranous, hairy. Male catkins 10- 20 mm long including slender, hairy peduncle, 5.6 mm broad,

with lax flowers. Male flowers: sepals free, broadly ovate, 2.5 mm long, cucullate, obtuse, glabrous to ± hairy; staminal filaments ± equal to sepals, with ovate, exserted anthers. Female catkins ovoid, 5-10 mm long, without equally long or slightly longer peduncle. Female flowers: sepals suborbicular, c. as long as or slightly larger than of male flowers, glabrous or ciliate on margins; ovary with glabrous free styles. Sorosis ovoid, 15-25 mm long, 5-8 mm across, white to pinkish-purple or black, sweet, edible.

Fl.: April-September.

Distribution: subtropical and tropical regions.

Uses: Leaves are the primary food source for silkworms in sericulture.Fruits are edible, rich in antioxidants, and used in jams, juices, and traditional remedies.

Morus nigra L., Sp. Pl. 2: 986 (1753).

Trees to 10 m tall; monoecious or dioecious. Bark dark brown. Branchlets pale brown pubescent. Stipules lanceolate, membranous, brown pubescent. Petiole 1.5-2.5 cm, pubescent; leaf blade broadly ovate, unlobed, 6-12(-20) × 7-11 cm, thick, abaxially pale green, shortly pubescent, and tomentose, adaxially dark green and coarse, base cordate, margin regularly and coarsely serrate, apex acute to shortly acuminate. Male catkins cylindric, 2-4 cm, pubescent. Female catkins ellipsoid, 2-2.5 cm; peduncle short. Female flowers: style inconspicuous; stigmas without mastoidlike protuberance, 2-branched and pubescent. Syncarp blackish purple when mature, elliptic, 2-2.5 × 1.5-2.5 cm.

Fl. April-September.

Distribution: subtropical and tropical regions.

Uses: Used to treat sore throat, digestive issues, and inflammation.Fruits are rich in vitamins, antioxidants, and are consumed fresh or in jams and syrups.Cultivated for its shade and aesthetic appeal in gardens.

Family: Myrtaceae

Eucalyptus alba Reinw. ex Blume, Bijdr. Fl. Ned. Ind. 17: 1101.

Trees, medium sized. Bark grayish white, smooth, exfoliating. Young leaves 3 or 4 pairs, opposite, petiolate; leaf blade ovate-lanceolate. Intermediate leaves alternate; leaf blade ovate to triangular, ca. 7.5 cm. Mature leaves; with a slightly weak 2-3 cm petiole; leaf blade broadly lanceolate to lanceolate, 10-13 × 2-4 cm, secondary veins at an angle of ca. 45° from midvein and inconspicuous on both surfaces, apex long and acutely pointed. Inflorescences axillary, simple, umbels 3-7-flowered; peduncle 1.5-2 cm, compressed. Flower buds elliptic, 8-9 mm. Hypanthium 4-5 mm; stipe 0-3 mm; calyptra slightly obtuse conic to slightly acute, shorter than hypanthium. Stamens 5-6 mm; anthers dorsifixed, dehiscing longitudinally. Capsule semiglobose to bowl-shaped, ca. 6 mm; disk broad or narrow; valves 3-5, exserted from hypanthium.

Fl. May- Dec

Distribution: is native to Southeast Asia, particularly found in Indonesia, Malaysia, and Papua New Guinea.

Uses: Leaves produce essential oils used for treating respiratory issues and as an antiseptic.Wood is used for construction, firewood, and making tools. Planted for soil stabilization, windbreaks, and reducing erosion.

Eucalyptus globularis hort. ex DC., Prodr. [A. P. de Candolle] 3: 219 (1828).

An aromatic tree. Commonly attains the height of 150-180 ft. (45.7-54.9 m) and a diameter of 4-7 ft. (1.2-2.1 m). It has a straight trunk up to two-thirds of its total height and a well-developed crown. Leaves are glossy, dark green, thick and leathery. They average in length from 5.9-7.9 in. (15-20 cm). The leaves of the young shoots are ovate, opposite, and horizontal. They are covered with a grey, waxy bloom which is much thicker on the bottom surface of the leaf. Solitary white flowers with many stamens, arise from the axils on flattened stalks. They range from 1.6-2.2 in. (4-5.5 cm) wide. Sepals and petals are united to form a warty lid which is present on the bud and drops off at flowering. The fruit is a hard, woody globose capsule. The fruit is 0.8-1 in. (2-2.5 cm) across. The numerous seeds are approximately 0.08 in. x 0.04 in. (2 x 1 mm). Seeds are dark brown with a brownish red chaff.

Fl.: Dec-May

Distribution: is native to Southeast Asia, particularly found in Indonesia, Malaysia, and Papua New Guinea.

Melaleuca squamophloia (Byrnes) Craven, Novon 7(2): 118 (1997). *Melaleuca styphelioides* var. *squamophloia* Byrnes in Austrobaileya 2: 74 (1984)

Trees or shrubs. Leaves alternate or opposite-decussate, petiolate or sessile; leaf blade leathery, secondary veins basal and parallel to leaf axis or pinnate. Flowers bisexual or female sterile, arranged in spikes or heads and pseudoterminal or lateral. Hypanthium subglobose or campanulate. Sepals 5, caducous or persistent. Petals 5. Stamens numerous, greenish white; filaments basally connate into 5 bundles opposite petals; anthers dorsifixed, cells parallel, dehiscing longitudinally. Ovary slightly adnate to hypanthium, 3-loculed, apex prominent; ovules numerous. Style linear; stigma ± enlarged. Capsule semiglobose to globose, apically dehiscing. Seeds obovoid-oblong to obovoid; testa thin; embryo straight.

Fl. May- Aug.

Distribution: About 280 species: mainly in Australia, but also in Indonesia, New Caledonia, and Papua New Guinea; several species cultivated in China but only one commonly cultivated.

Uses: The essential oil from leaves is used for treating colds, coughs, and respiratory issues.Provides durable wood for construction, furniture, and paper production.Leaves and oil are used in perfumes, soaps, and insect repellents.

Melaleuca citrina (Curtis) Dum.Cours., Bot. Cult. 3: 282 (1802). *Callistemon citrinus* (Curtis)

Skeels in Bull. Bur. Pl. Industr. U.S.D.A. 282: 49 (1913). *Callistemon lanceolatus* Sweet in Hort. Brit.: 155 (1826), nom. superfl. *Callistemon lanceolatus* var. *sparsus* Regel in Index Seminum (LE, Petropolitanus) 1856: 39 (1856), nom. superfl. *Metrosideros citrina* Curtis in Bot. Mag. 8: t. 260 (1794). *Metrosideros lanceolata* Sm. in Trans. Linn. Soc. London 3: 272 (1797), nom. superfl.

An evergreen shrub or small tree, often growing between 1 to 4 meters in height, although some species can reach up to 10 m. Leaves are long, narrow, and lanceolate, measuring about 3-7 cm in length and 0.5-1 cm in width. They are typically leathery and have a pointed tip with a prominent midrib. Leaves are aromatic when crushed, releasing a citrus-like fragrance. Flowers are its most distinctive feature, arranged in dense, cylindrical spikes that resemble a bottle brush. Spikes are usually 5-10 cm long and 3-5 cm in diameter. Flowers come in vibrant colors, most commonly red or crimson, though they can also be pink, white, or greenish-yellow. The prominent stamens give the flower spikes their characteristic brush-like appearance. Fruit is a woody capsule, about 5-10 mm in dm, containing numerous tiny seeds. These capsules remain on the plant for several years before releasing their seeds.

Fl. May- Aug.

Distribution: Throughout India.

Uses: *Callistemon* is widely cultivated for its ornamental value. The striking, brush-like flowers and attractive foliage make it a popular choice for gardens

and landscapes. It is often planted in parks, gardens, and along streets for decorative purposes.

Psidium guajava L., Sp. Pl. 1: 470 (1753).*Guajava pyrifera* Kuntze in Revis. Gen. Pl. 1: 239 (1891). *Myrtus guajava* (L.) Kuntze in Revis. Gen. Pl. 3(2): 91 (1898). *Myrtus guajava* var. *pyrifera* (Kuntze) Kuntze in Revis. Gen. Pl. 3(2): 91 (1898), not validly publ. *Psidium pyriferum* L. in Sp. Pl., ed. 2.: 672 (1762), nom. superfl.

Trees, to 13 m tall. Bark gray, smooth, peeling in strips. Branchlets angular, pubescent. Petiole ca. 5 mm; leaf blade oblong to elliptic, 6-12 × 3.5-6 cm, leathery, abaxially pubescent, adaxially slightly rough, secondary veins 12-15 on each side of midvein and usually impressed, reticulate veins obvious, base rounded, apex acute to obtuse. Flowers solitary or 2 or 3 in cymes. Hypanthium campanulate, ca. 5 mm, pubescent. Calyx cap nearly rounded, 7-8 mm, irregularly opening. Petals white, 1-1.4 cm. Stamens 6-9 mm. Ovary adnate to hypanthium. Style as long as stamens. Berry globose, ovoid, or pyriform, 3-8 cm, with persistent calyx lobes at apex; flesh white or yellow; placenta reddish, well developed, fleshy. Seeds many.

Fl.March-July

Distribution: Cultivated and sometimes naturalized in Guangdong, Guangxi, Guizhou, Hainan, Sichuan, Taiwan, and Yunnan [native to tropical America.

Uses: Fruits are rich in vitamin C and antioxidants, consumed fresh or processed into juices and jams.

Syzygiumcumini(L.) Skeels, U.S.D.A. Bur. Pl. Industr. Bull. 248: 25. 1912. *Calyptranthes cumini* (L.) Pers. in Syn. Pl. 2: 32 (1806). *Eugenia cumini* (L.)

Druce in Rep. Bot. Exch. Club Soc. Brit. Isles 3: 418 (1913 publ. 1914). *Myrtus cumini* L. in Sp. Pl.: 471 (1753)

Trees, 6-20 m tall. Branchlets grayish white when dry, terete. Petiole 1-2 cm; leaf blade broadly elliptic to narrowly elliptic, 6-12 × 3.5-7 cm, leathery, abaxially slightly pale when dry, adaxially brownish green to blackish brown and slightly glossy when dry, both surfaces with small glands, secondary veins numerous, 1-2 mm apart, and gradually extending into margin, intramarginal veins ca. 1 mm from margin, base broadly cuneate to rarely rounded, apex rounded to obtuse and with a short cusp. Inflorescences axillary on flowering branches or occasionally terminal, paniculate cymes, to 11 cm. Hypanthium obconic or long pyriform, ca. 4 mm or 7-8 mm. Calyx lobes inconspicuous, 0.3-0.7 mm. Petals 4, white or light purple, coherent, ovate and slightly rounded, ca. 2.5 mm. Stamens 3-4 mm. Style as long as stamens. Fruit red to black, ellipsoid to pot-shaped, 1-2 cm, 1-seeded; persistent calyx tube 1-1.5 mm.

Fl. Feb-Mar or Apr-May, **Fr**. Jun-Sep.

Distribution: Bhutan, India, Indonesia, Laos Nepal, Sri Lanka, Australia, Thailand and Vietnam.

Uses: Used to manage diabetes, digestive issues, and liver problems.Fruits are rich in vitamin C, iron, and antioxidants, often consumed fresh or in juices. The timber is durable and used for making furniture and construction materials

Family: Oxalidaceae

Averrhoa carambola L., Sp. Pl. 1: 428. 1753.

Plants 3-12(-15) m tall, densely branched, young parts finely pubescent or glabrous. Leaves 7-25 cm; petiole 2-8 cm; leaflets (3-)5-13; petiolules 1-2.5 mm; leaflet blades ovate to elliptic, 3-8 × 1.5-4.5 cm, abaxially pubescent to nearly glabrous, base obliquely rounded, apex acute to acuminate. Inflorescences axillary or rameal, panicles or cymes, branches and flower buds crimson. Flowers numerous, small. Sepals narrowly elliptic, 3-5 mm, base sparingly pubescent. Petals white with purple markings or pink to red with darker markings, 6-9 × 3-4 mm. Shorter stamens sterile, occasionally 1 or 2 fertile. Ovary pubescent. Berry yellow to yellow-brown, oblong, 7-13 × 5-8 cm, deeply (3-)5(or 6)-ribbed, stellate in cross section, very fleshy. Seeds numerous, blackish brown.

Fl. Apr-Dec, **Fr**. Jul-Dec.

Distribution: Fujian, Guangdong, Guangxi, Guizhou, Hainan, Sichuan, Taiwan, Yunnan [native to tropical SE Asia].

Uses: Fruit is rich in vitamin C, antioxidants, and low in calories, commonly eaten fresh or in juices. Also used in traditional medicine to treat fever, sore throats, and digestive disorders.

Oxalis corniculataL. Sp. Pl. 435, 1753; Hook. F. In Fl. Brit. Ind. 1: 436, 1872; Duthie, Cat. Pl. Kumoan 28, 1906; Collett, Fl. Siml. 71, 1921.

A diffuse, creeping annual herb. Stem much branched, rooting at joints. Leaves 3- foliate, long petioled; stipules adnate to the petiole; leaflets pale green, obcordate. Flowers yellow,

subumbellate, long stalked. Petals twice as long as the calyx. Bracts setaceous.

Fl. &**Fr**.: April-June.

Distribution: Throughout India; Indonesia, Bhutan.

Uses: Used in traditional medicine to treat digestive issues, skin infections, and as an anti-inflammatory. Leaves and stems are edible, often consumed in salads or as a tangy flavoring due to their sour taste. Acts as a ground cover plant, helping in soil stabilization and preventing erosion.

Family: Oleaceae

Nyctanthes arbor-tristis L., Sp. Pl. 1: 6 (1753). *Nyctanthes tristis* Salisb. in Prodr. Stirp. Chap. Allerton: 11 (1796), nom. superfl. *Parilium arbor-tristis* (L.) Gaertn. in Fruct. Sem. Pl. 1: 234 (1788).

Small to medium-sized deciduous tree with a spreading canopy. The leaves are dark green, elliptical, and arranged oppositely on the branches. The plant produces fragrant, white flowers with orange tubular centers which blooms at night and fall off by the next morning. Fruit is a small, round capsule containing seeds.

Fl. Sep-Oct.

Distribution:Assam, Bangladesh, Cambodia, East Himalaya, India, Jawa, Laos, Nepal, Sumatera, Thailand, Vietnam, Andaman Is., Malaya, Nicobar Is., Trinidad-Tobago.

Uses: Flowers are used to make perfumes, essential oils, and in aromatherapy. Revered in various cultures, the flowers are used in religious rituals and ceremonies.

Olea ferruginea Royle, Ill. Bot. Himal. Mts. [Royle] 267. *Olea chrysophylla* var. *cuspidata* (Wall. ex G.Don) A.Chev. in Rev. Bot. Appl. Agric. Trop. 28: 18 (1948). *Olea cuspidata* Wall. ex G.Don in Gen. Hist. 4: 49 (1837). *Olea europaea* var. *cuspidata* (Wall. ex G.Don) Cif. in Olivicoltore 19(5): 96 (1942).

Trees or shrubs, up to 10 m high, greyish green. Bark smooth when young, peeling off in narrow strips when old. Leaves oblong-lanceolate to ovate, 3-10 cm long, often cuspidate, very coriaceous, dark green and shining above, with a dense film of minute scales beneath which turn reddish brown on older leaves, margins recurved, midrib prominent; petiole short. Flowers whitish, in trichotomous axillary 2-4 cm long cymes. Calyx truncate or with 4 short teeth. Corolla tube very short, lobes 4, 1-2 mm long, elliptic, obtuse or acute, with a ridge along the middle. Drupe c. 8 mm long, 5 mm in diameter, ovoid, black when ripe; pulp scanty, oily.

Fl.: April-May, sometimes in Sept. **Fr**.: Aug-Nov.

Distribution: Afghanistan, Pakistan, Kashmir.

Uses: Wood is durable and used in construction and making tools. Leaves and bark are sometimes used in traditional remedies and for preparing herbal infusions.

Olea europaea subsp. *cuspidata* (Wall. &G.Don) Cif. Olivicoltore 19(5): 96 (1942).*Oleaferruginea*Royle, Ill. Bot. Himal. Mount. 267. *Olea chrysophylla* var. *cuspidata* (Wall. ex G.Don) A.Chev. in Rev. Bot. Appl. Agric. Trop. 28: 18 (1948). *Olea cuspidata* Wall. ex G.Don in Gen. Hist. 4: 49 (1837). *Olea europaea* var. *cuspidata* (Wall. ex G.Don) Cif. in Olivicoltore 19(5): 96 (1942).

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Fl.: April-May, sometimes September. Fr: Aug-Nov.

Distribution: Afghanistan, Pakistan, Kashmir.

Uses: Wood is hard and durable, used for making furniture, tools, and crafts. Fruits are sometimes consumed in pickled form, and the oil is used for cooking and in cosmetics.

Family: Phyllanthaceae

Phyllanthus emblica L., Sp. Pl. 2: 982 (1753). *Cicca emblica* (L.) Kurz in Forest Fl. Burma 2: 352 (1877). *Diasperus emblica* (L.)

Kuntze in Revis. Gen. Pl. 2: 599 (1891). *Emblicofficinalis* Gaertn. in Fruct. Sem. Pl. 2: 122 (1790).A monoecious glabrous or pubescent deciduous tree, up to 15-20 in. Bark grey, smooth. Wood red, hard. Intermediate shoots up to 20 cm long, solitary or fascicled, resembling pinnate leaves but usually floriferous towards the base, falling as a unit; short shoots not strongly developed. Cataphylls triangular. lanceolate, 2 mm long, acuminate, brownish-black. Foliage-leaves up to 80-150 per shoot, closely distichous; petioles 0.5 mm long; leaf-blades linear-oblong, 0.5-1.6 x 0.1-0.3 cm., usually obtuse, sometimes acute or subacute, somewhat obliquely rounded to subcordate at the base, margin thickened and inrolled, firmly chartaceous, lateral nerves 4-9 pairs, sometimes indistinct, light green above, paler and somewhat greyish beneath. Stipules of the cataphylls triangular-ovate, 1.5 mm long, acuminate, brownish-black; those of the leaves lanceolate, 0.7 mm long, reddish-brown. Proximal nodes barren, leafless, next ♂, then with ♂ & ♀ flowers, distally barren again but leafy. Male flowers: pedicels slender, 1-2 mm long; sepals 6, oblong-oblanceolate, 1.5-2 x 0.5-0.7 mm, obtuse or rounded, entire, yellowish-green with a pale hyaline margin; disc of 6 small clavate glands or 0; stamens 3, the filaments completely connate into a short terete column, anthers sessile, distinct, erect, oblong, apiculate, 0.8 mm long, the sacs parallel, longitudinally dehiscent. Female flowers subsessile; sepals thicker than the ♂ and somewhat denticulate, otherwise similar; disc urceolate, 1.5 mm high, completely enclosing the ovary, 6-ribbed, lacerate at the top; ovary ovoid, 3-celled, c. 1 mm diam., smooth; styles 3, stout, fleshy, c. 4 mm long, united at the base, bipartite, the segments flattened, spreading, sometimes bifid. Fruit sub-globose, 2.5 cm in dm when fresh, smooth, succulent, greenish or yellowish-white; endocarp massive, woody, 6-ridged,

tardily dehiscent, c. 2 mm thick. Seeds somewhat unequal, trigonous or plano-convex, 4-6 x 2.5-3 x 2-3 mm, 3 smooth, dark chestnut-brown.

Fl.: March-May; **Fr**.: September-November.

Distribution: Almost throughout India.

Uses: Widely used in Ayurvedic medicine for boosting immunity, improving digestion, and treating inflammation. Rich in vitamin C and antioxidants, the fruit is consumed fresh, dried, or in juices and jams.Amla oil is popular in hair care for promoting hair growth and preventing premature graying.

Phyllanthus urinaria L., Sp. Pl. 2: 982. 1753. *Diasperusurinaria*(Linnaeus) Kuntze; *Phyllanthus alatus* Blume; *P.cantoniensis*Hornemann; *P. cantoniensis*Schweigger (1812), not Hornemann (1807); *P. chamaepeuce*Ridley; *P. lepidocarpus*Siebold& Zuccarini; *P. leprocarpus*Wight; *P. nozeranii*Rossignol&Haicour.

