

A synopsis of genus *Ammannia* L. (Lythraceae) in India

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Abstract: The genus *Ammannia* L. (Lythraceae) in India is revised and a taxonomic synopsis is presented. In this study, nine species are recognized. *Ammannia nagpurensis* T.Mathew and M.P.Nayar have been synonymized under *A. multiflora*. A key to the species, along with brief descriptions, phenology, habitat preference, distribution, and conservation status are provided. Additionally, detailed taxonomic and nomenclatural notes are presented to aid in species identification and to reconcile ambiguities in taxonomic treatments.

Keywords: *Ammannia*, macrophyte, Myrtales, India, taxonomy.

Introduction

The genus *Ammannia* L. is a diverse hydrophilic group within the family Lythraceae, distributed in tropical and subtropical regions (POWO, 2025). The genus was first described by Linnaeus (1753) with three species: *A. latifolia* L., *A. ramosior* L., and *A. baccifera* L., all under the class *Tetrandria monogynia*. However, *A. ramosior* was later transferred to genus *Rotala* L. (*R. ramosior* (L.) Koehne) by Koehne (1877). Soon after, Roxburgh (1820) recognized six species of *Ammannia* from Indian regions, of which four species (viz., *A. multiflora* Roxb., *A. pentandra* Roxb., *A. rotundifolia* Roxb., and *A. vesicatoria* Roxb.) were newly described. De Candolle (1828) in his comprehensive study of the family Lythraceae, expanded the genus and recognized 34 species in four subgenera. Clarke (1879) in Hooker's 'Flora of British India' treated the genus *Ammannia* in broad sense (*sensu lato*) by incorporating genera

Nesaea Comm. ex Juss., and *Rotala* L. The genus was further classified under two subgenera, *Rotala* (L.) C.B. Clarke and *Eu-ammannia* C.B. Clarke. In contrast, Wight and Arnott (1834) recognized genera *Rotala*, *Ameletia* DC. and *Nesaea*, outside *Ammannia* based on their capsule dehiscence.

Koehne (1880, 1903) in his monograph, also distinguished all the three genera *Ammannia*, *Nesaea*, and *Rotala* based on capsule dehiscence pattern; irregular dehiscence in *Ammannia*, initial circumscissile dehiscence in *Nesaea*, and septicial dehiscence in *Rotala*. Koehne (1903) classified the genus *Ammannia* into two subgenera, *Euammannia* Koehne, and *Cryptotheca* (Blume) Koehne. The subgenus *Cryptotheca* is monotypic, with species, *A. macrocarpa* DC., and is characterized by two exerted stamens, uni-locular ovary, and parietal placentation, which is a unique morphology in the family. Subgenus *Euammannia* is further classified under two sections with two series each. The two sections of the subgenus *Euammannia* are characterized by styles that are short and included within the hypanthium in *A. sect. Astylia*, while long and exerted in *A. sect. Eustylia*.

The genus *Nesaea* was categorized into eight sections by Koehne (1903). Two endemic species from Indian subcontinent, *N. lanceolata* (B. Heyne ex C.B. Clarke) Koehne (= *A. prostrata* Buch.-Ham. ex Dillwyn) and *N. brevipes* (= *A. cordata* Wight & Arn.), were placed within the section *Ammanniastrum* Koehne. The species *N. triflora* (L.f.) Kunth (= *A. capitellata* (C. Presl) S.A. Graham & Gandhi) was placed under section *Typonesaea* Koehne. Blatter and Hallberg (1918), and Gamble

Received: 20.08.2025; Revised & Accepted: 04.12.2025

Published Online: 31.12.2025

(1919) treated genus *Nesaea* as distinct from *Ammannia* following Koehne (1903). Cook (1974, 1996) also treated *Ammannia*, *Nesaea*, and *Rotala* as distinct genera, and considered *Hionanthera* as probable congeneric with *Ammannia*. Panigrahi (1976) studied generic delimitation of *Ammannia*, *Nesaea*, *Rotala*, and *Hionanthera*, and concluded all four genera as distinct based on morphology, anatomy, and geographical distribution.

In India, the last revisionary study of *Ammannia* was published by Blatter and Hallberg (1918), identifying six species, including the newly discovered *A. destrorum* Blatt. & Hallb. Later, Mathew and Nayar (1992) described *A. nagpurensis* T.Mathew & M.P.Nayar from central and western India, based on herbarium specimens deposited at BLAT and CAL. Mathew *et al.* (2020) identified eight genera, and distinguished *Ammannia* (08 species and 2 forma), *Nesaea* (3 species), and *Rotala* (35 species) following the concept proposed by Koehne (1903).

The recent molecular investigation (Graham *et al.* 2011, 2021) based on nrITS and plastid *rbcl*, *trnL-F*, and *matK*, combined with micro-, macromorphological, and karyological evidence, strongly supports the hypothesis that genera *Ammannia*, *Crenea* Aubl., *Hionanthera*, and *Nesaea* are congeneric and constitute a monophyletic assemblage. *Rotala* is sustained as a distinct genus and nested in the early divergent clade *Heimia-Didiplis-Rotala* in the phylogenetic tree of the family (Graham *et al.* 2011, 2021). This was further supported by complete plastome based phylogenomic study of Lythraceae (Inglis *et al.*, 2023). Based on this concept Graham and Gandhi (2013a, 2013b), and Graham *et al.* (2021) resurrected or transferred the names which were earlier treated under *Crenea*, *Hionanthera*, and *Nesaea* within *Ammannia*. In India, three species of *Ammannia*, viz., *A. capitellata*, *A. cordata*, and *A. prostrata*, which were placed under the genus *Nesaea*, were resurrected by Graham and Gandhi (2013a, 2013b).

Currently, the genus is recognized by about 108 species (POWO, 2025), with diverse habits (from herbs to woody bushes) and habitats (from aquatics and marshy lands). The intra- and interspecific variations have long hindered species identification, to resolve this shortcoming a morphological investigation of the genus *Ammannia* in India was undertaken. This study provides first synoptic account of taxonomy of Indian *Ammannia* over a century, clarifying species identity, updating distributions, and resolving nomenclature inconsistencies.

Material and Methods

The present synopsis is based on live collections obtained during botanical exploration in India between 2020–2025 for the study of Lythraceae and exsiccate specimens from herbaria: ASSAM, BM, BLAT, BSI, BSD, CAL, DD, K, LINN, MH, RHT and SPPU. Additionally, specimens from other herbaria B, BSID, E, GZU, HAL, L, M, NY, P and PBL, including type specimens were studied in digital herbarium catalogues, JSTOR Global Plants (<https://plants.jstor.org/>), and GBIF database (<https://www.gbif.org/>).

The taxonomic identity of the taxa was confirmed with the aid of protologues, relevant literatures (Clarke, 1879; Koehne, 1880, 1903; Blatter & Hallberg, 1918; Panigrahi, 1976; Cook, 1996; Graham *et al.* 2011, 2021; Graham & Gandhi, 2013, 2013b; Mathew *et al.*, 2020), and morphological examination of both live specimens collected during the study and exsiccate specimens from various herbaria. The morphology of the specimens was studied using Nikon SMZ270 and Leica M80 stereomicroscopes equipped with digital camera. Beentje (2016) was followed for terminologies in morphological descriptions. Herbarium acronyms follows *Index Herbariorum* (Thiers 2025, continuously updated). Voucher specimens are deposited in SPPU.

Specimen seen in person are marked with an exclamation mark '!' and specimens seen only in the digital forms are marked with 'digital images!'.

Barcodes for all the specimens are mentioned where available. For the plant nomenclature the ICN Madrid code (Turland *et al.*, 2025) and IPNI (<http://www.ipni.org>) were referred for citations.

Results and Discussion

Nine species of *Ammannia* are recognized in India, viz. *A. auriculata* Willd., *A. baccifera* L., *A. capitellata* (C.Presl) S.A.Graham & Gandhi, *A. cordata* Wight and Arn., *A. desertorum* Blatt. & Hallb., *A. multiflora* Roxb., *A. octandra* L.f., *A. prostrata* Buch.-Ham. ex Dillwyn, and *A. senegalensis* Lam. Taxa such as *A. auriculata*, *A. baccifera*, and *A. multiflora* have wide distribution across the country. In contrast, *A. desertorum* is recorded to be distributed in west Indian states of Gujarat, and Rajasthan, extending till Pakistan. Three species *A. cordata*, and *A. prostrata* are confined to the Peninsular India, extended till Sri Lanka. *A. capitellata* is known only from pre-colonial collections in India from West Bengal housed at BM, and K. Two names *A. nagpurensis* and *A. debilis* Aiton, are synonymized under *A. multiflora* and *A. prostrata* respectively. Also, nomenclatural type (lectotype) of five names (viz., *A. indica* Lam., *A. aegyptiaca* Willd., *A. viridis* Willd. ex Hornem., *A. lanceolata* var. *pubiflora* Koehne, and *A. debilis* Aiton) are designated following Art. 9.3 of the ICN (Turland *et al.*, 2025). Mathew *et al.* (2020) reported *A. verticillata* (Ard.) Lam. in their annotated checklist, citing its distribution in West Bengal. Although the species is widely distributed in east Asia and Pakistan, no supporting material could be located to substantiate its distribution in India. Therefore, its occurrence in India is regarded doubtful.

Taxonomic treatment

Ammannia L., Sp. Pl. 1: 119. 1753. *Type* (designated by Britton & Brown, 1913): *Ammannia latifolia* L.

Cornelia Ard., Animadv. Bot. Specim. Alt. 2: `9, 1764. *Type*: *Cornelia verticillata* Ard.

Crenea Aubl., Hist. pl. Guiane, 1: 523, t. 209, 1775. *Type*: *Crenea maritima* Aubl.

Nesaea Comm. ex Kunth, Nov. Gen. Sp. 6 (pt. 25): 151, 1823. *Type*: *Nesaea triflora* (L.f.) Comm. ex Kunth.

Cryptotheca Blume, Bijdr. Fl. Ned. Ind. 17: 1128, 1827. *Type*: *Cryptotheca dichotoma* Blume.

Trotula Comm. ex DC., Prodr. 3: 90, 1828. *Type*: *Trotula triathis* Comm. ex DC.

Nexilis Raf., New Fl. 4: 9, 1838. **nom. illeg.**

Chrysolyga Willd. ex Steud., Nomencl. Bot., ed. 2, 1: 359, 1840. *Type*: *Chrysolyga salicifolia* Willd. ex Steud.

Ronconia Raf., Autik. Bot. 9, 1840. *Type*: *Ronconia triflora* Raf.

Diplostemon DC. ex Steud., Nomencl. Bot., ed 2., 1: 76, 1840; Miq., Fl. Ned. Ind. 1(1): 615, 1856. *Type*: *Diplostemon octandrum* Miq.

Hionanthera A.Fern. & Diniz, Bol. Soc. Brot. Ser. 2, 29: 90. 1955. *Type*: *Hionanthera mossambicensis* A.Fern & Diniz.

Dithea (Wight & Arn.) Miq., Fl. Ned. Ind. 1(1):615. 1856. *Type*: *Dithea verticillata* (Lam.) Miq.

Hapalocarpum Miq., Fl. Ned. Ind. 1 (1): 618. 1856. *Type*: *Hapalocarpum vesicatorium* Miq.

