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Current Taxonomic Status of Three Coastal Endemic Species of *Acacia* s.l. (Fabaceae: Mimosoideae) in Tamil Nadu, India

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भारत के तमिलनाडु राज्य में अकेशिया (फैबेसी : मिमोसॉयडी) की तीन तटवर्ती स्थानिक जातियों की वर्तमान वर्गिकी स्थिति

के. सम्पत कुमार, एस. आरूमुगम एवं काथिरेसन, के.

सारांश

यह षोध पत्र तमिलनाडु राज्य की तीन स्थानिक जातियों अकेषिया बोइली आर.पी. सूबेदार, *अकेशिया स्यूडोवेटी* थोथ. एवं *अकेशिया तंजोरेंसिस* रागूप, थोथ. और ए. महद. से संबंधित है। गौरतलब है कि प्रथम जाति को विलुप्त घोशित किया गया है। षेश दो जातियों के स्वीकृत वानस्पतिक नामों के संबंध में विस्तृत विवरण, पर्यायवाची और विषिश्ट विषेशताओं के संदर्भ में और विस्तार से चर्चा की जाती है। इनमें से जाति *अकेशिया कैंपबेल्ली* अर्न, *अकेशिया हाइडैस्पिका* जे. आर. ड्रम एक्स आर. पार्कर, *अकेशिया स्यूडोबूर्निया* जे. आर. ड्रम. एक्स आर. पार्कर और *अकेशिया स्यूडोवाइटी* थोथ. को *वाचेलिया इबुर्निया* (एल.एफ.) पी. जे. जी. हर्टर एवं मैब. में विलय कर दिया गया है। *सेनेगलिया तंजोरेंसिस* (रागूप, थोथ. ए. महाद) कोट्टिम. के साथ संगत जाति *सेनेगलिया मेलिफ़ेरा* (वाहल) एल.ए. सिल्वा और जे. फ्रीटास उपजाति *मेल्लिफेरा* को इंगित किया गया है, जो नियत समय में इन दोनों तत्वों के संभावित विलय को इंगित करता है।

ABSTRACT

This paper deals with three endemic species occurring in Tamil Nadu, viz. *Acacia bolei* R.P. Subhedar, *A. pseudowightii* Thoth. and *A. tanjorensis* Ragup. & al., all three originally recorded from coasts. As the first species has been declared extinct, detailed accounts with regard to accepted names, synonymy and characteristic features of the remaining two species are provided and discussed in detail. *Acacia minutifolia* Ragup. & al., replaced by *A. pseudowightii* Thoth., is now treated conspecific with *Vachellia eburnea* (L.f.) P.J.H. Hurter & Mabb., distributed in Indian Subcontinent extending to Iran & Oman. *Senegalia tanjorensis* (Ragup. & al.) Kottaimuthu is found closely related with *S. mellifera* (Vahl) L.A. Silva & J Freitas subsp. *mellifera* and both are likely to be merged with further studies. The importance of Version of Record in publications is also highlighted using the names *Senegalia tanjorensis* (Ragup. & al.) A.S. Deshpande & Maslin (2019) Vs *Senegalia tanjorensis* (Ragup & al.) Kottaimuthu (2019). All these three taxa are added here to the strand flora of India.

Keywords: *Acacia tanjorensis*, *A. minutifolia*, *A. bolei*, *Vachellia*, *Senegalia*, Nomenclature, Version of Record.

INTRODUCTION

During field explorations along the entire coast of Tamil Nadu from 2012–2017 by the first author towards documenting floristic diversity of coastal plants of Tamil Nadu, the occurrence of endemic *Acacia* species in the region was thoroughly scrutinised and the current nomenclatural status of the species necessitated detailed review in this regard.

