



## A taxonomic revision of the genus *Eriolaena* (Malvaceae) in India.

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**Abstract:** A detailed work on genus *Eriolaena* archives all names published in a concise nomenclatural review. It is derived from the tribe *Dombeya* with specific limitations and under the generic delimitation. Detailed taxonomic information & descriptions of all taxa and photographs have been provided for easy identification.

**Key words:** Malvaceae; *Dombeya*; *Eriolaena*; India; taxonomic revision.

### Introduction

The Genus *Eriolaena* was established by de Candolle on the basis of floral parts. At present the genus is known to be represented by 9 species, distributed in India, Southeast Asia & Southern China. The genus is characterized by actinomorphic, bisexual flowers, petals clawed at base, lacking staminodes, stamens 15- more forming staminal column around the ovary, antheriferous for nearly its whole length and ovary tipped with a long style and spreading stigmas, developing into a woody dehiscent capsule with numerous winged seeds (many in each carpel). It is one of the apomorphic genus in Sterculiaceae (now as Malvaceae) which is proven by molecular studies (Skema, 2012) and also a paleotropical genus which consists of 9 species mainly from India, Southeast Asia & Southern China excluding recently published *E. rulkensii* Dorr. from Continental Africa and 7 taxa occurred in Indian subcontinent.

At first, De Candolle (1823) described tribe Dombeyaceae, divided into three sub-tribes Helicterees, Dombeyees & Wallichiees. Sub tribe Wallichiees divided into two specific genera *Eriolaena* and *Wallichia* in his book based on number of floral parts and no. of flowers in inflorescence. Robert Brown (1834) in his book "Prodromus Florae Peninsulae Indiae Orientalis" made order Byttneriaceae (Family Sterculiaceae) into six tribes Sterculieae,

Kleinhovieae, Byttnerieae, Hermannieae, Dombeyaceae and Eriochlaeneae. The tribe *Eriochlaeneae* divided into two sub tribes *Eriochlaena* and *Microchlaena* based on nature of involucre and stamens. In the sub-tribe *Eriochlaena*, Involucral bracts close to flower, large, pectinate, calyx & corolla 5-lobed, stamens many and capsule 10-valved where as *Microchlaena*, Involucral bracts distant from flower, small, early deciduous, calyx & corolla 4-5 lobed, Stamens 20 and capsule 5-10 valved. De Candolle stated that *Microchlaena quinquelocularis* close allied to *Wallichia spectabilis* in all manner. Graham (1839) and Dalzell & Gibson (1861) mentioned *E. hookeriana* and *E.candollei* in their works respectively. Beddomei (1871) distinguished two species in his book as *E.hookeriana* & *E.quinquelocularis* on slender ground basis. Talbot (1909) stated that there are no constant differentiation characters among *E. hookeriana*, *E. candollei*, *E. stocksii* & *E. quinquelocularis* in his book "Forest flora of the Bombay Presidency and Sind". Hooker (1874) was provided information on the genus *Eriolaena* into 6 species on bracteole character. Cooke (1908) gave his opinion on distinguishable characters among species in his book "Flora of Presidency of Bombay". Gamble (1915) undisputed statements of earlier workers & mentioned 3 species. After Hooker, the genus has also been collected and reported in many parts of Indian subcontinent by many

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researchers mainly : Cooke (1908), Talbot (1909), Graham (1839), Dalzell & Gibson (1861), Woodrow (1897), Lisboa (1883), Beddome (1869), Brandis (1874, 1906), Gamble (1915), Haines (1910,1921), Malick (1993). In recent studies on the family Malvaceae (Bayer, Kubitzki, 2003), sub family Dombeyoideae Beilschm. (1833) has 20 genera and about 350 species and given detailed account on Genera. *Eriolaena* is closely allied to *Helmiopsiella* & *Helmiopsis* but differs in having lacking staminodes, stamens 15- more forming staminal column around the ovary, antheriferous for nearly its whole length; capsules have many seeds in each carpel.

The recent published literature revealed that 9 species distributed in India, Southeast Asia & Southern China excluding recently published *E. rulkensii* Dorr. from Continental Africa. Among them, three are endemic to India (*E. lushingtonii*, *E. quinquelocularis* & *E. candollei* var. *stocksii*) and *E. glabrescens* which is reported from South Yunnan, Thailand & South Vietnam and *E. kwangsiensis* which is endemic to China provinces of Guangxi & Yunnan. The 10<sup>th</sup> species, *E. rulkensii* which is reported from Mozambique (Continental Africa).

Nature of involucre bracts (bracteoles) and capsule dealt a major role in identification in present studies. The present study is a comprehensive treatment of genus *Eriolaena* in India based on relevant literature, specimens deposited in Indian herbaria and live collections. The detailed description and key of all accepted taxa are provided here for easy identification.

### Materials and Methods

Specimens for the study were collected through field trips and herbarium specimens including digital images from G, K, JCB, DD, MH, BSID, BSI, CAL, SKU & KU were examined. Identification was confirmed after consulting types, protologues, earlier published literature. Due to reasons as Apomorphic genus in Sterculiaceae (Skema, 2012), Carpel number is variable in the Dombeyaceae and if even varies with in the Genus (Bayer & Kubitzki, 2003), morphological and floristic characters were examined critically.

### Systematic treatment

**Eriolaena** DC., Mém. Mus. Hist. Nat. 10: 102, t. 5. 1823.

**Type:** *Eriolaena wallichii* DC.

Trees. Leaves simple or lobed, crenate, dentate or serrate. Cymes few to many-flowered, 1-flowered in *E. wallichii*. Involucral bracts 2-5, entire or incised to deeply divided or multisect, close to the calyx, sometimes distant from calyx, very caducous. Sepals 4 or 5, shortly connate at the base. Petals 4 or 5, clawed. Stamens numerous (15 to many), forming staminal column around the ovary, antheriferous for nearly its whole length, anthers linear, 2-celled, cells parallel, longitudinally dehiscent or opening with a short slit; staminodes absent. Ovary 5-10 locular, locules with many ovules. Style divided at apex, as equal to number of carpels. Fruits loculicidally dehiscent, smooth to tubercled, angulate or keeled, woody, usually pubescent, endocarp glabrous except for central part of septae. Carpels many seeded; seeds winged, endosperm scanty; cotyledons bifid, flat or plicate. The genus comprises 5 species and 2 varieties distributed in India.