Aquatic or marshy, annual or perennial, glabrous or papillose, herbs or subshrubs or shrubs (*Crenea* = *Ammannia*). Stems 0.5–2 (4) m high, terete or quadrangular in herbs, simple to sparsely or profusely branched. Leaves decussate, rarely alternate or whorled, sessile, linear or lanceolate or oblanceolate, spatulate (*Crenea* = *Ammannia*), attenuate to cuneate or auriculate-cordate at base, acute or obtuse at apex. Inflorescence sessile or subsessile or pedunculate, dichasial or polychasial cymes or solitary or capitulate subtended by enveloping bracteoles (*Nesaea* = *Ammannia*). Flowers actinomorphic sessile or subsessile or pedicellate, 4–5-merous. Bracteoles 2. Hypanthium campanulate or urceolate, lobes 4–8, triangular, appendages absent or short. Petals 4–8 or absent,

obovate or orbicular or suborbicular, included or exerted, pink or violet or white or creamy-white. Stamen 4–8 or 12–16, included or exerted. Ovary sessile, complete (*Crenea* = *Ammannia*) or incomplete, 2–5 locular, style simple, longer than to equal or shorter than ovary or sometime absent, stigma capitate, included or exerted. Capsules globose or ellipsoid, included or exceeding calyx lobes, dehiscent irregularly or initially partially circumscissile, outer wall smooth not striated. Seeds numerous or 2–5, convex or round or ovoid or oblong (*Hionanthera* = *Ammannia*) or narrowly elongated (*Crenea* = *Ammannia*), flattened or compressed.

Distribution & Habitat: Genus is distributed in all the continents, except Antarctica. Species diversity is high in tropical and Southern hemisphere. African continent must be the probable centre of diversity of the genus (Graham 1985, 2021). In India, the genus is distributed throughout the country.

This genus thrives in diverse habitat from marsh lands, inundated and fallow marshy fields, bunds or fringes of lakes, streams, rivers, and rarely in brackish water. All the recognized species have no particular habitat preferences. But, species like *A. auriculata*, *A. baccifera*, *A. multiflora* and *A. octandra* are commonly observed in the marshy fallow fields.

Key to species of *Ammannia* in India

- 1a Calyx lobes hirsute; capsule dehiscence circumscissile near the apex initially 2
 1b Calyx lobes glabrous; capsule dehiscence irregular 4
 2a Inflorescence pedunculate, peduncle 10–25 mm long; stamens and style exerted, style twice the length of hypanthium.....*A. capitellata*
 2b Inflorescence sessile or subsessile, up to 5 mm long; stamens and style included within the hypanthium, style stout, shorter than hypanthium 3
 3a Leaf lamina attenuate or cuneate at base; calyx lobes 0.5 mm or less; petals present ... *A. prostrata*

- 3b Leaf lamina obtuse or cordate at base; calyx lobes 0.75–1 mm long; petals absent...*A. cordata*
 4a Petals absent *A. baccifera*
 4b Petals present 5
 5a Style much shorter than ovary, included within hypanthium at anthesis.....*A. senegalensis*
 5b Style as long as or longer than ovary, well exerted at anthesis..... 6
 6a Scabrous papillose herbs; cymes sessile or subsessile, anthers as many as calyx lobes; capsules ellipsoid..... *A. desertorum*
 6b Glabrous herbs; cymes pedunculate, peduncles 1–15 mm long; anthers more than calyx lobes; capsule globose..... 7
 7a Hypanthium 1–2 mm long; stamens and stigmas reaching above the petals..... *A. multiflora*
 7b Hypanthium 3–5 mm long; stamens and stigmas exceeding above the petals..... 8
 8a Hypanthium 4-winged; capsules completely covered by hypanthium *A. octandra*
 8b Hypanthium not winged; capsules exceeding the hypanthium.....*A. auriculata*

Ammannia auriculata Willd., Hort. Berol. 7: t. 7. 1803. *Lectotype* (designated by Graham, 1985): EGYPT. Near Rosette, *Willdenow Herbarium* 3081 (B [B03081-010 digital image!]).

Ammannia arenaria Kunth, Nov. Gen. Sp. 6: 190. 1824. *Ammannia auriculata* Willd. var. *arenaria* (Kunth) Koehne in Engl., Bot. Jahrb. 1: 245. 1880. *Lectotype* (designated by Graham, 1985): Venezuela, **Caraceus Province**, near San Fernando, *A.J.A. Bonpland* 802 (P [P00679409 digital image!])

Ammannia senegalensis auct DC., Prodr. 3: 77. 1828. non Lam. (1792) **Fig. 1a & d**

Annual, erect, glabrous herbs. Stems 30–60 cm tall, quadrangular, inconspicuously winged, much branched from middle of stem. Leaves 7–80 × 2–10 mm, sessile, linear-lanceolate or

linear-oblong, acute at apex, cordate, articulate at base. Inflorescence axillary, pedunculate cymes; peduncle 2–8 mm long. Bracts leaf-like. Bracteoles 2, lanceolate, much shorter than hypanthium.

Flowers 3–15 per cyme, pedicellate; pedicels 0.5–1 mm long, 4-merous. Hypanthium campanulate, 3–5 mm long, 4–8 nerved, not winged. Calyx lobes 4, dentate, c. 0.5 mm long; calyx appendages absent or



Fig. 1: a & d. *Ammannia auriculata* Willd.; b & e. *Ammannia baccifera* L. (e, voucher APR0069); c & f. *Ammannia multiflora* (APR0101); g & h. *Ammannia octandra* L.f.; i & j. *Ammannia prostrata* Buch.-Ham. ex Dillwyn (APR0079). (photos, a. Abdurehman, d. Balkar Singh, b & h. Dr. K. Ravikumar, f. Pravin S., g. Nuwan Chaturanga, c, e, i, & j. Arun Prasanth).

inconspicuous. Petals 4, obovate, 10–15 mm long, carmine or magenta. Stamens 4–8, inserted about the middle of the hypanthium; anthers exerted. Ovary broad globose, exceeding hypanthium; style slender, as long as ovary; stigma capitate, exerted. Capsules globose, up to 3 cm long, exceeding hypanthium. Seeds numerous, discoid.

Flowering & fruiting: August–December.

Habitat: Common in rice fields and wet places.

Distribution: India (Jammu, & Kashmir, Haryana, Uttar Pradesh, Bihar, West Bengal, Rajasthan, Kerala, Tamil Nadu, Maharashtra, Karnataka, Andhra Pradesh), Russia, Iran, Afghanistan, Pakistan, China, Australia, Africa, American continent.

Specimens examined: INDIA, **Andhra Pradesh**, Nagarkurnool, Uma Maheswaram, 20.09.2013, *L. Rasinga*, & *M. Sankar Rao* 003639 (BSID0016339 image!). **Bihar**, Purnea, Purnea Dingra Ghat, 03.10.1868, *Kurz s.n.* (CAL!). **Haryana**, Ambala, 1844, *M.P. Edgeworths s.n.* (K[K004334722!]); Karnal, 15.09.1885, *J.R. Drummond* 24408 (K004334733!); Karnal, Tusam, 1886, *J.R. Drummond* 24403 (K004334734!); Hissar, Babranbir, 23.09.1946, *Raizade* 21010 (DD!); Sirsa, Chhakka Jheel, 02.12.1961, *Nair* 18981 (BSD!); Hissar, between Jind to Hansi, 16.10.1962, *Nair* 24800 (BSD!); Hissar, Hansi, 13.02. 963, *Nair* 25900 (BSD!); Hissar, Chakaranian, 26.10.1976, *Nair* 37642 (BSD!). **Jammu & Kashmir**, Kashmir, Srinagar, 20.10.1856, *Schlagintweit* 4525 (BM!); Baramula, 06.1905, *A. Meebold* 390 (CAL!); Ganderbal district, Ganderbal to Kangan, 14.07.1921, *R.R. Stewart* 6219 (K [K004334720!]) Anantnag, Achabal, Koul, *Dharmadhikari & Koul* 24 (CAL!). **Punjab**, Gurdaspur, 1880, *J.R. Drummond* 304 (K [K004334731!]); Hoshiarpur, *Misra* 41833 (BSD!); *s.loc., s.d., Thomson* 58 (CAL!). **Rajasthan**, Uvia, Mt. Abu, *Blatter* 3338 (BLAT!); Usrat, Mt. Abu, *Blatter* 3339 (BLAT!); Hindoli-Bundi, 23.12.1963, *D.M. Verma* 1892 (CAL!); Alwar, *R.B. Mujumdar s.n.* (CAL!); Bharatpur, Ghana Bird Sanctuary, *K.B. Majumdar s.n.* (CAL!); Ganganagar District,

Ghaggar bridge, 200 m, 13.09.1977, *G.P. Roy* 5029 (CAL!); *s.loc., s.d., Griffith* 2317 (CAL-176094!). **Uttarakhand**, Rudraprayag, Garhwal, 800 m Alt., 19.09.1958, *M.A Rao* 6356 (CAL!); Dehra Dun, Mathron Wale, 13.11.1961, *Bhattacharya* 18441 (BSD!). **Uttar Pradesh**, Moradabad, 01.09.1843, *s.coll. s.n.* (K004334724!); Shahjahanpur, Indalpur, Bank of Gomati River, 11.10.1885, *Duthie* 4022 (DD!). **West Bengal**, Howrah, Kochbihar, *s.d., S. Bandyopadhyay* 3445 (CAL!). **Uncertain localities**, *s.loc., s.d., M.M. Jaquemont* 1737 (K [K004334721!]); North West India, *s.loc., s.d., s.coll. s.n.* (K004334723!); Bank of river Chenab, 01.10.1846, *T. Thomson s.n.* (K004334726!); *s.loc.,* 01.11.1846, *T. Thomson s.n.* (K [K004334727!]); Punjab/Kashmir, 04.10.1878, *T. Thomson s.n.* (K [K000433478!]); *s.loc., s.d., J.R. Drummond* 24405 (K004334729!); *ibid., J.R. Drummond* 24415 (K [K004334730!]); *ibid., J.R. Drummond* 24407 (K [K004334732!]); *ibid., J.R. Drummond* 24409 (K [K004334735!]); *ibid., J.R. Drummond* 24410 (K [K004334736!]); *s.loc.* (Panjab), *s.d., T. Thomson s.n.* (BM!).

Conservation status: Least Concern (LC), global assessment (Ghogue & Gupta, 2020).

Notes: *Ammannia auriculata* is a widely distributed species in warm parts of the world, commonly growing in the cultivated fields. Species is characterized by its robust plants with pedunculate cyme, with 3–15 flowers (commonly 3 or 7), hypanthium 4–8 nerved, not winged, calyx lobes 4, flowers 4-merous with 4 showy petals and 4–8 stamens exceeding the hypanthium, capsule exceeding the hypanthium.

***Ammannia baccifera* L.**, Sp. Pl. 1: 120. 1753. *Lectotype* (designated by Graham, 1985): CHINA. *s.loc., s.d., Osbeck s.n.* (Linn [Linn Savage no. 156-4!]).

Ammannia indica Lam., Tabl. Encycl. 1 (2): 311. 1791. *Hapalocarpum indicum* (Lam.) Miq. 618. 1856. *Lectotype* (designated here): INDIA. in herb. Lamarck, *Sonnerat s.n.* (P [P00297859 digital image!]).

Ammannia aegyptiaca Will., Hort. Berol. 1: 6. t.6. 1803, *auct. non.* Willd. *Ammannia baccifera* L. subsp. *aegyptiaca* (Will.) Koehne in Engl., Bot. Jahrb. 1: 259. 1880. *Lectotype* (designated here): EGYPT, *s.d.*, *s.coll. s.n.* (B-W, [B-W03078020 digital image!]); isolecto B-W [B-W03078010 digital image!]).

Ammannia viridis Willd. ex Hornem., Hort. Hafn. 1: 146. 1813. *Ammannia baccifera* L. subsp. *viridis* (Hornem) Koehne in Engl., Bot. Jahrb. 1: 259. 1880. *Lectotype* (designated here): *s.loc. s.d.*, *s.coll. s.n.* (B-W [B-W03079010 digital image!]).

Ammannia vesicatoria Roxb., Fl. Ind. 1: 477. 1820. *Hapalocarpum vesicatorium* (Roxb.) Miq. 618. 1856. *Lectotype* (designated by Prasanth & Sardesai, 2024): [illustration] Roxburgh Icon. Illus. no. 35! (CAL digital image!).