The cosmopolitan genus *Acacia* Miller (1754), represented by *c.* 1500 taxa and distributed in all continents except

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Antarctica, being most diverse in Australia, Asia, Africa, and the Americas, is the second most speciose genus in Leguminosae (Maslin, 1988; Lewis, 2005; Murphy, 2008). Based on recent biochemical and molecular phylogenetic studies, the genus *Acacia* s.l. has been reclassified and five distinct clades or genera viz. *Vachellia* Wight & Arn. (formerly subgenus *Acacia*), *Senegalia* Raf., *Acaciella* Britton & Rose, and *Mariosousa* Seigler & al., besides *Acacia* s.s. have been recognised now (Orchard & Maslin, 2003; Kyalangalilwa & al., 2013). Most of the indigenous species of *Acacia* s.l. of the Indian and African regions can be grouped now into *Vachellia* and *Senegalia*, the presence and type of prickles and/or stipular spines being the distinguishing characters to differentiate the two genera. Species of *Vachellia* have capitate or head-like inflorescences and spinescent generally prominent stipules/thorns, but *Senegalia* species are characterised by spike or spicate inflorescences and non-spinescent stipules, generally inconspicuous recurved or straight prickles (Kyalangalilwa & al., 2013; Deshpande & al., 2019).

Sanjappa (1992) in the (first post-independent) checklist of the Indian legumes (s.l.) enumerated about 180 genera and around 1,300 taxa, including the exotic and introduced/cultivated taxa. In the recent Checklist of Legumes of South Asia, Kumar & Sane (2003) enumerated 105 species (*c*. 120 taxa) from the Indian Subcontinent. India has 45 native and 61 introduced taxa of the genus *Acacia* s.l. (Sanjappa, 1992; Chakrabarty & Gangopadhyay, 1996), while 98 species and 111 taxa were included by Kumar & Sane (2003). In India, the genera *Seneglia* and *Vachellia* together have 45 taxa of which 36 are indigenous; while 14 native taxa occur in the Indian Subcontinent, just five species (two species of *Senegalia* and three species of *Vachellia*) are strictly endemic to India (modified after Deshpande & al., 2019).

In Tamil Nadu, *Acacia* s.l. is represented by 57 taxa (Sanjappa, 1992; Vajravelu, 1983; Chakrabarty & Gangopadhyay (1996); Daniel & Umamaheswari, 2001; Kumar & Sane, 2003; Kottaimuthu, 2019). There are three endemic species of *Acacia* s.l. in the state viz. *A. bolei* R.P. Subhedar, *A. pseudowightii* Thoth. and *A. tanjorensis* Ragup. & al., all recorded from coastal habitats. It should be noted that the coastal stenoendemic legume *Acacia bolei*, now treated conspecific with *Vachellia bolei* (R.P. Subhedar) Ragup. & al., (2014), is declared possibly extinct since it has not been recorded after the type collections by Robert Wight in 1835 from the southernmost parts of coastal Tamil Nadu (Sampath Kumar & al., 2019; POWO, 2019). Hence, the current nomenclatural status and correct names of the two endemic legume trees, originally proposed by Ragupathy & al., (1990, 1991), *Acacia minutifolia* Ragup. & al., and *A. tanjorensis* Ragup. & al., are discussed here in detail.

MATERIAL AND METHODS

The present research is based on the study of herbarium specimens and literature and supplemented by extensive field surveys along the entire coast of Tamil Nadu from 2012–2017 by the first author. The following herbaria were consulted: B, BM, CAL, E, G, K, LINN MH, and P.

TAXONOMY

Vachellia eburnea (L.f.) P.J.H. Hurter & Mabb. in Mabberley's Plant-Book, ed. 3, 1021. 2008; Chakrab. & Maina in Phytotaxa 257: 297. 2016. *Mimosa eburnea* L.f., Suppl. Pl. 437. 1782, non Roxb., 1798. *Acacia eburnea* (L.f.) Willd., Sp. Pl. ed.4, 4(2): 1081. 1806; Wight & Arn., Prodr. Fl. Ind. Orient. 1: 276. 1834; Baker in Hook.f., Fl. Brit. Ind. 2: 273. 1878; Gamble, Fl. Madras 1: 426. 1919; Vajr. in N.C. Nair & A.N. Henry (eds.), Fl. Tamil Nadu 1: 134. 1983; Sanjappa, Legumes India 39. 1992; Chakrab. & M. Gangop. in J. Econ. Taxon. Bot. 20: 609. 1996; Kumar & Sane, Legumes South Asia 85. 2003. [Cockspurn-thron].