### Key to species

- 1a. Involucral bracts 1.5-2 cm long, toothed to pinnatifid or margins deeply fimbriate, close to flower (sub tribe: *Eriochlaena*).....2
- 1b. Involucral bracts up to 0.5 cm long, entire or toothed, distant from flower (subtribe: *Microchlaena*).....3
- 2a. Flowers solitary on peduncle..... **5. *E. wallichii***
- 2b. Flowers few to many on peduncled cymes.....**1. *E. candollei***
- 3a. Sepals and petals 5 each; flowers usually larger, 3-5 cm across..... **3. *E. quinquelocularis***
- 3b. Sepals and petals 4 or 5; flowers smaller, 2-3 cm across.....4
- 4a. Involucral bracts entire; inflorescence many-flowered..... **4. *E. spectabilis***
- 4b. Involucral bracts toothed; inflorescence 2-3-flowered..... **2. *E. lushingtonii***

1. *Eriolaena candollei* Wall., Pl. Asiat. Rar. 1: 57, t. 64. 1830; Dalz. & Gibs., Bomb. Fl. 24.1861; Masters in Hook.f., Fl. Brit. India 1:370.1874; J.C. Lisboa, in J. Roy. Asiat. Soc. 15: 209. 1883; Woodrow in J. Bombay Nat. Hist. Soc. 11: 129. 1897; T. Cooke, Fl. Bombay 1: 131. 1901; Duthie,

Fl. Gangetic Plain 1: 104. 1903; Malick in B.D. Sharma & Sanjappa, Fl. India 3: 415. 1993.

Trees, up to 5 m high; bark grey; young branches stellate pubescent, old branches more or less pubescent. Leaves broadly ovate to orbicular, 10-17 × 7-12, cordate at base, coarsely crenate to dentate along margins, acute to acuminate at apex, 5-9 nerved from the base, sparsely stellate hairy above, rusty pubescent beneath; petioles 3-12 cm long, more or less pubescent; stipules small, caducous. Flowers medium-sized, yellow, few to many, in axillary or terminal, peduncled cymes; peduncles 3-12 cm long, stellate hairy; pedicels 3-4 cm long, stellate hairy, jointed above middle; involucre bracts 2-5, ovate, multisect; segments linear, pubescent, near the base of the flower, persistent until anthesis. Sepals 5, linear to lanceolate, 1.5-2 × 0.2-0.35 cm, shortly connate at the base, acute to acuminate at apex, pubescent on both surfaces, glandular at the base inside. Petals 5, obovate, equaling the sepals, broader than sepals, yellow, undulate at apex, narrowed towards the base, claw broad, thick densely pubescent, deflexed between the sepals. Stamens many, multi seriate, irregularly arranged on staminal column; column 1.5-2 cm long; anthers linear to oblong, basifixed, 2-celled, cells parallel, longitudinally dehiscent or opening with a short slit. Ovary pubescent; style slightly longer than staminal column, stellate hairy, rarely glabrescent; stigma 5-10 lobed, sparsely hairy. Capsules woody, ovoid, 3 - 5.4 × 1.2-1.8 cm, 5-10-valved, tubercled, pubescent (rough, stellately pubescent in *E. stocksii*); seeds many in each locule, 1.2-2.6 × ca 0.8 cm, winged above; wings membranous, broad falcate.

#### Key to the varieties

- 1a. Flowers few, in peduncled cymes; sepals lanceolate, cuspidate at apex, stellately pubescent outside, villous within..... **1.2. var. *stocksii***  
 1b. Flowers usually many, in peduncled cymes; sepals not as above.....2  
 2a. Sepals linear to lanceolate, pubescent on both sides; staminal column length 1.5-2 cm.....**1.3. var. *hookeriana***  
 2b. Sepals linear to oblong, tomentose on both surfaces; staminal column length 2.5 cm.....**1.1. var. *candollei***

#### **1.1. var. *candollei***

*Eriolaena candollei* Wall., Pl. Asiat. Rar. 1: 57, t. 64. 1830; Dalz. & Gibs., Bomb. Fl. 24.1861; Masters in Hook.f., Fl. Brit. India 1:370.1874; J.C. Lisboa, in J. Roy. Asiat. Soc. 15: 209. 1883; Woodrow in J. Bombay Nat. Hist. Soc. 11: 129. 1897; T. Cooke, Fl. Bombay 1: 131. 1901; Duthie, Fl. Gangetic Plain 1: 104. 1903; Malick in B.D. Sharma & Sanjappa, Fl. India 3: 415. 1993.

**Type:** Myanmar, Prome hills, *Wallich* 1175 (Lectotype: Acc. no. K00112311, K: image).

Flowers large, yellow, in axillary or terminal, many flowered cymes; peduncles shorter than leaves; Involucral bracts 3-5, entire, toothed or pinnatifid, very caducous. Sepals linear to oblong, tomentose on both surfaces. Staminal column 2.5 cm long, glabrous. Capsule 5-10 valved, ovoid, woody, rough, sometimes tubercled, ribbed or not, acute to pointed.