Annual herbs, erect or procumbent, up to 80 cm tall; stem much branched at base; branches prostrate to ascending, winged, hispidulous along one side. Leaves distichous; stipules ovate-lanceolate, ca. 1.5 mm, base conspicuously auriculate; petiole very short; leaf blade papery, oblong or oblong-obovate or nearly linear, sometimes slightly falcate, 4-10 × 2-5 mm, abaxially gray-green or pale, or sometimes reddish tinged, adaxially bright or dark green, base mostly obtuse, sometimes conspicuously oblique, margin ciliate, apex rounded, obtuse, or acutely mucronulate; lateral veins 4 or 5 pairs, conspicuous. Plants monoecious. Flower fascicles male along distal part of branchlets, 2-4-flowered, female along middle and lower part of branchlets, 1-flowered; pedicel ca. 0.5 mm, with 1-2 bracteoles at base. Male flowers: sepals 6, elliptic to oblong-obovate, 0.3-0.6 × 0.2-0.4 mm, yellowish white, apex obtuse; disk glands 6, green; stamens 3; filaments completely united

into a slender column. Female flowers: pedicels ca. 0.5 mm; sepals 6, ovate to ovate-lanceolate, subequal, ca. 1 mm, margin membranous, yellowish white, persistent in fruit; disk orbicular, entire; ovary ovoid or spherical, with conspicuous raised scales; styles 3, free, bifid at apex, lobes revolute. Capsules globose, 2-2.5 mm in diam., with reddish blotches, scurfy-tuberculate. Seed 3-sided, 1-1.2 × 0.9-1 mm, light grayish brown, with 12-15 sharp transverse ridges on back and sides, often with 1-3 deep circular pits on side.

Fl. Apr-Jun, **Fr**. Jul-Nov.

Distribution: Almost throughout India.

Uses: Known for its detoxifying properties and used to cleanse the liver and improve digestion.

Family: Platanaceae

Platanus orientalis L., Sp. Pl. 2: 999. 1753. *Platanus orientalis* f. *liquidambarifolia* K.Koch in Dendrologie 2(1): 467 (1856), not validly publ.*Platanus umbrosa* Salisb. in Prodr. Stirp. Chap. Allerton: 393 (1796), nom. superfl. *Platanus vulgaris* Spach in Ann. Sci. Nat., Bot., sér. 2, 15: 291 (1841), nom. superfl.*Platanus vulgaris* var. *liquidambarifolia* Spach in Ann. Sci. Nat., Bot., sér. 2, 15: 292 (1841), not validly publ.*Platanus vulgaris* proles *orientalis* (L.) Cadevall in Fl. Catalunya 5: 192 (1935). *Platanus vulgaris* subsp. *orientalis* (L.) Bonnier

&Layens in Tabl. Syn. Pl. Vasc. France: 289 (1894), not validly publ.

Deciduous tree, upto 30 m tall. Young branchlets yellow-brown tomentose, old ones glabrous, becoming red-brown after drying, small lenticellate. Stipules less than 1 cm; petiole terete, 3–8 cm, tomentose; leaf blade broadly ovate, 9–18 × 8–16 cm, deeply 5- or 7-lobed, both surfaces gray-yellow pubescent at first, glabrate and then pubescent only along veins abaxially, principal veins 3 or 5, arising from base, base shallowly cordate or subtruncate; central lobe 7–9 × 4–6 cm, margin lobed; lateral lobes shorter, margin coarsely dentate. Flowers 4-merous. Male flowers: sepals short, small; stamens much longer than petals; filaments very short; anthers elongate. Female flowers: sepals pubescent; petals oblanceolate; carpels 4; styles elongate, apex crispate.Fruiting branchlets with (2 or)3–5 infructescences. Infructescence capitate, 2–2.5 cm in diam. Achenes with persistent style spiniform, 3–4 mm; basal hairs yellow; both styles and hairs exserted from infructescence.

Fl. Mar–May, **Fr**. Jun–Oct.

Distribution: Jammu and Kashmir.

Uses: Cultural Significance: Over time, the Chinar tree became deeply rooted in the cultural and social fabric of Kashmir. It is often seen as a symbol of resilience and longevity, given its impressive size and long lifespan. The tree is also associated with local folklore and traditions.

Family: Palantaginaceae

Plantago lanceolata L., Sp. Pl. 1: 113. 1753. *Arnoglossum lanceolatum* (L.) Gray in Nat. Arr. Brit. Pl. 2: 293 (1821 publ. 1822). *Lagopus lanceolatus* (L.)

Fourr. in Ann. Soc. Linn. Lyon, n.s., 17: 140 (1869). *Plantago lanceifolia* Salisb. in Prodr. Stirp. Chap. Allerton: 47 (1796), nom. superfl.

Herbs, perennial. Taproot long and thick. Leaves basal, glabrous or pubescent; petiole tenuous, 2-10 cm; leaf blade linear-lanceolate, lanceolate, or elliptic-lanceolate, 6-20 × 0.5-4.5 cm, papery, veins (3 or)5(or 7), base narrowly cuneate and decurrent onto petiole, margin entire or remotely denticulate, apex acuminate to acute. Spikes conic-ovoid at first but later capitate to shortly cylindric, 1-5(-8) cm, densely flowered; peduncle 10-60 cm, 5-sulcate, appressed pubescent; bracts ovate to elliptic, 3.5-5 mm, densely hirsute, keel spatulate, apex scarious and caudate. Sepals 2-3.5 mm, abaxially usually hirsute, keel narrow and not extending to apex; lower sepals connate to near apex, broadly obovate, 2-keeled, margin with sparse trichomes; upper sepals distinct, broadly ovate. Corolla white, glabrous; lobes ovate-lanceolate, 1.5-3 mm, patent to reflexed, apex shortly acuminate. Stamens adnate to near middle of corolla tube, exserted; anthers white or yellowish, ellipsoid, 2.5-3 mm. Pyxis narrowly ovoid, 3-4 mm, circumscissile near base, with (1 or)2 seeds. Seeds brown to dark brown, 325 narrowly ellipsoid to oblong, 2-2.6 mm, shiny, with a broad groove on ventral face; cotyledons vertical to ventral side.

Fl. May-Jun, **Fr**. Jul-Aug.

Distribution: Jammu and Kashmir, Himachal Pradesh, Maharashtra, Punjab, Tamil Nadu. Uses: Medicinal**:** Used to treat respiratory issues, coughs, wounds, and inflammation due to its anti-inflammatory and antimicrobial properties. Leaves are edible and can be used in salads or as a herbal tea.Often grown as a ground cover plant to prevent soil erosion and improve soil quality.

Family: Plumbaginaceae

Plumbago zeylanica L., Sp. Pl. 1: 151. 1753.

Perennial herbs or shrubs, erect, 1--3 m tall, evergreen. Branches spreading, often lianous. Petiole base sometimes auriculate; leaf blade ovate, 5- 8X (1.8) 2.5-4 cm, thin, base cuneate to obtuse, apex acuminate and mucronate.Inflorescences spicate-racemose, (3--)5--70-flowered; peduncle 0.5--1.5 cm,glandular; rachis glandular, (2--)3--8(--15) cm; bracts subovate, 4--6(--8) X (1--)1.5--2(--2.5) mm, apex acuminate; bractlets linear, ca. 2 X 0.5 mm. Calyx 1.0--1.2 cm, to 1.3 cm after anthesis, glandular almost throughout, tube ca. 2 mm in diam. at middle.Corolla white to pale bluish white, tube 1.8--2.2 cm, limb 1.6--1.8 cm in diam.; lobesobovate to oblong-lanceolate, ca. 7 X (2--)4 mm, apex mucronate to acuminate.Anthers blue, ca. 2 mm. Ovary ellipsoid, 5-angular. Style glabrous. Capsules paleyellow-brown, oblong. Seeds red-brown, ca. 7 X 1.5 X 0.6 mm, apex acute.

Fl. Oct-Mar, **fr.** Dec-Apr.

Distribution: Almost throughout India.

Uses: The plant is used to treat skin infections, leprosy, scabies, ringworm, dermatitis, acne, sores, and ulcers.

Family: Poaceae

Avena sativa L., Sp. Pl. [Linnaeus] 1: 79 (1753). *Avena dispermis* Mill. in Gard. Dict., ed. 8.: n.° 1 (1768), nom. superfl. *Avena fatua* var. *sativa* (L.) Hausskn. in Mitt. Geogr. Ges. (Thüringen) Jena 3: 238

(1884 publ. 1885). *Avena fatua* subsp. *sativa* (L.) Thell. in Vierteljahrsschr. Naturf. Ges. Zürich 56: 325 (1911). *Avena sativa* convar. *patula* Alef. in Landw. Fl.: 320 (1866), not validly publ.

An annual grass that typically grows to a height of 1-1.5 meters (3-5 feet). It has a fibrous root system and produces erect stems (culms) with elongated leaves. Leaves of *Avena sativa* are linear and narrow, up to 30-60 cm (12-24 inches) long and 1-2 cm (0.4-0.8 inches) wide. They have parallel veins and a membranous ligule at the junction of the leaf blade and sheath. The inflorescence of oats is a terminal panicle, which is loosely branched with spikelets. Each spikelet contains multiple florets arranged alternately along the axis. Flowers are small and inconspicuous, typically wind-pollinated. They have no petals but are enclosed within two chaffy bracts. Fruit is a caryopsis, commonly known as a grain or oat seed. It is small, elliptical, and encased within the persistent lemma and palea of the floret.

Fl. Feb-May.

Distribution: Throughout India.

Uses: Oats are widely consumed as a healthy food, rich in fiber, vitamins, and minerals, often in oatmeal or baked goods.Oats are commonly used as feed for livestock, especially horses and cattle.

Cymbopogon citratus (hort. ex DC.) Stapf, Bull. Misc. Inform. Kew 1906(8): 322, 357 (1906). *Andropogon citratus* DC. in Cat. Pl. Horti Monsp.: 78 (1813). *Cymbopogon nardus* subvar. *citratus* (DC.) Roberty in Boissiera 9: 174 (1960).

Perennial, shortly rhizomatous. Culms tufted, robust, up to 2 m tall, ca. 4 mm in diam., farinose below nodes. Leaf sheaths glabrous, greenish inside; leaf blades glaucous, 30–90 × 0.5–2 cm, both surfaces scabrid, base gradually narrowed, apex long acuminate; ligule ca. 1 mm. Spathate compound panicle large, lax, up to 50 cm, drooping, branches slender; spatheoles reddish or yellowish brown, 1.5–2 cm; racemes 1.5–2 cm; rachis internodes and pedicels 2.5–4 mm, loosely villous on margins; pedicel of homogamous pair not swollen. Sessile spikelet linear-lanceolate, 5–6 × ca. 0.7 mm; lower glume flat or slightly concave toward base, sharply 2-keeled, keels wingless, scabrid, veinless between keels; upper lemma narrow, entire and without awn, or slightly 2-lobed with ca. 0.2 mm mucro. Pedicelled spikelet 4–5 mm. Fl. and fr. summer. 2*n* = 40.

Fl. and Fr. Summer

Distribtuion: Commonly cultivated. Fujian, Guangdong, Guizhou, Hainan, Hubei, Taiwan, Yunnan, Zhejiang [origin unknown; cultivated in tropical Asia and elsewhere].

Uses: Used to treat digestive issues, reduce fever, and alleviate anxiety due to its anti-inflammatory and antimicrobial properties.Commonly used as a flavoring in cooking, particularly in Southeast Asian dishes, for its fresh, citrusy taste. Leaves are used in essential oils for aromatherapy, promoting relaxation and relieving stress.

Cynodon dactylon (L.) Pers., Syn. Pl. 1:85. 1805. Stewart, Punjab Pl. 253. 1869; Boiss., Fl. Or. 5:553. 1884; Duthie, Fodder Grasses 52. 1888:Hook. f., Fl. Brit. Ind. 7:288. 1896; Blatter & McCann, Bombay Grasses 250. 1935;

Bor, Fl. Assam 195 5:125. 1940; Sultan & Stewart, Grasses W. Pak. 2:274. 1959; Bor, Grasses Burma .Ceyl. Ind. Pak. 469. 1960; Bor in Towns., Guest & Al-Rawi, Fl. Iraq 9: 454. 1968; Bor, in Rech. f., Fl. Iran. 70:450. 1970; DeWet & Harlan in Taxon 19:565. 1970; Lazarides in Aust. J. Bot. Suppl. 5:39. 1972; Tzvelev, Poaceae URSS 642. 1976; Tutin in Tutin et al., Fl. Eur. 5:259. 1980.

Stoloniferous sward-forming perennial with slender underground rhizomes. Culms slender, up to 40 cm high. Leaf-blades often short and narrow, 2-12 cm long, 2-4 mm wide, glaucous, scaberulous, with or without scattered hairs, auricles and orifices bearded; ligule a short ciliolate rim about 0.3 mm long. Racemes usually 4-6, 2-7 cm long in a single whorl. Spikelets 2-2.5 (-3) mm long; glumes lanceolate, 1-nerved; lemma silky-pubescent on the keel with simple hairs, lateral nerves often glabrous; palea glabrous, scaberulous on the keels; anthers more than 1 mm long; caryopsis usually turgid or scarcely laterally compressed.

Fl. & **Fr**.: All year round.

Distribution: Throughout the India.

Uses: Commonly used as livestock feed, especially for grazing animals like cattle and goats.Widely used in lawns, sports fields, and golf courses due to its drought tolerance and hardiness

Dendrocalamus strictus Nees, Linnaea 9(4): 476 (1835).*Bambos stricta* Roxb. in Pl. Coromandel 1: 58 (1798).*Bambusa stricta* (Roxb.) Roxb. in Fl. Ind., ed. 1832. 2: 193 (1832). *Nastus strictus* (Roxb.) Sm. in A.Rees, Cycl. 24: n.° 2 (1813).

Culms 7–17 m,6–10 cm in dm.; internodes 30–45 cm, white powdery; wall thick, culm often solid. Branches several, main mid-culm ones 3. Culm sheaths deciduous, orange-brown, ca. 3/4 as long as internodes, thickly papery, margins ciliate, apex rounded; auricles absent; ligule 1–3 mm, serrulate; blade erect, narrowly triangular. Leaf sheaths initially sparsely hairy, becoming glabrous; ligule short, serrulate; blade usually narrowly lanceolate, 5–30 × 1–3 cm. Pseudospikelet clusters 2.5–5 cm in diam. Spikelet 8–15 mm, usually densely pubescent; fertile florets 2–4. Glumes 2 or more, 6–8 mm, long mucronate; lemma 9–10 mm, apex long mucronate; palea 8–9 mm. Anthers yellow, ca. 5 mm, connective apically produced. Ovary turbinate; style ca. 6.5 mm; stigmas 1. Caryopsis 6–8 mm.

Fl. Dec-Jan.

Distribution: India: Assam, Meghalaya, Mizoram, Tripura, West Bengal, Odisha, Western Peninsula; Bangladesh, Myanmar, Thailand.

Uses: Strong, durable bamboo poles are used for building houses, scaffolding, furniture, and other structures. Bamboo is used for making handicrafts, baskets, mats, and other woven items.Plays a role in soil erosion control and is used for reforestation due to its fast growth and root system.

Thysanolaena latifolia (Roxb. ex Hornem.) Honda , J. Fac. Sci. Univ. Tokyo, Sect. 3, Bot. 3: 312 (1930). *Melica latifolia* Roxb. ex Hornem. in Hort. Bot. Hafn., Suppl.: 117 (1819). *Neyraudia acarifera* (Roxb. ex Hornem.) Conert in Bot. Jahrb. Syst. 78: 240 (1959). *Panicum acariferum* Trin. in Sp. Gram. 1: t. 87 (1827), nom. superfl. *Thysanolaena*

acarifera Arn. & Nees in C.G.D.Nees von Esenbeck, Gramineae: 49 (1841), nom. superfl.

Culms 1–3 m tall, hard, unbranched, often arching. Leaf sheaths smooth; leaf blades broadly lanceolate-oblong, leathery, up to 40 × 3–7 cm; ligule truncate, 1–2 mm. Panicle up to 60 cm, open or contracted; main branches 1–3 per node, pilose in axils, bare of spikelets in lower part, lowest branch up to 30 cm; pedicels ca. 2 mm. Spikelets 1.5–1.8 mm; glumes 1/5–1/4 spikelet length, ovate-lanceolate; lower lemma as long as spikelet; upper lemma slightly shorter than lower lemma, marginal hairs rigid, to 1 mm, spreading at maturity, apex slightly recurved. Anthers brown, 0.5–1 mm. Caryopsis oblong, ca. 0.5 mm.

Fl. and Fr. May-Sep.

Uses: The long, sturdy leaves are traditionally used for making thatched roofs in rural areas. In some cultures, it is used in herbal medicine to treat fever and digestive issues.Planted for soil stabilization and controlling erosion due to its dense root system.

Setaria pumila Schult., Mant. 2 (Schultes) 274 (1824). *Panicum glaucum* var. *pumilum* (Poir.) Asch. &Graebn. in Syn. Mitteleur. Fl. 2(1): 78 (1899). *Panicum imberbe* var. *pumilum* (Poir.) Nees in C.F.P.von Martius, Fl. Bras. Enum. Pl. 2: 240 (1829). *Panicumpumilum* Poir. in J.B.A.M.de Lamarck, Encycl., Suppl. 4: 273 (1816). *Setaria glauca* var. *pumila* (Poir.) Hegi in Ill. Fl. Mitt.-Eur. 1: 191 (1907). *Setaria lutescens* f. *pumila* (Poir.) Soó in Acta Bot. Acad. Sci. Hung. 17: 124 (1971 publ. 1972)

Annual. Culms erect or geniculate, 20–90 cm tall, smooth or scabrous just below inflorescence, nodes glabrous. Leaf sheaths keeled, glabrous; leaf blades linear, 5–40 × 0.2–1 cm, abaxial surface smooth, adaxial surface scabrous or pilose at base; ligule ca. 1 mm. Panicle densely cylindrical, 3–17 × 0.4–0.8 cm; branches reduced to a single mature spikelet subtended by 5–10 or more bristles (sometimes an aborted spikelet also present); axis pubescent; bristles gold, brownish gold or sometimes purple, 2–3 times spikelet length. Spikelets broadly ovate, (2.2–)2.5–3.5 mm; glumes ovate; lower glume 1/3–1/2 as long as spikelet; upper glume 1/2–2/3 as long as spikelet; lower floret usually staminate; lower palea hyaline, ovate, matching the upper floret in size and shape, keels narrowly winged; upper lemma broadly ovate, coarsely rugose. Fl. and fr. Jun–Oct. 2*n* = 18, 36.

Fl&**Fr**. June-October.

Distribution: Waste places, mountain slopes, roadsides, forest margins. Anhui, Beijing, Fujian, Guangdong, Guizhou, Hainan, Heilongjiang, Henan, Hubei, Hunan, Jiangxi, Ningxia, Shaanxi, Shandong, Shanghai, Sichuan, Taiwan, Xinjiang, Xizang, Yunnan, Zhejiang [originally from temperate and subtropical Asia and Europe, but now widespread].

Uses: Used as a feed for livestock, especially in areas where other forage grasses are scarce.Helps in preventing soil erosion by stabilizing the soil with its dense root system.

Family: Polygonaceae

Bistorta amplexicaulis (D. Don) Green in Leafl. 1: 21. 1904; Hara, l.c. 69; in Hara et al., l.c.; Grierson &D.G.Long, l.c. 167; Munshi &Javeid, l.c. 60.

Polygonum amplexicaule D. Don Prodr. Fl. Nepal. 70. 1825; Hook. f., Fl. Brit. Ind. 5: 1886; Kitamura, Fl. Afghan. 89. 1960; Schiman-Czeika&Rech.f., l.c.; R. R. Stewart, l.c. 203; Bhopal & Chaudhri, l.c. 81.

Erect, 35-70 (-100) cm tall, branched or simple, glabrous, perennial, long rhizomatous herb. Stem simple or branched, erect, with few leaves. Leaves 3.0-15 x 1.75-10 cm, broadly lancoelate-ovate, serrate, acuminate, ciliate on midrib and margins, cordate or amplexicaule at base, petiole up to 10 cm long. Ochrea 1.5-5.0 cm long, lanceolate, tubular, acuminate, with two to three long acuminate lobes. Inflorescence 1.5-10.0 cm long, terminal, simple (var. speciosa) or branched (var. alba), many flowered, dense pedunculate raceme, peduncles up to 8.0 cm long. Flowers up to 4.0 mm across, pedicel 1-3 mm long. Ochreolae 3-5 mm long, lanceolate, cartilaginous, with long aristate apex and entire margin. Tepals 5, 2-3.5 x 1.5-2.5 mm, lanceolate to ovate, obtuse, entire, unequal. Stamens 8, filaments thick and short, unequal; anthers dark bluish, subexserted to exserted. Ovary 1-2 x 0.25-0.5 (-0.75) mm, lanceolate, trigonous with three, long, filiform winged and free styles and non-prominent stigma. Nuts 3.0-5.5 x 2.0-3.5 mm, ovate, trigonous and unequal lobes, dark brown to black, glabrous, shining.