Type: Lecto: INDIA, s. loc., 1777, *Koenig* s.n., Herb. Linn. 1228.24 (LINN: image!), inadvertently lectotypified by Ali (1973).

= *Acacia campbellii* Arn. in Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 18(1): 333. 1836; Gamble, Fl. Madras 1: 426. 1919; Vajrav. in N.C. Nair & A.N. Henry (eds.), Fl. Tamil Nadu 1: 134. 1983; Ahmedullah & M.P. Nayar, Endemic Pl. Indian Reg. 1: 91. 1986; Sanjappa, Legumes India 39. 1992. *Vachellia campbellii* (Arn.) A.S. Deshpande & Maslin in Nordic J. Bot. 37(4): https://doi.org/10.1111/njb.02047.2019, syn. nov.

Type: Lecto (designated here): INDIA, Karnataka, Mysore, 1835, *Campbell 26,* ex Herb. (W.H.) *Campbell*, E00318075!

= *Acacia hydaspica* J.R. Drumm. ex R. Parker in Bull. Misc. Inform. Kew 1921: 309. 1921 & For. Fl. Punjab 194. 1924. *Vachellia hydaspica* (J.R. Drumm. ex R. Parker) Ali in Pakistan J. Bot. 46: 3. 2014.

Type: Lecto: Pakistan, Punjab, Peshawar to Jhelum, *Stewart* 313, K000623257!, s.d., designated by Chakrabarty & Maina (2016).

= *Acacia pseudoeburnea* J.R. Drumm. ex Dunn in Bull. Misc. Info. Kew 1922: 185. 1922; Kumar & Sane, Legumes South Asia 96. 2003. *Vachellia pseudoeburnea* (J.R. Drumm. ex Dunn) Ragup. & al.,in Phytotaxa 162(3): 177. 2014.

Type: Lecto (designated here): India, Uttarakhand, Kumaon, *Stewart* 964 (given as '96' in the protologue), s.d., K000791197!.

Notes: Dunn (1922) in his protologue cited five specimens of five different collectors/collections from four different localities in NW India. Of these, only the specimens of Stewart and Thomson are available at K; other collections could not be traced in the concerned online herbaria (B, BM, CAL, E, G, P). Of these two available specimens, *Stewart* 964 (K000791197) is designated here as the lectotype as it is well preserved and matches with the protologue.

= *Acacia pseudowightii* Thoth. in Rheedea 2(1): 73. 1992. *Acacia minutifolia* Ragup., A. Mahad. & Thoth. in Ind. J. Forest. 14(1): 65. 1991, non F. Muell., 1874, nec Drake, 1896, *nom. illeg*. *Vachellia pseudowightii* (Thoth.) Kottaim. in Int. J. Curr. Res. Biosci. Plant Biol. 6(3): 38. 2019, syn. nov. *Vachellia pseudowightii* (Thoth.) A.S.Deshpande & Maslin in Deshpande & al., in Nordic J. Bot. 37(4): https://doi.org/10.1111/njb.02047.2019, later isonym, *nom. illegit*. as per Version of Record.

Type: Holo: India, Tamil Nadu, Thanjavur District, Rajamadam, 07.3.1989, *Ragupathy* 1039A (MH00000304!).

Notes: Deshpande & al., (2019) as well as Kottaimuthu (2019) mentioned that the lectotype of the name *Acacia eburnea* was designated by Hurter & Mabberley (2008) based on the specimen at Herb. LINN-1228.24 which is incorrect because they (Hurter & Mabberley, l.c.) did not include the statement "designated here" (*hic designatus*) or an equivalent as per Art. 7.11 of the *ICN* (Turland & al., 2018). It was Ali (1973) who first cited the type as: "Type: Herb. Linn. 1228/24 (LINN)", followed by Chakrabarty & Gangopadhyay (1996) who cited the type as: "*Type:* India, *Koenig* 77, Smith Herb. 1228/24 (LINN)", thus inadvertently but effectively lectotypifying the name. Of these, the designation by Ali (1973) takes priority.