**Flowering & Fruiting:** March-October

**Habitat:** Occasional in dry deciduous forests.

**Distribution:** World: Bangladesh, China South-Central, China Southeast, East Himalaya, India, Laos, Myanmar, Thailand, Vietnam; India (Jharkhand, Karnataka, Kerala, Maharashtra, Madhya Pradesh, Uttar Pradesh & West Bengal) & Burma

**Specimens examined:** India (**Jharkhand**, Parasnath WL, 20 March 2005, *Vinay Ranjan* 37883 (CAL); **Karnataka**, North Canara, 01 October 1883, *W.A.Talbot*, 674 (CAL); **Madhya Pradesh**, Indore, Girgi river bank, 23 October 1962, *A.S.Rao*, 84113 (CAL), Indore, Girgi river bank, 23 October 1962, *A.S.Rao*, 84113 (BSI); **Maharashtra**, Akrani dist., Taranmal, 01 May 1907, *W.A.Talbot*, 4985 (CAL); **West Bengal**, Calcutta, 18 May 1899, *Cave* 1512 (BSI), Calcutta, 18 May 1899, *Cave* 1512 (DD).

1.2. var. *stocksii* (Hook.f. & Thomson ex Mast.) K.C. Mohan, **comb. & stat.nov.** *Eriolaena stocksii* Hook.f. & Thomson ex Mast. in Fl. Brit. India 1: 370. 1874; Woodrow, in J. Bombay Nat. Hist. Soc. 11: 129. 1897; T. Cooke, Fl. Bombay, 1: 131. 1901; Haines, Bot. Bihar Orissa 1: 81. 1921; Malick in B.D. Sharma & Sanjappa, Fl. India. 3: 419. 1993. (Fig.1, D-G)

**Type:** India, Maharashtra, Konkan, Stocks 728 (Lectotype: K!-Acc. no. K000380319).

Sepals lanceolate, cuspidate at apex, stellately pubescent outside, villous within. Fruit capsule, conical, 5.4 × 2.4 cm, stellately pubescent, rough; seeds 2.6 × 0.8 cm.

**Flowering & Fruiting:** April-September.

**Habitat:** Occasional along hill slopes.

**Distribution:** Endemic to India. (Bihar, Gujarat, Jharkhand, Karnataka, Kerala, Maharashtra, Odisha & Tamil Nadu).

**Specimens examined:** India: **Bihar:** Chota Nagpur, 29 May 1979, J.J. Wood 187 (CAL); **Jharkhand,** Rajmahal Hills, S.Kurz, 59455 (CAL); **Karnataka,** Bangalore, Bannerghatta National Park, 12 August 1978, C. Saldanha, CS 19000 (JCB); **Maharashtra,** Konkan, 1867, Stocks, 728 (K); Akola dist., Narnala fort, 05 September 1977, SY Kamble, 150452 (BSI); **Odisha,** Angul, Satkosia Tiger Reserve, 26 July 2016, K.C.Mohan 8303 (BSID); **Tamil Nadu,** Coimbatore, 22 May 1906, C.E.C. Fischer 1109 (CAL).

1.3. var. *hookeriana* (Wight & Arn.) K.C. Mohan, **comb. & stat. nov.** *Eriolaena hookeriana* Wight & Arn., Prodr. Fl. Ind. Orient. 70. 1834; Master in Hook.f., Fl. Brit. Ind. 1: 370, 1874; T.Cooke, Fl. Bombay 1: 131. 1901; Duthie, Fl. Gangetic Plain 1: 104. 1903; Haines, Bot. Bihar Orissa 81. 1921; Dunn in Gamble, Fl. Madras 1: 110. 1915; Malick in B.D. Sharma & Sanjappa, Fl. India 3: 415. 1993.

**Type:** India, Tamil Nadu, Pulney hills, Wight 956 (Syntype: E-Acc. no. E00174186).

*Eriolaena hookeriana* Wight & Arn. var. *viridis* Haines, Bot. Bihar Orissa 1: 81. 1921. (**Fig. 1, A-C**)

Sepals linear to lanceolate, pubescent on both sides; staminal column 1.5-2 cm long; Fruit capsule ovoid, up to 4 cm long, 5-10 valved, tubercled.

**Flowering & Fruiting:** March - September

**Habitat:** Occasionally in dry deciduous forests.

**Distribution:** India (Andhra Pradesh, Bihar, Chhattisgarh, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Sikkim, Tamil Nadu, Telangana, Uttar Pradesh & West Bengal) & Sri Lanka

**Specimens examined:** INDIA: **Andhra Pradesh:** Chittor dist., Tirumala hills, 12 May 1999, Muralidhara Rao 24302 (MH), Godavari, Bison hills, 06 December 1902. C.A. Barber 5146 (MH), East Godavari, Errakonda, 05 July 1965, G.V. SubbaRao 24525 (MH), Kadapa dist., 18 July 1883, JS Gamble 15722 (MH), Godavari dist., February, 1885, Gamble, 15793 (MH), East Godavari, Bodlanka, 11 August 1987, D. Narsimhan 85565 (BSID), Godavari dist., 26 August 1899, C.A. Barber, 1084 (MH), Godavari district, Kappakonda hills, 12 August 1914, M.S.