Fl. July-Sep.

Distribution: Jammu and Kashmir and Sikkim.

Uses: Cultivated for its attractive pinkish flowers in gardens and landscapes.The plant helps in soil stabilization with its strong root system, making it useful for preventing erosion.

Polygonum aviculare L., Sp. Pl. 1: 362 (-363) (1753). *Centinodia avicularis* (L.) Fourr. in Ann. Soc. Linn. Lyon, n.s., 17: 146 (1869).

Centinodium aviculare (L.) Drejer in Fl. Excurs. Hafn.: 151 (1838). *Polygonum aviculare* subsp. *latifolium* Ehrh. in Hannover. Mag. 18: 221 (1780).

Herbs annual. Stems prostrate, ascending, or erect, 10-40 cm tall, much branched from base. Petiole short or nearly absent, articulate at base; leaf blade lanceolate or narrowly elliptic, 1-4 cm × 3-12 mm, both surfaces glabrous, midvein and lateral veins conspicuous, base cuneate, margin entire, apex acute or nearly obtuse; ocrea: lower part brown, upper part white or throughout brown, membranous, veined, apex lacerate. Flowers 1-5; axillary; bracts thinly membranous. Pedicel slender, articulate at apex. Perianth green, margin white or pinkish, 5-cleft to 2/3-3/4; tepals elliptic, 2-2.5 mm. Stamens 8; filaments dilated at base. Styles 3, free, short; stigmas capitate. Achenes included or slightly exceeding persistent perianth, black-brown, opaque, ovoid, trigonous, 2.5-3 mm, minutely granular striate

Fl. May-Jul, **Fr**. Jul-Aug.

Distribution: Near fields, roadsides, waste places; sea level to 4200 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang, Yunnan, Zhejiang [widely distributed in N temperate zone; widely naturalized in S temperate zone].

Uses: The plant is often used as forage for livestock due to its nutritious leaves and stems.Grown to prevent soil erosion because of its fast-growing and spreading nature.

Persicaria hydropiper (L.) H.Gross, Bot. Jahrb. Syst. 49(2): 315 (1913).*Persicaria acris* Gray in Nat. Arr. Brit. Pl. 2: 268 (1821 publ. 1822), nom. superfl. *Peutalis hydropiper* (L.) Raf. in Fl. Tellur. 3: 14 (1837). *Polygonum acre* Lam. in Fl. Franç. 3: 234 (1779), nom. superfl. *Polygonum gracile* Salisb. in Prodr. Stirp. Chap. Allerton: 259 (1796), nom. superfl. *Polygonum hydropiper* L. in Sp. Pl.: 361 (1753), nom. cons.

Annual herbs. Stem erect, 40-70 cm tall, much branched, glabrous, dilated at nodes. Leaves with peppery taste; petiole 4-8 mm; leaf blade lanceolate or elliptic-lanceolate, 4-8 × 0.5-25 cm, both surfaces glabrous, densely brown punctate, sometimes appressed hispidulous along midvein, base cuneate, margin ciliate, apex acuminate; cleistogamous flowers present in many leaf axils; ocrea tubular, 1-1.5 cm, membranous, sparsely appressed hispidulous, apex truncate, shortly ciliate. Inflorescence terminal or axillary, spicate, pendulous, interrupted below, usually lax, 3-8 cm, slender; bracts green, funnel-shaped, 2-3 mm, margin membranous, sparsely shortly ciliate, each 3-5-flowered. Pedicels longer than bracts. Perianth greenish, white or pink above, 5(or 4)-parted, brownish pellucid glandular punctate; tepals elliptic, 3-3.5 mm. Stamens 6, rarely 8, included. Styles 2 or 3. Achenes included in persistent perianth, black-brown, opaque, ovoid, biconvex or trigonous, 2-3 mm, densely small pitted.

Fl. May-Sep.;**Fr**. Jun-Oct.

Distribution: India: Assam, Kashmir; Bangladesh.

Uses: Leaves are used as a spicy herb in some cuisines, particularly in Southeast Asia.The plant has been used for its antimicrobial properties, particularly in treating skin infections.

Persicaria longiseta (Bruijn) Kitag., Rep. Inst. Sci. Res. Manchoukuo 1: 322 (1937).*Persicaria cespitosa* var. *longiseta* (Bruijn) C.F.Reed in Phytologia 63: 410 (1987)*Polygonum cespitosum* var. *longisetum* (Bruijn) Steward in Contr. Gray Herb. 88: 67 (1930). *Polygonum longisetum* Bruijn in F.A.W.Miquel, Pl. Jungh.: 307 (1854). *Polygonum posumbu* var. *longisetum* (Bruijn) F.Z.Li&C.Y.Qu in Bull. Bot. Res., Harbin 26: 280 (2006),

Annual plants, 3-8 cm in dm; roots also often arising from proximal nodes; rhizomes and stolon absent. Stems decumbent to ascending, branched, without noticeable ribs, glabrous. Leaves: ocrea hyaline to brownish, cylindric, 5-12 mm, chartaceous, base sometimes inflated, margins truncate, ciliate with bristles 4-12 mm, surface glabrous or strigose, not glandular-punctate; petiole 0.1-0.3 cm, glabrous, leaves sometimes sessile; blade without dark triangular or lunate blotch adaxially, ovate-lanceolate to linear-lanceolate, 2-8 × 1-3 cm, base tapering to cuneate, margins antrorsely strigose, apex acute to acuminate, faces glabrous or sparingly strigose along veins abaxially, glabrous or strigose along midvein and margins adaxially, not glandular-punctate. Inflorescences terminal, sometimes also axillary, erect, uninterrupted, 10-40(-80) × 3-7 mm; peduncle 10-50 mm, glabrous; ocreolae overlapping, margins ciliate with bristles (0.5-)1-4(-6) mm. Pedicels ascending, 1-2 mm. Flowers 1-5 per ocreate fascicle, homostylous; perianth pinkish green proximally, roseate distally, glabrous,

not glandular-punctate, scarcely accrescent; tepals 5, connate ca. 1/ 3 their length, obovate, 2.2-2.8 mm, veins not prominent, not anchor-shaped, margins entire, apex obtuse to rounded; stamens 5, included; anthers yellow, elliptic to ovate; styles 3, connate proximally. Achenes included, dark brown to black, 3-gonous, 1.6-2.3 × 1.1-1.6 mm, shiny, smooth.

Fl. May-Sep.;**Fr**. Jun-Oct.

Distribution: China North-Central, China South-Central, China Southeast, India, Inner Mongolia, Japan, Jawa, Khabarovsk, Korea, Kuril Is., Manchuria, Myanmar, Nansei-shoto, Nepal, Pakistan, Philippines, Primorye, Sakhalin, Taiwan, West Himalaya.

Uses:Plant is effective in preventing soil erosion due to its dense root system. It is sometimes used as forage for livestock, providing nutrition in certain regions.

Rumex hastatus D. Don, Prodr. 74. 1825; Hook. f., Fl. Brit. Ind. 5: 60. 1886; Kanjilal, For. Fl. Chakrata 393. 1928; Babu, Herb. Fl. Dehradun 446. 1977. Osmaston, For. Fl. Kumaon 426-437, 1927; Duthie, Cat. Pl. Kumaon 152, 1906.

Perennial erect, suffruticose herbs. Stem slender with a woody base. Leaves on subulate 1.5-10cm long petioles, triangular-hastate, fleshy; punctuate, 1.5 x 1.4cm long; higher ones linear-lanceolate to oblong. Flowers polygamous in small whorls, combined into panicles. Pedicels glandular, thin, 0.2-0.5cm long. Outer tepals

obovate-rounded, greenish purple, 0.12cm long; inner fruiting tepals orbicular, entire, retuse. Nut 3-quetrous, narrowly winged, 0.2-0.22cm long. Fruiting sepals orbicular, not fringed, notched at both ends.

Fl. &**Fr**.: Apr.-Aug.

Distribution: Abundant in exposed places near habitation.

Uses: Leaves are sometimes used as fodder for livestock, especially in regions with limited grazing. Also improve soil quality by accumulating nutrients in its leaves and roots.

Rumex dentatus L., Mant.. Pl. 2: 226. 1771; Hook.f. in fl. Brit. India 5: 59. 1886.

Annuals, erect, glabrous herbs, 30-100cm high, with reddish roots and ribbed hollow stem. Basal leaves in close whorls, much larger to cauline leaves, oblong, 10-16 x 3-7.5cm, obtuse, base rounded or cordate, margins undulate or crisped; petioles of variable size, up to 6.5cm in basal leaves, upper ones subsessile. Flowers 2-sexual, short stalked arranged in leafy or leafless verticillate panicles. Perianth segments broadly ovate, much enlarged in fruits, tubercled on the back, margins irregularly toothed; teeth short, straight, not hooked. Nuts acutely trigonous, brown.

Fl. &**Fr**.: Feb.-May.

Distribution: Submontane Himalayas and adjacent plains, S. India; Myanmar, S. W. China.

Uses: Young leaves can be eaten as a leafy green or used in salads, soups, and teas.Sometimes used as forage for livestock.

Family: Onagraceae

Oenothera rosea L.'Her. ex Ait. Hort. Kew. Ed. 1.2:3.1789; FBI. 2: 582. 1879; FBH. 116. 1977; Sharma &Kachroo, III. Fl. Jammu. t.100. 1983; FK. 298. 1999; 306 FSIR. 306.2004. *Hartmannia rosea* (L'Her. ex Ait.) G. Don in Sweet, Hort. Brit. Ed. 3: 236. 1839.

Annual-biennial herbs. Stems 30-60cm long, erect or suberect, branched, hairy. Leaves 1-4× 0.5-2cm, alternate, obovate, ovate or ovate-lanceolate, appressed-hairy, margins broadly toothed, acuminate; petioles 1-1.5cm long; lower leaves lyrate, upper irregularly toothed. Flowers 1.5-2cm long including the inferior ovary, pink or purple; solitary axillary; pedicle 0.5-1cm long., appressed-hairy. Bracts 1-2cm long, leafy. Floral tube 4-7cm long. Calyx tubular, tube 0.5-1cm long, 4-partite; segments ovate, acute, appressed-hairy, reflexed. Petals 4, 0.4-1cm long, obovate, obtuse, veins prominent. Stamens 8; filaments variable in size, arising from the rounded mouth of the tube. Styles 5mm long; stigma club-shaped, rosy, separable easily into 4 branches. Fruits (capsules) 0.8-1.5cm long., clavate, 4- ridged somewhat winged, appressed-hairy. Seeds many., ovoid, glabrous.

Fl. &**Fr**.: Apr-Oct.

Distribution: Native to Peru, now widely introduced in several parts of World.

Uses: Known for its oil, which is used in treating skin conditions, inflammation, and hormone imbalances. Also grown for its attractive pink flowers, often used in gardens and landscapes.

Family: Proteaceae

Grevillea robusta A. Cunn. ex R. Br., Suppl. Prodr. Fl. Nov. Holl. 24. 1830. *Grevillea robusta* var. forsteri L.H. Bailey in Stand. Cycl. Hort., ed. 2: 1412. 1947. *Grevillea umbratica* A. Cunn. ex Meisn. in DC., Prodr. 14: 381. 1856. *Grevillea venusta* A. Cunn. ex Meisn. in DC., Prodr. 14: 381. 1856. *Hakea robusta* (A. Cunn. ex R. Br.) Christenh. & M.W. Chase in Global Fl. 4: 89. 2018. *Stylurus robustus* (A. Cunn. ex R. Br.) O. Deg. in Fl. Hawaiiensis 98. 1932.

A handsomely straight evergreen tree, 10-25 m tall. Leaves 15-33 cm long; leaflets 7-19; 3-12 cm long, sessile, entire or pinnatifid, olive green above, silver grey silky hairy beneath; margin recurved. Racemes 5-15 cm long, appearing on the old wood, solitary, 2 or a few forming a panicle. Flowers solitary, in twos or threes; pedicel 1- 1.5 cm long, glabrous, leaving a permanent white lenticular scar. Sepals 1.5-2 cm long, hooded, at first all fused together except on one side, later on fused in twos basally and apically, free for the greater length in the middle, these pairs in their turnfree from each other or slightly fused above, orange yellow to orange or golden yellow to lemon yellow with dark red inner base. Stamens sessile; connective not produced beyond the anther cells; anthers about 1 mm long. Disc semi-annular. Gynophore about 2-3 mm long. Ovary glabrous; style lemon yellow, 1-2.5 cm long, dilated at the apex and bearing a greenish-yellow 1 mm long stigmatic cone. Follicle 2-seeded, 1.5-2. cm long, about 1 cm broad, silver grey to olive green, dehiscent. Seeds 1-1.5 cm long, 0.5-1 cm broad, broadly winged, thin, ovate, non-endospermic.

Fl.: March-April.

Distribution: Cultivated in Assam, Kerala, Karnataka, Madhya Pradesh, Maharashtra, Tamil Nadu, Uttar Pradesh.

Uses: Wood is durable and used in furniture making, construction, and as a source of plywood. Grown for its striking yellow and orange flowers, often used in landscaping and as a decorative tree.

Punica granatum L., Sp. Pl. 1: 472. 1753. *Punica nana* L., Sp. Pl. 2: 676. 1762.

Shrubs or small trees, 2-3 m tall, glabrous. Branches and branchlets 4-angled, becoming terete with age, often terminating as indurate spines. Petiole 2-10 mm; leaf blade adaxially shiny, lanceolate, elliptic-oblanceolate, or oblong, 2-9 × 1-2 cm, base attenuate, apex obtuse or mucronate. Floral tube red-orange or pale yellow, campanulate-urceolate, 2-3 × 1-1.5 cm; sepals 5-9, erect, deltate. Petals 5-9, bright red-orange [or white], obovate, 1.5-3 × 1-2 cm, apex rounded or obtuse. Stamens numerous, included to exserted.

Ovary 8-13-loculed, in 2 or 3 superposed layers, lower locules with axile placentation, upper ones with apparent parietal placentation. Fruit globose, leathery berries, variable in color, red to yellow-green or red-brown, 5- 12 cm in diam., crowned by persistent sepals, irregularly dehiscent. Seeds ob-pyramidal within juicy sarcotestal layer, ruby-red, pink, or yellowish white.

Fl. Mar-Jul.

Distribution: Andaman &Nicobar islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Jammu and Kashmir, Jharkhand, Goa, Haryana, Karnataka, Kerala, Madhya Pradesh, Manipur, Meghalaya, Nagaland,

Odisha, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, Uttarakhand and West Bengal.

Uses: Widely consumed and used in various culinary applications. Pomegranate juice is popular for its refreshing taste and nutritional benefits.Seeds are used in cooking, baking, and as a garnish in a variety of dishes.Alsoused to make jellies, jams, and syrups.

Family: Ranunculaceae

Clematis grataWall., Pl. Asiat. Rar. 1: 83, t. 98.1830.*Clematis cordata* Royle, Ill. Bot. Himal. Mts. 51. 1834. *Clematis vitalba* var. *grata* (Wall.) Finet &Gagnep. in Bull. Soc. Bot. France 50: 532 (1903). *Clematis vitalba* subsp. *grata* (Wall.) Kuntze in Verh. Bot. Vereins Prov. Brandenburg 26: 100 (1885)

Vines woody, Branches shallowly 4- or 5- grooved, densely puberulous. Leaves usually pinnate, rarely ternate; petiole 2.2–6.5 cm, densely to sparsely puberulous; leaflet blades triangular-ovate, ovate, or narrowly ovate, 2–5.8 × 1.5–4.6 cm, papery, 3-lobed, undivided, or occasionally unequally 2-parted, abaxially usually densely sericeous-puberulous, adaxially appressed puberulous, base subcordate to rounded, margin sparsely incised, apex acuminate to narrowly acuminate; basal veins abaxially ± prominent. Cymes axillary or terminal, usually many flowered; peduncle 2.8–6.5 cm, densely puberulous; bracts foliaceous or simple, ovate. Flowers 1.1–2 cm in diam. Pedicel 0.6–1.5 cm, densely puberulous.Sepals 4, white, spreading, obovate-oblong, oblong, or narrowly obovate, 6–10 × 2–4 mm, abaxially densely appressed sericeous-puberulous, adaxially glabrous, apex obtuse to subtruncate. Stamens 4–7.8 mm, glabrous; anthers narrowly oblong, 1.2–1.8

mm, apex minutely apiculate to obtuse. Ovaries pubescent. Style 4–5 mm, densely villous. Achenes elliptic, 2–3 × 1.3–1.8 mm, appressed puberulous; persistent style 1.2–2.6 cm, plumose.

Fl. Jul–Aug;**Fr**. Sep.

Distribution: Himachal Pradesh, Sikkim, Uttarakhand and Jammu and Kashmir.

Uses: Grown for its attractive flowers, often used in gardens and as climbing plants for fences or trellises.Symbolizes mental beauty and is sometimes used in floral arrangements and as a decorative plant.

Ranunculus arvensis L., Sp. Pl. 1: 555 (1753).*Hericinia arvensis* (L.) Fourr. in Ann. Soc. Linn. Lyon, ns, 16: 325 (1868). *Pachyloma arvense* (L.) Spach in Hist. Nat. Veg. 7:195 (1838). *Pfundia arvensis* (L.) Opiz in Seznam: 73 (1852), not validly publ.

Annual herbs. Stems ca. 30 cm, sparsely appressed puberulent, branched. Basal leaves 3-5; petiole 1.6-6 cm, sparsely puberulent; blade 3-lobed, 3-partite, or 3-sect, obovate or broadly rhombic, 1.5-3.5 × 1.5-4 cm, papery, sparsely appressed puberulent, base cuneate or broadly cuneate, lobes narrowly cuneate, 2- or 3-dentate at apex. Stem leaves petiolate or sessile, 1- or 2-ternate, ultimate lobes narrowly cuneate or linear-lanceolate. Flowers leaf-opposed, ca. 1 cm in diam. Pedicel 2-4 cm, appressed puberulent. Receptacle puberulent. Sepals 5, narrowly ovate, ca. 5 mm, abaxially appressed puberulent. Petals 5, obovate, ca. 5 × 3.8 mm, nectary pit covered by a scale, apex rounded. Stamens numerous. Aggregate fruit sub-globose, ca. 1.2 cm in diam. Achene complanate, elliptic, ca. 5 × 3.5 mm, glabrous, spiny, spines up to 2 mm; style persistent, ca. 2.6 mm.

Fl. Apr--May.

Distribution: Afghanistan, Albania, Algeria, Austria, Baleares, Baltic States, Belarus, Belgium, Bulgaria, Canary Is., Corse, Cyprus, Czechoslovakia, East Aegean Is., East Himalaya, Egypt, France, Germany, Greece, Hungary, India, Iran, Iraq, Italy, Kazakhstan, Kirgizstan, Kriti, Krym, Lebanon-Syria, Morocco, Netherlands, North Caucasus, Pakistan, Palestine, Poland, Portugal.

Uses: Often seen as a weed in fields and crops, though it can also attract pollinators like bees.

Family:Rosaceae

Fragaria ananassa Duchesne, Hist. Nat. Frais. 190 (1766), nom. inval. *Fragaria chiloensis* var. *ananassa* Duchesne ex Weston in Bot. Univ. 2: 329 (1771). *Fragaria vesca* var. *ananassa* (Duchesne ex Weston) Aiton in Hort. Kew. 2: 212 (1789). *Potentilla* × *ananassa* (Duchesne ex Weston) Mabb. in Telopea 9: 796 (2002).

Leaves compound with three leaflets, each leaflet being oval-shaped with serrated edges. The leaves are typically bright green and slightly hairy.Plant produces stolon, or runners, that spread horizontally along the ground. These runners root at various points, forming new plants and allowing the strawberry plant to propagate and cover ground effectively.

Flowers: Small, white, five-petaled flowers that bloom in clusters, each capable of developing into a strawberry fruit.

Fl. Apr--May.

Distribution: British Columbia, California, Oregon, Washington.

Uses: Rich in vitamin C, and antioxidants, commonly eaten fresh, in desserts, or as juice.Widely used in cooking and baking for jams, pies, smoothies.