The type specimen of *M. eburnea* has a label on its left-side: '*Mimosa cornigera*?' which necessitated examining the type at LINN (LINN-1228.22!) and the protologue of *Mimosa cornigera* L. (1753); now *Vachellia cornigera* (L.) Seigler & Ebinger*; (*syn. *Acacia cornigera* (L.) Willd.). It was revealed that *M. cornigera* L., native of C America, is quite different from *M. eburnea* L.f. (1782), with regard to the nature of inflorescence (yellow cylindric spikes Vs yellow globose head), spines (much shorter, stouter, brownish-black with recurved apex), and leaflets (especially the fleshy appendages at apex); the illustration by M. Smith (Curt. Bot. Mag. 121: t.7395. 1895, cited as *Acacia spadicigera* Schltdl. & Cham., syn. of *V. cornigera*) clearly depicts the distinct characters of *M. cornigera*. Apparently, the annotation label might be misplaced in the type specimen thus can be ignored. It is construed that both the specimens in the sheet LINN-1228.24 indeed belong to *M. eburnea* only, representing single gathering by Koenig in 1777 from India (given in the protologue but not mentioned in type specimen).

It is worthy to note that *Acacia roxburghii* Wight & Arn. (1834, non Kostel., 1835), treated as a synonym of *A. eburnea* (L.f.) Willd. (Sanjappa, 1992; Kumar & Sane, 2003, Deshpande & al., 2019, etc.), and as a synonym of *Vachellia eburnea* (Plant List, Tropicos.org, IPNI, POWO, 2019), are indeed misapplied and found here to be conspecific with *Acacia planifrons* Wight & Arn. [now *Vachellia planifrons* (Wight & Arn.) Ragup. & al.)], as noted in the protologue (Prodr. 276. 1834) by Wight & Arnott discussing the Roxburgh's name *Mimosa eburnea* (*sensu* Roxb., 1798, 1832, non L.f., 1782), besides citing *Mimosa umbrifera* Banks ex Wight & Arn. (POWO, 2019). Likewise, *Vachellia pseudowightii* (Thoth.) Kottaim. is to be treated as a synonym of *V. eburnea* while *V. pseudowightii* (Thoth.) A.S.Deshpande & Maslin becomes a later isonym.

Senegalia tanjorensis (Ragup. & al.) Kottaim. in Int. J. Curr. Res. Biosci. Plant Biol. 6(3): 38. 2019; Deshpande & al., in Nordic. J. Bot. 37(4): https://doi.org/10.1111/njb.02047. 2019. *Acacia tanjorensis* Ragup. & al., in J. Econ.Taxon. Bot. 14: 751. 1990; Kumar & Sane, Legumes South Asia 98. 2003. *Acacia modesta* sensu Chakrab. & M. Gangop. in J. Econ. Taxon. Bot. 20: 618. 1996, *auct. non* Wall., 1831, p. p., tantum quoad syn. *Acacia tanjorensis*. *Vachellia tanjorensis* (Ragup. & al.) Ragup., Seigeler, Ebinger & Maslin in Phytotaxa 162: 177. 2014.

Type: India, Tamil Nadu, Nagapattinam District, Kodiakkarari, 03 Feb. 1987, *S Ragupathy* 264 (Holo: MH!; Iso: CAL0000012940: image!).

Notes: While revising the genus *Acacia* for India, Chakrabarty & Gangopadhyay (1996) treated *Acacia tanjorensis* as conspecific with *A. modesta* Wall. [now *Senegalia modesta* (Wall.) P.J.H. Hurter], which is inappropriate due to clear-cut distinctions between the two species. Wallich (1831) in his protologue clearly mentioned that *A. modesta* is remarkable for its pallid, cinereous colored foliage and drooping spikes of fragrant flowers. Moreover, the native range of *A. modesta* is primarily the Indian subcontinent (N. India, Afghanistan, Baluchistan, Pakistan); in India, it is distributed in the West Himalayan regions, Punjab, Rajasthan, Maharashtra and Orissa.

