

ANGIOSPERMS OF INDIA KNOWN ONLY BY TYPE COLLECTION

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India's vast and varied climatic conditions, its undulating topography, and its variety of ecosystems have made it a repository of a huge number of species of plants, making it one of the richest regions of the world in terms of floristic diversity. As per the up-to-date records, 18,159 species of Angiospermae, 77 species of Gymnospermae, 1,274 species of Pteridophytae, 2,531 species of Bryophytae, 7,309 species of Algae, 14,936 species of Fungi and 1,071 species of viruses/bacteria have been recorded so far from India (Singh & Dash 2015). But still, there are many unexplored and under-explored areas where intensive and extensive surveys would result in further discovery of several novelties, as well as relocation of taxa after their type collection.

A scrutiny of the herbaria, literature (Jain & Rao 1983; Nayar & Sastry 1987, 1988, 1990; Rao et al. 2003) and earlier field surveys indicate that about 250 taxa of vascular plants (angiosperms and pteridophytes) have not been relocated after their type collection. However, during the present study, species that were earlier

considered endemic and known only by their type collections and reported to occur in other regions within our country or in other neighbouring countries as well have been excluded. Similarly, many species that have been rediscovered after their type collections from various phytogeographic regions of the country, especially from the Western Ghats regions during the past few decades, and many species or infraspecific taxa, which have been merged or treated as synonyms with their respective conspecific species have also been excluded. The present study revealed that a total of 69 taxa of angiosperms are still known only by their type collections.

In fact, there may be many more species of angiosperms that are known only by their type collection. However, as it is neither possible to check all the herbaria in India nor all the literature available on such species, a preliminary attempt has been made by the authors to include as many species as possible. Intensive and extensive field explorations are necessary to know the existence and also to assess the status of these taxa in our country. These species are enumerated below (in alphabetical order) with the hope that these may be relocated during exploratory surveys in the future. The current accepted botanical name for all the taxa with authority, family name, habit with a few salient features, habitat, type locality or distribution with elevation and the collection period have been briefly provided here. The digital images of type specimens and information taken from their collection labels are available at the Kew Herbarium Catalogue site (<http://apps.kew.org/>



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Enumeration

1. *Acilepis nayarii* (Uniyal) H. Rob. & Skvarla (Syn. *Vernonia nayarii* Uniyal; *V. recurva* Bedd. ex S. Moore) (Asteraceae)

A shrub with yellowish flowers; found in high altitude grasslands of the Anamalai Hills (Tamil Nadu) at about 2000m. It has not been recollected after 1857, and considered to be possibly extinct. Type collected by R.H. Beddome is housed at BM.

2. *Albertisia mecistophylla* (Miers) Forman (Menispermaceae)

A liana; female flowers and fruits are not known; confined to Assam and Meghalaya, and known only by the type collection by William Griffith.

3. *Ampelocissus helferi* (M.A. Lawson) Planch. (Vitaceae)

A scandent shrub; restricted to tropical evergreen forests of the Andaman Island; represented only by two collections (Helfer 1340, 1341), housed at K, CAL and PBL.

4. *Anaphalis barnesii* C.E.C. Fisch. (Asteraceae)

A herb with yellow flowers; known only by its type collection from the high altitude grasslands of the Western Ghats in Idukki District, Kerala by Edward Barnes deposited at K.

5. *Angelica nubigena* (C.B. Clarke) P.K. Mukh. (Apiaceae)

A stout herb with orbicular fruits; flowers are not known. An endemic species confined to Chola and Yakla passes in Sikkim, at about 3800m elevation; not collected since 1849.

6. *Arenaria ferruginea* Duthie ex F.N. Williams (Caryophyllaceae)

A laxly caespitose herb; found amidst rocks in the Himalayan valleys, at elevation ranges from 2100–3000 m. Endemic to the Kali and Dhauri valleys of Kumaon in Uttarakhand; not collected after J.F. Duthie in 1886.