Fragaria nubicolaLindl. ex Lacaita in J. L. Soc. 43; 467, 1916 (=*Fragaria vesca*L. Sp. Pl.494, 1753; Collet, Fl. Siml. 169, 1921 var. *nubicola*Hook. f. in Fl. Brit. Ind. 1: 344, 1879).

A softly silky herb. Stem nearly erect. Leafstalk sometimes bearing additional minute pair of leaflets. Leaflets deeply and acutely toothed, teeth tipped with tufts of silky hairs; stipules narrow, entire. Flower white. Bracteoles small, entire. Calyx lobenarrow, spreading in fruit. Fruit globose.

Fl.&**Fr**.: Feb.-Apr.

Distribution: China, Afghanistan, Bhutan, Myanmar, Nepal, Pakistan, Kashmir, Sikkim.

Uses: Grown for its attractive flowers and small, sweet-tasting berries, often used in decorative landscapes. Berries are edible and consumed for their mild sweetness, rich in vitamins and antioxidants.

Malus domestica Baumg., Enum. Stirp. Transsilv. 2: 43 (1816). Malus Mill. Gard. Dict. Abr., ed. 4.2: (1754).

Small deciduous tree reaching 5-12 m tall with a broad, round, often densely twiggy crown. Leaves simple, alternate, and ovate with an acute tip, clustered on pubescent spur branches, elliptical, serrate margin, cordate or rounded at base, 3-15 cm long, 2.5-5.5 cm wide, shortly apiculate. Flowers on spurs in clusters along the fruiting section of the branch, white or pink, 3-4 cm in diameter with five petals; sepals 3-7 mm long, glabrous outside, tomentose on inside; styles glabrous or sparsely villous at base. Fruits variable in size, colour and shape, depending on the variety, with subglabrous skin, wide edible fleshy.

Fl. March-May.

Distribution: India, Afghanistan, Kazakhstan, Kirgizstan, Pakistan, Tadzhikistan, Uzbekistan, Xinjiang.

Uses: Rich source of fiber, vitamins, and antioxidants, commonly eaten fresh, juiced, or used in cooking and baking.Apples are used in a variety of dishes, including pies, sauces, juices, and salads, as well as in fermented products like cider.

Prinsepia utilisRoyle, l.c. Hook. f. Fl. Brit. Ind. 2: 323,1879; Osmaton, For. Fl. Kumoan 205, 1927; Duthie, Cat. Pl. Kumaon 54, 1906; collett, Fl. Siml. 156, 1921.

A green-stemmed shrub to 3 m with dark leathery leaves, stout spines, and with short clusters of white flowers generally borne from the axils of the

spines. Leaves elliptic to narrow-lanceolate, long-pointed, 2.5-7.5cm, margin entire or minutely toothed; spines usually 2-4cm. Flowers regular, 7-15mm across; petals rounded; calyx cup-shaped with 5 unequal rounded lobes, persisting in fruit. Fruit oblong-cylindrical, 1.3-1.7cm long, fleshy, dark-purple, bloomed.

Fl.&**Fr**.: April-July.

Distribution: Commonly found in waste landscape of the area.

Uses: Fruit is edible and rich in vitamins, often consumed fresh or used to make jams and beverages.Grown for its attractive flowers and as a shrub in gardens for aesthetic purposes

Pyrus pashiaBuch.-Ham. ex D. Don, Prodr. 236. 1825; FBI. 2:374. 1878; FS. 169.f. 47; Ohashi in Hara et al. Enum. Pl. Nepal 2: 374. 1878; FS. 169. f. 47; Ohashi in Hara et al. Enum. Pl. Nepal 2: 143. 1979; Polunin and Stainton, Flowers Himal. 121. t. 35. 1984. *P. kumaonii*Decne. Ex Hook. f. 2: 374. 1878.

Medium sized, deciduous tree. Leaves 10-15 cm long, glabrous petiole, ovate-oblong or elliptic, acuminate, crenate, glabrous. Flowers 1-2 cm long, white; on 1-2 cm long, glabrous pedicel. Calyx 5-6 cm long; lobes triangular, acute, woolly without. Petals orbicular. Stamens numerous. Style woolly at base. Fruit 1.5-2.5 cm across, globose, dark, yellowish-brown, fleshy, with white spots. Seeds 5-6 mm long, ovoid, glabrous, brown-spotted.

Fl. &**Fr**.: Apr-Oct.

Distribution: W. Himalayas to China. Common at 1200-2400m.

Uses: Fruit is edible, though typically small and astringent, and is sometimes used in traditional beverages or jams.

Pyrus communis L., Sp. Pl. [Linnaeus] 1: 479 (1753).*Malus communis* (L.) Poir. in J.B.A.M.de Lamarck, Encycl. 5: 560 (1804), nom. illeg. *Sorbus pyrus* Crantz in Stirp. Austr. Fasc. 2: 56 (1763), nom. superfl.

Plant is deciduous typically grows up to 10-20 m in height, with a pyramidal or rounded crown. Leaves are alternate, oval to lanceolate in shape, and serrated along the margins. They are typically glossy green and turn yellow, orange, or red in the fall before dropping. The tree produces small, white flowers in early spring before the leaves emerge. These flowers are borne in clusters and are attractive to bees and other pollinators. Fruits are pomes known as pears. They vary in size, shape, and colour depending on the cultivar, ranging from round to bell-shaped and from green to yellow, red, or brown. The flesh is juicy and sweet, with a granular texture and several small seeds or pips in the centre.

Fl. April-June

Distribution:Albania, Austria, Baltic States, Belarus, Belgium, Bulgaria, Central European Russia, Corse, Cyprus, Czechoslovakia, East Aegean Is., East European Russia, France, Germany, Greece, Hungary, Iraq, Italy, Krym, Netherlands, North Caucasus, Poland, Romania, Sardegna, Sicilia, South European Russia, Spain, Switzerland, Transcaucasus, Turkey, Turkey-in-Europe, Ukraine, Yugoslavia.

Uses: Rich source of fiber, vitamins, and antioxidants, commonly eaten fresh, in salads, or used in cooking and baking. Used in a variety of dishes, including pies, jams, and juices, as well as in savory dishes like salads and sauces.

Prunus domestica L., Sp. Pl. 1: 475. 1753. *Prunus communis* Hudson; *P. domestica* var. *damascene* Linnaeus; *P. domestica* subsp. *Oeconomica*(Borkhausen) C. K. Schneider; *P. sativa* Rouy & Camus subsp. *domestica* (Linnaeus) Rouy & E. G. Camus.

Trees 6–15 m tall. Branches reddish brown, unarmed or with a few spines, glabrous; branchlets pale red to grayish green, sparsely pubescent. Winter buds reddish brown, usually glabrous. Stipules linear, margin glandular, apex acuminate. Petiole 1–2 cm, densely pubescent; leaf blade dark green, elliptic to obovate, 4–10 × 2.5–5 cm, abaxially pubescent, adaxially glabrous or sparsely pubescent on veins, base cuneate to occasionally broadly cuneate and with a pair of nectaries, margin remote crenate, apex acute to obtuse; secondary veins 5–7 on either side of midvein. Flowers solitary or to 3 in a fascicle, on apex of short branchlets, 1–1.5 cm in diam. Pedicel 1–1.2 cm, glabrous or pubescent. Hypanthium outside pubescent. Sepals ovate, outside pubescent, margin entire, apex acute. Petals white or occasionally greenish, obovate, base cuneate, apex rounded to obtuse. Drupe red, purple, green, or yellow, usually globose to oblong,rarely sub-globose, 1–2.5 cm in dm, often glaucous; endocarp broadly ellipsoid, pitted.

Fl. Mar, **Fr**. Sep.

Distribution: Kashmir, Meghalaya, Punjab, Uttar Pradesh.

Uses: Plums are rich in vitamins, antioxidants, and fiber, commonly eaten fresh or dried as prunes, or used in cooking and baking. Dried plums (prunes) are known for their digestive benefits, particularly in relieving constipation. Also used in jams, jellies, sauces, desserts, and beverages like plum wine and juices.

Prunus persica (L.) Batsch, Beytr, Entw. Pragm. GeschichteNatur-Reiche 1: 30. 1801; Hook. f. in Fl. India 2: 313. 1878.

A large deciduous shrub or small tree upto 8m high. Stem erect, branched twigs glabrous; special dwarf shoots bear flowers, otherwise the flowers arise from long branches; leaves exstipulate, subsessile with many pairs of glands present at the base of each leaf-blade; alternate, simple, elliptic-lanceolate, 8-15cm long; apex acute; margin serrulate, glabrous. Flower, cup-shaped, appearing before or with the 335 leaves. Petals pink. Fruit afleshy and downy drupe enclosing a hard furrowed one-seeded stone. commonly cultivated in China, India and Japan. Freestone peaches are soft and juicy when ripe and used as dessert; cling stone peaches are hard- fleshed and inedible, but are delicious on cooling in syrup, mostly for canning. Peaches are used in beverages and for for peach brandy and are a fair source of sugar, thiamine and ascorbic acid. Flowers anthelmintic. Root-bark is used in dysmenorrhoea, strains, constipation.

Fl. &**Fr**.: March-June.

Distribution: Common in Himalayas, Native to China.

Rosa alba L., Sp. Pl. 1: 492 (1753).

Rosa × *alba* var. *typica* Heinr.Braun in G.Beck von Mannagetta und Lerchenau, Fl. Nieder-Österreich 2(1): 802 (1892), not validly

publ.*Rosa* × *collina* subsp. *alba* (L.) Čelak. in Prodr. Fl. Böhmen: 618 (1875).

Plant is a deciduous shrub that typically grows to a height of 1.5 to 2.5 m (5 to 8 feet). It has a bushy and upright growth habit with arching canes. The leaves are pinnately compound, typically comprising five to seven leaflets. Each leaflet is oval, with a serrated margin, and has a dark green color on the upper side and a lighter green underside. The flowers are large, usually 5 to 8 cm in diameter, and are known for their pure white or pale pink color and strong fragrance. They have a semi-double to double flower structure, with numerous petals often exceeding 20 per bloom. Blooming generally occurs in late spring to early summer. The stems are often covered with numerous prickles, which are curved and can vary in size. The fruit, known as a hip, is small, oval, and turns from green to red or orange as it matures, typically in late summer or autumn. The hips are rich in vitamin C and contain several seeds.

Fl. Mar-May.

Distribution: Cultivated in many countries

Uses: Flowers of *Rosa alba* are highly valued in the cosmetic industry. The essential oils extracted from the petals are used in perfumes, skincare products, and other beauty products due to their soothing and aromatic properties.

Rosa indica L., Sp. Pl. 1: 492 (1753).

Erect shrubs, 1–2 m tall. Branchlets purple-brown, terete, robust, subglabrous; prickles abundant to absent, curved, stout, flat. Leaves including petiole 5–11 cm; stipules mostly adnate to petiole, free parts auriculate, margin entire, often glandular-pubescent, apex acuminate; rachis and petiole sparsely prickly and glandular-pubescent; leaflets 3–5, rarely 7, greenish abaxially, dark green adaxially, broadly ovate or ovate-oblong, 2.5–6 × 1–3 cm, both surfaces subglabrous, adaxially often shiny, base subrounded or broadly cuneate, margin acutely serrate, apex long acuminate or acuminate. Flowers 4 or 5 and fasciculate, rarely solitary, slightly fragrant or not, 4–5 cm in diam.; pedicel 2.5–6 cm, subglabrous or glandular-pubescent; bracts 1–3, linear, glabrous, margin glandular or entire, apex acute. Hypanthium ovoid-globose or pyriform, glabrous. Sepals 5, deciduous, ovate, sometimes leaflike, abaxially glabrous, adaxially densely villous, margin entire or few pinnately lobed, rarely entire, apex caudate. Petals 5, semi-double or double, red, pink, white, or purple, obovate, base cuneate, apex emarginate. Styles free, exserted, nearly equaling stamens, pubescent.

Fl. Apr–Sep, **Fr**. Jun-Aug.

Distributon: W. China, Eastern Himalaya, Nepal, introduced and cultivated in India and Pakistan.

Rosa moschata Herrm., De Rosa 15. 1762. Rosa glanduliferaRoxb., Fl. Ind. 2: 514. 1832. Rosa recurvaRoxb. ex Lindl, Ros. Monogr. 127. 1820. *Rosa nepaulensis* Andres., Mon. Ros. 2: 82, t. 82. 1823.

Erect or climbing shrubs, deciduous or evergreen. Stems prickly or rarely unarmed. Leaves alternate, imparipinnate, stipulate (in our area). Hypanthium (calyx-tube) globose-vetricose, constricted at the throat. Calyx lobes 5, rarely

4, Petals 5, rarely 4. Disc lining the hypanthium. Stamens numerous, inserted round the disc. Carpels numerous, enclosed by the hypanthium, free from one another. Styles protruding through the orifice of the disc, free or united into a column. Hypanthium closed at the mouth, fleshy and coloured at maturity, fruit a pomatum. A genus of 200 species distributed in temperate and subtropical zones of Northern Hemisphere, taxonomically very complex. The species are usually quite variable, Whi le the infraspecific differences are sometimes very subtle. The genetic barriers between many species are rather weak as a result intensive hybridization and introgression especially in the region destroyed due to the human activities. It holds also true in the case of Pakistan. Numerous beautiful roses of hybrid origin are cultivated in gardens, square and parks, only most important, taxa are discussed in this account. In the key and species descriptions, importance is given to both flowering short-shoots and long-shoots. In the latter case the prickles are primarily considered. The orifice is wide when it is at least 1/3 of the disc diameter.

Fl.&**Fr**. Mar-Apr.

Distribution: Jammu and Kashmir, Himachal Pradesh, Uttar Pradesh.

Uses: Widely grown for its beautiful, fragrant flowers, often used in gardens, landscaping, and as cut flowers for decoration.Rose petals and rose water are used in traditional medicine for their soothing, anti-inflammatory, and skin-care properties. Rose essential oil is used in aromatherapy, perfumes, and for its calming and stress-relieving effects.

Rosa webbiana Wall. ex Royle, Ill. Bot. Himal. Mts. [Royle] 1(6): 208 (1835).*Rosa webbiana* var. *genuina* Crép. in Bull. Soc. Roy. Bot. Belgique 13: 276 (1874), not validly publ.

Deciduous shrub that typically grows 1 to 3 m (3 to 10 feet) tall. Stems are often arching or scrambling, with thorny branches. Leaves are compound with 5 to 7 leaflets. Each leaflet is oval to lanceolate, serrated along the edges, and dark green in color. Flowers are solitary or in small clusters, usually pink to deep pink in color, occasionally white. They have a five-petaled structure typical of roses. Fuit is a bright red to orange-red hip (rose hip), which is a type of accessory fruit containing numerous small seeds.

Fl. June-August

Distribution:wild rose species native to the Himalayan region, including India, Pakistan, Nepal, Bhutan, and parts of China.

Uses: Cultivated for its fragrant, beautiful flowers, often used in gardens and as a decorative plant. Flowers are used to extract rose oil, which is utilized in perfumes and for its calming properties in aromatherapy.

Rubus ellipticus Sm. in Rees, Cyclop. 30: n. 16. 1819; Hook. f. in Fl. Brit. India 2: 336. 1878; Duthie, Fl. U. Gang. Pl. 1: 325. 1903; raizada& Saxena, Fl. Muss. 214. 1978.

A tall, grey-tomentose, sub-erect shrub. Stem and branches trailing, shaggy with long tawny bristles; prickles numerous, curved. Leaves compound; leaflets 3, orbicular, ovate, dark green above grey-tomentose beneath. Calyx lobes tomentose inside and

outside; lobes ovate acuminate or obtuse and mucronate, erect in fruit. Petals larger than calyx, white. Stamens 1-seriate. Fruit globose, exposed; drupes on a cylindric, hairy receptacle, many, golden yellow, stone rugose.

Fl. &**Fr**.: March-April.

Distribution: Throughout India.

Uses: Fruit is edible, sweet, and rich in vitamins, antioxidants, and dietary fiber, commonly eaten fresh or used in jams and juices.Grown for its attractive golden berries and as a decorative shrub in gardens.

Family: Rubiaceae

Galium aparine L., Sp. Pl. 1: 108. 1753. *Aparine hispida* Moench in Methodus: 640 (1794), nom. superfl.*Aparine vulgaris* Hill in Herb. Brit. 2: 149 (1770). *Asperula aparine* (L.) Besser in Prim. Fl. GaliciaeAustriac. 1: 114 (1809), nom. illeg.*Asperula aparine* var. *aparine* (L.) Nyman in Consp. Fl. Eur.: 332 (1879), not validly publ.*Asterophyllum aparine* (L.) K.F.Schimp. &Spenn. in F.C.L.Spenner, Fl. Friburg. 3: 1077 (1829). *Galion aparinum* (L.) St.-Lag. in Ann. Soc. Bot. Lyon 7: 113 (1880). *Galium lappaceum* Salisb. in Prodr. Stirp. Chap. Allerton: 59 (1796), nom. superfl.*Rubia aparine* (L.) Baill. in Hist. Pl. 7: 373 (1880).

Herbs, annual, procumbent or clambering. Stems 30–90 cm high, 4-angled, 1–4 mm in diam., branched from base, retrorsely aculeate along angles, glabrescent to pilose at nodes. Leaves at middle stem region in whorls of 6–

10, subsessile; blade drying papery, narrowly oblanceolate to narrowly oblongoblanceolate, 10–60 × 3– 10 mm, usually somewhat pilosulous or hispidulous adaxially, retrorsely aculeolate along midrib abaxially, base acute, margins flat to thinly revolute, retrorsely aculeolate, apex acute and shortly mucronate; vein 1. Inflorescences terminal and axillary, cymes 2- to several flowered; axes glabrous to aculeolate; bracts ± leaflike or none, 1–5 mm; peduncles 1–5 cm; pedicels 1–30 mm, finally elongating and sometimes curved directly under fruit. Ovary sub-globose, 0.3– 0.5 mm, with uncinate trichomes. Flowers hermaphroditic. Corolla yellowish green or white, rotate, 1.5–2 mm in diam.; lobes 4, triangular to ovate, acute. Mericarps sub-globose to kidneyshaped, 2.5–5 mm, with a dense cover of uncinate trichomes 0.4–1.2 mm from swollen base.

Fl. Mar–Jul, **Fr**. Apr–Nov.

Distribution: Jammu and Kashmir, Sikkim and Uttarakhand.

Uses: Used in traditional medicine for its diuretic properties.

Himalrandia tetrasperma (Roxb.) T. Yamaz., J. Jap. Bot. 45: 340. 1970. *Gardenia tetrasperma*Roxb., Fl. Ind. 2: 555. 1824. *Randiatetrasperma*Roxb. ex

Hook.f., Fl. Brit. India 3: 109. 1880. *Aidia tetrasperma* (Roxb.) T.Yamaz. in H. Hara, Fl. E. Himal. 307. 1966. *Gardenia tetrasperma* Wall. ex Roxb., Fl. Ind. 1: 709. 1820. *Gardenia densa* Wall. in Roxb., Fl. Ind. 2: 559. 1824. *Himalrandiadensa* (Wall.) Tirveng., Nordic J. Bot. 3: 462. 1983.

A small shrub, 2 m tall, branches spinescent. Leaves mostly towards the tip of branchlets, fascicled, 0.9-3 cm long, ovate-oblanceolate or elliptic, glabrous, entire, acute-subacute, petiole, c. 1 mm long; stipules c. 1.5 mm long. Flowers greenish-white, odoriferous, c. 12 mm long, 8-10 mm in diameter. Calyx-tube c. 1 mm long, teeth subulate, 1.5 mm long. Corolla funnel-shaped, tube c. 8 mm long, lobes 5, 4-5 mm long, acuminate. Anthers exserted, filaments short. Style long, filiform; stigmas spindle-shaped. Fruit 6-8 mm in diameter, globose, purple.

Fl.: May-June.

Distribution: Arunachal Pradesh, Assam, Himachal Pradesh, Jammu and Kashmir, Sikkim and Uttarakhand.

Used: In traditional medicine, the plant is used for its potential antimicrobial and anti-inflammatory properties.Grown for its attractive foliage and flowers, making it suitable for landscaping and gardens.

Rubia cordifolia L., Syst. Nat. ed. 12: 229. 1767. Rubia mitis Miq., Ann. Mus. Bot. Lugduno. Batavi 3: 112. 1867. Rubia scandens Zoll. &Moritzi, Syst. Verz. Zoll. 66. 1911. Rubia cordifolia cordifolia L. var. Deb & Malick, J. Bombay Nat. Hist. Soc 63: 782. 1968, syn. nov.