Ammannia salicifolia Hiern in Oliver, Fl. Trop. Africa, 2: 569. 1871. **nom. illeg.** **Fig. 1b & c**

Annual, erect, glabrous herbs. Stems 10–60 cm (rarely 1m) tall, quadrangular, not winged, branched from base of the stem. Leaves 07–70 × 2–16 mm, sessile, linear oblong or oblong-lanceolate, acute or obtuse at apex, base narrowed or rounded or subcordate-auriculate or attenuate. Bracts leaf-like. Bracteoles 2, lanceolate, much shorter than hypanthium, minute. Inflorescences axillary, subsessile or shortly pedunculate cymes. Flowers 3–15 per cyme, pedicellate, 4-merous, green. Hypanthium campanulate, 1.0–1.5 mm long, 8 nerved or smooth. Calyx lobes 4, dentate, *c.* 0.5 mm long; calyx appendages absent. Petals absent. Stamens 4, inserted above of half the hypanthium; anthers included. Ovary globose; style stout, *c.* 0.25 mm long, homostylous; stigma capitate, included. Capsules globose, *c.* 1.5 mm long, as equal as or slightly exceeding hypanthium. Seeds numerous, concave–convex.

Flowering & fruiting: August–March.

Habitat: Marshy places and fallow lands.

Distribution: India (throughout all the states), Sri Lanka, Nepal, Bangladesh, China, Malaysia, Vietnam, Indonesia, New Guinea, Pakistan,

Afghanistan, Russia, Iran, Iraq, Africa, Madagascar, North America, Australia.

Specimens examined: INDIA, **Andhra Pradesh**, Alluri Sitharama Raju, Devipatnam, 1885, *Gamble* 15784 (K [K004334829!]); *ibid.*, *Gamble* 15785 (K [K004334828!]); Ellur, *J.S. Gamble* 18545 (K [K004334827!]); Nellore, 22.03.1901, *Bourne* 2522 (K [K004334888!, K004334890!]); East Godavari, Balabhadrapuram, 26.12.1901, *Bourne* 3228 (K [K004334824!, K004334823!]); Godavari District (then), Katchalur, 1902, *Bourne* 3343 (K [K004334825!, K004334826!]); Chittoor, Nagapatla, 20.03.1918, *C.E.C. Fischer* 4293 (FRC [FRC4242!]); Y.S.R. District, Way to Guvvalcheruvu, 27.02.1959, *K. Subramanyam* 7795 (CAL!); Annamaiah District, Balapalle, 17.07.1962, *J.L. Ellis* 14222 (CAL!); Kurnool, Nallamalais, Mahanadi, 10.12.1969, *Ellis* 32737 (CAL!); Nellore, Kavali, 18.02.1986, *A. Sreenivasa Rao* ASR6272 (MH [MH00241688!]); Anantapur District, near Thimmamma marrimanu area, 20.03.1988, *N. Rama Rao* 85292 (BSID [BSID0009513 digital image!]); Prakasam District, Isukagundalu, G.B. WLS, 302 m Alt., 08.02.2016, *J. Swamy & L. Rasingam* 008106 (BSID [BSID0014427 digital image!]); T.R. Cheruvu, 10.12.2012, *L. Rasingam & Sankara Rao* 10196 (BSID [BSID0016210 digital image!]); Nellore, Bed of Pennar, 01.03.1901, *s.coll. s.n.* (K [K004334889!]); Kuppam, *s.d.*, *C.A. Barber* 10283 (K [K004334926!]). **Andaman & Nicobar Island**, South Andaman, Mangunji, 06.01.1894, *King s.n.* (CAL, 176025!); Port Blair, 10.01.1959, *K. Thothathri* 9006 (MH [MH00241979!]); Homfray Gunj, 15.04.1964, *J.L. Ellis & K. Ramamurthy* 18834 (MH [MH00241981!]); *ibid.* (MH [MH00241982!]); Car Nicobar Island, Sawai, 16.09.2011, *S. Prabhu & R. Sathiyaseelan* 277 (PBL [PBL0000061118 digital image!]). **Assam**, Kamakhya Temple hill, 18.02.1957, *Panigrahi* 5379 (CAL!). **Bihar**, Champaran, Manguraha forest, 10.04.1963, *Thothathri* 10110 (CAL!); Baraila wetland, 25 45'59.30" N 85 31'53.31" E, 11.11.2016, *K. Avinash Bharati* 079091 (CAL [CAL0000032467!]).

Chhattisgarh, Bastar, Sukhma, 12.12.1938, *H.F. Mooney* 880 (K [K004334884!]). **Gujarat**, *s.loc.*, 1915, *W.T. Sarton* 7790 (K [K004334868!]); Dharka, Varvala, 07.09.1952, *Dhruna* 950 (DD!); Junagadh, Girnar, 03.10.1953, *Raizada* 21242 (DD!); Sasan (Saurashtra), 07.10.1953, *Raizada* 23675 (K [K004334822!]); Rajkot, near Railway station, 20.10.1953, *Santapau* 16866 (BLAT!); Junagadh, Motibag, 15.11.1983, *S. Gopal s.n.* (K [K004334788!]). **Haryana**, Karnal, 1886, *Drummond* 24402 (K [K004334704!]); Karnal, 1886, *Drummond* 24404 (K [K004334703!]); Karnal, 03.10.1887, *Drummond* 24413 (K [K004334705!]); Panipat, 28.11.1961, *Nair* 18671 (BSD!); Karnal, 15.10.1962, *Nair* 24617 (BSD!); Rohtak, 10.12.1963, *Nair* 29723 (BSD!). **Himachal Pradesh**, Mandi, Rampur, 10.12.1985, *Drummond* 24812 (K [K00433801!]); *ibid.*, *Drummond s.n.* (K [K004334800!]). **Jharkhand**, Chota Nagpur, Palamaoo, 1837, *Wood s.n.* (CAL!); Chota Nagpur, 01.10.1878, *J.J. wood s.n.* (K [K004334851!]); Chota Nagpur, Daltonganj, *Gamble* 10170 (DD!, K [K004334878!]); Singbhum, 27.12.1902, *H.H. Haines* 559 (K004334855!, K004334881!); *ibid.*, *H.H. Haines* 559a (K004334856!); *ibid.*, *H.H. Haines* 555 (K [K004334854!]); Singbhum, 04.01.1904, *H.H. Haines* 5596 (K [K004334853!]); *ibid.*, (K [K004334852!]); Dalma WLS, 22.03.2008, *C.R. Magesh* 43904 (CAL!). **Karnataka**, Belgaum, 01.12.1852, *Ritchie* 1067/b (K [K004334814!]); Bellary, 01.07.1883, *J.S. Gamble* 17751 (K [K004334932!]); Mysore, Nanjangud, 28.03.1905, *C.A. Barber* 6803 (MH [MH00241861!]); Dharwad, Dharwad to Belgaum, *Sedgwick* 5498 (K [K004334820!]); Dharwad, Nigadi, *Sedgwick* 5708 (K [K004334819!]); Mandya, Srirangapatna, 11.03.1964, *K.M. Sebastine* 18728 (MH [MH00241863!]); Hassan, Holenarsipur road, 21.02.1970, *Saldhana C.J.* 16295 (K004334914!); Bengaluru, Tank near airport, 04.11.1970, *Cook & Gut* 101 (K004334913!); Mandya, Srirangapatna, 25.11.1978, *Keshava Murthy & Prakash KFP4546* (CAL!); Belgaum, *s.d.*, *Ritchie* 268 (K004334887!); Mangalore, *s.d.*, *Hohenacker R.F. s.n.* (K004334930!). **Kerala**, Kollam, 00.11.1910, *Meebold* 12709 (CAL175927!); Palghat, Walayar Dam Site, 11.07.1963, *J. Joseph* 17083 (MH [MH00241848!]); Thrissur, Thunakadavu, 28.10.1964, *K.M. Sebastine* 22355 (MH [MH00241958!]); Palghat, Kanjirapuzha, 08.03.1965, *K.M. Sebastine* 22837 (MH [MH00241962!]); Kannur, Begur, 03.03.1973, *V.S. Ramachandran* 62009 (MH [MH00241845!]); Ernakulam, 16.09.1973, *Cook, Rix & Schneller* 250 (K [K004334764!]); Kottayam, in rice field north of tourist bungalow, 22.09.1973, *Cook, Rix, & Schineller* 325 (K [K004334785!]); Kannur, Begur R.F., 22.03.1980, *V.S. Ramachandran* 66854 (MH [MH00241846!]); Kannur, Thallaserry, *s.d.*, *V.S. Ramachandran* 52204 (CAL!); Wayanad, Tolpetty Forest, *s.d.*, *V.S. Ramachandran* 52389 (CAL!); Wayanad, *s.d.*, *R.H. Beddome* 3103 (BM!); Malabar, *s.d.*, *R.H. Beddome* 3097 (BM!). **Lakshadweep Island**, Way to Ayrl firm, 10.10.1995, *P. Bhargava* 103150 (MH169162!); Kalpeni, 29.11.2008, *P. Lakshminarasimhan* 44282 (CAL!). **Madhya Pradesh**, Khandwa, 16.12.1888, *J.F. Duthie* 8296 (K [K004334869!]); Rewa District, Baghelkhandarea-Mand R.F., 08.02.1959, *K.M. Sebastine* 7638 (CAL!). Madhya Pradesh, Bunglapur, Towa River Bank, 30.09.1960, *J. Joseph* 11116 (MH [MH00241695!, MH00241696!]); Bilaspur, Pasan to Semera, *S.K. Murti* 15346 (CAL!); Gwalior, *s.d.*, *C. Maries* 232 (BM!). **Maharashtra**, Pune, Mulla river, 06.06.1979, *A. P. Young s.n.* (BM!); Mumbai, 13.01.1946, *E.L. Wallace* 9179 (K [K004334810!]); Bhidae tank, 13.11.1957, *K. Subramanyam* 4562 (CAL!); Nagpur, near Ambzeri, 14.11.1957, *K. Subramanyam* 4624 (MH [MH00241691!]); Nagpur, Sakkardara, 16.11.1957, *K. Subramanyam* 4648 (MH [MH00241693!, MH00241694!]); Pune, Base of Korai fort, Ambavne, 31.03.1964, *B.V. Reddi* 97685 (K004334837!); Pune, Arvi, Haveli Taluka, 19.11.1964, *M.Y. Ansari* 101860 (K [K004334817!]); Dhulia District, Nawagaon Ban, 25.10.1966, *R.D. Pataskar* 110318 (CAL!); Mumbai, *s.d.*, *s.coll. s.n.* (K [K004334815!, K004334816!]). **Manipur**, Senapati, on the way to Mao, 19.02.1882, *George*