Ramaswamy, 1645 (CAL), East Godavari district, Near Addateegala, 27 September 1980, G.V. Subba Rao, 68617 (CAL) Vishakapatnam, Ananthagiri, 24 September 1961, N.P.Balakrishnan 794 (CAL); **Jharkhand,** Parashnath, 15 October 1982, G.N.Tribedi 717 (CAL), Ramnad, 24 July 1963, E. Vajravelu 24887 (MH), Satyamangalam RF, 25 September 2007, Satyanarayana 125190 (MH); Parashnath, S. Kurz S.n.(CAL), Parashnath, S. Kurz (s.n.Acc. no.59371) (CAL); **Chhattisgarh:** Sirguja, 29 December 1990, J.J. Wood 243 (CAL); **Gujarat,** Surat, Hindla, 26 July 1972, ASB, ASB783 (CAL); **Karnataka,** Mysore, Biligiri Rangan Hills, 20 March 1980, S.B. Manohar KFP11058 (JCB), Mysore, Biligiri Rangan Hills, 26 October 1978, S.R. Ramesh KFP3895 (JCB); **Kerala,** Idukki dist., Painavu, 27 April 1984, C.N.Mohanan, 81640 (MH), Idukki, Painavu, 28 April 1984, C.N.Mohanan 81644 (BSID), Kottayam dist., on the way to Pambanar, 24 May 1965, Vivekanantham 24315 (MH); **Madhya Pradesh,** Balaghat, Muki, 05 May 1912, Haines, 2927 (K), Bhopal, Chawni, 21 August 1959, G. S. Puri, 42143 (BSI); **Maharashtra,** Kolhapur, Ambewadi, 14 May 1957, K.B.G. 18212, (BSI), Akola dist., Narnala fort, 24 June 1978, S.Y. Kamble, 153776 (BSI), Akola dist., Medshi, 26 August 1977, S.Y. Kamble, 150106 (BSI), Yavatmal dist., Karanji, 09 August 1979, S.Kartikeyan, 160113 (BSI), Yavatmal dist., Tipeswar, 25 September 1978, S. Kartikeyan, 156614 (BSI), Chandrapur dist., Mohalgaon, 22 December 1972, BM Wadhwa, 130382 (BSI); **Odisha,** Angul, Satkosia Tiger Reserve, 05 November 2014, K.C.Mohan 5990 (BSID), Balimela, 08 November 1963, D.C.S.Raju 983 (CAL), Podagada RF, 09 June 1964, D.C.S.Raju 1683 (CAL), Koraput district, 22 April 1963, D.C.S. Raju 865 (CAL), Sonkarada forest, 06 June 1964, D.C.S.Raju 1616 (CAL); **Rajasthan,** Banswara, Singh 3763 (BSJO); Kota, Wadhwa 9433 (BSA); Udaipur, Kanodia 82193 (BSI); **Tamil Nadu,** Columala forest, Wight 956, (K), Nilgiri dist., Sept.1886, Gamble 17908 (MH), Dindigul dist., Kodaikanal, 01 June 1905, CA Barber 7331 (MH), Madhurai dist., Pannaikadi, 20 September 1963, Deb, DB, 31037 (MH), Madhurai dist., Pulney hills, 26 July 1920, Gamble 16661 (MH), Madhurai dist., Sirumalai, 31 July 1920, Gamble 16717 (MH), Coimbatore dist., Cherankotta malai, 16 August 1929, Narayanaswamy, 18983 (MH), Madurai dist, Way

to Centre camp, 14 August 1990, V.Lakshman 91134 (BSID), Javadi hills, 09 September 1916, C.E.C.Fischer 3991 (CAL), Anaimalai hills, 12 April 1908, C.A. Barber, 8413 (CAL); **Telangana**, Karimnagar, Aklaspur, GVS Murthy 25602 (KU), Warangal, Medaram, CS Reddy 607 (KU), Adilabad, Gummadiloddhi, 24 September 1985, T. Ravishankar 83150 (BSID); **Uttar Pradesh**, Ranipur, Bande, 1921, UC Kanjilal 112916 (DD); Ranipur south, 1920, UC Kanjilal & Sri Ram. 112917 (DD); **West Bengal**, Malda, January, 1869, Gamble 9152 (CAL).

**2. *Eriolaena wallichii*** DC., Mém. Mus. Hist. Nat. 10: 102. 1823; Masters in Hook.f., Fl. Brit. India 1:370.1874; Malick in B.D. Sharma & Sanjappa, Fl. India 3: 419. 1993; Duthie, Fl. Gangetic Plain 1: 104. 1903; Haines, Bot. Bihar Orissa 1: 80. 1921 (Repr. ed. 1:83.1961).

**Holotype:** India, Uttar Pradesh, Sukanagar, Wallich 1174, Acc. No. G 00209064 (G-DC).

Trees, up to 7 m high; bark greyish; young branches stellately pubescent, mature branches more or less glabrous. Leaves ovate to orbicular, rarely 3-lobed near apex, 8-16 × 7.5-14 cm, papery, stellate tomentose above, stellate pubescent below, 7-nerved from base, cordate at the base, margins very shallowly obtusely dentate, apex acuminate to acute; petioles ca. 4.5 cm long, stellate velutinous. Flowers yellow, solitary on peduncle, axillary or terminal; peduncles villous, shorter than leaves. Involucral bracts ovate, 1.5-2 cm long, densely woolly stellate pilose, margins deeply fimbriate. Sepals 5, linear, to lanceolate, ca. 3 cm long, acute at apex. Petals 5, obcordate, 2-2.5 cm long, shorter than sepals, emarginate at apex. Stamens many, arranged irregularly on staminal tube; tube 2-2.5 cm long; anthers linear. Ovary ovoid, 5-locular, stellate hairy; style 1-1.5 cm long, puberulent throughout; stigmatic lobes very short. Capsule cylindrical, smooth, ca. 3 × 2.5 cm, pubescent; each valve with prominent verrucose keel, grooved between valves, apex shortly beaked, valves 8-10, adaxial margin conspicuously woolly pilose. Seeds many in each locule, 1.2-2.5 × 0.6, winged above, arranged in 2 rows.

**Flowering & Fruiting:** March- October.

**Habitat:** Occasional in moist dense forests.

**Distribution:** Nepal, Yunnan & India (Uttar Pradesh, Odisha, Bihar, Kerala)

**Specimens examined:** India: **Uttara Pradesh**, Sukanagar, 18 May 1810, Wallich 1174, Acc. No. K00112310 (K: image!); 1985, K.C. Malick, Acc. No. 59360 (CAL); **Odisha**, Malkangiri, Goiparvatam, 19 May 1959, R.S.Rao 18468 (CAL); Haines 5425, Acc.No. K000380328 (K: image!).