7. *Arenaria thangoensis* W.W. Sm. (Caryophyllaceae)

A small delicate herb; confined to the alpine regions of Sikkim (Thangu, ca 4200m; Chugya, ca 4500m), and not collected after 1912.

8. *Asparagus rottleri* Baker (Asparagaceae)

An undershrub; endemic to Deccan Peninsula; known only by the type collection.

9. *Aspidopterys tomentosa* (Blume) A. Juss. var. *hutchinsonii* (Haines) R.C. Srivast. (Malpighiaceae)

A liana with ovate and apically notched samaras; found in hilly tracts at about 100m elevation; known only from type locality (Mayurbhanj Hills, Odisha), and type specimen (Haines 4181) is housed at K and CAL; not recorded after 1937.

10. *Begonia scintillans* Dunn (Begoniaceae)

An acaulescent herb; endemic to the Abor hills, Arunachal Pradesh; recorded around the mountain of Bapus, on the south face and towards Wotung, at elevation ranges from 1200–2000 m; known only by the type collection made in 1912.

11. *Begonia wattii* C.B. Clarke (Begoniaceae)

A herb with pink flowers; endemic to the Naga Hills (Nagaland), and the type housed at CAL.

12. *Begonia wengeri* C.E.C. Fisch. (Begoniaceae)

A herb with white flowers; type was collected from moist shady banks of water bodies at elevation ranges from 456–760 m in dense patches as undergrowth of evergreen forests at about 100km south of Lungleh in south Lushai Hills in Mizoram, and the collection (Wenger 324) is available at K.

13. *Calamus dilaceratus* Becc. (Areaceae)

Endemic to the Nicobar Islands and known only by its type collection (Nicobar Isl., S. coll. at K) made in 1888.

14. *Capparis cinerea* M. Jacobs (Capparaceae)

An armed shrub with pink-tinged white flowers; endemic to Khaiyang (open hillside, at about 1800m) in Manipur; represented by a solitary type collection made by Kingdon-Ward.

15. *Carex christii* Boeckeler (Cyperaceae)

A herb; endemic to grassy slopes of the Nilgiri Hills, Tamil Nadu at elevation ranges from 1524–2133 m; known only by its type collection.

16. *Carex munroi* Boott ex C.B. Clarke (Cyperaceae)

A herb, up to 90cm high; endemic to Kinnaur (Himachal Pradesh), at about 3505m; known only by type collection (Munro 7431 at K).

17. *Carex pseudoaperta* Boeckeler ex Kük. (Cyperaceae)

A herb, up to 25cm high; endemic to grassy hillslopes (at 1828m) of the Nilgiri Hills, Tamil Nadu; known only by type collection (Herb. Boeck.).

18. *Carex sahnii* Ghildyal & U.C. Bhattach. (Cyperaceae)

A herb; endemic to Sikkim (Pheedong), and known only by its type collection.

19. *Carex vicinalis* Boott (Cyperaceae)

A herb, up to 60cm high with dark purple glumes; endemic to the Nilgiri Hills, Tamil Nadu, and known only by its type collection housed at K.

20. *Chondrilla setulosa* C.B. Clarke ex Hook.f. (Asteraceae)

A perennial herb with yellow flowers; confined to grassy hillslopes (up to 2800m) in Jammu and Kashmir, and known only by its type collection.

21. *Cissus spectabilis* Hochst. ex Planch. (Vitaceae)

An erect shrub; endemic to Sikkim (Terai) and West Bengal (Siliguri – 8km and Panchkil – 3km), found in damp forests; represented by only two collections made about 125 years ago.

22. *Cleyera japonica* Thunb. var. *grandiflora* (Wall. ex Choisy) Kobuski (Theaceae)

A tree, up to 8m high with yellow flowers; found in evergreen forests at about 1900m, that receive high rainfall (up to 1200cm annually); endemic to the Khasi Hills (Elephanta Falls) in Meghalaya; represented by only a few collections at ASSAM.