Watt 6114 (MH [MH00241688!]). **Meghalaya**, East Kashi Hills, Katrang, 01.12.1915, *U. Kanjilal* 6286 (ASSAM11664!); Nongpoh, Umling, 12.03.1968, *J. Joseph* 43799 (ASSAM42798!); Shillong, L.W.S., Khasuali, 21.12.2014, *S.R. Talukdr* 131748 (ASSAM93351!). **Mizoram**, Lushai Hills, Lungleh, 19.01.1927, *Parry* 88 (K004334781!). **Odisha**, Gnanjam, 1884, *J.S. Gamble* 13685 (K [K004334830!]); Ganjam, Koinjur to Kusadaudi, 26.01.1900, *C.A. Barber* 1254 (MH [MH00241214!]); Kalahandi, Jamchua, 22.01.1943, *H.F. Mooney* 2178 (K [K004334882!]); Kalahandi, Taprang forest, 27.01.1943, *H.F. Mooney* 2190 (K [K004334883!]); Katrang section, 08.11.2014, *K.C.Mohan* 6122 (BSID [BSID0010808 digital image!]). **Puducherry**, *s.d.*, *Prescott* 1831 (K [K000904098!]). **Punjab**, Sargodha, Malakwal to Shahpur, 30.10.1902, *Drummond* 14683 (K [K004334802!]). **Rajasthan**, Kyasra, 16.12.1964, *D.M.Verma* 6806 (CAL!); Kota, 27.10.1970, *Cook & Gut* 03 (K [K004334806!]); Kota, Abhe Palace Tank, 29.10.1970, *Cook & Gut* 60 (K [K004334807!]). **Tamil Nadu**, Triunelveli, Palayamkottai, 01.10.1835, *s.coll.* 978 (K [K004334915!]); Coimbatore, 1845, *J. Miers s.n.* (BM!); Chennai, Pallavarum, *G. Thomson* 213 (K [K0041162230!]); Chennai, Agri-Horticultutral Garden, 12.07.1900, *Bourne s.n.* (K [K004334832!]); Erode, Bhavani, 18.02.1908, *Bourne* 5069 (K [K004334833!]); Erode, Gopichettyalayam, 11.02.1910, *C.E.C. Fischer* 1759 (FRC4241!); Coimbatore, Sethhumadai, 08.12.1912, *C.E.C. Fischer* 3521 (K [K004334927!]); Coimbatore, 01.03.1929, *E.K. Krishna s.n.* (K [K004334831!]); Coimbatore, Pollachi, Walayar, 06.05.1957, *K. Subramaniyam* 3021 (MH [MH00241895!]); Nilgiri, Kalhatti falls, 29.11.1971, *N.C. Rathakrishnan* 39068 (MH [MH00241855!]); Tiruchirappalli, Srirangam Island, 01.12.1975, *Mathew K.M.* 146 ([K004334787!]); Sivagangai, Manamadurai, 25.06.1978, *N.C. Nair* 57480 (CAL!); Tiruchirappalli, Thuraiyur, Pulivalam forest, 25.01.1980, *S. Periyannayagam* RHT26106 (K [K004334875!]); Erode, Bhavani-Kattalai, 03.12.1986, *K. Ramamurthy* 84604 (CAL!); Nilgiri, *s.d.*, *G. J. 4* (K [K004334835!]); Nilgiri, *s.d.*, *s.coll.* 4 (K [K004334834!]); Nilgiri, *s.d.*, *Prescott* 353 (K [K000904095!]); Chennai (Madras), *s.d.*, *s.coll. s.n.* (K [K004334867!]); Chengulpet, Tambaram, Puthur, *s.d.*, *Barnes E.* 798 (K [K004334912!]); Chennai, *s.d.*, *Shuter s.n.* (K [K004334920!]); Chennai, Fort St. George, *s.d.*, *s.coll.* 112 (K [K004334924!]); Nilgiri, Kalhatty, *s.d.*, *R.H. Beddome s.n.* (BM!); Coimbatore, *s.d.*, *R.H. Beddome* 3105 (BM!); Tiruchirappalli, *s.d.*, *R.H. Beddome* 3098 (BM!); Theni (Madurai), Periyakulam, *s.d.*, *s.n.* 3099 (BM!). **Telangana**, Nalgonda, Nagarjunasagar, 13.12.1959, *K.M. Sebastine* 9765 (CAL!); Hyderabad, 29.11.1967, *T. Rajagopal* 470 (K [K004334789!]); Kompalli, 26.05.2007, *K. Chandra Sekar* 150 (BSID [BSID0012035 image!]); Krishnagiri, Naralapalli, 29.01.2022, *Arun Prasanth* APR0069 (SPPU!); Pudukottai, Narthamalai, 29.01.2022, *Arun Prasanth* APR0077 (SPPU!); Pudukottai, Bommadi Inselberg, 29.01.2022, *Arun Prasanth* APR0080 (SPPU!). **Uttar Pradesh**, Mordabad, *T. Thomsom* 112 (BM!); Etawah, Chambal, 17.02.1886, *J.F. Duthie* 4668 (K [K004334864!]); Lakmipu Kheri, 28.04.1898, *Inayat* 21572 (K [K004334808!]); Abdullagenj, 19.11.1964, *G. Panigrahi & O.P. Misra* 6423 (CAL!); Allahabad, Daryaganj, 18.10.1964, *T. Rajagopal* 6121 (CAL!). **Uttarakhand**, Dehra Dun, 01.12.1895, *J.S. Gamble* 25634 (K [K004334857!]). **West Bengal**, Howrah, Botanical garden (Hort. Cal.), 1832, *Wallich* 2098a (K [K004334797!]); *ibid.*, *Wallich* 2098b (K [K004334795!]); Paschim Bardhman, Panagarh, Paddy fields, 30.01.1945, *E.L. Wallace* 04 (BM!); Kolkata, Dum Dum, 23.11.1959, *N.S. Chatterjee* 14 (CAL, 451!); Howrah, Bakultala, 26.12.1960, *K. Thothathri* 9563 (CAL!); West Bengal, E. Barisha, 25.01.1963, *M.K. Ghosh* 854 (CAL, 3864!); Hooghly, Hind motor rice field, 26.12.1967, *S. Sen s.n.* (CAL!); Kolkata, Ramnagar, 26.09.1988, *T. Mathew* 13113 (CAL [CAL0000052625!]); Almora, Kumaon, *s.d.*, *R. Sratrachey & J.E. Winterbottom* 02 (BM!); Howrah, Botaincal Garden (HBC), *s.d.*, *F. Kingdon Ward*

11338 (BM!). **Uncertain localities**, *s.loc.*, 01.03.1811, *s.coll. s.n.* (K [K004334937!]); *s.coll.*, 1844, *Edgeworth M.P.* 39 (K [K004334865!]); *s.coll.*, 01.08.1845, *G. Thomson s.n.* (K [K004334836!]); *s.loc.*, 01.11.1846, *T. Thomson* 1583 (K [K004334858!]); *s.loc.*, 1870, *Thompson R.* 278 (K [K004334863!]); *s.loc.* (Bombay Presidency), 1915, *W.T. Sarton* (K [K004334816!]); *s.loc., s.d., Heyne s.n.* (K [K000904097!]); *s.loc.* (Punjab Prov.), *s.d., Drummond* 24417 (K [K004334794!]); *ibid., Drummond* 24406 (K [K004334793!]); *ibid., Drummond* 24411 (K [K004334792!]); *ibid., Drummond* 24412 (K [K004334791!]); Bank of river Hinden, 02.1843, *T. Thomson s.n.* (K [K004334790!]); *s.loc. s.d., s.coll. s.n.* A (K [K004334798!]); *s.loc.* (Peninsular India Orient., *s.d., HWP* 1023 (K004334796!); *s.loc., s.d., Drummond s.n.* (K [K004334799!]); *s.loc.* (North Gujarat), 1915, *Sarton* 7779 (K004334809!); *s.loc.* (Central Province), *s.d., J.F. Diuthie* 8296 (K [K004334871!]); *s.loc., s.d., s.coll. s.n.* (K [K004334885!]); *s.loc.* (Concan), *s.d., Gibson s.n.* (K [K004334886!]); *s.loc.* (Peninsular Ind. Orient.), *s.d., s.coll.* 1023 (K [K004334918!]); *s.loc., s.d., s.coll. s.n.* (K [K004334919!]); *s.loc., s.d., s.coll. s.n.* (K [K004334923!]); *s.loc., s.d., s.coll. Bourne* 5070 (K [K004334928!, K004334929!]); *s.loc.* (Masor & Carnatic), *s.d., G. Thomson s.n.* (K [K004334931!]); *s.loc.* (Peninsular Ind. Orient.), *s.d., s.coll.* 981 (K [K004334933!, K004334938!]); *s.loc., s.d., s.coll. s.n.* (K [K004334936!]); *s.loc.* (Sayndap), *s.d., Roxburgh s.n.* (BM!); *s.loc.* (Kyonszeihc), *s.d., F. Buchanan Hamilton s.n.* (BM!); *s.loc., s.d., R.H. Beddome* 3100 (BM!); *s.loc., s.d., C.P.* 1542 (BM!); *s.loc.* (Peninsula Ind. Orientalis), *s.d., Herb. Wight Propr.* 1024 (BM!); *s.loc., s.d., s.coll. s.n.* (BM!); *s.loc.* (Panjab), *s.d., T. Thomson s.n.* (BM!); *s.loc.* (Masor & Carnatic), *s.d., G. Thomson s.n.* (BM!); *s.loc.* (Bombay Presidency), 06.01.1880, *A.P. Young s.n.* (BM!); *s.loc.* (Bengal), 28.04.1875, *C.B. Clarke* 26233 (BM!); *s.loc., s.d., Koenig s.n.* (BM!).

Conservation status: Least Concern (LC), global assessment (Lansdown, 2018).

Notes: *Ammannia baccifera* is a cosmopolitan species distributed across diverse habitat. It is commonly seen in cultivated or fallow fields and along the bunds of water bodies. The species exhibits high polymorphism, which often leads to confusion with morphologically similar African taxon (*A. aegyptiaca*). It is characterized as a glabrous herb, 10–60 cm tall (occasionally growing up to 1 m), and profusely branched; inflorescences are axillary, subsessile or shortly pedunculate, 3–15 per cyme; flowers 4-merous, hypanthium 1–1.5 mm long, 8-nerved; calyx appendages and petals absent; stamens 4, not exceeding the hypanthium, style stout, capsule exceeding the hypanthium.

Mathew (2020) synonymized *A. prostrata* under *A. baccifera*; however, both species are very distinct and the former can be easily distinguished based on the presence of 2 bracteoles, 3–15 flowers per cyme, hypanthium 1–1.5 mm long, glabrous calyx lobes and petals absent (*vs. A. prostrata* bracteoles 2–4, 1–5-flowered cymes, hypanthium 1.5–2 mm long, calyx lobes hirsute and petals present).

As noted, *A. baccifera* is highly polymorphic in characters, especially in leaf morphology. Leaves linear oblong or oblong-lanceolate, acute or obtuse at apex, base narrowed or round or subcordate-auriculate or attenuate. Based on the variation in leaf base morphology, infraspecific taxa, *i.e. A. baccifera* subsp. *viridis* and *A. baccifera* subsp. *aegyptiaca* have been erected by Koehne (1880, 1903). However, these variations are observed within the population and are not supported by additional distinguishing characters.

De Wilde and Duyfies (2014) mentioned ‘Type: *Sonnerat s.n.*, in herb. Lamarck (holo P, barcode P00297859), India’ for the name *A. indica* Lam. However, their statement lack ‘designated here’ or equivalent phrase intended to designate a lectotype. According to Article 7.11 of ICN, lectotypification published on after 1st January 2001 must include the phrase ‘designated here’ or equivalent expression to be effective. Therefore,

their typification does not constitute a valid lectotypification, and here we are designating specimen P00297859 (P) as lectotype following Art. 9.3 of ICN (Turland *et al.*, 2025)

According to article 8.1 of the ICN, the nomenclatural type of a name must be a specimen or an illustration, either cited or uncited and the designation of a photograph of the original specimen as lectotype is not valid. Immelman (1991) type statement as 'B-Willd:Photo PRE!' does not constitute a valid lectotypification. Therefore, here we designate specimen B-W03078020 (B) as lectotype for the name *A. aegyptiaca* following article 9.3 of the ICN (Turland *et al.*, 2025).

Ammannia capitellata (C.Presl) S.A. Graham & Gandhi, Harvard. Pap. Bot. 18(2): 155. 2013b. *Nesaea capitellata* C.Presl., Isis (Oden) 21: 273. 1828. *Lectotype* (designated by Graham & Gandhi, 2013b): MAURITIUS. *s.loc., s.d., F.W. Sieber* 174 (PR [PR615826/PR4805]).

Lythrum triflorum L.f., Suppl. Pl. 249. 1782. *Nesaea triflora* (L.f.) Kunth, Nov. Gen. Sp. ed. 6. 151. 1823. *Ammannia triflora* Wall., Numer. List n. 6323. 1832. **nom. nud.** *Lectotype* (designated by Verdcourt, 1994): MAURITIUS. *s.loc., s.d., P. Commerson s.n.* (P); *Isolecto* G, M [M146401 digital image!]).