A cursory comparison of the protologues of *A. tanjorensis* and *A. mellifera* (Vahl) Benth. subsp. *mellifera* revealed that the two species are apparently more closely related to each other rather than to *A. modesta*. The nature of leaves, prickles, length of the peduncle, dense inflorescence, membranous non-stipitate pods and the number of seeds (1-5) in both are closely resembles thus leading us conclude that the allied species for *Acacia tanjorensis* (now *Senegalia tanjorensis*) is *Acacia mellifera* subsp. *mellifera* (now *Sengalia mellifera* (Vahl) L.A. Silva & J. Freitas subsp. *mellifera*), which is native to Africa and was introduced in the 1980's in India (Tamil Nadu) and Pakistan. Moreover, Rangaswamy & Chakrabarty (1966) recorded that the seeds of *A. modesta* contain massive coiled funicle and a prominent pleurogram which is not present in the seeds of *A. mellifera* and *A. tanjorensis* which possesses seeds with a central horse-shoe shaped areole and terminal, sunken hilum (see: inset of **Fig. 1D**). The morphological characters of these three species are given in **Table 1** for comparison. The striking similarities between *S. tanjorensis* and *S. mellifera* subsp. *mellifera* indicates that the two elements may eventually be united, when further gatherings of the former are made available from the type locality.

Ragupathy & al., (1990) in their protologue differentiated *A. modesta* from *A. tanjorensis* mainly based on the size and shape of the leaves and pod characters. The presence of recurved paired prickles on the base of each node and non-spinescent stipules, lenticellular bark and the dark brown to stramineous, longitudinally dehiscent, ensiform pods with acute-acuminate apex and the 1-5 brownish seeds indicate that it is more closely allied to *Senegalia mellifera* subsp. *mellifera*. *Acacia tanjorensis* is reported to be an endemic of India and distributed in Arunachal Pradesh and Tamil Nadu by Kumar & Sane (2003), but it needs to be verified to confirm this. It is likely that the Arunachal Pradesh specimen might be *A. modesta* (= *Senegalia modesta*).

DISCUSSION

Acacia minutifolia Ragup., A. Mahad. & Thoth. was described in 1991 based on the specimens collected by Ragupathy (Holo: *S Ragupathy 1039A*, MH!) from the Coromandel Coast at Rajamadam, Thanjavur district (Ragupathy & al., 1991). However, it is a later homonym of *Acacia minutifolia* F. Muell. (1874), hence the replacement name *Acacia psedudowightii* Thoth. was proposed by Thothathri (1992). Recently, Deshpande & al., (2019) transferred *Acacia psedudowightii* Thoth. to *Vachellia* and the new combination *Vachellia pseudowightii* (Thoth.) A.S. Deshpande & Maslin was proposed. However, Kumar & Sane (2003) treated *A. pseudowightii* Thoth. as conspecific with *Acacia eburnea* (L.f.) Willd. (1806). Meanwhile, Kottaimuthu (2019) also proposed the name *Vachellia pseudowightii* (Thoth.) Kottaim. Altough Kottaimuthu's name takes precedence based on the 'Version of Record' (ICN Art. 30.3, Rec. 30A.1 and Art. 31.1; Turland & al., 2018), it has to be treated as a synoynm of *Vachellia eburnea* (L.f.) P.J.H. Hurter & Mabb. now.