Vines, herbaceous, climbing or scrambling herbs, with red rhizomatous base and roots; stems to 3.5 m, several to many from base, often much branched, quadrangular, glabrous to puberulent, with ribs rounded to thinly winged, sparsely to densely retrorsely aculeolate. Leaves in

whorls of 4 or more (up to 8 or rarely 12); petiole (1-)1.5-3(-6) cm; blade drying papery to thickly papery, usually remaining ± greenish, lanceolate, oblong-lanceolate, ovate, or oblong-ovate, (1-)1.5-4(-7) × (0.3-)0.5-1.5(- 2.5) cm, length/breadth index mostly 2.5-4, glabrous to pilosulous or hirtellous, sparsely to densely scaberulous, base rounded, truncate, cordulate, or cordate, margin serrulate-aculeolate, apex obtuse and apiculate to acute or acuminate; principal veins 3 or 5, palmate. Inflorescences thyrsoid, paniculate, with terminal and axillary, several- to many-flowered cymes; axes glabrous to puberulent or pilosulous, ± aculeolate; bracts linear-lanceolate to ligulate, 1-3 mm; pedicels 1-4 mm. Ovary 0.5- 0.8 mm, smooth to scaberulous. Flowers hermaphroditic (rarely polygamo-dioecious?). Corolla pale yellow or greenish yellow, rotate, glabrous, fused base 0.2- 0.4 mm; lobes lanceolate, spreading to reflexed, 1.2-1.5 mm, caudate. Mericarp berry becoming orange then apparently black, 4-6 mm in diam.

Fl. Aug-Sep, **Fr**. Oct-Nov.

Distribution: in temperate zones of Himalaya.

Uses: Roots contain anthraquinone compounds that are used to produce a red dye, historically used in textiles. Grown for its attractive, heart-shaped leaves and small flowers, often used in gardens or as ground cover.

Family: Rutaceae

Citrus limon (L.) Osbeck, Reise Ostindien 250 (1765). *Citrus medica* f. *limon* (L.) M.Hiroe in Forest Pl. Hist. Jap. Islands 1: 218 (1974). *Citrus medica* var. *limon* L. in Sp. Pl.: 782 (1753). *Citrus medica* subsp. *limon* (L.) Cout. in Notas Fl. Portugal 2: 14 (1915).

Tree. Smooth, yellow outer skin (rind), segmented flesh inside, and seeds. The tree typically grows up to about 10-20 feet in height, with glossy, dark green leaves. The flowers are white and fragrant, eventually developing into the fruit.

Fl. Aug.-Nov.

Distribution: The lemon is native to the foothills of the Himalayas, and is cultivated in the plains of Punjab, Sind and Baluchistan. Used as a rootstock for oranges and grapefruit. Also commonly used for pickles.

Uses: Rich in vitamin C, lemons are consumed fresh, juiced, or used in cooking and baking for their tangy flavor and health benefits.Known for its antimicrobial, anti-inflammatory, and digestive benefits, lemon is often used in natural remedies for colds and sore throats.Lemons are widely used in beverages, salads, desserts, marinades, and as a garnish due to their refreshing flavor.

Citrus maxima (Burm.) Merr., Interpr. Herb. Amboin. 296 (1917).

Trees. Young branches, abaxial surface of leaves, peduncles, and ovaries pilose. Branches usually purplish, flat with ridges when young. Petiole 2-4 × 0.5-3 cm or less, winged; leaf blade broadly ovate or elliptic, 9-16 × 4-8 cm or larger, thick, dark green, base rounded, apex rounded to obtuse and sometimes mucronate. Flowers solitary or in racemes; flower buds purplish or rarely milky white. Calyx 3-5-lobed. Petals 1.5-2 cm. Stamens 25-35, some undeveloped. Style long and thick. Fruit pale yellow and yellowish green, globose, oblate, pyriform, or broadly obconic, usually more

than 10 cm in diam., with large prominent oil dots, to 200-seeded or seedless; pericarp spongy; sarcocarp with 10-15(-19) segments, white, pink, reddish, or rarely milky yellow. Seeds irregularly shaped, with conspicuous ridges, undeveloped seeds numerous; embryo solitary; cotyledons milky white.

Fl. Apr-May, Fr. Sep-Dec.

Distribution: It is believed to be native to Southeast Asia, specifically in areas such as Malaysia and Thailand. It is widely cultivated in tropical and subtropical regions worldwide for its fruit.

Uses: Rich in vitamin C, fiber, and antioxidants, commonly eaten fresh or used in salads, juices, and desserts.

Citrus sinensis Pers., Syn. Pl. [Persoon] 2(1): 74 (1806).

Small to medium-sized evergreen tree belonging to the citrus genus.It typically grows up to 5-10 meters in height, with a rounded crown and dense foliage. Leaves of Citrus sinensis are alternate, ovate to elliptical in shape, and glossy green. They emit a characteristic citrus fragrance when crushed.The tree produces fragrant white flowers, often in clusters, which are attractive to bees and other pollinators. Fruits of Citrus sinensis are round to oval-shaped berries known as oranges. They have a thick, leathery rind that ranges in color from green to orange-yellow when ripe. The flesh is juicy, sweet-tasting, and segmented into individual carpels, with seeds or pips embedded within.

Fl. March-May. ***Fr.*** Sept.-Oct.

Distribuiton: India, Widely cultivated in the Punjab and Sind region.

Uses: Rich in vitamin C, fiber, and antioxidants, oranges are commonly eaten fresh, juiced, or used in cooking and baking. Known for boosting immunity, improving digestion, and supporting heart health due to their high vitamin C and flavonoid content.

Murraya koenigii (L.) Spreng. in Syst. Veg., ed. 16. 2: 315 (1825).

*A*n evergreen shrub or small tree native to the Indian subcontinent. It typically grows up to 4–6 m in height, though it can sometimes reach up to 15 meters under ideal conditions.The leaves of the curry leaf plant are small and pinnate, typically consisting of 11-21 leaflets arranged oppositely along the central stem (rachis). Each leaflet is lanceolate or ovate in shape, with a glossy dark green color. Leaves are highly aromatic and are a key ingredient in various cuisines, especially in Indian cooking. Flowers small and white, arranged in clusters. They are fragrant and attract pollinators like bees and butterflies. Fruits of the curry leaf plant are small, black berries that contain seeds. While not typically consumed, they add to the ornamental value of the plant.

Fl. April-June. *Fr*. June-Aug.

Distribution: Along the foothills of Himalayas in India and Pakistan, Assam to Siam, China, Ceylon.

Uses: Leaves of the curry leaf plant are highly valued for their distinct aroma and flavor. They are commonly used as a seasoning in various Indian dishes, particularly curries, soups, and chutneys.

Zanthoxylum armatum DC., Prodr. 1:727. 1824; Hartly, J. Arnold Arb. 47:211. 1966; Naithani, Fl. Chamoli 1: 113. 1984. *Z. alatum*Roxb., Fl. Indica 2.3: 768. 1832; Hook. f. in Fl. Brit. India 1: 493. 1875; Duthie, Fl. U. Gang. Pl. 1: 134. 1903.

Sub-deciduous shrub or sometimes a small tree, with corky bark and with numerous long straight spines on branches lets and leaf-stalks, with pinnate leaves, and with small yellow flowers in short in short branches lateral clusters. Flower small 1mm, one-sexed; pale–yellow, calyx with 6-8 acute lobes; petals absent; stamens 6-8, much longer than calyx in male flowers. Leaf-stalk narrowly winged; leaflets 2-6 pairs, lanceolate, 8cm toothed, sparsely gland-dotted. Ripe capsule 3-4mm, globular, red, wrinkled, aromatic; seed shining black.

Fl.&**Fr.**: Feb.-May.

Distribution: It is found in open places.

Uses: Dried fruits and seeds are highly valued as a spice in culinary practices, particularly in Indian and Nepali cuisines. Known for their unique flavor and aroma, these spices are frequently used to enhance the taste of pickles, curries, and spice blends.

Family: Rhamnaceae

Ziziphus mauritiana Lam., Encycl. [J. Lamarck & al.] 3: 319 (1797).

Trees or shrubs, evergreen,upto 15 m tall. Young branches densely yellow-gray tomentose; branchlets pilose; old branches purple-red. Stipular spines 2, one oblique and hooklike recurved; petiole 5-13 mm, densely gray-yellow tomentose; leaf blade adaxially dark green, shiny, ovate or oblong-elliptic, rarely subrounded, 2.5-6 × 1.5-4.5 cm, papery to thickly papery, abaxially yellow or gray-white tomentose, adaxially glabrous, 3-veined from base,

veins conspicuously reticulate abaxially, impressed or ± prominent adaxially, base subrounded, slightly oblique, margin serrulate, apex rounded, rarely acute. Flowers green-yellow, few to 10 in subsessile or shortly pedunculate, axillary dichotomous cymes. Pedicel 2-4 mm, gray-yellow tomentose. Sepals ovate-triangular, abaxially hairy, apex acute. Petals oblong-spatulate, clawed at base. Stamens sub-equaling petals. Disc thick, fleshy, 10-lobed, concave at middle. Ovary globose, glabrous; style 2-fid or branched to half. Drupe orange or red, turning black at maturity, oblong or globose, 1-1.2 cm, ca. l cm in diam., with persistent tube at base; fruiting pedicel 5-8 mm, pilose, 2-loculed, 1- or 2-seeded; mesocarp corky; endocarp thick, thickly leathery. Seeds red-brown, broad and compressed, 6-7 × 5-6 mm, shiny.

Fl. Aug-Nov, **Fr**. Sep-Dec.

Distribution: India, Pakistan, Afghanistan, Ceylon, China, Australia, Trop. Africa.

Uses: Fruit is rich in vitamins, minerals, and antioxidants, commonly eaten fresh, dried, or used in jams and juices.

Ziziphus oxyphylla Edgew. in Trans. Linn. Soc. Bot. 20:43. 1846. Lawson, l.c. 634; Parker, l.c. 84; Bamber, Pl. Punj. 76. 1916; Burkill, Work. List. Fl. Pl. Baluch. 26. 1903; R.R. Stewart, l.c. 469. Browicz, l.c. 6.

Small glabrous, tree or shrub, stipular spines slender, unequal, smaller slightly recurved, larger one straight c. 1.5 mm long. Leaves 2.5-6 cm x 1.5-3 cm, ovate to lanceolate, acuminate or cuspdate, base slightly oblique or cordate, glabrous, serrate to crenately serrate, petiole 5-10 mm long. Cymes glabrous axillary, fascicled,

many-flowered. Flowers 3-4 mm in diameter, glabrous, pedicel 1-2 mm long, 400 glabrous, wiry. Calyx 5-lobed, not keeled glabrous c. 2 mm long, ovate, obtuse to subacute. Petals hooded, spathulate c. 1.5 mm long; Disc thin almost 5-lobed. Fruit fleshy ovoid 8-10 mm long, orange-black when ripe, 1-celled, 1 seeded with flattened pyrene.

Fl. June-September.

Distribution: Himachal Pradesh, Jammu& Kashmir, Punjab, Uttar Pradesh.

Uses:Fruit is edible, rich in nutrients, and commonly consumed fresh or dried, though less common than other jujube species.

Family: Salicaceae

Populus ciliata Wall. ex Royle, Ill. Bot. Himal. Mts. [Royle] 10: 346, t. 84a, f.1 (1839).

Large tree; bark on young stems greenish grey, smooth; brown longitudinally fissured on old stems. Bud sticky, bud scales brown shining. Leaves petiolate, petiole 5-13 cm long, hairy; lamina 7-18 x 6-13 cm, broadly ovate, crenate-serrulate, teeth minutely hairy, base cordate or rounded, 3-5 nerved, minutely pubescent on the lower surface, tip acute to acuminate. Male catkin 7.5-10.5 cm long, compact in flower. Male flower: Pedicel small, bract oblanceolate, hairy, disk obliquely cup-shaped, crenulate; stamens many, anthers olong, longer than filaments. Female catkin (in fruit) 15-30.5 cm, lax. Female flower: Disk embracing half the ovary, margin undulate, stigmas 3-4,

very large, obcordate. Capsule 7.5-10.5 mm, orbicular, 3-4-valved (not warty); pedicel 2.5-10 mm long. Seed covered by long silky hairs.

Fl. March-April.

Distribtuion: The trees are sometimes, lopped for fodder; Distribution: Pakistan (Chitral) eastwards to Kashmir, 4-10000 ft, along the Himalayas through India, Nepal, Sikkim, Bhutan, Myanmar.

Uses: Wood is light, soft, and used in construction, furniture making, and as fuel.Planted in hilly areas for soil conservation and to control erosion due to its fast growth and root system. Bark and leaves are used in traditional medicine.

Salix alba L., Sp. Pl. 2: 1021 (1753). *Argorips alba* (L.) Raf. in Alsogr. Amer.: 13 (1838). *Salixpallida* Salisb. in Prodr. Stirp. Chap. Allerton: 394 (1796), nom. superfl.

Trees up to 25 m tall; bark dull gray, fissured; crown spreading. Branchlets brownish, glabrous, tomentose when young. Buds coadnate, ca. 6 × 1.5 mm, apex acute. Stipules caducous; petiole 2-10 mm, sericeous; leaf blade lanceolate, oblanceolate, or obovate-lanceolate, 5-12 × 1-2 cm, abaxially tomentose or subglabrous, adaxially often glabrous, both surfaces sericeous when young, base cuneate, margin serrulate, apex acuminate or long acuminate; lateral veins 12-15 on each side of midvein. Flowering coetaneous. Male catkin 3-5 cm; peduncle 5-8 mm; bracts yellowish, ovate-lanceolate or obovate-oblong, ciliate, abaxially glabrous, adaxially subglabrous or pilose at base, margin entire. Male flower: glands adaxial and abaxial; stamens 2, free; filaments pilose at base; anthers yellow. Female catkin 3-4.5 cm, to 5.5 cm in fruit; bracts yellowish, lanceolate or ovate-

lanceolate, ciliate, caducous, abaxially cottony at base, adaxially sericeous. Female flower: glands adaxial and abaxial, adaxial gland rarely small; ovary ovoid-conical, 4.5-5 mm, glabrous, shortly stipitate or subsessile; style short, 2-lobed; stigma 2-parted.

Fl. Apr-May, **Fr**. May.

Distribution: Himachal Pradesh, Jammu and Kashmir, Uttarakhand.

Uses: Bark contains salicin, which is used in traditional medicine as a natural pain reliever and anti-inflammatory, forming the basis for aspirin. Wood is used for making furniture, wickerwork, and as a source of firewood due to its lightweight and flexible properties.

Family: Sapindaceae

Koelreuteria elegans (Seem.) A.C.Sm., Contr. U.S. Natl. Herb. 20: 518 (1952). *Azedarach elegans* (Seem.) Kuntze in Revis. Gen. Pl. 1: 110 (1891). *Melia elegans* Seem. in Fl. Vit.: 36 (1865).

Trees, 15-17 m tall or higher. Branches ridged, pubescent. Leaves bipinnate, with petiole ca. 50 cm; leaflets 5-13; petiolules 2-2.5 cm; blades oblong-ovate, 6-8 × 2.5-3 cm, varied in shape and size, sub-leathery, abaxially glabrous or only barbate at vein axils, base extremely oblique, margin slightly incurved serrate or nearly entire below middle, apex long acuminate to caudate. Thyrses terminal, large, ca. 25 cm; branches and pedicels pubescent. Flowers yellow, ca. 5 mm in diam. Sepals 5, oval or ovate-triangular, ciliate. Petals 5, lanceolate or oblong, with 2-lobed, tuberculate toothed scale, claw hairy.

Stamens 7 or 8; filaments hairy. Capsules inflated, ellipsoid, 3-ridged, ca. 4 cm; carpels sub-cordiform, abaxially reticulate veined, adaxially shiny. Seeds black, globose, ca. 5 mm in dm.

Fl. July- Sep. **Fr.** Oct-Nov.

Distribution: south-eastern USA (i.e. Texas, Louisiana, Mississippi and Florida) and on some Pacific islands (i.e. Hawaii and Guam).

Uses: Grown for its attractive yellow flowers and decorative seed pods, it is commonly used in landscaping and urban environments.

Dodonaea viscose Jacquin, Enum. Syst. Pl. 19. 1760. *Dodonaea viscosa* f. *typica* Herter in RevistaSudamer. Bot. 5: 35 (1937), not validly publ.*Dodonaea viscosa* var. *vulgaris* Benth. in Fl. Austral. 1: 476 (1863).

Shrubs or small trees, 1-3 m tall or higher. Branches flat, narrowly winged or ridged, with sticky juice. Leaves simple; petiole short or nearly absent; blades variable in shape and size, linear, linear-spoon-shaped, linear-lanceolate, or oblong, 5-12 × 0.5-4 cm, papery, both surfaces with sticky juice, glabrous, nitid when dry, lateral veins many, dense, very slender, margin entire or inconspicuously shallowly wavy, apex acute, obtuse, or rounded. Inflorescences terminal or axillary near apices, shorter than leaves, densely flowered, rachis and branches ridged. Pedicels 2-5 mm, sometimes to 1 cm, slender. Sepals 4, lanceolate or narrowly elliptic, ca. 3 mm, apex obtuse.

Stamens 7 or 8; filaments less than 1 mm; anthers incurved, ca. 2.5 mm, glandular. Ovary ellipsoid, abaxially with sticky juice, 2- or 3-loculed; style ca. 6 mm, apex 2- or 3-lobed. Capsules obcordiform or compressed-globose, 2- or 3-winged, 1.5-2.2 cm tall, with wing 1.8-2.5 cm wide; testa membranous or papery, veined. Seeds 1 or 2 per locule, black, lenslike.
Fl. Sep., **Fr.** Oct-Mar.

Distribution: Almost throughout India.

Uses: Planted for soil stabilization and as a windbreak in arid and semi-arid regions.Grown as a hedge or ornamental shrub due to its attractive foliage and tolerance to drought.

Family: Saxifragaceae

Bergenia ciliata Sternb, Revis. Saxifrag. suppl. 2:2. 1831; Yeo in Kew Bull. 20:120. 1966. *Saxifraga ciliata* Royle, Illu. Bot. Himal. 226. T. 49. F. 2. 1835. *S. ligulata* Wallich var. *ciliate* (Royle) C.B. Clarke in Hook. F., Fl. Brit. India 2: 398. 1878. *Megasea ciliate* Haworth, Saxifr. Enum. 7. 1821.

Small herb, Stem upto 25cm long; rootstock very stout, creeping; Leaves ovate or rounded, 5-15cm long, margin fringed with long bristle hairs; Flowers on stout leafless stem, in dense cluster, pink in color, 1.5 – 2.5cm long; petals 5; calyx glabrous, lobes blunt; style long.

Fl.: Feb.-Apr., **Fr**.: May-June.

Distribution: Afghanistan to S.E. Tibet, 1800 – 4300m., Forests, rock hedges.

Uses: Grown for its attractive foliage and pink flowers, making it a popular choice in rock gardens and shady landscapes. Dried leaves are sometimes used to make herbal tea with potential health benefits.

Bergenia stracheyi (Hook.f. & Thomson) Engl., Bot. Zeitung (Berlin) 26: 842 (1868).*Saxifraga stracheyi* Hook.f. & Thomson in J. Proc. Linn. Soc., Bot. 2: 61 (1857).

Leaveslarge and leathery, providing a lush, green appearance. The leaves resemble the shape and texture of an elephant's ear, which is why the plant is sometimes called "elephant's ears.Clusters of bell-shaped flowers that come in various colors, adding vibrant splashes to gardens; typically pink, white, or purple and bloom in dense clusters. Plant spreads via underground rhizomes, allowing it to form extensive ground cover. These rhizomes help the plant survive in harsh conditions by storing nutrients.

Uses: Valued for its attractive flowers and foliage, it is often grown in rock gardens and alpine landscapes.The dried leaves are sometimes used to prepare herbal tea, believed to have health-promoting properties.

Family: Scrophulariaceae

Buddleja asiatica Lour., Fl. Cochinch. 1: 72 (1790).