Ammannia mauritiana S.A.Graham & Gandhi, Harvard Pap. Bot. 18(1): 78. 2013. **nom. illeg.** **Fig. 2a** Annual, erect herbs. Stems 15–60 cm tall, quadrangular, not winged, poorly branched. Leaves 10–35 × 5–13 mm, oblong-lanceolate, acute or obtuse at apex, obtuse or rarely *cordate* at base. Inflorescence axillary, pedunculate cymes, peduncle 10–25 mm long. Bracts 2, oblanceolate, leaf-like, partially enclosing the flowers. Bracteoles 2, linear-lanceolate, 2–4 mm long. Flowers 3–5 per cyme, pedicellate, pedicels *c.* 2 mm long, 4–5-merous. Hypanthium campanulate, 2.5–3.5 mm long, 8–10-nerved. Calyx lobes 5 (rarely 4), *c.* 0.5 mm long, dentate, acute or acuminate, apex hirsute; calyx appendages as equal as or slightly

exceeding the calyx lobes, apex hirsute. Petals 5 (rarely 4), obovate, 2.5–3 mm long, lilac or crimson. Stamens 8–10, in two rows, arising from the middle of the hypanthium, exerted. Ovary globose, *c.* 1.5 mm long; style 1 mm or 3 mm long, heterostylous; stigma capitate, exerted. Capsule globose, *c.* 3 mm long, included within the calyx; dehiscence circumscissile near the apex initially. Seeds numerous, suborbicular.

Flowering & fruiting: Not observed.

Habitat: On edges of permanent water-hole on black soil with sedges or rice fields (Verdcourt 1994).

Distribution: India (West Bengal), Sri Lanka, Madagascar, Mauritius, Kenya, Tanzania.

Specimens examined: INDIA. **West Bengal**, Hooghly, Serampore, 1845, *Griffith s.n.* (K [K006473040!]); Hooghly, Serampore, *s.d., Griffith s.n.* (BM!). **Uncertain localities**, *s.loc., s.d., Wallich s.n.* (K [K006473039!]); *s.loc.* (Bengal), *s.d., Wallich s.n.* (K [K006473041!]).

Conservation status: Data Deficient (DD) (IUCN, 2024).

Notes: *Ammannia capitellata* is a species which was earlier placed in genus *Nesaea* (*N. triflora*). It is known only by two colonial collections: one Griffith's from Serampore, West Bengal (K006473040! and BM!), and another Wallich's from Bengal, uncertain from West Bengal, India or Bangladesh (K006473041!). The species can be distinguished from other Indian *Ammannia* by its unique peduncled, 3(-5)-flowered cymes, peduncle 1–2.5 cm long, and puberulous; flowers heterostylous, style 1 or 3 mm long.

Mathew (2020) treated the species under *Nesaea* and considered its occurrence doubtful in India, based on Walkar's specimen from K herbarium, which we could not able to locate during our visit. However, we were able to study the specimens of *Griffith s.n.* and *Wallich s.n.* which confirms its distribution in India from West Bengal.



Fig. 2: a. *Ammannia capitellata* (C.Presl) S.A. Graham & Gandhi (K006473040); b. *Ammannia cordata* Wight & Arn. (K000729586); c. *Ammannia desertorum* (BLAT89775); d. *Ammannia senegalensis* Lam. (BLAT789529). (Image credit, a & b. Royal Botanic Gardens, Kew, c. & d. Blatter Herbarium, St. Xavier's College, Mumbai).

Ammannia cordata Wight & Arn., Pordr. Fl. Ind. Orent. 1: 304. 1834. *non* Hiern, in Fl. of Trop. Africa 2: 475. 1871. *Nesaea cordata* (Wight & Arn.) M.R. Almeida, Fl. Maharashtra 2: 87. 1998. **nom. illeg.** *Nesaea brevipes* Koehne, Bot. Jahrb. Syst. 3: 326. 1882. *Lectotype* (designated by Graham & Gandhi, 2013a): INDIA, Peninsular India, *R. Wight* 1021 (K [K00729585!]; *Isolecto* K [K006473028!], E [E00174596!, E00174597!, E00174598!], GZU [GZU261329!], NYBG [NY00386447!], HAL [HAL0120055!]. *Syntype*: Uncertain locality, *s.loc., s.d., Hb Wight Wallich* 6322 (K [K00729586!, K006473023!, K006473030!], BM!). **Fig. 2b**

Annual, erect or decumbent, glabrous herbs. Stems 10–40 cm tall, quadrangular at apex, terete at base, branched from base of the stem. Leaves 10–45 × 2–18 mm, sessile, elliptic, oblong or ovate, acute or obtuse at apex, obtuse or cordate at base. Inflorescence axillary, sessile cymes. Bracts leaf-like. Bracteoles 2–4, linear-lanceolate, 2–3 mm long, as long as or slightly shorter than hypanthium. Flowers 1–5 per cyme, 4-merous, subsessile or pedicellate; pedicels 0.5–0.8 mm long. Hypanthium 1.5–3 mm long, campanulate, 8-nerved. Calyx lobes 4, dentate, 0.75–1.0 mm long, hirsute at apex; calyx appendages 4, as long as or shorter than calyx lobes, ciliate at apex. Petals absent. Stamens 4, arising near the base of hypanthium; anthers included. Ovary globose; style inconspicuous; stigma capitate. Capsule *c.* 2 mm long, globose or subglobose, covered by calyx lobes; dehiscence circumscribed near the apex initially. Seeds numerous, suborbicular.

Flowering & fruiting: September–March.

Habitat: Herb grows in wet and marshy places during post monsoon. Commonly observed in fallow and cultivated fields.

Distribution: India (Andhra Pradesh, Karnataka, Kerala, Odisha, and Tamil Nadu), Sri Lanka, and Bangladesh.

Specimens examined: INDIA, **Andhra Pradesh**, Tirupati (Nellore), Tadam 12.03.1901, *Jacob*

2146 (K [K006473024!]); Tirupati (Chittoor), Chandragiri, 22.02.1914, *C.A. Barber* 9978 (K [K006473026!]); Y.S.R., Kadapa, Balapalle, 21.02.1963, *Ellis* 15729 (CAL!); Kerala, Wayanad, Tholpetty, *s.d., Ramachandran* 52394 (MH!); **Odisha**, Gnajam, Kaliamba, *J.S. Gamble* 13838 (K [K006473038!]); Ganjam, 1884, *J.S. Gamble* 13838 (21861!); Ganjam, Chatrapur, *J.S. Gamble* 21543 (K [K006473029!]); Panasa Puthi, 19.12.1962, *Subba Rao* 30375 (ASSAM, 35717!, 35718!). **Karnataka**, Uttar Kannada, Karwar, 00.10.1921, *L.J. Sedgwick* 6726 (K [K006473032!, K006473033!]). **Kerala**, Kasaargod, 1945, *Rao & Raju* 88238 (MH!); Kannur (Cannanore), Tolpetty R.F., *s.d., Ramachandran* 52394 (MH!). **Tamil Nadu**, Krishnagiri, Hosur, 29.12.1916, *C.A. Barber* 13941 (MH [MH00242065!], K [K006473025!]); Chelgulpt, Vandalur, *s.coll. s.n.* (K [K006473036!]); Chelgulpt, Vandalur, 13.02.1934, *E. Barnes* 771 (K [K006473035!]); Chelgulpt, Vandalur, *E. Barnes* 815 (K [K006473037!]); Madurai, Alagar hills, Nupur Ganga, 11.06.1957, *K. Subramanyam* 3410 (MH [MH00242062!]); Chengalpattu, Vedanthangal Bird Sanctuary, 26.01.1976, *A.N. Henry* 47051 (MH [MH00242068!]); Dharmapuri, Harur, Chitteri Hills, Chokkampatty, 10.08.1978, *K.M. Matthew* 16159 (RHT [RHT025014!], K [K006473027!]); Salem, Sangkagiri, Sankagiri hill, 08.12.1978, *K.M. Matthew* RHT19854 (K [K006473010!]); *ibid.*, 09.12.1978, *K.M. Matthew* 19888 (RHT [RHT025011!]); *ibid.*, 09.12.1978, *K.M. Matthew* 19902 (RHT [RHT025012!]); Salem, Attur, Chinakalrayans, from kottapati to Thenkalvarai, 21.02.1979, *K.M. Matthew* 21919 (RHT [RHT025013!]); Pudukkotai, Kulathur, Narthamalai, Bommidimalai, 09.03.1984, *K.M. Matthew & S.J. Britto* 29666 (RHT [RHT025009!]); *ibid.*, 24.03.1984, *K.M. Matthew* 29936 (RHT [RHT025010!]); Kallakurichi, Ulundurpettai, Pulloorkkadu, 16.03.1984, *K.M. Matthew & S.J. Britto* 29765 (RHT [RHT25015!]); Pudukottai, Sithannavasal, 28.11.1984, *C. Arulappan* 259 (MH [MH00242063!]); Thanjavur, 15.04.1987, *S. Ragupathy* 351 (MH, 147510!); Theni, Anduvan

Estate, 14.08.1990, V. Lakshmanan 91140 (MH [MH00242060!]); Kanchipuram, Brahmadesam, 23.02.1999, K.M. Mathew & K.T. Augustine 60420 (RHT [RHT025016!]); Viluppuram, Perumbakkam, 10.03.1999, K.M. Mauthew & K. T. Augustine 60550 (RHT [RHT025017!]); Viluppuram, Marakkanam, 11.12.2001, K.M. Mathew 73561 (RHT [RHT023020!], K [K006473034!]); Thenkasi, Courtrallam, s.d., R.H. Beddome 3114 (BM!); Coimbatore, Anamalai, s.d., R.H. Beddome 3111 (BM!).

Conservation status: Least Concern (LC), global assessment (Mani, 2011a).

Notes: *Ammannia cordata* is endemic to Indian subcontinent, which was formerly placed in genus *Nesaea* (*N. brevipes* Koehne). Wight & Arnott (1834) originally described the name *A. cordata* based on specimens: *Wight 1021* and *Wallich cat no. 6322*. Subsequently, Koehne (1882) published the name *N. brevipes* with a description and citing *A. cordata* as a synonym, referencing its syntype *Wallich cat no. 6322*. This makes the *N. brevipes* as nomenclatural synonym of *A. cordata* Wight & Arn.

The species is distinguished based on erect or decumbent herb, elliptic or oblong leaves with cordate or obtuse base, 1–5 flowered sessile cyme, bracteole 2–4, flowers 4-merous, ciliate at calyx lobes, petals absent. Notably, Wight & Arnott (1834) and Koehne (1882) mentioned petals 4, and petals 0–4 respectively. However, no petals were observed in any of the specimens examined.

Ammannia desertorum Blatt. & Hallb., J. Bombay Nat. Hist. Soc. 26: 213. 1918. *Lectotype* (designated by Prasanth & Sardesai, 2024): INDIA, **Rajasthan**, Jaisalmer, Devikot, 11.1917, *Blatter & Hallberg* 3347 (BLAT [89775!]).

Fig. 2c

Annual, erect, scabrous papillose herbs. Stems 15–70 cm tall, terete at base, quadrangular above, profusely branched from middle of the stem. Leaves linear-lanceolate, 12–70 × 1–8 mm, acute at apex, auriculate-cordate at base, papillose.

Inflorescence axillary, sessile or subsessile cymes, up to 1.5 mm long. Bracts leaf-like. Bracteoles 2, lanceolate, subulate, shorter than hypanthium. Flower 3–15 per cyme, pedicellate, c. 1 mm long, 4-merous. Hypanthium campanulate, 1.5–2 mm long, 8-nerved. Calyx lobes 4, dentate; calyx appendages absent. Petals 4, obovate, purple, caducous. Stamens 4–8, inserted below the half of the hypanthium; anthers included. Ovary ellipsoid; style slender, exerted; stigma capitate. Capsule ellipsoid, c. 3 mm long, slightly exceeding the calyx lobes. Seeds numerous, sub-globose, yellowish brown.