As Hurter & Mabberley (2008) already made the new combination *Vachellia eburnea* (L.f.) P.J.H. Hurter & Mabb., the correct name for the heterotypic synonym *A. pseudowightii* Thoth. is *Vachellia eburnea* (L.f.) P.J.H. Hurter & Mabb., native to Indian region and widely distributed in the Indian Subcontinent as well as Afghanistan, Iran, Oman & Myanmar (POWO, 2019). *Vachellia eburnea* is an armed glabrous small tree, with stipular thorns of various sizes, bipinnate leaves with concave gland between the last pair of pinnae, leaflets 5–8 pairs, ovate-oblong, obtuse, glabrous; peduncles axillary, flowers in heads, stamens many, distinct, and pods elongated and twisted; seeds 3–9, oblong-elliptic; distributed in dry evergreen to dry deciduous forests of Tamil Nadu. Chakrabarty & Gangopadhyay (1996), having found no difference, treated *A. campbellii, A. hydaspica, A. pseudoeburnea* as well as *A. minutifolia* as synonyms of *A. eburnea* but Deshpande & al., (2019) treated all these synonyms as distinct species without mentioning their distinctive features. The present studies support the views of Chakrabarty & Gangopadhyay (1996) as well as Chakrabarty & Maina (2015) and therefore these species are merged herein again under *V. eburnea.*

Acacia tanjorensis Ragup. & al., reported as a coastal stenoendemic legume tree, discovered in 1987 by Ragupathy & al., from the southern end of Coromandel Coast at Kodiakkarai (Point Calimere), Nagapattinam district (part of erstwhile Thanjavur district), Tamil Nadu. The species was named and added to the Floras of India and Tamil Nadu by Ragupathy & al., (1990). This species was, however, treated conspecific with *Acacia modesta* Wall. (1831) by Chakrabarty & Gangopadhyay (1996) while Kumar & Sane (2003) accpeted it as a distinct species. Recently, Ragupathy & al., (2014) transferred the species to *Vachellia* as *V. tanjorensis* (Ragup. & al.) Ragup., Seigler, Enbinger & Maslin. However, Deshpande & al.,(2019) considered the new combination by Ragupathy & al., (2014) as erroneous and treated it under *Senegalia* and proposed the name, *Senegalia tanjorensis* (Ragup. & al.) A.S. Deshpande & Maslin. Meanwhile, Kottaimuthu (2019) also proposed the name *Senegalia tanjorensis*