Shrubs or small trees, 1--8 m tall; young branchlets, leaves abaxially, petioles, and inflorescences densely stellate pubescent or woolly with white, gray, or tawny hairs. Branchlets terete or subterete. Leaves opposite, sometimes alternate towards branchlet apex. Petiole 2--15 mm; leaf blade

narrowly to very narrowly elliptic, 6--30 X 1--7 cm, adaxially stellate pubescent or glabrous, base cuneate to decurrent, margin subentire or remotely serrate-dentate, apex acuminate, lateral veins 10--14 pairs. Inflorescences terminal and/or axillary, 1--3 or more seemingly racemose cymes together, 5--25 X 0.7--2 cm; bracteoles linear. Pedicel to 2 mm. Calyx campanulate, 1.5--4.5 mm; lobes triangular, outside stellate pubescent or tomentose, inside glabrous. Corolla white, rarely pale violet or greenish; tube 2.5--4.8 mm, outside densely to sparsely stellate pubescent; lobes suborbicular, 1-1.7 × 1-1.5 mm, spreading. Stamens inserted above middle of corolla tube to nearly at mouth, included; anthers oblong. Ovary ovoid to narrowly ovoid, 1-1.5 × 0.8-1 mm, glabrous or scaly. Style short; stigma capitate. Capsules ellipsoid, 3-5 X 1.5-3 mm, glabrous or sparsely and minutely scaly. Seeds pale brown, elliptic, 0.8-1 × 0.3-0.4 mm, short winged at both ends.

Fl. Jan-Oct; **Fr**. Mar-Dec.

Uses: Grown for its fragrant flowers and ability to attract pollinators like butterflies, making it popular in gardens and landscapes.Used for erosion control and as a windbreak in agroforestry systems due to its fast growth and adaptability.

Family: Solanaceae

Cestrum diurnum L., Sp. Pl. 1: 191 (1753).

Plantis an evergreen shrub that typically grows to a height of 3 m (10 feet). It has an upright growth habit and can spread out to create a bushy appearance. The leaves are simple, smooth, and lanceolate to ovate, measuring 5-15 cm

(2-6 inches) in length. They are a vibrant green and have a slightly waxy texture. The flowers are small, white, and tubular, similar in structure to those of *Cestrum nocturnum*. However, *Cestrum diurnum* flowers bloom during the day and emit a pleasant fragrance that can be enjoyed throughout the daylight hours. The blooms are arranged in clusters and attract diurnal pollinators such as bees and butterflies. The plant produces small, dark berries. Like *Cestrum nocturnum*, the berries of *Cestrum diurnum* are generally not consumed by humans due to their potential toxicity.

Fl. January-April, also August-October.

Distribution: A native of W. Indies, cultivated elsewhere.

Uses: Grown for its fragrant white flowers, which bloom during the day, making it a popular choice in gardens. Planted as a hedge or for landscaping due to its dense growth and ability to thrive in various conditions.

Cestrum nocturnum L., Sp. Pl. 1: 191. 1753. *Chiococca nocturna* (L.) Jacq. in Enum. Syst. Pl.: 16 (1760)

Shrubs erect or sprawling, 1-3 m tall; young growth puberulent, glabrescent. Branches slender. Petiole 0.8-2 cm; leaf blade oblong-ovate or oblong-lanceolate, 6-15 × 2-4.5 cm, entire. Inflorescences drooping, many-flowered, axillary or terminal racemose panicles, 7-10 cm. Flowers strongly night scented. Pedicel 1-5 mm. Calyx campanulate, 2-3 × 1-1.5 mm; lobes deltoid, 0.5-0.8 mm. Corolla greenish or whitish yellow, 1.5-2.5 cm, tube slightly contracted at throat, lobes 3-4 mm. Filaments with dentate appendages,

usually puberulent at point of insertion. Ovary ca. l mm. Berry white, juicy, oblong or globose, 6-10 × 4-10 mm. Seeds 1-5, ellipsoid, 3.5-4.5 mm.

Fl. Aug- Sep.

Distribution: Native to Belize, Colombia, Costa Rica, El Salvador, French Guiana, Guatemala, Honduras, Mexico Central, Mexico Gulf, Mexico Northeast, Mexico Northwest, Mexico Southeast, Mexico Southwest, Nicaragua, Panamá, Venezuela.

Uses: Cultivated as an ornamental plant in gardens and landscapes for its aromatic flowers, which release a strong, pleasant fragrance at night. It is often used as a hedge or accent plant.

Physalis angulataL., Sp. Pl. 1: 183. 1753. *Boberella angulata* (L.) E.H.L.Krause in J.W.Sturm, Deutschl. Fl. Abbild., ed. 2. 10: 61 (1903). *Physalis angulata* var. *normalis* Kuntze in Revis. Gen. Pl. 2: 452 (1891), not validly publ.*Physalis ciliata* Siebold &Zucc. in Abh. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. 4(3): 146 (1846), nom. superfl.

Plant is erect, abundantly branched reach upto a height of 90 cm. Root is taproot. Stem is hollow, polygonal and glabrous. Leaves glabrous, simple alternate, oval, apiculate, attenuate and sinuous serrated margin 2 to 3 cm long and 10 to 15 mm wide, the margin is sinuous and irregularly serrated, provided some short, white hairs. The leaf blade is marked with 4 to 6 pairs of pinnate venations. Petiole 3 -5 cm long. The flowers are solitary, campanulate and axillary having short peduncle. Calyx 3mm long, 5 fused sepals. Corolla campanulate having fused 5 petals. Stamens 5 inserted into

the corolla tube alternating with petals. The ovary has 2 loculus with many ovules. The fruit is berry included in the calyx turned into pending vesicle. The fruit is a berry, 8 to 10 mm in diameter, yellow at maturity and containing many seeds. The berry is included in the calyx, which is turned into an obconical vesicle, pending, 2cm wide and 2 – 3cm long. This vesicle is first green and then turns brown and dries at maturity. It is traversed by 8 or 9\longitudinal ribs, connected by a network of thin ribs. The seeds are flat and lenticular, with a diameter of 1 mm. The seed coat is orange and finely pitted.

Fl. &**Fr**. June- Aug.

Distribution: Throughout the India.

Uses: Used in traditional medicine. Ripe fruit is edible and can be consumed raw or in jams.Acts as a cover crop to prevent soil erosion and improve soil health

Solanum nigrum L., Sp. Pl. [Linnaeus] 1: 186 (1753 *Solanum humile* Salisb. in Prodr. Stirp. Chap. Allerton: 134 (1796), nom. superfl. *Solanum morella* Desf. in Observ. Pl. Angers: 113 (1818), nom. superfl. *Solanum morella* subsp. *nigrum* (L.) Rouy in G.Rouy&J.Foucaud, Fl. France 10: 364 (1908), nom. superfl. *Solanum nigrum* var. *genuinum* Hassl. in Trab. Mus. Farmacol. 21: 104 (1909), not validly publ. *Solanum nigrum* var. *humile* Macloskie in Rep. Princeton Univ. Exped. Patagonia, Botany 8: 707 (1905), not validly publ. *Solanum nigrum* var. *legitimum* Neilr. in Fl. Nied.-Oesterr.: 535 (1858), not validly publ. *Solanum vulgatum* Baumg. in Fl. Lips.: 120 (1790), nom. superfl.

Solanum vulgatum var. *nigrum* (L.) Spenn. in Fl. Friburg. 2: 427 (1826), nom. superfl.

Herbs annual, erect, 25-100 cm, pubescent with simple hairs, unarmed. Stems often angular, sparsely pubescent. Petiole 2-5 cm; leaf blade ovate, 4-10 × 3-7 cm, pubescent or glabrescent, base cuneate, decurrent, entire or coarsely dentate, apex obtuse. Inflorescences extra-axillary umbels; peduncle 2-4 cm. Pedicel 0.8-1.2 cm. Calyx cup-shaped, 2-3 × 2-3 mm; lobes sub-deltate, 0.5-1 × 1-1.5 mm, pubescent abaxially, ciliate. Corolla white, 8-10 mm; lobes ovate-oblong, 4-5 × 3-3.5 mm, pubescent abaxially, ciliate, spreading. Filaments 1-1.5 mm; anthers oblong, 2.5-3.5 mm. Style 5-6 mm. Fruiting pedicel strongly deflexed; fruiting calyx applied to berry. Berry dull black, globose, 8-10 mm in diam. Seeds discoid, ca. 2 mm in diam.

Fl. May-Aug, **Fr**. Jul-Nov.

Distribution: cosmopolitan

Uses: The ripe berries and tender leaves are consumed as food in some cultures after proper preparation to remove toxins.Its berries are used to produce natural dyes.

Solanum viarumDunal in DC., Prodr. 13: 240. 1852. *Solanum khasianum* var. *chatterjeeanum* Sengupta, Bull. Bot. Surv. India 3: 413. 1961. *Solanum myriacanthum* Gandhi in C.J. Saldanha & Nicolson, Fl. Hassan: 461. 1976, non Dunal, 1813.

Herbs or sub-shrubs, erect, 0.5-1(-2) m tall, armed, minutely tomentose with many-celled, simple, mostly glandular hairs. Stems and branches terete, densely and evenly pubescent with many-celled, simple hairs to 1 mm, armed

with recurved prickles 2-5 × 1-5(-8) mm and sometimes with needlelike prickles 1-4 mm. Leaves unequal paired; petiole stout 3-7 cm, armed with erect, flat straight prickles 0.3-1.8 cm; leaf blade broadly ovate, 6-13 × 6-12 cm, with prickles andcoarse, many-celled, glandular simple hairs on both surfaces, these mixed with sparse, sessile, stellate hairs abaxially, base truncate to short hastate, margin 3-5lobed or -parted; lobes blunt at apex. Inflorescences extra-axillary, subfasciculate,1-5-flowered racemes; peduncle obsolete or short. Flowers andromonoecious, only basal ones fertile. Pedicel 4-6 mm. Calyx campanulate, ca. 10 × 7 mm, lobes oblong-lanceolate, 0.6-1.2 mm, hairy and sometimes prickly abaxially. Corollawhite or green; lobes lanceolate, ca. 2.5 × 10 mm, pubescent as on calyx. Filaments 1-1.5 mm; anthers lanceolate, acuminate, 6-7 mm. Ovary puberulent. Style ca. 8 mm, glabrous. Berry pale yellow, globose, 2-3 cm in diam. Seeds brown, lenticular, 2-2.8 mm in diam. Distribution: found in Japan, India, SW Asia and Europe in fields, nearby habitationandwaste areas.

Fl. Jun-Aug, **Fr.** Jun-Oct.

Distribution: Kerala, Kannur, Kasaragod, Thrissur Tamil Nadu: Coimbatore, Kanniyakumari, Nilgiri, Salem.

Uses: Used in agriculture to rear beneficial insects for biological control of pests.Contains solasodine, a compound studied for potential pharmaceutical applications.

Withania somnifera (L.) Dunal, Prodr. [A. P. de Candolle] 13(1): 453 (1852). *Alicabon somniferum* (L.) Raf. in Sylva Tellur.: 56 (1838). *Physalis*

somnifera L. in Sp. Pl.: 182 (1753). *Physaloides somnifera* (L.) Moench in Methodus: 473 (1794)

Ashwagandha is a short, tender perennial shrub that grows about 35-75 cm (14-30 inches) tall. The leaves are simple, ovate, and about 5-12 cm (2-4.7 inches) long. They are green, smooth, and have a slightly hairy texture. The flowers are small, green, and bell-shaped. They are typically clustered in groups at the axils of the leaves. The fruit is a small, spherical, red berry, about the size of a raisin. It is enclosed in a papery calyx. The root is thick, tuberous, and brown, resembling a carrot in shape. It is the most used part of the plant in traditional medicine.

Fl. Mostly throughout the year.

Distribution: Canary Islands, Mediterranean, Africa, Iraq, S. Iran, Syria, Turkey, Palestine, Arabia, Pakistan and India.

Uses: Supports overall immune health and promotes vitality.

Family: Tetramelaceae

Tetrameles nudiflora R.Br., Pl. Jav. Rar. (Bennett) 79. t. 17.

A large deciduous tree that can reach to the height of 40-60 m(130-200 feet) with the trunk dm of up to 2 m (6.5 feet). It has a straight, cylindrical trunk and a wide-spreading crown. The bark is smooth and grayish-white to light brown. It may develop fissures and flakes as the tree matures. Leaves are simple, alternate, and broadly ovate, resembling those of the maple tree (hence the specific epithet "acerifolium" meaning "maple-leaved"). They are

palmately lobed with 3 to 5 lobes, measuring up to 20-30 cm (8-12 inches) long and wide. The leaf surface is smooth and glossy green, with a slightly serrated margin.

The tree produces small, inconspicuous flowers that are unisexual, with male and female flowers appearing on separate trees (dioecious). Flowers are yellowish-green and are borne in clusters. Fruit is a small, woody capsule that splits open when mature to release numerous tiny, winged seeds. The seeds are dispersed by the wind.

Fl. March to May

Distribution: India, Assam, Meghalaya; Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Sri Lanka, Thailand, Vietnam, Australia

Uses: The lightweight wood is used for making furniture, plywood, and construction materials.Bark and other parts are used in traditional medicine for treating fever, wounds, and digestive issues.Provides habitat and food for wildlife, especially in tropical forests, and supports soil stabilization.

Family: Theaceae

Camellia oleifera C.Abel, Narr. Journey China 174, 363 (1818).*Sasanqua oleifera* (C.Abel) Raf. in Sylva Tellur.: 140 (1838). *Thea oleifera* (C.Abel) Rehder &E.H.Wilson in C.S.Sargent, Pl. Wilson. 2: 393 (1915). *Theaphylla oleifera* (C.Abel) Raf. in Sylva Tellur.: 139 (1838)

Shrubs or trees, 1-5(-8) m tall. Young branches grayish brown; current year branchlets reddish brown, pubescent. Petiole 5-10 mm, pubescent; leaf blade elliptic, oblong-elliptic, or obovate, 3-10(-12) × 2-4(-5) cm, leathery to rigidly leathery, abaxially pale green, sparsely pilose along midvein or

glabrous, and becoming yellowish green when dry, adaxially dark green, shiny, and hirtellous along midvein, midvein raised on both surfaces, secondary veins 5-8 on each side of midvein, abaxially obscure, and adaxially raised, base broadly cuneate to cuneate, margin serrate to serrulate, apex acute to acuminate and with an obtuse tip. Flowers axillary or subterminal, solitary or paired, 4-6 cm in diam., subsessile. Bracteoles and sepals 8-11, caducous; outer bracteoles and sepals lunate to semiorbicular, scalelike, 1-3 mm, glabrous or subglabrous; inner bracteoles and sepals obovate to suborbicular, 0.9-1.2 cm, outside yellow tomentose, inside glabrous, margin membranous and ciliolate. Petals 5-7, white, nearly distinct, obovate, oblong-obovate, or oblanceolate, 2.5-3.5(-4.5) × 1.5-2.5(-3) cm, apically 2-parted. Stamens ca. 1.5 cm, glabrous; outer filament whorl basally connate for ca. 5 mm. Ovary globose, 2-3 mm in diam., white tomentose, 3-loculed; style 0.8-1.2 cm, glabrous or base tomentose, apically 3-lobed to 3-parted. Capsule globose to ellipsoid, 2-4 cm in diam., 1-3-loculed with 1 or 2 seeds per locule; pericarp 3-6 mm thick, villous, splitting into 2 or 3 valves. Seeds brown to reddish brown, globose to semiglobose, 1.5-2 cm in diam.

Fl. Dec-Jan, **Fr.** Sep-Oct.

Distribtuion: China, India, Laos, Myanmar, Vietnam; North America. China (wide areas of S-Qinling Shan to Huaihe River valley in China), Japan (Kyushu), Ryukyu Isl., Korea (introduced), N-Laos, N-Myanmar [Burma], N-Vietnam, trop. Africa (introduced), USA (introduced) (Florida (introduced), Georgia (introduced), North Carolina (introduced), South Carolina (introduced)).

Uses: Seeds are pressed to produce camellia oil, a healthy cooking oil rich in unsaturated fats. Camellia oil is used in skincare products for its moisturizing and antioxidant properties.

Family: Tiliaceae

Grewia optiva J. Drumm. ex Burret. Notizbl. Bot. Gart. Berlin. 9:692, 1926(*Grewia oppositifolia*Roxb. Fl. Ind. 2: 583, 1832; Hook.f. in Fl. Brit. Ind. 1: 384, 1872; Osmaston, For. Fl. Kumaon 60, 1927).

A medium-sized tree. Leaves ovate, acuminate, coarsely serrate, scabrid above, pubescent beneath, 3 nerved; stipules linear subulate. Flowers 1-8 together, peduncles solitary, leaf opposed or exceptionally a few, axillary tomentose; buds densely stellate-pubescent. Petals shorter than sepals, linear, claw distinct, white or pale yellow. Fruit 1-4 lobed, black when ripe.

Fl.: Apr.-June. **Fr**.: Oct.-Dec.

Distribution: In hot valleys on outer slopes ascending to 2000m.

Uses: Leaves are highly nutritious and used as livestock feed, especially in hilly regions.Bark yields strong fibers for making ropes, mats, and other products.Wood is used for making tools, furniture, and as a source of firewood.

Family: Ulmaceae

Ulmus wallichiana Planch. in Ann. Sci. Nat. Ser. 3. 10:277. 1848. Brandis, For. Fl. N. W. & C. Ind. 432. 1874; Hook. f., Fl. Brit. Ind. 5. 480. 1888; Melville &Heybroek in Kew Bull. 26, 1:8. 1971.

A large deciduous tree; young branches pubescent to tomentose. Leaves 7-15 x 4- 6 cm, elliptic-acuminate to obovate-cuspidate, base obliquelly cuneate to rounded, sharply biserrate, teeth arching with 2-4 secondary teeth, upper surface pubescent to scabridulous in old leaves, lower surface densely pubescent to scabridulous in old leaves, lower surface densely pubescent to tomentose; petiole 6-10 mm long, pubescent. Flowers in clusters on branches of previous season appearing before leaves. Inflorescence axis elongated; pedicels in fruit more than 5 mm long, articulated; lower portion ± 1/3rd the length of pedicel, uniformly pilose. Perianth tube narrowed into the pedicel, lobes 5.6, obtuse, pubescent to subglabrous. Stamens 5-6, filaments longer than the perianth, anthers red. Ovary slightly pubescent all over. Samara orbicular-obovate, 12-15 mm, narrowed into a short stipe, 2-3 mm long; stipe longer than the perianth, seed centrassl, hirsute to subglabrous; wing membranous, reticulate, margin ± ciliolate.

Fl.: March-April.

Distribution: Himachal Pradesh, Jammu and Kashmir, Uttarkhand.

Uses: Bark is used in traditional medicine for treating respiratory ailments, wounds, and inflammation.Wood is valued for making furniture, agricultural tools, and construction materials.Used in reforestation programs and as a shade tree due to its adaptability and ecological benefits.

Family: Urticaceae

Debregeasia saeneb (Forsskål) Hepper & Wood, Kew Bull. 38: 86. 1983.*Rhus saeneb* Forsskål, Fl. Aegypt.-Arab. 206. 1775; *Boehmeria salicifolia* D. Don; *Debregeasia bicolor* (Roxb.) Weddell; *D. salicifolia* (D. Don) Rendle; *Urtica bicolor* Roxburgh.

Shrubs or small trees 2-5 m tall, often dioecious. Branches dark purplish, young branchlets and petioles sparsely spreading hirtellous and mixed snow white tomentose. Stipules oblong-lanceolate, 6-10 mm, 2-cleft at apex, tomentose along veins abaxially; petiole 0.5-3 cm; leaf blade adaxially green, oblong to linear-lanceolate, sometimes linear, 5-15 × 1.5-4 cm, thinly papery or papery, 3-veined, lateral ones straight, reaching to middle, secondary veins 4-6 on each side from middle of leaf, anastomosing at margin, abaxial surface thickly snow-white tomentose, fine veins invisible, sometimes sparsely appressed pubescent on main and secondary veins, adaxial surface sparsely appressed strigose, sometimes rugose, base rounded, margin finely serrulate, apex acuminate. Inflorescences borne always on previous years' branches, often flowering before leaf flush, 1-2-dichotomously branched or solitary, 0.5-1 cm; peduncle 0-0.5 cm, appressed pubescent; glomerules globose, 4-6 mm in diam.; bracts obovate, ca. 2.5 mm, membranous. Male flowers shortly pedicellate, flattened in bud, 1.2-1.5 mm in diam.; perianth lobes (3 or)4, triangular-ovate, densely white tomentose abaxially, connate at base, apex acute; rudimentary ovary sessile, obovoid, ca. 0.5 mm. Female flowers sessile, obovoid, ca. 0.7 mm; perianth tube membranous, glabrous, 4-denticulate at apex. Achene orange, ca. 1 mm, stipitate at base, enclosed by fleshy perianth and adnate to it.

Fl. Mar-Apr, **Fr**. May-Jul.