Flowering & fruiting: October–December.

Habitat: Scabrous herb grows in wet and marshy places, prefer to grow in edges of waterbodies in sandy clay soil substrate.

Distribution: India (Rajasthan, and Gujarat), Pakistan.

Specimens examined: INDIA, **Gujarat**, Jamnagar, Rozi, 16.10.1945, *Santapau* 7515 (BLAT!). **Rajasthan**, Jodhpur, near Badka, 00.11.1917, *Blatter & Hallberg* 3347 (BLAT!); Jaisalmer, Devikot 18.11.1973, *Tiwari* 867 (CAL!).

Conservation status: Data Deficient (DD) (IUCN, 2024).

Notes: Blatter and Hallberg (1918) described *Ammannia desertorum* based on their collections from Rajasthan, south of Jaisalmer and Jodhpur. The species is characterized by its scabrid-papillose stem and leaves, 3–15-flowered cyme, 4 calyx lobes, 4 petals (caducous), 4–8 stamens, style as long as or shorter than ovary, and ellipsoid capsule.

Blatter and Hallberg (1918) stated that the “*species shares similar habitat with A. auriculata and can be easily distinguished by its inflorescence, and generally whole plant is covered with capsules*”. However, upon examination of *Ammannia* specimens housed at K and BM herbarium, we find *A. desertorum* is morphologically similar to the east African species *A. elata* A. Fern., in having linear-lanceolate leaves

with auriculate to cordate base, dichasial cyme, 4 calyx lobes, and 4–8 stamens. They can be distinguished based on scabrid-papillose stem and leaves, and ellipsoid capsule.

Ammannia multiflora Roxb., Fl. Ind., ed. Carey & Wall., 1: 447. 1820. *Lectotype* (designated by Prasanth & Sardesai, 2024): [illustration] Roxburgh Icon. Illus. no. 915 (CAL!).

Ammannia nagpurensis T. Mathew & M.P. Nayar, Bull. Bot. Surv. India. 31(1–4): 158. 1992. **syn. nov.** *Type*: INDIA. **Maharashtra**, Nagpur Dt., Jalenkeri farms, 283 m, 20.11.1957, *Subramanyam* 4717 (Holo CAL not seen; iso MH!). **Fig. 1c & f**

Annual, erect, glabrous herbs. Stems up to 70 cm tall, quadrangular, inconspicuously winged, profusely branched from middle of the stem. Leaves linear-lanceolate or elliptic-lanceolate, 3–30 × 0.5–3 mm, acute at apex, auriculate-cordate, lower one cuneate at base. Inflorescence axillary, pedunculate cymes; peduncle 1–15 mm long. Bracts leaf-like. Bracteoles 2, lanceolate, much shorter than hypanthium. Flowers 3–15 per cyme, 4-merous, pedicellate; pedicel 1–2 mm long. Hypanthium campanulate, 1–2 mm long, 8-nerved. Calyx lobes 4, dentate, c. 0.5 mm long; calyx appendages absent. Petals 4, obovate, pink or orange, caducous. Stamen 4, included at the middle of hypanthium; anthers inserted. Ovary globose; style slender, slightly exerted; stigma capitate. Capsule globose, exceeding the hypanthium. Seeds numerous, triangular-ovoid.

Flowering & Fruiting: September to February.

Habitat: Grows in marshy places, edges of streams and paddy fields.

Distribution: India (Jammu & Kashmir, Haryana, Uttara Pradesh, Bihar, West Bengal, Rajasthan, Kerala, Tamil Nadu, Maharashtra, Karnataka, Andhra Pradesh), Russia, Iraq, Iran, Afghanistan, Pakistan, China, Philippines, Japan, Malaysia, Australia and Africa.

Specimens examined: INDIA, **Andhra Pradesh**, Ongole, 01.02.1920, *B. Chatterjee* 5653 (K

[K004334751!]); Bapatla, Repalle, 12.12.1924, *G.V. Narayanan* 16810 (MH [MH00241887!]). **Bihar**, Baralla Wetland, 12.11.2016, *K. Avinash Bharati* 079118 (Cal [CAL0000032472!]). **Gujarat**, Jamnagar, Rozi, 16.10.1945, *Santapau* 7514 (BLAT!); Okha, Dwarka, 01.10.1953, *Dhruna* 3110 (DD!); Junagad, Gir, 05.10.1953, *M.B. Raizada* 21373 (K [K004334739!]); Junagad, Sasan Gir to Janvania, 05.10.1953, *Santapau* 16359 (BLAT!); Saurashtra, Okha, 14.10.1953, *Santapau* 16737 (BLAT!); Dangs, Unai, 03.11.1953, *Santapau* 17268 (BLAT!); Waghai, Pimpri road, 19.10.1954, *Santapau* 19647 (BLAT!). **Haryana**, Hissar, 03.12.1961, *Nair* 17190 (BSD!). **Jharkhand**, Ramgarh (then Hazaribagh), Mandu, 25.11.1874, *C.B. Clarke* 25033A (BM!); Singbhum, *Haines* 337 (CAL!, K [K004334755!]); Hazaribagh, 18.11.1953, *F.H.W. Kerr* 2371 (BM!); Palamau, Tarea hills, *Sanyal* 04 (CAL!). **Karnataka**, Shivamoga, *Meebold* 10279 (CAL!); Dharwad, *Sedgwick & Bell* 6618 (BLAT!); Kodagu, Coorg, Kalhalla, 04.01.1959, *Arora* 46146 (BSI!) **Kerala**, Kollam, Thenmalla, Mamooode to Vandalodu, 11.02.1961, *Subramanian* 70563 (BSI!). **Madhya Pradesh**, Gwalior, 1890, *C. Maris* 201 (BM!); Satna, near Satna town, 20.09.1959, *K.M. Sebastine* 8894 (MH [MH00241893!, MH00241894!, MH00241895!]); Hoshanagabad, Bunglapur, Towa River, 30.09.1960, *J. Joseph* 11099 (MH [MH00241889!, MH00241890!]); Saugor, Rahakgarh, near Bina River, 04.11.1960, *N.P. Balakrishnan* 11490 (MH [MH00241897!]); Mandla, Khari R.F., 26.11.1961, *J. Joseph* 13428 (MH [MH00241891!, MH00241892!]); Jabalpur (Jabalpore), *s.d.*, *R.H. Beddome* 3108 (BM!). **Maharashtra**, Chandrapur (Chanda), 14.12.1889, *J.F. Duthie* 9485 (K [K004334743!]); Nashik, Iगतपुरी, 01.1917, *Blatter* 3372 (BLAT!); Pune, Khandala, *Blatter* 3356 (BLAT!); Pune (Poona), 01.08.1919, *Bell* 6229 (K [K004334754!]); Pune, Lonavala, near Valwan dam, 18.08.1964, *Venkata Reddy* 9937 (CAL!); Thane, Saihean forest, 26.10.1967, *Billore* 1130054 (CAL!); Nagpur, Jalankeri farm, 20.11.1957, *Subramanyam* 4717 (MH!);

Pune, Bramhonoli, 03.10.2024, *Arun Prasanth* APR00101 (SPPU!); *s.loc.* (Bombay, Concan), *s.d.*, *Stock s.n.* (K [K004334763!]). **Meghalaya**, Lylek District, K & J hills, 01.12.1915, U. Kanjilal 6286 (ASSAM11664!). **Odisha**, Balangir, Agalpur, 20.11.1948, *H.F. Mooney* 3142 (K [K004334742!]); Balangir, Bakbahal, 30.11.1948, *H.F. Mooney* 3150 (K [K004334741!]); Malkangiri, Orkel, 11.11.1963, *D.C.S. Raju* 1019 (CAL!). **Punjab**, *s.d.*, *Thomson s.n.* (MH [MH00241900!]). **Rajasthan**, Sirohi, Abu Road, *Blatter* 3383 (BLAT!); Chittaurgarh, Hindoli, 23.12.1963, *Verma* 1894 (CAL!). **Tamil Nadu**, Coimbatore, Kollegal, 13.12.1905, *Fischer* 659 (CAL!); Coimbatore, Kombu – south Coimbatore, 13.02.1915, *C.E.C. Fishcher* 3790 (FRC 4240!, 11728!); Tirunelveli, Palayamkottai, Sivanaperi, 06.02.1916, *C.E. Fishcer s.n.* (K [K000729679!]); Krishnagiri, Hosur, 30.12.1916, *s.coll.* 13971 (K [K004334765!]); Dharmapuri, Hoganakkal, 13.02.1927, *Jacob* 18003 (MH!); Tirunelveli, Courtallam, 28.07.1957, *Subramanyam* 3805 (MH!); Villupuram, Gingee R.F., 21.03.1961, *Sebastine* 12346 (MH!); Salem, Attur, Pachamalai Mannmalai, 22.02.1979, *N. Venugopal* 22268 (RHT [RHT024878!]); Krishnagiri, Naralapalli, 16.12.2021, *Arun Prasanth* APR0068 (SPPU!). **Telangana**, Amberpet, Osmanabad University campus, 23.09.1967, *T. Rajagopal* 357 (K [K004334757!]). **Uttrakhand**, Dehra Dun, Nagrioh hill, 1891, *J.S. Gamble* 23154 (K [K004334744!]); Dehra Dun, Lachmansid, 27.10.1961, *Bhattacharya* 17998 (BSD!); Ramnagar, Corbett National Park, 03.10.1980, *Pant* 72299 (BSD!). **Uttara Pradesh**, Shajahanpur, near Indalpur, 11.10.1885, *J.F. Duthie s.n.* (K [K004334746!]); Shajahanpur, Indalpur, Bank of river Gomati (Gumpti), 11.10.1885, *J.F. Duthie* 4024 (BM!); Jhasia, 25.10.1964, *G. Panigrahi s.n.* (CAL!); Shajahanpur, Bank of Gomati River, 11.10.1885, *J.F. Duthie* 4024 (CAL!, DD!). **West Bengal**, Howrah, *Wallich* 973 (BM!); Bhirbhum, Carghola Ghat, 31.10.1868, *Kurz s.n.* (CAL!); Howrah, Botanical Garden, 03.11.1967, *Sharma* 752 (CAL!); Burdwan, Dishergarh,

23.09.1972, *Banerjee* 67 (CAL!); Hooghly, Semarpore, *s.d.*, *Griffith s.n.* (BM!). **Uncertain localities**, Bank of Chenab river, 01.10.1846, *T. Thomson s.n.* (K [K004334747!]); Bengala, *s.d.*, *Wallich 2101a* (K [K004334748!]); *s.loc., s.d.*, *J.F. Duthie* 8294 (K [K004334740!]); Shanagar, *s.d.*, *Wallich* 18 (K [K004334749!]); *s.loc., s.d., s.coll. s.n.* (K [K004334764!]); *s.loc., s.d., s.coll. s.n.* (K [K004334766!]); *s.loc.* (Malabar & Concan), *s.d.*, *Hooker f. & Law s.n.* (BM!); *s.loc.* (Panjab), *s.d.*, *T. Thomson s.n.* (BM!); *s.loc., s.d.*, *Wallich 2101A–C* (BM!); *s.loc.* (Peninsula Ind. Orient.), *J. Cambell s.n.* (BM!); *s.loc., s.coll.* 2101C (BM!).

Conservation status: Least Concern (LC), global assessment (Zhuang, 2014).