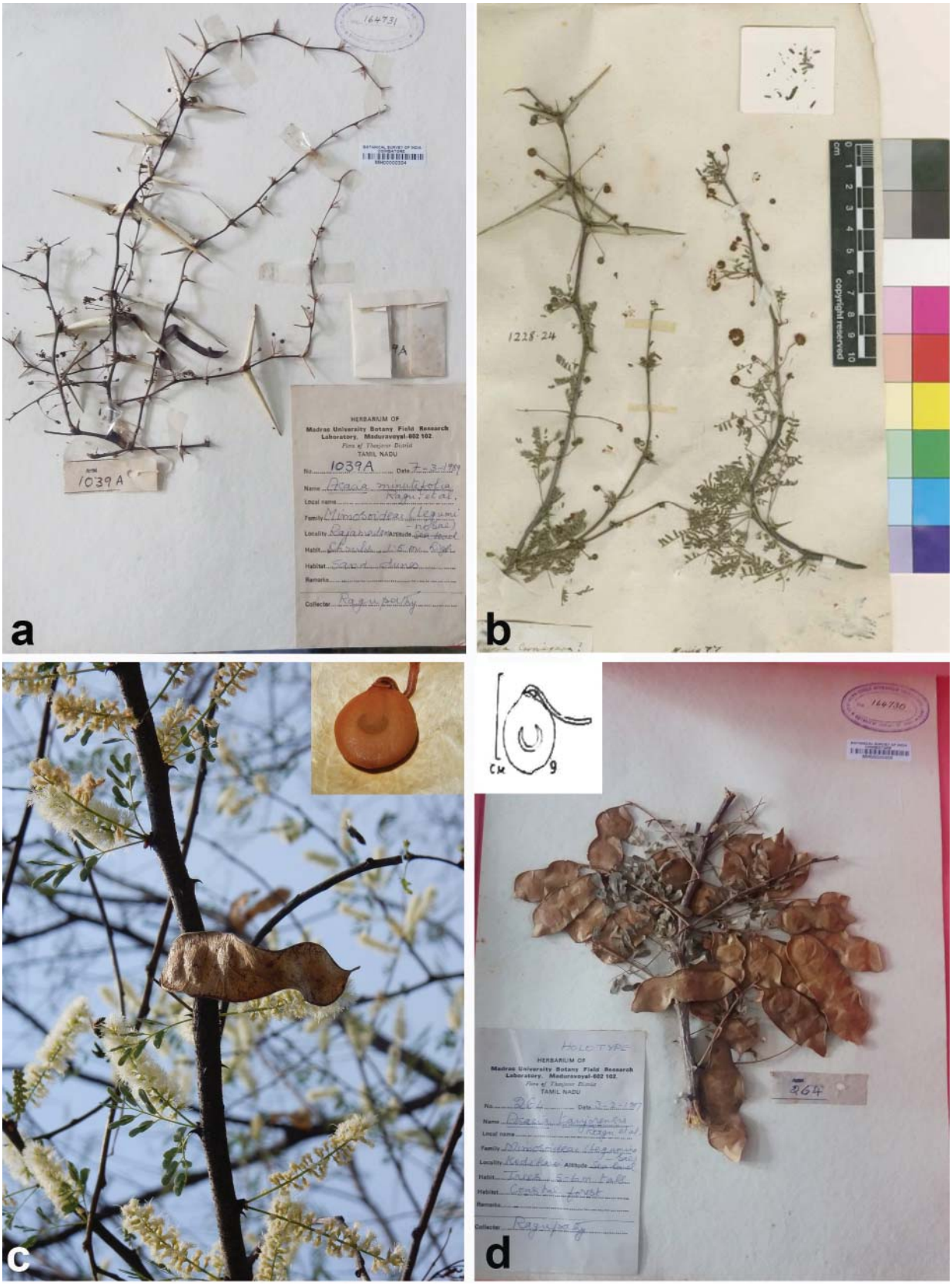

Fig. 1. **a.** Holotype of *Acacia minutifolia*; **b.** Lectotype of *Mimosa eburnea*; **c.** Flowers and fruit of *Senegalia mellifera*; close-up of the seed (inset); **d.** Holotype of *Acacia tanjorensis*; diagram of the seed depicted in the protologue (inset).

(Ragup. & al.) Kottaimuthu. Based on the 'Version of Record' (ICN Art. 30.3, Rec.30A.1 and Art. 31.1; Turland & al., 2018), Kottaimuthu's name takes precedence and hence the current and correct name for the endemic legume species is *Senegalia tanjorensis* (Ragup., Thoth. & A. Mahad.) Kottaim., and Deshpande's name becomes an isonym.

Senegalia mellifera (Vahl) L.A. Silva & J Freitas subsp. *mellifera* (syns. *S. mellifera* (Benth.) Seigler & Ebinger subsp. *mellifera*; *Acacia mellifera* (Vahl) Benth. ssp. *mellifera; Mimosa mellifera* Vahl), considered as an invasive species, was introduced into cultivation in Tamil Nadu, India (Sastry & Karathekar, 1990; Chakrabarty & Gangopadhyay, 1996; Deshpande & al., 2019; ILDIS; World Wide Wattle; CABI.org, 2020) owing to its high survival percentage and its use as a live fence as well as fuel-wood (Puri & Panwar, 2007). As *A. mellifera* was reported to be introduced in late 1980's in the region (*vide* Sastry & Karathekar, 1990), it is quite possible that Ragupathy & al.,(1987) encountered it on coast described *Acacia tanjorensis*. Moreover, the presence of stipular spines in *A. tanjorensis* as reported by Ragupathy & al.,(1987) seems to be an error since the allied species cited *A. modesta* is now treated as *Senegalia modesta* where stipular spines are absent! The morphological characters of these species are compared in **Table 1**.