Distribtuion: Shady, moist places by streams, forests in mountain valleys; 1700-2300 m. SW Xinjiang, S Xizang [Afghanistan, Kashmir, Nepal; Iran, Yemen, Ethiopia].

Uses: Bark is utilized for making ropes and textiles.Acts as ground cover and helps in soil stabilization in tropical regions.

Family: Verbenaceae

Duranta erecta L., Sp. Pl. 2: 637 (1753).

The leaves are opposite or whorled along the stems, elliptic to ovate in shape, and typically glossy green. They may have serrated margins and vary in size from 2 to 7 centimeters in length. Some cultivars exhibit variegated or golden-yellow foliage.The flowers of Durantaerecta are small, tubular, and borne in dense clusters known as racemes. The flower clusters may be terminal or axillary and can vary in color from violet-blue to lavender or white, depending on the cultivar. The flowers are attractive to butterflies and bees.The fruit of Durantaerecta is a small, spherical berry that ripens from green to yellow or orange. The berries are often persistent on the plant and may attract birds, which aid in seed dispersal.

Fl. and **Fr**. May-Oct.

Distribution: Usually cultivated or sometimes naturalized near farm houses; 200-400 m. Naturalized in Fujian, Guangdong, Guangxi, Hainan, Hunan, Jiangxi, Taiwan, Zhejiang [North and South America].

Uses: Widely grown as an ornamental shrub for its attractive flowers and vibrant purple or yellow berries.Often used as a hedge or barrier due to its dense growth and thorny branches.

Verbena officinalis L., Sp. Pl. 1: 20 (-21) (1753).

Herbs, annual or weakly perennial, erect, 30-140 cm tall, pubescent to subglabrous. Leaves narrowed into a petiole 0.3-4 cm; leaf blade ovate, obovate, or oblong, 2-8 X 1-5 cm, papery, hirsute especially on abaxial veins, margin coarsely dentate or cut to sometimes deeply pinnatifid or lobed. Spikes long, slender; bracts as long as calyx. Calyx 1-4 mm, pubescent, glandular. Corolla blue to pink, (2-)4-8 mm, pubescent. Ovary glabrous. Nutlets oblong, ca. 2 mm.

Fl. &**Fr**. Jul-Oct

Distribution: Grassy places on mountain slopes; 100-1800 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shanxi, Sichuan, Taiwan, Xinjiang, Xizang, Yunnan, Zhejiang [worldwide weed in temperate zones and tropics].

Uses: Used in herbal medicine to treat conditions like anxiety, insomnia, and digestive issues.Leaves are sometimes used to flavor teas, salads, and desserts.Extracts are used in skincare products for their soothing and anti-inflammatory properties.

Family: Violaceae

Viola biflora L., Sp. Pl. 2: 936 (1753).

Herbs perennial. Rhizome erect or obliquely ascending, slender or slightly robust, noded, with numerous rootlets. Stems 2 or several fasciculate, erect or obliquely ascending, 10-25 cm tall, slender, 3-5-noded, usually glabrous or sparsely puberulous when young. Basal leaves 2 to several; petiole 4-8 cm; leaf blade reniform, broadly ovate, or suborbicular to orbicular, 1-3 × 1-4.5 cm, abaxially glabrous, adaxially sparsely puberulous, sometimes puberulous on both surfaces, base cordate or subtruncate, margin obtusely dentate or shallowly repand-crenate, apex obtuse. Stipules free, ovate or ovate-lanceolate, 3-6 mm, margin entire or remotely denticulate, apex acute; cauline leaves shortly petiolate; petiole glabrous or puberulous; leaf blade smaller than basal ones. Flowers yellow, sometimes whitish at late anthesis; pedicels 1-6 cm, slender, 2-bracteolate at upper part; bracteoles lanceolate. Sepals linear-lanceolate or lanceolate, 3-4 mm, apex acute, basal auricles very short, margin membranous, glabrous or shortly ciliate in middle and lower parts. Petals oblong-obovate, 6-8 mm, purple veined, lateral ones inside not barbate, anterior one ca. 1 cm (spur included); spur shortly cylindric, 0.5-2.5 mm; spur of anterior stamens shortly triangular. Ovary glabrous; styles clavate, base slightly geniculate, deeply 2-lobed in upper half, lobes obliquely spreading, with a conspicuous stigma hole in between lobes. Capsule oblong-ovoid, 4-7 mm, glabrous.

Fl. Apr-May, **Fr.** Jun-Sep.

Distribution: native to Europe and parts of Asia, including the Himalayas.

Uses: Cultivated for its delicate flowers in gardens and as ground cover in shaded areas.Provides nectar and pollen for pollinators, including bees and butterflies.

Viola odorataL., Sp. Pl. 2: 934. 1753. *Viola hirta* var. *odorata* (L.) Fiori in A.Fiori& al., Fl. Anal. Italia 1: 405 (1898). *Viola hirta* subsp. *odorata* (L.) Fiori in A.Fiori& al., Fl. Anal. Italia 1: 404 (1898). *Viola martii* subsp. *odorata* (L.) Schimp. &Spenn. in Fl. Friburg. 3: 1036 (1829), nom. illeg.

Herbs perennial, acaulescent, stoloniferous, 3-15 cm tall. Rhizome erect or oblique, brownish, robust, densely noded, with numerous roots and slender, long stolons produced from nodes. Leaves basal; leaf blade orbicular or reniform to broadly ovate-cordate, smaller at anthesis, 1.5-2.5 × 1.5-2.5 cm, gradually accrescent, to 4.5 × 4.5 cm, both surfaces sparsely puberulous or subglabrous, base deeply cordate, margin crenate, apex rounded or ± acute. Flowers deep purple, large, fragrant; pedicels long, slender, puberulous or subglabrous, 2-bracteolate at or above middle. Sepals oblong or oblong-ovate, base obtuse or shallowly dentate, apex obtuse, basal auricles 2-3 mm. Petals crenate, upper ones obovate, lateral ones inside shortly bearded, anterior

one broadly obovate, 1.5-2 cm (spur included); spur 2-4 mm, straight or slightly curved; spurs of 2 anterior stamens robust, ca. 4 mm. Ovary puberulous; styles slender and straight at base, thickened upward and slightly compressed, apically curved and with a hooked beak about as long as diameter of styles, with a smaller stigma hole at tip of beak. Capsule globose, densely puberulous.

Fl. Apr-May, **Fr.** Jun-Sep.

Distribution: Andhra Pradesh, Gujarat, Jammu & Kashmir, Karnataka, Tamil Nadu, West Bengal.

Uses: Provides nectar and pollen for pollinators, including bees and butterflies.Sometimes used in folklore and literature as a symbol of modesty and faithfulness.

Family: Zingiberaceae

Amomum subulatum Roxb., Pl. Coromandel 3(2): t. 227; Fl. Ind. i. 43 (1815). Cardamomum subulatum, (Roxb.) Kuntze, Revis. Gen. Pl. 2:687. (1891).

Plants 1-2 m tall. Ligule 3-4 mm, membranous, apex rounded, emarginate; petiole absent or nearly so on proximal leaves, 1--3 cm on distal ones; leaf blade oblong-lanceolate, 25-60 × 3.5-11 cm, glabrous, base rounded or cuneate, apex long cuspidate. Spikes subturbinate, ca. 5 cm in diam.; peduncle 0.5-4.5 cm, scalelike sheaths brown; bracts pale red, ovate, ca. 3 cm, apex obtuse with horny cusp; bracteoles tubular, ca. 3 cm, apex acute, emarginate. Calyx glabrous, 3-cleft to middle; lobes subulate. Corolla tube equaling calyx; lobes yellow, central one subulate at apex. Lateral staminodes red, subulate, ca. 2 mm. Labellum with yellow midvein, oblong, ca. 3 cm, white pubescent, veins conspicuous, apex involute. Filament ca. 5 mm; anther ca. 1 cm; connective appendage elliptic, entire, ca. 4 mm. Capsule purple or red-brown, globose, 2--2.5 cm in diam., with 10 undulate wings, apex with persistent calyx.

Fl. May--Jun, fr. Jun--Sep. 2 *n* = 48.

Distribution: Dense forests; 300--1300 m. Guangxi, Xizang, Yunnan [Bangladesh, Bhutan, N India, Myanmar, Nepal, Sikkim].

Uses: Widely used as a spice in Kashmiri cuisine, imparting a smoky flavour to dishes such as Rogan Josh, Yakhni, and various meat and vegetable preparations. It is an essential ingredient in Kashmiri Wazwan, a traditional multi-course meal. It is valued for its aromatic and medicinal properties.

Curcuma longa L., Sp. Pl. 1: 2 (1753). *Kua domestica* Medik. in Hist. &Commentat. Acad. Elect. Sci. Theod.-Palat. 6: 396 (1790), nom. superfl. *Stissera curcuma* Giseke in Prael. Ord. Nat. Pl.: 249 (1792), nom. superfl.

Plants ca. 1 m tall. Rhizomes many branched, orange or bright yellow, cylindric, aromatic; roots tuberous at tip. Petiole 20--45 cm; leaf blade green, oblong or elliptic, 30--45(--90) × 15--18 cm, glabrous, base attenuate, apex shortly acuminate. Inflorescences terminal on pseudostems; peduncle 12--20 cm; spike cylindric, 12--18 × 4--9 cm; fertile bracts pale green, ovate or oblong, 3--5 cm, apex obtuse; coma bracts spreading, white and green, sometimes tinged reddish purple, apex acute. Calyx white, 0.8--1.2 cm, puberulent, apex unequally 3-toothed. Corolla pale yellow; tube to 3 cm; lobes deltoid, 1--1.5 cm, central one larger, apex mucronate. Lateral staminodes shorter than labellum. Labellum yellowish with central, yellow band, obovate, 1.2--2 cm. Anther spurred at base. Ovary sparsely hairy.

Fl. Aug.

Distribution: Cultivated. Fujian, Guangdong, Guangxi, Sichuan, Taiwan, Xizang, Yunnan [native origin unknown; cultivated throughout tropical Asia].

Uses: Turmeric is a staple spice in Asian cuisine.In traditional medicine, turmeric is celebrated for its anti-inflammatory and antioxidant properties. It is often used in remedies to treat a variety of ailmendigestive issues to skin conditions. For instance, a mixture of turmeric and honey is a popular home remedy for sore throats.Turmeric is also utilized in skincare for its potential to improve skin tone and reduce inflammation.

Elettaria cardamomum(L.) Maton Trans. Linn. Soc. London 10: 254 (1811). *Alpiniacardamomum* (L.) Roxb. in Asiat. Res. 11: 355 (1810). *Amomum cardamomum* L. in Sp. Pl.: 1 (1753). *Amomum racemosum* Lam. in Tabl. Encycl. 1: t. 2 (1791), nom. superfl.*Amomum repens* Sonn. in Voy. Indes Orient. 3: 272 (1782), nom. superfl.*Cardamomum officinale* Salisb. in Trans. Hort. Soc. London 1: 282 (1812). *Cardamomum verum* Oken in Allg. Naturgesch. 3(1): 508 (1841), nom. superfl.*Elettaria cardamomum* var. *minor* Watt in Commerc. Prod. India: 512 (1908), not validly publ.*Elettaria repens* Baill. in Traité Bot. Méd. Phan. 2: 1432 (1884), nom. superfl.*Matonia cardamomum* (L.) Stephenson &J.M.Churchill in Med. Bot. 3: t. 106 (1831). *Zingiber cardamomum* (L.) Stokes in Bot. Mat. Med. 1: 69 (1812).

Elettaria cardamomum, also known as cardamom, is a perennial plant that can grow up to 15 ft tall. It has fragrant leaves and produces a fruit that contains small, aromaticLeaves linear-lanceolate, sword-shaped leaves,

alternate in two ranks, up to 24 in long, dark green in color. Flowers are white, lilac, or pale violet in color, butterfly-shaped with reddish purple markings in the middle, borne on a flowering stalk that can reach over 1 m in length. Fruit are light green to yellow in color spherical to ellipsoid in shape and three-sided pod with 15–20 black and brown seeds.

Fl. April- May

Distribution: India (Native). Bangladesh, Cambodia, Costa Rica, Lesser Sunda Is., Réunion, Thailand, Trinidad-Tobago, Vietnam (Introduced).

Uses : The seeds are added whole or crushed to various dishes, desserts, and beverages. Used to treat sore throat, skin disease, and digestive problems

Zingiber officinale Roscoe, Trans. Linn. Soc. London 8: 348 (1807). *Amomum angustifolium* Salisb. in Prodr. Stirp. Chap. Allerton: 4 (1796), nom. illeg.*Amomum zingiber* L. in Sp. Pl.: 1 (1753)*Zingiber zingiber* (L.) H.Karst. in Deut. Fl.: 471 (1880), not validly publ.

Rhizomes branched, yellowish inside, thickened, fleshy, strongly aromatic. Pseudostems 50--100 cm. Leaves sessile; ligule slightly 2-lobed, 2--4 mm, membranous; leaf blade lanceolate or linear-lanceolate, 15--30 × 2--2.5 cm, glabrescent. Inflorescences arising from rhizomes, ovoid, 4--5 × ca. 1.5 cm; peduncle to 25 cm; bracts pale green, sometimes yellowish at margin, ovate, ca. 2.5 cm, apex mucronate; bracteoles equaling bracts. Calyx ca. 1 cm. Corolla yellowish green; tube 2--2.5 cm; lobes lanceolate, ca. 1.8 cm. Central lobe of labellum with purple stripe and cream blotches, oblong-obovate, shorter than corolla lobes; lateral lobes ovate, ca. 6 mm, free nearly to base.

Stamen dark purple; anther ca. 9 mm; connective appendage curved, ca. 7 mm.

Fl. Oct.

Distribution: Cultivated. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [native origin unknown; widely cultivated in the tropics and subtropics.

Uses: Traditionally used in herbal medicine.Grown for its attractive small purple or yellow flowers, often used in alpine or rock gardens.

GYMNOSPERMS

Family: Araucariaceae

Araucaria Juss., Gen. Pl. [Jussieu] 413 (1789). *Altingia* Jacob-Makoy in Nursery Cat. (L. Jacob-Makoy & Co.) 1836: 13 (1836).

Araucaria is a genus of evergreen coniferous trees native to several regions around the world, but they are not naturally found in Jammu and Kashmir. However, they are sometimes cultivated as ornamental trees in parks, gardens, and private landscapes in the region due to their distinctive appearance and attractive foliage. Araucaria trees are characterized by their symmetrical, conical shape and dense, spirally arranged branches. The leaves are needle-like or scale-like, depending on the species, and are often arranged in whorls

around the branches. Some species produce large, spherical cones that contain edible seeds.

Cone: Matures fromApril and June

Distribution: Papua New Guinea; Australia (including Norfolk Island), New Caledonia, South America; three species (introduced) in China.

Uses: Flowers are known for their sweet fragrance and are used in the perfume industry. Flowers are edible and are used in desserts, salads, and as garnishes.

Family: Cupressaceae

Cupressus torulosa D.Don, Descr. Pinus [Lambert] 2: 18 (1824).*Cupressus lusitanica* subsp. *torulosa* (D.Don ex Lamb.) Silba & Brian Chen in J. Int. Conifer Preserv. Soc. 12: 85 (2005).

Cupressus torulosa, commonly known as the Himalayan cypress is a species of coniferous tree native to the Himalayan region, including parts of Jammu and Kashmir. Typically grows to a height of 20-45 m (65-148 feet), though in favorable conditions, it can reach up to 60 meters (197 feet). The tree has a dense, conical or broadly columnar crown when young, becoming more irregular and flat-topped with age. The bark is grayish-brown, smooth on young trees, but becoming furrowed and fissured on mature specimens. Leaves are scale-like, overlapping, and arranged in opposite decussate pairs along the branches. They are dark green to bluish-green in color, with a glandular spot on the upper surface. It produces small, spherical cones that measure about 1-2 cm in diameter. These cones start out green and eventually turn brown as they mature. Each cone contains several seeds.

Spores: Apr.-May.

Distribution: Species is native to the Himalayan region, including parts of India (such as Jammu and Kashmir), Bhutan, Nepal, and Tibet. It is commonly found at altitudes ranging from 1,500 to 3,000 meters (4,920 to 9,840 feet) above sea level.

Uses: Plays a crucial role in stabilizing soil on steep slopes, thus helping to prevent erosion.The dense foliage of the tree provides habitat and shelter for various birds and mammals found in the Himalayan ecosystem.

Family: Cycadaceae

Cycas circinalis Roxb., Hort. Bengal. 71; Fl. Ind. iii. 744 (1832).*Cycas circinalis* var. *vera* J.Schust. in H.G.A.Engler (ed.), Pflanzenr., IV, 1: 66 (1932), not validly publ.

A cycad, type of gymnosperm that resembles palms and ferns but is actually a distant relative of pine trees. This species typically grows to a height of 2 to 3 meters (6.5 to 10 feet), but in some cases can reach up to 6 meters (20 feet). The trunk is stout, cylindrical, and covered with the remnants of old leaf bases, giving it a rough texture. The leaves are large, pinnate, and can grow up to 2 meters (6.5 feet) in length. They are bright green and leathery, with numerous narrow leaflets arranged along a central rachis. *D*ioecious. Male plants produce pollen cones (strobili), while female plants produce ovulate structures that contain seeds.

Cones arises variely in different months**.**

Distribution: Native toIndia.

Uses: Widely used as an ornamental plant due to its attractive foliage and palm-like appearance. It is popular in gardens and landscapes in suitable climates.Various parts of the plant have been used in traditional medicine, though care must be taken due to the presence of toxic compounds.

Family: Cupressaceae

Platycladus orientalis (L.) Franco, Portugaliae Acta Biol., Sér. B, Sist. 33 (1949). *Biota orientalis* (L.) Endl. in Syn. Conif.: 47 (1847). *Thuja orientalis* L. in Sp. Pl.: 1002 (1753)

Trees to more than 20 m tall; trunk to 1 m (or more) d.b.h.; bark reddish brown to light grayish brown, thin, flaking in long strips; crown ovoid-pyramidal when young, broadly rounded or irregular when old. Leaves 1-3 mm, apex bluntly pointed; facial leaves rhomboid, with a conspicuous, linear, glandular groove at center abaxially; lateral leaves overlapping facial ones, boat-shaped, ridged, apex slightly incurved. Pollen cones yellowish green, ovoid, 2-3 mm. Seed cones when immature bluish green, subglobose, ca. 3 mm in diam., when ripe reddish brown, subovoid, 1.5-2(-2.5) × 1-1.8 cm; proximal 2 fertile cone scales 2-seeded, distal 2 fertile scales 1-seeded. Seeds grayish brown or purplish brown, ovoid or subellipsoid, 5-7 × 3-4 mm, slightly ridged.

Pollination: Mar-Apr, **Seed maturity,** Oct.

Distribution: Natural occurrences are difficult to distinguish from local introductions, owing to extensive cultivation and planting in the past; 300-3300 m. Native in S Gansu, Hebei, Henan, Shaanxi, Shanxi; introduced or status uncertain in Anhui, Fujian, N Guangdong, N Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, S Nei Mongol, Shandong, Sichuan, Xizang, Yunnan, Zhejiang [Korea, E Russia].

Uses: Widely used as an ornamental tree in gardens, parks, and along roadsides due to its attractive appearance and ability to be shaped into hedges and topiaries. The wood is lightweight, durable, and resistant to decay, making it useful for construction, especially in outdoor settings such as fences and posts.

Juniperus horizontalis Moench 699. (1794). *Sabina horizontalis* (Moench) Rydb. in Bull. Torrey Bot. Club 39: 100 (1912)

Shrubs, dioecious, prostrate to decumbent; crown depressed. Bark brown, exfoliating in thin strips, that of small branchlets (5--10 mm diam.) smooth, that of larger branchlets exfoliating in wide strips or plates. Branches creeping; branchlets erect, 3--4-sided in cross section, ca. 2/3 or less as wide as length of scalelike leaves. Leaves green but turning reddish purple in winter, abaxial gland elliptic, conspicuous, exudate absent, margins entire (at 20´ and 40´); whip leaves 4--8 mm, not glaucous adaxially; scalelike leaves 1.5--2 mm, mostly overlapping to 1/3 their length, apex rounded or obtuse to acute and apiculate, spreading. Seed cones mostly

maturing in 2 years, of 2 distinct sizes, generally with curved peduncles, globose to ovoid, 5--7 mm, blue-black to brownish blue when mature, lightly glaucous, soft and resinous, with 1--2(--3) seeds. Seeds 4--5 mm.