Notes: *Ammannia multiflora* was described by Roxburgh (1820) based on his collection from Kolkata (Calcutta), West Bengal (Bengal Province). The species is characterized by linear-lanceolate amplexicaules leaves, pedunculate cyme, 1–15 mm long, hypanthium 1–2 mm long; stigmas are reaching above the petals. The species exhibits high morphological polymorphism in floral characters, explicitly length of peduncle, pedicel and flower arrangement. Mathew and Nayar (1992) described the *A. nagpurensis* based on peduncle up to 15 mm, subrotund calyx lobes with mucronate apex, anthers inserted within hypanthium. However, the overlapping peduncle morphology range from 1–15 mm long, and dentate calyx lobes were observed in the specimens examined (BLAT [26938!, 26939!, 26955!, 26956!, 26957!, 26959!, 26963!, 26971!, 26983!]; BM [Kerr 2371!, *s.coll.* 2101C!, *C.B. Clarke* 25033A!, *Wallich* 973!]; K [K000729678!, K004334739!, K004334740!, K004334741!, K004334742!, K004334743!, K004334749!, K004334761!, K004334763!, K004334764!, K004334750! (Sri Lanka)]; RHT [RHT024878!]). This polymorphism is observed throughout its distribution range in country and also in specimens from Nepal and Sri Lanka. Therefore, *A. nagpurensis* is synonymized under *A. multiflora*.

De Wilde and Duyfjes (2014) treated *A. multiflora* as a synonym of *A. auriculata* in their study. However, they can be distinguished by hypanthium up to 1–2 mm long, petals caducous, and stamens included (vs. hypanthium 3–5 mm long, petals showy persistent, stamens exerted in *A. auriculata*).

Ammannia octandra L.f., Suppl. Pl. 127. 1782. *Diplostemon octandrus* (L.f.) Miq., Fl. Ned. Ind. 1(1): 615. 1856. *Nesaea octandra* (L.f.) Wight, Icon. Pl. Ind. Orient. 1: t. 217. 1839. *Lectotype* (designated by Panigrahi, 1976): 'Habitat in India Orientalis', s.d., Koenig s.n. (LINN [LINN156.5!]).

Ammannia linearis Miq., Fl. Ned. Ind. 1(1): 619. 1856.

Fig. 1g & h

Annual, erect herbs. Stems 20–50 cm tall, quadrangular, not winged, much branched from above base of the stem. Leaves linear-lanceolate, 30–50 × 07–10 mm, sessile, acute at apex, broadly cordate at base. Inflorescence axillary, solitary or pedunculate, cymes; peduncle 2–3 mm long. Bracts scale-like. Bracteoles 2, lanceolate, 1–1.5 mm long, shorter than hypanthium. Flowers 1–5 per cyme, pedicellate; pedicels up to 2 mm long. Hypanthium campanulate, 3–5 mm long, 8-nerved, 4-winged. Calyx lobes 4, dentate; calyx appendages minute or absent. Petals 4, obovate, c. 3 mm long, caducous. Stamens 8, included below half of the hypanthium; anthers exerted. Ovary broadly globose; style slender, up to 6 mm long, exceeding the petals; stigma capitate. Capsule globose, included in hypanthium. Seeds numerous, ovoid.

Flowering & Fruiting: November–March.

Habitat: Herb growing on low-lying wet places, marshy lands, and paddy fields mostly with clay substratum.

Distribution: India (Andhra Pradesh, Karnataka, Tamil Nadu), Sri Lanka, Bangladesh, China, Philippines, Indonesia.

Specimens examined: INDIA, **Andhra Pradesh**, Guntur, Ragupaliem, 26.02.1902, C.A. Barber

4259 (MH [MH00241612!], K [K004334773!]); Kakinada, Samalkota farm, 29.01.1913, s.coll. s.n. (MH [MH00241610!]). **Tamil Nadu**, Kanyakumari (Komari), 27.02.1796, *Rottler* s.n. (K [K004334771!]); Tirunelveli, Palayankottai, s.coll. 980 (K [K004334772!]); Pudukkottai, s.coll. s.n. (MH [MH00241599!]); Chennai, Nungambakkam, 03.03.1899, *Bourne* s.n. (K [K004334774!]); Villupuram, Kumarakshi Road, 06.02.1931, V. Narayanasamy 5127 (MH [MH00241586!]); Thanjavur, Cadavasal, 12.02.1931, V. Narayanasamy 5228 (MH [MH00241608!]); Villupuram, Annamalaiyar Nagar, 01.02.1958, K.M. Sebastine 5251 (MH [MH00241588!]); Madurai, Natham, 21.04.1958, K. Subramanyam 5735 (MH [MH00241597!]); Tiruchirapalli, 28.01.1960, K.M. Mathew 1474 (RHT024882!); Villupuram, Gingee R.F., 18.03.1961, K.M. Sebastine 12198 (MH [MH00241590!]); Dharmapur, Pennagaram, Gandigar Lake, 04.12.1964, E. Vajravelu 22444 (MH [MH00241594!]); Ramanathapuram, Sivagangai, Esani Forest, 16.12.1964, K. Ramamurthy 22729 (MH [MH00241600!, MH00241601!]); Cuddalore, Kollidam, 13.03.1969, K.M. Mathew 10066 (RHT [RHT024883!]); Cuddalore, Chidambaram, 06.03.1976, C. Rajamani 1418 (RHT [RHT024897!]); Chidambaram, near Municipal guest house, 03.04.1976, K.M. Matthew RHT12643 (CAL!); Tiruchirapalli, Oosipalam, 28.12.1976, K.M. Matthew 5673 (RHT [RHT025027!]); Cuddalore, Chidambaram, Annamalai nagar, Picchavaram road, 15.01.1977, K.M. Matthew & D.I. Arockiasamy 6214 (RHT [RHT024898!]); Tiruchirapalli, Lalgudi, Kilikkoodu, 19.02.1977, s.coll. RHT6688 (RHT [RHT024887!], K [K004334776!]); *ibid.*, 17.02.1978, Rajendran & Diraviyam 11922 (RHT [RHT024889!]); *ibid.*, 21.02.1978, Rajendran & Diraviyam 12096 (RHT [RHT024890!]); Cuddalore, Chidambaram, Palaiman canal, 03.04.1978, K.M. Matthew 12667 (RHT [RHT024904!]); Tiruchirapalli, Srirangam Island, 10.02.1979, K.M. Matthew 11779 (RHT [RHT024883!]); Tiruchirapalli, Uttamarkovil, 16.02.1979, Alamelu & Guna 21634

(CAL!); Tiruchirapalli, Lalgudi, Tollgate to Edaiyathumangalam, 19.02.1980, *Periyayagam & Diraviyadoss* 26559 (RHT [RHT24892!]); Chengalpattu, Manali, Andarkuppam, 01.05.1984, *D. Narasimhan* 498 (MH [MH00241584!]); Chengalpattu, Ennore, 24.02.1986, *D. Narasimhan* 997 (MH [MH00241586!]); Thanjavur, 08.09.1988, *S. Ragupathy* 833 (MH [MH00241606!]); Ramanathapuram, Ilayangudi, 30.10.1988, *V. Balasubramaniam* 1932 (MH [MH00241602!]); Ramanathapuram, Sathirakudi, 14.11.1989, *V. Balasubramaniam* 2203 (MH [MH00241603!]); Chennai, *s.d., s.coll.* 53 (K [K004334769!]); Viluppuram, Marakkanam, Bank of Kollimedu tank, 02.02.2000, *K.M. Matthew* 71103 (RHT [RHT025041!]); Tirupattur, Javadhu hills, MPCA, 31.03.2000, *K.M. Matthew* 71670 (RHT [RHT025042!]); Thiruvallur, Kattuppalli sea coast, Kamarajar Kuppam, 09.12.2001, *K.M. Matthew* 73481 (RHT [RHT027908!]); Tirupattur, Thenmalai, Javadhu Hills, 07.01.2002, *K.M. Matthew* 73832 (RHT [RHT025043!]); *ibid.*, 08.01.2002, *K.M. Mathew* 73860 (RHT [RHT025044!]); Theni (Madurai), Periyakulam, *s.d., R.H. Beddome* 3107 (BM!). **Uncertain localities**, *s.loc.*, 1832, *Wallich s.n.* (K [K004334770!]); Peninsular India, *s.loc., s.d., s.coll.* 1018 (K [K004334767!, K004334768!]); Mysore & Carnatic, *s.loc., s.d., G. Thomson s.n.* (K [K004334775!]); *s.loc.* (Peninsula Ind. Orient.), *s.d. Herb. Wight Propr.* 1018 (BM!); *s.loc.* (Maisor & Carnatic), *s.d. G. Thomson s.n.* (BM!).

Conservation status: Least Concern (LC), global assessment (Rehel, 2011).

Notes: *Ammannia octandra* was first described by Linnaeus (1782) in his *Supplementum Plantarum* based on *Koenig's* collection from India. Species is characterized by 1–5-flowered cyme, scale-like bract, hypanthium 3–5 mm long, winged, 4 calyx lobe and petals with 8 stamens, capsule included within the hypanthium.

De Wilde and Duyfjes (2014) cited *Koenig* specimen at BM as holotype and the specimen at LINN herbarium as isotype. However, Panigrahi

(1976) had earlier formally designated the *Koenig* specimen savage no. 156.5 (LINN!) as lectotype stating ‘Type: India: “Habitat in India Orientali, *Koenig*” (LINN 156/5)’. This should be accepted as lectotype in accordance to article 7.11 of ICN, Turland *et al.* (2025), antedating superfluous lectotypification of De Wilde and Duyfjes (2014).

Ammannia prostrata Buch.-Ham. ex Dillwyn, Rev. Hortus Malab. 40. 1839. *Nesaea prostrata* (Buch.-Ham. ex Dillwyn) Suresh in Nicolson *et al.*, Interpret. Rheede’s Hort. Malab. 168. 1988. *Lectotype* (designated by Mabberly, 1977): [illustration] “beli-tsjira” in Rheede, Hortus Malabaricus 9: 165, t.84. 1689.

Ammannia debilis Aiton, Hort. Kew. 1: 163. 1789. **syn. nov.** *Ditheca debilis* (Aiton) Miq., Fl. Ned. Ind. 1(1): 615. 1856. *Lectotype* (designated here): UNITED KINGDOM, London, Richmond up on Thames, Kew Botanical Garden, 1778, *s.coll. s.n.* (BM [BM001122163!]).

Ammannia lanceolata B.Heyne ex C.B.Clarke in Hooker, Fl. Brit. Ind. 2: 570. 1879. *Nesaea lanceolata* (B.Heyne ex C.B.Clarke) Koehne, Bot. Jahrb. Syst. 3: 325. 1882. *Lectotype* (designated by Panigrahi, 1976): SRI LANKA. *s.d., Thwaites* 2796 (BM [BM000944558!]; Isolecto K [K006473011!]).

Nesaea lanceolata (B.Heyne ex C.B.Clarke) Koehne var. *pubiflora* Koehne, Bot. Jahrb. Syst. 3: 326. 1882. *Lectotype* (designated here): INDIA, *s.loc.* (Maisor & Carnatic), *s.d., G. Thomson s.n.* (BM!). Residual Syntypes: INDIA, Chennai, Sengundram (Red hills), *G. Thomson* 74 (K [K006473022!]). *s.loc., s.d., Wallich* 2106E (BM!, Syntype). **Fig. 1i & j**

Annual, erect or decumbent, glabrous herbs. Stems 5–30 cm tall, quadrangular at apex, terete at base, much branched from base. Leaves oblong, linear-lanceolate, 7–35 × 2–10 mm, sessile, acute or obtuse at apex, attenuate to cuneate at base. Inflorescence axillary, sessile or subsessile cymes; peduncle *c.* 5 mm long. Bracts leaf-like. Bracteoles 2–4, oblong-lanceolate, much shorter than hypanthium. Flower 1–5 per cyme, sessile or subsessile, pedicel 0.5 mm long. Hypanthium 1.5–

2 mm long, campanulate, 8-nerved. Calyx lobes 4, dentate, up to 0.5 mm, acute, hirsute at apex; calyx appendages 4, as equal or shorter than calyx lobes, hirsute at apex. Petals 4, obovate or suborbicular, c. 1 mm long, caducous, pink. Stamens 4, included at the middle of the hypanthium, anthers inserted. Ovary globose; style stout, shorter than ovary; stigma capitate, included. Capsule up to 2 mm long, globose or sub-globose, not exceeding the hypanthium; dehiscence circumscribed near the apex initially. Seeds numerous, suborbicular.