23. *Dicliptera abuensis* Blatt. (Acanthaceae)

A straggling shrub with deep pink flowers; found in wet and shady habitats of the Dhobi Ghats, Mt. Abu, Rajasthan; collected only once by Hallberg in 1916.

24. *Dicliptera ghatica* Santapau (Acanthaceae)

An erect branched herb with pinkish flowers; confined to Mardi, Khandala Ghats, not collected after the type collection.

25. *Dipcadi minor* Hook.f. (Liliaceae)

A herb; endemic to Deccan Plateau (specific localities not known), and not collected after Dalzell, who collected it from the Konkan in 1859.

26. *Drimia polyphylla* (Hook.f.) Ansari & Sundararagh. (Asparagaceae)

A herb; endemic to the hillslopes or tableland of Deccan Peninsula, and not collected during the last 122 years.

27. *Elaeocarpus gausseii* Weibel (Elaeocarpaceae)

A tree, up to 20m tall with white flowers; confined to shady humid habitats in moist evergreen forests, at about 1500m elevation in the High Wavy Mountains of Theni District, Tamil Nadu (precise locality not known); represented by a solitary collection (Blasco 1677 at K).

28. *Eragrostis rottleri* Stapf (Poaceae)

An annual; recorded from Tranquebar, east coast of Tamil Nadu; known only by the type collections by Rottler in 1779 (Rottler s.n.) housed at K.

29. *Eria occidentalis* Seidenf. (Orchidaceae)

An epiphyte with clustered pseudobulbs; recorded from the Quercus forests of Kumaon District, Uttarakhand, at about 1550m elevation; known only from type locality.

30. *Garcinia cadelliana* King (Clusiaceae)

A medium-sized tree; recorded from tropical evergreen forests in the South Andaman Islands; known only by the type collection by George King (King's Collector 371 at K) in 1884. However, Nayar & Sastry (1990) presumed the possibility of its occurrence in the Jarawa belt of the Middle Andamans.

31. *Garcinia kingii* Pierre ex Vesque (Clusiaceae)

A small tree; endemic to the Andaman Islands; known only by the type collection.

32. *Hedyotis beddomei* Hook.f. (Rubiaceae)

A shrub; found in open grasslands at about 2000m elevation; known only by type collection (R.H. Beddome 255 at K) by Beddome from the Palghat Hills in 1872.

33. *Heracleum jacquemontii* C.B. Clarke (Apiaceae)

A herb with white flowers; endemic to northwestern Himalaya (no precise locality known); represented only by type specimen collected by Jacquemont during 1830–1832.

34. *Hypoestes andamanensis* Thoth. (Acanthaceae)

A herb or small shrub with pink flowers, as undergrowth in tropical evergreen forests; endemic to the Middle Andaman Islands, and known only by the

type collection.

35. *Impatiens macrocarpa* Hook.f. (Balsaminaceae)

A glabrous, shrubby herb; recorded from Devicolam at about 1830m elevation in Idukki District, Kerala by Meebold in 1911; represented by a solitary collection (A. Meebold 13462).

36. *Impatiens munnarensis* E. Barnes (Balsaminaceae)

A tender herb, up to 1m high; flowers white with purple streaks; found along steams/marshy places at about 1300m elevation, near Munnar–Kanniamalai locality in Idukki District, Kerala; not collected after the type collections (E. Barnes 1277, 1282) by Edward Barnes in 1835.

37. *Impatiens nilgirica* C.E.C. Fisch. (Balsaminaceae)

An acaulescent herb with purplish flowers; endemic to the Nilgiri Hills (about 2800m), Tamil Nadu; known only by the type collection by Edward Barnes in 1929.

38. *Lactuca filicina* Duthie ex Stebbins (Asteraceae)

A herb; endemic to the Kali valley, found in open grassy meadows at elevation ranges from 1820–2433 m in Uttarakhand; known only by the type collection.