**3. *Eriolaena lushingtonii*** Dunn in Bull. Misc. Inform. Kew 1915: 88 1915 & in Gamble, Fl. Madras 1: 109.1915; Malick in B.D. Sharma & Sanjappa, Fl. India 3: 417. 1993; Ellis, Fl. Nallamalais 1: 57. 1987. (**Fig. 2**)

**Type:** India, Andhra Pradesh, Chelama, A.W. Lushington s.n. (**Holotype:** Acc. No. K000380321: image!).

Moderate tree; bark greyish; young branches stellately pubescent. Leaves up 6-9×5-10 cm, orbicular, cordate at base, acute, sometimes younger leaves slightly lobed towards apex, irregularly shortly dentate, stellate hairy above, softly tomentose beneath, 7-nerved from the base; petioles 3-5 cm long. Flowers ca 2 cm long, in slender 2-3-flowered racemes, near the ends of the branches, peduncles longer than leaves, pubescent; flowering buds oblong, constricted at the middle; pedicels jointed above middle; involucral bracts 2-3, 2-4 mm long, linear, little distant from the flower, minute, multisect, caducous. Flowers yellow. Sepals 4 or 5, linear, wider near the base and apex, very acute, 1.5-2 × 0.2-0.3 cm long, pubescent within and tomentose without, glandular at the base inside. Petals 4 or 5, obovate, equaling the sepals, white or yellow; glabrous except narrowed densely pubescent base, undulate near apex. Staminal column ca 2 cm long; anthers 10-25, linear to oblong, basifixed, irregularly arranged near apex; staminodes absent. Ovary pubescent; style as long as staminal column, densely stellate hairy below, sparsely towards apex; stigma 4-7 lobed, sparsely hairy, the lobes revolute. Capsules woody, ovoid, ca. 4 cm long, 4-7 celled, 5-10 valved; valves smooth, more or less pubescent, usually silky villous at the inner angles. Seeds numerous, winged on one side at top.

**Flowering & Fruiting:** April-October.

**Habitat:** Occasional in open dry deciduous forests.

**Distribution:** World: India: Telangana & Andhra Pradesh (Strictly endemic to Nallamala forests)

**Specimens examined:** India: **Andhra Pradesh**, Prakasham dist., Moulatla RF, 13 July 1984, R.K. Mohan 0405 (CAL); Prakasham dist., Rollapenta, 16 August 1972, Ellis 42284 (MH); Rollapenta, 12 May 2017, KC Mohan 009413 (BSID); Kurnool dist., Chelama, 1902, Lushington (K000380321) (K: image); Kurnool dist., Chelama 04 July 1963, Ellis 16715 (MH); **Telangana**, Mahabubnagar, Near Mannanur Core zone, 30 June 1988, V.B.Hosagoudar 86610 (BSID).

**Note:** As examined in Madras herbaria, reported specimens from Karnataka, Tamil Nadu & Kerala states are misapplied.

**4. *Eriolaena spectabilis*** (DC.) Planch. ex Mast. in Hook.f., Fl. Brit. India 1: 371. 1874. *Wallichia spectabilis* DC., Mém. Mus. Hist. Nat. 10: 104, pl. 6. 1823; Haines, Bot. Bihar Orissa 1: 80. 1921 (Repr. ed. 1:83.1961); Malick in B.D. Sharma & Sanjappa, Fl. India 3: 418. 1993. *Jackia spectabilis* (DC.) Spreng., Syst. Veg. 3: 85. 1826.

**Holotype:** Nepal, 1821, Wallich 1173, Acc.No. G00358604 (G).

Tree, up to 5 m high; Bark grey; young branches stellately pubescent. Leaves simple, ovate to broadly ovate, 8-14 × 6-13 cm, abaxially densely gray-white or brownish stellate velutinous, adaxially sparsely slightly stellate hairy, basal veins 5-7, cordate at the base, margins irregularly minute dentate, shortly acute at apex; Petioles 2-5 cm long, velutinous. Flowers white or pale yellow, in many flowered cymes, axillary or terminal, densely velutinous; peduncles longer than leaves, stellate hairy. Pedicels ca. 2.5 cm long, stellate pubescent, constricted above the middle. Involucral bracts distant from the base, linear to lanceolate, entire, 4 mm long. Sepals 4 or 5, linear to lanceolate, 1.8 - 2.5 cm long, densely stellate tomentose, acute at apex, glandular at the base.

Petals 4 or 5, white or pale yellow, obovate to spatulate, 2-2.5 × 0.5-0.9 cm, narrowed towards the base, claw broad, villous. Stamens many, arranged irregularly towards the apex; filaments short; anthers linear to oblong, basifixed, 2-celled. Ovary ovoid, 8-10-celled, velutinous; style basally villous; stigmatic lobes short. Capsule woody, ovoid to ellipsoid, ca. 5 × 3 cm, verrucose and angular, deeply grooved between valves, apex obtuse or beaked. Seeds many in each locule, winged.