Flowering & fruiting: October–March.

Habitat: Herb grows in fringes of ponds, fallow fields and marshy places after monsoon.

Distribution: India (Andhra Pradesh, Odisha, Karnataka, Kerala, and Tamil Nadu) and Sri Lanka.

Specimens examined: INDIA. **Andhra Pradesh**, Tirupati, Tada, 16.02.1901, *Bourne* 2523 (CAL!, K [K006473018!]); Tirupati, Tada, 13.03.1901, *Bourne* 2147a (K [K006473012!]); *ibid.*, *Bourne* 2147b (K [K006473013!]); Chittoor, Chandragiri, 22.02.1914, *s.coll.* 9997 (MH!). **Odisha**, Gnajam, Chatrapur, *J.S. Gamble* 21695 (K [K006473019!]). **Karnataka**, Uttar Kanada, Yellapur, *Talbot s.n.* (DD!); Uttar Kannada, Karwar, 09.10.1887, *Talbot* 1575 (CAL!); Uttar Kannada, Karwar, *L.J. Sedgwick* 6669 (K [K006473020!]). **Kerala**, Thrissur, Parambikulam, 14.02.1963, *Sebastine* 15314 (MH!); Malappuram, Olipramkadavu, 15.08.1985, *Naseem* 5624 (CALI!). **Tamil Nadu**, Mayiladuthurai, Tarangambadi, 1778, *Koenig s.n.* (BM!); Chennai, 1834, *Griffith & Lindly s.n.* (K [K006473016!]); Chennai, 01.02.1899, *C.A. Barber* 133 (MH [MH00242072!], K [K006473009!]); Chennai, 09.03.1899, *C.A. Barber* 226 (MH [MH00242073!], MH00242074!); Chennai, 12.02.1899, *s.coll. s.n.* (MH [MH00242076!]); Chennai, Egmore, Spurtank, 20.01.1900, *s.coll. s.n.* (MH [MH00242071!]); Thanjavur, Kodiakadu, 21.01.1961, *J.L. Ellis* 11818 (MH [MH00242084!]); Ramanathapuram, Sayalgudi, 08.12.1977, *N.C. Nair* 53194 (MH [MH00242082!, MH00242083!]);

Parangipettai, 10.02.1979, *K. Ramamurthy* 58178 (MH00242078!, MH00242077!); Tiruchirapalli, Thuraiyur, Pachaimalai, 26.01.1980, *Diraviam & Xavier* 26122 (RHT [RHT025006!]); Pudukottai, Kulathur, Narthamalai, 07.02.1980, *Diraviam* 26355 (RHT [RHT025007!]); *ibid.*, 09.03.1984, *K.M. Matthew & S.J. Britto* 26355 (RHT [RHT025008!]); *ibid.*, 20.01.1989, *K.M. Matthew* 30727 (RHT [RHT24886!]); Pudukottai, Narthamalai, 15.03.1986, *C. Arulappan* 737 (MH [MH00242079!]); Ramanathapuram, Enthal, 12.01.1989, *V. Balasubramaniam* 2014 (MH [MH00242080!]); Cuddalore, Ramanathapuram, Periapattanam cut road, 29.12.1989, *V. Balasubramaniam* 2349 (MH [MH00242091!]); Pudukottai, Narthamalai, 29.01.2022, *Arun Prasanth* APR0079 (SPPU!). **Uncertain localities**, *s.loc., s.d., Herb. Wight Prop.* 1020 (K [K006473014!]); *s.loc.*, 1832, *Wallich* 2106a (K [K006473015!]), *s.loc.*, 1832, *Wallich* 2106b (K [K006473017!]); *s.loc.* (Maison & Carnatic), *s.d., G. Thomson s.n.* (BM!); *s.loc., s.d., Koenig s.n.* (BM!).

Conservation status: Least Concern (LC), global assessment (Mani, 2011b).

Notes: *Ammannia prostrata* is allied to *A. cordata*, but can be distinguished by oblong, linear-lanceolate leaves with attenuate or cuneate base; petals showy up to 1 mm long, capsule not exceeding the hypanthium. Cyme is usually sessile, but in *Sedgwick* 6669 (K) and RHT025007 (RHT) it is pedunculate (c. 5 mm long).

Nomenclature: Clarke (1879) described *A. lanceolata*, which Koehne (1882) later transferred to *Nesaea* based on circumcissile capsule dehiscence and persistent style. This was followed in subsequent floristic works (Blatter & Hallberg, 1918; Gamble, 1919; Mathew, 1983; Saxena & Brahamam, 1995; Saldhana, 1996; Pullaiah & Chennaiah, 1997; Mathew *et al.*, 2020). *Ammannia prostrata* Buch.-Ham. ex Dillwyn (1839) published based on 'beli-tsjiira. 9. t. 84. 1689' of van Rheede's Hortus Malabaricus, was later transferred to *Nesaea* by Suresh (1988) as *N. prostrata*, and treated *A.*

lanceolata (= *N. lanceolata*) as synonym. This was adopted in several works (Verdcourt, 1995; Cook, 1996; Almeida, 1998; Sunil & Sivadasan, 2009). Recently, Graham *et al.* (2011) concluded that *Nesaea* is congeneric to *Ammannia*, and Graham and Gandhi (2013) accepted the name *A. prostrata*. Following this treatment, *Ammannia prostrata* has been accepted in literatures and databases (Britto, 2019; POWO, 2025; WFO, 2025).

Ammannia debilis Aiton (1789) published based on cultivated specimens, introduced from 'East Indies', is morphologically conspecific with *A. prostrata*, sharing oblong to linear-lanceolate leaves with attenuate base, axillary cyme bearing flowers, hypanthium 1.5–2 mm long, hirsute calyx lobes, petals 1 mm long. However, *A. debilis* has been applied inconsistently to several taxa, *A. baccifera* and *A. multiflora* (Clark, 1879; Koehne, 1903), and also misidentified for specimens from Java (Moritzi, 1846; Miquel, 1856). Although, *A. debilis* has nomenclatural priority, its inconsistent use leads to nomenclatural instability. To establish a nomenclatural stability, we intend to conserve the name *A. prostrata* against *A. debilis* under Article 14 of ICN (Turland *et al.*, 2025), and a formal proposal has been submitted to the journal Taxon.

The nomenclatural type of the name *A. debilis* Aiton was cited as 'Type: BM001122163, a specimen in Bank's herbarium (BM) with a determination...' by De Wilde and Duyfies (2014). However, according to article 7.11 of ICN their statement lack 'designated here or equivalent phrase' which make their typification invalid. Therefore, here we designate specimen BM001122163 (BM) as the lectotype following Art. 9.3 of ICN (Turland *et al.*, 2025).

Also, Panigrahi (1976) formally designated *Thwait's* 2796 (BM) as the lectotype for the name *A. lanceolata*. Hence, later lectotypifications by Graham and Gandhi (2013) and Prasanth and Sardesai (2024) are superfluous.

Ammannia senegalensis Lam., Tabl. Encycl. 1(2): 311, t.77, f.2. 1792. *Lectotype* (designated by

Verdcourt, 1994): SENEGAL, *s.loc., s.d., Roussillon s.n.* (P [P00297858 digital image!]).

Ammannia senegalensis Lam. forma *indica* Blatt & Hallb., J. Bombay Nat. Hist. Soc. 26: 214. 1918. *Lectotype* (designated by Almeida, 1998): INDIA, **Maharashtra**, Pune, Khandala, 11.1916, *Blatter & Hallberg* 3350 (BLAT!). **Fig. 2d**

Annual, erect, rarely prostrate, glabrous herbs. Stems 10–40 cm tall, quadrangular at apex, terete at base, inconspicuously winged, much branched from middle of stem. Leaves oblanceolate or sublinear, 5–50 × 1–13 mm, sessile, acute or obtuse at apex, auriculate-cordate or subcordate at base, lower ones cuneate. Inflorescence axillary, subsessile, cymes; peduncle *c.* 1 mm long. Bracts leaf-like. Bracteoles 2, lanceolate, shorter than hypanthium. Flowers 3–15 per cyme, 4-merous, pedicellate; pedicel *c.* 1 mm long. Hypanthium campanulate, 1–1.5 mm long, 8-nerved. Calyx lobes 4, dentate; calyx appendages absent. Petals 4, obovate, *c.* 0.2 mm long, caducous, pink. Stamens 4, inserted at the middle of the hypanthium; anther included. Ovary globose, slightly exceeding hypanthium; style inconspicuous, shorter than ovary; stigma capitate, inserted. Seeds numerous, ovoid.

Flowering & Fruiting: November–May.

Habitat: Marshy places near lakes and ponds fringes.

Distribution: India (Maharashtra). Africa, Madagascar, China, Hongkong.

Specimens examined: INDIA. **Maharashtra**, Pune, *Blatter & Hallberg* 19866 (BLAT!); Pune, Khandala, *Blatter & Hallberg* 3350 (BLAT!); Pune, *Blatter & Hallberg* 3352 (BLAT!); Pune, Khandala, *Sedgwick* 7919 (K [K004334911!]); Pune, Khandala, near Khaud Talav, 29.05.1944, *Santapau* 4364 (BLAT!); Pune, Khandala, near Khaud Talav, 29.12.1948, *Santapau* 9771 (BLAT!).

Conservation status: Least Concern (LC), global assessment (Ghough & Anitha, 2020).

Notes: *Ammannia senegalensis*, an African species first recorded by Blatter and Hallberg (1918) from Khandala, Pune district of Maharashtra. In the present study the species is included based on pre-colonial collections. All known specimens are collected around a lake in Khandala Pune. Despite repeated attempts we were unable to collect the species from the locality. Further, a specimen collected from the same locality (K004334811!) was found matching to *A. auriculata*, with exerted style.

Presence of heterostylous flowers are common morphological character observed across several species of *Ammannia*. However, the collections made by Blatter & Hallberg and Santapau (cited in specimen examined) may represent individual of *A. auriculata* exhibiting homostylous flowers, where stamens and style are of equal length. This casts doubt on species distribution in India. However, in the absence of self-observation of this putative heterostylous form, here we retain *A. senegalensis* in the Indian flora. The species is morphologically similar to *A. auriculata* but can be distinguished by 1–1.5 mm long hypanthium, and style stout or absent (versus *A. auriculata*, hypanthium 3–5 mm long, style slender).

Panigrahi (1976) cited a microfiche of original specimen at K as type, stating ‘Type: E. Senegal, *Roussillon s.n.* (P microfiche no. 238118, K)’. Apparently, this cannot be serving as type according to Art. 8.1 of ICN, as only physical specimen or illustration only can serve as nomenclatural type, and the original material still exists. Verdcourt (1994) subsequently designated the actual specimen at P herbarium (P00297858) as lectotype, which is valid according to Art. 8.1 and 9.3 of ICN (Turland *et al.*, 2025).

Acknowledgements

Authors are thankful to the authorities of Savitribai Phule Pune University for the support and research facility. We acknowledge herbarium images provided by Board of Trustees of the Royal Botanical Garden, Kew, and Blatter Herbarium,

St. Xaviers College, Mumbai. We are beholden to all the curators of herbaria for granting access to study the specimens. Special thanks to Alison Moore, Sue Frisby, and Sara Edwards (curators, K herbarium) and Jovita Yesilyurt (curator, BM herbarium) for their support during AP’s visit to UK herbaria and Dr. Varsha Nimbalkar for her inputs. Thanks to John McNeill (Edinburgh) and Mayur Nandikar (Pune) for insightful nomenclatural discussions. Financial assistance provided by IAPT Research Grant 2023 to AP and by Rashtriya Uccharat Shiksha Abhiyan (RUSA), Ministry of Education, Government of India, New Delhi, to MMS are sincerely acknowledged.

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