39. *Leucas angustissima* Sedgw. (Lamiaceae)

A herb with white flowers; found in stony/rocky places; endemic to Gersoppa Ghat, North Kanara (Uttara Kannada) district of Karnataka; known from only two old specimens collected 92 years ago.

40. *Mesua manii* (King) Kosterm. (Syn. *Kayea manii* King) (Clusiaceae)

A medium-sized tree; endemic to the tropical evergreen forests of the South Andaman Island; not recorded since the type collection.

41. *Neanotis carnosa* (Dalzell) W.H. Lewis (Rubiaceae)

An annual, up to 15cm high; endemic to Karnataka (Kulhati in Kadur District); recorded from moist forest floor at elevation ranges from 1600–1700 m; known only by the type collection by Talbot in 1897.

42. *Neottia inayatii* (Duthie) Schltr. (Orchidaceae)

A terrestrial, leafless herb; found in shady places at elevation ranges from 2500–3000 m. Endemic to Kashmir; known only by a few old collections.

43. *Neuracanthus neesianus* C.B. Clarke (Acanthaceae)

A small shrub; known from the type collection made in 1850, from areas with black cotton soil in Polur, North Arcot District (now known as Thiruvannamalai District), Tamil Nadu.

44. *Pauia belladonna* Deb & R.M. Dutta (Solanaceae)

A herb; endemic to Tirap District of Arunachal Pradesh; found at about 2000m elevation; known only by the type collection made in 1963.

45. *Pimpinella evoluta* (C.B. Clarke) M. Hiroe (Apiaceae)

A herb; recorded only once in 1885 from the Jakpho Mountains in Nagaland.

46. *Pimpinella tongloensis* P.K. Mukh. (Apiaceae)

A herb with white flowers; endemic to the Singaleela range in the Sikkim Himalayan region (including Darjeeling District of West Bengal); not recorded after 1868.

47. *Pinanga andamanensis* Becc. (Arecaceae)

A palm, up to 9m high; fruits ovoid to ellipsoid, 13–15 × 8–9 mm. Endemic to the Andaman Islands; known only by the type collection.

48. *Pollia pentasperma* C.B. Clarke (Commelinaceae)

An erect tufted herb with white flowers; endemic to northeastern India (Meghalaya: Khasi Hills; Mizoram: Lushai Hills and Nagaland: Naga Hills); not recorded in the past 100 years.

49. *Psychotria tylophora* Kurz (Rubiaceae)

A glabrous herb; found in seashore forests of Nicobar Islands. Type (Kurz s.n. at K) was collected by Kurz during February 1875 from Katchal Island; not relocated after the type collection.

50. *Pternopetalum radiatum* (W.W. Sm.) P.K. Mukh. (Apiaceae)

A herb; flowers not known; fruits oblong-ovoid, ca. 2×1 mm. Endemic to Sikkim (Yumthang and Sebu Valley; ca. 3500m, 23.8.1892, G.A. Gammie 992 at K); not recorded since 1892.

51. *Pternopetalum senii* Deb & R.M. Dutta (Apiaceae)

A slender, erect herb with purple flowers; reported from Tirap District of Arunachal Pradesh; not collected after the type collection in 1961.

52. *Salacia jenkinsii* Kurz (Celastraceae)

A climber; precise locality of its occurrence is not known; it is simply indicated as 'Assam', which in today's context includes (Assam, Meghalaya, Manipur, Nagaland, Mizoram, Tripura and Arunachal Pradesh), not recorded after the type specimen collected by Kurz in 1875.

53. *Saussurea clarkei* Hook.f. (Asteraceae)

A herb; endemic to Kashmir Himalaya; found on open slopes, amidst grasses in the alpine region at elevation ranges from 4000–5000 m. There is no recent collection in Indian herbaria.

54. *Senecio kundaicus* C.E.C. Fisch. (Asteraceae)

A herb with yellow flowers; endemic to the Nilgiri Hills (Kundah range); not recollected after type collection deposited at K.