**Flowering & Fruiting:** May-October

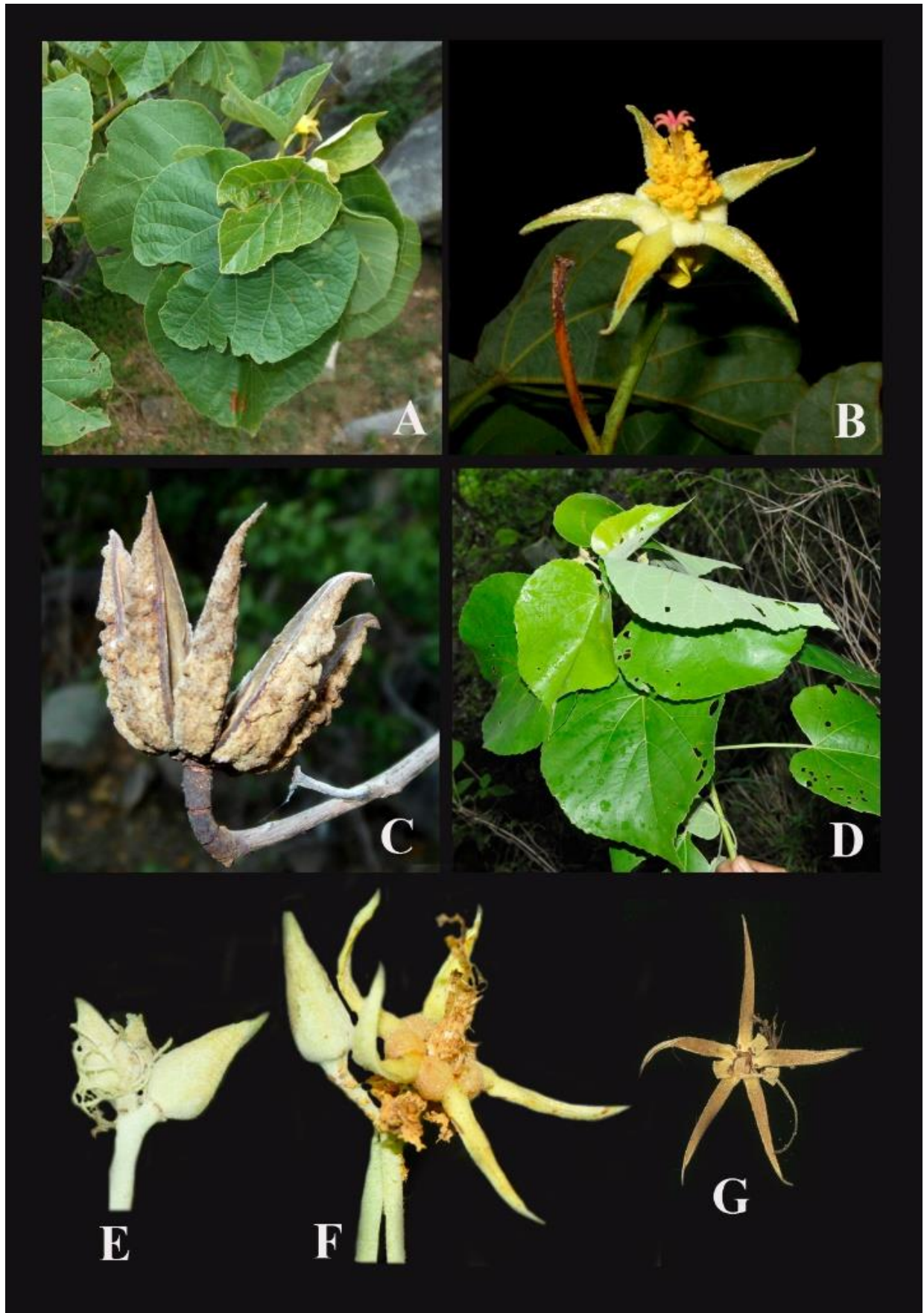
**Habitat:** Occasional in moist dense forests.

**Distribution:** World: India (Assam, Bihar, Himachal Pradesh & Manipur), Bhutan and Nepal, and in the Chinese provinces of Guangxi, Guizhou and Yunnan.

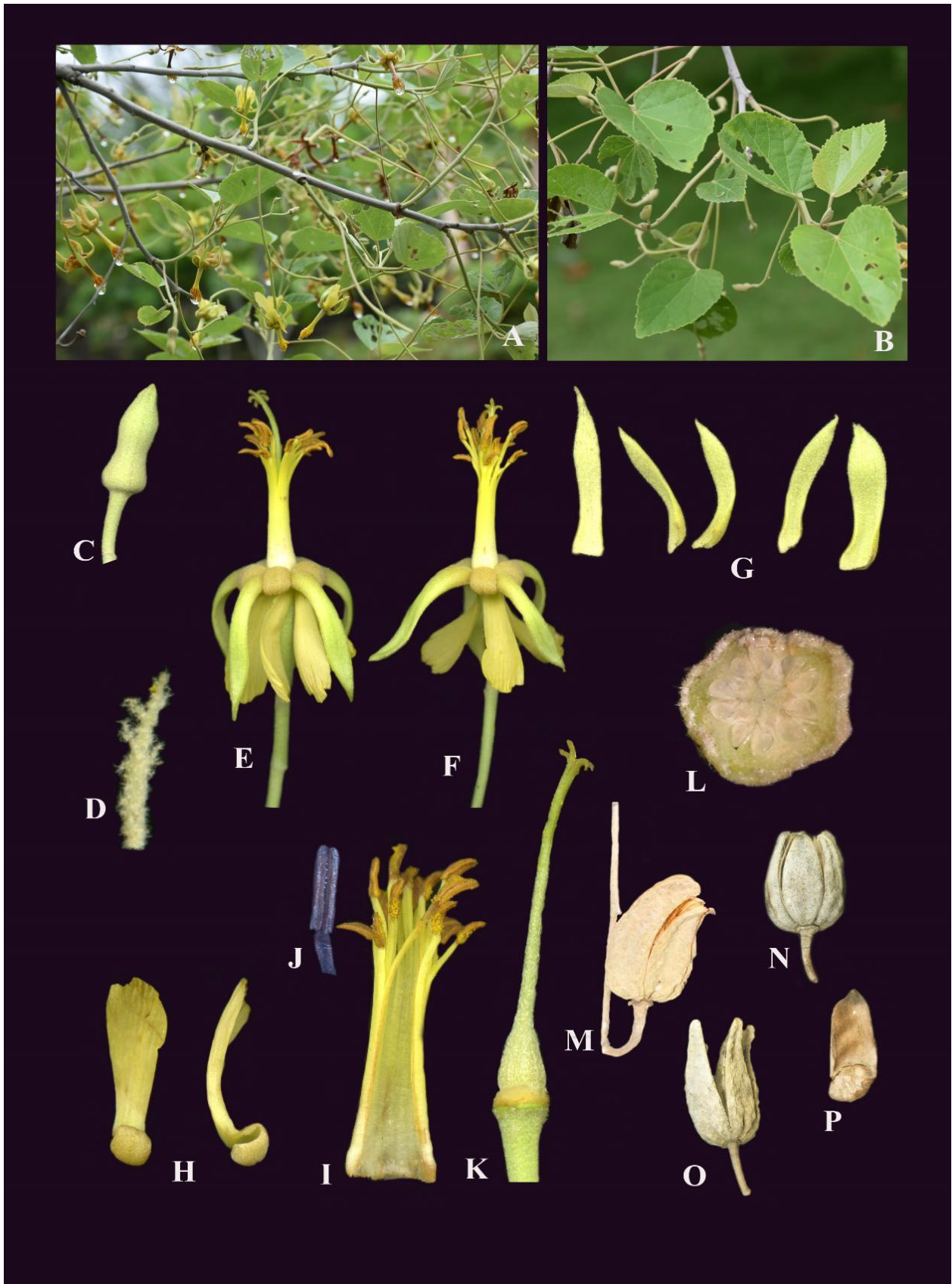
**Specimens examined:** India. **Assam**, Manipur-Naga hills, Lungshak, 21 June 1948, SK Mukherji, 3093 (CAL), Manipur-Naga hills, Lungshak, 18 May 1948, S.K. Mukherji, 2895 (CAL); **Bihar**, Parashnath, Kurz (s.n., Acc. no.59421) (CAL); **Manipur**, Nungba, November 1907, A. Meebold, 5958 (CAL); Karong, 18 May 1882, George Watt 7140 (CAL).