In a nut shell, it is clear now that, of the three endemics of *Acacia sensu lato* reported so far from Tamil Nadu, *A. bolei* (= *Vachellia bolei*), a coastal stenoendmeic is possibly extinct and never recollected after the type collection by Robert Wight in 1835. The name *Acacia minutifolia,* replaced by *A. pseudowightii*, is now synonymised under *Vachellia eburnea* furnished with types. If *Senegalia tanjorensis* is treated conspecific with *Senegalia mellifera* subsp. *mellifera*, the only endemic legume of Tamil Nadu will be the already extinct *V. bolei*. Besides, the potential risk/consequences associated with keeping 'Accepted version' of papers online (even after full peer review, provided with DOI, and copyright protection), and the importance of 'Version of Record' in publications, particularly for new combinations, has also been brought to light for the first time.

Table 1. Comparison of morphological characters of *Senegalia tanjorensis* with *S. modesta* and *S. mellifera* subsp. *mellifera*.

Morphological Characters	*Senegalia tanjorensis*	*Senegalia modesta*	*Senegalia mellifera*
Habit	Trees, 5–6 m tall.	Small to medium-sized, well-branched, bushy trees or shrubs, 5–10 m.	Small trees or large shrubs, 1–6 m high; much-branched, glabrous, more or less obconical.
Stem	Bark ash colored; stem with ridges and furrows, lenticellate.	Bark greyish; branchlets brownish, lenticillate.	Bark grey-brown to purplish-black, lenticellate; ste m rough, fissured.
Spines/ Prickles	Stipular spines short*, binate, axillary, recurved.	Spines, axillary, paired, straight; prickles dark-brown, polished.	Stipules in pairs not spinescent, linear, caducous; prickles in pairs, intra-stipular, brown-black, recurved.
Leaves	Distinct gland on the rachis below the first pair of pinnules	Small gland at the base and one between the uppermost pinnae.	Rachis with a gland between the top 1-2 pairs of pinnae;
Inflorescence / Flowers	Spikes axillary; flowers white; ovary sessile, subglobose.	Spikes solitary or in pairs, lax; flowers white turns yellow, bisexual, fragrant; ovary linear, substipitate.	Spikes longer than leaves; pedicels longer than calyx; flowers white, fragrant; ovary shortly stipitate.
Pods / seeds	Pods *c*. 8.5 cm long, flat, oblong, glabrous, margin undulate; seeds: 1-5, ovate-elliptic, 0.5 –1.0 × 0.3 – 0.8 cm, brownish; central areole horse-shoe shaped; hilum terminal, sunken.	Pods *c*. 7.5 cm long, stipitate, linear-oblong, flat, straight, margin entire or slightly undulate; seeds: 6–8, orbicular, flat, glossy, smooth, brownish-red; seeds reported to contain massive coiled funicle and a prominent pleurogram.	Pods *c*. 9 cm long, ensiform, oblong, chartaceous; seeds: 1-5, obovate, yellowish-brown, smooth, shining, compressed, 0.8–1.0 × 0.5 – 0.6 cm; central areole horse-shoe shaped; hilum terminal, sunken.

Phenology	Fl.: January-April; Fr.: April onwards.	Fl.: April-June onwards; Fr.: May-November.	Fl. & Fr.: December-April & September-November.
Distribution & Ecology	Endemic to coastal Tamil Nadu (southern end of Coromandel Coast); restricted to coastal sandy habitats of Point Calimere (Kodiakkarai), Tamil Nadu.	Sub & Central Himalayas, low hills & scrubs; India: Bihar, Delhi, Haryana, Jammu & Kashmir, Ladakh, Maharashtra, Punjab, Rajasthan, Uttar Pradesh; Pakistan & Afghanistan.	Native of Ethiopia; widely distributed in Africa & Arabia; introduced in India & Pakistan.
Common Name	----- N.A. -------	Amritsar gum	Hookthorn; Blackthorn

Note: * - The given character state is from the protologue by Ragup. & al.,(1990) which is an error in the light of new facts; *Senegalia* species are characterised by non-spinescent stipules, generally inconspicuous recurved or straight prickles (see: Kyalangalilwa & al., 2013; Deshpande & al., 2019).

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