55. *Senecio mayurii* C.E.C. Fisch. (Asteraceae)

An annual with dark brown-pubescent stems and yellow flowers; endemic to the Kemmangundi Hills in Karnataka; known only by its type collection.

56. *Senecio mishmi* C.B. Clarke (Asteraceae)

A herb with yellow flowers; endemic to the Mishmi Hills, Arunachal Pradesh; known only by type collection.

57. *Seseli alboalatum* (Haines) Pimenov & Kljuykov (Syn. *Ligusticum alboalatum* Haines) (Apiaceae)

A herb with white flowers; found in wet places at about 900m altitude in the hills of Chotanagpur, Neterahat Plateau in Ranchi District, Jharkhand and Samripat, Surguja localities in Raigarh District of Chhattisgarh. Type specimen: Neterahat, 760m, May 1918, Haines 4319 (K)

58. *Silene khasiana* Rohrb. (Caryophyllaceae)

A straggling brittle herb with pale pink flowers; found in humid hilly regions on mossy rocks and slopes amidst undergrowth of forests, at elevation ranges from 1500–1800 m at Molim and Mauphlong localities in the Khasi Hills, Meghalaya; known only by its type collection by Hooker & Thomson in 1850 housed at K.

59. *Silene vagans* C.B. Clarke (Caryophyllaceae)

A scandent herb with pubescent stems; found in moist rocky localities and hill slopes at about 1770m in Kohima, Kegurima, Nagaland; known only by the type collection (C.B. Clarke 4177) by C.B. Clarke on 28 October 1888 housed at K.

60. *Sterculia khasiana* Debb. (Sterculiaceae)

A medium-sized tree; an endemic to Khasi Hills, Meghalaya; known only by the type specimen.

61. *Strobilanthes hallbergii* Blatt. (Acanthaceae)

A large shrub with purple flowers; found in gravelly soils; recorded only once from steep ridges in the northeast of Usrat Valley of Mt. Abu (Rajasthan) by Hallberg in 1916.

62. *Synotis simonsii* (C.B. Clarke) C. Jeffrey & Y.L. Chen (*Senecio simonsii* C.B. Clarke) (Asteraceae)

A shrub with yellow flowers; reported from "eastern India: Assam" (precise locality not known); known only from its protologue but type collection not traceable.

63. *Syzygium andamanicum* (King) N.P. Balakr. (Myrtaceae)

A small tree with white flowers; fruits are not known; an endemic to the Andaman Islands, and known only by the type collection.

64. *Taeniophyllum andamanicum* N.P. Balakr. & N. Bhargava (Orchidaceae)

An epiphytic small leafless orchid; flowers light green, turning yellowish; recorded growing in sunny localities with high humidity in association with liverworts; endemic to Baratang Island of the Andaman Islands, and known only from its type collection.

65. *Trachyspermum villosum* (Haines) P.K. Bhattach. & K. Sarkar (Apiaceae)

A herb, ca 1m high; endemic to the sandstone hills of Ramnagar in North Champaran District, Bihar; not recorded after the type collection (Haines 4744 at K) made in 1916.

66. *Trivalvaria kanjilalii* D. Das (Annonaceae)

A shrub with pale green or yellow flowers; endemic to Meghalaya; not recorded after 1917.

67. *Uvaria eucineta* Bedd. ex Dunn (Annonaceae)

A scandent shrub; endemic to Goomssur forests at about 700m elevation in Russelkonda Hills, Ganjam District, Odisha; known only by the type collection by Beddome in 1880.

68. *Vernonia pulneyensis* Gamble (Asteraceae).

A small shrub with purple flowers, found in open forests along the banks of Pambar River and Shembaganur hillside in Kodaikanal at about 2300m;

known only by its type collection by P.F. Fyson in 1916.

69. *Youngia nilgiriensis* Bab. (Asteraceae)

A herb with yellow flowers; endemic to the grasslands of Sispara (about 2060m), Nilgiri Hills, Western Ghats; known only by its type collection by Gamble housed at K.

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