Family: Pinaceae

Cedrus deodara (Roxb. ex D.Don) G.Don, Hort. Brit. [Loudon] 1: 388, No. 23637 (1830). *Abies deodara* (Roxb. ex D.Don) Lindl. in Penny Cyclop. 1: 34 (1833). *Cedrus libani* var. *deodara* (Roxb. ex D.Don) Hook.f. in Himal. J. 1: 257 (1854). *Cedrus libani* subsp. *deodora* (Roxb. ex D.Don) P.D.Sell in Watsonia 18: 92 (1990). *Larix deodara* (Roxb. ex D.Don) K.Koch in Wochenschr. VereinesBeförd. GartenbauesKönigl. Preuss. Staaten 10: 308 (1867). *Pinus deodara* Roxb. ex D.Don in A.B.Lambert, Descr. Pinus 2: 8 (1824)

Evergreen trees, 40-80m high; with spreading branches and drooping branchlets. Leaves in dense clusters, needle-like, 3-quetrous, clustered as the end of branchlets, 2.5-4cm long, sharp-pointed. Male cones cylindrical, erect, 5-12cm long; pollen sacs-2. Female cones solitary, at the end of branchlets, erect, ovoid or cylindrical, 10-14 x 8-10cm, with numerous, thin, crustaceous bract-scales; young cones bluish-purple; seeds 5-1mm long, wings longer than seeds.

Fl. Sep.-Oct.**Fr**. Oct.-Nov.

Distribution: Common throughout in the Kumaon region mostly near the sacred groves, Afghanistan to W. Nepal.

Uses: Commonly grown as an ornamental tree in gardens and parks due to its distinctive, symmetrical shape and attractive foliage. Wood of some *Araucaria*species is used for construction, furniture, and crafting, especially due to its durability.

Pinus roxburghii Sarg., Silva N. Amer. 11: 9. 1897; Naithani, Fl. Chamoli 2: 763. 1985. *P. longifolia* 401 Roxb. ex Lambert, Descr. Gen. Pinus 1: 29. t. 21. 1803, non Salisbury, 1796; Hook. f. in Fl. Brit. India 5: 652.1888.

Evergreen trees, to 40m high; bark rough, deeply fissured. Leaves dark or light-green, needle like, on dwarf-shoots surrounded by persistent bud-scales. Male cones ovoid, 1.5-2cm long, borne on clusters at the base of current year shoots. Female cones solitary or 2-5 together, 10-18 x 7.5-12cm; bract-scales woody, with pyramidal, pointed or recurved beak; seeds 6-10mm long, obliquely oblanceolate, compressed, with membranous wing; cotyledons 10-12.

Pollination: Apr-May, **Seed maturity** Oct-Nov.

Distribution: Mountains; 2100-2200 m. S Xizang [Bhutan, N India, Kashmir, Nepal, Pakistan, Sikkim].

Uses: Chir Pine forests are ecologically important as they provide habitat for various wildlife species The tree also has economic significance, as its wood is used for construction, furniture making, and as a source of resin and pine

nuts. Additionally, the pine needles are sometimes used as fodder for livestock.

Pinus wallichiana A.B.Jacks., Bull. Misc. Inform. Kew 1938(2): 85 (1938). *Leucopitys excelsa* Nieuwl. in Amer. Midl. Naturalist 3: 70 (1913). *Pinus excelsa* Wall. ex D.Don in A.B.Lambert, Descr. *Pinus* 2: 5 (1824), nom. illeg.

Trees to 70 m tall; trunk to 1 m or more d.b.h.; bark dark gray-brown, minutely scaly and flaking; crown broadly pyramidal; 1st-year branchlets green (drying red-brown), shiny, faintly whitish bloomed, glabrous; winter buds red-brown, cylindric-obovoid or cylindric-conical, slightly resinous. Needles 5 per bundle, pendulous, slender, triangular in cross section, (6-)11-18(-20) cm × ca. 1 mm, soft, adaxial surface dark green, vascular bundle 1, resin canals 3, adaxial 2 marginal, abaxial 1 always median. Seed cones pendulous, pedunculate (peduncle 2.5-4 cm), cylindric, straight or curved, 10-30 × 3-4 cm (5-9 cm wide when open), resinous. Seed scales cuneate-obovate, 3-5 × 2-3 cm at middle of cone; apophyses shiny, often glaucous, rhombic, slightly thickened; umbo dark brown, slightly projecting, apex obtuse, obviously incurved. Seeds brown or black-brown, ellipsoid-obovoid, 3-9 × 4-5 mm; wing 1-3 cm × 8-9 mm.

Pollination: Apr-May, seed maturity autumn of 2nd year.

Distribution: Mountains, temperate rainforests; 1600-3300 m. S Xizang, NW Yunnan [Afghanistan, Bhutan, N India, Kashmir, Myanmar, Nepal, Pakistan, Sikkim].

Uses: The wood of Blue Pine is soft, light, and durable, making it valuable for construction, furniture, and making railway sleepers.The tree produces resin, which is used in varnishes, adhesives, and incense.Blue Pine forests play a critical role in preventing soil erosion and maintaining watershed stability in mountainous regions.

PTERIDOPHYTES

Family: Dryopteridaceae

Dryopteris chrysocoma (Christ) C. Chr., Index Fil. 257. 1905; Fraser-Jenkins in Bull. Brit. Mus. Nat. Hist. (Bot.) 18: 371- 374. f. 25. 1989; Khullar & Sharma in Pangtey& Joshi, West Himal. Env. Probl. Devel. 1. 337. 1987. *Aspidiumfilix-mas* var. *chrysocoma* Christ in Bull. Herb. Boiss. 6. 966. 1898. *Dryopteris macrocarpa* stewart in Bull. Torrey Bot. Club 72: 406. 1945.

Fronds up to 120 cm long, upright or hanging over rocks. Stipes thick ¼ to ½ the length of the lamina, sparsely glandular, smooth, pale, densely clothed with narrowly lanceolate pale brown scales further up and on the rachis. Lamina becoming twice pinnate below, lanceolate, up to 27cm wide, bearing up to 25 pairs of separate pinnae; pinnae linear, herbaceous, pale green, slightly impressed. Sori large, in two lobes, becoming crowded together, indusiate. Indusia flashy, white. Spores regular, dark brown.

Sori: July – Sep.

Distribution: Frequent on forest floors or growing on the exposed rocks 1600- 2800m.

Family: Pteridaceae

Adiantum capsillus- veneris L., Sp. Pl. 2: 1096. 1753; C.B. Clarke in Trans Linn. Soc. London 1: 453. 1880; Bedd., Handb. Ferns Brit. India 84. 1883;

Stewart in Bull. Torney Bot. Club 72: 421. 1945; Dixit, Cens. Indian Pterid. 74. 1984l. Dade; Hansraj (Hindi); Parioshan (Urdu); Gaoutheer (Kashmir).

Plants terrestrial or epilithic, 10-40 cm tall. Rhizomes creeping, slender, scales dense, brown, lanceolate, margins entire. Fronds remote or closely spaced; stipe castaneous-black, glossy, 3-20 cm, slender, base covered with same scales as rhizome, distally glabrous; lamina mostly 2-pinnate below middle, 1-pinnate above middle, ovate-triangular in outline, 6-25 × 8-16 cm, base cuneate, apex acute; pinnae 3-5 each side, obliquely ascending, stalk up to 15 mm; rachises, costae, and stalks same color as stipes, slightly zigzag, color passing into lamina base; basal pair of pinnae larger, 1(or 2)-pinnate, narrowly ovate in outline, 3-9 × 2.5-4 cm, apex obtuse; pinnae from second pair upward all similar but progressively smaller; pinnules 2-4 pairs per ultimate pinna, alternate, obliquely ascending; stalk castaneous-black, 1-2 mm, slender; blade subequal in size or basal pair slightly larger, 12-20 × 10-15 mm, thinly herbaceous, green or dark brown-green, both surfaces glabrous, base cuneate, sides entire, upper margin rounded, 2-4-lobed or divided into twiglike segments; sterile pinnules with apex obtuse, with marginal teeth broadly triangular or erose; fertile segments with apex truncate, straight or slightly depressed, entire or with erose teeth on both sides; terminal pinnules flabellate, usually larger, base narrowly cuneate, stalks up to 1 cm. Veins multidichotomously forked, reaching margins, visible on both surfaces. Sori 3-10 per pinnule, on apices of lobes of upper margin; false indusia yellowish green, brown when old, narrowly reniform or orbicular-reniform, membranous, upper margins flat and straight, entire, persistent. Perispore thickly granular.

Sori. Throughout the year.

Distribution: On limestone near running streams, bottom of limestone caves, cliffs wet with dripping water; 100-2800 m.

Adiantum edgeworthiis Hook., Sp. Fil. 2:14. T. 8113. 1851; Bedd., Handb. Ferns Brit. India Suppl.: 17. 1892. *A. caudatum* L. var. *edgeworthii* (Hook.) Bedd., Handb. Ferns Brit. India 84. 1883; Khullar, Illus. Fern Fl. W. Himal. 1: 290. 1994.

Plants terrestrial, 10-30 cm tall. Rhizomes erect, short, scales black-brown lanceolate, margins denticulate. Fronds clustered; stipe dark purplish, glossy, 4-16 cm, base covered with scales, distally smooth; lamina 1-pinnate, linear-lanceolate in outline, 6-23 × 2-3 cm, base subattenuate, apex acuminate; rachis castaneous, with sparse reddish brown linear scales, smooth, apex often prolonged into a whiplike stolon and rooting to form new plantlets; pinnules 10-30 each side, opposite or alternate, if rachis prolonged into a whiplike stolon then upper pinnules gradually further apart from each other; stalk ca. 1 mm; several basal pairs of pinnules shorter and relatively broader than middle pinnules and slightly reflexed, middle pinnules horizontally spreading, dimidiate, 1-1.5 × 0.5-0.8 cm, papery, dark brownish or brownish green, both surfaces glabrous, base asymmetrical with acroscopic side truncate, lower and inner margins straight and entire, upper margin shallowly 2-5-lobed, apex acute or obtuse; segments suborbicular, entire or slightly undulate; upper pinnules progressively smaller distally, terminal pinnules subflabellate, base cuneate, upper margins divided; veins multidichotomously forked, visible on both surfaces. Sori 2-5 per pinna, borne at apex of

segments; false indusia orbicular or oblong, membranous, upper margins flat and straight, entire, persistent. Perispore granular.

Sori: Aug- Sep.

Distribution: Shaded wet places, on rocks; 700-2500 m.

Uses: Grown for its delicate, feathery fronds, often used as an ornamental plant in gardens or as a houseplant. In some cultures, the plant is used in rituals or as a symbol of protection.

Hemionitis albomarginata (C.B.Clarke) Christenh., Global Fl. 4: 9 (2018). *Aleuritopteris albomarginata* (C.B.Clarke) Ching in Hong Kong Naturalist 10: 109 (1941). *Cheilanthes albomarginata* C.B.Clarke in Trans. Linn. Soc. London, Bot. 1: 456 (1880). *Cheilanthes farinosa* var. *albomarginata* (C.B.Clarke) Bedd. in Suppl. Ferns Brit. Ind.: 22 (1892).

Rhizomes erect, short; scales bicolorous, black with broad, pale margins, lanceolate. Fronds clustered. Stipe dark brown, lustrous, 6-12 cm × 1-2 mm, scaly; scales black or dark brown, with conspicuous lighter margins, broadly lanceolate. Lamina oblong-deltoid to deltoid, 9-19 × 4-10 cm, pinnate-bipinnatifid at base, papery when dry, with white or pale yellow farina abaxially, also with scales along costae and midveins abaxially, glabrous adaxially; pinnae 3-5 pairs, sessile, distinct along rachis, basal pair of pinnae ovate-deltoid, inequilateral, bipinnatifid; pinnules 6-8 pairs, basal basiscopic pinnules larger than adjacent acroscopic ones, 2-3 cm × 0.5-1 mm, lanceolate, pinnatifid; second pair of pinnae with same shape as basal ones; third and upper pairs of pinnae lanceolate, pinnatifid. Sori consisting of

several sporangia, confluent at maturity. False indusia broad, often nearly to midvein, interrupted, margins fimbriate.

Sori: July – December.

Distribution: Common on moist humus rich exposed slopes or walls, 1500-2500m on the outer ranges.

Uses: Known for its attractive, glossy, heart-shaped leaves, it is commonly grown as an ornamental fern in gardens or as a houseplant. Plays a role in the ecosystem by contributing to the biodiversity of tropical forests, where it is native.

Family: Lygodiaceae

Lygodium Japonicum *(*Thunb.) Sw. in Schrard., J. Bot. 1800 (2): 106. 1801; *Ophioglossum japonicum* Thunb. in J.A.Murray (ed.), Syst. Veg., ed. 14.: 926 (1784). *Hydroglossum japonicum* (Thunb.) Willd. in Abh. Kurfürstl.-Mainz. Akad. Nützl. Wiss. Erfurt 2(4): 26 (1802)

Rhizome widely creeping, dichotomously branched, 2-5 mm in diam., densely clothed with dark brown hairs, fronds commonly 5-10 mm apart. Juvenile fronds erect, first branching an unequal dichotomy two main branches of large fronds bipinnate, deltoid in outline, with palmatisect pinnae, pinna margins doubly serrate. Rachis of climbing fronds hardly ca. 2 mm in diam., glabrous except for minute hairs on flattened adaxial surface between narrow wings; primary rachis branches 3-10 mm, dormant apex covered with pale hairs; secondary branches of fronds on young or stunted plants pinnate, on well-grown fronds bipinnate or tripinnate, deltoid in

outline, commonly ca. 12 cm long and wide, rachises densely shortly hairy on adaxial surface and with fewer longer hairs elsewhere; sterile tertiary pinnae of lower rachis branches palmate with 5-7 lobes, middle lobe much longer than lateral lobes, tertiary pinnae higher up frond 3-lobed with an elongate middle lobe or pinnate with small oblique and often lobed quaternary pinnae and a usually deltoid-pinnatisect terminal pinna ca. 3 cm, margins acutely biserrate, apex obtuse or subacute; stalks of pinnae up to 3 mm, never articulate or thickened at apex; costae usually with long scattered hairs, veins and surfaces usually glabrous but sometimes shortly hairy; fertile secondary branches tripinnate, pinnae smaller than sterile pinnae, sorophores 2-12 mm; indusia glabrous or with few hairs if lamina hairy; spores finely low tuberculate to verrucose with prominent laesurae.

Sori: June – October.

Distribution: Climbing in secondary vegetation; sea level to ca. 500 m (in Taiwan). Anhui, Chongqing, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shanghai, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Bhutan, India, Indonesia (Java), Japan, Kashmir, Korea, Nepal, Philippines, Sri Lanka; tropical Australia, North America].

Uses: Cultivated as an ornamental plant due to its delicate, fern-like appearance, often used in gardens or as ground cover.In some regions, *Lygodium japonicum* is used for soil stabilization and erosion control, especially in tropical areas.

BRYOPHYTES

Family: Aytoniaceae

Plagiochasma Leham. &Lindenb. Nov. Strip. Pug. 4:13. 1832. Nom.cons.

Shiny, areolate, air pores small, faintly visible, margins purple, scalloped and slightly undulate; when dry, margins tightly incurved. Branches simple or once, sometimes twice furcate, rarely articulate with apical or ventrolateral innovations, broadly Ungulate, 10-20 mm long, 5-8 mm wide, 750-925 µm thick medianly, in section 6-8 times wider than thick, apex notched with large, orbicular appendages recurved over edge; groove absent, thallus margins acute, thin; flanks sloping very obliquely; ventral face medianly keeled, green. Scales in 2 ventral rows, body up to 1250 µm long, margins occasionally with projecting papillae, base flatly arched, ± 1100 µm wide, gradually narrowed above, deeply constricted and folded where joined with large, mostly single, orbicular, often decolorate appendage, 750 µm long, 550 µm across widest part, margins smooth with 1 or 2 rows of small rectangular cells, alternating with somewhat larger cells, some smaller oil cells scattered throughout scale. Dorsal epidermal cells unistratose, hyaline, thin-walled, thickened at corners, polygonal, 22.5-42.5 x 15.0-27.5 µm, smooth externally; air pores slightly raised, simple, 7.5-10.0 µm wide, surrounded by innermost ring of tiny, collapsed cells, then by 2 (or 3 partly) concentric rings of 5 or 6 larger cells in each, radial walls not thickened. Assimilation tissue 375-500 µm thick, air chambers empty, in several storeys, bounding walls chlorophyllose; storage tissue well developed; oil cells scattered throughout tissues.. Elaters pale brown, 187-240 µm long, 10 µm wide in middle, tapering toward ends, 5 µm wide, bi- or trispiral.

Distribution: Afghanistan, Burma, Celebes, China, Taiwan [Formosa], India, Kashmir, Nepal, Pakistan, Philippines, Sikkim and Vietnam. It is also known from the Arabian Peninsula, Socotra and Yemen, and in Africa from Ethiopia, Kenya, Tanzania and Zimbabwe.

Family: Funariaceae

Funaria Hedw. Sp. Musc. Frond. 172. 1801.

Plants small to medium-sized, gregarious or tufted, bright green to yellowish green. Stems short, erect, simple except for a short basal antheridial branch. Leaves larger and erect distally, reduced proximally, oblong-ovate to broadly obovate distally; concave; apex usually acute or acuminate margins erect, entire to serrate beyond middle; costa single, ending before the tip to excurrent; distal and medial laminal cells large, rhombic-hexagonal to rectangular, lax and rather thin-walled, proximal cells oblong-rectangular, differentiated alar cells absent. Sexual condition autoicous; antheridial branches 1-2, basal, perigonial paraphyses clavate with an enlarged inflated cell; perichaetia apparently absent paraphyses. Seta elongate, erect to strongly curved or twisted. Capsule exserted, usually inclined to pendent, asymmetric and usually curved, yellow to brown, pyriform, often sulcate or plicate when dry and empty, annulus large and revoluble or not differentiated, exothecial cells oblong-hexagonal to linear, walls incrassate especially so on inner tangential wall, stomata immersed; peristome double, inserted somewhat below the mouth, teeth well developed, obliquely directed, lance-acuminate, papillose-striate, often strongly trabeculate, frequently appendiculate at the tips and fusing with a latticed disk, endostome segments opposite the teeth, $^{1}/6$ or more the length of the teeth,

papillose or weakly papillose-striate with a basal membrane and cilia absent. Operculum usually oblique to the axis of the capsule, convex to weakly conic, cells in obliquely radial rows. Calyptra large, cucullate, usually smooth, and often long-rostrate. Spores spherical, smooth or papillose to baccate-insulate.

Family: Marchantiaceae

MarchantiaL. Sp. Pl. 2: 1137. 1753. (1May 1753).

Thallus 2.7-20 mm wide, often tinged with purple. Branching dichotomous. Epidermal pores compound, with 4-7 rings of cells, radial walls thin. Air chambers in 1 layer, with chlorophyllose filaments. Basal tissue with oil cells, often with sclerotic cells and mucilage cavities. Rhizoids smooth and tuberculate. Ventral scales in 4-10 rows, with oil cells and marginal papillae, each pair of rows of different shape, the 2 median with large appendage. Asexual reproduction by discoid gemmae with 2 growing points. Gemma cups cup-shaped. Dioecious, rarely with male branches developing in the female receptacles and then monoecious. Antheridiophore terminal; stalk with 0-2 assimilatory strips, 2-4 rhizoid furrows and scales, sometimes with modified ventral thallus scales sheathing the base; receptacle peltate or palmate, 2-to 12-lobed, with compound pores on dorsal side and scales underneath. Archegoniophore terminal; stalk with 1-2 assimilatory strips, 2-4 rhizoid furrows, and scales, sometimes with modified ventral thallus scales sheathing the base; receptacle 2- to 13-lobed, with compound pores on dorsal side. Involucres bilabiate, alternating with the receptacular lobes in neotropical species. Archegonia 2-14 per archegonial cavity, each fertilized archegonium enclosed within a campanulate pseudoperianth. Calyptrae 2- to

3-layered after fertilization. Sporophytes several per involucre, maturing sequentially; mature sporophyte with slightly elongating seta; capsule splitting into irregular valves to 1/2 of capsule length, walls with annular thickenings; spore/elater ratio more than 4:1. Spores 5000 to more than 10,000 per capsule, 8-36 |Lim diam., distal face either with tuberculate areoles, or with ridges and depressions, or irregularly pitted or grooved, or vermiculate, proximal face usually irregularly pitted or vermiculate, trilete scar ±; distinct. Elaters with 2-3 helical bands. Gametophytic chromosome number n = 9 or 18.

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