**Note:** Based on Webb collection from Simla, It is reported here, its distribution in Himachal Pradesh.

***Eriolaena quinquelocularis*** (Wight & Arn.) Drury, Handb. Ind. Fl. 1: 99. 1864; Master in Hook.f., Fl. Brit. Ind. 1: 371, 1874; Woodrow in J. Bombay Nat. Hist. Soc. 11: 129.1897; T. Cooke, Fl. Bombay 1: 132. 1901; Haines, Bot. Bihar Orissa 1: 81. 1921; Dunn in Gamble, Fl. Madras 1:110. 1935; Malick in B.D. Sharma & Sanjappa, Fl. India 3: 418. 1993. *Microchlaena quinquelocularis* Wight & Arn., Prodr. Fl. Ind. Orient. 1: 71. 1834 (**Fig. 3**).

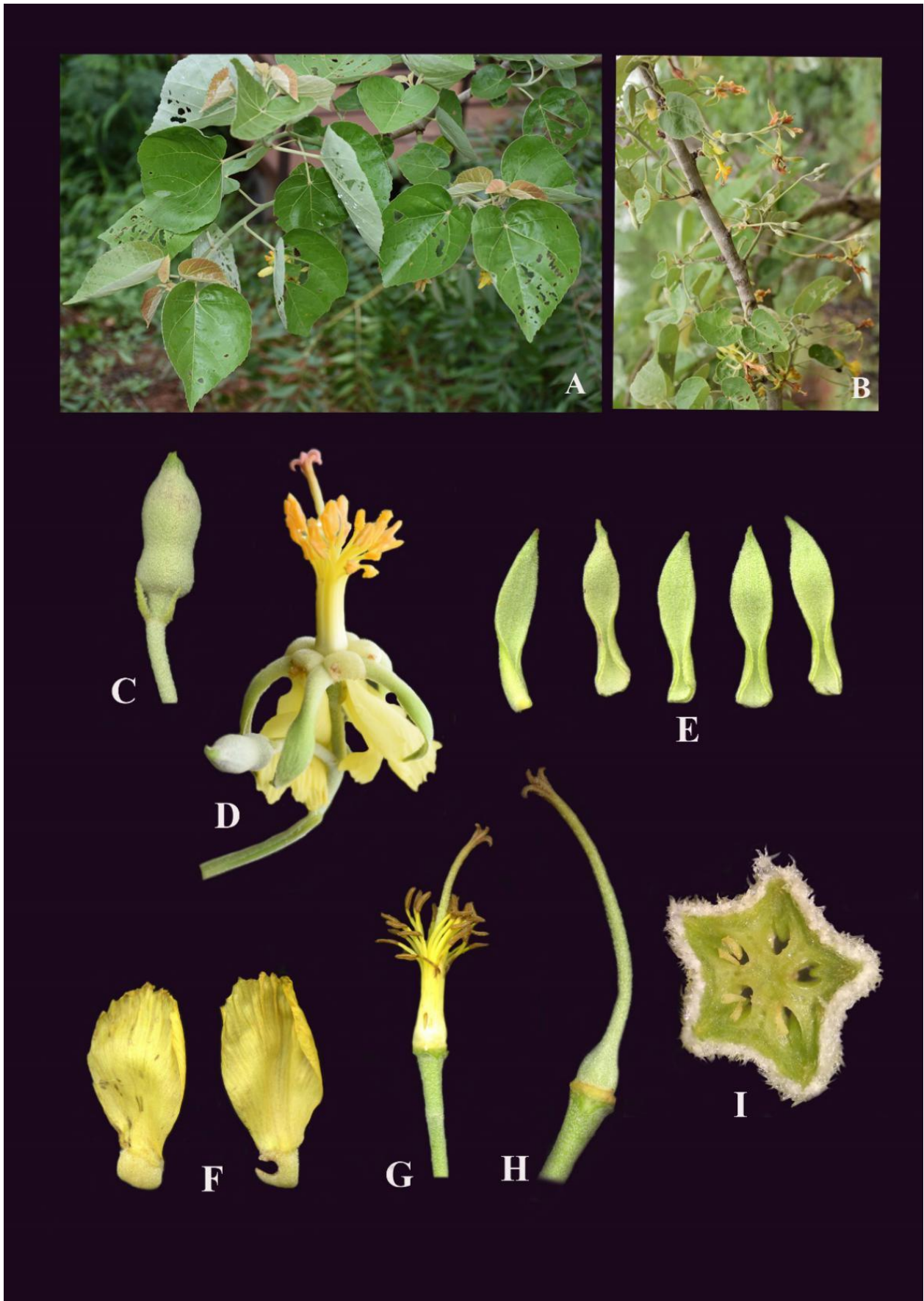


**Fig. 1.** A-C. *Eriolaena candollei* Wall. var. *hookeriana* A. Twig, B. Flower, C. Fruit; D-G. *Eriolaena candollei* var. *stocksii* D. Twig, E. Involucral bracts, F & G. Flower.



**Fig. 2:** *Eriolaena lushingtonii* Dunn A. Twig; B. Leaves; C. Flower bud; D. Involucral bract; E. 5-merous flowers; F. 4-merous flower; G. Sepals; H. Petals; I. Staminal sheath; J. Anther; K. Gynoecium; L. Ovary L.S.; M-O. Fruits; P. Seed





**Fig. 3:** *Eriolaena quinquelocularis* (Wight & Arn.) Wight A. Twig; B. Flowering branch; C. Bud; D. Flower; E. Sepals; F. Petals; G. Staminal sheath; H. Gynoeceium; I. Ovary L.S.

**Lectotype:** India, R. Wight 253, Acc. no. K000380343 (K: image).

Trees, up to 4 m high; branchlets sparsely stellate hairy when young. Leaves 7-18 × 5-12 cm, orbicular, coarsely crenate-serrate, dotted with small tufts of stellate hairs above, softly tomentose beneath, cordate at the base, 7-nerved from the base, acuminate at apex; petioles 3.5-12 cm long, tomentose when young, becoming at length nearly glabrous. Flowers 3-5 cm across, in slender 2-5-flowered peduncles, rarely many flowered (Brandis, 1911) near the ends of the branches, mildly fragrant, peduncles longer than leaves, pubescent; pedicels 1-2 cm long, angular, stellate hairy, jointed above middle; involucre bracts 2-3, linear, distant from the flower, minute, entire or with toothed margins, early caducous. Sepals 5, linear-oblong, acute at apex. 2-2.5 × 0.3-0.5 cm long, pubescent on both surfaces, glandular at the base inside. Petals 5, obovate-oblong, equaling the sepals, white or yellow, narrowed towards the base, claw broad, thick densely pubescent, deflexed between the sepals. Stamens many, irregularly arranged on staminal column, 1.2-1.5 cm long; anthers linear to oblong, irregularly arranged on short filaments. Ovary pubescent; style longer than staminal column, stellate hairy; stigma 5-lobed, sparsely hairy, the lobes revolute. Capsules woody, oblong to ovate or ovate to lanceolate, 2.5 - 3 cm long, pointed, 5-celled, 5-10 valved; valves tubercled, more or less pubescent, usually silky villous at the inner angles. Seeds many in each locule, 1-1.6 × 0.5-0.7 cm, imbricate; wing papery, falcately curved.

**Flowering & Fruiting:** April-October

**Habitat:** Common in dry deciduous forests.

**Distribution:** World: South Yunnan & India; India: (Andhra Pradesh, Bihar, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu & Telangana)

**Specimens examined:** India: **Karnataka**, Bellary dist., Sandhur hills, 23 August 1979, S.B.Manohar KFP9063 (JCB); **Kerala**, Idukki dist., Trannikudy, 01 October 1972, B.D. Sharma, 42372 (MH), Idukki, Kumili, Dec.1910, A. Meebold, 994 (CAL), Idukki, Dec.1910, A. Meebold, 12881 (CAL), Idukki, Kulamavu, 25 September 1984, C.N.Mohanan 80189 (BSID); Idukki reservoir, 24 December 1983, A.G. Pandurangan, 66464 (CAL); **Maharashtra**, Ranipur, 26 September 1963, R.S.Rao, 92615

(CAL), Poona dist, Bushi village, 27 June 1964, Venkata Reddy, 97958 (CAL), Poona dist, Tiskari Jungle, 02 February 1964, Venkata Reddy, 95814 (CAL), Pune, Sinhagarh, 13 December 1964, M.Y.Ansari 104702 (BSI), Nashik, Saptashringi, 11 May 1907, Bhidale s.n.(BSI), Nashik, Sawarna valley, 16 January 1967, John 111201, (BSI), Palghar dist., Dharampur, 15 June 1958, P.S.Toar 39205, (BSI), Pune, Sinhagarh, 13 June 1963, M.Y.Ansari 87388 (BSI), Washim dist., Medshi, 21 February 1978, S.Y. Kamble 152744 (BSI), Thana dist., Kondeshwar, 26 January 1961, K.P.Janarthanan 70284 (BSI), Shahpur dist., Ajoba hills, 17 October 1967, KV.Billore, 111975 (BSI), Thana dist., Dadra road, 25 August 1967, KV.Billore, 110510 (BSI), Jalgaon, East Khandesh, Chalisgaon, 14 July 1957, S.D.Mahajan, 20409, (BSI), Nandurbar dist., Toranmal, 16 August 1965, Pataskar 105801(BSI), Pune dist., Bhiwade khund, 26 June 1944, Hemadri.K 94363 (BSI), Khandala dist., on the way to boma hills, 23 December 1962, RS Rao, 83442 (BSI), Pune dist., Bhoma hills, 11 November 1956, SK Jain, 8902 (BSI), Pune dist., Bhiwade khund, 15 May 1964, Hemadri.K 89932 (BSI); **Rajasthan**, Udaipur, Kanodia 223 (BSI); **Tamil Nadu**, Anaimalai hills, 18 August 1912, C.E.C. Fischer 3469 (CAL), Anaimalai hills, 12 August 1920, C.E.C. Fischer 4460 (CAL), Kambamettu, 28 June 1959, K. Subramanyam 8285 (CAL), Kalhatti hills, 03 June 1994, S.K. Mondal 7198 (CAL), Attikatti Dam, 04 July 1961, Joseph 12674 (CAL), Attikatti Dam, 27 December 1911, C.E.C. Fischer, 3226 (CAL), Gudalur, Oct. 1910, A.Meebolde 11632 (CAL); **Telangana**, Karimnagar dist., Mahadevpur RF, Naqvi 696 (KU), Warangal dist., Medaram RF, VS Raju 4728 (KU).

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